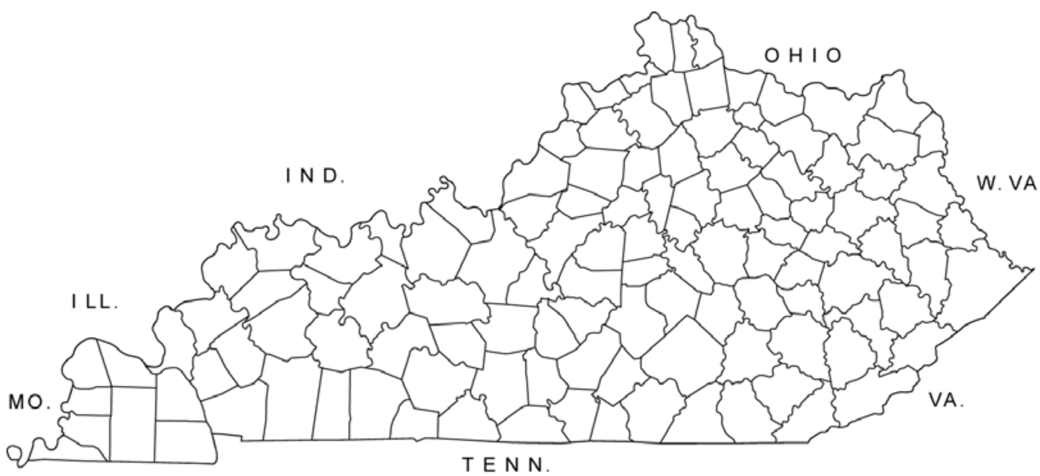
THE ARCHAEOLOGY OF KENTUCKY: AN UPDATE

VOLUME ONE



Edited
by
David Pollack

Kentucky Heritage Council
State Historic Preservation Comprehensive
Plan Report No. 3

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Edited

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Kentucky Heritage Council

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PREFACE

The Kentucky Heritage Council is the Commonwealth's historic preservation office and is charged with preserving the state's abundant historic and prehistoric resources. Since its creation in 1966 the Council has taken the lead in identifying, preserving, and protecting Kentucky's heritage for future generations.

With the publication, of 1990 archaeological state plan, the Council initiated the first what was intended to be a series of reports on different aspects of Kentucky archaeology, architecture, and material culture. The Council's initial archaeological planning efforts consisted of awarding a survey and planning grant to the University of Kentucky in 1980. This study defined the seven management areas used in the prehistoric overviews (chapters 2-7) and presented short summaries of the cultural history of each management area (*A Research Design for Kentucky Archaeology* by R. Berle Clay*)*. Shortly after the completion of this initial project, the planning process known as RP3 (Resource Planning, Protection, and Preservation) was initiated by the National Park Service. The Council's RP3 efforts focused on developing several study units, including one on the Green River Shell Middens of western Kentucky (never published) and one on the salt licks of central and northern Kentucky (*Kentucky Salt Licks: A Preservation Planning Perspective* by Richard A. Boisvert 1984).

In 1982, the U.S. Army Corps of Engineers initiated an RP3 study of the entire Louisville District. The primary goal of this project was to summarize the culture history of the district and to identify avenues for future research. Study units defined for this project consisted of a period of archaeological time within a geographic area (e.g., the Late Archaic in the Middle Ohio, Green, and Salt River drainages). Although drafts of all the study units were completed, none were ever finalized and published. These documents provided very little information on each study unit and were not geared toward a particular audience (i.e., the archaeological community or those involved in issuing U.S. Army Corps of Engineers 404 permits). As a result, few were satisfied with the RP3 documents.

In 1985, the National Park Service introduced a comprehensive planning process they believed was an improvement over the RP3 model. The Park Service instructed the states to develop comprehensive historic preservation plans based on thematic studies bounded in time and space. These were to be "contexts." The contexts developed by the states were viewed by the Park Service as being crucial for evaluating cultural resources and identifying significant archaeological sites and architectural resources.

Having experienced the RP3 process and finding it wanting, the staff of the Council staff was somewhat skeptical about this approach to planning. As the staff became more familiar with the comprehensive planning process, however, it became evident that this process provided an opportunity to work with the archaeological community to not only summarize what was known about Kentucky's past, but to better plan future archaeological research, site protection, and education activities.

What came out of that undertaking was a 788 page document that contained a series of prehistoric contexts and an historic context. Each context summarized what was known about a particular temporal unit and outlined a series of research questions and objectives that was to guide future archaeological research. This document also included an overview of the level of archaeological investigations that had been conducted within each of the Kentucky's seven management areas, and concluded with overviews of the Section 106 process, site protection and preservation tools, and public education options. The intent was to update this document ever five years.

As it turned out this was far too ambitious a schedule, and this update was almost 20 years in the making. A great deal of archaeological work has taken place since the 1990 state plan was finalized. Much of this work has been undertaken in response to federally funded or licensed projects. But other projects have been undertaken in advance of state funded projects or in response to threats to significant archaeological sites. A great deal of university and grant supported research also has been conducted throughout the state. All of this work has contributed to Kentucky's rich archaeological database, which the authors' of this document attempted to summarize and update. Undoubtedly, however, given the best efforts of all involved in this project, some significant projects have been omitted from this document. If this is the case, we apologize in advance, as it was not the intent of any of the authors' to slight the work of others. It simply was an oversight given the vast amount of work that has been conducted in the last 20 years.

Finally, though we have learned a great deal about Kentucky archaeology in the last 20 years, there is still much to be learned. While archaeologists have begun to address many of the questions and objectives outlined in the 1990s, and others are no longer considered to be valid, they also have come to ask new questions. This is what makes archeology an exciting and rewarding endeavor.

As I noted in 1990, with any document that summarizes what is known about the archaeology of an entire state, some sections of this document were in need of revision shortly after they were written. Thus, it is my hope that the next update will not be 20 years in the making.

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Kentucky Heritage Council and
Director
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ACKNOWLEDGEMENTS

This publication was funded by the Commonwealth of Kentucky under the provisions set forth in KRS171.381.

I would like to take this opportunity to express my appreciation to the authors of the chapters included in the following two volumes. Without their efforts and support, this publication would never have been completed. I also would like to thank the Federal Highway Administration, Kentucky Division Office, and David Waldner of the Kentucky Transportation Cabinet's Division of Environmental Analysis, who secured the funds for this undertaking and who patiently waited for this update to be completed.

While several of the authors from the 1990 volume participated in the update of the overviews, several others, for various reasons, were unable to do so. However, the work of John T. Carter, R. Barry Lewis, Jimmy A. Railey, William E. Sharp, and Kenneth B. Tankersley provided the foundation for those who took on the task of updating the overviews. For all of the authors, I would like to thank them for providing such a solid baseline from which we all could start.

No one can prepare overviews, such as those presented in this document, without the help of many different people. Speaking for all of the authors, I would like to thank all those Kentucky archaeologists across the decades who, through fieldwork, analysis, or just plain consideration of the patterns they observed, helped construct the rich archaeological database that is Kentucky archaeology.

I also would like to take this opportunity to thank Matt Davidson, James Hixon, Christopher Moore, Susan Neumeyer, Carl Shields, Lori Stahlgren, and Marcie Venter, for providing editorial assistance, and Wesley Stoner and Betty Jo Stokes, for assistance in the compilation of the data provided to each author. Relative to the Woodland chapter, thanks go to Erin G. Avery, who assisted with the literature review, to the Fort Ancient chapter, thanks go to Don Miller, Martin Raymer, Bill Sharp, and Terry Tune for reading drafts and for providing feedback and editorial suggestions, and to the Historic chapter thanks go to Carrell Rush, who assisted with the literature review. I apologize in advance for anyone's name I forgot to mention.

David Pollack
Frankfort, Kentucky
October 2008

CHAPTER AUTHORS' ACKNOWLDGEMENTS[1]

The preparation of a statewide archaeological overview is not an easy task. Few states have been able to complete this kind of planning document once, let alone update it. Yet, David Pollack has now overseen the preparation of two of these massive tomes. This is surely a record.

This milestone reflects David's deep commitment to Kentucky archaeology, his ever-present optimism about and commitment to the CRM process in the face of growing bureaucracy, and his vision for what Kentucky archaeology has contributed to our understanding of the past and what it will contribute in the future. Over the years in his role as first a staff member, then manager of the Kentucky Heritage Council's Site Protection and Archaeology Section, David has reviewed or participated in projects all across Kentucky that encompass the entire span of human presence in the Commonwealth. Few who have been involved in Kentucky archaeology share David's depth and breadth of experiences and archaeological knowledge. Drawing on these experiences, he has developed a broad perspective on Kentucky archaeology's essential questions and potential contributions to many research domains, both within the state and outside its borders. Even his commitment to public education was not forgotten on this project. His vision clearly made David the person for the job.

Nevertheless, it takes more than vision to see a document like this to completion. It also takes enormous effort in other areas. David had to: attend to the day-to-day operationalization of the document itself; organize people to abstract the reports from which we would pull information for our chapters; handle contributing authors' quirks; and ensure evenhandedness in the sites and projects that we mentioned. He did this while being ever-mindful of the many purposes this document must serve and the time schedule for its completion. He nudged us to do a better job reflecting on the many accomplishments in Kentucky archaeology over the last 20 years. He has an uncanny memory for important projects long forgotten by others, many of which are mentioned here only because David reminded us of them.

Many of us have not always agreed with David, and we have even had our battles with him. Regardless of professional differences or debates, one thing is true: David <u>always</u> has the best interest of Kentucky at heart, and what he does is not for himself, but for the betterment of archaeology in this state.

This publication reflects David's vision of accomplishments and future directions of Kentucky archaeology, his unfailing patience and good humor, and his skills in editing and formatting. When the time for the next revision rolls around, whomever takes up this task will surely have a tough act to follow.

Thank you, David, from all of us.

Kary Stackelbeck
Philip Mink
Greg Maggard
Dick Jefferies
Darlene Applegate
Gwynn Henderson
Kim McBride
Stephen McBride
Jay Stottman
Alexandra Bybee

[1]We realize our acknowledgement of David Pollack's contribution to this volume is somewhat irregular. We prepared these comments entirely without his knowledge (until, of course, we had to send them to him with instructions for their inclusion in this publication).

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CHAPTER 1: INTRODUCTION

By
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Before the passage of the National Historic Preservation Act of 1966 and subsequent regulations, most of the sites recorded and excavated in Kentucky represented those that had been investigated by William S. Webb and his associates. Several reports have been written on these sites but much of the material remains unanalyzed and, in some cases, unwashed. With the passage of historic preservation laws and regulations in the 1960s and 1970s archaeological research in the state increased substantially. As a result of compliance with these laws, many large-scale survey and excavation projects were undertaken in Kentucky during the 1980s. In addition, the Kentucky Heritage Council (KHC) through federal survey and planning grants, and its state grants programs funded a great deal of research throughout the state. These projects as well as others were reported on in the Kentucky's 1990 comprehensive archaeological state plan (Pollack 1990).

As was the case in 1990, most cultural resource management funded studies tend to be project-specific, reflecting the general nature of cultural resource management archaeology, and few authors have attempted to summarize or synthesize existing data within a region. Sufficient funds often have not been available to reproduce more than a few copies of these reports, while others exist only in manuscript form. Thus, although much has been written about individual sites or regions of the state, researchers not associated with a particular institution or consulting firm are often unaware of the existence of many significant studies.

Recognizing the need to summarize and disseminate information on Kentucky archaeology, in the late 1980s the Kentucky Heritage Council contracted with several archaeologists to produce overviews for the following archaeological contexts: Paleoindian, Archaic, Woodland, Mississippi, Fort Ancient, and Historic. Each author was instructed to define their context in time and space, and to summarize previous archaeological investigations undertaken in Kentucky that contributed to a better understanding of that context. The results of these efforts were published in 1990 as a two volume set entitled *The Archaeology of Kentucky: Past Accomplishments and Future Directions*.

Since its publication in 1990 the has KHC used this document, and in particular the research questions presented at the end of each chapter, to direct it's federal and state grant programs, and to set agency goals and priorities for archaeology. This document also has provided the contexts for evaluating the significance of archaeological sites nominated for listing in the National Register of Historic Places. With respect to Section 106 of the National Historic Preservation Act of 1966 and its implementing regulations

(Advisory Council's Regulations for the Protection of Historic Properties - 36CFR, Part 800), information presented in the state plan has been used to evaluate the significance of archaeological sites found during the course of federally supported or licensed projects. Pursuant to the Advisory Council's Regulations, it also has been used to formulate research questions that are the foundation of data recovery plans developed to address adverse impacts to significant archaeological sites.

As discussed in Chapter 2, prior to 1987 almost 12,000 archaeological sites had been documented in Kentucky. By 2005, this total had risen to almost 24,000 sites. Not only were a large number of archaeological sites documented in the intervening years, but almost 6,500 reports, articles, books, thesis, and dissertations were published (see Chapter 2). Newly recorded archaeological sites as well as their associated survey reports have been incorporated into the Kentucky's archaeological geographic information system databases and coverages, which were develop in the late 1990s and early 2000s. These databases and coverages continue to be updated and maintained as a cooperative effort of the University of Kentucky Office of State Archaeology, the Kentucky Archaeological Survey, and the Kentucky Heritage Council (see Chapter 2 figures).

Recognizing the need to synthesis this new information and to update the 1990 state plan, the KHC again contracted with several archaeologists to produce overviews for the Paleoindian, Archaic, Woodland, Mississippi, Fort Ancient, and Historic periods. As in 1990, each author was instructed to define their context in time and space, and to summarize previous archaeological investigations undertaken in Kentucky that contributed to a better understanding of that context. They also were asked to identify, what had been learned since publication of the 1990 plan, and to revise and update the research questions presented at the end of each context.

In the process of updating the 1990 state plan, it became quite evident that a great deal of new work had been undertaken in the last 18 years. This work, which has been of local, state, and national significance, has greatly expanded our knowledge of Kentucky archaeology. In chapters 3-8, the most significant of these studies are summarized, and insights that have been gained into prehistoric and historic lifeways are identified. While a great deal has been learned since publication of the 1990 state plan, there is still much that we do not know about the past. Thus, while Kentucky archaeologists have been able to address a variety of research questions, others still remain to be addressed, and new research questions have been proposed.

In chapters 3-7 (Paleoindian, Archaic, Woodland, Mississippi, and Fort Ancient contexts) information is presented for each of the following management areas: Purchase, Green River, Upper Cumberland, Salt, Bluegrass, Upper Kentucky/Licking, and Big Sandy. In general, these management areas are organized around Kentucky's major river drainages. Chapter 8 presents a review of previous historical archaeological research conducted in the state. This chapter is organized around the following cultural landscapes: Ohio Valley Urban Centers, Jackson Purchase, Pennyrile, Appalachian Mountains, and Bluegrass. In general, except for the Ohio Valley Urban Centers, the cultural landscapes correspond to large physiographic regions.

The 1990 state plan made mention of the need to educate the public about archaeology and the importance of preserving archaeological sites for future generations. At that time it was noted that an informed public can work for stronger protection of archaeological sites and can assist in the preservation of significant cultural resources. Recognizing this need, public archaeological efforts in Kentucky now include site visits, publication of books and booklets on a variety of topics, teacher workshops (Project Archaeology), development of grade school curriculums, and site-specific archaeological education programs and experiences. There also has been recognition by federal agencies, such as the Federal Highway Administration, Forest Service, and National Park Service, that they need to educate the public about archaeological sites that have been investigated during the course of their projects. In addition, land managing agencies have recognized the need to educate the public about the importance of preserving and protecting significant archaeological resources located on federal lands.

The remainder of this chapter provides a framework within which the archaeological resources in the state can be placed. First, the state's six archaeological contexts are defined. This is followed by a brief review of the state's environmental setting and definitions of the management areas, which are used to characterize the prehistoric occupation of the state and the cultural landscapes, which are used to characterize the historic occupation of the state.

ARCHAEOLOGICAL OVERVIEWS

The six archaeological contexts (Paleoindian, Archaic, Woodland, Mississippi, Fort Ancient, and Historic periods) discussed in this volume represent units of time that provide a framework for discussing prehistoric and historic developments in Kentucky. These contexts are state-wide in scope, except for the Mississippi and Fort Ancient periods. Mississippi period occupations are known from the Purchase, Green River, Upper Cumberland, and Salt River management areas, while Fort Ancient occupations are known from the Salt, Bluegrass, Upper Kentucky/Licking, and Big Sandy management areas. Although Mississippi and Fort Ancient period sites exhibit sufficient similarities (e.g., shell tempered ceramics, triangular projectile points, sedentary communities, and dependence on corn agriculture) to have been presented as one Late Prehistoric context, for the purpose of this document they have been treated as separate contexts. This decision was based in part on the level of previous research conducted at Mississippi and Fort Ancient period sites in Kentucky. While this approach has the disadvantage of highlighting differences in Mississippi and Fort Ancient period material culture, settlement patterns, and sociopolitical organization, it allows for a more comprehensive treatment of these archaeological manifestations than would have been possible if they had been presented as one context.

PALEOINDIAN PERIOD

The Paleoindian period dates from ca. 9,500 to 8,000 B.C. Although people probably lived in what is now Kentucky before 9,500 B.C., the archaeological evidence of such utilization and occupation of this region has yet to be found. Paleoindians are the first people known to have lived in Kentucky, exploit its resources, and settle its dynamic environments. Climatically, Kentucky was somewhat cooler and moister than it is today but a warming trend had begun. During this period, circum-glacial coniferous forests, grasslands, or areas with "mosaic" vegetation began to be replaced with a closed-canopy mixed deciduous hardwood forest. Paleoindian subsistence and settlement strategies responded to these changes.

ARCHAIC PERIOD

The Archaic period is that segment of eastern North American prehistory extending from 8,000 to 1,000 B.C. This period has been divided into Early, Middle, and Late subdivisions based on various technological, social, subsistence, and settlement criteria. For purposes of this document, the following temporal framework is employed: 1) Early Archaic - 8,000 to 6,000 B.C.; 2) Middle Archaic - 6,000 to 3,000 B.C.; and 3) Late Archaic - 3,000 to 1,000 B.C.

Early Archaic (8000-6000 B.C.)

The Early Archaic is defined on the basis of technological and social changes associated with the retreat of the last Pleistocene glacier. The glacial retreat brought about significant regional climatic changes, the complete replacement of circum-glacial coniferous forests with mixed deciduous forests, and the replacement of Pleistocene fauna with modern species.

Middle Archaic (6000 - 3000 B.C.)

The Middle Archaic is recognized as a time of increased regionalization of cultures, which is reflected by a variety of technological, settlement, subsistence, and social traits. This temporal unit also is characterized by the appearance of regional projectile point styles. A variety of specialized tools, which reflect the exploitation of a wide array of resources and new processing techniques, first appear during this temporal unit. The increased number and diversity of both formal and informal groundstone tools, many used for plant food processing, is a particularly noticeable aspect of many Middle Archaic assemblages.

Late Archaic (3000 - 1000 B.C.)

Late Archaic cultures in eastern North America reflect a continuation of the trend toward greater regional specialization and adaptation first evident in the Middle Archaic. Adaptation to unique regional environmental conditions resulted in the development of specialized technologies that were used to exploit locally available plant and animal resources. Evidence of increased social complexity is present at some Late Archaic sites, especially some of the large Green River shell mounds. The association of grave goods manufactured from nonlocal raw materials with some burials suggests special treatment of certain individuals.

WOODLAND PERIOD

As with the Archaic period, the Woodland period has been divided into three chronological subdivisions: Early, Middle, and Late. For the purposes of this document, the following temporal framework is employed: 1) Early Woodland - 1000 to 200 B.C.; 2) Middle Woodland - 200 B.C. to A.D. 500; and 3) Late Woodland - A.D. 500 to 900-1000. During this period the trend toward greater regional specialization and adaptation initiated during the Archaic period continued and by Middle Woodland times at least two distinct cultural adaptations (Adena and Crab Orchard) are identifiable in the archaeological record.

Early Woodland (1000 - 200 B.C.)

The Early Woodland is distinguished from the preceding Late Archaic by the appearance of ceramics in the archaeological record. However, subsistence patterns changed little from Late Archaic times. In central and eastern Kentucky, the construction of earthen enclosures and burial mounds during the Early Woodland is suggestive of increased social complexity.

Middle Woodland (200 B.C. - A.D. 500)

During the Middle Woodland, the construction of earthen enclosures and burial mounds continued, and reached its height of popularity by the middle of this temporal unit. Many grave goods recovered from Adena burial mounds in north-central and eastern Kentucky, and nonlocal materials found at Crab Orchard sites in western Kentucky are indicative of interregional exchange. Middle Woodland habitation sites range from large base camps in western Kentucky to smaller more dispersed settlements in north-central Kentucky.

Late Woodland (A.D. 500 - 1000)

Late Woodland artifact assemblages are essentially similar to those from late Middle Woodland sites. However, most lack Hopewellian decorated ceramics or other items indicative of interregional exchange. During this period, some groups (e.g., Newtown) established circular donut-shaped settlements, and throughout this temporal unit there is evidence for increased nucleation of local populations and a shift to a more sedentary lifestyle. Late Woodland subsistence patterns reflect a hunting-gathering-gardening strategy similar to that of the Middle Woodland but with increased use of native cultigens. By the end of the Woodland period tropical cultigens such as corn had been incorporated into local diets.

MISSISSIPPI AND FORT ANCIENT PERIODS (A.D. 900-1000 - 1700-1750)

As noted previously, for the purposes of this document the Late Prehistoric period has been divided into two contexts, consisting of the Mississippi and Fort Ancient periods.

Mississippi

The Mississippi period is characterized by shell tempered ceramics and a hierarchical settlement system consisting of sites ranging from farmsteads to administrative centers that featured plazas flanked by one or more platform mounds. Mississippi period political organization is broadly comparable to that of a chiefdom. By the beginning of the Mississippi period, maize and squash had become important components of the diet. Native cultigens and wild plants, especially nuts, however, continued to be exploited by Mississippi period populations.

Fort Ancient

As with the Mississippi period, the introduction of shell temper marks the beginning of the Fort Ancient period. Fort Ancient represents a response by populations living in north-central and eastern Kentucky to an increased reliance on corn and beans coupled with a more sedentary life style characterized by permanent villages. There is a decrease in the use of native cultigens and nuts during the Fort Ancient period, relative to the preceding Woodland period, but wild plants continue to be exploited. Fort Ancient groups lacked the settlement hierarchy and ranked society of Mississippian groups to the west and south.

HISTORIC PERIOD

Pre-Settlement Exploration (? - 1775)

This temporal unit is characterized by the exploration of what is now Kentucky by representatives of the French government, explorers, traders, and land speculators. Contact with aboriginal groups was limited and usually for short periods of time. It was during this temporal unit that Kentucky became known as the "dark and bloody ground," used ostensibly only for hunting by aboriginal groups.

Early Settlement (1775-1820/1830)

This temporal unit is marked by conflict between aboriginal groups and the British. During the Early Settlement temporal unit, most of the land in Kentucky was claimed, an infrastructure of roads was established, towns were created, and counties were formed. A regional economic system that included the use of major rivers to transport goods, establishment of a national banking system, and the shipping of farm produce to regional markets also was established.

Antebellum (1820/1830-1861)

During the Antebellum, Kentucky experienced a great deal of growth that resulted from a highly productive agricultural economy. For much of this temporal unit, Kentucky was the sixth most populous state in the union and its political leaders played a greater role in national affairs than at any other time. County seats grew in population as the country side was fully settled by Euro-Americans, cleared of forests, and brought into productive agricultural use.

Civil War (1861-1865)

This temporal unit is marked by conflict between the northern and southern states. Although a few battles were fought in Kentucky and fortifications were established throughout the state, few major battles occurred in the state. Kentucky was not affected by the war to the same degree as states to the south and east.

Postbellum Readjustment and Industrialization (1865-1915)

Throughout the Postbellum, Kentucky remained predominantly agricultural as the rest of the nation entered the industrial age. During the Reconstruction Era the local agricultural labor system was restructured and an effort was undertaken to build a railroad system that integrated Kentucky into the national economy. As a result of the railroad, by the end of this temporal unit goods produced in Kentucky were being sold in direct competition with those manufactured in distant regions. Simultaneously, the demand for lumber and coal in the growing industrial centers to the east brought other changes to much of Kentucky, as did the rapid expansion of industries and commercial interests in the local urban centers. The lumber and coal industries restructured the economies of eastern and western Kentucky, while the urban industrial and commercial developments required a greater work force, which led many to move from rural communities to the larger cities in search of jobs. Even as the extractive industries expanded in eastern and western Kentucky and Kentucky's urban centers grew, the state as a whole remained more rural and traditional than the rest of the nation. During this temporal unit, many farms began to grow tobacco and the landscape around Lexington began to take on the appearance of the present-day horse farms.

Industrial and Commercial Consolidation (1915-1945)

During this temporal unit, Kentucky continued to lag behind the nation in economic development. As with much of the south, the 1920s were a period of agricultural stagnation. The national prohibition on alcohol had a negative impact on the economy of central Kentucky, which was known for its bourbon. At the same time, the social issues of the 1920s, such as the anti-evolution crusade, resulted in the rebirth of the Klu Klux Klan in Kentucky. The age of the automobile brought with it the construction of service stations, motels, tourist attractions, and garages, along with wider, realigned major roads that together gave both urban and rural Kentucky a new look.

ENVIRONMENTAL SETTING

Kentucky covers 103,208 km^2 of surface area and is situated within the heart of the Eastern North American woodlands. Over millions of years, geological, climatic, and other natural forces have shaped the present-day landscape of Kentucky. Except for changes in biological communities and hydrological regimes, however, the state's topographic landscape, has for the most part, maintained its present form throughout the period of human occupation.

Kentucky's bedrock geology consists chiefly of flat-lying Paleozoic sedimentary deposits, with more recent Mesozoic- and Tertiary-age deposits characterizing the far western portion of the state. The state's physiography owes it present condition to relative tectonic dormancy and a prevailing humid continental climate during recent geologic times. Continental ice sheets of the Pleistocene Epoch intruded only into the extreme northern portion of Kentucky near Cincinnati, Ohio, and only indirect effects of the glaciers can be observed in other areas of the state.

Kentucky falls within three major physiographic provinces as defined by Fenneman (1938): the low-lying Coastal Plain in the extreme western portion of the state; the rolling Interior Low Plateaus, which covers most of the western and middle portions; and, in eastern Kentucky, the rugged Cumberland Plateaus. Within Kentucky, the Interior Low Plateaus are subdivided into four physiographic regions: the Western Coalfield (Shawnee Hills), the Mississippian Plateaus (Pennyroyal), the Knobs, and the Bluegrass (Figure 1.1). The specific features of these physiographic subdivisions are discussed within the respective management area descriptions.

A network of stream systems cross these physiographic provinces and empty into the Ohio and Mississippi rivers (Figure 1.2). The Ohio River, which forms the state's northern boundary, drains 97 percent of the total land area and empties into the Mississippi River, which forms the state's extreme western boundary. Major drainage systems that flow northwesterly into the Ohio River are the Big Sandy, Little Sandy, Licking, Kentucky, Salt, Green, Tradewater, Cumberland, and Tennessee (Worms et al. 1977:160). A single drainage system may cut across several physiographic regions as does the Kentucky River, which flows through the Eastern Mountains, Knobs, and Bluegrass (figures 1.1 and 1.2).

The weathering of parent rock formations has produced soils of varying fertility, composition, and depth (Bladen and Bailey 1977:110-114). Since nearly all soils have developed under the same climate and forest cover, soil differences are due chiefly to the parent material and topography (Bailey and Winsor 1964:13, 27).

Because Kentucky lies within a restricted latitudinal range, and elevation differences are generally of a low order, native biological communities exhibit subtle variation across the state. Before Euro-American settlement, almost all of Kentucky was covered by mature deciduous forests, except for occasional glades within the Bluegrass and Mississippian Plateaus and patches of cleared areas and secondary-growth forests

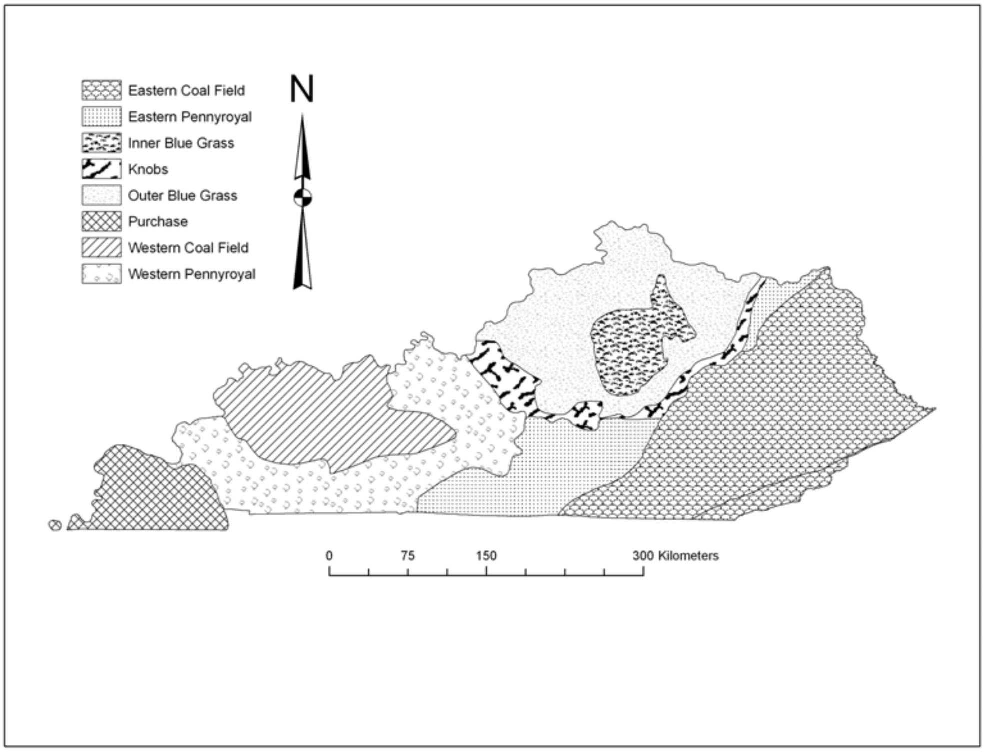

Figure 1.1. Physiographic regions of Kentucky.

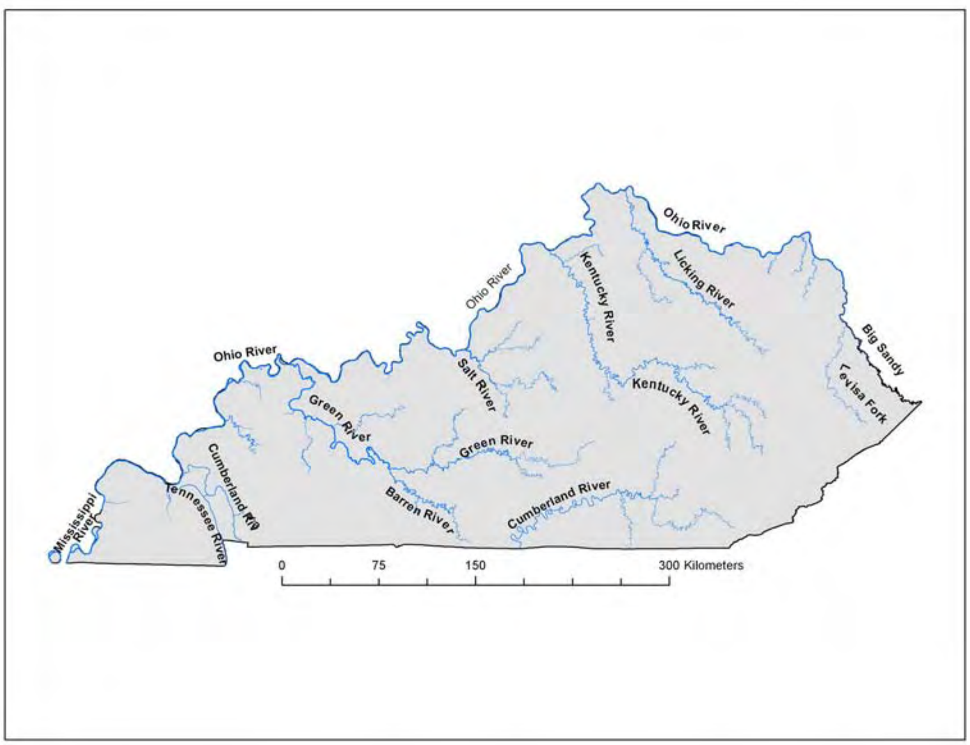

Figure 1.2. Major rivers and streams in Kentucky.

near aboriginal settlements. According to Braun's (1950) classification, Kentucky is divided between two major forest communities: the Mixed Mesophytic Forest within the Cumberland Plateaus of eastern Kentucky, and the Western Mesophytic Forest that covers the rest of the state. The Mixed Mesophytic Forest is characterized by a rich floral diversity with a variety of dominant tree species. Oak and hickory dominate the Western Mesophytic Forest but are accompanied by a wide range of other species.

Prehistoric faunal communities were generally similar across the state. The white-tailed deer was perhaps the single most important animal resource for post-Pleistocene peoples in the state. Other species also were frequently exploited, and local conditions sometimes favored intensive exploitation of certain animal species such as waterfowl along the Mississippi flyway, and fish and mollusks along many of the state's larger streams and rivers.

MANAGEMENT AREAS

To deal with the geographic distribution of Kentucky's prehistoric archaeological resources, the state has been subdivided into the following management areas (Clay 1981): Purchase, Green River, Salt River, Upper Cumberland, Bluegrass, Upper Kentucky/Licking, and Big Sandy (Table 1.1; Figure 1.3). These areas were delimited primarily according to landform divisions and major drainage systems. For the purposes of this volume all but the Salt River Management Area have been further subdivided into sections that allow for more detailed focus upon prehistoric cultural developments in different areas of the state.

Table 1.1: Management Areas and Sections (See Figure 1.3).

Management Area	Section	Counties (Figure 1.4)
1) Purchase	A) Mississippi River	Carlisle, Fulton, Graves, Hickman
	B) Ohio River I	Ballard, Livingston, McCracken
	C) Lower Tennessee\ Cumberland	Calloway, Lyon, Marshall, Trigg
2) Green River	D) Ohio River II	Breckinridge, Crittenden, Daviess, Hancock, Henderson, Union
	E) Western Coalfield	Butler, Hopkins, McLean, Muhlenberg, Ohio, Webster
	F) Pennyroyal	Allen, Caldwell, Christian, Logan, Simpson, Todd, Warren
	G) Upper Green River	Adair, Barren, Casey, Edmonson, Grayson, Green, Hart, Metcalfe, Taylor
3) Salt River	H) Salt River	Anderson, Boyle, Bullitt, Hardin, Jefferson, Larue, Marion, Meade, Mercer, Nelson, Oldham, Shelby, Spencer, Washington
4) Upper Cumberland	I) Lake Cumberland	Clinton, Cumberland, McCreary, Monroe, Pulaski, Russell, Wayne
	J) Southeastern Mountains	Bell, Harlan, Knox, Laurel, Whitley
5) Bluegrass	K) Central Bluegrass	Bourbon, Clark, Fayette, Franklin, Garrard, Harrison, Jessamine, Lincoln, Madison, Montgomery, Scott, Woodford
	L) Northern Bluegrass	Boone, Campbell, Carroll, Gallatin, Grant, Henry, Kenton, Owen, Pendleton, Trimble
	M) Eastern Bluegrass	Bath, Bracken, Fleming, Lewis, Mason, Nicholas, Robertson
6) Upper Kentucky/ Licking	N) Gorge	Estill, Lee, Magoffin, Menifee, Morgan, Powell, Rowan, Wolfe
	O) Interior Mountains	Breathitt, Clay, Jackson, Knott, Leslie, Letcher, Owsley, Perry, Rockcastle
7) Big Sandy	P) Lower Big Sandy	Boyd, Carter, Elliott, Greenup, Johnson, Lawrence, Martin
	Q) Upper Big Sandy	Floyd, Pike

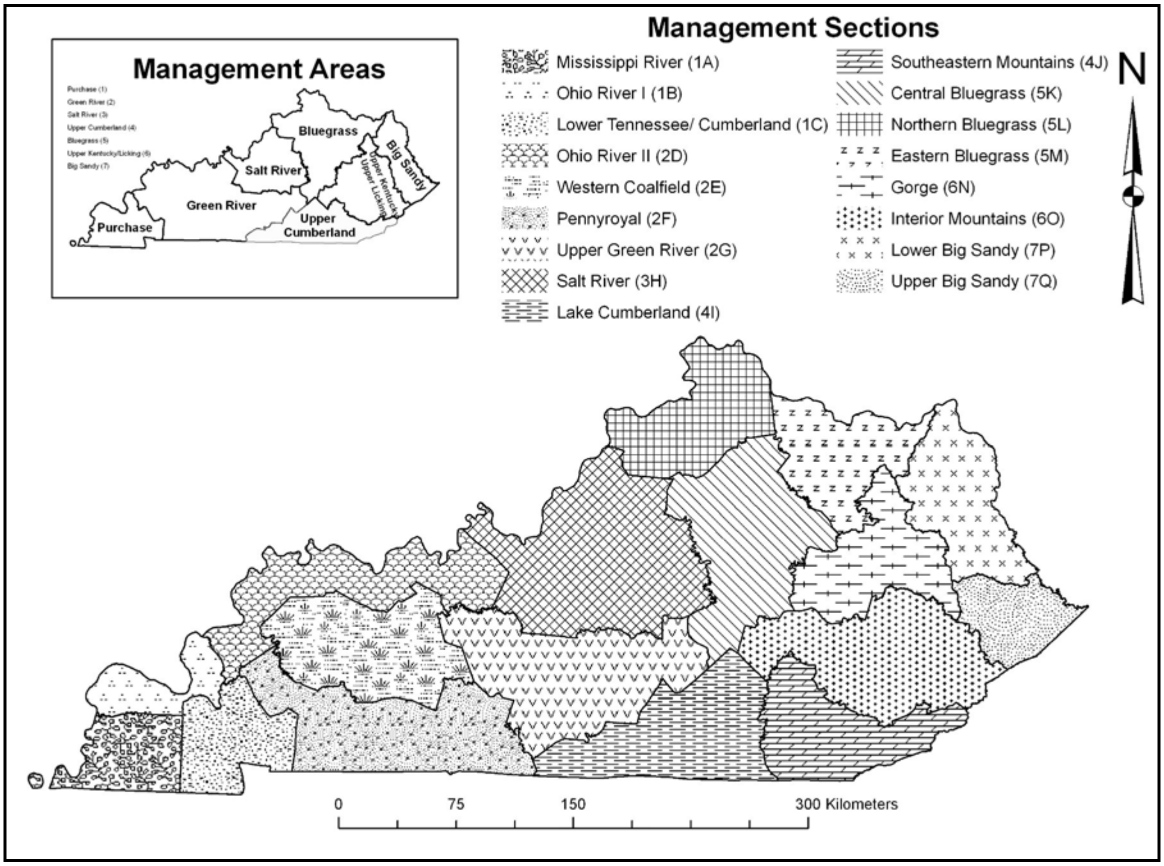

Figure 1.3. Management Areas and Sections.

MANAGEMENT AREA 1 (PURCHASE)

This westernmost management area of Kentucky contains 11 counties and encompasses 8,868 km^2 (mean county area=806 km^2). It is delimited by the lower Ohio River on the north, the Green River Management Area on the east, the State of Tennessee on the south, and the Mississippi River on the west, and has been subdivided into three sections: Mississippi River, Ohio River I, and Lower Tennessee/Cumberland.

Except for most of Livingston, Lyon, and Trigg counties, the Purchase Management Area is situated within the Mississippi Embayment Region of the Coastal Plain Physiographic Province. This area is characterized by broad alluvial floodplains along both major and minor streams, interspersed with low, gently rolling uplands. Loess-covered bluffs often border narrower bottomland stretches, especially along the Mississippi River. The underlying lithology of the Mississippi Embayment consists of unconsolidated gravels, sands, and clays of Tertiary age, with older Cretaceous sediments cropping out within the Lower Tennessee-Cumberland Section. The western margins of the Purchase Management Area are situated within the Mississippian Plateaus Physiographic Region, characterized by rolling karst uplands and narrow stream valleys.

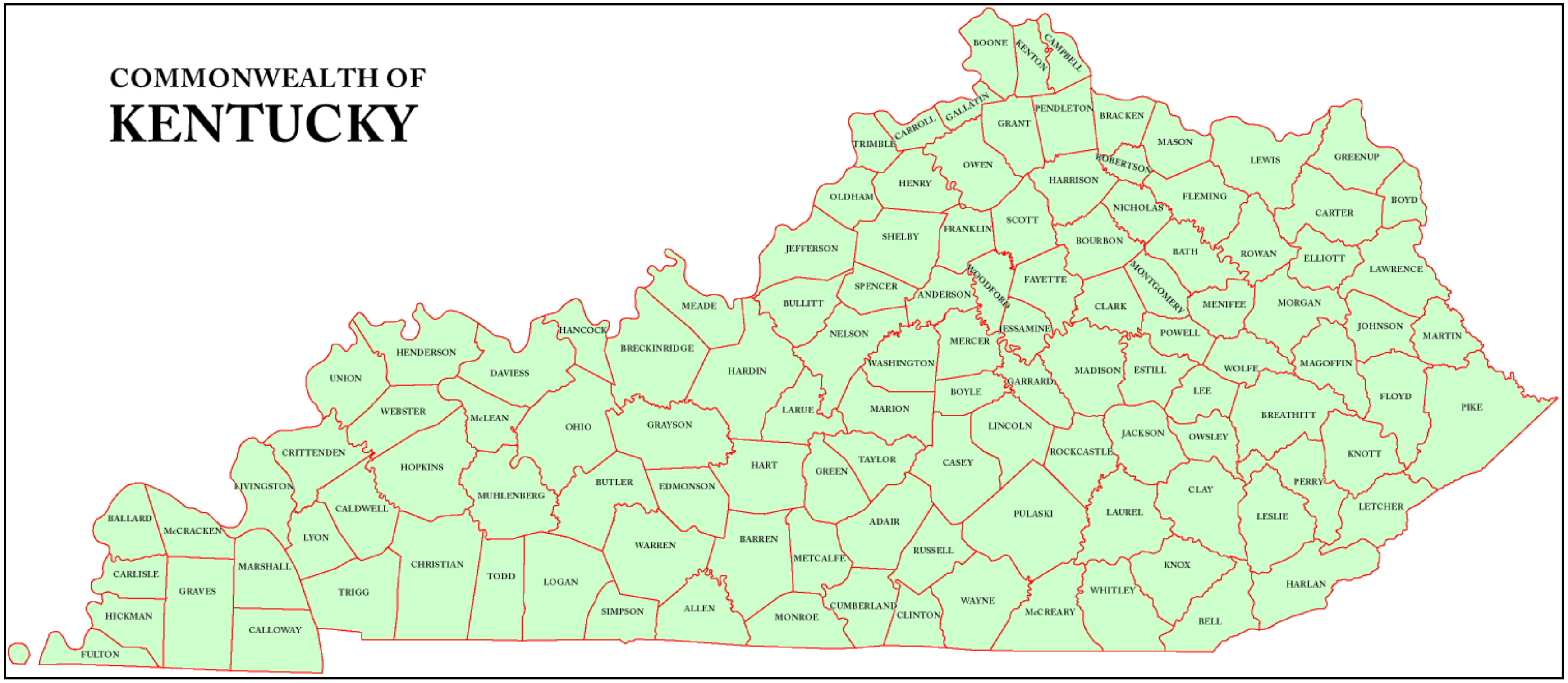

Figure 1.4. Kentucky's 120 Counties.

MANAGEMENT AREA 2 (GREEN RIVER)

The Green River Management Area encompasses 28 counties and comprises 30,065 km^2 (mean county area=1,074 km^2). The Ohio River defines the northwestern boundary of the Green River Management Area, and it adjoins the Purchase Management Area on the west, the State of Tennessee on the south, the Upper Cumberland Management Area on the southeast, the Bluegrass Management Area on the extreme east, and the Salt River Management Area on the northeast. This management area has been subdivided into four sections: Ohio River II, Western Coalfield, Pennyroyal, and Upper Green River.

As its name implies, most of this management area is drained by the Green River and its tributaries, which include the Rough, Nolin, and Barren rivers, but some portions are drained by the Tradewater, Cumberland, and smaller tributaries of the Ohio River.

The Green River Management Area includes the Western Coalfield Physiographic Region, and most of the Mississippian Plateaus. The Western Coalfield Region encompasses most of the Ohio River II Section (except for Crittenden and Breckinridge counties), and all of the Western Coalfield Section, while the Pennyroyal and Upper Green River sections lie almost completely within the Mississippian Plateaus Physiographic Region.

The Western Coalfield Physiographic Region is underlain by Pennsylvanian sandstones, shales, and coal. The landscape includes rolling uplands with sandstone cliffs. Rockshelters occur in some areas. The floodplains of the Tradewater and Green rivers are extensive and, for the most part, poorly drained. During the Pleistocene, glacial outwash choked the lower Ohio River channel, damming the Tradewater and Green rivers and forming vast dendritic lakes within their valleys.

The Mississippian Plateaus Physiographic Region is characterized by a strongly developed karst topography that exhibits many sinkholes, springs, and caves. Sandstone clifflines and rockshelters occur in a broad band that borders the Western Coalfield Physiographic Region. Within this band, major streams are deeply incised, and the Green River in the vicinity of the Mammoth Cave area flows through a particularly narrow, 60-90 m deep gorge. Further away from the margin of the Western Coalfield Physiographic Region, stream valleys are somewhat wider, but overall surface drainage in these areas is poorly developed, as most runoff is diverted through the subterranean drainages of the karst terrain. In certain locations, the Mississippian limestones are so high in carbonate content that soil development is inhibited, which resulted in the treeless or cedar-studded barrens that were noted by early settlers.

MANAGEMENT AREA 3 (SALT RIVER)

The Salt River Management Area, which contains l4 counties, encompasses an area of 11,261 km^2 (mean county area=804 km^2). It has not been subdivided into sections. The Ohio River defines the northwestern boundary, the Green River Management Area its western and southern boundaries, and the Bluegrass Management Area forms its eastern border. Although most of this management area lies within the Salt River drainage, small portions are drained by the Rough River, Kentucky River, and smaller tributaries feeding directly into the Ohio.

Though relatively small, this management area contains a great deal of environmental diversity, including portions of three physiographic regions (Mississippian Plateaus, Knobs, and Bluegrass). Natural features of the Mississippian Plateaus region have been discussed under the Green River Management Area. The Knobs region, a narrow belt of conical hills that intermittently encircles the Bluegrass, is underlain by Silurian and Devonian deposits that are capped with Mississippian limestones. The area is well-dissected, and some streams contain expansive bottomlands suitable for human occupation.

The eastern half of the Salt River Management Area is situated within the Bluegrass Physiographic Region. Most of this area is covered by the Outer Bluegrass and the Eden Hills. The extreme western periphery of the Inner Bluegrass also lies within the Salt River Management Area.

MANAGEMENT AREA 4 (UPPER CUMBERLAND)

The Upper Cumberland Management Area encompasses the drainage of the upper Cumberland River, from its headwaters in Harlan County to where it crossing the Kentucky/Tennessee state line. It contains 12 counties and encompasses an area of 12,150 km^2 (mean county area=1,012 km^2). The western to northern boundary of this management area adjoins the Green River, Bluegrass, and Upper Kentucky/Licking management areas, respectively. The Tennessee state line forms the southern boundary, and the far eastern end adjoins the State of Virginia. The Upper Cumberland Management Area has been separated into two sections: Lake Cumberland and Southeastern Mountains.

The upper Cumberland River drains most of this management area, except for the extreme western end, which lies within the Green River drainage, and a very small portion of Harlan County, which is drained by the upper Kentucky River. The Lake Cumberland Section (with the exception of McCreary County) technically lies within the Mississippian Plateaus Physiographic Region. However, the Cumberland River has cut into the plateau, and the landscape over most of this section is more dissected and rugged than the karst plain to the west and north. The immediate valley of the upper Cumberland River is narrow but contains numerous expanses of bottomland.

The eastern portion of the Lake Cumberland Section and the entire Southeastern Mountains Section lie within the rugged Cumberland Plateaus, a maturely dissected area underlain by Pennsylvanian sandstones, shales, and coal. Within the Southeastern Mountains Section, the Cumberland River flows through a narrow valley that contains stretches of bottomland suitable for human settlement. Along the Cumberland Escarpment, the Cumberland River and its tributaries flow through precipitous gorges such as Cumberland Falls. These gorges are flanked by sandstone cliff lines that contain large numbers of rockshelters, many of which were used by prehistoric and historic peoples. In Harlan, Bell, and extreme southeastern Whitley County, the elevation of the plateau increases. This area includes thrust-faulted Pine Mountain and the state's highest point, Black Mountain (1254 m above sea level). Also occurring in this area are several somewhat expansive tectonic basins, the largest and most recognizable one being the Middlesboro Basin.

MANAGEMENT AREA 5 (BLUEGRASS)

The Bluegrass Management Area encompasses 29 counties and an area of 18,686 km^2 (mean county size=644 km^2). The northern boundary of the management area is formed by the Ohio River. The Salt River Management Area borders it on the west, the Green River and Upper Cumberland management areas border it on the extreme south, the Upper Kentucky/Licking Management Area borders it to the east, and the Big Sandy Management Area borders its on the extreme northeast. Most of this management area is drained by the Kentucky and Licking rivers and smaller tributaries along the Ohio River. However, the extreme southern portion (Lincoln County) of this management area is drained by the upper Green River. This management area has been subdivided into three sections: Central Bluegrass, Northern Bluegrass, and Eastern Bluegrass.

The Bluegrass Management Area includes four physiographic subdivisions: Inner Bluegrass, Eden Hills, Outer Bluegrass, and Knobs. The Inner Bluegrass consists of a somewhat karstic, gently rolling plain underlain by Ordovician limestones. Major streams in this area are deeply entrenched, with extremely narrow floodplains that are generally poorly suited for human habitation. Unlike the gentle landscape of the Inner Bluegrass, the surrounding Eden Hills, is a rough, maturely dissected area with steep-sided ridges and narrow stream valleys. Floodplains along the larger streams in the Eden Hills subdivision, such as the Kentucky River, are wider than in the Inner Bluegrass. The terrain of the Outer Bluegrass is slightly more rugged than that of the Inner Bluegrass, but otherwise is similar.

MANAGEMENT AREA 6 (UPPER KENTUCKY/LICKING)

This management area encompasses 17 counties and an area of 13,740 km^2 (mean county area=808 km^2). It is bordered on the north and west by the Bluegrass Management Area, on the east by the Big Sandy Management Area, on the south by the Upper Cumberland Management Area, and, on the extreme southeast the State of Virginia. Although this management area is centered on the upper portions of the Kentucky and Licking River drainages, most of Rockcastle County and portions of Jackson and Clay counties are drained by the Rockcastle River, which flows into the upper Cumberland. The Upper Kentucky/Licking Management Area has been subdivided into the Gorge and Interior Mountains sections.

The Upper Kentucky/Licking Management Area lies almost wholly within the rugged Cumberland Plateaus. Mississippian rocks are exposed along the western front of the Cumberland Plateaus, but these quickly give way to Pennsylvanian sandstones, shales, and coal as one moves eastward into the plateau interior. The terrain is maturely dissected, with narrow upland ridges and steep-sided valleys, which are often lined with sandstone cliffs. Streams flow through narrow bottoms with intermittent stretches of floodplain. Narrow gorges, which open onto wider valleys where the streams exit the plateau are located along the Cumberland Escarpment. Rockshelters are somewhat more common within the Gorge Section than the Interior Mountains Section.

MANAGEMENT AREA 7 (BIG SANDY)

The final management area in the state comprises the easternmost nine counties, encompassing an area of 8,438 km^2 (mean county area=938 km^2). The Big Sandy Management Area is bordered on the north by the Ohio River, on the west by the Bluegrass and Upper Kentucky/Licking management areas, on the south by the State of Virginia, and on the east by the Tug Fork and lower Big Sandy rivers. This management area has been subdivided into two sections: Lower and Upper Big Sandy.

The Big Sandy Management Area is drained by the Big Sandy River, Little Sandy River, Tygarts Creek, and smaller tributaries of the Ohio River. Physiographically, this management area lies wholly within the Cumberland Plateaus Physiographic Region, which has been described in previous sections.

CULTURAL LANDSCAPES

The five cultural landscapes (Table 1.2; Figure 1.5) defined for Kentucky represent a way to organize various sets of historic properties within geographic areas, which have been defined based on regional environmental and/or cultural factors. Each cultural landscape reflects a region's mineral and soil resources, as well as its historical and economic development. Although the buildings, townscapes, and landscapes of the five cultural landscapes have many common features, the unique qualities of each are readily distinguishable. For the purposes of this volume all but the Jackson Purchase Cultural Landscape been subdivided into sections that allow for more detailed focus upon historic cultural developments in different areas of the state.

Table 1.2: Cultural Landscapes and Sections (See Figure 1.5).

Cultural Landscape	Section	Counties (Figure 1.4)
1) Purchase		Ballard, Carlisle, Calloway, Fulton, Graves, Hickman, McCracken, Marshall,
2) Pennyrile	A) Western Coalfield	Butler, Breckinridge, Daviess, Edmonson, Grayson, Hancock, Henderson, Hopkins, Livingston, Lyon, McLean, Muhlenberg, Ohio, Trigg, Union, Webster
	B) Plain	Allen, Barren, Caldwell, Christian, Crittenden, Hardin, Hart, Larue, Logan, Meade, Simpson, Todd, Warren
	C) Eastern	Adair, Casey, Clinton, Cumberland, Green, Metcalfe, Monroe, Pulaski, Russell, Taylor, Wayne
3) Ohio Valley Urban Centers	A) Louisville	Jefferson
	B) Northern Kentucky	Boone, Campbell, Kenton
4) Bluegrass	A) Inner	Anderson, Boyle, Bourbon, Clark, Fayette, Franklin, Garrard, Harrison, Jessamine, Lincoln, Madison, Mercer, Scott, Woodford
	B) Outer	Bath, Bracken, Bullitt, Carroll, Fleming, Gallatin, Grant, Henry, Marion, Mason, Montgomery, Nelson, Nicholas, Oldham, Owen, Pendleton, Robertson, Shelby, Spencer, Trimble, Washington
5) Appalachian Mountains	A) Coalfields	Bell, Floyd, Harlan, Johnson, Knott, Knox, Lawrence, Leslie, Letcher, McCreary, Martin, Perry, Pike, Whitley
	B) Foothills	Boyd, Breathitt, Carter, Clay, Elliott, Estill, Greenup, Jackson, Laurel, Lee, Lewis, Magoffin, Menifee, Morgan, Owsley, Powell, Rockcastle, Rowan, Wolfe

JACKSON PURCHASE

This area is a relatively flat region with highly productive farm lands. Access to regional markets has been historically available via the Ohio-Mississippi River system and the Illinois Central Railroad. Since this area was the last portion of the state to be opened for settlement, the earliest buildings date from the 1820s and 1830s and most of the towns appear to reflect the planning and architectural concepts of the post-Civil War era. Since World War II, the rate of population growth in this area has been low. For the most part, this cultural landscape encompasses the same region as Management Area 1.

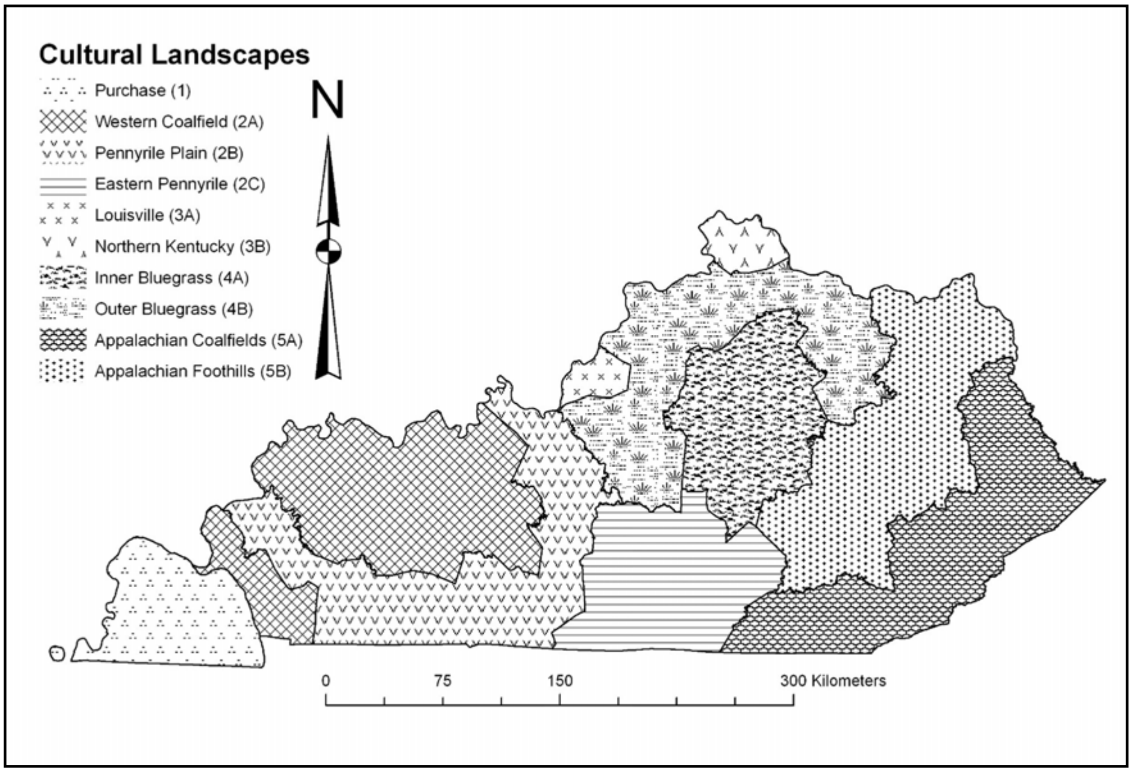

Figure 4. Cultural landscapes and sections.

PENNYRILE

This cultural landscape includes the lower Tennessee-Cumberland area as well as the watersheds of the Green, Tradewater, and lower Ohio rivers. This cultural landscape roughly corresponds to Management Area 2. The Pennyrile Cultural Landscape has been subdivided into three sections: Western Coalfield, Pennyrile Plain, and Eastern Pennyrile.

Western Coalfield

Situated in the west-central part of the Pennyrile, the Western Coalfield is an area of limited agricultural potential. Coal has been mined in this area since the 1870s, which has resulted in the development of several railroad centers and mining communities.

This cultural landscape also includes the lands that border the lower Cumberland and Tennessee rivers. Although this area was accessible to early settlement, the rugged character of the land limited its agricultural potential. Most population growth in the nineteenth century was related to the needs of the river transportation system. During the twentieth century, this area has lost population due to a changing economy, and federal recreational and flood protection projects. The development of Kentucky Lake, Barkley Lake, and the Tennessee Valley Authority's Land Between the Lakes Recreation Area has resulted in the displacement of a substantial part of the population and the loss of many historic resources. No area of Kentucky has lost more of its early heritage to federal projects than this section.

Pennyrile Plain

This section includes the fertile agricultural lands of the Nashville Basin and the lower Ohio River. This area experienced settlement beginning in the 1790s and has been, after the Inner Bluegrass Section, the most productive agricultural area of Kentucky. The county seats reflect the ongoing prosperity of this section and the rural areas contain many Antebellum farm complexes.

Eastern Pennyrile

This section contains substantially less usable land than the Pennryile Plain. Although settled somewhat early, this area remains relatively undeveloped due to its poor transportation facilities. The population of the area has not changed substantially in the last century, but many counties have experienced some population loss during this period. The rural landscape primarily consists of small, often marginal farms.

OHIO VALLEY URBAN CENTERS

These communities are products of the industrialization of the Ohio Valley that began in the 1840s and continued into the twentieth century. Their development as industrial and regional commercial centers during the last half of the nineteenth century is due in a large part to their location on the Ohio River. These communities contain one-third of the present population of Kentucky. Louisville is situated in Management Area 3 and the Northern Kentucky communities are located in Management Area 5. This cultural landscape has been subdivided into two sections: Louisville and Northern Kentucky.

<u>Louisville</u>

Louisville, Kentucky's largest population center, experienced its greatest growth and expansion during the period of 1870-1900. Sometimes described as a Victorian museum, the city contains many neighborhoods, commercial areas, and industrial buildings from the late nineteenth century. Few buildings survive from the Antebellum temporal unit.

<u>Northern Kentucky</u>

The northern Kentucky suburbs of Cincinnati experienced tremendous growth after the Civil War due to the rapid growth of Cincinnati as an industrial-commercial center. From 1879 to 1900, Covington and Newport were the second and third largest cities in Kentucky as housing for workers at Cincinnati's factories and warehouses was rapidly built. Both cities attracted large settlements of German and Irish immigrant families.

BLUEGRASS

The Bluegrass region of north-central Kentucky was the destination of the first settlers who came to the state. This region was settled rapidly and has been a productive agricultural area for over two centuries. Because most of the political and educational institutions of the state are located in this cultural landscape, residents of this area have had a greater influence on the politics of Kentucky than those who reside in the other four cultural landscapes. This cultural landscape roughly corresponds with management areas 3 and 5. The Bluegrass Cultural Landscape has been subdivided into two sections: Inner Bluegrass and Outer Bluegrass.

<u>Inner Bluegrass</u>

This section contains the most productive, highest-valued agricultural land in the state. Most of this land was claimed and settled before 1800 and most of Kentucky's surviving eighteenth century buildings are found here. In general, the Inner Bluegrass Section contains more architect-designed plantation and farm houses than any other region in the state. Besides the many preserved rural sites, the area contains a large number of early villages and nineteenth century landscapes. Many county seats in this area retain a high percentage of nineteenth century buildings. This area is also unique in that it contains the only counties where slaves out-numbered whites before the Civil War.

Outer Bluegrass

This section, which surrounds the Inner Bluegrass Section, also contains some highly productive agricultural areas. These areas are often associated with large farm houses dating to every temporal unit, since the early nineteenth century. However, parts of the Outer Bluegrass Section are unsuited for plowing, such as the Eden Hills, which is best suited for forests and open grasslands. In general, this section has experienced less industrialization than other regions. As a result, most counties have approximately the same population as they had in 1870 and agriculture remains the primary economic activity.

APPALACHIAN MOUNTAINS

This cultural landscape comprises almost one-third of the state. Less than 10 percent of this rugged area is suitable for agricultural activities. Consequently, early settlement in this cultural landscape was sparse. Called Kentucky's Last Frontier by one writer, many counties were formed after 1850 and the more populous counties now have a population of four to six times their 1870 level. This cultural landscape roughly corresponds with management areas 4, 6, and 7. The Appalachian Mountains Cultural Landscape has been subdivided into two Sections: Highlands and Foothills.

Highlands

This section experienced only limited settlement until construction of the railroads at the turn of the century and the subsequent growth of the coal mining industry. Most of the buildings and structures in this section date from the twentieth century, and from 1910-1940 several towns were constructed by coal companies to house their employees. Due to the topography of this section, roads, housing, and coal processing facilities tend to be located in the few flat areas that are suitable for settlement. Because of the extensive alteration of these properties and localities, few nineteenth century buildings or landscapes have survived.

Foothills

The Foothills Section is a rugged area that contains some river valleys. It has supported limited farming activities and little in the way of coal mining. Lumbering industry practices in the early twentieth century adversely affected a large part of this section. Many areas devastated by large-scale clear-cutting came under federal government management in the 1930s and were incorporated into the Daniel Boone National Forest. This section is the least densely populated region of Kentucky and contains the counties with the lowest per capita income in the state.

STATE-WIDE OBJECTIVES

In this section, several general state-wide objectives are discussed. These objectives relate to informational needs, that if, addressed would provide archaeologists with an improved over-all database. The emphasis here is on improving the quality of the existing inventory, ensuring that existing collections are analyzed and reported on, and addressing biases in the site inventory database. As these objectives are met, archaeologists working in Kentucky will be in a better position to address more specific research issues relating to topics, such as subsistence/settlement patterns, social structure, and biological anthropology.

The objectives listed below are broad in scope and are not intended to supersede the more detailed research issues discussed in the archaeological contexts.

1) Conduct more problem-oriented surveys: In the past 20 years, many small- and large-scale cultural resource management surveys have been conducted. That these projects have been conducted in diverse topographic settings, has led to the identification of a variety of site types. The emphasis on cultural resource management surveys, however, has led to a decline in large-scale surveys designed to address specific research problems. These types of studies are needed in order to gain a better understanding of prehistoric and historic settlement patterns.

2) Continue to investigate small upland sites: Projects undertaken in upland areas throughout Kentucky have resulted in the documentation of many small habitation sites, such as Early, Middle and Late Woodland camps, Mississippian farmsteads, and special purpose sites, such as Adena off-mound activity loci. Investigation of these types of sites has greatly informed archaeologists understanding of prehistoric and historic lifeways.

3) Continued to focus on intra-site spatial organization: Though some progress has been made in determining site structure, there is still much that archaeologists do not know about the internal organization of prehistoric and historic settlements. Large blocks should be excavated at sites that contain intact subplowzone midden deposits, while mechanical equipment should be used to remove the plowzone from sites that lack intact midden deposits but contain subplowzone features. Only by exposing large areas of a site in a controlled fashion can archaeologists begin to identify and analyze intrasite spatial patterns (e.g., document activity areas and trash disposal patterns) and to determine site structure (e.g., arrangement of structures, presence of plazas, and relationship of outbuildings and slave cabins to main residence).

4) Investigate alluviated and colluviated areas: Though a great deal of research in Kentucky has been conducted in the floodplains of major stream valleys, few of these areas have been deep-tested with heavy equipment to determine the nature

and extent of buried archaeological components. Geomorphological studies still need to be conducted to determine the potential for deeply buried deposits in different drainage systems and various environmental settings.

5) Analyze existing museum collections and publish the results: Though some progress has been made in analyzing existing collections, especially those recovered by Webb in the late 1930s and early 1940s, there are still many that have never been analyzed by professional archaeologists. Other collections are in need of reanalysis in light of new research questions and refined methodologies. Efforts should be made to identify these collections, analyze them, and prepare site reports.

6) Make greater use of geophysical equipment and other new technologies: In the last 18 years there also has been a greater use of geophysical equipment (e.g., ground penetrating radar, electrical resistivity, and electromagnetic susceptibility) to locate grave shafts, foundations, and other types of features. These methods are being used with greater effectiveness as an aid in developing research designs, addressing research questions, and gaining insights into intrasite settlement patterns.

7) Continue to maintain, update, and improve Archaeological Site Geographic Information System (GIS): Development of the archaeological GIS has greatly facilitated project reviews and it is increasingly being used by planners. There is still room for improvement and to linking the existing site inventory to site forms, reports, and other relevant information. Refinement of the archaeological GIS also will aid the development of site location models that can be tested by archaeologists. It is only after such models have been constructed for each time period and for Kentucky's diverse environments that it will be possible to develop reliable predictive site location models.

8) Continue to prepare educational materials, and provide the students and the public with opportunities to participate in archaeological research. While great strides have been made in developing education materials (e.g., books, booklets, videos, and curriculum) and providing opportunities for students to participate in archaeological research, it is important that archaeologists continue to educate the public about why we do archaeology, the relevance of archaeology to their lives, and why it is important to preserve archaeological sites for future generations.

As the following chapters will illustrate, the intensity of archaeological research conducted within the state's seven management areas and five cultural landscapes is extremely varied. Some areas have received a tremendous amount of work, while others have been virtually ignored. The results of these research efforts and directions for future research are presented in chapters 2-8.

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CHAPTER 2: OVERVIEW OF ARCHAEOLOGICAL RESEARCH IN KENTUCKY [1]

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INTRODUCTION

The management areas and sections defined in Chapter 1 provide the framework for organizing and summarizing Kentucky's archaeological data and the level of previous archaeological work undertaken within the state. In this chapter, information is presented on the percentage of each management area and section that has been surveyed; and the number of sites recorded; number of reports generated; number of major surveys undertaken and sites that were recorded by those surveys; and the number of sites tested, excavated, and listed on the National Register of Historic Places within each management area and section. References also are provided for major surveys and significant testing and excavation projects. For the purposes of this document, major surveys refer to those projects that recorded at least 30 sites or encompassed at least 400 ha (hectare). Significant testing and excavation projects are those studies that yielded archaeological data (e.g., features, chronological assays, or unique information that had not previously been recorded in Kentucky) that have substantially improved our understanding of Kentucky's prehistoric and historic past. More detailed information pertaining to each of the prehistoric periods (Paleoindian, Archaic, Woodland, Mississippian, and Fort Ancient) is provided in chapters 3-7, while the Historic period is discussed in Chapter 8.

The distribution of site types within each management area is also presented. The definitions of these site types, which follow the standardized definitions used by the Office of State Archaeology (OSA), are provided in the following section. That these definitions are standardized allows state-wide inventory data to be summarized and compared between archaeological contexts, management areas, and sections within management areas. Two key changes have been made in the use of these site types compared to Carter et al. (1990). First, the "undetermined" category is not used as a site type. Second, historic sites are assigned to one of three site types (historic farm, industrial, and military), rather than being lumped under the "other" category.

The amount of archaeological work and the resulting reports have increased substantially since 1987 (Table 2.1). Much of this work has been undertaken as a direct result of cultural resource management projects, but university supported research

[1] Adapted from Carter et al. 1990

projects also have contributed to the growth of archaeological studies undertaken in Kentucky during the last 20 years. Reports for projects that crossed multiple county boundaries within a section, were tallied with the county that precedes the others alphabetically. Major surveys that crossed section boundaries were tallied with the section that contained the majority of new sites documented by the project.

Site type frequency, site distribution patterns, and cultural historical frequencies presented in this chapter and in Chapters 3-9 are taken from the OSA site inventory and reports as of 2005 (though whenever possible an attempt was made to include significant reports that were completed after that date). Maps of site distributions and areas surveyed were created using these data and the Geographical Information Systems program, ArcView 3.2.

SITE TYPE DEFINITIONS

The 19 site types described below are used to summarize site inventory data and distributional trends for each management area. It is recognized, however, that these site types and associated definitions are rather general and that researchers will want to develop more descriptive or functional terms to characterize sites in their respective study areas or to meet specific research needs. In some cases, examples of sites or expected artifacts, features, and/or architecture are provided; these are not exhaustive of the possibilities within each category.

OPEN HABITATION WITHOUT MOUND(S)

These sites vary considerably in size, intensity of occupation, and range of activities performed at them. Sites of this type include small habitations (usually less than 1 ha in size), such as hunting, fishing, gathering and other types of extractive sites, and large habitations (usually over 1 ha in size), such as base camps and villages. Structural remains as well as features and human interments may be present at small and large habitation sites. Large habitations also often contain substantial midden deposits.

ISOLATED FIND

Any single artifact and/or a small cluster of flakes not associated with any other prehistoric remains is considered to be an “isolated find.” Isolated finds are often represented by a single diagnostic artifact (e.g., a projectile point, ceramic sherd, or piece of whiteware) or secondarily deposited materials.

ROCKSHELTER

A rockshelter site is any utilized natural rock overhang. These sites are usually habitation areas and often contain thick midden deposits, human burials, and a wide variety of cultural materials. Environmental conditions at many of these sites sometimes result in the preservation of normally perishable items, such as baskets, moccasins, and wooden tools. Use of these sites varies from temporary encampments or areas of specialized activities (e.g., nitre mining and moonshine stills) to long-term occupations.

CAVE

Caves are natural solution cavities formed primarily in limestone. They are distinguished from rockshelters by the presence of a zone that is not exposed to sunlight. Archaeological remains have not only been found at cave entrances, but also deep within cave systems themselves. Domestic debris (i.e., midden) is primarily found at cave entrances, while cave interiors were often explored and their natural resources sometimes exploited by miners. The interiors of caves also served as burial loci.

QUARRY

Natural geological formations that exhibit evidence of the removal of materials, usually chert or stone, are generally considered to be quarry sites. Quarries may or may not be associated with a nearby workshop site.

STONE MOUND

This category is characterized by individual mounds constructed of stone that vary in size and configuration. Stone mounds may have functioned as small or large burial cairns, or as ceremonial effigies. Stone mounds may also be created in the process of clearing a field for agricultural purposes, resulting in a feature that may be erroneously identified as the remains of ancient cultural activity. By definition, this site type (when correctly identified) is not associated with a recognized habitation area. If more than one mound is present, the site is classified as a mound complex.

EARTH MOUND

Single earth mounds not associated with a recognized habitation area are included within this category. Earth mounds vary in size and configuration; they functioned as burial loci and/or house platforms. They were constructed in single episodes or as a result of the accumulation of successive, superimposed construction phases over time. If more than one mound is present, the site is classified as a mound complex.

MOUND COMPLEX

A mound complex consists of a cluster of two or more earth and/or stone mounds that are not associated with any recognized habitation area. These clusters may have been used for religious/ceremonial purposes and/or human interment.

PETROGLYPH/PICTOGRAPH

Sites with prehistoric designs that were pecked into natural rock formations are classified as petroglyphs. Sites with designs that were *drawn* on natural rock formations are classified as pictographs. These site types may or may not be associated with other types of sites (i.e., rockshelters).

WORKSHOP

This site type is defined as a concentration of chert or other stone debitage and unfinished or rejected artifacts that is not associated with any other cultural remains (i.e., midden, features, or structures). In effect, workshop sites are artifact manufacturing and processing sites.

NONMOUND EARTHWORK

This site type consists of earth or stone embankments of varying designs, usually circular, rectangular, or linear. “Sacred circles,” rectangular “forts,” and railroad beds are good examples of this site type.

ISOLATED BURIAL

A single human burial not associated with a cemetery, which may contain one or more individuals, is considered an "isolated burial."

CEMETERY

These sites are non-mound human interment loci. This site type category may include a single circumscribed area of burials, or a general area that encompasses multiple, small clusters of burials.

SPECIALIZED ACTIVITY AREA

This site type consists of the remains of single, short-term cultural activities (e.g., kill/butchering station, spring house, or stone fence). Artifact inventories and/or features associated with this site type tend not to exhibit a great deal of diversity.

OPEN HABITATION WITH MOUND(S)

The definition for this site type is similar to the site type "Open Habitation Without Mound(s)," except that these sites *are* associated with mound(s). These mounds range from earth and/or stone burial facilities to large platform structures used for religious/ceremonial purposes.

HISTORIC FARM

Historic farmsteads consist of sites that have artifacts, features, architecture, and/or architectural remains associated with agricultural life in rural areas. Examples of structures that may be present, either in intact or remnant form, include the main residence, slave quarters, tenant house, barn, corral, storage facility, or other outbuilding. Material culture may include domestic or architectural remains related to the occupation of the house, or tools associated with the activities of producing, maintaining, harvesting, processing and storing crops and/or domesticated animals.

INDUSTRIAL

This category includes sites that contain artifacts, features, and/or architecture related to the processing of materials or the production, repair, storage, or transportation of materials, goods, or equipment. Some examples include: mills, potteries, wheat threshing sites, railroad beds, oil vats, pump houses, tar and lye leaching sites, quarries, coal mine shafts, and mining communities.

MILITARY

This category includes sites that contain material culture, features, and/or architectural remains related to organized conflict. Examples of this site type include stations/fortifications, garrisons, encampments, or battlefields.

OTHER

A site that, for whatever reason, cannot be assigned to any of the previously defined site types is placed within this category.

GENERAL TRENDS SINCE 1987

Before proceeding with assessments of archaeological work conducted within each of the management areas, several trends observed for the state as a whole since the previous state plan was published are worth noting (Table 2.1). First, slightly fewer sites have been recorded in Kentucky since 1987, but these sites are being recorded a faster rate. If we consider that sites were first officially recorded in Kentucky beginning around 1932, the average rate of sites recorded has increased from roughly 214 per year before 1987 to 586 sites per year since 1987. Second, there has been a major increase in the number of reports completed, with slightly more than four times as many reports completed in the last 20 years than were prepared in the 60 proceeding years (Table 2.1). This trend is due, in part, to the large number of small cultural resource management (CRM) projects, many of which report few or no archaeological sites within their respective project boundaries, which is why there has not been a corresponding increase in the number of sites. Third, there has been a significant decrease in the number of major surveys (encompassed at least 400 ha and/or recorded at least 30 new sites) since 1987, as well as a decrease in the number of sites recorded by major surveys. Fourth, there has been a decrease in the number of sites tested or excavated since 1987. But as with the number of sites recorded, on average more sites have been tested and excavated on a yearly basis since 1987 than prior to 1987. Fifth, more sites have been listed on the

National Register of Historic Places in Kentucky since 1987; this trend is due almost entirely to one National Register District in the Red River Gorge area that contains over 450 sites (Table 2.1). The extent to which these trends in archaeological work across the state as a whole are reflective of patterns observed within each management area are considered in the following sections.

Table 2.1. Data by Management Area: 1) Purchase, 2) Green River, 3) Salt River, 4) Upper Cumberland, 5) Bluegrass, 6) Upper Kentucky/Licking, 7) Big Sandy.

	1	%	2	%	3	%	4	%	5	%	6	%	7	%	Total	%
Area (km^2)	9352	8.9	30308	29.0	11398	10.9	12514	12.0	18835	18.0	13809	13.2	8473	8.1	104689	100.0
Area Surveyed (km^2)	282	8.2	543	15.7	332	9.6	616	17.8	250	7.2	944	27.3	485	14.0	3452	3.3
Sites																
Before 1987	1062	9.0	3357	28.5	1888	16.0	1132	9.6	2189	18.6	1310	11.1	846	7.2	11784	50.1
Since 1987	1039	8.9	2477	21.1	1075	9.2	1942	16.6	2017	17.2	2593	22.1	572	4.9	11715	49.9
Total	2101	8.9	5834	24.8	2963	12.6	3074	13.1	4206	17.9	3903	16.6	1418	6.0	23499	100.0
Reports																
Before 1987	178	11.4	427	27.4	197	12.7	138	8.9	357	22.9	129	8.3	130	8.4	1556	19.4
Since 1987	346	5.3	1317	20.3	655	10.1	942	14.5	1083	16.7	1434	22.1	708	10.9	6485	80.6
Total	524	6.5	1744	21.7	852	10.6	1080	13.4	1440	17.9	1563	19.4	838	10.4	8041	100.0
Major Surveys																
Before 1987	8	8.1	24	24.2	14	14.1	13	13.1	18	18.2	13	13.1	9	9.1	99	60.0
Since 1987	3	4.5	13	19.7	4	6.1	17	25.8	14	21.2	11	16.7	4	6.1	66	40.0
Total	11	6.7	37	22.4	18	10.9	30	18.2	32	19.4	24	14.5	13	7.9	165	100.0
Major Surveys No. Sites																
Before 1987	323	5.8	1411	25.5	1101	19.9	935	16.9	976	17.6	413	7.5	372	6.7	5531	64.2
Since 1987	59	1.9	918	29.8	134	4.4	706	22.9	441	14.3	748	24.3	74	2.4	3080	35.8
Total	382	4.4	2329	27.0	1235	14.3	1641	19.1	1417	16.5	1161	13.5	446	5.2	8611	100.0
Tested Sites																
Before 1987	47	5.5	189	22.0	222	25.8	44	5.1	214	24.9	43	5.0	102	11.8	861	54.8
Since 1987	27	3.8	175	24.7	106	15.0	54	7.6	214	30.2	84	11.8	49	6.9	709	45.2
Total	74	4.7	364	23.2	328	20.9	98	6.2	428	27.3	127	8.1	151	9.6	1570	100.0
Excavated Sites																
Before 1987	21	16.5	27	21.3	9	7.1	3	2.4	36	28.3	8	6.3	23	18.1	127	56.7
Since 1987	3	3.1	13	13.4	21	21.6	11	11.3	36	37.1	4	4.1	9	9.3	97	43.3
Total	24	10.7	40	17.9	30	13.4	14	6.3	72	32.1	12	5.4	32	14.3	224	100.0
National Register Sites																
Before 1987	12	7.9	59	38.8	8	5.3	5	3.3	40	26.3	15	9.9	13	8.5	152	22.0
Since 1987	4	0.7	14	2.6	2	0.4	1	0.2	56	10.4	457	84.9	4	0.7	538	78.0
Total	16	2.3	73	10.6	10	1.4	6	0.9	96	13.9	472	68.4	17	2.5	690	100.0

MANAGEMENT AREA 1 (PURCHASE)

Over 2,000 archaeological sites have been recorded in the Purchase Management Area; the only other management area with fewer sites is the Big Sandy (Table 2.1). The percentage of sites recorded before and since 1987 is roughly equivalent, though the actual number of sites recorded has dropped slightly over the past 20 years. The relative paucity of documented sites is due in part to the fact that few major surveys (n=11) have been conducted in the Purchase Management Area, most of which were projects completed before 1987. The majority of the sites are found in the Lower Tennessee/Cumberland Section (58.1 percent), followed by the Ohio River I Section (26.7 percent) and the Mississippi River Section (15.3 percent) (Table 2.2). The density of sites by management area section and county within the management area, and across the state, is represented in Figure 2.1.

As with the other management areas, the majority of sites are classified as Open Habitation without mound(s) (67.2 percent) (Table 2.3). Rockshelter sites are absent in the Mississippi River Section, and scarce in the other sections, representing less than 1 percent of the sites recorded in the Purchase Management Area. Other site types that are absent from the Mississippi River Section and rare throughout the rest of this management area are caves, stone mounds, petroglyphs/pictographs, isolated burials, specialized activity sites, industrial sites, and military sites (Table 2.3). Interestingly, there are more mound-related sites (i.e., earth mounds, mound complexes, and open habitations with mounds) in the Mississippi River Section (n=43) than the other two sections in this management area. Overall, the proportion of mound-related sites in the Purchase Management Area (n=99 sites or 4.7 percent) is relatively high compared to the other management areas; only the Bluegrass (n=270 or 6.4 percent) and Big Sandy (n=79 or 5.6 percent) have higher proportions. All of the open habitations with mound(s) and mound complexes in this management area were recorded before 1987.

This management area contains relatively few NRHP sites (n=16) compared to the other management areas. Of interest is the fact that despite the lower intensity of archaeological investigations in the Mississippi River Section, it has the most sites listed on the NRHP (n=9 or 56.3 percent). Most of the National Register sites in the Purchase Management Area were recorded before 1987 (n=12 or 75 percent) (Table 2.2, Figure 2.2).

Collectively, almost 75 percent of the reports from this management area are from the Ohio River I and Lower Tennessee/Cumberland Sections (Table 2.2), which likely accounts for the higher percentage of sites from these sections compared to the Mississippi River Section. Nearly twice as many reports have been completed in the Purchase Management Area since 1987 compared to before 1987 (Table 2.2). As with other parts of the state, this reflects a significant increase in cultural resource management projects. Even with this increase, the Purchase Management Area has fewer reports than any other management area (Table 2.1). It also has the fewest major surveys (n=11), which represent only 6.7 percent of the major surveys conducted statewide. Most of the major Purchase Management Area surveys were in the Ohio River I Section (n=8 or 72.7 percent). Of the eight major surveys conducted in this section, six were

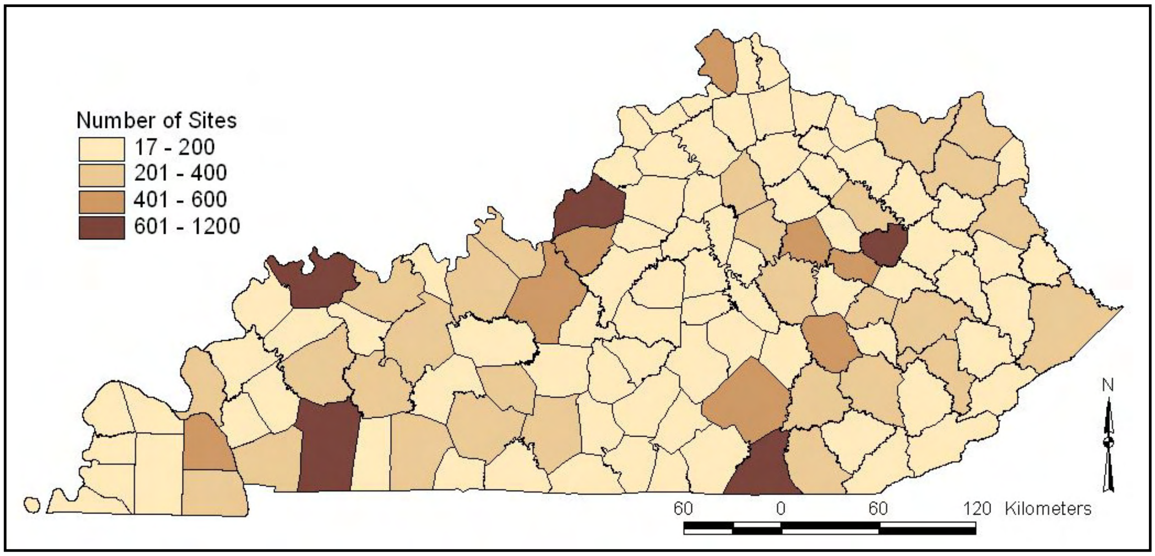

Figure 2.1. Distribution of sites by county.

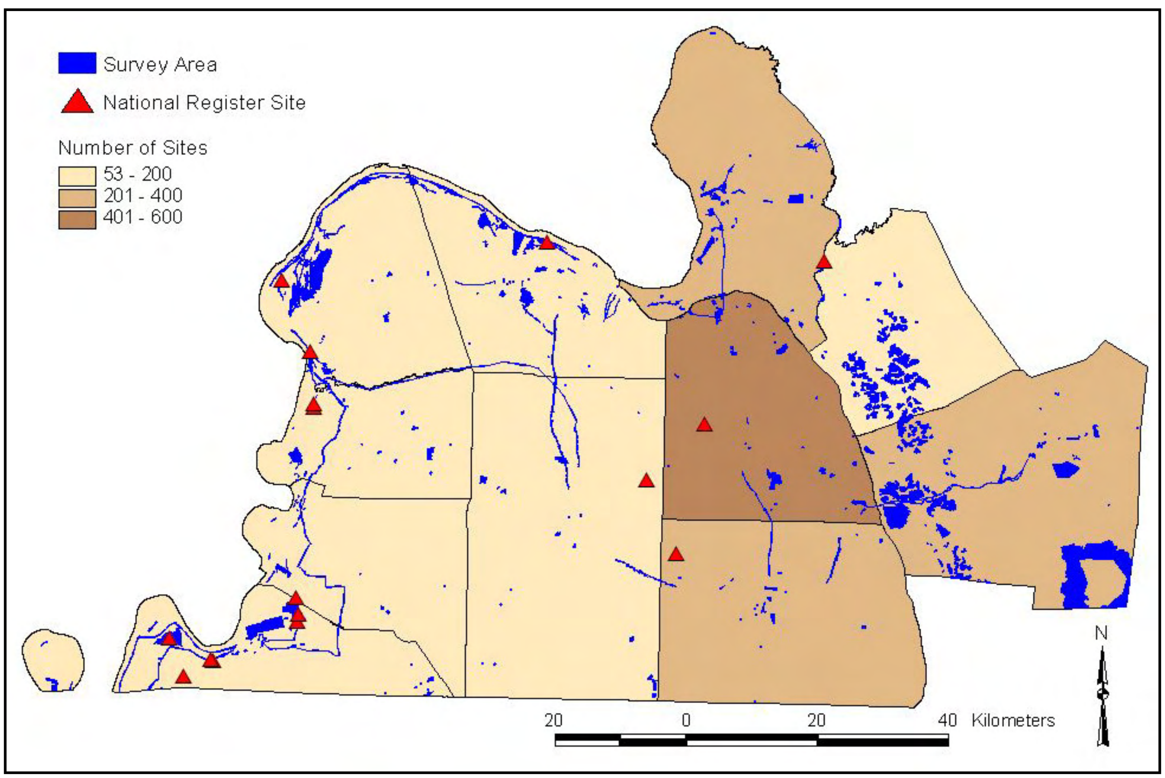

Figure 2.2. Distribution of archaeological sites, National Register sites, and surveys in the Purchase Management Area.

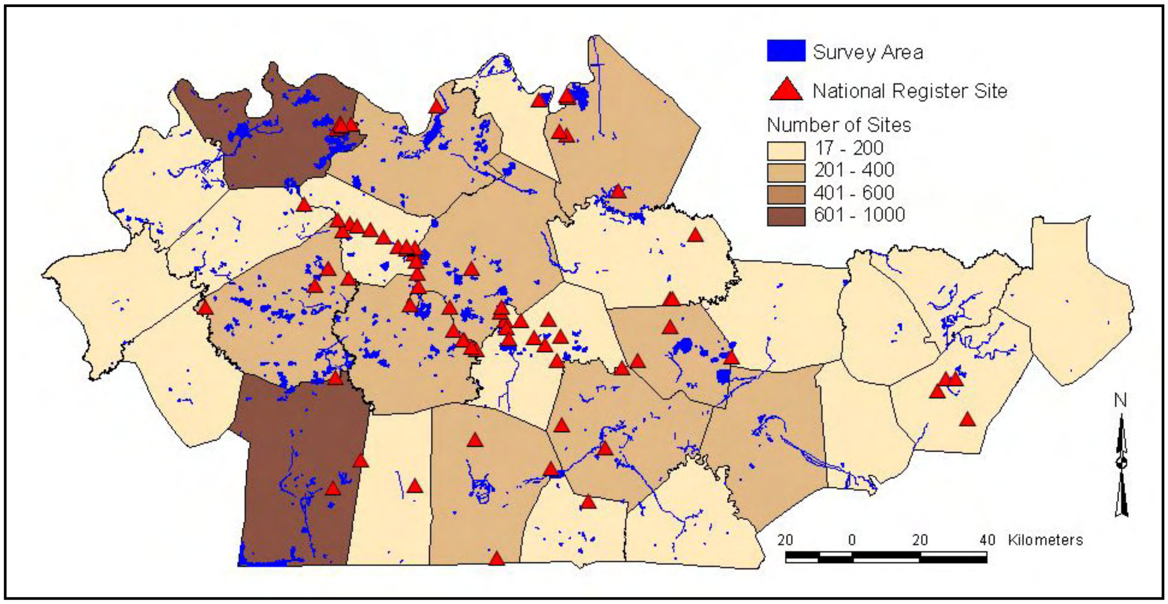

Figure 2.3. Distribution of archaeological sites, National Register sites, and surveys in the Green River Management Area.

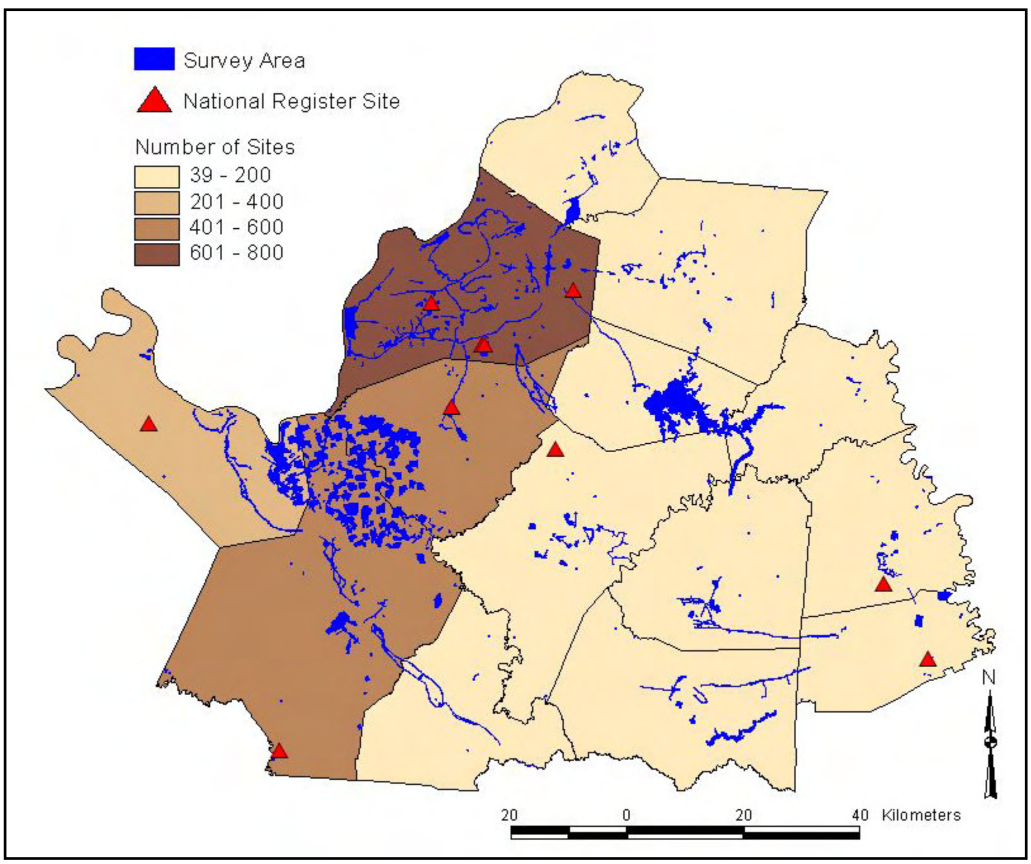

Figure 2.4. Distribution of archaeological sites, National Register sites, and surveys in the Salt River Management Area.

Table 2.2. Purchase Management Area: Section Data.

	Mississippi River	Ohio River I	Lower Tennessee/ Cumberland	Total	Percent
Area (km^2)	3209	2290	3853	9352	
Row Percent	34.3	24.5	41.2	100.0	
Area Surveyed (km^2)	52	64	166	282	
Percent of Section/MA	1.6	2.8	4.3	3.0	
Sites					
Before 1987	211	395	456	1062	50.5
Since 1987	110	165	764	1039	49.5
Total	321	560	1220	2101	100.0
Row Percent	15.3	26.7	58.1	100.0	
Reports					
Before 1987	46	59	73	178	34.0
Since 1987	86	138	122	346	66.0
Total	132	197	195	524	100.0
Row Percent	25.2	37.6	37.2	100.0	
Major Surveys					
Before 1987	2	6	0	8	72.7
Since 1987	0	2	1	3	27.3
Total	2	8	1	11	100.0
Row Percent	18.2	72.7	9.1	100.0	
Major Surveys Sites					
Before 1987	78	245	0	323	84.6
Sites 1987	0	39	20	59	15.4
Total	78	284	20	382	100.0
Row Percent	20.4	74.3	5.2	100.0	
Tested Sites					
Before 1987	5	18	24	47	63.5
Since 1987	6	14	7	27	36.5
Total	11	32	31	74	100.0
Row Percent	14.9	43.2	41.9	100.0	
Excavated Sites					
Before 1987	1	4	16	21	87.5
Since 1987	0	2	1	3	12.5
Total	1	6	17	24	100.0
Row Percent	4.2	25.0	70.8	100.0	
National Register Sites					
Before 1987	7	2	3	12	75.0
Since 1987	2	2	0	4	25.0
Total	9	4	3	16	100.0
Row Percent	56.3	25.0	18.8	100.0	

Table 2.3. Distribution of Site Types by Section within the Purchase Management Area.

Site Type	Mississippi River	Ohio River I	Lower Tennessee/ Cumberland	Total	Percent
Open Habitation w/out mound(s)	198	385	829	1,412	67.2
Isolated Find	5	1	4	10	0.5
Rockshelter	0	13	2	15	0.7
Cave	0	0	3	3	0.1
Quarry	1	1	9	11	0.5
Stone Mound	0	3	0	3	0.1
Earth Mound	22	14	14	50	2.4
Mound Complex	6	3	10	19	0.9
Petroglyph/Pictograph	0	2	2	4	0.2
Non-Mound Earthwork	3	1	0	4	0.2
Workshop	1	5	9	15	0.7
Isolated Burial	0	1	1	2	0.1
Cemetery	3	20	46	69	3.3
Specialized Activity Site	0	2	7	9	0.4
Open Habitation w/ Mound(s)	15	7	8	30	1.4
Historic Farm	38	67	259	364	17.3
Industrial	0	8	7	15	0.7
Military	0	3	2	5	0.2
Other	29	24	8	61	2.9
Total	321	560	1,220	2,101	100.0

completed prior to 1987. Most of the major and the minor surveys throughout the management area have been undertaken as part of cultural resource management projects related to highway construction and other development (e.g., industrial parks, housing, cell towers, and barge fleeting areas). Two major clusters of surveys in the Lower Tennessee/Cumberland Section (Figure 2.2) are associated with projects in the Land Between the Lakes National Recreation Area and Fort Campbell. Only relatively small proportions of the area within each section have been surveyed for archaeological sites; the total area surveyed is 282 km^2, representing some 3.0 percent of the area within the Purchase Management area (Table 2.2). The reports of major surveys that have been undertaken in the Purchase Management Area are listed below. The distribution of all surveys in this management area may be seen in Figure 2.2.

MAJOR SURVEYS

Mississippi River Section

Kreisa, Paul P.
1987 Late Prehistoric Settlement Patterns in the Big Bottoms of Fulton County. In *Current Archaeological Research in Kentucky: Volume One,* edited by David Pollack, pp. 78-100. Kentucky Heritage Council, Frankfort.

Sussenbach, Tom, and R. Barry Lewis
1987 *Archaeological Investigations in Carlisle, Hickman, and Fulton Counties, Kentucky: Site Survey and Excavations*. Western Kentucky Project Report 4. Department of Anthropology, University of Illinois, Urbana-Champaign.

Ohio River I Section

Autry, William O., Jr.
1979 An Archaeological Reconnaissance of the General Location for the 20MW Atmospheric Fluid Bed Combustion Pilot Plant and Associated Borrow Areas, TVA Shawnee Steam Plant, McCracken County, Kentucky. Report submitted to the Tennessee Valley Authority, Nashville.

Autry, William O., Larry R. Kimball, and Glyn D. DuVall
1989 *Archaeological and Geomorphological Investigations in Selected Bends Along the Lower Cumberland River, Livingston, Crittenden, and Lyon Counties, Kentucky*. DuVall and Associates, Nashville, Tennessee.

Gray, Marlesa, and G. Michael Watson
1981 *Archaeological Reconnaissance of the Lower Ohio River Navigation Area, Illinois, and Kentucky*. WAPORA, Inc., Cincinnati.

McGraw, Betty J.
1981 *Archaeological Reconnaissance Survey of the Great River Road Project: Ballard, Carlisle, Hickman and Fulton Counties, Kentucky*. Kentucky Transportation Cabinet, Frankfort.

Matternes, Hugh B.
1995 *Archaeology By Invitation: Results of the 1994 Middle Mississippi Survey*. Report No. 6. Wickliffe Mounds Research Center, Murray State University, Wickliffe, Kentucky.

Nance, Jack D.
1987 Research into the Prehistory of the Lower Tennessee-Cumberland-Ohio Region. *Southeastern Archaeology* 6(2):93-99.

O'Malley, Nancy, Julie Riesenweber, and A. Gwynn Henderson
1983 *Cultural Resources Reconnaissance of the Lower Cumberland River, Livingston, Crittenden, and Lyon Counties, Kentucky*. Archaeological Report No. 75. Department of Anthropology, University of Kentucky, Lexington.

Schwartz, Douglas W., Tacoma G. Sloan, and John W. Griffin
1958 *Survey of the Archaeological Resources of the Barkley Reservoir, Kentucky and Tennessee*. Ms. on file, Museum of Anthropology, University of Kentucky, Lexington.

Weinland, Marcia K., and Thomas W. Gatus
1979 *A Reconnaissance and Evaluation of Archaeological Sites in Ballard County, Kentucky*. Archaeological Survey Report No. 11. Kentucky Heritage Commission, Frankfort.

Lower Tennessee/Cumberland Section

Schenian, Pamela A., and Stephen T. Mocas
1994 *An Archaeological Reconnaissance of the Proposed Improvement of US68/KY80 from Aurora to the Cadiz Bypass in Marshall and Trigg Counties, Kentucky*. Archaeology Service Center, Murray State University, Murray, Kentucky.

EXCAVATIONS

The Purchase Management Area has fewer tested sites than any other management area in Kentucky (n=74 or 4.7 percent). Most of those sites are in the Ohio River I Section (n=32 or 43.2 percent), followed closely by the Lower Tennessee/Cumberland Section (n=31 or 41.9 percent). Only 11 sites have been tested in the Mississippi River Section. The number of excavated sites is similarly low (n=24); most of these sites are in the Lower Tennessee/Cumberland Section (n=17 or 70.8 percent). Given the presence of significant archaeological remains in the Mississippi River Section (e.g., Adams [15Fu4], Turk [15Ce6], and Amburg Mounds [15Fu15]), the paucity of tested and excavated sites in this section likely reflects lesser impacts from commercial, residential, and recreational development rather than a lack of actual research potential.

The rate of excavations has decreased more dramatically in the Purchase Management Area over the last 20 years than anywhere else in the state (Table 2.1). In fact, fewer sites have been excavated in the Purchase since 1987 than any other management area (Table 2.1). Most of the archaeological excavations in this management area were conducted during or before the 1960s. It should be noted, however, that despite decreasing rates of excavation elsewhere in the management area, research has been ongoing at the Wickliffe Mounds site (15Ba4) (Wesler 1989, 1991, 2001). The references for the most significant excavations in this management area are provided below.

Mississippi River Section

Edging, Richard B.
1990 *The Turk Site: A Mississippian Period Town in Western Kentucky*. Kentucky Heritage Council, Frankfort.

Kreisa, Paul P.
1989 *Second-Order Communities in Western Kentucky: Site Survey and Excavation at Late Woodland and Mississippi Period Sites*. Western Kentucky Project Report No. 7. Department of Anthropology, University of Illinois, Urbana-Champaign.

Lewis, R. Barry (editor)
1986 *Mississippian Towns of the Western Kentucky Border: The Adams, Wickliffe, and Sassafras Ridge Sites*. Kentucky Heritage Council, Frankfort.

Sussenbach, Tom, and R. Barry Lewis
1987 *Archaeological Investigations in Carlisle, Hickman, and Fulton Counties, Kentucky: Site Survey and Excavations*. Western Kentucky Project Report No. 4. Department of Anthropology, University of Illinois, Urbana-Champaign.

Trader, Patrick D.
2003 *Archaeological Investigation of the Winston Tipton Site (15Fu119), Fulton County, Kentucky*. Archaeological Report No. 495. Program for Archaeological Research, Department of Anthropology, University of Kentucky, Lexington.

Webb, William S., and William D. Funkhouser
1933 The *McLeod Bluff Site in Hickman County, Kentucky*. Reports in Archaeology and Anthropology 3. University of Kentucky, Lexington.

Ohio River I Section

Anderson, Patricia K., Autry, William O. and Glyn D. DuVall
1992 *Archaeological Reconnaissance and Testing for the Proposed Kentucky Lock Addition, Tennessee River, Livingston County, Kentucky*. DuVall and Associates, Nashville, Tennessee.

Carstens, Kenneth C.
1999 *A Combined Phase I and Phase II Archaeological Reconnaissance of a 52 Acre Tract in Eastern McCracken County, Kentucky*. Archaeological Services, Murray, Kentucky.

Henderson, A. Gwynn, and David Pollack
2000 Late Woodland Cultures in Kentucky. In *Late Woodland Societies: Tradition and Transformation across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 613-641. University of Nebraska Press, Lincoln.

Herndon, Richard L.
2003 *Phase II National Register Evaluation of 15Lv222 (The Chestnut Lake Site) and 15Lv223 (The Crounse Site) in Livingston County, Kentucky*. Cultural Resource Analysts, Lexington, Kentucky.

King, Blanche Busey
1937a *Recent Excavations at the King Mounds, Wickliffe, Kentucky*. Hobbies 44.

1937b Recent Excavations at the King Mounds, Wickliffe, Kentucky. *Illinois State Academy of Science Transactions* 30:83-90.

1939 *Under Your Feet: The Story of the American Mound Builders*. Dodd, Mead, and Company, New York.

Kreisa, Paul P.
1988 *Second-Order Communities in Western Kentucky: Site Survey and Excavation at Late Woodland and Mississippi Period Sites*. Western Kentucky Project Report No. 7, University of Illinois, Urbana-Champaign.

1990 *Organizational Aspects of Mississippian Settlement Systems in Western Kentucky*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Illinois, Urbana-Champaign.

1995 Mississippian Secondary Centers along the Lower Ohio River Valley: An Overview of Some Sociopolitical Implications. In *Current Archaeological Research in Kentucky: Volume Three,* edited by John F. Doershuk, Christopher A. Bergman, and David Pollack, pp. 161-178. Kentucky Heritage Council, Frankfort.

Lewis, R. Barry
1986 *Mississippian Towns of the Western Kentucky Border: The Adams, Wickliffe, and Sassafras Ridge Sites*. Kentucky Heritage Council, Frankfort.

Nance, Jack D.
1981 The Morrisroe Site, Livingston County, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Rossen, Jack
2000 Archaic Plant Utilization at the Hedden Site, McCracken County, Kentucky. In *Current Archaeological Research in Kentucky: Volume Six*, edited by David Pollack and Kristen J. Gremillion, pp. 1-24. Kentucky Heritage Council, Frankfort.

Schock, Jack M.
1994 *Archaeological Testing of Sites 15Lv208-15Lv209 for the Proposed Ledbetter Community Treatment Plant Site at Ledbetter in Livingston County, Kentucky*. Arrow Enterprises, Bowling Green, Kentucky.

Stout, Charles
1996 *Archaeological Data Recovery of Site 15Lv208, a Mississippian House Floor in Livingston County, Kentucky*. Archaeology Service Center, Murray State University, Murray, Kentucky.

Wesler, Kit W.
1985 *Archaeological Excavations at Wickliffe Mounds, 15Ba4: Mound A, 1984*. Report No. 1. Wickliffe Mounds Research Center, Murray State University, Murray, Kentucky.

1988 The King Project at Wickliffe Mounds: A Private Excavation in the New Deal Era. In *New Deal Era Archaeology and Current Research in Kentucky*, edited by David Pollack and Mary Lucas Powell, pp. 83-96. Kentucky Heritage Council, Frankfort.

1989 *Archaeological Excavations at Wickliffe Mounds, 15Ba4: Mound D, 1987*. Report No. 3. Wickliffe Mounds Research Center, Murray State University, Wickliffe, Kentucky.

1991 *A Preliminary Assessment of the 1991 Excavations in Mound C, the Wickliffe Mounds Cemetery*. Wickliffe Mounds Research Center, Murray State University, Wickliffe, Kentucky.

1992 Chronology and Spatial Perspectives on Ceramic Vessel Form at Wickliffe Mounds (15Ba4). In *Current Research in Kentucky: Volume Two*, edited by David Pollack and A. Gwynn Henderson, pp. 223-242. Kentucky Heritage Council, Frankfort.

1996 A New Look at the Mississippian Landscape at Wickliffe Mounds. In *Current Archaeological Research in Kentucky: Volume Four*, edited by Sara L. Sanders, Thomas N. Sanders, and Charles Stout, pp. 280-297. Kentucky Heritage Council, Frankfort.

1998 Reconstructing the 1932-1939 King Excavations at Wickliffe Mounds. In *Current Archaeological Research in Kentucky: Volume Five,* edited by Charles D. Hockensmith, Kenneth Carstens, Charles Stout, and Sara J. Rivers, pp. 203-214. Kentucky Heritage Council, Frankfort.

2001 *Excavations at Wickliffe Mounds*. University of Alabama Press, Tuscaloosa.

2006 Platforms as Chiefs: Comparing Mound Sequences in Western Kentucky. In *Leadership and Polity in Mississippian Society*, edited by Brian M. Butler and Paul D. Welch, pp. 142-155. Occasional Paper No. 33. Center for Archaeological Investigations, Southern Illinois University, Carbondale.

Wesler, Kit W., and Sarah W. Neusius
1987 *Archaeological Excavations at Wickliffe Mounds, 15Ba4: Mound F, Mound A Addendum, and Mitigation for the Great River Road Project, 1985 and 1986.* Report No. 2. Wickliffe Mounds Research Center, Murray State University, Murray, Kentucky.

Wesler, Kit W., Julie K. Stein, and Richard Edging
1991 *Archaeological Excavations at Wickliffe Mounds, 15Ba4: North Village and Cemetery, 1988-1989*. Report No. 4. Wickliffe Mounds Research Center, Murray State University, Wickliffe, Kentucky.

Lower Tennessee/Cumberland Section

Allen, Roger C.
1976 Archaeological Investigations at Two Sites in the U.S. Interstate Highway 24 Right of Way in Marshall County, Kentucky. Ms. on file, Department of Anthropology, University of Kentucky, Lexington.

Clay, R. Berle
1961 Excavations at the Tinsley Hill Village 1960. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

1963a The Tinsley Hill Mound. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

1963b Tinsley Hill Village 1962. A Project of the Inter-Agency Archaeological and Paleontological Salvage Program. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

1963c The Rodgers and Wilson Sites in Trigg County, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Fryman, Frank Jr.
1966 The Goheen Site: A Late Mississippi Site in Marshall County, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Funkhouser, William D., and William S. Webb
1931 *The Duncan Site on the Kentucky-Tennessee Line*. Reports in Archaeology and Anthropology 1. University of Kentucky, Lexington.

Mocas, Stephen T.
1977 *Excavations at the Lawrence Site (l5Tr33), Trigg County, Kentucky*. University of Louisville Archaeological Survey, Louisville.

Nance, Jack D.
1976 *The Dead Beaver Site: An Archaic Campsite in the Land Between the Lakes*. Kentucky Archaeological Association Bulletin 4-5.

2001 *Archaeological Investigations at the Whalen Site (15-LY-48), Lyon County, Kentucky*. Department of Archaeology, Simon Frazier University, Burnaby, British Columbia, Canada.

Pollack, David, and Jimmy A. Railey
1987 *Chambers (15Ml109): An Upland Mississippian Village in Western Kentucky*. Kentucky Heritage Council, Frankfort.

Schenian, Pamela A., and Stephen T. Mocas
1993 *The Combined Phase II/III Archaeological Investigation of Site 15Ml134 in the Hite Painting Barge Painting Facility at Tennessee River Mile 9.75, near Little Cypress, Marshall County, Kentucky*. Archaeological Service Center, Murray State University. Murray, Kentucky.

Stout, Charles, Gregory R. Walz, and Jarrod Burks
1996 Archaeological Investigations at the Canton Site (15Tr1), Trigg County, Kentucky. In *Current Archaeological Research in Kentucky: Volume Four*, edited by Sara L. Sanders, Thomas N. Sanders, and Charles Stout, pp. 264-279. Kentucky Heritage Council, Frankfort.

Schroeder, Sissel
2006 Walls as Symbols of Political, Economic, and Military Might. In *Leadership and Polity in Mississippian Society*, edited by Brian M. Butler and Paul D. Welch, pp. 115-141. Occasional Paper No. 33. Center for Archaeological Investigations, Southern Illinois University, Carbondale.

Schwartz, Douglas W.
1960 Preliminary Report on Archaeological Investigations at 15Ly18, a Stone Grave Site in the Barkley Basin, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

1961 *The Tinsley Hill Site: A Late Prehistoric Stone Grave Cemetery in Lyon County, Kentucky*. Studies in Anthropology No. 1. University of Kentucky Press, Lexington.

1962 *The Driskill Site: A Late Woodland Occupation in the Lower Cumberland River Valley*. Transactions of the Kentucky Academy of Science 23.

Schwartz, Douglas W., and Tacoma G. Sloan
1959 Archaeological Investigation at 15Ly9, the Driskill Site, a Woodland Occupation in the Lower Cumberland River Valley. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Webb, William S.
1952 *The Jonathan Creek Village, Site 4, Marshall County, Kentucky*. Reports in Archaeology and Anthropology 8. University of Kentucky, Lexington.

MANAGEMENT AREA 2 (GREEN RIVER)

The Green River Management Area has the largest number of recorded sites (n=5,834) in the state (Table 2.1). This is commensurate with the fact that this is the largest management area encompassing 30,308 km^2 (29.0 percent of the state). Almost sixty percent of the sites documented in this management area (n=3,357 or 57.5 percent) were recorded before 1987 (Table 2.4). The Ohio River II Section contains more sites than any other section in this management area (n=1877 or 32.2 percent) despite the fact that it encompasses the smallest area (6,371 km^2 or 21.0 percent). This is probably due to the fact that several major surveys were undertaken in this section prior to 1987, with many of these projects being located adjacent to the Ohio River (see Figure 2.3). In part, as a result of this work and subsequent surveys, Henderson County has the second highest number of archaeological sites (n=872) in the state (Figure 2.1).

The reverse is true for the Upper Green River, which is the largest section (8936 km^2 or 29.5 percent), but contains the fewest sites (n=1,215 or 20.83 percent). The number of documented sites in the Upper Green River Section may reflect a lower site density, or it may be due to the fact that this section has the lowest survey coverage, with less than one percent having been surveyed (Table 2.4). Many of the sites in this section have been located as a result of large survey projects undertaken within Mammoth Cave National Park (Prentice 1989; Watson and Carstens 1982).

The number of archaeological sites recorded in the Western Coalfield and Pennyroyal Sections is proportional to their areas (Table 2.4). Of interest is that 77.5 percent of the sites documented in the Pennyroyal Section were recorded during the course of major surveys, with many of these being undertaken at Fort Campbell.

As with most of the other management areas, open habitation sites without mounds represent the most abundant site type (n=3,983 or 68.3 percent) in the Green River Management Area. This site type is prevalent in all four of the sections, comprising between 62 percent (Western Coalfield) and 77 percent (Pennyroyal) of the sites. Historic farms are the next most common site type, comprising just over 11 percent of the sites in this management area. Mound-related site types (open habitations with mounds, earth mounds, and mound complexes) are relatively common in the Green River Management area; the only area with more of these site types is the Bluegrass. Most of the mound-related sites are found in the Western Coalfield and Pennyroyal sections (Table 2.5). Unlike the Purchase Management Area, there are numerous rockshelter (n=455) and cave sites (n=81) in the Green River Management Area (Table 2.5). Though rockshelters are well-represented in all of the sections, caves tend to be located primarily in the Pennroyal and Upper Green River sections, and no other management area contains more cave sites. The relative abundance of cave sites in these sections is not surprising considering the presence of Mammoth Cave and other large cave systems in this management area.

Table 2.4. Green River Management Area: Section Data.

	Ohio River II	Western Coalfield	Pennyroyal	Upper Green River	Total	Percent
Area (km^2)	6371	6869	8132	8936	30308	
Percent	21.0	22.7	26.8	29.5	100.0	
Area Surveyed (km^2)	191	188	86	78	543	
Percent of Section/MA	3.0	2.7	1.1	0.9	1.8	
Sites						
Before 1987	1252	639	907	559	3357	57.5
Since 1987	625	584	612	656	2477	42.5
Total	1877	1223	1519	1215	5834	100.0
Percent	32.2	21.0	26.0	20.8	100.0	
Reports						
Before 1987	99	120	112	96	427	24.5
Since 1987	335	368	331	283	1317	75.5
Total	434	488	443	379	1744	100.0
Percent	24.9	28.0	25.4	21.7	100.0	
Major Surveys						
Before 1987	11	1	6	6	24	64.9
Since 1987	3	1	7	2	13	35.1
Total	14	2	13	8	37	100.0
Percent	37.8	5.4	35.1	21.6	100.0	
Major Surveys No. Sites						
Before 1987	564	37	575	235	1411	60.6
Since 1987	219	40	602	57	918	39.4
Total	783	77	1177	292	2329	100.0
Percent	33.6	3.3	50.5	12.5	100.0	
Tested Sites						
Before 1987	72	29	59	29	189	51.9
Since 1987	56	37	47	35	175	48.1
Total	128	66	106	64	364	100.0
Percent	35.2	18.1	29.1	17.6	100.0	
Excavated Sites						
Before 1987	1	12	8	6	27	67.5
Since 1987	6	2	3	2	13	32.5
Total	7	14	11	8	40	100.0
Percent	17.5	35.0	27.5	20.0	100.0	
National Register Sites						
Before 1987	10	36	8	5	59	80.8
Since 1987	4	4	1	5	14	19.2
Total	14	40	9	10	73	100.0
Percent	19.2	54.8	12.3	13.7	100.0	

There are a significant number of sites listed in the National Register of Historic Places in this management area; only the Upper Kentucky/Licking and Bluegrass management areas have more sites listed on the National Register (Table 2.1). Slightly more of these sites are located in the Western Coalfield Section (n=40 or 54.8 percent), and most were recorded before 1987 (n=59 or 80.8 percent) (Table 2.4). Many of these sites are Archaic shell middens, while others are cave or petroglyph/pictograph sites. The distribution of these National Register sites is presented in Figure 2.3.

Table 2.5. Distribution of Site Types by Section within the Green River Management Area.

Site Type	Ohio River II	Western Coalfield	Pennyroyal	Upper Green River	Total	Percent
Open Habitation w/out mound(s)	1,282	759	1,170	772	3,983	68.3
Isolated Find	87	23	11	8	129	2.2
Rockshelter	82	53	95	225	455	7.8
Cave	2	2	32	45	81	1.4
Quarry	4	0	7	9	20	0.3
Stone Mound	4	8	7	0	19	0.3
Earth Mound	17	31	24	6	78	1.3
Mound Complex	3	28	13	7	51	0.9
Petroglyph/Pictograph	6	3	3	8	20	0.3
Non-Mound Earthwork	0	2	6	3	11	0.2
Workshop	1	2	6	8	17	0.3
Isolated Burial	0	0	1	0	1	0.0
Cemetery	45	17	28	11	101	1.7
Specialized Activity Site	5	7	2	2	16	0.3
Open Habitation w/ Mound(s)	15	6	25	7	53	0.9
Historic Farm	262	230	73	84	649	11.1
Industrial	6	4	4	4	18	0.3
Military	0	1	0	2	3	0.1
Other	56	47	12	14	129	2.2
Total	1,877	1,223	1,519	1,215	5,834	100.0

Archaeological investigations in the Green River Management Area have generated more reports than any other area of the state (n=1,744 or 21.7 percent). This figure is consistent with the percentage of recorded sites in this management area and the land area it encompasses. The number of reports for each section is not highly variable, though slightly more reports derive from the Western Coalfield Section (n=488 or 28.0 percent). Given the large number of reports generated by archaeological work in this section, it is surprising that only two major surveys have been conducted in this region, indicating that the reports that have been written represent smaller surveys, site testings, and excavations.

More major surveys have been conducted and more sites have been recorded by major surveys in the Green River than any other management area (tables 2.1 and 2.4). Most of the major surveys have been conducted within the Ohio River II and Pennyroyal sections, and most were completed before 1987 (Table 2.4). Although the number of major surveys has decreased in the Green River Management Area since 1987, the number of sites recorded by major surveys has increased from an average of 58.8 sites per survey in the years before 1987 to 70.6 sites per survey since 1987. This suggests that the more recent major surveys have been conducted in areas of higher site density or encompassed larger areas.

Surveys undertaken in the Ohio River II and Western Coalfields sections have been undertaken as part of cultural resource management projects related to mining operations, highway construction and an examination of the Rough River Lake shoreline and research-oriented studies. Surveys undertaken in the Pennyroyal and Upper Green River sections also have been conducted as part of cultural resource management projects related to highway construction and mining operations, with surveys also being conducted along the shoreline of Barren River Reservoir and within the boundaries of Fort Campbell.

The distribution of all surveys in the Green River Management Area is presented in Figure 2.3. Reports of major surveys that have been conducted in this management area are listed below by section.

MAJOR SURVEYS

<u>Ohio River II Section</u>

Allen, Roger C.
1978 *Archaeological Reconnaissance and Assessment of a Proposed Power Plant and Transmission Line in the Western Coalfields of Kentucky*. Archaeological Report No. 3. Department of Anthropology, University of Kentucky, Lexington.

Carstens, Kenneth C., and Kandis K. Jenings
1978 *An Archaeological Survey and Testing of the Proposed Camp Breckenridge-Peabody Coal Company Coal Washing Plant, Priority Areas I and II, Union County, Kentucky*. Department of Anthropology, Murray State University, Murray.

Carstens, Kenneth C., Kandis K. Jenings, and R. Johnson
1979 *Archaeological Survey and Testing of the BOB Area, Priority III, Peabody Coal Company, Union County, Kentucky*. Department of Anthropology, Murray State University, Murray.

Hoffman, Michael A.
1966 Archaeological Surveys of the Newburgh and Uniontown Lock and Dam Areas on the Kentucky Side of the Ohio River. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Jobe, Cynthia E., Roger C. Allen, and Richard A. Boisvert
1979 *An Archaeological Reconnaissance and Assessment of a Proposed Transmission Line, Railroad Spur, and New Plant Site in Western Kentucky*. Archaeological Report No. 22. Department of Anthropology, University of Kentucky, Lexington.

MacFarlane, Heather
1980 A Cultural Resource Assessment of the Proposed Coal Conversion Facility and Two Alternate Solid Waste Disposal Sites, Breckenridge County, Kentucky for Ashland Synthetic Fuels, Inc. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Ottesen, Ann I.
1981 *Report on a Preliminary Study of Prehistoric Settlement Patterns in Three Counties in Northwestern Kentucky*. Kentucky Heritage Council, Frankfort.

Pollack, David
1998 *Intraregional and Intersocietal Relationships of the Late Mississippian Caborn-Welborn Phase of the Lower Ohio River Valley*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Kentucky, Lexington.

2004 *Caborn-Welborn: Constructing a New Society after the Angel Chiefdom Collapse*. University of Alabama Press, Tuscaloosa.

Schenian, Pamela A., and Stephen T. Mocas
1993 *A Phase I Archaeological Survey of ca. 3100 Acres of the Rough River Lake Shoreline, Breckinridge and Grayson Counties, Kentucky*. Archaeology Service Center, Murray State University, Kentucky.

Schwartz, Douglas W., Tacoma G. Sloan, and John Walker
1958 *Appraisal of the Archaeological Resources of the Rough River Basin, Kentucky*. Office of State Archaeology, University of Kentucky, Lexington.

Sussenbach, Tom
1998 *Phase I Archaeological Survey of 1585 Acres for a Surface Mine in Henderson County, Kentucky*. Sterling Archaeological Consultants, Winchester, Kentucky.

Turnbow, Christopher A., Malinda Stafford, Richard A. Boisvert, and Julie Riesenweber
1980 *A Cultural Resource Assessment of Two Alternate Locations of the Hancock Power Plant, Hancock and Breckinridge Counties, Kentucky*. Archaeological Report No. 30. Department of Anthropology, University of Kentucky, Lexington.

Versluis, Vincent
2003 *A Phase I Archaeological Reconnaissance of Approximately 1645 Acres for a Coal Mining Permit Area (Permit Application # 851-0030) Near Hebbardsville, Henderson County, Kentucky*. Great Rivers Archaeological Services, Burlington, Kentucky.

<u>Western Coalfield Section</u>

Collins, Michael B., David Pollack, and Kenneth W. Robinson
1981 *Distributional and Locational Trends of Archaeological Sites in the Western Kentucky Coalfield*. Archaeological Survey Report No. 63. Department of Anthropology, University of Kentucky, Lexington.

Jefferies, Richard W., Victor D. Thompson, and George R. Milner
2005 Archaic Hunter-Gatherer Landscape Use in West-Central Kentucky. *Journal of Field Archaeology*. 30(1):3-23.

Weinland, Marcia K., and Gerald N. DeLorenze
1980 *A Reconnaissance and Evaluation of Archaeological Sites in Hopkins County, Kentucky*. Archaeological Survey Report No. 15. Kentucky Heritage Commission, Frankfort.

Pennyroyal Section

Albertson, Eric S., and C. Andrew Buchner

1999a *An Intensive Cultural Resources Survey of 5180 Acres within Selected Portions of Training Areas 4, 11, 13, 17, and 19 Fort Campbell Military Reservation, Montgomery County, Tennessee, and Christian County, Kentucky*. Panamerican Consultants, Memphis, Tennessee.

1999b *An Intensive Cultural Resources Survey of 4068 Acres Selected Portion of the Fort Campbell Military Reservation, Montgomery, and Stewart Counties, Tennessee, and Christian and Trigg Counties, Kentucky*. Panamerican Consultants, Memphis, Tennessee.

2001 *An Intensive Cultural Resources Survey of 4836 Acres within Selected Portions of the Fort Campbell Military Reservation, Montgomery and Stewart Counties, Tennessee, and Christian and Trigg Counties, Kentucky*. Panamerican Consultants, Memphis, Tennessee.

Bradbury, Andrew P.

1998 *An Archaeological Survey of Portions of Training Areas 31, 32, 33, 34, and 40 within the Fort Campbell Military Installation, Christian County, Kentucky and Stewart County, Tennessee*. Cultural Resource Analysts, Lexington.

Foster, Gary S.

1972 An Archaeological Survey of Gasper River Drainage, Logan and Warren Counties, Kentucky. Ms. on file, Department of Sociology and Anthropology, Western Kentucky University, Bowling Green.

Gray, Jay W., and C. Andrew Buchner

2003 *Fort Campbell 9: A Report Documenting PCI's Ninth Intensive Cultural Resources Survey, Covering 3715 Acres at Ft. Campbell, KY-TN*. Panamerican Consultants, Memphis, Tennessee.

Hammond, William Raleigh

1975 An Archaeological Survey of Barren River From Mouth of Barren River to Barren River Reservoir Dam (Kentucky). Ms. on file, Department of Sociology and Anthropology, Western Kentucky University, Bowling Green.

Hoffman, Michael A.

1968 Archaeological Survey and Test Excavations Along the I-24 Right of Way in Southwestern Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Sanders, Thomas N. and David R. Maynard

1979 *A Reconnaissance and Evaluation of Archaeological Sites in Christian County, Kentucky*. Archaeological Survey Report No. 12. Kentucky Heritage Commission, Frankfort.

Schock, Jack M.

1972 *Intermediate Report on an Archaeological Shoreline Survey in Barren River Reservoir (Kentucky)*. Archaeological Survey Report No. 3. Department of Sociology and Anthropology, Western Kentucky University, Bowling Green.

1987 *A Cultural Reconnaissance of Approximately 790 Acres for the Proposed South Fork Little River Watershed Floodwater Retarding Structure No. 5 West of Fairview in Christian County, Kentucky*. Arrow Enterprises, Bowling Green, Kentucky.

Schock, Jack M., and Terry Weis Langford
1979 An Archaeological Shoreline Reconnaissance of Barren River Lake, Allen, Barren, and Monroe Counties, Kentucky. Ms. on file, Department of Sociology and Anthropology, Western Kentucky University, Bowling Green.

Stallings, Richard, Nancy Ross-Stallings, and Sarah Adams
1994 *A Phase I Cultural Resource Survey of a 17.4 Mile Realignment of US 231, Bowling Green to Scottsville, Warren and Allen Counties, Kentucky*. Cultural Horizons, Harrodsburg, Kentucky.

<u>Upper Green River Section</u>

Cassell, Mark S.
1989 *A Shoreline Archaeological Reconnaissance of Nolin River Lake, Edmonson, Grayson, and Hart Counties, Kentucky*. U.S. Army Corp of Engineers, Louisville.

French, Michael W., David W. Schatz, Anne T. Bader, and Richard J. Stallings
2002 *Phase I Intensive Survey and Deep Subsurface Reconnaissance of Portions of the Glasgow Outer Loop and Phase II Archaeological Evaluations of 15Bn82 and 15Bn84 in Barren County, Kentucky*. AMEC Earth & Environmental, Louisville.

Hanson, Lee H., Jr., and Robert C. Dunnell
1964 Archaeological Survey of the Green River Reservoir. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Prentice, Guy
1989 *Mammoth Cave National Park Archaeological Inventory Project Interim Report - 1988 Investigations*. National Park Service, Southeast Archaeological Center, Tallahassee, Florida.

Schwartz, Douglas W.
1960 An Archaeological Survey of the Nolin River Reservoir. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Sloan, Tacoma G., and Douglas W. Schwartz
1960 Archaeological Survey of Mammoth Cave National Park. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Watson, Patty Jo, and Kenneth C. Carstens
1978 *July Report of Archaeological Survey and Testing, Mammoth Cave National Park*. Cave Research Foundation, St. Louis.

1982 *Archaeological Survey and Testing, Mammoth Cave National Park*. National Park Service, Tallahassee.

EXCAVATIONS

The highest number of sites tested in the Green River Management Area are in the Ohio River II Section (n=128 or 35.2 percent) (Table 2.4). Half as many sites have been tested in each of the Western Coalfield and Upper Green River sections (Table 2.4). Overall, there has been a slight decrease in the number of sites tested in this management area since 1987, though both the Western Coalfield and Upper Green River sections witnessed an increase in tested sites (Table 2.4).

Nearly 18 percent of the excavated sites in Kentucky are in the Green River Management Area; the only area with more excavated sites is the Bluegrass Management Area (Table 2.1). Interestingly, more sites have been excavated in the Western Coalfield Section than any other section of this management area; most of these projects were completed before 1987 (Table 2.4). This is largely due to the number of Archaic sites along the Green River that have been the focus of archaeological investigations since the 1930s. Despite the relatively high number of sites that have been tested in the Ohio River II Section, only seven have been excavated—most of them since 1987 (Table 2.4). The reports of some of the more significant testing and excavation projects in the Green River Management Area are listed below.

<u>Ohio River II Section</u>

Bader, Anne T.

1991 *Phase II Archaeological Investigation on the Beech Fork (15Bc168) and the Clover Creek Church (15Bc169) Sites in Breckinridge County, Kentucky*. Archaeological Resources Consultant Services, Louisville.

1996 *A Phase III Archaeological Data Recovery at the Rockmaker Site, 15Bc138, Breckinridge County, Kentucky*. MAAR Associates, Newark, Delaware.

Bader, Anne T., and Tim Atwell

1993 *Phase III Data Recovery at the Beech Fork Site (15Be168), Breckinridge County*, Kentucky. Archaeology Resources Consulting Services, Louisville.

Creasman, Steven D.

1993 *A Phase II National Register Evaluation of the Clark Site (15Da32) and the ABE Carter Site (15Da33) in the Proposed Owensboro-Daviess Industrial Park, Daviess County, Kentucky*. Cultural Resource Analysts, Lexington.

Evans, Martin, Stephen Mocas, Roger Moeller, Renee Black, and Anthony O. Clark

1994 *Phase III Archaeological Investigation of the Yellowbank Site (15Bc164) in Breckinridge County, Kentucky*. Archaeology Resources Consultant Services, Louisville.

Maggard, Greg, and David Pollack

2006 *The Highland Creek Site: Middle to Late Archaic Wetland Utilization in Western Kentucky*. Research Report No. 5. Kentucky Archaeological Survey, Lexington.

Schenian, Pamela A.
1988 *Report of the Archaeological Mitigation of the Onionville Mine Complex, at Approximate Green River Mile 31.8, Henderson County, Kentucky*. Archaeology Service Center, Murray State University, Murray, Kentucky.

Sussenbach, Tom
1991 *Archaeological Investigations at the Proposed Scott Paper Plant in Daviess County, Kentucky*. Archaeological Report No. 238. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

1992 The Yankeetown Occupation at the Foster Site in Daviess County, Kentucky. In *Current Archaeological Research in Kentucky: Volume Two*, edited by David Pollack and A. Gwynn Henderson, pp. 103-118. Kentucky Heritage Council, Frankfort.

Versluis, Vincent
2004 *Phase II Archaeological Testing of Sites 15He847, 15He848, 15He850, 15He852, 15He855, 15He863, and 15He873 for a Patriot Coal Mining Permit Area (Permit Application Number 851-0030) Near Hebbardsville, Henderson County, Kentucky*. Great Rivers Archaeological Services, Burlington, Kentucky.

Wagner, Mark J, Tracey Sandefur, Charles Foor, Lucretia Kelly, and Kathryn E. Parker
1992 *Phase III Archaeological Investigations at the James L. Brown Farmstead (15He683) Green Coal Company Permit 851-0006 Henderson County, Kentucky*. American Resources Group, Carbondale, Illinois.

Webb, William S., and William D. Funkhouser
1931 *The Tolu Site in Crittenden County, Kentucky*. Reports in Archaeology and Anthropology 1(5). University of Kentucky, Lexington.

Western Coalfield Section

Crothers, George Martin
1999 *Prehistoric Hunters and Gatherers, and the Archaic Period Green River Shell Middens of Western Kentucky*. Unpublished Ph.D. dissertation, Department of Anthropology, Washington University, St. Louis, Missouri.

Hammerstedt, Scott
2006 *Mississippian Construction, Labor, and Social Organization in Western Kentucky*. Unpublished Ph.D. dissertation, Department of Anthropology, Pennsylvania State University, University Park.

Hensley, Christine Kay
1994 *The Archaic Settlement System of the Middle Green River Valley, Kentucky*. Unpublished Ph.D. dissertation, Department of Anthropology, Washington University, St. Louis, Missouri.

Hockensmith, Charles D.
1991 The Evans Shelter: An Early Mississippian Camp in Butler County, Kentucky. In *Studies in Kentucky Archaeology*, edited by Charles D. Hockensmith, pp. 133-151. Kentucky Heritage Council, Frankfort.

Marquardt, William H., and Patty Jo Watson (editors)
2005 *Archaeology of the Middle Green River Region, Kentucky*. University Press of Florida, Gainseville.

McBride, Stephen W., and James P. Fenton
1996 *Phase II Testing of 15McL137 at the KY 81 Bridge over the Green River at Calhoun-Rumsey McLean County, Kentucky*. Wilbur Smith Associates, Lexington, Kentucky.

Niquette, Charles M. (editor)
1991 *Excavations at the Andalex Village (15Hk22), Hopkins County, Kentucky*. Cultural Resource Analysts, Lexington.

Olmanson, Thor
2003 *Phase II Evaluation of Archaeological Sites 15Hk277, 15Hk278, 15Hk279, and 15Hk280: An Archaic Hilltop Site and Surrounding Rockshelters in Hopkins County, Kentucky*. Thor A. Olmanson, Columbia, Kentucky.

Rolingson, Martha A.
1961 *The Kirtley Site: A Mississippian Village in McLean County, Kentucky*. Transactions of the Kentucky Academy of Science: 22.

Shaffer, Scott C.
2000 *Phase II Archaeological Testing and National Register of Historic Places Eligibility Assessment at Site 15Mu196, Muhlenberg County, Kentucky*. Shaffer Archaeological and Historical Consulting, Madisonville, Kentucky.

Smith, Harold E.
1993 *A Phase II National Register Evaluation of the Two Upland Mississippian Sites, 15Hk208 and 15Hk213, within the Clear Creek/Tradewater Drainage, Hopkins County, Kentucky*. Vaughan Engineering, Madisonville, Kentucky.

1997 *Small Upland Mississippian Sites in the Western Coalfields of Kentucky: A Report on Archaeological Investigations at the Perkins (15Hk214) and Holland (15Hk248) Sites, Hopkins County, Kentucky*. Vaughan Engineering, Madisonville, Kentucky.

Webb, William S.
1946 *Indian Knoll, Site Oh2, Ohio County, Kentucky*. Reports in Archaeology and Anthropology 4(3), Part I. University of Kentucky, Lexington.

1950 *The Carlson Annis Mound, Site 5, Butler County*. Reports in Archaeology and Anthropology 7(4). University of Kentucky, Lexington.

1951 *The Parrish Village Site, Site 45, Hopkins County, Kentucky*. Reports in Archaeology and Anthropology 7(6). University of Kentucky, Lexington.

Webb, William S., and William G. Haag
1940 *Cypress Creek Villages, Sites 11 and 12, McLean County, Kentucky*. Reports in Archaeology and Anthropology 4(2). University of Kentucky, Lexington.

Young, Jon Nathan
1962 *Annis Mound: A Late Prehistoric Site on the Green River*. Unpublished Master's thesis, Department of Anthropology, University of Kentucky, Lexington.

Pennyroyal Section

Andrews, Susan C., James P. Fenton, Tracey A. Sandefur, and Stephen W. McBride
2004 *"The Necessary, Durable, Useful, and Ornamental…" Archaeology of a Transitional Frontier Farmstead, Site 15Lo168, the John Arnold Farmstead, Logan County, Kentucky*. Wilbur Smith Associates, Lexington.

Applegate, Darlene
2000 The Watkins Site (15Lo12) Revisited: Previous Research, New Interpretations, and Recent Artifact Analysis. In *Current Archaeological Research in Kentucky: Volume Six*, edited by David Pollack and Kristen J. Gremillion, pp. 121-144. Kentucky Heritage Council, Frankfort.

Boedy, Randall D.
1983 *Archaeological Mitigation of 15Ca4 and Testing of 15Ca51 in the Corridor of the Improvements to the Wastewater Treatment Facility of the City of Princeton, Caldwell County, Kentucky*. Department of Anthropology, Murray State University, Murray, Kentucky.

Cambron, James W.
1974 Savage Cave Site. *Journal of Alabama Archeology* 20(2):204-215.

Fiegel, Kurt H.
1995 A Summary of the 1991-1995 Archaeological and Archival Investigations at the South Union Shaker Village in Logan County, Kentucky. In *Historical Archaeology in Kentucky*, edited by Kim A. McBride, W. Stephen McBride, and David Pollack, pp. 369-389. Kentucky Heritage Council, Frankfort.

Kreisa, Paul P, Jacqueline M. McDowell, and Gregory R. Walz
2002 *National Register of Historic Places Evaluation of Six Prehistoric Archaeological Sites at Fort Campbell, Kentucky and Tennessee*. Public Service Archaeology Program, University of Illinois, Urbana-Champaign.

Mansberger, Floyd, and Ronald Deiss
1990 *Historical Archaeology and the Sisters' Privy, Shakertown, South Union, Kentucky*. Fever River Research, Springfield, Illinois.

Schock, Jack M., and Teresa Weis Langford
1982 *Archaeological Data Recovery at Six Sites at Barren River Lake in Allen and Barren Counties, Kentucky*. Department of Sociology and Anthropology, Western Kentucky University, Bowling Green.

Webb, William S., and William D. Funkhouser
1929 *The Williams Site in Christian County, Kentucky*. Reports in Archaeology and Anthropology 1. University of Kentucky, Lexington.

Upper Green River Section

Bradbury, Andrew

1996 *A National Register Evaluation of Twelve Sites in Adair, Cumberland and Metcalf Counties, Kentucky*. Cultural Resource Analysts, Lexington, Kentucky.

Duffield, Lathel F.

1966 The Robert Dudgeon Site: A Stratified Archaic Site in the Green River Reservoir, South Central Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

French, Michael W., David W. Schatz, Anne T. Bader, and Richard J. Stallings

2002 *Phase I Intensive Survey and Deep Subsurface Reconnaissance of Portions of the Glasgow Outer Loop and Phase II Archaeological Evaluations of 15Bn82 and 15Bn84 in Barren County, Kentucky*. AMEC Earth & Environmental, Louisville.

Fryman, Frank B., Jr.

1968 The Corbin Site: A Possible Early Component of the Green River Phase of the Mississippi Tradition in Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Hanson, Lee H., Jr.

1964 The Jewell Site, Bn21, Barren County, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

1970 *The Jewell Site, Bn21, Barren County, Kentucky*. Miscellaneous Paper No. 8. Tennessee Archaeological Society, Knoxville.

Lowthert, William, Carl Shields, and David Pollack

1998 *Mississippian Adaptations along the Barren River in South Central Kentucky*. Research Report No. 1. Kentucky Archaeological Survey, Lexington.

Watson, Patty Jo

1969 *The Prehistory of Salts Cave, Kentucky*. Reports of Investigations No. 16. Illinois State Museum, Springfield.

Watson, Patty Jo (editor)

1974 *Archeology of the Mammoth Cave Area*. Academic Press, New York.

Webb, William S., and William D. Funkhouser

1934 *The Occurrence of the Fossil Remains of Pleistocene Vertebrates in the Caves of Barren County, Kentucky*. Reports in Archaeology and Anthropology 3(2). University of Kentucky, Lexington.

MANAGEMENT AREA 3 (SALT RIVER)

The Salt River Management Area is one of the smallest in Kentucky, representing less than 11 percent of the land area in the state (Table 2.1). This area contains nearly 3,000 sites, resulting in a site density of 0.26 sites/km^2, which is higher than all of the other management areas, with the exception of the Upper Kentucky/Licking area, which has a site density of 0.28 sites/km^2. Almost two-thirds of the sites in this management area were recorded before 1987 (n=1,888 or 63.7 percent), with 58.3 percent of these sites being documented during the course of major surveys (Table 2.6; Figure 2.4). Sites documented by major surveys have dropped substantially since 1987, with those documented by such surveys representing only 12.5 percent (n=134) of the sites recorded in this management area in the last 20 years. That slightly more than three times as many reports were prepared after 1987 relative to before 1987 indicates that most of the sites documented in this management area were recorded during the course of projects that encompassed less than 400 ha or recorded fewer then 30 sites.

Open habitations without mounds comprise the most prevalent site type in this management area (n=2,153 or 72.7 percent) (Table 2.7). The proportion of this site type is higher than in any other management area. The next most common site type is historic farm (n=460 or 15.5 percent) (Table 2.7). There are several mound-related sites (i.e., open habitation with mound(s), earth mound, and mound complex) (n=48), but not as many as most of the other management areas (Table 2.7). Sites classified as open habitation with mound(s) (n=5) are relatively scarce and widely scattered across the management area.

Relatively few archaeological sites in the Salt River Management Area have been listed on the National Register of Historic Places (n=10), with most being listed before 1987 (Table 2.6; Figure 2.4). The only area with fewer sites listed in the National Register of Historic Places is the Upper Cumberland Management Area. Three of the National Register properties in the Salt River Management Area are cave sites (15Jf200, 15Jf537, and 15Hd15), and one is a rockshelter (15Bu236). This is of interest in part because this management area has relatively few cave and rockshelter sites (n=46 or 1.5 percent) compared to the other management areas (with the exception of the Purchase and Bluegrass management areas).

Less than three percent of this management area has been surveyed by professional archaeologists (Table 2.6). Two survey clusters are evident in Figure 2.4; they are the result of several projects at Fort Knox and in the Taylorsville Lake area. Another cluster of surveys is associated with cultural resource management projects in and around Louisville in Jefferson County. Additional surveys have been conducted as part of cultural resource management projects related to bridge and highway construction and general development throughout this management area. Major surveys that have been conducted in the Salt River Management Area are listed below.

Table 2.6. Salt River Management Area Data.

		Salt River	Percent
Area (km^2)		1,1398	
Percent		100.0	
Area Surveyed (km^2)		332	
Percent		2.9	
Sites			
	Before 1987	1,888	63.7
	Since 1987	1,075	36.3
	Total	2,963	100.0
	Percent	100.0	
Reports			
	Before 1987	197	23.1
	Since 1987	655	76.9
Total		852	100.0
Percent		100.0	
Major Surveys			
	Before 1987	14	77.8
	Since 1987	4	22.2
	Total	18	100.0
	Percent	100.0	
Major Surveys No. Sites			
	Before 1987	1,101	89.1
	Since 1987	134	10.9
	Total	1,235	100.0
	Percent	100.0	
Tested Sites			
	Before 1987	222	67.7
	Since 1987	106	32.3
	Total	328	100.0
	Percent	100.0	
Excavated Sites			
	Before 1987	9	30.0
	Since 1987	21	70.0
	Total	30	100.0
	Percent	100.0	
National Register Sites			
	Before 1987	8	80.0
	Since 1987	2	20.0
	Total	10	100.0
	Percent	100.00	

Table 2.7. Distribution of Site Types within the Salt River Management Area.

Site Type	Salt River	Percent
Open Habitation w/out mound(s)	2,153	72.7
Isolated Find	19	0.6
Rockshelter	31	1.0
Cave	15	0.5
Quarry	6	0.2
Stone Mound	20	0.7
Earth Mound	31	1.0
Mound Complex	12	0.4
Petroglyph/Pictograph	2	0.1
Non-Mound Earthwork	3	0.1
Workshop	44	1.5
Isolated Burial	1	0.0
Cemetery	22	0.7
Specialized Activity Site	52	1.8
Open Habitation w/ Mound(s)	5	0.2
Historic Farm	460	15.5
Industrial	23	0.8
Military	7	0.2
Other	57	1.9
Total	2,963	100.0

MAJOR SURVEYS

Boedy, Randall D.
1999 *A Phase I Archaeological Survey of the Wilcox Urban Site Expansion Area, Training Areas 16, 17, and 18, Bullitt County, Kentucky*. Daniel Boone National Forest, USDA Forest Service, Winchester, Kentucky.

Boisvert, Richard A.
1977 *A Reconnaissance and Evaluation of Archaeological Sites in Hardin County, Kentucky*. Archaeological Survey Report No. 5. Kentucky Heritage Commission, Frankfort.

Chapman, L., William O. Autry, Jr., Betty J. McGraw, and N. Emig
n.d. Report on Archaeological Investigations for the West County Expansion Program of the Louisville and Jefferson County, Kentucky Metropolitan Sewer District. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Claggett, Stephen R., and J. Ned Woodall
1976 An Archaeological Survey of Bernheim Forest, Bullitt and Nelson Counties, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Driskell, Boyce N., and Nancy O'Malley
1979 *An Archaeological Survey and Assessment of Areas to be Modified at the Wilcox Gunnery Range, Fort Knox, Kentucky*. Archaeological Report No. 15. Department of Anthropology, University of Kentucky, Lexington.

Fenwick, Jason M.
1976 *An Archaeological Survey of the Proposed Lincoln Trail Industrial Park Site in Hardin County, Kentucky*. Ohio Valley Archaeological Research Associates, Lexington.

Granger, Joseph E., and Philip J. DiBlasi
1975a *An Archaeological Reconnaissance of the Jefferson Freeway, Sections 1-6 and 10, Jefferson County, Kentucky*. University of Louisville Archaeological Survey, Louisville.

1975b *An Archaeological Reconnaissance of the Riverport Industrial Park, Jefferson County, Kentucky*. University of Louisville Archaeological Survey, Louisville.

Granger, Joseph E., and J. E. Hoehler
1971 *The Hoehler Collection: A Survey of Sites in North Central Kentucky*. Archaeological Survey Report 4. University of Louisville Archaeological Survey, Louisville.

Hale, John R.
198l *A Survey of Archaeological Sites in Otter Creek Park, Meade County, Kentucky. Toward a Research and Management Design: Cultural Resources Studies in the Falls Region of Kentucky, Volume II*. University of Louisville Archaeological Survey, Louisville.

Leedecker, Charles H.
1978 *Archaeological Survey and Evaluation of the Proposed Taylorsville Lake Project Area, Kentucky*. Unpublished Master's thesis, Department of Anthropology, George Washington University, Washington, D.C.

McGraw, Betty J.
1976 Archaeological Survey and Testing in the Proposed Taylorsville Reservoir in Anderson, Spencer, and Nelson Counties, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

O'Malley, Nancy, Boyce N. Driskell, Julie Riesenweber, and Richard A. Levy
1980 *Stage I Archaeological Investigations at Fort Knox, Kentucky*. Archaeological Report No. 16. Department of Anthropology, University of Kentucky, Lexington.

Pritchard, James C., and Christy W. Pritchard
2004 *Phase I Investigations in Training Area 18 and the Wilcox Range at the US Army Armor Center and Fort Knox in Bullitt County, Kentucky*. Gray and Pape, Cincinnati, Ohio.

Pritchard, James C., Maureen S. Meyers, and Bradley S. Bowden
2004 *Phase I Archaeological Survey of Training Areas 2-10, 12-14, 16, and 17, U.S. Army Garrison Fort Knox, Fort Knox, Kentucky*. Gray and Pape, Cincinnati, Ohio.

Robinson, Kenneth W., Thomas W. Gatus, and Robert L. Brooks
1979 *Archaeological Resources Reconnaissance, Survey, and Evaluation, Taylorsville Lake, Salt River Basin, Spencer, Anderson, and Nelson Counties, Kentucky: 1978 Season*. Archaeological Report No. 7. Department of Anthropology, University of Kentucky, Lexington.

Sussenbach, Tom, and Dan B. Davis
1995 *Phase I Archaeological Survey for the KY 555 Extension from the Bluegrass Parkway to KY 248 in Anderson, Nelson, and Washington Counties, Kentucky*. Archaeological Report No. 359. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

EXCAVATIONS

A relatively high number of sites in the Salt River Management Area have been tested (n=328); most of these projects were completed before 1987 (Table 2.6). At the time of the previous state plan, this management area had the most tested sites, but it has since been surpassed by the Green River and Bluegrass Management Areas (Table 2.1). While there has been a decrease in the number of sites tested relative to other management areas, a large number of sites have been excavated within the Salt River Management Area. In fact slightly more than one-fifth of the sites excavated since 1987 are located in this management area, with most being located in Jefferson County (Table 2.6). The reports of some of the more significant test and larger-scale excavations that have been conducted in this management area are listed below.

Anslinger, C. Michael, Albert M. Pecora, Charles M. Niquette, and Jonathan P. Kerr
1994 *Salvage Excavations at the Railway Museum Site (15Jf630), Jefferson County, Kentucky*. Cultural Resource Analysts, Lexington.

Bader, Anne T.
2003 *Archaeological Data Recovery at the Muhammad Ali Center Parking Garage Construction Site, Louisville, Jefferson County, Kentucky*. AMEC Earth & Environmental, Louisville.

Bader, Anne T., and Joseph E. Granger
1989 *Recent Archaeological Investigations on the Kentucky Air National Guard Site (15JF267), Jefferson County, Kentucky*. Granger Consultants, Louisville.

Boedy, Randall D., and Charles M. Niquette
1987 *A Phase III Archaeological Examination of the Danville Tank Site (15Bo16), Boyle County, Kentucky*. Cultural Resource Analysts, Lexington.

Brooks, Robert L.
1985 The Old Bear Site (15Sh18): An Upland Camp in the Western Outer Bluegrass Region. In *Woodland Period Research in Kentucky,* edited by David Pollack, Thomas N. Sanders, and Charles D. Hockensmith, pp. 110-123. Kentucky Heritage Council, Frankfort.

Bybee, Alexandra D.
2001 *A National Register Evaluation of Site 15Mn361 in Marion County, Kentucky*. Cultural Resource Analysts, Lexington.

Collins, Michael B. (editor)
1979 *Excavations at Four Archaic Sites in the Lower Ohio Valley, Jefferson County, Kentucky. Vols. I and II*. Occasional Papers in Anthropology No. 1. Department of Anthropology, University of Kentucky, Lexington.

Davis, Daniel B., Leon Lane, Nancy O'Malley, and Jack Rossen
1997 *Phase II Testing and Phase III Mitigation of Three Sites in the Bardstown Industrial Park, Nelson County, Kentucky*. Archaeological Report No. 386. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Driskell, Boyce N., Cynthia E. Jobe, Christopher A. Turnbow, and Mary E. Dunn
1984 *The Archaeology of Taylorsville Lake: Archaeological Data Recovery and Synthesis*. Archaeological Report No. 85. Department of Anthropology, University of Kentucky, Lexington.

French, Michael W., and Anne T. Bader
2004 *Interim Report: Intensive Archaeological Investigation at the Shippingport Site (15Jf702) at the McAlpine Locks and Dam, Louisville, Kentucky (2003-2004 Field Season)*. AMEC Earth & Environmental, Louisville.

2006 *Second Interim Report: Intensive Archaeological Investigation at the Shippingport Site (15Jf702) at the McAlpine Locks and Dame, Louisville, Kentucky (2005-2006 Field Season)*. AMEC Earth & Environmental, Louisville.

Granger, Joseph E.
1988 Late/Terminal Archaic Settlement in the Falls of the Ohio River Region of Kentucky: An Examination of Components, Phases, and Clusters. In *Paleoindian and Archaic Research in Kentucky*, edited by Charles D. Hockensmith, David Pollack, and Thomas N. Sanders, pp. 153-203. Kentucky Heritage Council, Frankfort.

Granger, Joseph E., Edgar E. Hardesty, and Anne T. Bader
1992 *Phase III Data Recovery Archaeology at Habich Site (15Jf550) and Associated Manifestations at Guthrie Beach, Jefferson County, Kentucky*. Archaeology Resources Consultant Services, Louisville.

Hockensmith, Charles D., David Pollack, Valerie A. Haskins, and Jack Rossen
1998 The Shelby Lake Site: A Late Woodland Upland Camp in Shelby County, Kentucky. In *Current Research in Kentucky: Volume 5*, edited by Charles D. Hockensmith, Kenneth C. Carstens, Charles Stout, and Sara J. Rivers, pp. 121-162. Kentucky Heritage Council, Frankfort.

McBride, Kim A.
1995 Archaeology at the Shaker Village at Pleasant Hill: Rediscovering the Importance of Order. In *Historical Archaeology in Kentucky*, edited by Kim A. McBride, W. Stephen McBride, and David Pollack, pp. 391-408. Kentucky Heritage Council, Frankfort.

McKelway, Henry S.
1995 *Historic and Prehistoric Archeology at Falls Harbor, Jefferson County, Kentucky*. Cultural Resource Analysts, Lexington.

Mansberger, Floyd

1990 Archaeological Investigations at the Cathedral of the Assumption, Louisville, Kentucky. Fever River Research, Springfield, Illinois.

Miller, Sarah E.

2002 *Old St. Thomas: Initial Investigations and Archaeological Assessments of St. Thomas Catholic Church and Surrounding Property, Nelson County, Kentucky*. Report No. 51. Kentucky Archaeological Survey, Lexington.

Mocas, Stephen T.

1976 *Excavations at Arrowhead Farm (15Jf237)*. University of Louisville Archaeological Survey, Louisville.

1995 The SARA Site (15Jf187): An Early Late Woodland Site in the Falls of the Ohio River Region. In *Current Archaeological Research in Kentucky: Volume Three*, edited by John F. Doershuk, Charles A. Bergman, and David Pollack, pp. 113-136. Kentucky Heritage Council, Frankfort.

O'Malley, Nancy

1987 *Middle Class Farmers on the Urban Periphery: Historic Archaeological Investigations of the Johnson/Bates Farmstead Site, Jefferson County, Kentucky*. Archaeological Report No. 162. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Stallings, Richard, and Nancy Ross-Stallings

1996 *Phase II Archaeological Investigation of Site 15HD478 Located Near Elizabethtown, Hardin County, Kentucky*. Cultural Horizons, Harrodsburg, Kentucky.

Stottman, M. Jay

1996 *Out of Sight, Out of Mind: An Archaeological Analysis of the Perception of Sanitation*. Unpublished Master's thesis, Department of Anthropology, University of Kentucky, Lexington.

1999 *Archaeological Excavations at the Old Bank Building, Shepherdsville, Bullitt County, Kentucky*. Report No. 17. Kentucky Archaeological Survey, Lexington.

Stottman, M. Jay, Anne T. Bader, and Joseph E. Granger

1992 *A Phase Three Archaeological Investigation of the Hall-Standiford Site (15JF571) on Shewmaker Air Base, Standiford Field Airport, Jefferson County, Kentucky*. Archaeology Resources Consultant Services, Louisville.

Stottman, M. Jay, and Joseph E. Granger

1993 *The Archaeology of Louisville's Highland Park Neighborhood, Jefferson County, Kentucky*. Archaeology Resources Consultant Services, Louisville.

Stottman, M. Jay, and Matthew E. Prybylski

2004 *Archaeological Research of the Riverside Wash House.* Research Report No. 7. Kentucky Archaeological Survey, Lexington.

2007 *An Archaeological Survey of the Portland Wharf Site (15Jf418), Louisville, Kentucky*. Report No. 68. Kentucky Archaeological Survey, Lexington.

Stottman, M. Jay, and Jeffrey L. Watts-Roy
2000 *Archaeological Research of the Riverside Detached Kitchen*. Research Report No. 4. Kentucky Archaeological Survey, Lexington.

Young, Amy L.
1995 Archaeology at Locust Grove Plantation, Jefferson County, Kentucky. In *Current Archaeological Research in Kentucky: Volume Three*, edited by John F. Doershuk, Charles A. Bergman, and David Pollack, pp. 279-296. Kentucky Heritage Council, Frankfort.

MANAGEMENT AREA 4 (UPPER CUMBERLAND)

The Upper Cumberland Management Area has the fourth highest number of sites (n=3074), representing over thirteen percent of the sites in the state (Table 2.1). This is proportional to the area encompassed by the Upper Cumberland Management Area, which represents 12.0 percent of the area of the state (Table 2.1). Almost two-thirds of the sites have been recorded since 1987 (n=1,942 or 63.2 percent). The overwhelming majority of the sites (n=2,182 or 71.0 percent) are in the Lake Cumberland Section (Table 2.8). McCreary County (Lake Cumberland Section) has the highest number of sites (n=1,185) of any Kentucky county (Figure 2.1). This figure represents nearly 39 percent of all sites in the Upper Cumberland Management Area, and over half of the sites in the Lake Cumberland Section. Most of these sites were documented during the course of federally mandated surveys undertaken by the Daniel Boone National Forest, and the Big South Fork National Recreation Area.

As with the other management areas, the majority of sites are identified as open habitations without mounds (n=1,241 or 40.4 percent) (Table 2.9). Of interest is the high percentage of rockshelter or cave sites (n=1,140 or 37.1 percent) (Table 2.9). The only region with more of these site types is the Upper Kentucky/Licking Management Area. Historic farm sites are also relatively abundant (n=428 or 13.9 percent). Few sites are classified as open habitations with mounds, earth mounds, or mound complexes (n=27); no other management area has fewer earth-mound related sites. No sites in this management area have been classified as nonmound earthworks (Table 2.9).

The Upper Cumberland Management Area has the fewest number of sites (n=6) listed on the National Register of Historic Places in the state (see Figure 2.5). All are located in the Southeastern Mountains Section, and all but one was listed prior to 1987. Carter et al. (1990:48) suggest that the low number of listed National Register sites is consistent with the very low number of sites recorded, tested, and excavated in this region. Since 1987, the number of sites recorded and tested in this management area has more than doubled, and the number of excavated sites has nearly quadrupled (Table 2.8). Although only one additional site in this area has been listed on the National Register as a result of these projects, several have been determined eligible for listing in the National Register of Historic Places (e.g., Main [15Bl35], Mills [15Bl80], and Bailey [15Bl100]). The paucity of National Register sites in this management area may simply reflect a lack of effort directed towards nominating sites, rather than an indication of this region's research potential.

The total area surveyed in this management area ranks second in the state (Table 2.1; see distribution of surveys in Figure 2.5). Many of the surveys that have been conducted in the Lake Cumberland Section are associated with the Daniel Boone National Forest, Cumberland River/Lake, highway construction, Big South Fork National River and Recreation Area, and coal mining operations. In the Southeastern Mountains Section, surveys have primarily been associated with the Daniel Boone National Forest, timber sales, coal mining operations, and highway construction. Of the 30 major surveys conducted in this management area, most are located within the Lake Cumberland Section (n=20 or 66.7 percent). This is the only management area where there has been

Table 2.8. Upper Cumberland Management Area: Section Data.

	Lake Cumberland	Southeastern Mountains	Total	Percent
Area (km^2)	7054	5460	12514	
Percent	56.4	43.6	100.0	
Area Surveyed (km^2)	323	293	616	
Percent	4.6	5.4	4.9	
Sites				
Before 1987	726	406	1132	36.8
Since 1987	1,456	486	1942	63.2
Total	2182	892	3074	100.0
Percent	71.0	29.0	100.0	
Reports				
Before 1987	73	65	138	12.8
Since 1987	488	454	942	87.2
Total	561	519	1080	100.0
Percent	51.9	48.1	100.0	
Major Surveys				
Before 1987	8	5	13	43.3
Since 1987	12	5	17	56.7
Total	20	10	30	100.0
Percent	66.7	33.3	100.0	
Major Surveys No. Sites				
Before 1987	676	259	935	57.0
Since 1987	496	210	706	43.0
Total	1,172	469	1641	100.0
Percent	71.4	28.6	100.0	
Tested Sites				
Before 1987	31	13	44	44.9
Since 1987	30	24	54	55.1
Total	61	37	98	100.0
Percent	62.2	37.8	100.0	
Excavated Sites				
Before 1987	2	1	3	21.4
Since 1987	5	6	11	78.6
Total	7	7	14	100.0
Percent	50.0	50.0	100.0	
National Register Sites				
Before 1987	0	5	5	83.3
Since 1987	0	1	1	16.7
Total	0	6	6	100.0
Percent	0.0	100.0	100.0	

an increase in major surveys since 1987 (Table 2.8). The number of sites recorded, however, documented during the course of major surveys actually decreased (Table 2.8). As with the other management areas, there has been a significant increase in the number of reports produced since 1987. Only five reports had been produced in this area before 1970; 133 reports were completed between 1970 and 1987. But since 1987, over 900 reports have been produced, at an average rate of 60 reports per year. This is comparable to other management areas, and highlights the increase in the amount of archaeological work that has been conducted in recent decades. Not surprisingly, most of these efforts are the result of cultural resource management projects, particularly small surveys (i.e., those that encompass areas less than 400 ha or recorded fewer than 30 sites). Reports of the major surveys that have been conducted in the Upper Cumberland Management Area are listed below by section.

Table 2.9. Distribution of Site Types by Section within the Upper Cumberland Management Area.

Site Type	Lake Cumberland	Southeast Mountains	Total	Percent
Open Habitation w/out mound(s)	939	302	1,241	40.4
Isolated Find	5	3	8	0.3
Rockshelter	788	314	1,102	35.8
Cave	37	1	38	1.2
Quarry	9	1	10	0.3
Stone Mound	6	12	18	0.6
Earth Mound	0	6	6	0.2
Mound Complex	2	11	13	0.4
Petroglyph/Pictograph	5	0	5	0.2
Non-Mound Earthwork	0	0	0	0.0
Workshop	13	1	14	0.5
Isolated Burial	4	6	10	0.3
Cemetery	21	16	37	1.2
Specialized Activity Site	33	8	41	1.3
Open Habitation w/ Mound(s)	5	3	8	0.3
Historic Farm	261	167	428	13.9
Industrial	30	13	43	1.4
Military	5	4	9	0.3
Other	19	24	43	1.4
Total	2,182	892	3,074	100.0

MAJOR SURVEYS

Lake Cumberland Section

Boedy, Randall D., and William E. Sharp

1992 *A Phase I Cultural Resource Assessment of the 1st Quarter FY 93 Timber Sales on the London, Somerset and Stearns Ranger Districts Daniel Boone National Forest*. Daniel Boone National Forest, USDA Forest Service, Winchester, Kentucky.

Bybee, Alexandra D., and Ann D'Ambruoso

2003 *Archaeological Survey of the Proposed West Albany Bypass Project in Clinton County, Kentucky*. Cultural Resource Analysts, Lexington.

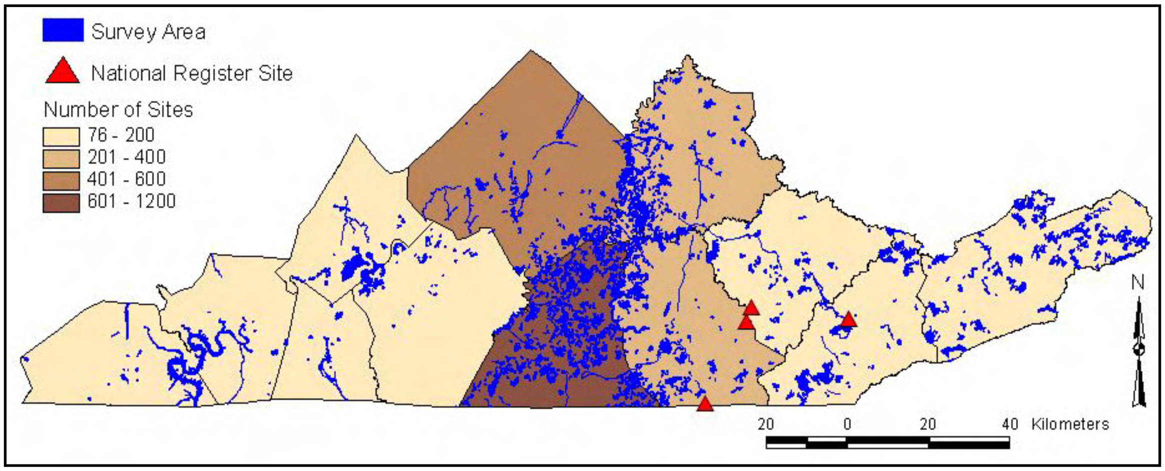

Figure 2.5. Distribution of archaeological sites, National Register sites, and surveys in the Upper Cumberland Management Area.

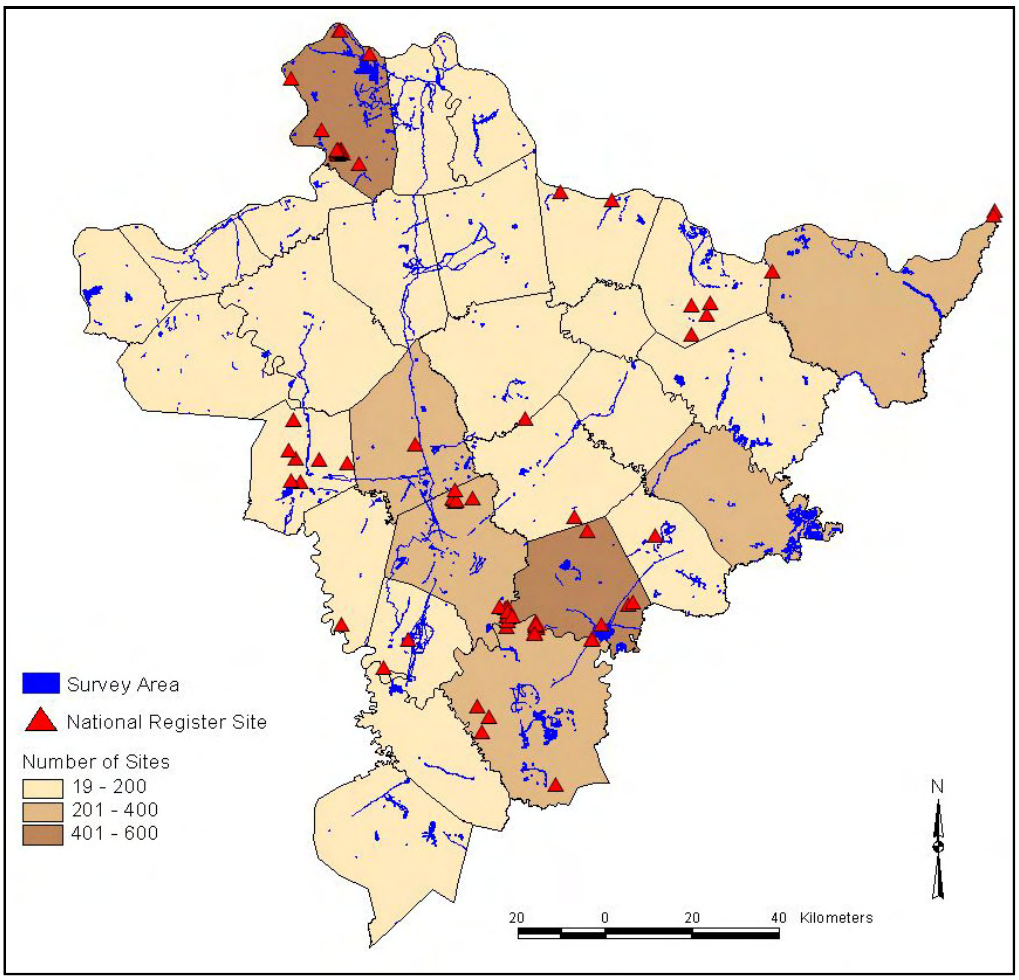

Figure 2.6. Distribution of archaeological sites, National Register sites, and surveys in the Bluegrass Management Area.

Creasman, Steven D.
1993 *An Archaeological Survey of the Proposed Realignment of Kentucky Highway 61, Burkesville-Columbia, in Adair, Cumberland and Metcalfe Counties, Kentucky*. Cultural Resource Analysts, Lexington.

Davis, Daniel B., and Don W. Linebaugh
2001 *A Phase I Archaeological Survey of Improvements to Four Roads within the Big South Fork National River and Recreation Area, McCreary County, Kentucky, and Scott County, Tennessee*. Archaeological Report No. 410. Program for Archaeological Research, Department of Anthropology, University of Kentucky, Lexington.

Ferguson, Terry A., Robert A. Pace, and Jeffery W. Gardner
1983 *An Archaeological Reconnaissance and Testing of Indirect Impact Areas within Selected Development sites of the Big South Fork National River and Recreation Area*. University of Tennessee, Knoxville.

French, Michael W.
1999 *Phase I Archaeological Survey for the Proposed US 127 Expansion and Bypass around Albany, Clinton County, Kentucky*. Division of Environmental Analysis, Kentucky Transportation Cabinet, Frankfort.

2004 *Phase I Archaeological Intensive Survey for the Proposed KY 61 Realignment Right-of-Way and Investigation Buffer in Cumberland County, Kentucky (KYTC Item No. 8-158.04)*. AMEC Earth & Environmental, Louisville.

Gatus, Thomas W.
1983 *A* Reconnaissance and Evaluation of Archaeological Sites in Pulaski County, Kentucky. Report on file, Office of State Archaeology, University of Kentucky, Lexington.

Haag, William G.
1947 Preliminary Appraisal of the Archaeological Resources of Wolfe Creek Dam Reservoir. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Hawkins, Rebecca A., and Scott A. Walley
1993 *Phase I Archaeological Reconnaissance of 1009 Acres in the Stanton, Redbird, Berea, London, Stearns, and Somerset Ranger Districts on the Daniel Boone National Forest*. Algonquin Archaeological Consultants, Cincinnati, Ohio.

Hutchinson, Steven K., Ellen A. Dugan, and Richard S. Levy
1982 *Inventory and Evaluation of Architectural and Engineering Resources of the Big South Fork National River and Recreation Area, Tennessee and Kentucky*. Environmental Consultants, Lexington.

Knudsen, Gary D., and Cecil Ison
1984 *A Cultural Resource Inventory of 1343 Acres, Greenwood and Campbell Land Exchanges*. USDA Forest Service, Daniel Boone National Forest, Stanton, Kentucky.

1985 *A Cultural Resource Assessment of Federal Lands Affected by Deep Mines 5-C and 6 in McCreary County, Kentucky*. USDA Forest Service, Daniel Boone National Forest, Stanton, Kentucky.

Logsdon, Phil
1998 *Phase I Archaeological Resource Survey of Approximately 4.2 Miles of a Realignment of US 127, Clinton County, Kentucky*. Division of Environmental Analysis, Kentucky Transportation Cabinet, Frankfort.

Millican Associates, Inc.
1982 Environmental Inventory: Little South Fork, Wild River, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

O'Steen, Lisa D.
1990 *A Cultural Resource Survey of Tracts in the Daniel Boone National Forest: McCreary, Leslie, Clay, Jackson, Menifee, and Rowan Counties, Kentucky*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

1991 *A Cultural Resource Survey of Sixteen Tracts in the Daniel Boone National Forest, McCreary County, Kentucky*. USDA Forest Service, Daniel Boone National Forest. Winchester, Kentucky.

Prentice, Guy
1993 *Big South Fork National River and Recreation Area Archaeological Resource Survey, 1992 Field Season*. Southeast Archaeological Service Center, National Park Service. Tallahassee, Florida.

Soil Systems, Inc.
1980 Environmental Inventory Cumberland Wild River Kentucky. Report on file, Office of State Archaeology, University of Kentucky, Lexington.

Sussenbach, Tom, Sharp, William E., Spivey, Adonis, and David E. Rotenizer
1991 *Cultural Resource Assessment of Selected Tracts Encompassing 2290 Acres in the Stearns Ranger District, McCreary and Whitley Counties, Kentucky*. Archaeological Report No. 247. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Wilson, Robert C., and Dennis W. Finch
1980 *The Big South Fork National River and Recreation Area: Phase I Archaeological Reconnaissance Survey in McCreary County, Kentucky, Pickett, Fentress, Scott and Morgan Counties, Tennessee*. National Park Service, Tallahassee.

Southeastern Mountains Section

Boedy, Randall, and William E. Sharp
1992 *A Phase I Cultural Resource Assessment of the FY-92 timber Sales and Road Projects on the London, Somerset, and Stearns Ranger Districts, Daniel Boone National Forest*. USDA-Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

Boedy, Randall D., William E. Sharp, and Mary M. White
2003 *An Archaeological Survey of Southern Pine Beetle Areas in the Daniel Boone National Forest, Laurel, Whitley, Pulaski and McCreary Counties, Kentucky*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

Foster, Gary S., and Jack M. Schock
1972 *Archaeological Survey of Proposed Realignment of Highway l19, Harlan and Letcher Counties, Kentucky*. Archaeological Survey Report 4. Department of Sociology and Anthropology, Western Kentucky University, Bowling Green.

Hockensmith, Charles D.
1980 Archaeological Survey along the Cumberland River in Central Knox County, Kentucky. Ms. on file, Kentucky Heritage Council, Frankfort.

Jefferies, Richard W., and Jennifer Flood
1996 Archaeological Survey and Testing of Upper Cumberland Mississippian Sites in Knox and Whitley Counties, Kentucky. In *Current Archaeological Research in Kentucky: Volume Four*, edited by Sara L. Sanders, Thomas N. Sanders, and Charles Stout, pp.138-168. Kentucky Heritage Council, Frankfort.

Rolingson, Martha A., and Douglas W. Schwartz
1963 Archaeological Survey of Laurel River Reservoir. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Schlarb, Eric J., and E. Nicole Mills
2003 *An Archaeological Assessment of the 610 Ha Croushourn Tracts, Harlan County, Kentucky*. Report No. 83. Kentucky Archaeological Survey, Lexington.

Schlarb, Eric J., and Ann Shouse Wilkinson
2003 *An Archaeological Assessment of Two Tracts (1276 Ha), Blanton Forest State Nature Preserve, Harlan County, Kentucky*. Report No. 78. Kentucky Archaeological Survey, Lexington.

Schock, Jack M.
1977 *An Archaeological Survey and Testing of Four Recreation Areas and One Water Line for Laurel River Lake, Laurel and Whitley Counties, Kentucky*. Department of Sociology and Anthropology, Western Kentucky University, Bowling Green.

Soil Systems, Inc.
1979 Environmental Inventory Rockcastle Wild River, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Weinland, Marcia K. and Gerald DeLorenze
1980 Reconnaissance and Evaluation of Archaeological Sites in Knox County, Kentucky. Ms. on file, Kentucky Heritage Council, Frankfort.

EXCAVATIONS

Relatively few sites have been tested in the Upper Cumberland Management Area (n=98) compared to other management areas (only the Purchase Management Area has fewer). Almost two-thirds of these sites (n=61 or 62.2 percent) are located in the Lake Cumberland Section. Similarly, comparatively few sites have been excavated (n=14); the only region with fewer excavated sites is the Upper Kentucky/Licking Management Area.

On the other hand, this is the only management area that exhibited an increase in the number of sites since 1987 (Table 2.1). Overall, most of the archaeological research and resulting reports in the Upper Cumberland region reflect survey efforts, rather than the excavation of significant archaeological sites. Reports of significant excavations are listed below.

<u>Lake Cumberland Section</u>

Bradbury, Andrew P., and Grant L. Day
1999 *Phase III Archaeological Investigations at 15Cu27 and 15Cu31, Cumberland County, Kentucky*. Cultural Resource Analysts, Lexington.

Sussenbach, Tom (editor)
1993 *Archaeological Investigations at the Wolf River Rockshelter (15Cu23) in Cumberland County, Kentucky*. Archaeological Report No. 314. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Haag, William G.
1960 A Proposed Sequence of Occupation of Ceramic Sites in the Wolfe Creek Dam Reservoir. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Lane, Leon, Dennis Stanford, Tom Dillehay, C. Vance Haynes, Carl Shields, and Michael French
1995 Early Paleoindians and Eastern U.S. Rockshelters: Findings and Implications of Test Excavations at Wolfe Shelter (15Cu21). In *Current Archaeological Research in Kentucky: Volume Three*, edited by John F. Doershuk, Christopher A. Bergman, and David Pollack, pp. 1-22. Kentucky Heritage Council, Frankfort.

Lewellyn, Joe P.
1963 A Study of the Skeletal Material from the Long Site. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Prentice, Guy
1995 *Big South Fork National River and Recreation Area Archaeological Resource Survey 1994 Field Season*. Southeast Archaeological Center, National Park Service, Tallahassee, Florida.

Sussenbach, Tom
1997 *Archaeological Evaluations of 15McY570 and 15McY616: Investigations at Two Prehistoric Ridgecrest Sites in the Daniel Boone National Forest, McCreary County, Kentucky*. Sterling Archaeological Consultants, Winchester, Kentucky.

Weinland, Marcia K.
1980 *The Rowena Site, Russell County, Kentucky*. Kentucky Archaeological Association Bulletins 16 and 17.

West, Maxine
1940 Kentucky Geological Survey-University of Michigan Museum of Anthropology Expedition. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Southeastern Mountains Section

Bradbury, Andrew P.
2007 *Data Recovery Excavations at the Cranks Creek Site (15Hl58), Harlan County, Kentucky*. Cultural Resource Analysts, Lexington.

Carmean, Kelli
1994 *Phase II Investigations of the 909 Land Exchange Tracts on the London Ranger District*. USDA-Forest Service, Daniel Boone National Forest. Department of Anthropology, Eastern Kentucky State University, Richmond.

Creasman, Steven D.
1994 *Upper Cumberland Archaic and Woodland Period Archaeology at the Main Site (15Bl35), Bell County, Kentucky*. Cultural Resource Analysts, Lexington.

1995 *Archaeological Investigations at the Mills Site (15Bl80), Bell County, Kentucky*. Cultural Resource Analysts, Lexington.

Jefferies, Richard W., Breitburg, Emanuel, and C. Margaret Scarry
2000 *Archaeological Investigations at Area 2 of the Croley-Evans Site: A Mississippian Mound Center in Southeastern Kentucky.* Report No. 1. Upper Cumberland River Archaeological Project, Department of Anthropology, University of Kentucky. Lexington.

Schock, Jack M.
1977 *Comments and Excavations Plan: Structures and Features at (15Hl304) a Pisgah Culture Site in Harlan County*. Department of Sociology and Anthropology, Western Kentucky University, Bowling Green.

Stokes, B. Jo, and Carl R. Shields
1999 *Woodland Occupations along Clear Creek in Southeastern Kentucky* Research Report No. 2. Kentucky Archaeological Survey, Lexington.

Updike, William D.
1996 *Phase II Archaeological Investigations of Site 15Kx91 in Knox County, Kentucky*. Archaeological Report No. 378. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

MANAGEMENT AREA 5 (BLUEGRASS)

The Bluegrass Management Area has the second highest number of sites (n=4,206), representing nearly 18 percent of the sites in the state. This is commensurate with the area encompassed by this management area (18,835 km^2 or 18 percent of the area of the state) (Table 2.1). Most of the counties in the Bluegrass Management Area have 200 or fewer recorded sites, while five counties have between 201 and 400, and two counties have between 401 and 600 sites (Figure 2.1). Those counties with the highest number of sites are Boone and Clark (Figure 2.1). Many of the sites in these counties have been recorded as a result of cultural resource management (e.g., J.K. Smith Power Station Survey in Clark County [Turnbow et al. 1979]) and university based research projects (e.g., the Boone County Survey Project [Henderson 1995]).

Over half of the sites are located in the Central Bluegrass Section, despite the fact that the proportion of the area surveyed in each section is roughly the same (Table 2.10). The number of sites per area surveyed is also higher in the Central Bluegrass Section (20.6 sites/km^2) compared to the Northern Bluegrass (12.4 sites/km^2) and Eastern Bluegrass Sections (14.6 sites/km^2). The higher frequency of sites in the Central Bluegrass Section may reflect the larger area encompassed by this section (Table 2.10) and the fact that it has been the focus of more archaeological work than the other sections, rather than an actual higher site density.

The majority of sites recorded in the Bluegrass Management Area are open habitations without mound(s) (n=2,904 or 69.0 percent), followed distantly by historic farms (n=551 or 13.1 percent) (Table 2.11). Of interest is the high number of earth mounds (n=206); together with stone mounds (n=63) and other mound-related sites (n=64) these site types account for nearly 8 percent of the sites in this management area. No other management area has as many mounds. Over half of the earth and stone mounds are located in the Central Bluegrass Section.

The Bluegrass Management Area also has a relatively high number of sites listed on the National Register of Historic Places (n=96) (see Figure 2.6). The only management area with more National Register sites is the Upper Kentucky/Licking (n=472) (Table 2.1). Almost two-thirds of the National Register sites are located in the Central Bluegrass Section (n=60 or 62.5 percent) (Figure 2.6). This is likely due to the greater amount of archaeological work that has been conducted in this section, particularly the higher number of testing and excavation projects (Table 2.10). Most of the National Register sites in this management area have been recorded since 1987 (n=56 or 58.3 percent).

Despite the large size of the Bluegrass Management Area and the fact that so many cultural resource management and research projects have been conducted within its boundaries, only a small proportion of its area has been surveyed (250 km^2 or 1.3 percent); no other management area has had a smaller portion of area surveyed (Table 2.1). Yet, the Bluegrass Management Area is second only to the Green River Management Area in the number of major surveys undertaken (Table 2.1). As noted above and by Carter et al. (1990:53), these have been conducted as part of cultural resource management projects and research-based investigations, many of which have been conducted by the University of Kentucky and the Kentucky Heritage Council (until the early 1980s the Kentucky Heritage Commission). In general, surveys in the Bluegrass Management Area have been conducted for construction projects related to highways, various parks (e.g., Fort Boonesboro), power plants, the Daniel Boone National Forest, and the Bluegrass Army Depot. The distribution of all surveys in this management area is depicted in Figure 2.6.

Table 2.10. Bluegrass Management Area: Section Data.

		Central Bluegrass	Northern Bluegrass	Eastern Bluegrass	Total	Percent
Area (km^2)		8340	5612	4883	18835	
	Percent	44.3	29.8	25.9	100.0	
Area Surveyed (km^2)		120	73	57	250	
	Percent	1.4	1.3	1.2	1.3	
Sites						
	Before 1987	1299	444	446	2189	52.0
	Since 1987	1171	459	387	2017	48.0
	Total	2470	903	833	4206	100.0
	Percent	58.7	21.5	19.8	100.0	
Reports						
	Before 1987	161	116	80	357	24.8
	Since 1987	546	298	239	1083	75.2
	Total	707	414	319	1440	100.0
	Percent	49.1	28.8	22.2	100.0	
Major Surveys						
	Before 1987	9	3	6	18	56.3
	Since 1987	7	4	3	14	43.8
	Total	16	7	9	32	100.0
	Percent	50.0	21.9	28.1	100.0	
Major Surveys No. Sites						
	Before 1987	516	141	319	976	68.9
	Since 1987	194	142	105	441	31.1
	Total	710	283	424	1417	100.0
	Percent	50.1	20.0	29.9	100.0	
Tested Sites						
	Before 1987	103	46	65	214	50.0
	Since 1987	126	50	38	214	50.0
	Total	229	96	103	428	100.0
	Percent	53.5	22.4	24.1	100.0	
Excavated Sites						
	Before 1987	19	10	7	36	50.0
	Since 1987	21	14	1	36	50.0
	Total	40	24	8	72	100.0
	Percent	55.6	33.3	11.1	100.0	
National Register Sites						
	Before 1987	28	3	9	40	41.7
	Since 1987	32	24	0	56	58.3
	Total	60	27	9	96	100.0
	Percent	62.5	28.1	9.4	100.0	

Table 2.11. Distribution of Site Types by Section within the Bluegrass Management Area.

Site Type	Central Bluegrass	Northern Bluegrass	Eastern Bluegrass	Total	Percent
Open Habitation w/out mound(s)	1,789	587	528	2904	69.0
Isolated Find	49	7	5	61	1.5
Rockshelter	14	1	5	20	0.5
Cave	10	0	2	12	0.3
Quarry	4	0	2	6	0.1
Stone Mound	36	6	21	63	1.5
Earth Mound	111	53	42	206	4.9
Mound Complex	10	5	9	24	0.6
Petroglyph/Pictograph	1	2	0	3	0.1
Non-Mound Earthwork	12	4	1	17	0.4
Workshop	8	7	4	19	0.5
Isolated Burial	10	0	6	16	0.4
Cemetery	28	18	20	66	1.6
Specialized Activity Site	14	4	0	18	0.4
Open Habitation w/ Mound(s)	18	11	11	40	1.0
Historic Farm	256	161	134	551	13.1
Industrial	27	3	22	52	1.2
Military	12	12	1	25	0.6
Other	61	22	20	103	2.4
Total	2,470	903	833	4,206	100.0

Nearly half of the reports for this management area are from projects conducted in the Central Bluegrass Section (Table 2.10). This section has also been the subject of half of the major surveys conducted in this management area (Table 2.10). The reports for the major surveys conducted within each section are listed below.

MAJOR SURVEYS

<u>Central Bluegrass Section</u>

Brooks, Robert L.

1981 *The Subdivision Project: An Analysis of Archaeological Resources in the South Lexington Vicinity, Fayette County, Kentucky*. Office of State Archaeology, University of Kentucky, Lexington.

Clay, R. Berle

1976 The Auvergne Mound and the Bluegrass Project. Paper presented at the 33rd Annual Meeting of the Southeastern Archaeological Conference, Tuscaloosa, Alabama.

Ensor, H. Blaine, Steven Hunt, Marianne Marek, Anna Presley, Brian Shaffer, David Shanabrook, Donna Shepard, and Philip Waite
1996 *1993 Phase I Cultural Resource Survey and Archaeological Site Recordation Blue Grass Army Depot Madison County, Kentucky*. Geo-Marine, Plano, Texas.

Gatus, Thomas W., and Richard A. Boisvert
1977 *A Reconnaissance and Evaluation of Archaeological Sites in Clark County, Kentucky*. Archaeological Survey Report No. 4. Kentucky Heritage Commission, Frankfort.

Granger, Joseph E., and Amy L. Young
1988 *A Phase I Archaeological Reconnaissance of the Richmond Bypass Project in Madison County, Kentucky*. Presnell Associates, Louisville.

Henderson, A. Gwynn
1998 *Middle Fort Ancient Villages and Organizational Complexity in Central Kentucky*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Kentucky, Lexington.

Hockensmith, Charles D.
1979 An Archaeological Survey of the Raven Run Nature Sanctuary, Fayette County, Kentucky. Office of State Archaeology, University of Kentucky, Lexington.

King, Brian C.
2003 *Archaeological Survey of the US 68 Preferred Alternate Routes (Alternate 9 and Alternate 12) from Bourbon to Nicholas Counties, Kentucky (Item No. 7-310.00)*. Cultural Resource Analysts, Lexington.

McBride, Kim A., and M. Jay Stottman
2000 *A Metal Detector Survey for the Battle of Richmond*. Report No. 29. Kentucky Archaeological Survey, Lexington.

Sandefur, Tracey A., Robert W. Ball, Crista M. Haag, James P. Fenton, and Courtney D. Stall
2004 *Phase I Archaeological Survey of Three Alternates for KY 52, Garrard and Madison Counties, Kentucky*. Wilbur Smith Associates, Lexington.

Sanders, Thomas N., and Marcia K. Weinland
1976 *A Reconnaissance and Evaluation of Archaeological Sites in Franklin County, Kentucky*. Archaeological Survey Report No. 1. Kentucky Heritage Commission, Frankfort.

Schenian, Pamela A.
1989 *An Archeological Reconnaissance of the Proposed Lexington-Somerset AT&T Fiber Optic Cable Line in Boyle, Fayette, Garrard, Jessamine, Lincoln, and Pulaski Counties, Kentucky*. Archeology Service Center, Department of Sociology, Anthropology, and Social Work, Murray State University, Murray, Kentucky.

Schock, Jack M.
1993 *A Cultural Reconnaissance of Approximately 784 Acres for the Proposed Cedar Creek Lake in Lincoln County, Kentucky*. Arrow Enterprises, Bowling Green, Kentucky.

Schock, Jack M., and Terry Weis Langford
1981 *An Archaeological Reconnaissance of the Proposed Spencer Road-Smith l5.5 Mile Long Powerline Route, Clark and Montgomery Counties, Kentucky*. Arrow Enterprises, Bowling Green, Kentucky.

Turnbow, Christopher A., Richard A. Boisvert, Boyce N. Driskell, Cynthia E. Jobe, and Eric Gibson
1979 *A Cultural Resource Assessment of the J.K. Smith Power Station, Clark County, Kentucky*. Archaeological Report No. 18. Department of Anthropology, University of Kentucky, Lexington.

Turnbow, Christopher A., and Cynthia E. Jobe
1981 *Cultural Resource Investigations of the J.K. Smith Power Station, Clark County, Kentucky*. Archaeological Report No. 60. Department of Anthropology, University of Kentucky, Lexington.

Weinland, Marcia K., and Jason M. Fenwick
1979 *A Reconnaissance and Evaluation of Archaeological Sites in Jessamine County, Kentucky*. Archaeological Survey Report No. 10. Kentucky Heritage Commission, Frankfort.

Northern Bluegrass Section

Corso, Robert A., and Joseph E. Wakeman
1992 *Literature Review and Reconnaissance Survey of the Proposed Texas Eastern Products Pipeline Company, Limited Partnership Pipeline in Whitewater and Miami Townships, Hamilton County, Ohio and Boone County, Kentucky*. Archaeological Services Consultants, Columbus, Ohio.

Fitting, James E., C. H. Benn, Donald J. Weir, and C. S. Demeter
1976 *An Evaluation of the Archaeological Resources of the Upper East Bend Bottom, Boone County, Kentucky*. Land Planning Services Department, Commonwealth Associates, Jackson, Michigan.

Henderson, A. Gwynn
1995 *Results of the 1992 University of Kentucky Boone County Survey: A Brief Summary*. Archaeological Report No. 362. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Mozzi, Marina E., and Laura Clifford
2000 *Final Phase I Archaeology Survey for Expansion of Facilities at the Cincinnati-Northern Kentucky International Airport in Boone County, Kentucky*. Environment and Archaeology, Florence, Kentucky.

Purrington, Burton L., and David G. Smith
1966 An Archaeological Survey of the Eagle Creek Reservoir in Grant and Owen Counties, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Schock, Jack M.
1989 *An Archaeological Survey for Approximately 28 Miles of U.S. 127 Between Frankfort and Owenton in Franklin and Owen Counties, Kentucky*. Arrow Enterprises, Bowling Green, Kentucky.

Wagner, Mark J., and J. F. Hopgood
1979 A Phase I Archaeological Reconnaissance of the Northern Kentucky Port Authority Riverport and Industrial Park Project Site. Report on file, Office of Sate Archaeology, University of Kentucky, Lexington.

<u>Eastern Bluegrass Section</u>

Bartnik, George P., John T. Dorwin, David F. Barton, and Kevin J. Crouch
1981 *A Cultural Resource Assessment of 7,065 Acres in the Daniel Boone National Forest, Kentucky*. Resource Analysts, Bloomington, Indiana.

Dugan, Ellen A., Richard S. Levy, and Kenneth W. Robinson
1982 *A Cultural Resources Survey of Timber Sales in the Daniel Boone National Forest*. Environmental Consultants, Lexington.

Fenwick, Jason M.
1979 *A Reconnaissance and Evaluation of Archaeological Sites in Fleming County, Kentucky*. Archaeological Survey Report No. 14. Kentucky Heritage Commission, Frankfort.

Hanson, Lee H., Jr.
1964 *An Archaeological Survey of the Cave Run Reservoir*. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Jobe, Cynthia E., Malinda Stafford, and Richard A. Boisvert
1980 *An Archaeological Survey and Assessment of Various Timber Sales Areas, Road Rights-of-Way and Land Exchanges within the Daniel Boone National Fores*t. Archaeological Report No. 29. Department of Anthropology, University of Kentucky, Lexington.

Levy, Richard S.
1991 *A Cultural Resources Survey of Timber Management Areas on the Morehead, Berea, London, Redbird, Somerset and Stearns Ranger Districts, Daniel Boone National Forest*. American Archaeological Consultants, Fair Oaks, California.

Schock, Jack M., and Terry L. Weis
1978 *An Archaeological Survey of the Proposed Carrs Site and Other Accessory Areas, Lewis County, Kentucky*. Arrow Enterprises, Bowling Green.

Stallings, Richard, Mary Evelyn Starr, Sarah Adams, and Deirdre Dolgin
1995 *A Phase I Cultural Resource Survey of the Proposed Realignment of KY 11, Bath and Montgomery Counties, Kentucky*. Cultural Horizons, Harrodsburg, Kentucky.

Sussenbach, Tom
1991 *Archaeological Investigations of 800 Acres at the Proposed Mead Paper Plant Site in Lewis County, Kentucky*. Archaeological Report No. 259. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

EXCAVATIONS

The level of archaeological work conducted in the Bluegrass Management Area is reflected, in part, by the fact that more than one-quarter of the tested sites and nearly one-third of the excavated sites in Kentucky are located within its borders (Table 2.1). No other management area has more tested or excavated sites (Table 2.1). Since 1987, the same number of sites have been tested or excavated in the Bluegrass Management Area as in the years before 1987, though the distribution of those sites varied by section (Table 2.1). This suggests that, with the exception of the increased number of small surveys, the level of work in this management area has remained relatively constant. Over half of the tested and excavated sites in this management area are located in the Central Bluegrass Section (Table 2.10). The reports of significant testing and excavation projects within each of the sections appear below.

Central Bluegrass

Anderson, Jason M.
2003 *A National Register Evaluation of Site 15Mm140 in Montgomery County, Kentucky*. Cultural Resource Analysts, Lexington.

Barber, Jennifer
2003 *Phase II and III Archaeological Excavations at the Armstrong Farmstead (15Fa185), Fayette County, Kentucky*. Cultural Resource Analysts, Lexington.

Boisvert, Richard A., and C. Wesley Cowan
1975 *An Assessment of the Archaeological Resources of the Proposed Extension of the Mt. Sterling-Montgomery County Airport, Kentucky*. Ohio Valley Archaeological Research Associates, Lexington.

Boisvert, Richard A., Christopher A. Turnbow, and Richard S. Levy
1979 Archaeology at Little Mountain: Mitigation by Controlled Surface Collection on Three Late Archaic and Early Woodland Sites, Montgomery County, Kentucky. Archaeological Report No. 27. Department of Anthropology, University of Kentucky, Lexington.

Bybee, Alexandra, and Michael D. Richmond
2003 *Data Recovery at a Nineteenth Century Cemetery (15Mm137) in Montgomery County, Kentucky*. Cultural Resource Analysts, Lexington.

Carmean, Kelli
2003 *Two Seasons at the Broaddus Site (15Ma179): A Middle Fort Ancient Village in Madison County, Kentucky*. Department of Anthropology, Eastern Kentucky University, Richmond.

Clay, R. Berle
1976 The Auvergne Mound and the Bluegrass Project. Paper presented at the Annual Southeastern Archaeological Conference, Tuscaloosa, Alabama.

1983 Pottery and Graveside Ritual in Kentucky Adena. *Midcontinental Journal of Archaeology* 8(1).

1984 *Peter Village: 164 Years Later, A Summary of 1983 Excavations*. Office of State Archaeology, University of Kentucky, Lexington.

1985 Peter Village 164 Years Later: 1983 Excavations. In *Woodland Period Research in Kentucky*, edited by David Pollack, Thomas Sanders, and Charles Hockensmith, pp. 1-41. Kentucky Heritage Council, Frankfort.

Day, Grant L.
2002 *Monterey Site (15Bb112): Phase III Excavations at a 19th Century Hamlet in Bourbon County, Kentucky*. Cultural Resource Analysts, Lexington.

2004 "Higby's" Tavern Stand: A Phase III Excavation at Higbee's Tavern (15Fa222), Fayette County, Kentucky. Cultural Resource Analysts, Lexington.

Day, Grant L., and R. Berle Clay
2002 *Phase III Excavations at McConnell's Homestead Site (15Bb75), Bourbon County, Kentucky*. Cultural Resource Analysts, Lexington.

Fassler, Heidi
1987 Guilfoil: A Middle Fort Ancient Village in Fayette County. In *Current Archaeological Research in Kentucky: Volume One*, edited by David Pollack, pp. 154-187. Kentucky Heritage Council, Frankfort.

Fenton, James P., and Ludomir R. Lozny
1995 *Final Report of Phase II Archaeological Investigations on the Richmond Bypass, Madison County, Kentucky*. Wilbur Smith Associates, Lexington.

French, Michael W., and Anne T. Bader
2001 *A Phase I Archaeological Reconnaissance of 64 Acres of Proposed Borrow Area at Blue Grass Army Depot and Phase II Investigations at Site 15Ma218*. Ogden Environmental and Energy Services, Louisville.

Funkhouser, William D., and William S. Webb
1935 *The Ricketts Site in Montgomery County, Kentucky*. Reports in Archaeology and Anthropology 3(3). University of Kentucky, Lexington.

Haag, William G.
1940 A Description of the Wright Site Pottery. In *The Wright Mounds, Sites 6 and 7, Montgomery County, Kentucky*, by William S. Webb, pp. 75-82. Reports in Anthropology and Archaeology 5(1). University of Kentucky, Lexington.

Henderson, A. Gwynn
1992 Capitol View: A Early Madisonville Horizon Settlement in Franklin County, Kentucky. In *Current Archaeological Research in Kentucky: Volume Two*, edited by David Pollack and A. Gwynn Henderson, pp. 223-240. Kentucky Heritage Council, Frankfort.

Henderson, A. Gwynn, and David Pollack
1996 New Field: An Early Madisonville Horizon Site in Bourbon County, Kentucky. In *Current Archaeological Research in Kentucky: Volume Four*, edited by Sara L. Sanders, Thomas N. Sanders, and Charles Stout, pp. 169-233. Kentucky Heritage Council, Frankfort.

McBride, Kim A., and W. Stephen McBride
2000 *Archaeological Investigations at Logan's Fort, Lincoln County, Kentucky*. Research Report No. 3. Kentucky Archaeological Survey, Lexington.

McBride, W. Stephen
1991 *Preliminary Archaeological Investigations at the Pope House, 15FA205, Lexington, Kentucky*. Archaeological Report No. 246. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

1992 *Continued Archaeological Investigations at the Pope House, 15FA205, Lexington, Kentucky*. Archaeological Report No. 277. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

1993 *Archaeology at Henry Clay's Ashland Estate: Investigations of the Mansion, Yard, and Privy*. Archaeological Report No. 281. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

McBride, W. Stephen, Susan C. Andrews, J. Howard Beverly, and Tracey A. Sandefur
2003 *From Supply Depot to Emancipation Center, the Archaeology of Camp Nelson, Kentucky*. Wilbur Smith Associates, Lexington.

McBride, W. Stephen, and Kim A. McBride
1991 *Preliminary Archaeological Investigations at Ashland, 15FA206, Lexington, Kentucky*. Archaeological Report No. 245. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

McBride, W. Stephen, and William E. Sharp
1993 *Archaeological Investigations at Camp Nelson: A Union Quartermaster Depot and Hospital in Jessamine County, Kentucky*. Archaeological Report No. 241. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Miller, Donald A., and Christopher A. Bergman
2000 *Phase III Data Recovery Investigations at the Old Springs Site (15FR20), Franklin County, Kentucky*. BHE Environmental, Cincinnati.

O'Malley, Nancy
1992 *Archaeological Test Excavations at Two Sites along Paris Pike, Bourbon County, Kentucky*. Archaeological Report No. 291. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

1996 *Kinkeadtown: Archaeological Investigation of an African-American Neighborhood in Lexington, Kentucky*. Archaeological Report No. 377. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

O'Malley, Nancy, and Karen Hudson
1993 *Cultural Resource Assessment of Boone Station State Park, Fayette County, Kentucky*. Archaeological Report No. 316. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

O'Malley, Nancy, Donald W. Linebaugh, Jeanie Duwan, and R. Berle Clay
1999 *"A Brilliant and Pleasant Light": Nineteenth-Century Gas Lighting at Ashland, Lexington, Fayette County, Kentucky*. Archaeological Report No. 413. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Picklesimer, John W., II, Carol S. Weed, and Brandon McCuin
2004 *Phase II Investigations at Seven Archaeological Sites (15FA223, 15FA225, 15FA228, 15SC100, 15SC101, 15SC182, and 15SC183) Within the Proposed US 25 Construction Corridor in Fayette and Scott Counties, Kentucky*. Gray & Pape, Cincinnati.

Pollack, David, and Charles D. Hockensmith
1992 Carpenter Farm: A Middle Fort Ancient Community in Franklin County, Kentucky. In *Current Archaeological Research in Kentucky: Volume Two*, edited by David Pollack and A. Gwynn Henderson, pp. 151-186. Kentucky Heritage Council, Frankfort.

Pollack, David, Mary Lucas Powell, and Audrey Adkins
1987 Preliminary Study of Mortuary Patterns at the Larkin Site, Bourbon County, Kentucky. In *Current Archaeological Research in Kentucky: Volume One*, edited by David Pollack, pp. 188-204. Kentucky Heritage Council, Frankfort.

Rafinesque, C. S.
1820 On A Remarkable Ancient Monument Near Lexington. *Western Review and Miscellaneous Magazine* 1(5).

Sharp, William E.
1990 Fort Ancient Period. In *The Archaeology of Kentucky: Past Accomplishments and Future Directions, Volume Two*, edited by David Pollack, pp. 467-557. Kentucky Heritage Council, Frankfort.

Sharp, William E., and David Pollack
1992 The Florence Site Complex: Two Fourteenth Century Fort Ancient Communities in Harrison County, Kentucky. In *Current Archaeological Research in Kentucky: Volume Two*, edited by David Pollack and A. Gwynn Henderson, pp. 187-222. Kentucky Heritage Council, Frankfort.

Sharp, William E., and Christopher A. Turnbow
1987 The Muir Site: An Upland Fort Ancient Community in the Inner Bluegrass Region of Kentucky. In *Current Archaeological Research in Kentucky: Volume One*, edited by David Pollack, pp. 137-153. Kentucky Heritage Council, Frankfort.

Stottman, M. Jay
2008 *Underneath the Craw: Archaeological Excavations at the Frankfort Craw Site (15Fr136), Frankfort, Kentucky*. Research Report No. 6. Kentucky Archaeological Survey, Lexington.

Turnbow, Christopher A.
1983 The Arrasmith Site. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Turnbow, Christopher A., Cynthia E. Jobe, Nancy O'Malley, Dee Ann Wymer, Michelle Seme, and Irwin Rovner
1983 *Archaeological Excavations of the Goolman, DeVary, and Stone Sites in Clark County, Kentucky*. Archaeological Report No. 78. Department of Anthropology, University of Kentucky, Lexington.

Turnbow, Christopher A., and William E. Sharp
1988 *Muir: An Early Fort Ancient Site in the Inner Bluegrass*. Archaeological Report No. 165. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Webb, William S.
1940 *The Wright Mounds, Sites 6 and 7, Montgomery County, Kentucky*. Reports in Archaeology and Anthropology 5(1). University of Kentucky, Lexington.

1941 *Mt. Horeb Earthworks, Site 1 and the Drake Mound, Site 11, Fayette County, Kentucky*. Reports in Archaeology and Anthropology 5(2). University of Kentucky, Lexington.

1943 *The Riley Mound, Site Be15 and the Landing Mound, Site Be17, Boone County, Kentucky, With Additional Notes on the Mt. Horeb Site, Fa1 and Sites Fa14 and Fa15, Fayette County*. Reports in Archaeology and Anthropology 5(7). University of Kentucky, Lexington.

Webb, William S., and William D. Funkhouser
1940 *Ricketts Site Revisited, Site 3, Montgomery County, Kentucky*. Reports in Archaeology and Anthropology 3(6). University of Kentucky, Lexington.

Webb, William S., and William G. Haag
1947 *The Fisher Site, Fayette County, Kentucky*. Reports in Archaeology and Anthropology 7(2). University of Kentucky, Lexington.

Northern Bluegrass

Andrews, Susan C., and Tracey A. Sandefur
2002 *Climbing the Social Ladder: Archaeology at the Enos Hardin Farmstead, Owen County, 1820–1870*. Wilbur Smith Associates, Lexington.

Bergman, Christopher A.
1992 *Phase II Testing of Sites 15Be389 and 15Be391 for the Extension of Runway 9/27 at the Cincinnati/Northern Kentucky International Airport, Boone County, Kentucky*. 3D/Environmental Services, Cultural Resources Division, Cincinnati.

Boisvert, Richard A.
1982 *1982 Archaeological Investigations at Big Bone Lick State Park: Preliminary Report*. Office of State Archaeology, University of Kentucky, Lexington.

Breetzke, David
2001 *Phase II Archaeological Investigation of Site 15Be509 for Expansion of Facilities at the Cincinnati-Northern Kentucky International Airport in Boone County, Kentucky*. Environment and Archaeology, Florence, Kentucky.

Doershuk, John F., Christopher A. Bergman, Heidi Fassler, Eugene V. Goodman, and Nicholas Dunning
1992 *Archaeological Investigations of the Proposed North American Stainless Water Discharge Pipe Trench Across Site 15CL44, Carroll County, Kentucky*. 3D/Environmental Services, Cultural Resources Division, Cincinnati.

Duerksen, Ken, John F. Doershuk, Larry R. Kimball, and Christopher A. Bergman
1994 *Kramer Points and Fayette Thick Ceramics: Data Recovery at the West Runway Site (15Be391), an Upland Early Woodland Camp in Boone County, Kentucky*. 3D/Environmental Services, Cultural Resources Division, Cincinnati.

Funkhouser, William D., and William S. Webb
1937 *The Chilton Site in Henry County, Kentucky*. Reports in Archaeology and Anthropology 3(5). University of Kentucky, Lexington.

Genheimer, Robert A.
1987 *Archaeological Testing, Evaluation, and Final Mitigation Excavations at Covington’s Riverfront Redevelopment Phase II Site, Kenton County, Kentucky*. R. G. Archaeological Services, Covington, Kentucky.

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1981 *A Fort Ancient Village at Augusta, Kentucky*. Granger and Associates, Louisville.

Henderson, A. Gwynn
1993 *Prehistoric Research at Petersburg (15BE6), Boone County, Kentucky*. Archaeological Report No. 289. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Henderson, A. Gwynn (editor)
1992 *Fort Ancient Cultural Dynamics in the Middle Ohio Valley*. Monographs in World Archaeology No. 8. Prehistory Press, Madison, Wisconsin.

Huebchen, Karl
2006 *The Ronald Watson Gravel Site (15Be249): An Examination of the Late Woodland/Fort Ancient Transition in Boone County, Kentucky.* Unpublished Master's thesis, University of Cincinnati, Department of Anthropology.

Kreinbrink, Jeannine
1992 The Rogers Site Complex in Boone County, Kentucky. In *Current Archaeological Research in Kentucky: Volume Two*, edited by David Pollack and A. Gwynn Henderson, pp. 79-102. Kentucky Heritage Council, Frankfort.

MacCord, Howard
1953 The Bintz Site. *American Antiquity* 18(3).

Ross-Stallings, Nancy, and Richard Stallings
1996 *Phase III Archaeological Investigations at the Froman Site (15CL51): An Early Late Woodland Habitation in Carroll County, Kentucky*. Cultural Horizons, Harrodsburg, Kentucky.

Stallings, Richard, and Nancy Ross-Stallings
1993 *Phase I Cultural Resource Investigation of a 20 acre Wetland Development Site in Owen County and Phase I and II Cultural Resource Investigation of a 100 acre Gypsum Surface Impoundment Site Located Near Ghent, Carroll County, Kentucky*. Cultural Horizons, Harrodsburg, Kentucky.

Stottman, M. Jay
1999 *Archaeological Excavations at Bell's Tavern, Barren County, Kentucky*. Report No. 26. Kentucky Archaeological Survey, Lexington.

Walley, Scott A., Rebecca A. Hawkins, and James C. Litfin
1997 *Phase I Survey of the Proposed 350-acre IDI Industrial Park, Phase II Evaluation of the Wackenstein Site, 15Be467, and Excavation of the Gaines-Graves Cemetery, 15Be474, Boone County, Kentucky*. Algonquin Archaeological Consultants, Cincinnati, Ohio.

Webb, William S.
1943a *The Crigler Mounds, Sites Be20 and Be27, and the Hartman Mound, Site Be32, Boone County, Kentucky*. Reports in Archaeology and Anthropology 5(6). University of Kentucky, Lexington.

1943b *The Riley Mound, Site Be15 and the Landing Mound, Site Be17, Boone County, Kentucky, With Additional Notes on the Mt. Horeb Site, Fa1 and Sites Fa14 and Fa15, Fayette County*. Reports in Archaeology and Anthropology 5(7). University of Kentucky, Lexington.

Webb, William S., and John B. Elliott
1942 *The Robbins Mounds, Sites Be3 and Be14, Boone County, Kentucky*. Reports in Archaeology and Anthropology 5(5). University of Kentucky, Lexington.

Eastern Bluegrass

Bodkin, Frank M.
2004 *A Phase II Archaeological Testing of Sites 15BH180 in Bath County and 15MF380 in Menifee and Bath Counties, Morehead Ranger District, Daniel Boone National Forest*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

Granger, Joseph E., and Donald B. Ball
1982 *Historic Archaeological Investigations of the Linville Site 15Bk12, Bracken County, Kentucky*. Granger and Associates, Louisville.

Granger, Joseph E., and Philip J. DiBlasi
1983 *An Appendix (D) to A Fort Ancient Village at Augusta, Kentucky: Archaeological Data Recovery in a Segment of the West Second Street Forced Main Right-of-Way*. Granger and Associates, Louisville.

Henderson, A. Gwynn (editor)
1992 *Fort Ancient Cultural Dynamics in the Middle Ohio Valley*. Monographs in World Archaeology No. 8. Prehistory Press, Madison, Wisconsin.

Marquardt, William H.
1970 Archaeological Investigations in the Cave Run Reservoir, Kentucky: 1969 Season. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Peres, Tanya M.
2003 *A Phase II Archaeological Evaluation of Site 15BH212, Associated with the KY 11 Project, Bath County, Kentucky (Item No. 9-121.2, 9-121.3, and 9-121.4)*. Archaeological Report No. 462. Program for Archaeological Research, Department of Anthropology, University of Kentucky, Lexington.

Pollack, David, and Cynthia E. Jobe
1992 The Snag Creek Site. In *Fort Ancient Cultural Dynamics in the Middle Ohio Valley*, edited by A. Gwynn Henderson, pp. 69-82. Monographs in World Archaeology No. 8. Prehistory Press, Madison, Wisconsin.

Pullins, Stevan C.
2005 *A Phase III Excavation at the Duckworth Farm Site (15Bh212) in Bath County, Kentucky (Item No. 9-121.20).* Cultural Resource Analysts, Lexington.

Railey, Jimmy A. (editor and compiler)
1984 *The Pyles Site (15Ms28): A Newtown Village in Mason County, Kentucky*. Occasional Paper No. 1. William S. Webb Archaeological Society, Lexington.

Turnbow, Christopher A.
1992 The Fox Farm Site. In *Fort Ancient Cultural Dynamics in the Middle Ohio Valley*, edited by A. Gwynn Henderson, pp. 51-68. Monographs in World Archaeology No. 8. Prehistory Press, Madison, Wisconsin.

Turnbow, Christopher A., and Cynthia E. Jobe
1992 The Augusta Site. In *Fort Ancient Cultural Dynamics in the Middle Ohio Valley*, edited by A. Gwynn Henderson, pp. 83-98. Monographs in World Archaeology No. 8. Prehistory Press, Madison, Wisconsin.

Webb, William S.
1941 *The Morgan Stone Mound, Site 15, Bath County, Kentucky*. Reports in Archaeology and Anthropology 5(3). University of Kentucky, Lexington.

Webb, William S., and Charles E. Snow
1959 *The Dover Mound*. University of Kentucky Press, Lexington.

MANAGEMENT AREA 6 (UPPER KENTUCKY/LICKING)

The Upper Kentucky/Licking Management Area ranks third in the state for the number of sites located within its boundaries (n=3,903 or 16.6 percent) and for the area it encompasses (13,809 km^2 or 13.2 percent) (Table 2.1). Slightly more sites are located in the Gorge Section (n=2,071 or 53.1 percent), despite the fact that the Interior Mountains Section encompasses a significantly larger area (Table 2.12). Since 1987, more sites have been recorded in the Upper Kentucky than any other management area (Table 2.1). The largest number of sites is found in Menifee County (n=735 sites) (Figure 2.7), likely reflecting a greater amount of work, much of which has been undertaken as part of cultural resource management projects associated with the Daniel Boone National Forest (including the Red River Gorge Geological Area). Two other counties with relatively high site frequencies, Powell and Jackson, are also located within the Daniel Boone National Forest.

This is the only management area whose most common site type is *not* open habitation without mounds. Rockshelter sites (n=1,577) account for over 40 percent of the sites, while open habitations without mounds account for less than 30 percent (Table 2.13). The next most common site type is historic farm (n=726 or 18.6 percent). No military or non-mound earthwork sites have been recorded in the Upper Kentucky/Licking Management Area. Of interest is the fact that despite a major increase in the number of rockshelters recorded since 1987, from 633 to 1577, there has been a decrease in the proportion of rockshelters relative to other site types, from 48.3 percent to 40.4 percent. There has also been a significant increase in the number and proportion of petroglyph sites recorded since 1987, from four to 38. Prior to 1987, only two open habitations with mound(s) had been recorded in this management area, but since 1987, 11 have been recorded, including the first such site documented in the Gorge Section.

This management area has the highest number of National Register sites (n=472) (Table 2.1). All but seven are located in the Gorge Section. Most of these sites are part of the Red River Gorge National Register District situated within portions of Menifee, Wolfe, and Powell counties (Figure 2.7). A number of the other National Register sites are part of the Prehistoric Rock Art Sites Thematic Listing, which includes sites from throughout the state.

Paradoxically, the Upper Kentucky/Licking Management Area had the fewest number of reports completed in the years before 1987 (n=129), but most completed since 1987 (n=1,434) (Table 2.1). It currently has the second highest number of reports in the state (n=1,563 or 19.4 percent), largely due to the many small projects that have been conducted in the Daniel Boone National Forest (Table 2.1). Additional reports have been prepared for cultural resource management projects undertaken as part of highway and coal projects, and surveys of Natural Bridge State Resort Park and Robinson Forest. The Interior Mountains Section has nearly twice as many reports as the Gorge Section (Table 2.12).

Table 2.12. Upper Kentucky/Licking Management Area: Section Data.

	Gorge	Interior Mountains	Total	Percent
Area (km^2)	5,332	8,477	13,809	
Percent	38.6	61.4	100.0	
Area Surveyed (km^2)	257	687	944	
Percent	4.8	8.1	6.8	
Sites				
Before 1987	869	441	1,310	33.6
Since 1987	1,202	1,391	2,593	66.4
Total	2,071	1,832	3,903	100.0
Percent	53.1	46.9	100.0	
Reports				
Before 1987	70	59	129	8.3
Since 1987	465	969	1,434	91.7
Total	535	1,028	1,563	100.0
Percent	34.2	65.8	100.0	
Major Surveys				
Before 1987	6	7	13	54.2
Since 1987	5	6	11	45.8
Total	11	13	24	100.0
Percent	45.8	54.2	100.0	
Major Surveys No. Sites				
Before 1987	298	115	413	35.6
Since 1987	179	569	748	64.4
Total	477	684	1,161	100.0
Percent	41.1	58.9	100.0	
Tested Sites				
Before 1987	33	10	43	33.9
Since 1987	30	54	84	66.1
Total	63	64	127	100.0
Percent	49.6	50.4	100.0	
Excavated Sites				
Before 1987	8	0	8	66.7
Since 1987	2	2	4	33.3
Total	10	2	12	100.0
Percent	83.3	16.7	100.0	
National Register Sites				
Before 1987	14	1	15	3.2
Since 1987	451	6	457	96.8
Total	465	7	472	100.0
Percent	98.5	1.5	100.0	

No other management area has had more area surveyed (944 km^2 or 6.8 percent of this management area) (Table 2.1). The surveyed areas in this management area account for over a quarter (27.3 percent) of the total area surveyed in the state (Table 2.1). Major surveys account for about 10 percent of the area surveyed in the Interior Mountains Section and about 15 percent of the area surveyed in the Gorge Section. Of the 24 major surveys that have been conducted, slightly more than half (n=13 or 54.2 percent) have been undertaken within the Interior Mountains Section (Table 2.12). Of interest is the fact that there has been a slight decrease in the number of major surveys conducted since 1987, but there has been a major *increase* in the number of sites reported by major surveys (Table 2.12). The average number of sites recorded per major survey jumped from 31.8 before 1987 to 68 since 1987. This suggests that the major surveys conducted in the last 20 years encompassed larger areas and/or were located in areas of higher site density. Reports of major surveys that have been conducted in this management area are listed below by section.

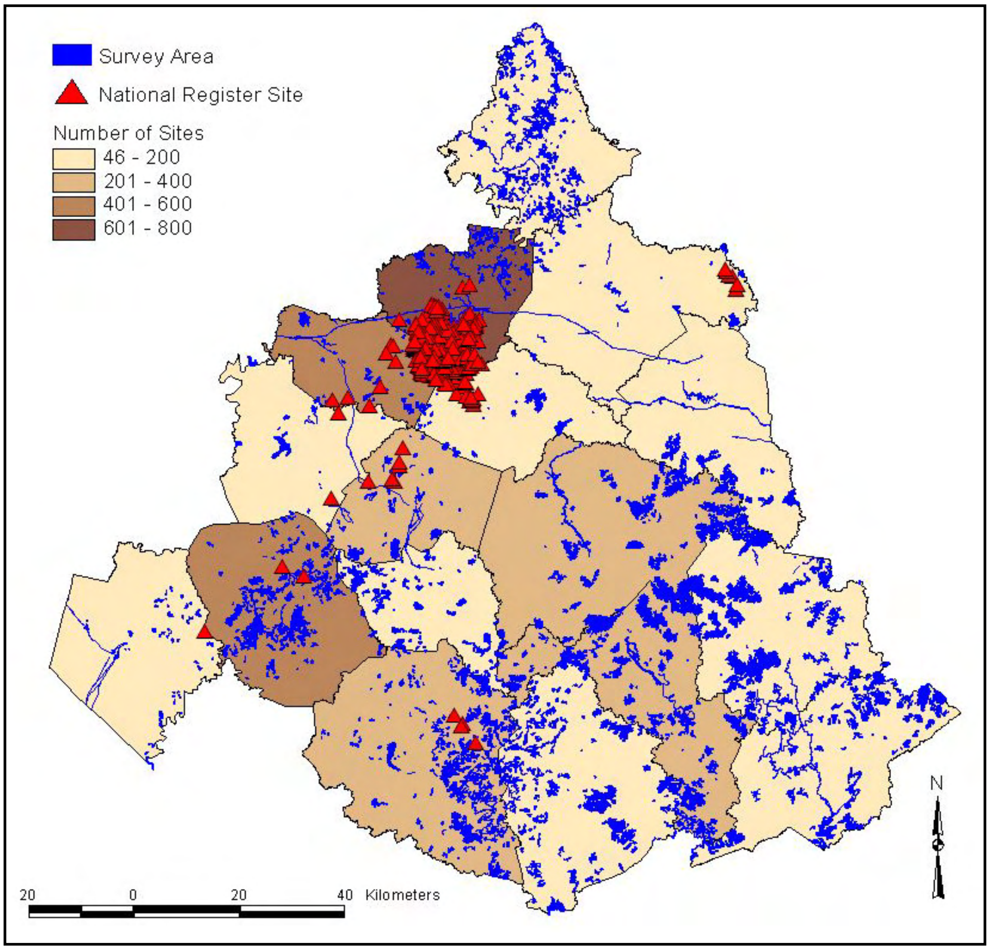

Figure 2.7. Distribution of archaeological sites, National Register sites, and surveys in the Upper Kentucky/Licking Management Area.

Table 2.13. Distribution of Site Types by Section within the Upper Kentucky/Licking Management Area.

Site Type	Gorge	Interior Mountains	Total	Percent
Open Habitation w/out mound(s)	575	580	1,155	29.6
Isolated Find	11	3	14	0.4
Rockshelter	999	578	1,577	40.4
Cave	9	6	15	0.4
Quarry	12	9	21	0.5
Stone Mound	19	23	42	1.1
Earth Mound	5	5	10	0.3
Mound Complex	2	9	11	0.3
Petroglyph/Pictograph	26	12	38	1.0
Non-Mound Earthwork	0	0	0	0.0
Workshop	3	3	6	0.2
Isolated Burial	3	1	4	0.1
Cemetery	26	43	69	1.8
Specialized Activity Site	38	13	51	1.3
Open Habitation w/ Mound(s)	1	12	13	0.3
Historic Farm	240	486	726	18.6
Industrial	65	32	97	2.5
Military	0	0	0	0.0
Other	37	17	54	1.4
Total	2,071	1,832	3,903	100.0

MAJOR SURVEYS

<u>Gorge Section</u>

Bodkin, Frank M.

1993 *A Phase I Cultural Resource Survey of the Pond Lick, Burnt House, Stone Quarry, Leatherwood, Spaws Creek, Craney, and Ditney Ridge Timber Sales in Rowan, Bath, Menifee, and Morgan Counties on the Morehead Ranger District, Daniel Boone National Forest*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

1994 *A Cultural Resource Survey of the Proposed 1995 and 1996 Timber Projects in Bath, Menifee, Morgan, and Rowan Counties on the Morehead Ranger District, Daniel Boone National Forest*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

Cowan, C. Wesley

1975 *An Archaeological Survey and Assessment of the Proposed Red River Reservoir in Powell, Wolfe, and Menifee Counties, Kentucky*. University of Kentucky Museum of Anthropology.

Davis, Daniel B.
1996 *An Archaeological Survey of Approximately 400 Acres in the Copperas Creek Drainage of the Clifty Wilderness Area, Red River Gorge Geological Area, Menifee County, Kentucky*. Report No. 10. Kentucky Archaeological Survey, Lexington.

1999 *A Phase I Archaeological Survey of an Alternate Route for a Section of KY 114 between Prestonsburg and Salyersville, Floyd and Magoffin Counties, Kentucky*. Archaeological Report No. 403. Program for Archaeological Research, Lexington, Kentucky.

Knudsen, Gary D., Janet Kellar, and Scott Simpson
1983 *Cultural Resource Inventory, Big Sinking Creek Oil Field, Daniel Boone National Forest, Kentucky*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

Schock, Jack M., and Terry Weis Langford
1982 *An Archaeological Reconnaissance of the Proposed Smith-Magoffin 58 Mile Long Powerline Route in Magoffin, Menifee, Morgan, and Powell Counties, Kentucky*. Arrow Enterprises, Bowling Green, Kentucky.

Tune, Teresa, W, Tom Sussenbach, A. Gwynn Henderson, and Adonis Spivey
1991 *Phase I Cultural Resource Assessment of Ten Timber Salvage Tracts and a Road Improvement in Menifee, Powell and Wolfe Counties, Kentucky, Stanton District, Daniel Boone National Forest*. Archaeological Report No. 218. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Turnbow, Christopher A.
1976 *An Archaeological Survey of the Red River Gorge Geological Area in Daniel Boone National Forest in Powell, Wolfe, and Menifee Counties, Kentucky*. Report on file, Office of Sate Archaeology, University of Kentucky, Lexington.

Weinland, Marcia K., and Thomas N. Sanders
1977 *A Reconnaissance and Evaluation of Archaeological Sites in Powell County, Kentucky*. Archaeological Survey Report No. 2. Kentucky Heritage Commission, Frankfort.

Wyss, James D., and Sandra K. Wyss
1977 *An Archaeological Assessment of Portions of the Red River Gorge Geological Area, Menifee County, Kentucky*. Ohio Valley Archaeological Research Associates, Lexington.

Interior Mountains Section

Allen, Roger C.
1975 *An Archaeological Survey of a Proposed Coal Washing Facility, Clay County, Kentucky*. Ohio Valley Archaeological Research Associates, Lexington.

Fouts, Thomas E., and Johnny A. Faulkner
1992a *Phase I Cultural Resource Assessment of the 1st Quarter FY 93 Timber Sales and Other Non-Timber projects on the Stanton, Berea, And Redbird Ranger Districts, Daniel Boone National Forest*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

1992b *A Phase I Cultural Resource Assessment of the FY-92 Timber Sales on the North Half of the Daniel Boone National Forest*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

Fouts, Thomas E., Johnny A. Faulkner, Lief Meadows, and John Wright
1993 *A Phase I Cultural Resource Assessment of 5 Timber Sales and Non-Timber Projects in Jackson, Menifee, Lee, Owsley, and Rockcastle Counties, Kentucky on the Daniel Boone National Forest*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

Fryman, Frank B., Jr., M. L. Fryman, and Michael J. Rodeffer
1967 A Preliminary Survey of the Archaeological and Historical Resources of the Proposed Parker Branch Reservoir, Laurel, Jackson, and Rockcastle Counties, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Gatus, Thomas W., and Thomas N. Sanders
1978 *A Reconnaissance and Evaluation of Archaeological Sites in Perry County*. Archaeological Survey Report No. 10. Kentucky Heritage Commission, Frankfort.

Higel, Thomas E.
1967 Archaeological Survey of the Proposed Booneville Reservoir Area on the South Fork in the Kentucky River. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Knudsen, Gary D.
1981 *Cultural Resource Inventory of Proposed Impact Areas, Daniel Boone National Forest, Kentucky*. U.S. Forest Service, Stanton, Kentucky.

O'Steen, Lisa D., and Ron Schoettmer
1994 *A Cultural Resources Survey of Tracts in the Daniel Boone National Forest: Redbird Ranger District: Leslie, Clay, and Owsley Counties, Kentucky*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

Purrington, Burton L.
1966 An Archaeological Survey of the Carr Fork Reservoir, Knott County, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Sharp, William E.
1997 *Management Summary of a Phase I Cultural Resource Survey of the Berea North Timber Sale and Associated Tracts Jackson County, Kentucky, Berea Ranger District, DBNF*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

Sloan, Tacoma G.
1958 Archaeological Survey of the Buckhorn Reservoir, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Sussenbach, Tom, C. Douglas R. Graham, Kim A. McBride, W. Stephen McBride, Sara L. Sanders
1990 *Archaeological Site Distributions on the Cumberland Plateau of Eastern Kentucky*. Archaeological Report No. 218. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

EXCAVATIONS

Compared to most of the other management areas, not as many sites located in Upper Kentucky/Licking Management Area have been tested (n=127) or excavated (n=12). In fact, no other region has fewer excavated sites. The tested sites are roughly equally distributed between the Gorge and Interior Mountains Sections (Table 2.12). The number of tested sites has nearly doubled over the past 20 years (Table 2.12), whereas half as many sites have been excavated since 1987. All but two of the excavated sites are located in the Gorge Section. Reports of the most significant of these projects are listed below.

Gorge Section

Brooks, Pamela B., Robert L. Brooks, and Michael B. Collins
1979 *The Bluestone Archaeological Project: Excavations at the 15RO-35-36 Site Complex*. Special Report No. 1. Archaeological Services, Lexington.

Cowan, C. Wesley
1976 *Test Excavations in the Proposed Red River Lake, Kentucky: 1974 Season*. University of Kentucky Museum of Anthropology.

Davis, Daniel B., and Jack Rossen
2000 *A Phase II Archaeological Evaluation of the O'Hare Site Complex (15Mf632), Associated with the U.S. 460 Project, Menifee County, Kentucky*. Archaeological Report No. 436. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Dorwin, John T., Edward Henson, Larry Meadows, and Donald T. Warholic
1970 Archaeological Investigation of the Deep Shelter, Cave Run Reservoir Area, Rowan County, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Esarey, Mark E., and J. Bryant Evans
1992 *Phase II Testing of Site 15Po210 for the Proposed Stanton Place Apartments Development, Powell County, Kentucky*. Archaeological Report No. 270. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Funkhouser, William D., and William S. Webb
1929 *The So-Called 'Ash Caves' in Lee County, Kentucky*. Reports in Archaeology and Anthropology, Volume 1, No. 2. Department of Anthropology and Archaeology, University of Kentucky, Lexington.

Gremillion, Kristen J.
1996 Late Woodland Utilization of the Rock Bridge Shelter in Wolfe County, Kentucky. In *Current Archaeological Research in Kentucky: Volume Four*, edited by Sara L. Sanders, Thomas N. Sanders, and Charles Stout, pp.17-31. Kentucky Heritage Council, Frankfort.

Ison, Cecil R.
1988 The Cold Oak Shelter: Providing a Better Understanding of the Terminal Archaic. In *Paleoindian and Archaic Research in Kentucky*, edited by Charles D. Hockensmith, David Pollack, and Thomas N. Sanders, pp. 205-219. Kentucky Heritage Council, Frankfort.

Mickelson, Andrew M.
2001 *Mitigation of the Upper Portion of the Gladie Creek Site (15Mf410), Red River Gorge Geological Area, Daniel Boone National Forest, Stanton Ranger District, Menifee County, Kentucky*. Mickelson (Archaeological Consultant) Columbus, Ohio.

Niquette, Charles M., and Myra A Hughes
1992 *A National Register Evaluation of the Lindon Fork Rockshelter (15Wo107) Wolfe County, Kentucky*. Cultural Resource Analysts, Lexington.

O'Steen, Lisa D., Kristen J. Gremillion, and R. Jerald Ledbetter
1991 *Archaeological Testing at Five Sites in the Big Sinking Creek Oil Field, Lee County, Kentucky*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

Schlarb, Eric J., and David Pollack
2002 *An Archaeological Evaluation of the Military Wall Rockshelter (15Po282), Daniel Boone National Forest, Powell County, Kentucky*. Report No. 44. Kentucky Archaeological Survey, Lexington.

Webb, William S., and William D. Funkhouser
1936 *Rock Shelters in Menifee County, Kentucky*. Reports in Archaeology and Anthropology, Volume 3, No. 4. Department of Anthropology and Archaeology, University of Kentucky, Lexington.

Interior Mountains Section

Betty, J. McGraw, and Lathel F. Duffield
2002 *Phase II Testing of Doty Creek #1 Rockshelter, 15Lr60, Letcher County, Kentucky*. McGraw, Lexington, Kentucky.

Bradbury, Andrew P.
2000 Archaeological Investigations at the Gays Creek Shelter (15Pe186), Perry County, Kentucky. In *Current Archaeological Research in Kentucky: Volume Six*, edited by David Pollack and Kristen J. Gremillion, pp. 59-75. Kentucky Heritage Council, Frankfort.

Bush, David R.
1988 New Evidence of Paleoindian and Archaic Occupations in Clay and Perry Counties, Kentucky. In *Paleoindian and Archaic Research in Kentucky*, edited by Charles D. Hockensmith, David Pollack, and Thomas N. Sanders, pp. 47-65. Kentucky Heritage Council, Frankfort.

Boedy, Randall D., and Johnny A. Faulkner
2001 *Archaeological Investigations at Three Sites in the Daniel Boone National Forest in Owsley, Clay, and Powell Counties, Kentucky*. USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

McGraw, Betty J., Kurt H. Fiegel, and James Lee Hixon
1991 *Phase II Archaeological Testing of the Kay Shelter (15Br118) and Crank Shelter (15Br119) Breathitt County, Kentucky*. Betty J. McGraw, Lexington, Kentucky.

McGraw, Betty J. and Annette Ericksen
1993 *Phase II Archaeological Testing of the Carr Fork Rockshelter (15Kt15) and two Stone Mounds (15Kt18) Knott County, Kentucky*. Betty J. McGraw, Lexington, Kentucky.

McIlhany, Calvert W., Lynn Snyder, Anna Dixon, Donna Boyd
1991 *Archaeological Test Excavations at Prehistoric Site 15Br9 in Breathitt County, Kentucky*. Calvert W. McIlhany, Bristol, Virginia.

MANAGEMENT AREA 7 (BIG SANDY)

The Big Sandy Management Area is the smallest region and has the lowest number of recorded sites in the state (n=1418 or 6.0 percent) (Table 2.1). Most of the sites are in the Lower Big Sandy Section (76 percent), which also is the larger of the two sections that comprise this management area (Table 2.14). This section also has a higher density of sites per area surveyed (5.6 sites/km^2). The highest number of sites in this management area occurs in Greenup County (Lower Big Sandy Section), with 333 sites (see Figure 2.8). Other counties with more than 200 sites include Carter and Lawrence, which are also located in the Lower Big Sandy Section, and Pike, which is located in the Upper Big Sandy Section. Over one-third of the sites in this management area have been recorded as part of major surveys (Table 2.14). Almost sixty percent of the sites were recorded before 1987 (n=846 or 59.7 percent).

The most prevalent site type in the Big Sandy Management Area is open habitation without mound(s) (n=769 or 54.2 percent) (Table 2.15). Historic farm sites (n=220 or 15.5 percent) and rockshelter sites (n=211 or 14.9 percent) represent the second and third most prevalent site types, respectively (Table 2.15). The large number of historic farm sites documented in this management area since 1987 reflects an increased emphasis on the part of archaeologists to document small historic sites in rural settings. Among the rockshelter sites, most are located in the Lower Big Sandy Section (n=191). Since 1987, 126 rockshelters site have been documented, an increase of about 150 percent compared to the 85 rockshelters that had been documented prior to 1987. There are a significant number of mound-related sites (i.e., open habitation with mound(s), earth mound, stone mound, and mound complex) in this region (n=109), most of which occur in the Lower Big Sandy Section (n=95).

There is a relatively low number of sites listed on the National Register of Historic Places in the Big Sandy Management Area (n=17) compared to the other management areas (Table 2.1). More than eighty percent are located in the Lower Big Sandy Section (n=14 or 82.4 percent), and most were recorded before 1987 (n=13 or 76.5 percent). Since 1987, only four sites located in this management area have been listed in the National Register.

This region has the second lowest number of reports and major surveys of any management area in the state (Table 2.1). Just over half of the reports have been prepared for projects in the Lower Big Sandy Section, but more area has actually been surveyed in the Upper Big Sandy Section (Table 2.14; see distribution of surveys in Figure 2.8). Among the surveys undertaken in the Big Sandy Management Area, most have been conducted as part of cultural resource management projects associated with coal mining operations, the construction of lakes (e.g., Yatesville, Fishtrap, and Paintsville), and highway projects.

There have been relatively few major surveys conducted in this region (n=13), most of which have been in the Lower Big Sandy Section (n=9 or 69.2 percent). Fewer than half as many major surveys have been conducted in the last 20 years as in the years before 1987 (Table 2.14). Furthermore, there has been a significant decrease in the average number of sites per major survey, from 41.3 before 1987 to 18.5 since 1987

(Table 2.14). This may indicate that the major surveys conducted before 1987 encompassed larger areas and/or were located in areas of significantly higher site density. Reports of major surveys that have been conducted in this management area are listed below by section.

Table 2.14. Big Sandy Management Area: Section Data.

	Lower Big Sandy	Upper Big Sandy	Total	Percent
Area (km^2)	5396	3077	8473	
Row Percent	63.7	36.3	100.0	
Area Surveyed (km^2)	193	292	485	
Percent of Section/MA	3.6	9.5	5.7	
Sites				
Before 1987	732	114	846	59.7
Since 1987	346	226	572	40.3
Total	1.078	340	1.418	100.0
Row Percent	76.0	24.0	100.0	
Reports				
Before 1987	101	29	130	15.5
Since 1987	330	378	708	84.5
Total	431	407	838	100.0
Row Percent	51.4	48.6	100.0	
Major Surveys				
Before 1987	7	2	9	69.2
Since 1987	2	2	4	30.8
Total	9	4	13	100.0
Row Percent	69.2	30.8	100.0	
Major Surveys No. Sites				
Before 1987	328	44	372	83.4
Since 1987	68	6	74	16.6
Total	396	50	446	100.0
Row Percent	88.8	11.2	100.0	
Tested Sites				
Before 1987	90	12	102	67.5
Since 1987	38	11	49	32.5
Total	128	23	151	100.0
Row Percent	84.8	15.2	100.0	
Excavated Sites				
Before 1987	18	5	23	71.9
Since 1987	6	3	9	28.1
Total	24	8	32	100.0
Row Percent	75.0	25.0	100.0	
National Register Sites				
Before 1987	11	2	13	76.5
Since 1987	3	1	4	23.5
Total	14	3	17	100.0
Row Percent	82.4	17.6	100.0	

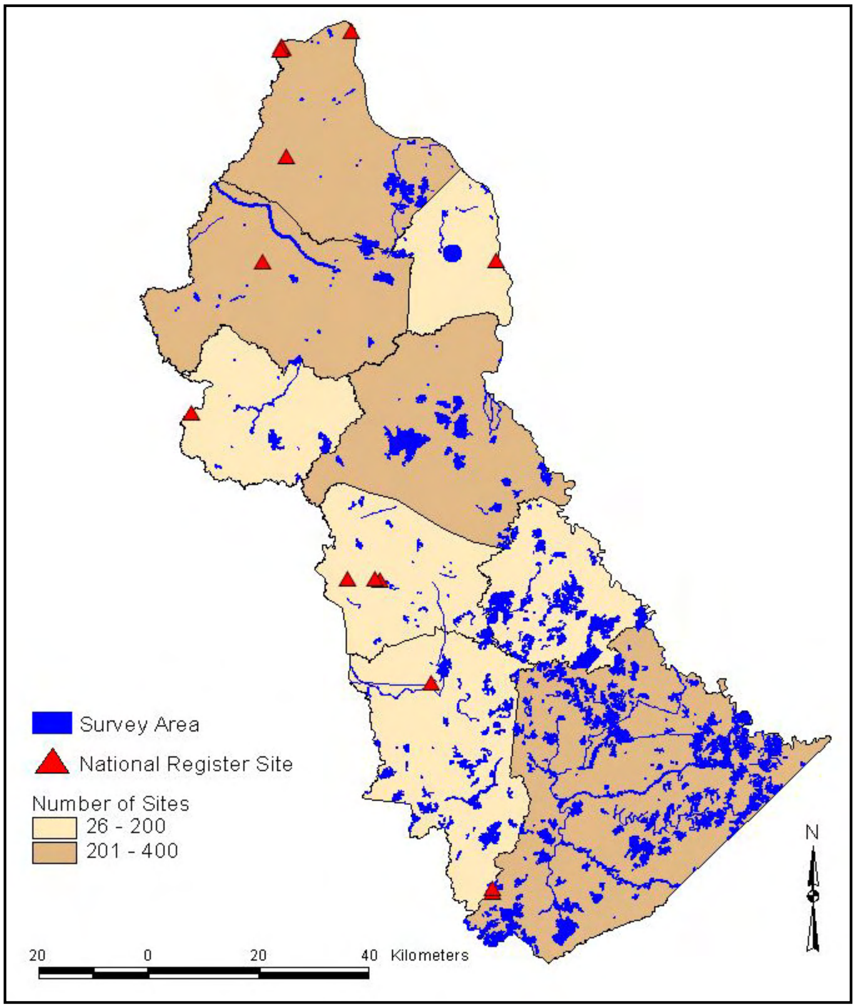

Figure 2.8. Distribution of archaeological sites, National Register sites, and surveys in the Big Sandy Management Area.

MAJOR SURVEYS

<u>Lower Big Sandy Section</u>

Adovasio, James M. (compiler)
1982 *The Prehistory of the Paintsville Reservoir, Johnson and Morgan Counties, Kentucky*. Ethnology Monograph No. 6. Department of Anthropology, University of Pittsburgh, Pittsburgh.

Dexter, Richard W.
1974 Archaeological Survey and Testing in the Proposed Paintsville Reservoir in Johnson and Morgan Counties, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Table 2.15. Distribution of Site Types by Section within the Big Sandy Management Area.

Site Type	Lower Big Sandy	Upper Big Sandy	Total	Percent
Open Habitation w/out mound(s)	635	134	769	54.2
Isolated Find	0	0	0	0.0
Rockshelter	191	20	211	14.9
Cave	3	0	3	0.2
Quarry	7	0	7	0.5
Stone Mound	25	5	30	2.1
Earth Mound	44	3	47	3.3
Mound Complex	16	1	17	1.2
Petroglyph/Pictograph	4	0	4	0.3
Non-Mound Earthwork	9	0	9	0.6
Workshop	3	0	3	0.2
Isolated Burial	2	2	4	0.3
Cemetery	9	24	33	2.3
Specialized Activity Site	3	2	5	0.4
Open Habitation w/ Mound(s)	10	5	15	1.1
Historic Farm	88	132	220	15.5
Industrial	13	4	17	1.2
Military	0	1	1	0.1
Other	16	7	23	1.6
Total	1,078	340	1,418	100.0

Duffield, Lathel F., and Edward F. Heffernan

1974 Archaeological Reconnaissance of the Proposed Paintsville and Yatesville Reservoirs in Johnson, Morgan, and Lawrence Counties, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Fenwick, Jason M.

1976 Archaeological Survey and Testing in the Proposed Yatesville Reservoir, Lawrence County, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Garst, Susan H.

2002 *An Archaeological Shoreline Reconnaissance at Grayson Lake in Carter and Elliot Counties, Kentucky*. Cultural Resource Analysts, Lexington.

Gatus, Thomas W., and David R. Maynard

1980 *A Reconnaissance and Evaluation of Archaeological Sites in Greenup County, Kentucky*. Ms. on file, Kentucky Heritage Council, Frankfort.

Glover, John T., and Edward F. Heffernan

1977 A Preliminary Archaeological Survey and Assessment of the Proposed Kehoe Reservoir Project in Carter and Greenup Counties, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Hamilton, Nathan D., James M. Adovasio, and Jack. Donahue
1983 *An Archaeological Reconnaissance of the Main Stem of the Big Sandy River, Wayne County, West Virginia and Boyd and Lawrence Counties, Kentucky, and the Levisa Fork, Johnson County, Kentucky: An Interim Report*. Cultural Resource Management Program, University of Pittsburgh, Pittsburgh.

Niquette, Charles M., and Teresa K. Donham
1985 *Prehistoric and Historic Site Archaeology in the Proposed Yatesville Reservoir, Lawrence County, Kentucky*. Cultural Resource Analysts, Lexington.

Pecora, Albert M.
1994 *A Coal Mine Survey along Whiteoak Fork in Martin County, Kentucky*. Cultural Resource Analysts, Lexington.

Rolingson, Martha Ann
1963 An Archaeological Survey of the Grayson Reservoir. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

<u>Upper Big Sandy Section</u>

French, Michael W., Mathia Scherer, Lorene Miner, Tara Jones, and Anne Bader
2003 *Intensive Phase I Archaeological Survey and Deep Subsurface Reconnaissance for the I-66 Appalachian Corridor, Pike County, Kentucky and Mingo County, West Virginia*. AMEC Earth & Environmental, Louisville.

McGraw, Betty J.
2003 *Phase I Archaeological Survey of the Berkeley Energy Corporation Big Branch Coal Permit Area Pike County, Kentucky*. McGraw, Lexington, Kentucky.

Sanders, Thomas N., and Thomas W. Gatus
1977 *A Reconnaissance and Evaluation of Archaeological Sites in Floyd County, Kentucky*. Archaeological Survey Report No. 7. Kentucky Heritage Commission, Frankfort.

Schwartz, Douglas W.
1962 An Archaeological Survey of the Fishtrap Reservoir. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

EXCAVATIONS

Considering the low number of documented sites in this management area, a relatively high percentage (12.9) have been tested (n=151) or excavated (n=32) (Table 2.1). The vast majority of the tested sites (n=128 or 84.8 percent) and most of the excavated sites (n=24 or 75.0 percent) are located in the Lower Big Sandy Section. Fewer than half as many sites have been tested or excavated in the Big Sandy Management Area in the last 20 years as in the years before 1987 (Table 2.14). Reports documenting the results of significant testing and excavation projects are listed below by section.

Lower Big Sandy Section

Adovasio, James M., William C. Johnson, Philip T. Fitzgibbons, Rick C. Carlisle, Jack Donahue, Frank J. Vento, N. Luffman Yedlowski, and Joseph. L. Yedlowski.

1987 *Painstville Reservoir, Kentucky, Revisited: The 1982 Archaeological Investigations*. Cultural Resource Management Program, Department of Anthropology, University of Pittsburgh, Pittsburgh.

Ahler, Steven R.

1987 Middle-Late Woodland Occupation at the Hansen Site, l5Gpl4, Greenup County, Kentucky. In *Current Archaeological Research in Kentucky: Volume One*, edited by David Pollack, pp. 44-77. Kentucky Heritage Council, Frankfort.

1988 *Excavations at the Hansen Site (15Gp14) in Northeastern Kentucky*. Archaeological Report No. 173. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Aument, Bruce W.

1985 Results of the Boyd County Mounds Project and the Preliminary Interpretation of Prehistoric Mortuary Variability. In *Woodland Period Research in Kentucky*, edited by David Pollack, Thomas Sanders, and Charles Hockensmith, pp. 63-84. Kentucky Heritage Council, Frankfort.

Burdin, S. Rick, and David Pollack

2006 *The Early Late Woodland Wiley Creek Site (15Jo74) and Early Fort Ancient Curtis Site (15Jo75), Johnson County, Kentucky*. Report No. 125. Kentucky Archaeological Survey, Lexington.

Fitzgibbons, Philip T., James M. Adovasio, and Jack Donahue

1977a *Excavations at Sparks Rockshelter (l5Jo19) Johnson County, Kentucky*. University of Pittsburgh, Pittsburgh.

1977b Excavations at Sparks Rockshelter (l5Jo19), Johnson County, Kentucky. *Pennsylvania Archaeologist* 47(5).

Hanson, Lee H., Jr.

1966 *The Hardin Village Site*. Studies in Anthropology No. 4. University of Kentucky Press, Lexington.

Hardesty, Donald L.

1964 The Biggs Site Gp8 in Greenup County, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Henderson, A. Gwynn, and David Pollack

1985 The Late Woodland Occupation of the Bentley Site. In *Woodland Period Research in Kentucky*, edited by David Pollack, Thomas Sanders, and Charles Hockensmith, pp. 140-165. Kentucky Heritage Council, Frankfort.

1992a The Thompson Site. In *Fort Ancient Cultural Dynamics in the Middle Ohio Valley*, edited by A. Gwynn Henderson, pp. 31-50. Monographs in World Archaeology No. 8. Prehistory Press, Madison, Wisconsin.

1992b The Laughlin Site. In *Fort Ancient Cultural Dynamics in the Middle Ohio Valley*, edited by A. Gwynn Henderson, pp. 99-111. Monographs in World Archaeology No. 8. Prehistory Press, Madison, Wisconsin.

Henderson, A. Gwynn, David Pollack, and Dwight R. Cropper
1988 The Old Fort Earthworks, Greenup County, Kentucky. In *New Deal Era Archaeology and Current Research in Kentucky*, edited by David Pollack and Mary Lucas Powell, pp. 64-82. Kentucky Heritage Council, Frankfort.

Ison, Cecil R., and Bet. S. Ison
1985 The Carroll Shelter: A Multi-component Rockshelter in Northeastern Kentucky. In *Woodland Period Research in Kentucky*, edited by David Pollack, Thomas N. Sanders, and Charles D. Hockensmith, pp. 125-138. Kentucky Heritage Council, Frankfort.

Janzen, Donald E.
1989 *Archaeological Testing at Six Sites on the Proposed AA Highway Corridor between Vanceburg and Grayson Lewis and Carter Counties, Kentucky*. Janzen, Danville, Kentucky.

Kerr, Jonathan P., Renee M. Bonzani, Andrew P. Bradbury, and Vera Morgan
2004 *Early Archaic Archaeology at the Hart Site (15La183) in Lawrence County, Kentucky*. Cultural Resource Analysts, Lexington.

Kerr, Jonathan P., Myra A. Hughes, Robert B. Hand, and Charles M. Niquette
1989 *Phase III Excavations at the Graham Site, a Stratified Archaic/Woodland Site in the Proposed Yatesville Reservoir, Lawrence County, Kentucky*. Cultural Resource Analysts, Lexington.

Ledbetter, R. Jerald, and Lisa D. O'Steen
1992 The Grayson Site: Late Archaic and Late Woodland Occupations in the Little Sandy Drainage. In *Current Archaeological Research in Kentucky: Volume Two*, edited by David Pollack and A. Gwynn Henderson, pp. 13-42. Kentucky Heritage Council, Frankfort.

Ledbetter, R. Jerald, Andrea Shea, and Stan De Filippis
1991 *The Grayson Site: Phase III Investigations of 15Cr73, Carter County, Kentucky*. Project Number 174. Southeastern Archaeological Services, Athens, Georgia.

McBride, Kim A, Daniel B. Davis, A. Gwynn Henderson, Joseph W. McCarthy III, David E. Rotenizer, M. Margaret Scarry.
1994 *Archaeological Investigations at the McKenzie Farmstead (15Jo67): A Multiple Component Occupation in Johnson County, Kentucky*. Archaeological Report No. 334. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Niquette, Charles M., and Randall D. Boedy
1986 *The Calloway Site (15Mt8): A Transitional Early to Middle Woodland Camp in Martin County, Kentucky*. Cultural Resource Analysts, Lexington.

Niquette, Charles M., Randall D. Boedy, and Gail Fritz
1987 The Calloway Site (15Mt8): A Woodland Camp in Martin County, Kentucky. *West Virginia Archaeologist* 39(1):21-56.

Niquette, Charles M., Jonathan P. Kerr, Robert B. Hand, Dee Ann Wymer, Myra A. Hughes, Greg Sheldon
1989 *Phase III Excavations at the Dow Cook Site (15La4) in the Proposed Yatesville Reservoir, Lawrence County, Kentucky*. Cultural Resource Analysts, Lexington.

Pollack, David, and A. Gwynn Henderson
1983 A Preliminary Report on the Contact Period Occupation at Lower Shawneetown (15Gp15), Greenup County, Kentucky. *Proceedings of the Symposium on Ohio Valley Urban and Historic Archaeology* 1:1-9.

1984 A Mid-Eighteenth Century Historic Indian Occupation in Greenup County, Kentucky. In *Late Prehistoric Research in Kentucky*, edited by David Pollack, Charles Hockensmith, and Thomas Sanders, pp. 1-24. Kentucky Heritage Council, Frankfort.

Railey, Jimmy A.
1991 The Conley-Greene Rockshelter (15El4): An Early Woodland Occupation in the Cumberland Plateau of Northeastern Kentucky. In *Studies in Kentucky Archaeology*, edited by Charles D. Hockensmith, pp. 66-101. Kentucky Heritage Council, Frankfort.

Stallings, Richard, Nancy Ross-Stallings, Sarah Adams, Annette Ericksen, Flora Church, and Richard Bonnett
1995 *Phase III Mitigation at Sites 15Cr61 and 15Cr64, Located Near Grayson, Carter County, Kentucky*. Cultural Horizons, Harrodsburg, Kentucky.

Vento, Frank, James M. Adovasio, and Jack Donahue
1979 *Excavations at Dameron Rockshelter (l5Jo23A), Johnson County, Kentucky*. Department of Anthropology, University of Pittsburgh, Pittsburgh.

Webb, William S.
1942 *The C & O Mounds at Paintsville, Sites l5Jo2 and l5Jo9, Johnson County, Kentucky*. Reports in Archaeology and Anthropology 5(4). University of Kentucky, Lexington.

Upper Big Sandy Section

Bybee, Alexandra D., Renee M. Bonzani, C. Diane DeRoche, and Amanda Graham
2004 *Old Branham (15Fd94): Bioarchaeological Investigations of an Historic Cemetery, Floyd County, Kentucky (Item No. 12-301.00)*. Cultural Resource Analysts, Lexington.

Dunnell, Robert C.
1966 *Archaeological Reconnaissance in Fishtrap Reservoir, Kentucky*. Department of Anthropology, Yale University, New Haven.

Dunnell, Robert C., Lee Hanson, and Donald L. Hardesty
1971 The Woodside Component of the Slone Site, Pike County, Kentucky. *Southeastern Archaeological Conference*. Bulletin 14.

Foster, Gary S., and Jack M. Schock
1976 *An Archaeological Survey of Backley Creek*, *U.S. 119, Pike County*. Department of Sociology and Anthropology, Western Kentucky University, Bowling Green.

Huser, William A., Mark E. Esarey, Karen E. Hudson, Julie O'Shaughnessy, Katherine M. Roberts, and David E. Rotenizer
1993 *Phase III Archaeological Investigation at the Prater Historic Site (15Fd62) in Floyd County*, *Kentucky*. Archaeological Report No. 308. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky Lexington.

Kerr, Jonathan P., Steven D. Creasman, Gary D. Crites, and Albert M. Pecora
1995 *Phase III Investigations at the Martin Justice Site (15Pi92) Pike County, Kentucky*. Cultural Resource Analysts, Lexington.

O'Malley, Nancy
1990 *The DeRossett-Johns Site: Archaeological Exploration of Prestonsburg's Early History*. Archaeological Report No. 243. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Richmond, Michael D., Jonathan P. Kerr, Renee Bonzani, R. Berle Clay, and Jessica Allgood
2002 *Phase II National Register Evaluation of the Cain Farmstead (15Mg33), the Short Fork Site (15Mg38), the Prime Farmland Site (15Fd78), and the Prater Site (15Fd81) in Magoffin and Floyd Counties, Kentucky (Item No. 12-001.00)*. Cultural Resource Analysts, Lexington.

SUMMARY

The rate of archaeological investigations over the past 20 years has increased dramatically, particularly with the greater number of smaller surveys conducted as part of cultural resource management projects. This has resulted in an exponential increase in the number of reports completed for each management area, and the documentation of thousands of sites. If we consider that sites were first officially recorded in Kentucky beginning around 1932, the average rate of sites recorded was roughly 214 per year before 1987. Since 1987, new sites have been recorded at an average rate of about 586 per year. These figures, coupled with the dramatic increase in the number of reports, reflects a rate of archaeological work over the past 20 years that far surpasses that which was completed from ca. 1932 to 1987.

Overall, the Green River Management Area has been the subject of more intensive archaeological surveys than the other management areas. This assessment is based on the fact that it has more sites, more reports, more major surveys, and more sites documented by major surveys than any other management area. On the other hand, the Bluegrass Management Area is the region that has been subjected to more intensive excavation-based studies, with more tested and excavated sites than any other management area. Conversely, less work has been undertaken in the Purchase Management Area, which has the fewest reports, major surveys, sites reported by major surveys, and tested sites than any other management area. In addition, fewer sites have been excavated in this region since 1987 than any other management area.

The data discussed in this chapter relate only to general archaeological investigations and levels of effort undertaken within Kentucky. The significance of these data relative to specific time periods, research questions, and cultural developments is explored in the following chapters.

CHAPTER 3: PALEOINDIAN PERIOD[1]

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INTRODUCTION

Since the publication of the Tankersley's (1990b) overview of Paleoindian archaeology in Kentucky, relatively few new Late Pleistocene sites have been documented within the state. During the past 17 years, however, there have been significant changes in how archaeologists conceptualize, model, and understand the earliest inhabitants of North America, and research undertaken in Kentucky has contributed to this paradigm shift. Some of these developments include: 1) recognition that the colonization of the Americas occurred earlier than previously considered; 2) documentation of a wider range of cultural diversity across North America during the Late Pleistocene; and 3) development of models that emphasize the complex processes associated with the colonization and subsequent regionalization of new landscapes. These factual and conceptual developments have direct implications for our understanding of Paleoindian lifeways in Kentucky.

RETHINKING COLONIZATION

Until the late 1990s, the view of Late Pleistocene hunter-gatherers in the Americas was largely dominated by the "Clovis-first" paradigm. The theoretical perspective that lay at the heart of this hypothesis held that the New World was peopled by hunter-gatherers migrating from Northeast Asia across the Bering Land Bridge around 11,500 years ago (Haynes 1964, 1966; Kelly 2003; Martin 1973, 1984). The Clovis culture was thought to represent a specialized hunting economy based on the exploitation of large terrestrial mammals and megafauna (Haynes 1966; Martin 1967, 1973; Mossiman and Martin 1975). Upon entering the New World, Clovis peoples were believed to have rapidly colonized much of continental North America (along a rapidly expanding 'bow-wave' front), followed quickly by large parts of northern and western South America. This rapid colonization is thought to have resulted in a relatively homogeneous Late Pleistocene "founder" culture for the entirety of the New World (Fiedel 2000; Haynes 1980; Kelly and Todd 1988; Lynch 1990, 1983, 1974).

[1] Adapted from Tankersley 1990

Within the past two decades, however, new discoveries have resulted in a rather surprising amount of data that cannot be explained under the Clovis-first hypothesis (Bonnichsen and Schneider 1999; Dillehay 1997, 2000; Grayson and Meltzer 2002; Madsen 2004). These discoveries have seriously challenged the Clovis-first model and force us to reconsider the timing of colonization and the processes that were involved in the initial settlement of the New World. Three key developments are responsible for the challenges leveled at the Clovis-first theory: 1) the discovery of sites in both North and South America, most notably the Monte Verde site in southern Chile, that pre-date the posited entry of Clovis into the New World (Adovasio et al. 1999; Adovasio and Pedler 2004; Bryan et al. 1978; Bryan and Gruhn 2003; Dillehay 1988, 1989, 1997; Goodyear 1999; Lepper and Bonnichsen 2004; McAvoy and McAvoy 1997; Meltzer et al. 1997); 2) a failure to identify clear Clovis or Clovis-progenitor sites in the presumed home ranges of Siberia and Alaska (Hamilton and Goebel 1999; Goebel 2004; Goebel et al. 1991); and 3) the recognition of greater than before acknowledged cultural variability, including the existence of several lithic assemblages in North and South America that are technologically distinct from Clovis (Adovasio and Pedler 2004; Borrero 2006; Bryan 1991, 1973; Dillehay 1999, 2000; Goebel et al. 1991; Lavallée 2000; Meltzer 1993, 2002).

Perhaps the most interesting result of these recent developments has been an expanded discussion of the potential timeframe in which colonization was initiated (Bryan 2004; Dillehay 1997; Madsen 2004). It is now clear that humans were in the Americas by at least 11,000 B.C. This is based on the intensively dated occupation of the Monte Verde site, located in southern Chile (Dillehay 1997; 1989; Meltzer et al. 1997), which clearly demonstrates a human presence in the New World that predates the earliest Clovis site (Aubrey site, Texas) by nearly 1,000 years (Ferring 1989, 1990; Fiedel 2006). Assuming the colonization of the New World was initiated through North America—which seems most likely given its proximity to the Asian landmass and recent genetic data (cf., Merriwether 2002; Schurr 2004)—then the early dates from Monte Verde correspondingly imply that humans must have been in North America by at least that time, if not earlier.

Expanding the timeframe for the colonization of the Americas does not mean archaeologists must reject the possibility of a Clovis migration, only the presumed primacy of that migration (Dillehay 2000; Madsen 2004; Meltzer 2004). Clearly, the Clovis phenomenon still represents a rapid and unique spread of a people, technology, and/or economy across a relatively open North American landscape (Anderson 1996; Meltzer 2002). Most researchers now acknowledge that several migrations into the New World may have occurred at different times during the Late Pleistocene (Madsen 2004; Meltzer 2002). These migrations may have involved various cultural groups, who could have originated in different geographic locations, and traveled to North and South America by different methods and routes (Bonnichsen and Turnmire 1999; Bryan 1991; Dixon 1999; Gruhn 1987, 2004; Merriwether 2002; Schurr 2004). The challenge before archaeologists is to better understand the social, economic, and technological relationships that may or may not have existed between various early populations.

The Clovis-first theory held that a homogeneous "founder" culture was responsible for the relatively rapid colonization of North and South America—a situation that should result in similar archaeological expressions and human physiology throughout the New World during the Late Pleistocene. Biological, linguistic, skeletal, and genetic studies, however, point toward a range of diversity that does not fit well with the notion of a founding lineage or culture (Greenberg et al. 1986; Horai et al. 1993; Horai et al. 1996; Merriwether 2002; Munford et al. 1995; Neves et al. 1996; Nichols 1990, 2002; Schurr 2004; Steele and Powell 1992, 2002; Szathmary 1993; Torroni et al. 1993). Although there is often little direct agreement in the age ranges or number of migrations suggested by these individual studies, when taken as a whole, the picture they paint of colonization is one of a complex process that may have occurred earlier (ca. 15,000-30,000 years ago) than has traditionally been considered and involved multiple, separate migrations (Schurr 2004; Steele and Powell 2002).

At present, however, the archaeological record suggests that the younger end of this age range (ca. 13,000 B.C.) is the most likely. The Monte Verde site places humans in southern South America by at least 10,500 B.C. (Dillehay 1997). If colonization initiated through North America—as the evidence suggests—then even the most rapid rate of movement (see Anderson and Gillam 2000; Surovell 2000) would place the timing of initial entry around 14,000-15,000 years ago, which correlates relatively well with the lower end of the linguistic, genetic, and skeletal estimations.

In addition to the genetic and linguistic diversity that appears to have been present during the Late Pleistocene, it has become increasingly clear that a wide variety of cultural expressions also existed. The Nenana complex of Alaska (Goebel et al. 1991; Hamilton and Goebel 1999; Powers and Hoffecker 1989); the Western Stemmed Tradition of the Great Basin and Columbia Plateau (Ames 1988; Beck and Jones 1997); and maritime-focused coastal California sites (Erlandson 1994; Erlandson and Moss 1996; Jones et al. 2002; Rick et al. 2005) evidence varied economic practices and technological traditions that are distinct from the traditional characterizations of Clovis.

In South America this cultural diversity is even more apparent with widely varying economic and technological traditions across the continent during the Late Pleistocene (Dillehay 2000; Dillehay et al. 1992; Lavallée 2000). Sites, such as Monte Verde in Chile (Dillehay 1997, 1989), Taima-Taima in Venezuela (Ochsenius and Gruhn 1979), Amotape complex sites in northern Peru (Richardson 1983, 1981), coastal sites in southern Peru and northern Chile (Lavallée 2000; Keefer et al. 1998; Sandweiss et al. 1998), Fishtail complex sites of southern and western South America (Briceño 1999; Borrero 1996; Miotti 2003; Miotti and Salemme 1999; Politis 1991), Itaparica Tradition sites in eastern Brazil (Kipnis 1998), and early unifacial sites in Colombia (Correal 1986, 1981), illustrate a range of cultural adaptations and traditions in distinct environments that is inconsistent with the previously held notions of widespread cultural homogeneity.

MODELING COLONIZATION

The recognition of a wider range of early cultural diversity has forced researchers to reevaluate long-standing ideas on how and when the Americas were colonized. The failure of the traditional 'bow-wave' model of rapid migration (e.g., Martin 1973;

Mossiman and Martin 1975) to account for or explain early diversity has fostered a renewed interest in understanding (and modeling) the process of colonization itself. As a result of the renewed interest in colonization, several models have been generated that focus more exclusively on the behavioral and strategic choices humans make in open landscapes (e.g., Anderson 1990; Anderson and Gillam 2000; Beaton 1991; Bettinger and Young 2004; Dillehay 1997; Dixon 1999; Kelly and Todd 1988; Meltzer 2002), with relatively less emphasis on the timing of initial entry (although this remains an important question [see Fiedel 1999, 2002, 2006; Madsen 2004]).

One of the important features of several of the newer models is an explicit recognition that variable rates of exploration, expansion, and settlement may have operated conterminously (Anderson and Gillam 2000; Beaton 1991; Dillehay 1997; Dixon 1999). Rather than viewing colonization as an event, these models conceptualize colonization as a process in which exploration and migration may only be the first steps. Generally speaking, *colonization* is defined as the process through which viable human groups enter, explore, and settle a given landscape or region (Beaton 1991; Dillehay 2000; Dixon 1999; Madsen 2004; Meltzer 2002).

This conceptualization is necessarily broad and encompasses a wide range of potential human behaviors. Adapting to new climatic and ecological conditions, transforming technologies to new requirements, and maintaining group viability and social ties are all equally important components of the *process* of colonizing a new landscape (Golledge 1999; Mandryk 1993; Meltzer 2002; Rockman 2003). Differential strategies pursued by coterminous colonizing populations (or over time) could produce profound cultural variability in the archaeological record. The possibility of linking that variability to different strategies of colonization shows promise for increasing our understanding of how and when humans settled the New World.

Conceptualizing colonization as a process allows researchers to begin to integrate seemingly disparate regional data and patterns into larger interpretive frameworks (on supra-regional scales). The strength of this approach is that archaeologists no longer assume that colonization was the same everywhere (Beaton 1991; Dillehay 1997; Meltzer 2002). Rather, it seems likely that different groups probably approached the exploration and settlement of new landscapes with distinct strategies. Identifying and documenting this strategic variability may provide explanations—which have largely eluded archaeologists—for the cultural variability that is known to have existed during the Late Pleistocene period.

Another important feature of some colonization models is the recognition that intensity of settlement in individual landscapes and/or regions varied widely (Anderson 1996; Anderson and Gillam 2000; Bonnichsen and Turnmire 1999; Dillehay 2000). One explanation for disparities in settlement intensity is the process of *regionalization*, which is interrelated with colonization. *Regionalization* can be defined as the process in which colonizing groups and their offspring, within some geographically restricted region, begin to develop more intensive or specialized subsistence practices that are tailored to specific local ecologies (Dixon 1999; Tankersley 1998).

Like colonization, regionalization must be viewed as a process that involves the strategic choices of individual groups that may lead to increased territoriality, development of formal social networks, changes in mobility and subsistence strategies, economic intensification, and technological changes (Bamforth 1991; Bar-Yosef and Valla 1991; Dillehay 2000; Henry 1985; Stanford 1999; Tankersley 1998). The process of regionalization provides researchers with a significant conceptual tool for understanding the diversity of cultural expressions that develop after the initial colonization of a new landscape. The appearance of the Folsom, Goshen, Agate Basin and Cody complexes of western North America, and the Cumberland, Gainey, Beaver Lake, and Dalton complexes (among others) of eastern/southern North America may be best understood as regional outgrowths of an on-going process that emphasized increasingly intensified knowledge and use of local environments and resources. However, significant deficiencies remain in our understanding of the differences in the social, economic, and technological practices of these early complexes. If archaeologists can gain more insight into the development and organization of these distinct complexes, then they may be able to better understand the relationships between them and the strategies of the early colonizers from which they developed.

In sum, the 1990s and 2000s have seen some remarkable developments in the study of the peopling of the New World. New data (archaeological, linguistic, and genetic), an expanded chronology, and more robust models have shifted our understanding of colonization away from one-dimensional techno-economic explanations toward more comprehensive characterizations of the social, demographic, and behavioral choices that may have been involved in colonization. Although understanding the timing of initial migrations remains important, the growing recognition of a wide range of cultural diversity in the archaeological record has shifted researchers focus toward attempts to explain this diversity. These attempts have led to new conceptualizations of the process of colonization and the specific strategies involved in that process—as well as those that developed after initial colonization.

THE KENTUCKY PALEOINDIAN PERIOD

The Paleoindian period (ca. 9,500-8,000 B.C.) represents the initial documented colonization of all the major physiographic regions within Kentucky. It was recognized early on that differences in densities and distributions of sites, technologies, and subsistence patterns existed between earlier and later Paleoindian manifestations (Mason 1962; Rolingson 1964; Rolingson and Schwartz 1966). However, it has only been within the past two decades that archaeologists have begun to more specifically define these differences and relate them to relatively distinct phases within the broader Paleoindian period.

It is now relatively common across much of North America to refer to three distinct phases within the Paleoindian period: Early, Middle, and Late (Anderson 1996; Goodyear 1999; Stanford 1999; Tankersley 1996). The timeframes represented by each of these phases is somewhat variable and overlapping across different geographical regions. In general though, each temporal phase is believed to represent relatively distinct settlement patterns, technologies, and subsistence practices that were associated with the processes of colonization and regionalization (Anderson 1996; Anderson and Gillam 2000; Meltzer 2002; Ray 2003; Stanford 1999; Tankersley 1996, 1998). Like the temporal frameworks of these phases, there also exists a substantial amount of overlap in the technological and subsistence patterns and practices between the different phases.

Within Kentucky, archaeological components indicative of the Early, Middle, and Late Paleoindian subperiods have been identified across the state (see Ray 2003; Tankersley 1996). The general characteristics and loose temporal boundaries of each of these three subperiods are discussed below.

EARLY PALEOINDIAN (?-8,000 B.C.)

Pre-Clovis (?-9,500 B.C.)

To date, no pre-Clovis aged sites have been identified in Kentucky. However, since the discovery of the Monte Verde site in Chile (Dillehay 1997, 1989), it has become clear that North America was likely initially settled earlier than archaeologists have traditionally thought (Lepper and Bonnichsen 2004; Madsen 2004). As a result, a growing number of sites have been documented that contain cultural assemblages in depositional contexts that are stratigraphically below Clovis layers. Several of these possible pre-Clovis sites are located in regions close to Kentucky—notably, Cactus Hill in Virginia, Topper in South Carolina, Big Eddy in Missouri, and the Meadowcroft Rockshelter in Pennsylvania (Adovasio et al. 1999; Goodyear 1999; Lopinot et al. 2000; McAvoy and McAvoy 1997).

One of the best examples of pre-Clovis aged cultural materials in the southeastern North America comes from the stratified, multicomponent Cactus Hill site (McAvoy and McAvoy 1997; McAvoy 1997; Wagner and McAvoy 2004). The site is located on the coastal plain of southeastern Virginia and is situated within a paleo-sand dune and contains stratified Clovis, and apparently pre-Clovis artifacts (McAvoy and McAvoy 1997; Wagner and McAvoy 2004). A well-defined Clovis layer containing fluted points, other tools, and hearth features has been radiocarbon dated to ca. 8,900 B.C. (McAvoy 1997). Several clusters of small quartzite flakes, small prismatic blades, blade cores, and retouched flakes were recovered from deposits stratigraphically below the Clovis layer. Two small, basally-thinned bifaces (roughly pentangular forms) also were recovered from below the Clovis layer and appear to be associated with the clusters of small blades and flakes (McAvoy and McAvoy 1997). Locally-available quartzite cobbles appear to have been the focus of lithic reduction activities within the pre-Clovis deposits.

In addition to the flake and blade clusters, a charcoal concentration was identified and yielded a radiocarbon age of 13,120 B.C. (15,070±70 B.P). Soil samples collected from below the Clovis layer and associated with the flake clusters yielded additional dates of 14,720 B.C. (16,670±730 B.P). and 14,990 B.C. (16,940±50 B.P.) (McAvoy and McAvoy 1997; Wagner and McAvoy 2004). McAvoy (1997) suggests that the artifacts from the lower levels of Cactus Hill represent a clear pre-Clovis occupation of the southeast by at least 13,000 B.C. that emphasized the production of small prismatic blades.

A second example of nearby pre-Clovis aged deposits comes from Meadowcroft Rockshelter, which overlooks a tributary of the upper Ohio River. Adovasio and colleagues (Adovasio et al. 1980, 1990; 1999; Adovasio and Pedler 2004) have identified a deeply stratified and multicomponent sequence of radiocarbon-dated deposits that span the Late Pleistocene and Holocene. An unfluted, lanceolate-shaped projectile point (referred to as a Miller Lanceolate) was recovered from the lower levels (Stratum IIa) of the shelter and is associated with an age of 10,800-9,300 B.C. (based on bracketed dates from stratigraphically above and below the projectile point) (Adovasio et al. 1999). Other lithics associated with the lower strata at Meadowcroft include small prismatic blades apparently struck from prepared cores.

Several well-known critiques (notably Haynes 1980, 1987; Tankersley et al. 1987; Tankersley and Munson 1992) have been raised regarding the possible introduction of particulate and/or soluble contaminants into the lower deposits at Meadowcroft that may have affected radiocarbon determinations. In spite of the fact that the radiocarbon determinations from Meadowcroft do appear to correlate closely with both the cultural and stratigraphic sequences (Adovasio et al. 1999), the site remains controversial.

Although geographically removed from one another, there are broad similarities among some of these sites that may provide hints about what a possible pre-Clovis occupation in Kentucky might look like. Only two of these sites—Cactus Hill and Meadowcroft—have been discussed here, but they (along with the Topper site) share an early emphasis (ca. 14,000-10,000 B.C.) on the production of small prismatic blades and flakes from prepared cores (Adovasio et al. 1999; Adovasio and Pedler 2004; Goodyear 1999; McAvoy and McAvoy 1997). Small unfluted bifaces also have been found, like the pentangular Cactus Hill examples, but appear less frequently than the associated blade tools.

At present, little can be said regarding the technological organization of any pre-Clovis group, let alone subsistence strategies or settlement patterns. It is clear from the above discussions, however, that it is important to excavate levels beyond what are considered to be the basal cultural deposits. Perhaps one of the most important contributions of these sites is that they remind archaeologists to remain both conceptually and methodologically open to the possibility of encountering archaeological deposits and materials that do not fit within traditional timeframes and conceptualizations (Adovasio and Pedler 2004; Dillehay 1997, 2000; Goodyear 1999; Lepper and Bonnichsen 2004; Meltzer 2002).

Clovis (ca. 9,500-8,800 B.C.)

The Clovis culture or complex represents the earliest widely documented occupation in Kentucky and across North America (Anderson 1996; Haynes 2002; Tankersley 1990a). Fluted and finely worked lanceolate projectile points represent the most diagnostic artifact type recovered from Clovis sites, but other lithic, bone, and ivory tool types also are well-known (Boldurian and Cotter 1999; Haynes 2002; Frison 1999; Morrow and Morrow 1999; Tankersley 1996). Although a range of variability in size and basal shape has been documented for Clovis points (Collins 1999; Haynes 2002; Morrow and Morrow 1999; Ray 2003), which are bifacially flaked, concave-based, lanceolate forms identified by the presence of thinning flakes—or flutes—that extend from the base toward the distal end (Figure 3.1). Flutes may be single or composite, and located on one or both faces of the tool. Most fluted points were manufactured from bifacial preforms, but flake blanks also appear to have been employed (Boldurian and Cotter 1999; Haynes 2002; Sanders 1990).

Clovis points often display resharpening along the distal margins of the blade and were multifunctional (serving both as weapon tips and for use in various cutting/butchering activities) (Boldurian and Cotter 1999; Kay 1996; Ray 2003). The proximal edges were typically ground in preparation of hafting. Clovis points may have been hafted by: 1) tightly binding the tool directly to a bone or ivory foreshaft that was then attached to a spear shaft (Boldurian and Cotter 1999; Frison 1999); or 2) by direct binding to the spear shaft using beveled bone or wood rods to provide counter-pressure that secures the tool in place (Haynes 2002; Lyman et al. 1998).

Aside from the distinctive fluted points, Clovis lithic toolkits also contain large bifaces (sometimes used as cores or tools), blades and polyhedral and conical blade cores, side and end scrapers made on both blades and flakes, and gravers (Boldurian and Cotter 1999; Frison 1999; Haynes 2002; Sanders 1990; Stanford 1999). Unifacial and flake tools, some finely worked, are relatively common in Clovis assemblages (Morrow 1996; Sanders 1990). Clovis blades, in general, are triangular in cross-section with faceted, ground platforms (Collins 1999; Freeman et al. 1996). At the Adams (15Ch90) and Joe Priddy (15Hd583) sites in Kentucky, Clovis blades were often retouched along the side or end to form cutting and scraping tools (Haag 2004; Sanders 1990:52-59). Clovis sites in Kentucky that contain evidence for blade technology tend to be situated adjacent to high quality raw material exposures (Gramly and Yahnig 1991; Haag 2004; Lane et al. 1997; Stackelbeck 1996).

The Clovis toolkit is also known to have included a variety of perishable bone and ivory implements. Bone and ivory foreshafts (beveled on one or both ends) and points have been recovered from a number of sites located across western North America (Frison 1999; Haynes 2002). In eastern North America, however, bone and ivory tools are much less common. Notable exceptions include a large number of modified bone and ivory implements recovered from submerged contexts in Florida (Dunbar and Webb 1996), and two incised bone points with beveled bases from Sheriden Cave in Ohio that were associated with extinct Pleistocene fauna and Clovis lithic tools and debitage (Redmond and Tankersley 2005).

Haynes (2002:110) has noted that no Clovis site contains all of the tool classes that have been identified. Assemblages from Clovis sites typically contain only one or a few individual tool classes, suggesting that individual sites were likely occupied for relatively short periods and that different activities may have been pursued in distinct locations across the landscape. Large sites with high artifact densities and wide varieties of tool classes—indicating more intensive and/or repeated occupations—are relatively rare (Anderson 1996; Stanford 1999). The Adams site in Christian County and the Carson-Conn-Short site, which is situated along Kentucky Lake in Tennessee, are notable

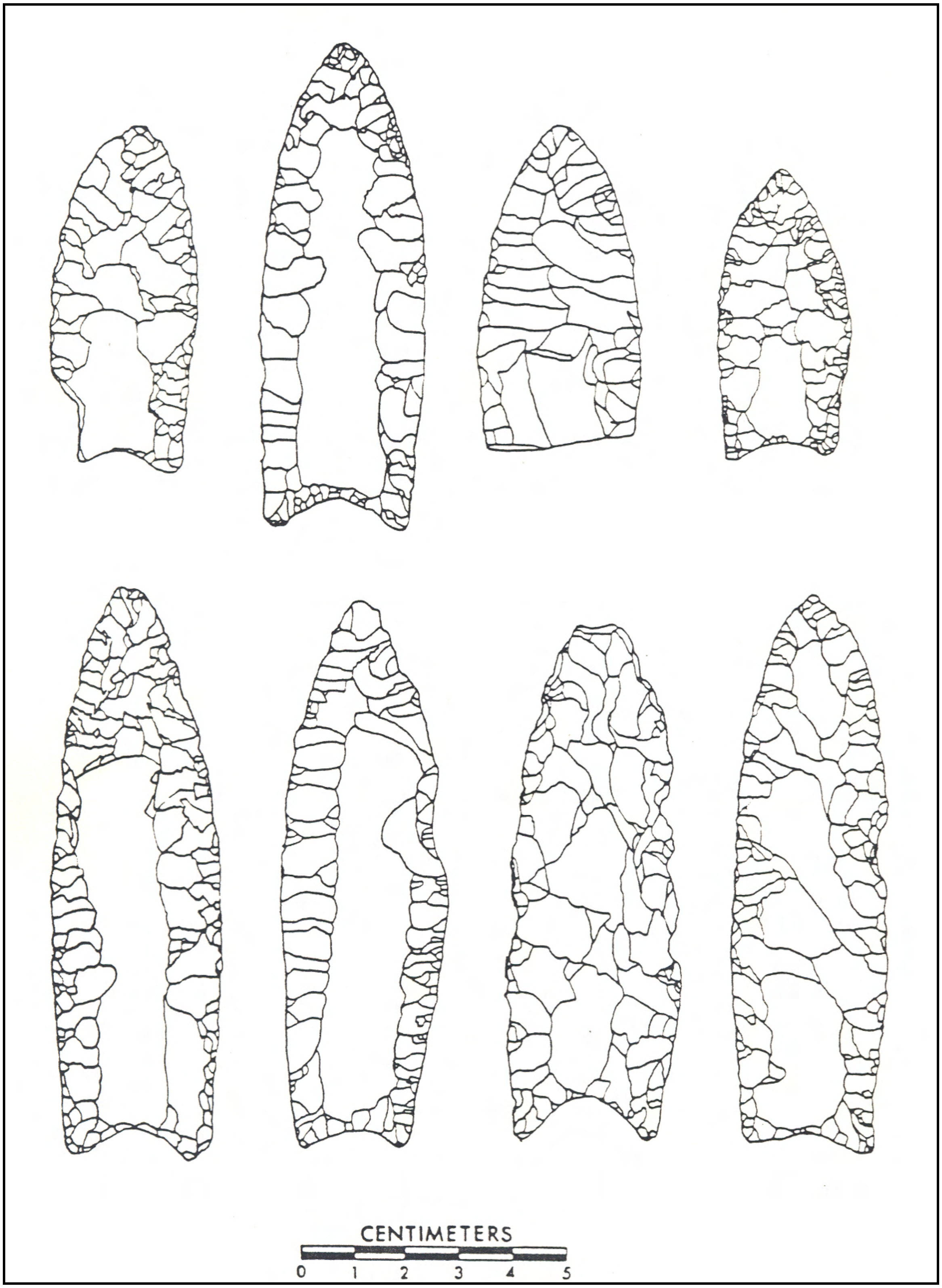

Figure 3.1. Clovis cluster projectile points from Big Bone Lick (15Be18 and 15Be269-272).

examples where high densities of a wide range of tool classes, including blades, have been documented (Broster and Norton 1993, 1996; Sanders 1990).

It is unclear if the few recorded large and/or dense Clovis sites represent intensive quarry/workshop locales, repeated occupations, seasonal rendezvous sites, or some combination of each (Anderson 1996; Freeman et al. 1996; Gramly and Yahnig 1991; Haag 2004). Sanders (1988, 1990) has suggested that the Adams site deposits represent an intensively occupied, short-term base camp/workshop (Figure 3.2). Others (Gramly and Yahnig 1991; Haag 2004; Tankersley 1996) see the high density of deposits at the site as indicative of repeated occupation/use. The Adams site—along with several other quarry/habitation sites identified in the Little River drainage of southwestern Kentucky (e.g., Ezell [15Ch483], Roeder [15Ch482]), and Boyd [15Ch236] [Figure 3.3] sites)—illustrate the difficulty in clarifying the nature of Clovis occupations at these sites due to the fact that intact, subplowzone deposits are rare to nonexistent and only limited excavations have taken place at this sites (Gatus and Marquardt 1984; Gramly and Yahnig 1991; Sanders 1990).

Aside from the relatively few dense quarry/habitation sites that have been identified, most of the Clovis sites in Kentucky—and in the larger Southeast region as a whole—are represented by relatively small, ephemeral occupations. These smaller sites are typically shallow in terms of depth of deposits, contain low numbers of artifacts, and provide evidence for few subsistence or economic activities (Anderson 1996; Gramly and Yahnig 1991; Goodyear 1999; Ray 2003; Tankersley 1990a). Small sites probably represent several different possible functions, including short-term habitations, encounter/temporary use sites, and possible kill/butchering sites, among others. At present, however, we do not have a very good idea of the range of Clovis site types that exist in Kentucky.

Several possible kill/butchering sites have been identified in Kentucky (Adams Mastodon [15Hr14], Big Bone Lick [15Be18, 15Be269-272], and Clay's Ferry Crevice [15Fa163] sites are possibilities), but the Early Paleoindian artifacts recovered from these sites have not been conclusively associated with Pleistocene faunal remains (Haag 2004; Lowthert 1998; Tankersley 1996; Walters 1988). A few cave and rockshelter sites in Kentucky may contain Clovis materials, such as the Enoch Fork Shelter (15Pe50) in Perry County, but none have, as yet, yielded clearly documented diagnostic Early Paleoindian artifacts in context (Bush 1988; Evans 1995; Freeman et al. 1996; Haag 2004; Tankersley 1996). The Enoch Fork Shelter, however, did yield a radiocarbon date of 9010 B.C. (10,960±240 B.P.) that was stratigraphically associated with a retouched blade (Bush 1988:60-61). This date and the associated blade were recovered from deposits stratigraphically below a Late Paleoindian lanceolate point, suggesting that this site may represent an example of Early Paleoindian cave/shelter use in Kentucky. However, it is equally likely that the Enoch Fork deposits represent a Middle Paleoindian occupation (Evans 1995).

Although Clovis sites are found in all regions of the state, it has been suggested that they tend to cluster in specific topographic settings, such as terraces along major stream confluences, around karstic features (e.g., sinkholes and sinkponds), and near outcrops of high quality lithic raw materials (Anderson 1990; Gatus and Maynard 1978; Tankersley 1996). However, Ray's (2003) survey of Paleoindian site locations in Marion

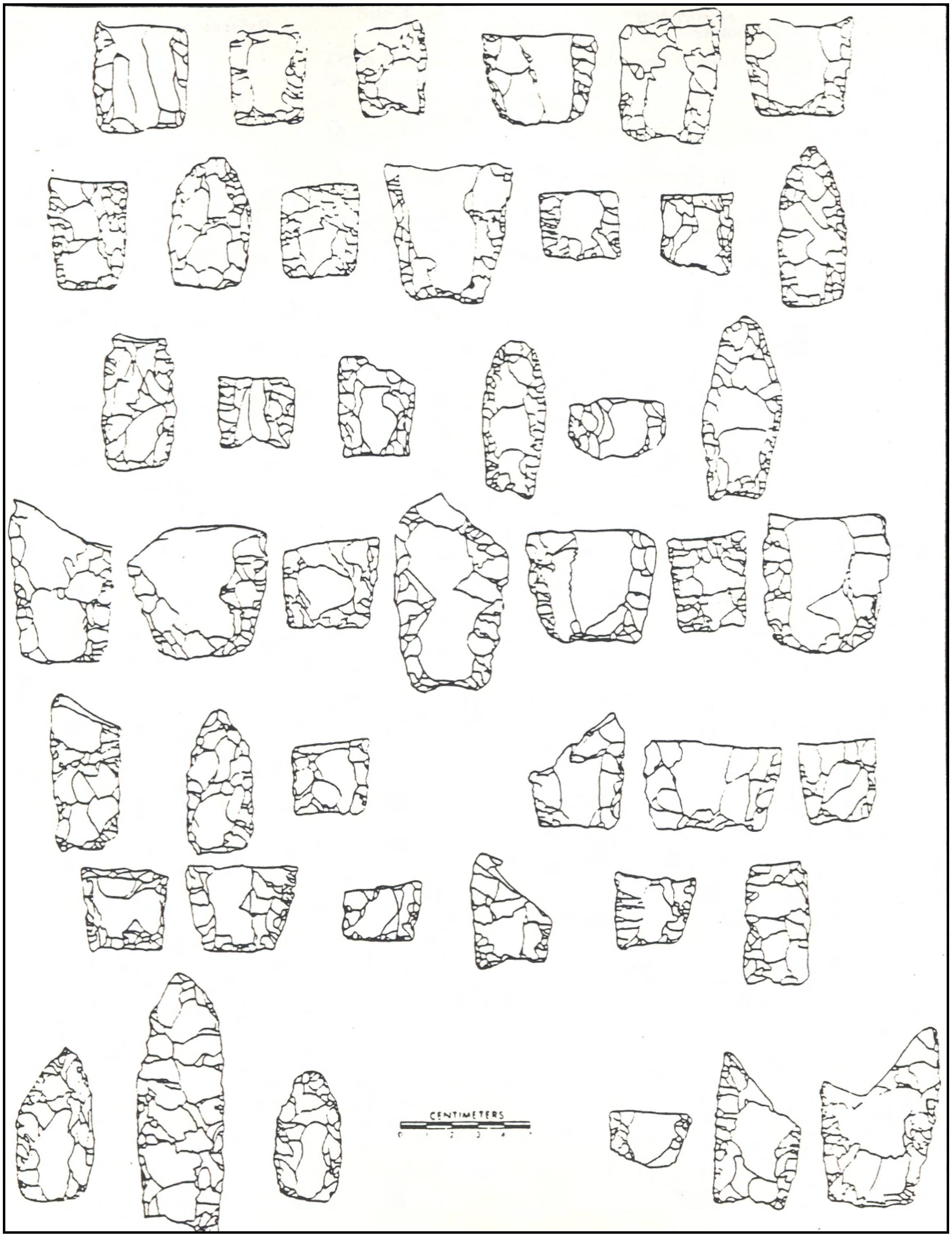

Figure 3.2. A sample of the fluted point assemblage from the Adams site (15Ch90), Christian County, Kentucky.

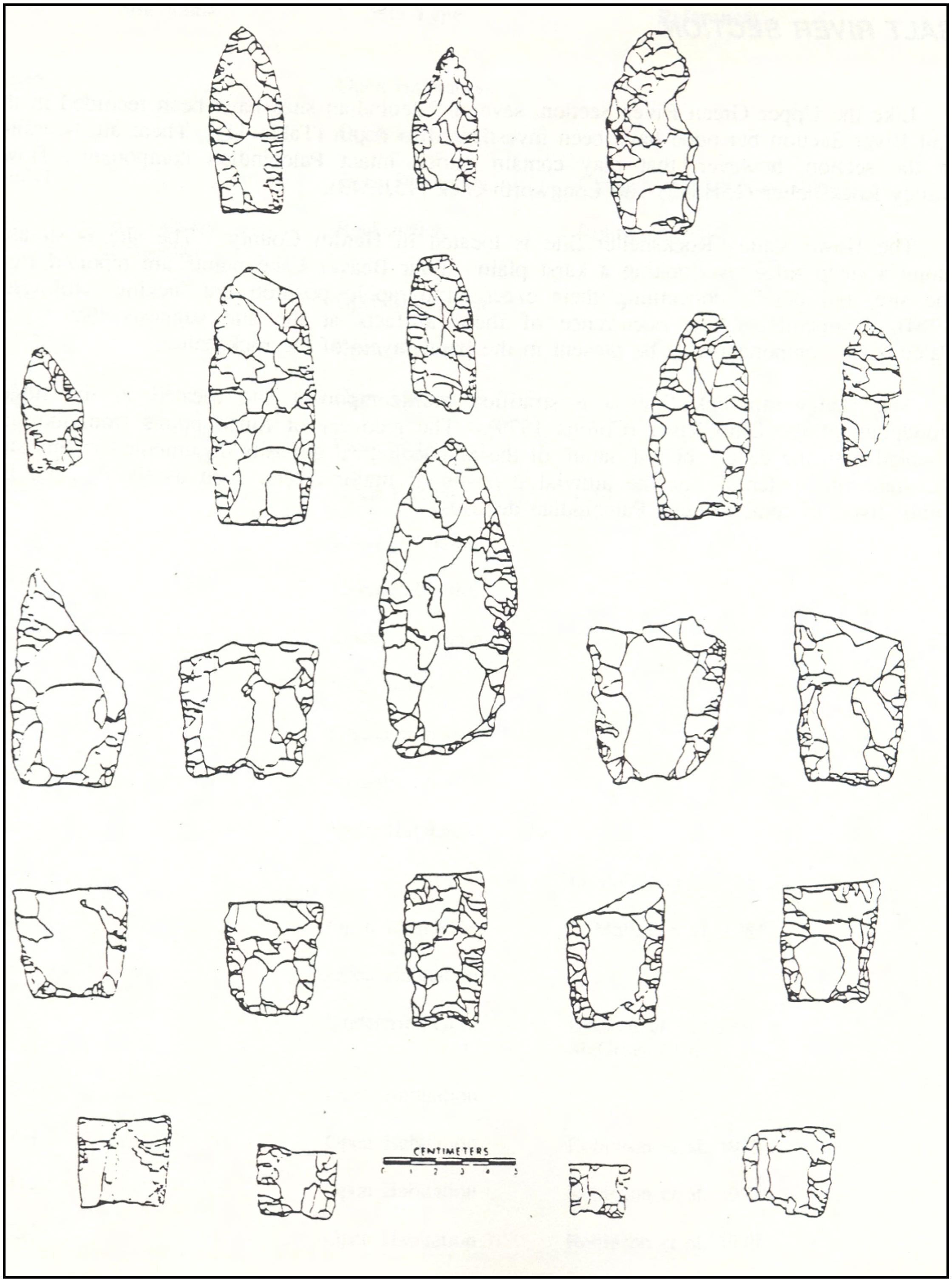

Figure 3.3. A sample of the fluted point assemblage from the Boyd site (15Ch236), Christian County, Kentucky

and Washington counties indicated that upland and headwater locations also were frequently used. Of the 20 Early and Middle Paleoindian sites documented by Ray (2003:26-43), 57.9 percent were situated on ridge summit or divide summit landforms, indicating a much more diverse and widespread pattern of settlement than previously thought. Since Clovis groups are considered to have been highly mobile populations, archaeologists should expect to find their sites in widely varying locations. Widespread settlement on different kinds of landforms along with the presence of distinct types of Clovis sites, however, is suggestive of a level of landscape and resource knowledge that is not consistent with a rapidly moving colonizing population (Dixon 1999; Meltzer 2002).

Anderson (1990:185-196) has suggested that during Clovis times, portions of western Kentucky (specifically the central Ohio and lower Cumberland drainages) were ‘staging areas’ for the exploration and settlement of other nearby areas of the continent. The dense quarry/habitation sites of the Little River complex in Christian County appear to provide strong support for this idea. The quarry/habitation sites that define this complex, however, bear little resemblance—in terms of density of materials and occupation—with Clovis sites in other regions of Kentucky. In addition, archaeologists do not know for how long the sites associated with this complex were occupied, whether those occupations were contemporaneous or sequential, or what kind of relationship they may have had with sites in neighboring areas. Developing a better understanding of the temporal and economic relationships between these sites and others in Kentucky is necessary to provide more insight into how the process of colonization occurred.

Aside from increasing our understanding of Clovis settlement, researchers also need to expand our knowledge of Early Paleoindian subsistence. Clovis groups in Kentucky have long been characterized primarily as big game hunters (Kelly and Todd 1988; Tankersley 1990b, 1996). However, as noted above, archaeologists currently have no clear kill/butchering sites in Kentucky. There is no doubt that Clovis peoples exploited big game resources—kill/butchery sites in nearby states, such as the Kimmswick site in Missouri and the Coats-Hines site in Tennessee, attest to the exploitation of big game (Breitburg et al. 1996; Graham et al. 1981).

Dincauze (1993) has noted that environmental conditions in eastern North America may have limited the preservation of Pleistocene bones in kill/butchery sites. It has been suggested, however, that the diverse and changing local environments of eastern North America toward the end of the ice age may have fostered more of a generalized foraging strategy that emphasized the exploitation of a wider range of small game and plant resources (Dincauze 1993; Meltzer 1993; Walker and Driskell 2007). Even at the Kimmswick site in Missouri, a diverse range of faunal species were exploited, including small mammals, fish, reptiles, and birds, indicating a varied subsistence base (Graham et al. 1981; Graham and Kay 1988).

Subsistence information from Clovis sites is generally rare. However, research across North America is painting a picture of Clovis subsistence that more closely resembles the broad-spectrum Early and Middle Archaic subsistence practices (see Chapter 4) than it does a big game hunting specialization (Cannon and Meltzer 2004; Collins 2007; Kornfield 2007; Lepper 1999; Meltzer 1993). In Kentucky, the paucity of excavated Clovis sites with intact deposits limits our ability to gather information regarding Early Paleoindian subsistence practices. However, it is becoming clear that archaeologists should expect to encounter a variety of potential faunal and botanical resources at Clovis sites.

In sum, the Clovis occupation of Kentucky appears to have been dense and widespread. In spite of the number of sites and finds that have been identified, archaeologists still know very little about the timing of Clovis occupation (aside from the one radiocarbon date from Enoch Fork Shelter), the range of different types of Clovis sites, or Clovis subsistence practices. Advances in understanding Clovis settlement and landform use (Ray 2003), technological strategies (Freeman et al. 1996; Gramly and Yahnig 1991; Haag 2004; Ray 2003; Tankersley 1996), and possible colonization strategies (Anderson 1996; Lane and Anderson 2001) suggest that future research will provide much needed additional data.

MIDDLE PALEOINDIAN (CA. 9,000-8,500 B.C.)

The Middle Paleoindian phase is similar in most respects to the preceding Early Paleoindian Clovis subdivision, but is distinguished by technological changes, greater stylistic diversity, and probable increased economic regionalization (Goodyear 1999; Ray 2003; Tankersley 1996). The Middle Paleoindian phase witnessed marked climatic changes that resulted in environmental instability and the apparent extinction of most species of Pleistocene mega-fauna (Anderson et al. 1996; Delcourt and Delcourt 1981; Grayson 1987; McWheeney 2007; Morse et al. 1996). These environmental changes appear to have resulted in a subsistence shift toward an increased reliance on regionally available plant and smaller game resources within a mixed foraging economy (Walker 2007).

A shift toward more locally available resources also is apparent in Middle Paleoindian lithic toolkits. Use of a wider range of raw material resources, including some poorer quality materials, occurred during this phase (Haag 2004; Tankersley 1996). Changes in lithic technology also accompanied the increased use of locally available chert resources. Tankersley (1996:31) states that the blade technology of the Early Paleoindian phase disappeared and was replaced by bipolar reduction. It also has been suggested that a change in fluting technology occurred, resulting in a shift from direct percussion during the Early Paleoindian phase to indirect percussion during Middle Paleoindian times (Morrow 1996; Ray 2003).

Middle Paleoindian projectile points also show increased stylistic diversity with the appearance of Cumberland and Gainey points. Gainey points are lanceolate, fluted points that stylistically resemble Clovis points (Deller 1989; Deller and Ellis 1988; Justice 1987; Morrow 1995; Ray 2003; Simons et al. 1984). Gainey points are typically thinner than Clovis points, have deeper basal concavities, and are often resharpened along the distal end of the blade. Flutes typically extend one-half to three-quarters of the blade length and often overlay discernable guide flutes (Morrow 1996; Morrow and Morrow 1999; Ray 2000, 2003; Simons et al. 1984). Gainey points are also usually ground along the lateral proximal margins, but do not exhibit extensive basal retouch after fluting (Ray 2003:20).

Cumberland points also are a lanceolate, fluted point (Figure 3.4). However, they are typically longer and narrower than either Clovis or Gainey points. The blade on Cumberland points is typically excurvate, while the lateral proximal edges expand slightly, resulting in flared ‘ears’ or a ‘fishtail-like’ appearance to the hafted end of the tool (Justice 1987; Ray 2003; Rolingson 1964; Tankersley 1996). Cumberland points are deeply fluted, with flutes often extending three-quarters to nearly the full length of the blade. Ray (2003:20-21) notes that these types of points were frequently resharpened along the distal end of the blade and that the resharpening flakes often truncate the end of the flute channel. Cumberland points do not exhibit guide flutes, but are often finely retouched along the concave basal margin.

Middle Paleoindian lithic toolkits typically contain a wider range of tool types than their Early Paleoindian predecessors. Limaces, spurred end scrapers, and a wide variety of flake tools become more common in Middle Paleoindian assemblages (Ray 2003; Tankersley 1996) (Figure 3.5). The greater diversity of tool types present in these assemblages is probably related to subsistence activities associated with an increasingly mixed foraging economy and the exploitation of a wider range of local resources.

Like Early Paleoindian Clovis sites, Middle Paleoindian sites are found throughout Kentucky. However, based on the distribution of recorded diagnostic points, it appears that Middle Paleoindian sites may have a somewhat wider distribution than Clovis (Tankersley 1996). Middle Paleoindian sites and components have been well-documented in floodplain/terrace settings in the Purchase Management Area, such as the Henderson site (15Ly27) in Lyon County, and in the Green River Management Area at the Boyd (15Ch236) site in Christian County (Gramly and Yahnig 1991; Rolingson and Schwartz 1966; Tankersley 1996). Sites of this period, however, also have been documented in the Knobs region of the Salt River Management Area, including 15 sites in the Upper Rolling Fork region (Ray 2003), the Red Sand site (15Ht46) in Hart County (Lane and Gordon 1997) and the Danville Tank site (15Bo16) in Boyle County (Boedy and Niquette 1987). Several Middle Paleoindian sites also have been identified in the uplands of Upper Cumberland Management Area, including the Oil Well Branch Road site (15McY412) (Des Jean 1993) and several sites in the Alma Nation site complex in Cumberland County (Lane 1995, 1996b, 1996c; Lane et al. 1995), and in the Big Sandy Management area at the Cowpen Creek site (15Pi96) in Pike County (Baltz 1995).

In spite of the geographically wide distribution of Middle Paleoindian sites and projectile points, archaeologists know relatively little about the nature of these occupations or the activities that occurred at individual sites. That no Middle Paleoindian sites or components have been excavated in Kentucky in the last 20 years limits our ability to understand the transition from Early to Middle Paleoindian adaptations, and the relationships between contemporaneous Middle Paleoindian cultural expressions (e.g., Gainey and Cumberland). No sites in Kentucky have yet been identified that yielded a Middle Paleoindian radiocarbon date in direct association with diagnostic artifacts. However, as noted above, the Enoch Fork Shelter has yielded one radiocarbon date that may fit within the Middle Paleoindian timeframe (9,010 B.C.;10,960±240 B.P.) (Bush 1988; Evans 1995).

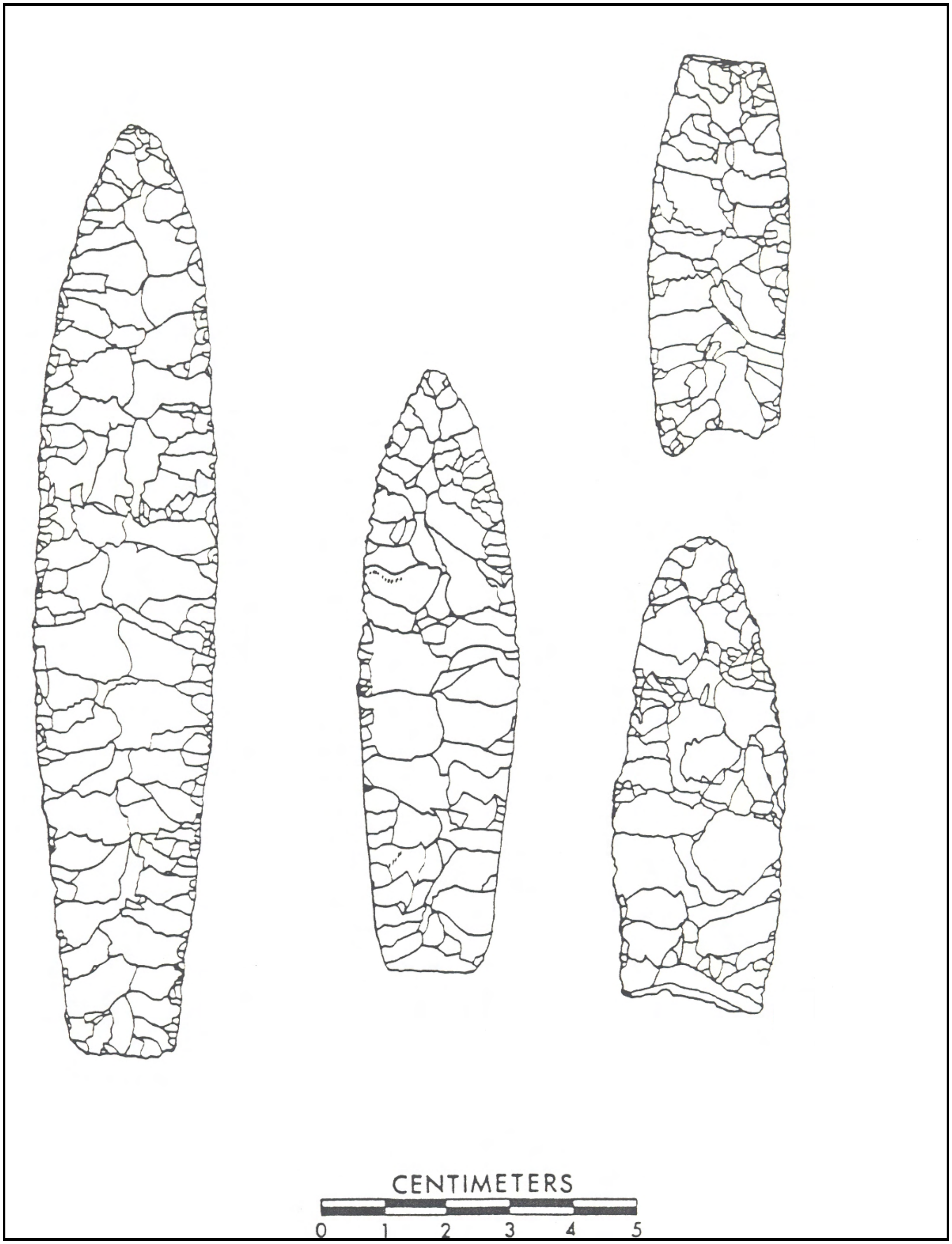

Figure 3.4. Cumberland cluster projectile points from Kentucky sites. The small resharpened specimen on the far right is from Great Rock Sink, Pulaski County, Kentucky.

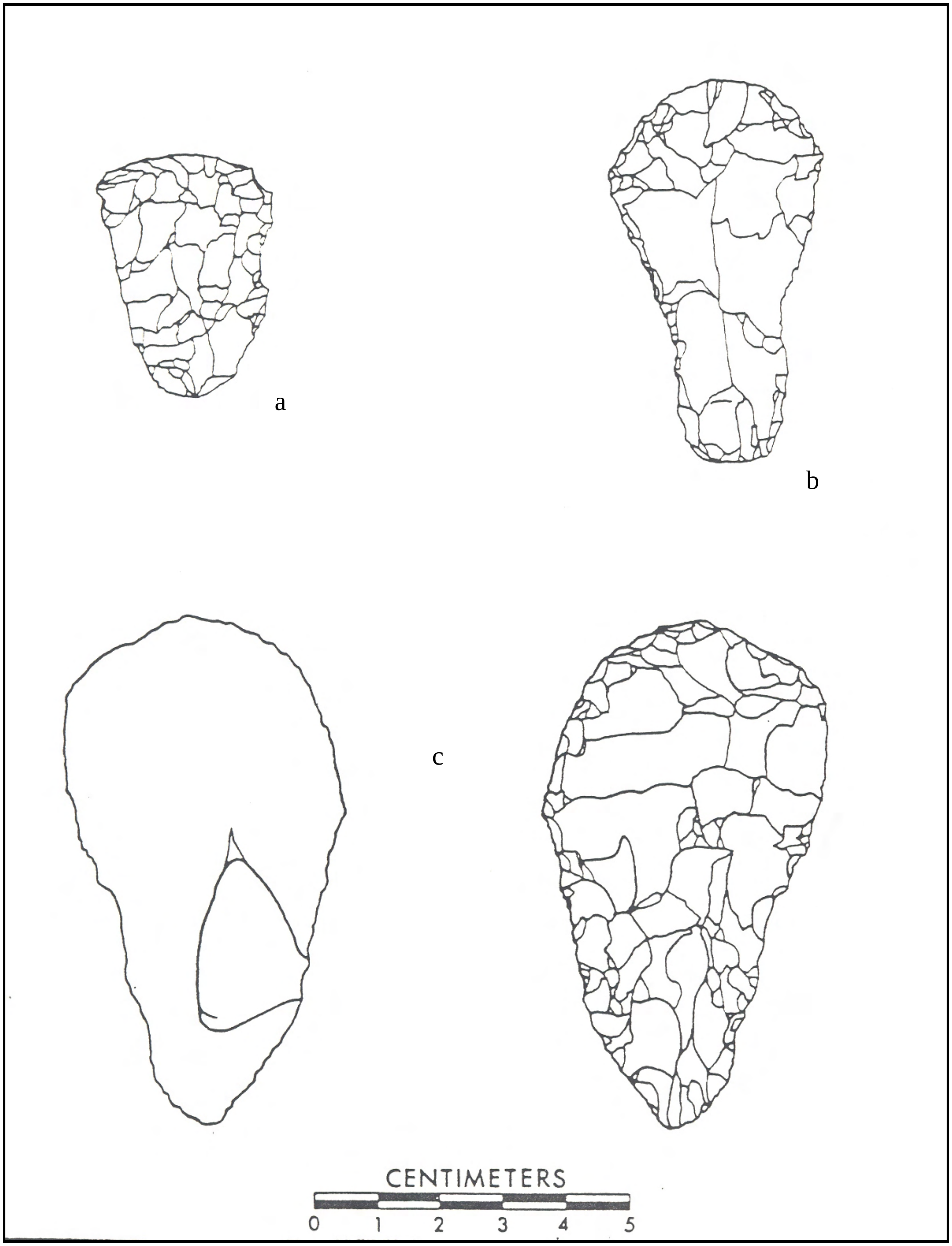

Figure 3.5. Early Paleoindian endscrapers: a-b, display grave spur; c, made on a blade (the reverse side illustrates bulb of percussion removal).

In general, the Middle Paleoindian phase is the least well-understood of the three Paleoindian phases. It is clear that important changes in lithic technology and stylistic diversity, along with a probable broadening of subsistence strategies, occurred during this time. How these changes relate to the known environmental shifts that also occurred during this phase is unknown. Archaeologists may speculate that environmental changes fostered increased regionalization, which resulted in a greater reliance on locally available resources and the development of distinct projectile point styles. These ideas, however, require additional data from both survey and excavation contexts in order to be tested.

LATE PALEOINDIAN (CA. 8,500-8,000 B.C.)

Late Paleoindian occupations are generally recognized by the presence of unfluted lanceolate projectile points. Like Early and Middle Paleoindian points, Late Paleoindian points are bifacially-flaked, lanceolate forms. However, they lack the characteristic flutes that are diagnostic of earlier projectile point types (Freeman et al. 1996; Ray 2003; Tankersley 1996). Basal and lateral edge grinding is typical. Projectile point bases may be concave, convex, or straight. The concave-based forms often display basal thinning flakes that are similar to flutes but technologically different and much shorter.

Late Paleoindian projectile points recovered from Kentucky sites can be assigned to two stylistic clusters: Lanceolate Plano and Dalton (Justice 1987; Ray 2003) The Lanceolate Plano cluster, includes both the Plainview and Agate Basin types. Neither type, however, is very common at Kentucky sites. The Dalton cluster includes Beaver Lake, Quad, and the classic Dalton types, which are much more common in the state (Justice 1987) (Figure 3.6).

Kentucky Lanceolate projectile points are very similar to those found on the Plains (Frison 1999; Stanford 1999; Wormington 1957). The presence of these points in Kentucky may be the result of a migration from the west, although this proposition has not been tested. Certain Lanceolate Plano points, in particular the Plainview type, are both morphologically similar to the earlier Clovis point, except that they lack the characteristic flute. However, the Agate Basin type is quite different. It is a long, narrow, parallel or slightly convex, lanceolate blade that displays uniform flaking (Stanford 1999). The base is usually straight, although slightly convex and even concave forms have been found. Concave-based Agate Basin points are frequently referred to as the Angostura variety (Justice 1984:50). Edge grinding of the haft element is always present and extensive, often more so than that found on other Paleoindian projectile point types. Lateral edge grinding usually extends to the midsection of the point Agate Basin points from Kentucky range in length from 5 to 13 cm, with an average length of 8.5 cm (Rolingson 1964:49).

Dalton cluster points are typically identified by their ‘fish-like’ appearance or by the common occurrence of obvious, extensive, and sometimes even beveled resharpening above the haft element (Ray 2003; Tankersley 1996). Both Beaver Lake and Quad points

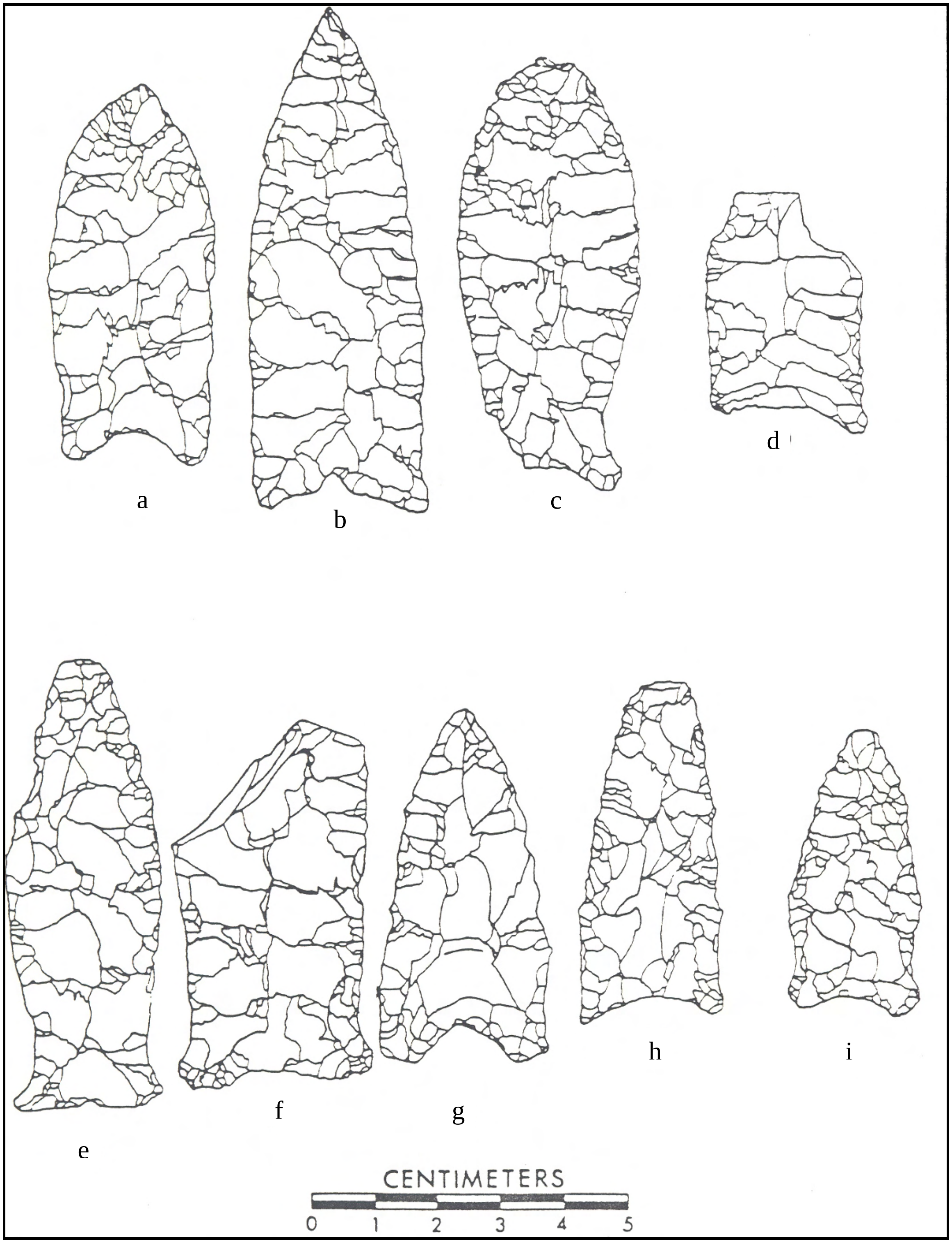

Figure 3.6. Dalton cluster points: a, Quad; b-f, Beaver Lake; g-i; Dalton.

have a ‘fish-tailed’ base. Except for the absence of flutes, these two types are morphologically similar to Cumberland points, but tend to be both shorter and narrower than earlier points (Ray 2003). It is this similarity that led investigators, such as Rolingson (1964), to conclude that most Beaver Lake points were simply unfluted Cumberland points. As Ray (2003:46-47) notes, however, channel fluting disappears entirely in the Late Paleoindian subperiod and is replaced by basal thinning.

Like Beaver Lake points, Quad points have a ‘fish-like’ shape and are short and wide. Beaver Lake points, in contrast, appear long and narrow. The basal ears of most Quad points project profoundly and often form the widest section of the point (Ray 2003; Tankersley 1996). In contrast, the midsection of a Beaver Lake point is wider than its base. Basal and lateral edge grinding is usually present but not always as pronounced as that exhibited by other types. Quad points from Kentucky range in length from 4.1 to 8.6 cm, but most cluster around 6.0 cm.

The classic Dalton type includes a great deal of variation, much of which can be attributed to a change in form due to extensive blade resharpening (Goodyear 1974; Ray 2000, 2003). These types of points frequently exhibit a serrated or right-handed beveled blade edge, or some combination of both traits. Through continued reuse and resharpening, these points eventually became whittled down to a stage where they were converted into other tool forms. Specimens in the final stage of resharpening often display a drill-like appearance but usually lack the blade edge wear associated with true drills. Edge grinding of the haft area is usually intensive. Dalton points from Kentucky range from 3.1 to 8.5 cm in length, with an average of 5.7 cm (Rolingson 1964:44).

Ray (2003:46-50) suggests that four major changes in lithic technology occurred between the Late Paleoindian subperiod and their earlier predecessors. These changes include a more intensive use of a wider range of locally available chert resources. Early and Middle Paleoindian points tend to be manufactured from high quality local and exotic raw materials, while the later points are often manufactured from lower quality materials. Secondly, channel fluting is replaced with basal thinning. Third, there appears to be a marked reduction in the size of projectile points. Mean length of the points studied in the Upper Rolling Fork survey conducted by Ray (2003:35-41) indicated a range of 8.1-5.7 cm for Early and Middle Paleoindian points and a range of 6.9-3.9 cm for Late Paleoindian points.

The final change in lithic technology that occurred during the Late Paleoindian subperiod was the extensive resharpening of projectile point blade margins. Clovis, Cumberland and Gainey points were typically resharpened only along the distal end of the point blade. Late Paleoindian points, in contrast, are often heavily resharpened along the lateral edges of the blade indicating substantial reuse. Multiple resharpenings often resulted in beveled and/or serrated margins, which are not typically present on earlier points (Ray 2000, 2003).

Aside from the wider range of stylistic diversity in diagnostic projectile points, Late Paleoindian lithic toolkits also are more diverse than those of the Early and Middle Paleoindian subperiods. A wide variety of bifacial and unifacial tools, including beveled and backed bifaces, unifacial and flake scrapers, adzes, retouched flakes, and drills/perforators, are common in Late Paleoindian assemblages (Goodyear 1999; Morse

1997; Tankersley 1996). The increased variety of tools and greater diversity of diagnostic styles is thought to represent ongoing regionalization as Late Paleoindian groups became increasingly localized in terms of settlement, subsistence practices, and resource use (Goodyear 1999; Ray et al. 1998).

The Late Paleoindian subperiod was marked by oscillating, but accelerating, environmental change (Muller 1986). Except for some high Appalachian peaks, Kentucky's vegetational cover had changed from spruce and jack pine parklands to mixed hardwood forests (Delcourt and Delcourt 1981). By Late Paleoindian time, large herbivores, such as mammoth, mastodon, horse, and moose/elk had become or were going extinct (Kunen and Anderson 1980). Open areas were most likely restricted to karst barrens and sandy terraces along major streams.

As these environmental changes unfolded, the Late Paleoindian diet continued the shift toward a broad-spectrum foraging economy, which had begun in the Early and Middle Paleoindian subperiods. Evidence from Late Paleoindian deposits at Dust Cave in Alabama attest to this trend. Faunal and botanical remains from Dust Cave indicate the exploitation of an extremely wide range of plants, including various nut species, and animals (fish, birds, reptiles, amphibians, and a variety of small and medium sized mammals) (Hollenbach 2007; Walker 2007; Walker and Driskell 2007).

The results from Dust Cave are not unique. Data from Late Paleoindian sites across eastern North America point to a subsistence pattern that emphasized a broad-spectrum foraging economy (Walker and Driskell 2007). Tankersley (1990b, 1996) has suggested that Late Paleoindian foragers became more generalized in response to the extinction of the Pleistocene megafauna, which necessitated the exploitation of less desirable small game resources. He has argued that because these smaller game animals were dispersed (i.e., not herd animals), Late Paleoindians were not as mobile as their Early and Middle Paleoindian predecessors (Tankersley 1996:35).

A reduction in mobility during the Late Paleoindian period does seem to have occurred, given the increased stylistic diversity of projectile points and the fact that more sites have been found in a wider range of settings throughout the state. For the first time, Paleoindians began to clearly occupy caves and rockshelters (in eastern, central, and western Kentucky), although open air settings remained the most common. There is also a larger number of Late Paleoindian sites compared to the Early and Middle Paleoindian subperiods, which may indicate an increase in population size and density.

Why Late Paleoindians began to inhabit a wider range of physiographic settings, exploit a wider range of resources, and reduce their mobility may be related to the extinction of Pleistocene megafauna as Tankersley (1990b; 1996) has suggested. It seems more likely, however, that these trends continue those begun during the Early and Middle Paleoindian subperiods and reflect the ongoing process of regionalization. As Late Paleoindians became increasingly familiar with the landscapes they occupied, they began to exploit more diverse local resources and move less, in effect, ‘settling in’ to particular environmental settings. As these groups ‘settled in’, they became tethered—both economically and socially (as is indicated by the diversity of point styles)—to specific regions and gave rise to the broad-spectrum economies that would come to characterize the subsequent Archaic period in Kentucky.

GENERAL STATEWIDE PATTERNS

Of the 366 sites that have Paleoindian components most were identified on the basis of one or a few diagnostic stone tools. Sites with Paleoindian components have been documented in 89 of Kentucky's 120 counties, but 31 counties have no recorded Paleoindian sites (Figure 3.7). Several factors may account for the absence of Paleoindian sites in these counties and the relative paucity of Paleoindian sites in general. First, it may simply represent the nature and intensity of the earliest occupation of the state. This would be consistent with the lower population densities that have been proposed for this period of colonization and initial regionalization (Anderson 1990; Anderson and Gillam 2000). Second, the high mobility of early populations was not conducive to the acquisition, production, and discarding of large quantities of materials (Binford 1980; Kelly 1995). With fewer cultural remains associated with Paleoindian site occupations, these types of sites have significantly reduced archaeological visibility relative to later components, thus making them difficult to locate. Lastly, their greater antiquity means these sites have had more time to be exposed to post-depositional forces (both natural and cultural) that may dislocate, alter, or destroy the remains of Paleoindian activity.

Of the 366 Paleoindian sites, slightly more than two-thirds were recorded before 1987 (n=247 or 67.5 percent). Despite this statewide trend, two management areas witnessed an increased rate in the number of Paleoindian sites recorded over the past two decades: Salt River and Upper Cumberland (Table 3.1). The increase in Paleoindian sites recorded for the Salt River Management Area is due almost entirely to the efforts of Jack Ray who surveyed a portion of the Upper Rolling Fork and Beech Fork Rivers (Ray 1998, 1999, 2003). The slight increase in sites documented in the Upper Cumberland Management Area is the result of a research project conducted in Cumberland County that was specifically focused on the recovery of Paleoindian data (Leon Lane, personal communication 2007).

Over one third of the Paleoindian sites in Kentucky have been classified as open habitations without mounds (Table 3.2). No Paleoindian sites have been identified as stone mound, earth mound, non-mound earthwork, or isolated burial site types (Table 3.2). The few sites that fall under the categories of petroglyph/pictograph, cemetery, and open habitation with mound(s) (Table 3.2) are multicomponent, and have only minimal evidence of Paleoindian use based on the recovery of one or a few diagnostic stone tools. Many other multicomponent sites likewise contain only one or perhaps a few cultural artifacts that are diagnostic of Paleoindian toolkits. Nearly one third of all Paleoindian sites are located in dissected upland settings (n=113 or 30.9 percent), and one quarter of the sites are in floodplain settings (n=93 or 25.4 percent) (Table 3.3).

Some of the densest concentrations of Paleoindian sites are located: 1) along the Little, Green, and Ohio Rivers in the Green River Management Area; 2) along the Upper Rolling Fork and Beech Fork Rivers in the Salt River Management Area; 3) in Cumberland and Pulaski Counties in the Upper Cumberland Management Area; and 4) in the Central Bluegrass Section (Figure 3.7). In fact, more Paleoindian sites have been

Table 3.1. Distribution of Paleoindian Sites by Management Area and Section.

Management Area/Section	Sites Recorded Before 1987	Sites Recorded Since 1987	Total
Purchase			
Mississippi River	8	0	8
Ohio River I	7	0	7
Lower Tennessee /Cumberland	11	2	13
Total	26	2	28
Percent	92.9	7.1	
Green River			
Ohio River II	20	4	24
Western Coalfield	29	1	30
Pennyroyal	41	13	54
Upper Green River	12	13	25
Total	102	31	133
Percent	76.7	23.3	
Salt River			
Salt River	28	45	73
Total	28	45	73
Percent	38.4	61.6	
Upper Cumberland			
Lake Cumberland	12	18	30
Southeastern Mountains	4	0	4
Total	16	18	34
Percent	47.1	52.9	
Bluegrass			
Central	37	12	49
Northern	8	3	11
Eastern	9	2	11
Total	54	17	71
Percent	76.1	23.9	
Upper Kentucky / Licking			
Gorge	4	3	7
Interior Mountains	3	2	5
Total	7	5	12
Percent	58.3	41.7	
Big Sandy			
Lower Big Sandy	13	0	13
Upper Big Sandy	1	1	2
Total	14	1	15
Percent	93.3	6.7	
Entire State			
Total	247	119	366
Percent	67.5	32.5	100.0

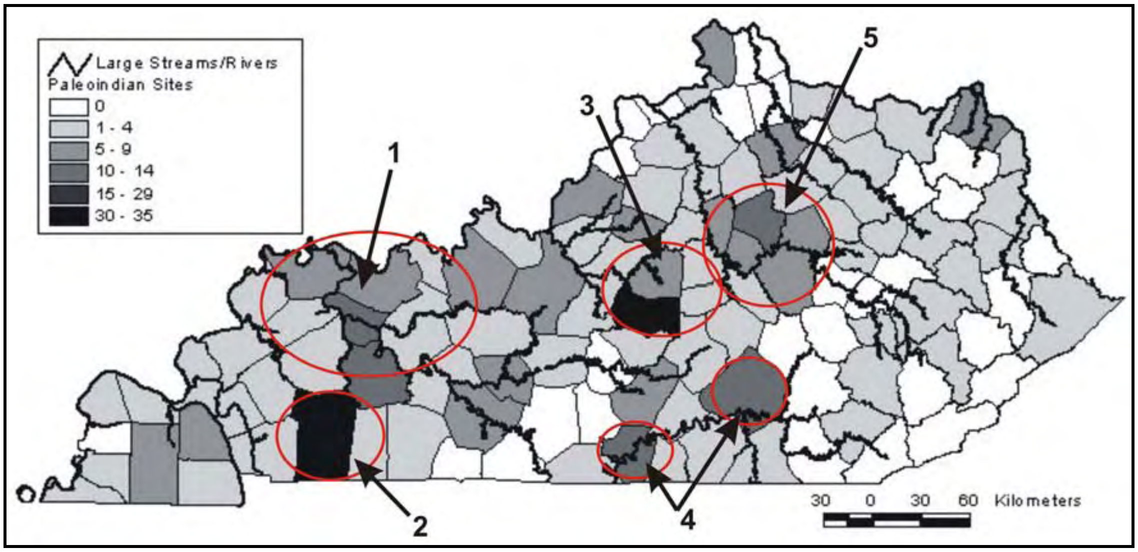

Figure 3.7. Distribution of Paleoindian Sites (numbered areas highlight denser concentrations): 1, Ohio River II Section and lower Green River of the Western Coalfield Section of the Green River Management Area; 2, Little River in the Pennroyal Section of the Green River Management Area; 3, Upper Rolling Fork River of the Salt River Management Area; 4, Cumberland and Pulaski Counties in the Lake Cumberland Section of the Upper Cumberland Management Area; and 5, Central Bluegrass Section of the Bluegrass Management Area.

recorded in Christian County (n=35 or 9.6 percent), located in the Green River Management Area, and Marion County (n=30 or 8.2 percent), located in the Salt River Management Area, than any other county in Kentucky. More detailed discussion of these concentrations and other regional trends in Paleoindian occupation of the state are presented in the following discussions of each of the management areas.

The first step in any archaeological investigation is identifying where the sites are located. This step has consumed much (though not all) of the research efforts on the Paleoindian Period up to this point in Kentucky. We have a reasonable, albeit incomplete, understanding of where Paleoindians were locating themselves on the landscape based on the distribution of their diagnostic stone tools. Filling in the gaps of the distribution of these sites (as noted below) and focusing more intensively on recovering additional data (e.g., subsistence remains, internal spatial organization of activity areas, etc.) are sorely needed in order to address more complex questions regarding the nature of Paleoindian societies. Overall, few Paleoindian sites in Kentucky have been investigated beyond their initial documentation during survey. Those that have been investigated and have yielded significant data (particularly from intact deposits) are presented with each of their respective management areas and sections below (Table 3.4). In addition, sites that have the *potential* to yield significant data if further studies are undertaken are also discussed in the following sections (Table 3.4).

Table 3.2. Distribution of Paleoindian Sites by Management Area and Site Type.

Site Type	Pur-chase	Green River	Salt River	Upper Cumberland	Blue-grass	Upper Kentucky/ Licking	Big Sandy	Total	Percent
Open Habitation w/out Mound(s)	25	111	67	26	65	6	15	315	86.1
Isolated Find	2	4						6	1.6
Rockshelter		4	2	4		5		15	4.1
Cave		3	2	3				8	2.2
Quarry	1	1		1				3	0.8
Mound Complex						1		1	0.3
Non-Mound Earthwork								0	0.0
Workshop		4	1		1			6	1.6
Cemetery		2	1					3	0.8
Specialized Activity Site		1			4			5	1.4
Open Habitation w/ Mound(s)		3			1			4	1.1
Total	28	133	73	34	71	12	15	366	100.0
Percent	7.7	36.3	19.9	9.3	19.4	3.3	4.1	100.0	

Table 3.3. Distribution of Paleoindian sites by Management Area and Landform.

Landform	Purchase	Green River	Salt River	Upper Cumberland	Blue-grass	Upper Kentucky/ Licking	Big Sandy	Total	Percent
Floodplain	9	24	20	6	18	4	12	93	25.4
Terrace	3	14	12	7	16	2	3	57	15.6
Hillside	5	16	9	6	6	3	0	45	12.3
Dissected Uplands	11	41	27	9	23	2	0	113	30.9
Undissected Uplands	0	35	3	6	8	1	0	53	14.5
Other	0	3	2	0	0	0	0	5	1.4
Total	28	133	73	34	71	12	15	366	100.0
Percent	7.7	36.3	19.9	9.3	19.4	3.3	4.1	100.0	

Table 3.4. Significant Paleoindian Sites.

Site Number	Site Name	Reference
<u>Purchase Management Area</u>		
Mississippi River Section		
None		
Ohio River I Section		
None		
Lower Tennessee/Cumberland Section		
15Cw241		Kerr and Tuma 1998
15Ly27	Henderson	Rolingson 1964
15Tr10	Roach Village	Rolingson 1964
<u>Green River Management Area</u>		
Ohio River II Section		
15Bc282	Brother Abraham	Mocas 1993a
15Bc283	George Branch Shelter A	Mocas 1993b
15Cn50		Miller and Striker 2005
15Da32	Clark	Creasman 1993a
15Da33	Abe Carter	Creasman 1993a
Western Coalfield Section		
15Hk45	Parrish Village	Webb 1951; Rolingson 1964
Pennyroyal Section		
15Ch90	Adams	Sanders 1990; Sanders and Maynard 1979; Haag 2004
15Ch236	Boyd (Ledford)	Freeman and Smith 1992; Sanders and Maynard 1979
15Ch482	Roeder	Freeman et al. 1996
15Ch483	Ezell	Freeman et al. 1996
15Ch572		Versluis 1999
Upper Green River Section		
15Ad122		Baltz et al. 1998
15Ad125		Baltz et al. 1998
15Cs18		Ray 2003
15Ta80		Baltz et al. 1998
15Ta88		Baltz et al. 1998
15Ed422	Brier Creek	Davis 1999
<u>Salt River Management Area</u>		
15Bo16	Danville Tank	Niquette 1984; Boedy and Niquette 1987
15Bu244	Hall's Cave	Wilson et al. 1983
15Hd583	Joe Priddy	Haag 2004
15Jf243	Longworth Gick	Collins 1979; French 1998
15Mn28		Ray 2003
15Mn32		Ray 2003
15Mn59		Ray 2003
15Mn100-115		Ray 2003
15Mn310		Ray 2003
15Mn317		Ray 2003
15Mn329		Ray 2003
15Mn342		Ray 2003
15Mn355		Ray 2003
15Mn359		Ray 2003
15Ne34		Ray 2003
15Ne88-90		Ray 2003

Table 3.4. Continued

Site Number	Site Name	Reference
15Ws30-34		Ray 2003
15Ws36-37		Ray 2003
<u>Upper Cumberland Management Area</u>		
Lake Cumberland Section		
15Cu21	Wolfe Shelter	Lane 1996a; Lane et al. 1995
15Cu41		Creasman 1993b
15Cu43	Crawley Farmstead	Lane 1996b
15Cu44	Alma Nation	Lane 1995
15Cu46	Stella Cross	Lane 1996c
15Cu63	Sexton Fork	Lane 1996d
15Cu64	Owsley Farm	Lane and McBride 1997
15Cu67	Lewis Creek	Lane 1997a
15Cu74		Lane and Shields 1997
15Cu81	Clint Carter	Lane 1997b
15McY412	Oil Well Branch Road	DesJean 1993
15Pu18	Great Rock Sink	Tankersley 1990b
15Wn71		Bybee 2003
Southeastern Mountains		
15Kx5		Turnbow and Allen 1977
<u>Bluegrass Management Area</u>		
Central Bluegrass Section		
15Hr14	Adams Mastodon	Duffield and Boisvert 1983; Walters 1988
15Fa163	Clays Ferry Crevice	Tankersley 1990b
15Js116	Snowden	Fiegel 1994
Northern Bluegrass Section		
15Be18/15Be269-272	Big Bone Lick	Lowthert 1998; Tankersley 1985, 1987
Eastern Bluegrass Section		
15Ni2	Lower Blue Licks	Boisvert 1984
15Lf78	Upper Blue Springs	Boisvert 1984
<u>Upper Kentucky/Licking Management Area</u>		
Interior Mountains Section		
15Pe50	Enoch Fork Rockshelter	Bush 1988; Evans 1995
<u>Big Sandy Management Area</u>		
Lower Big Sandy Section		
15Jo14	Mayo	Rolingson 1964
Lower Big Sandy Section		
15Pi96	Cowpen Creek	Baltz 1995

PURCHASE MANAGEMENT AREA

The Purchase Management Area has relatively few Paleoindian sites (n=28). All but two of the sites were recorded before 1987. Most of the Paleoindian sites are located in dissected upland (n=11 or 39.3 percent) and floodplain settings (n=9 or 32.1 percent) (Table 3.3). No Paleoindian sites have been identified in undissected upland settings in this management area.

There are two possible explanations for this relative paucity of Paleoindian sites. First, given the active alluvial history of the Mississippi and Ohio Rivers, which border two of the sections in this management area, Paleoindian sites may be deeply buried (see Autry et al. 1989), and thus difficult to detect with traditional survey methods. This active alluvial history also may result in the dislocation of archaeological materials, which would further complicate efforts to identify the loci of Paleoindian activity. Lastly, few projects have specifically targeted Paleoindian research topics in the Purchase Management Area, and those that have were completed before 1987 (e.g., Gatus and Marquardt 1984; Rolingson 1964).

MISSISSIPPI RIVER SECTION

Only eight Paleoindian sites have been identified in the Mississippi River Section, all of which were recorded prior to 1987. Most of these sites are classified as open habitations without mounds (Table 3.5), and most are multicomponent. The only other Paleoindian site types represented in this section consist of two isolated finds and a quarry (Table 3.5). The only county for which no Paleoindian sites have yet been recorded in this section and management area is Carlisle County. Paleoindian projectile points were recovered from three Mississippian sites (Flanary [15Cn2], McLeod Bluff [I5HiI] and Sassafras Ridge [15Fu3] [Rolingson 1964]), and from the surface of the Early Archaic Youngblood site (l5Gv26) (Gatus and Marquardt 1984). Given the active alluvial history of the Mississippi River, there is a potential for the discovery of buried sites in this section. Open habitation sites also should be present on the high bluffs that overlook the Mississippi River Valley.

Table 3.5. Purchase: Site Type by Management Area Section.

Site Type	Mississippi River	Ohio River I	Lower Tennessee / Cumberland	Total	Percent
Open Habitation w/out mound(s)	5	7	13	25	89.3
Isolated Find	2			2	7.1
Quarry	1			1	3.6
Total	8	7	13	28	100.0
Percent	28.6	25.0	46.4	100.0	

OHIO RIVER I SECTION

The seven Paleoindian sites in the Ohio River I Section were all recorded before 1987. These sites represent one quarter of those identified in the Purchase Management Area. All are open habitations without mounds (Table 3.5). Additional Paleoindian sites in this section may be buried under alluvium along the Ohio River, and also should be present on elevated areas overlooking the floodplain.

LOWER TENNESSEE/CUMBERLAND SECTION

Almost half of the Paleoindian sites in the Purchase Management Area are located in the Lower Tennessee/Cumberland Section (n=13). All are open habitations without mounds (Table 3.5), with only two recorded since 1987. The Lower Tennessee/Cumberland Section is situated within well-developed karst terrain consisting of an extensive sinkhole plain with scattered knobs and ridges. High quality lithic resources are abundant in this region. As a result, it is expected that more Paleoindian sites of varying site types will eventually be identified and recorded in this section. Most of the sites that have been investigated, such as Henderson (15Ly27) and Roach Village (15Tr10), are multicomponent open habitation sites with limited evidence of Paleoindian occupation (Rolingson 1964).

The Henderson site (l5Ly27) is located in Lyon County near the confluence of the Eddy Creek and the Cumberland River. Prior to professional investigations at the site, seven Paleoindian projectile points of the Clovis, Cumberland, and Dalton clusters were collected from the immediate vicinity by local collectors (Rolingson 1964:57). Given the large collection of Paleoindian material and the possibility of impact from Lake Barkley, investigations were conducted in 1958. Several trenches were excavated at the site. Each trench was excavated to a depth of 29.4 cm. Paleoindian and Archaic lithic material was recovered from the upper 15.2 cm of the excavations. Unfortunately, the site's cultural deposits were not only shallow but also deflated and entirely mixed. The Paleoindian material recovered during excavation included two possible Cumberland projectile point fragments and a large assemblage of unifacial tools.

The Roach Village site (l5Trl0) is located approximately 0.4 km from the Tennessee River in Trigg County. Before inundation by Kentucky Lake, excavations were conducted during a two month period in 1941. These excavations identified three distinct strata: a disturbed plowzone; an intact stratum containing a Mississippian house basin; and a deflated and mixed basal stratum containing Woodland, Archaic, and Paleoindian artifacts (Rolingson 1964).

Site 15Cw241 is another multi-component open habitation site from which Paleoindian materials have been recovered (Kerr and Tuma 1998). This site is located on a ridge spur along Blood River in Calloway County. It contains evidence of Early and Late Paleoindian occupations, based on the recovery of two Clovis and two Dalton cluster projectile points. Although these points were recovered from the site’s surface, it is still fairly unusual for a Kentucky site to yield this many Paleoindian diagnostics. Taken together with the other Paleoindian sites that have been recorded in this section, it is apparent that this was an area of significant, focused occupation throughout the Paleoindian period.

GREEN RIVER MANAGEMENT AREA

Over one-third of all Paleoindian sites in Kentucky have been recorded in the Green River Management Area (n=133 or 36.3 percent). No other management area has as many Paleoindian sites. Furthermore, no other management area has as many different site types with associated components assigned to this temporal unit (Table 3.2), with most of the sites classified as open habitation without mounds (n=108 or 81.2 percent) (Table 3.6). Within this management area, sites tend to be associated with dissected upland (n=41 or 30.8 percent) or undissected upland settings (n=35 or 26.3 percent) (Table 3.3). Over three quarters of the Paleoindian sites in the Green River Management Area were recorded before 1987 (n=102 or 76.7 percent).

Table 3.6. Green River: Site Type by Management Area Section.

Site Type	Ohio River II	Western Coalfield	Pennyroyal	Upper Green River	Total	Percent
Open Habitation w/out mound(s)	22	28	45	16	111	83.5
Isolated Find	1	1	2		4	3.0
Rockshelter	1		1	2	4	3.0
Cave			1	2	3	2.3
Quarry			1		1	0.8
Workshop			2	2	4	3.0
Cemetery				2	2	1.5
Specialized Activity Site				1	1	0.8
Open Habitation w/ Mound(s)		1	2		3	2.3
Total	24	30	54	25	133	100.0
Percent	18.0	22.6	40.6	18.8	100.0	

OHIO RIVER II

Fewer Paleoindian sites have been recorded in the Ohio River II Section than any other section within the Green River Management Area (n=24 or 18.0 percent), and most of those were recorded prior to 1987 (n=20 or 83.3 percent). With the exception of one isolated find (15Cn2) and one rockshelter (15Bc283), all are open habitations without mounds, which tend to be located along the Ohio and Green rivers (Figure 3.7). Given the well-developed floodplains in this section, it is expected that intact, buried Paleoindian sites will be identified along the Ohio River. Additional Paleoindian deposits are likely to be identified on elevated areas overlooking the Ohio valley and other waterways, and in rockshelters.

Limited excavations conducted at two multicomponent sites located in Daviess County, Clark (15Da32) and Abe Carter (15Da33), documented the presence of ephemeral Paleoindian occupations (Creasman 1993). The Clark site is located on a "low relief ridge of a broad, flat outwash plain south of the Ohio River" (Creasman 1993:62). The nearby Abe Carter site is located "along the top and south slope of a low relief knoll of a broad flat terrace" (Creasman 1993:80). The limited evidence for Paleoindian occupation of these sites was based on the recovery of a fluted projectile point fragment (Clovis?) from subsurface context at each location (Creasman 1993:31). In addition, at the Clark site, a unifacial spurred endscraper was recovered from the same excavation context as the fluted point fragment (Creasman 1993:69). Based on the paucity of materials recovered and the lack of associated features, these sites were interpreted as short duration extractive camps (Creasman 1993).

Other sites in this section that have yielded Paleoindian materials include the Brother Abraham site (15Bc282), George Branch Shelter A (15Bc283), and Site 15Cn50 (Mocas 1993a, 1993b; Eric Schlarb, personal communication 2007). The Brother Abraham site is an open habitation located on a bench above the south side of the George Branch of Rough River. Paleoindian occupation of this site is evidenced based on at least six diagnostic projectile points (largely from a private collection), including those of the Cumberland, Beaver Lake, Quad, and Dalton varieties (Mocas 1993a). The presence of these materials points to Middle and Late Paleoindian use of this site.

The George Branch Shelter A is located directly below the Brother Abraham site. The only diagnostic recovered from the shelter was a Dalton point. In addition, at least one human burial was reportedly looted from this shelter, though no intact burials were noted at the time of survey (Mocas 1993b). If it is a single component Dalton site, and if the burial actually did exist, this would be the only Late Paleoindian burial site identified in the state. Late Paleoindian burials, even cemeteries, are known from outside the state (e.g., the Sloan site in Arkansas [Morse 1975, 1997]), but none have been recorded in Kentucky.

Site 15Cn50 is a stratified rockshelter in Crittenden County that was occupied from the Late Paleoindian phase through the Mississippi period (Eric Schlarb, personal communication 2007). Two Beaver Lake/Dalton-type points were recovered from the lowermost levels, along with other associated debitage. Analysis of the materials and samples collected from this site is on-going, but it is expected to provide information on Paleoindian subsistence and settlement patterns. This site type is not common in western Kentucky. There are only four other rockshelter sites in the Green River Management Area with Paleoindian components (Table 3.6).

WESTERN COALFIELD

All but one of the 30 Paleoindian sites in the Western Coalfield Section were recorded before 1987. This section has the second highest number of Paleoindian sites in the Green River Management Area (n=30 or 22.6 percent). These sites are represented primarily by open habitations without mounds (n=27 or 90.0 percent) (Table 3.6). A concentration of Paleoindian sites in this section, particularly in McLean and Muhlenberg Counties, is located along the Green River (Figure 3.7). Relatively few sites with Paleoindian deposits have been investigated in this section, and those that have were excavated during the WPA era of Kentucky archaeology. Paleoindian artifacts were recovered from Archaic shell midden sites (Indian Knoll [15Oh2], Carlston Annis [15Bt5], and Austin [15McL13]), three non-shell midden Archaic sites (Barrett [15McL4], Butterfield [15McL7], and Parrish Village [15Hk45]), and from a Mississippian village (Morris Village [15Hk49]) (Rolingson 1964). While the Paleoindian components at most of these sites were obscured by later habitations, the artifact assemblage at Parrish Village suggests that this site contains a substantial Paleoindian occupation.

Parrish Village lies in the northwestern portion of Hopkins County near the confluence of Rose, Weirs, and Clear Creeks (Rolingson 1964). The topography is hilly with broad valleys and swampy floodplains. The recovery, by local collectors, of two Clovis and two Cumberland points from the site's plowzone prompted the University of Kentucky to excavate the site between 1939 and 1940. Four additional fluted points and a large assemblage of unifacial tools were recovered from a midden deposit at a depth of 30.5 and 45.7 cm below surface. Unfortunately, numerous Late Archaic features, including more than 100 burials also were recovered from this cultural stratum. The deflated nature of this site is typical of Paleoindian open habitations in most of western Kentucky.

PENNYROYAL

Slightly more than forty percent of the Paleoindian sites in the Green River Management Area have been recorded in the Pennyroyal Section (n=54 or 40.6 percent) (Table 3.1). Christian County (n=35) has the most Paleoindian sites of any of the counties that comprise this section as well as the entire state. On the other hand no Paleoindian sites have been recorded in Allen or Simpson counties. The large number of Paleoindian sites documented in this section may be due to its karstic topography and the availability of high quality chert. There are numerous sinkholes, sinkhole ponds, springs, and active caves, many of which have Paleoindian sites documented in their vicinity. Most of the Paleoindian sites in the Pennyroyal Section are open habitations without mound(s) (n=45 or 83.3 percent), though several other site types also are represented (Table 3.6).

The relatively high number of recorded Paleoindian sites in Christian County is due in part to focused Paleoindian research efforts along the Little River (Freeman et al. 1996; Gatus and Marquardt 1984; Gramly and Yahnig 1991; Sanders 1990; Sanders and Maynard 1979). At least 12 Paleoindian sites have been documented in this drainage, including a series of lithic workshop-habitation sites and isolated artifacts. Perhaps the most significant of these sites are Adams (15Ch90), Boyd (15Ch236; also referred to as Ledford), Roeder (15Ch482), and Ezell (15Ch483) (Freeman et al. 1996; Sanders 1990; Sanders and Maynard 1979). All appear to have been occupied during the Early Paleoindian subperiod based on the recovery of Clovis projectile points and/or abundant cores, blades, bifaces, and other debitage that are considered characteristic of the production of these fluted points.

The Adams site is located in Christian County near the town of Hopkinsville. The site is situated along the margin of a large sinkhole overlooking the North Fork of the Little River (Sanders 1990; Sanders and Maynard 1979:168; see also Haag 2004). High-quality chert nodules from the Blue River Group are available in residuum at the site, in limestone outcrops exposed along the Little River, and in the alluvium of the river and its intermittent tributaries. Examination of this locality has documented the presence of a large concentration of manufacturing debris on the surface of the site. Carl Yahnig, a local avocational archaeologist, has intensively collected the site since 1975 and has obtained a sample of artifacts. Thomas Sanders (1983, 1990) analyzed Yahnig's collection in conjunction with his own controlled surface collection of the site. He found that the artifact assemblage exhibits a remarkable uniformity in the selection of raw material and "technological practices" (Sanders 1983:198). All the temporally diagnostic artifacts from this site are fluted projectile points, and Yahnig and Sanders have recovered multiple examples of every stage of the fluted point manufacturing sequence (Figure 3.2). Additionally, large prepared cores, identical to those described by Green (1963) for the Clovis culture, and unifacial tools made on blades and flakes have been recovered. On the basis of these findings, Sanders considered Adams to be a single component Clovis site. Single component Clovis sites are extremely rare in the eastern United States, making the Adams site worthy of more in-depth investigations.

The Boyd site is located less than 2 km directly north of the Adams site in Christian County. The site is situated on a narrow ridge spur facing an acute bend in the North Fork of the Little River (Sanders and Maynard 1979). Like the Adams site, high quality chert nodules are prolific near the site. An intensive but nonsystematic collection of artifacts has been made from the plowzone by Carl Yahnig. His collection includes a multitude of fluted points in various stages of manufacture, prepared blade cores and blade tools, flake tools, and a large quantity of manufacturing debris (Yahnig 1986) (Figure 3.3). In this respect, artifacts from the site duplicate the Adams site assemblage. Unlike Adams, however, Boyd is a multicomponent site that contains late Paleoindian, Early Archaic, and Late Archaic materials

Limited excavations, coring, and/or trenching have been conducted at the Ezell and Boyd sites, which also are located along the Little River in Christian County (Freeman et al. 1996; Freeman and Smith 1992; Gatus and Marquardt 1984; Sanders 1990). As noted by Freeman et al. (1996:401), the Little River Complex consists of sites are primarily retooling loci for the manufacture-replacement of the lithic component of the inhabitant's tool kits. However, these interpretations are based largely on surface materials. Given the potential for intact deposits at Boyd and Ezell (Freeman et al. 1996:398-401), it seems likely that future investigations may offer additional information on the nature of Paleoindian use and occupation in the Little River drainage. Another site that may yield evidence of Early Paleoindian occupation of this area is Site 15Ch472, which is located along the South Fork of the Little River (Versluis 1999). The basal fragment of a Clovis point was recovered from this site (Versluis 1999:23).

Mention also should be made of Savage Cave (15Lo11), which is located in Logan County. This site consists of both a true limestone cave and the surface immediately surrounding the cave's entrance. During the 1960s, Savage Cave received considerable attention as an alleged example of a "Paleolithic" or "Early Man" site

(Schenian 1988). These claims to antiquity were based primarily on the assumption that the 14 Paleoindian projectile points in the collection of the late Genevieve Savage came from stratified alluvial deposits in the cave; the same deposits that contained the remains of extinct Pleistocene fauna, including two species of peccary. This, however, was not the case. All of the Paleoindian projectile points were recovered from deflated plowzone contexts outside the cave (Kenneth Carstens, personal communication 1986). While the cave may have been exploited for water and chert, Schenian's (1988) reexamination of the site has demonstrated that evidence for a Paleoindian period habitation within the cave is lacking.

UPPER GREEN RIVER

Like the Pennyroyal Section, the Upper Green River Section is also dominated by karst topography. The Upper Green River Section is the only section in this management area for which more Paleoindian sites have been recorded in the last two decades (n=13) than in the years before 1987 (n=12) (Table 3.1), with the first Paleoindian sites being documented in reported in Casey and Taylor counties. There are still three counties (Barren, Green, and Metcalfe) in this section, however, where no Paleoindian sites have been recorded. Over half of the sites in this section are open habitations without mound(s) (n=14 or 56.0 percent), however six other site types are also represented (Table 3.6). The Upper Green River Section has not been the focus of as many projects geared specifically toward Paleoindian research topics as the Pennyroyal Section.

Although several Paleoindian sites have been recorded in the Upper Green River Section, none have been investigated in detail (Table 3.10). Kenneth Carstens' (1980) surface survey of the Mammoth Cave area in the late 1970s, however, identified some potentially significant Paleoindian sites both within the National Park and in immediately adjacent areas. These sites, include Patch Rockshelter (15Ed42), Blue Spring Hollow (15Ed52), Elmore Rockshelter (I5Ed212), and Chestnut Grove (15Ht28). Paleoindian occupation of these sites was identified based on the presence of diagnostic stone tools, though their potential to yield intact deposits is unknown. In addition, a Clovis point manufactured from Hixton Silicified Sandstone, was collected from the surface near the Historic Entrance of Mammoth Cave (15Ed1) (Tankersley 1989b).

Three projects (Baltz et al. 1998; Davis 1999; Lane and Gordon 1997) undertaken since 1987 also have identified several sites that have the potential to contain significant Paleoindian data. While surveying the fluctuation zone around Green River Lake, Baltz et al. (1998) identified four previously undocumented Late Paleoindian sites (15Ad122, 15Ad125, 15Ta80, and 15Ta88). Different (though stylistically similar) diagnostics were recovered from each of the sites, including Quad and Plano Cluster points (15Ad122), a Beaver Lake point (15Ad125), a Hi-Lo Cluster point (15Ta80), and a Dalton point (15Ta88). Given their location along the lake shoreline, all of these sites have been moderately to heavily impacted by sheet and bank erosion. The boundaries of at least two sites (15Ad122 and 15Ad125) likely extend beyond the area of erosion and may contain intact deposits that have not yet been investigated (Baltz et al. 1998). Despite the lack of substantial intact deposits at sites 15Ta80 and 15Ta88, they are of interest because prehistoric occupation at these sites may have been limited to the Late Paleoindian subperiod. Further investigation of four of these sites is needed, based largely on the possibility of recovering additional data on their Paleoindian occupations (Baltz et al. 1998).

Another potentially important Paleoindian site in this section, the Brier Creek site (15Ed422), was located along the edge of two adjacent sinkholes on a bluff overlooking the Brier Creek stream valley. Though consisting only of a small scatter of lithic tools and debris, this site is considered significant. The site is interpreted as a single component Paleoindian hunting camp or extractive site that appears to have been the result of a single event or occupation (Davis 1999:41). The lone diagnostic stone tool from this site consisted of a Middle Paleoindian Cumberland projectile point that was recovered from a shovel probe in intact subsurface context. It is rare to identify a single component Paleoindian site with intact subsurface deposits, much less one from the Middle subperiod, which is poorly understood in Kentucky and elsewhere in the Southeast or Midwest.

The Red Sand site (15Ht46) is located along the Nolin River in Hart County. Limited excavation of this site in 1997 documented the presence of buried Late Paleoindian-Early Archaic deposits (Lane and Gordon 1997). A Kirk Corner-Notched project points, several endscrapers, a variety of bifaces, and debitage was recovered from these deposits. All of the tools and debitage pointed to a reliance on locally available cherts. The presence of a Clovis variant projectile point and blade-like flakes from disturbed contexts suggests the site also may contain a Late Paleoindian component. Additional research at this site has the potential to contribute to our understanding of Paleoindian lifeways and how people adapted to the changing Late Pleistocene-Early Holocene environment.

SALT RIVER MANAGEMENT AREA

The Salt River Management Area has the second highest number of Paleoindian sites in the state (n=73 or 19.9 percent). The majority have been recorded since 1987 (n=45 or 61.6 percent), with most classified as open habitations without mound(s) (n=66 or 90.4 percent) (Table 3.7). Paleoindian sites in this management area tend to be on dissected upland (n=27 or 37.0 percent) or floodplain settings (n=20 or 27.4 percent) (Table 3.3). Oldham County is the only county in the Salt River Management Area where no Paleoindian sites have been recorded.

Table 3.7. Salt River: Site Type by Management Area Section.

Site Type	Total	Percent
Open Habitation w/out mound(s)	67	91.8
Rockshelter	2	2.7
Cave	2	2.7
Workshop	1	1.4
Cemetery	1	1.4
Total	73	100.0
Percent	100.0	

The Longworth-Gick site, located along the Ohio River, exemplifies the potential to recover Paleoindian materials from buried floodplain deposits. Fluted points were recovered from this multicomponent site, along with substantial evidence of later Archaic occupation (Collins 1979; French 1998). Beyond the recovery of these points, however, the nature of Paleoindian occupation at this site has not been thoroughly investigated.

The Howe Valley Rockshelter site (15Hd12) is located in Hardin County. The site is situated along a steep ridge overlooking a karst plain. Four Beaver Lake points are reported from the site, but details concerning their exact stratigraphic position are lacking (Rolingson 1964). Nonetheless, the occurrence of these artifacts at the site suggests that a late Paleoindian component may be present in the basal layers of the rockshelter.

Another important Paleoindian site located in Hart County, is the Joe Priddy site (15Hd583) (Haag 2004; Lane et al. 1997; Stackelbeck 1996). This site encompasses more than 9,000 m^2 and is located adjacent to sinkhole. Among the Paleoindian artifacts recovered from this site was the midshaft of a lanceolate fluted project points and a conical blade core, blade flakes from blade cores that are bifacially reduced, unmodified flakes, and retouched flakes that are indicative of a Clovis blade technology (Haag 2004:5; Stackelbeck 1996). The site appears to have been a short-term habitation site, a quarry, or a workshop (Lane et al. 1997; Stackelbeck 1996).

There is a notable concentration of Paleoindian sites in the south-central part of this management area (Figure 3.7). More Paleoindian sites have been recorded in Marion County (n=30 or 41.1 percent) than any other county in the Salt River Management Area; compared to other counties statewide, it is second only to Christian County in the Green

River Management Area. Of interest is the fact that the sites recorded in Marion and adjacent Washington County represent a relatively high percentage of the total number of Paleoindian sites documented in this management area. Paleoindian sites account for over 16 percent of the site recorded in Marion County and 18 percent of the sites recorded in Washington County.

The relatively high percentage of Paleoindian sites in Marion and Washington counties is the direct result of a single project along the Upper Rolling Fork and Beech Fork Rivers (Ray 1998, 1999, 2003). Based on this multi-year study, Ray recorded 37 sites with Paleoindian components in Marion (n=25 sites), Washington (n=7 sites), Nelson (n=4 sites), and Casey Counties (n=1 site). Much of this work involved interviews with local collectors and documentation of the projectile points in their collections (Ray 2003). In addition to recording the locations from which diagnostic stone tools were derived, Ray (2003) collected data on tool types, metrics, and raw material using a modified "Paleoindian Point Data Form." This form is part of a nationwide effort to document the presence and density of Paleoindian sites in North America (Anderson and Faught 19980) (Ray 2003:17). Four of the sites contained Early Paleoindian diagnostics (i.e., Clovis points), 13 had Middle Paleoindian diagnostics (i.e., Gainey and/or Cumberland points), and 20 had Late Paleoindian diagnostics (i.e., Quad, Beaver Lake, Dalton and/or Hardaway points) (Ray 2003:Tables 3-6).

Ray (1998, 1999) also conducted geoarchaeological assessments of the chert resources and landforms along the Upper Rolling Fork River. He then used these data in conjunction with the stone tool data to address various research topics, including settlement patterns, changes in procurement and use of local and extralocal chert resources, and changes in lithic technology over the course of the Paleoindian period (Ray 2003:ii). Aside from the collections of materials examined from the Little River Complex (Sanders 1983, 1988; Sanders and Maynard 1979; Yahnig 1986), this represents one of the most impressive datasets on Paleoindian settlement patterns and lithic technology from a circumscribed area in Kentucky, and perhaps the Southeast.

The Hall's Cave site (15Bu244) in Bullitt County, may contain an Early Paleoindian component (Wilson et al. 1983). This cave is situated on a bluff face along the lower end of Floyd's Fork. Unfortunately, the cave deposits have suffered considerable disturbance through looting activity. In 1983, however, a survey team from the University of Louisville documented the presence of faunal remains of several species, including those of extinct Pleistocene mastodon (*Mammut Americanum*) and seven other unidentified bones considered to be of Pleistocene age. Faunal remains of elk (*Cervus elaphus*) also were identified. Three heavily patinated chert unifaces were found in "loose" association with these remains. If the association can be verified, then the non-diagnostic unifaces would have be from an Early Paleoindian (perhaps pre-Clovis) toolkit, given the antiquity of the mastodon remains. Though circumstantial, this possible association of cultural materials with extinct faunal remains could be worthy of further investigation. As with other sites of similarly ambiguous association (e.g., Big Bone Lick [15Be18 and 15Be269-272], Adams Mastodon site [15Hr14], and Clay's Ferry Crevice site [15Fa163] in the Bluegrass Management Area), there is no clear evidence from a Kentucky site of Paleoindian hunting or butchering of Pleistocene megafauna.

Another Paleoindian site in this management area, the Danville Tank site (15Bo16), is situated on an elevated hilltop in the first range of hills that mark the transition from between the Outer Bluegrass and the Knobs. This range also divides the Salt and Kentucky River drainages. Test excavations resulted in the recovery of a Late Paleoindian Plano Complex projectile point from sub-plowzone context at 29 cm below surface in one test unit. Based on the results of this initial testing, the Danville Tank site was thought to perhaps represent an undisturbed, single component Late Paleoindian site (Niquette 1984). However, subsequent Phase III excavations revealed that 1) the Paleoindian occupation was ephemeral; 2) more intensive occupation occurred during the Late Archaic/Early Woodland period; and 3) the integrity of the deposits had been affected by the vertical displacement of cultural materials (Boedy and Niquette 1987:37).

Although the excavations failed to identify significant Paleoindian occupation at the Danville Tank site, another aspect of the research for this project did yield data on Paleoindian settlement in and around Boyle County. Much like Ray's (2003) project cited above, researchers conducted a Paleoindian projectile point survey by interviewing local collectors and amateur archaeologists (Boedy and Niquette 1987:10). This survey resulted in the documentation of 74 projectile points, including Clovis, Cumberland, Quad, unfluted Plano Complex, Folsom and lanceolate-shaped points that were fluted on one face only (Boedy and Niquette 1987:10). These points were found at 41 sites primarily located in Boyle and Lincoln counties, and to a lesser extent in Mercer, Garrard, Casey, Washington, Adair, Marion, and Clinton counties (Boedy and Niquette 1987:10). In addition to the Salt River Management Area, materials documented by Boedy and Niquette are located into the Bluegrass, Green River, and Upper Cumberland management areas.

UPPER CUMBERLAND MANAGEMENT AREA

Thirty-four Paleoindian sites have been recorded in the Upper Cumberland Management Area, with 30 being located in the Lake Cumberland Section and four being located in the Southeastern Mountains Section. Slightly more than half (n=18; 52.9 percent) of these sites have been recorded since 1987. Paleoindian sites in this management area are relatively equally distributed among terrace (n=7), floodplain (n=6), hillside (n=6), and undissected upland (n=6) settings, though slightly more are associated with dissected uplands (n=9) (Table 3.3).

Table 3.8. Upper Cumberland: Site Type by Management Area Section.

Site Type	Lake Cumberland	Southeastern Mountains	Total	Percent
Open Habitation w/out mound(s)	22	4	26	76.5
Rockshelter	4		4	11.8
Cave	3		3	8.8
Quarry	1		1	2.9
Total	30	4	34	100.0
Percent	88.2	11.8	100.0	

LAKE CUMBERLAND SECTION

Most of the Paleoindian sites in this section have been classified as open habitations without mound(s) (n=22 or 73.3 percent), though a few were identified as rockshelters (n=4 or 13.3 percent) or caves (n=3 or 10.0 percent). One of the more important Paleoindian sites in this section is the Wolfe Shelter (15Cu21), which yielded evidence of Early, Middle, and Late Paleoindian occupation (Lane et al. 1995). This is one of the few rockshelters that have been targeted in Kentucky and elsewhere in the Southeast to look for evidence of Paleoindian occupation (Lane et al. 1995). Though Paleoindian materials have been recovered from this site, research conducted to date has yet to recover these materials from intact deposits (Lane et al. 1995).

The Wolfe Shelter is part of a concentration of 10 Paleoindian sites in Cumberland County, four of which are part of the Alma Nation Site Complex. In addition, to the Wolfe Shelter, this complex consists of the Crawley Farmstead (15Cu43), Alma Nation (15Cu44), and Stella Cross (15Cu46) (Lane 1997). Occupation of these sites spanned the duration of the Paleoindian period based on the recovery of Early, Middle, and Late diagnostic projectile points. Many of these points are in private collections. A nearby site (15Cu74) yielded a Clovis projectile point (Lane and Shields 1997), and Lane reported documented four other Paleoindian sites (Sexton Fork [15Cu63], Owsley Farm [15Cu64], Lewis Creek [15Cu67], and Clint Carter [15Cu81]) in the vicinity of the Alma Nation Complex based on an examination of diagnostic projectile points in private collections (Lane 1995, 1996d, 1997a, 1997b; Lane and McBride 1997). An additional site (15Cu41) yielded a spurred endscraper, which is similar to those that have been documented elsewhere as part of Paleoindian toolkits (Creasman 1993b).

Among these 10 sites, all are identified as open habitations without mound(s), with the exception of the Wolfe Shelter and Site 15Cu41, which is interpreted as being a quarry. Among the open habitation sites, three are located on floodplains (Owsley Farm, Lewis Creek, and Site 15Cu74), one is on a terrace (Site 15Cu81), and four are in dissected upland settings (Crawley Farmstead, Alma Nation, Stella Cross, and Sexton Fork). Though many of these sites have disturbed deposits or are poorly understood, it is clear that Cumberland County has a relatively high number of Paleoindian sites compared to other parts of the state. This is probably due to the fact that it has been the focus of more intensive research efforts, rather than an actual higher Paleoindian site density.

Another potentially important site in the Lake Cumberland Section is Site 15Wn71. This site is situated along a ridge on a terrace of Meadow Creek, and may contain evidence of a single component Late Paleoindian occupation. Among the materials collected, the only diagnostic was a Beaver Lake projectile point manufactured from St. Louis chert. The point and much of the remaining artifacts, consisting largely of lithic debitage and fire-cracked rock, were recovered from plowzone. Bybee (2003:71, 83), however, noted that the site had the potential to contain intact subplowzone deposits and intact features. Based on the results of the initial survey, this site was interpreted as a short-term campsite or extractive location (Bybee 2003:71).

Paleoindian materials also have been recovered from an upland site in McCreary County that was situated on an upland saddle between two sandstone ridges. Among the materials recovered from the surface of the Oil Well Branch Road site (15McY412), were unfluted Cumberland point, four Kirk corner-notched points, and a Kanawha stemmed point (Des Jean 1993). The presence of these points suggests the site was occupied during the Late Paleoindian/Early Archaic transition. This site may represent a short-term hunting camp (Des Jean 1993).

Tankersley (1990b:114) noted that the Great Rock Sink site (15Pu18), though heavily disturbed, may contain intact, stratified cultural deposits. This site is situated in a well-dissected karst upland near the Cumberland River. Great Rock Sink is a large sinkhole that forms a voluminous dry shelter. The potential for identifying Paleoindian deposits is based in part on the recovery of a heavily reworked Cumberland point, a Beaver Lake point base, and a unifacial knife (Tankersley 1990b:114) (Figure 3.4). Professional archaeological investigations, however, have yet to be conducted at this site.

SOUTHEASTERN MOUNTAINS SECTION

Only four Paleoindian sites have been recorded in the Southeastern Mountains Section, with all being located in Knox County and recorded before 1987 (Table 3.1). The only section with fewer Paleoindian sites is the Upper Big Sandy Section in the Big Sandy Management Area, where only two such sites have been recorded. All four of the Paleoindian sites in the Southeastern Mountains Section are open habitations without mound(s) (Table 3.8). None of these sites have been investigated. Turnbow and Allen's

(1977) report of fluted points from the surface of Site 15Kx5, however, suggests that ridgetops overlooking mountain gaps may contain early Paleoindian sites.

BLUEGRASS MANAGEMENT AREA

The Bluegrass Management Area has the third highest number of Paleoindian sites recorded in the state (n=71 or 19.4 percent), with most being documented before 1987 (n=54 or 76.1 percent) (Table 3.1). These sites tend to be located in dissected uplands (n=23 or 32.4 percent) and floodplains (n=18 or 25.4 percent).

This management area is distinguished from other regions in Kentucky by the high potential for fossilized remains of Pleistocene fauna, such as mammoth (*Mammuthus jeffersoni*), mastodon, ground sloth, moose/elk, caribou, and musk ox, to be documented in association with springs, sinkholes, and grikes, among other features common to the karst topography of the area. These topographic features also are known to be the loci of Paleoindian deposits. However, despite the efforts of several investigators (Boisvert 1984; Duffield and Boisvert 1983; Lowthert 1998; Tankersley 1985, 1989; Vesper and Tanner 1984; Walters 1988), none have yet to document unequivocal evidence of Paleoindian cultural materials in direct association with Pleistocene faunal remains. Certainly, however, the potential exists to identify such early intact kill sites or processing stations, perhaps at such locations as the Adams Mastodon site (15Hr14) and Clays Ferry Crevice site (15Fa163) in the Central Bluegrass Section, and Big Bone Lick (15Be18 and 15Be269-272) in the Northern Bluegrass Section (see below).

CENTRAL BLUEGRASS SECTION

Most of the Paleoindian sites in this management area have been recorded in the Central Bluegrass Section (n=49 or 69.0 percent) (Table 3.1). The majority of these sites were recorded before 1987 (n=37 or 75.5 percent), and all but four are identified as open habitations without mound(s) (Table 3.9). The single site identified as an open habitation with mound(s) (Site 15Js6) is a multicomponent site where Paleoindian use is indicated by a single Clovis projectile point that was reported by the owner. With a few notable exceptions (Boisvert 1984; Duffield and Boisvert 1983; Rolingson 1964; Vesper and Tanner 1984; Walters 1988), there have been few concerted efforts to investigate Paleoindian sites in this section.

There is a moderately dense concentration of Paleoindian sites in this section compared to other parts of the state (Figure 3.7). More Paleoindian sites have been recorded in Fayette County (n=10) than any other county in this section, or the rest of the Bluegrass Management Area. An additional 26 Paleoindian sites have been documented in nearby Clark (n=5), Madison (n=7), Jessamine (n=5), and Woodford (n=5) counties. These sites have been recorded during the course of multiple projects, with most sites represent by deflated open habitations located near small upland springs, such as the Bryan Station Springs site (l5Fa18) and the Upper Blue Springs site (l5Hr78). Fluted points have been recovered from the plowzone deposits immediately surrounding springs at both sites (Boisvert 1984; Rolingson 1964).

Table 3.9. Bluegrass: Site Type by Management Area Section.

Site Type	Central Bluegrass	Northern Bluegrass	Eastern Bluegrass	Total	Percent
Open Habitation w/out mound(s)	45	9	11	65	91.5
Workshop	1			1	1.4
Specialized Activity Site	2	2		4	5.6
Open Habitation w/ Mound(s)	1			1	1.4
Total	49	11	11	71	100.0
Percent	69.0	15.5	15.5	100.0	

There is a possibility that intact kill sites may occur in this section at small sinkhole ponds near springs, as suggested by materials recovered from the Adams Mastodon site (15Hr14) and at the Clay's Ferry Crevice site (15Fa163). The Adams Mastodon site is located near Cynthiana in Harrison County. The site consists of a small spring and shallow sinkhole pond situated on a low bedrock rise that overlooks the North Fork of the Licking River. Historically, the sinkhole has been used as a farm pond. Because of persistent subsurface drainage, steps were taken in 1982 to plug the sink. This resulted in the removal of the upper levels of a blue-gray lacustrine clay that contained the remains of at least one mastodon. The presence of large fossil bones in these deposits was not surprising, however, since the owner, Mr. Muff Adams, had exposed similar bone during prior attempts to seal the pond (Lathel Duffield, personal communication 1982). In October 1982, three weekends of excavation were conducted at the site by the University of Kentucky. The excavation was directed toward the recovery of the mastodon remains and taphonomic data (Duffield and Boisvert 1983; Walters 1988). These investigations suggested that the mastodon had been butchered, although the possibility of post-mortem scavenging was not ruled out. The presence of "cut marks" on certain bones and a "non-random pattern" of limestone slabs in direct association with the mastodon remains argued for an anthropogenic origin of the stones in the clay (Duffield and Boisvert 1983).

The Clays Ferry Crevice site is a fossiliferous grike located in Fayette County. The site is situated at the interface of the gently rolling karst upland with the narrow, deeply cut, and steep-sided gorge of the Kentucky River. This area has been subjected to extensive tectonic disturbances as evidenced by the faulted and folded Middle Ordovician strata that are exposed in the immediate vicinity of the site. The impact of the tectonic forces on the site's depositional history is unknown at this time.

The grike and proboscidean bones were initially exposed by the construction of Interstate 75; the extent of the deposits destroyed by this project is unknown. Subsequent damage to these deposits has been caused by erosion and by vandals. It is possible that a sinkhole pond may have existed above the grike during the Pleistocene. Unfortunately, the overlying surficial deposits have been partially graded, thereby masking the original topographic features of the site.

Since the grike was first exposed, proboscidean bones have been removed from the unconsolidated deposits by a few collectors. Most of these remains consist of limb bones. Dennis Vesper and Ray Tanner (1984:18) have suggested that the remains represent a single mammoth (*Mammuthus jeffersoni*). Two Clovis points manufactured from Upper Mercer chert were reported collected from the fossil-bearing deposits. Examination of slope wash by the Tankersley (1990b) revealed heavily weathered unidentifiable bone fragments, oxidized limestone, and a heat-altered endscraper. The stone tool is not temporally diagnostic. A radiocarbon assay of 6,680±310 B.C. was obtained from a bone sample collected from the site by Michael Gramly (Vesper and Tanner 1984:18). Since standard age determinations on bone samples of this antiquity commonly give anomalous dates, this date is not considered acceptable.

While the topographic and geologic characteristics of the Clays Ferry Crevice site would have made it an ideal location for an early Paleoindian group to dispatch a mammoth, Tankersley (1990b:117) noted that based on available data, a Clovis-mammoth association cannot be confirmed at this site. It is possible that Paleoindian materials found at this site were not contextually associated with fossil-bearing deposits. Karst features such as sinkholes and grikes are natural traps for a variety of animal species. Animal remains tend to accumulate over a long period of time in the colluvium of these features, which makes stratigraphic interpretations difficult. Besides self-entrapment, the remains of many species accumulate in these features as a result of carnivore or scavenger activities (Parmalee et al. 1978). Some portions of the deposits in the grike are probably intact and should be investigated in order to evaluate the site's integrity and to determine if the Paleoindian materials are contextually associated with Pleistocene fauna

One open habitation site that may be worth further investigation is the Snowden site (15Js116). This site, which is located on a ridge overlooking a sinkhole, was initially identified as part of a highway survey project (Fiegel 1994). The only diagnostic recovered was a Late Paleoindian Beaver Lake projectile point, which consists of distal and proximal fragments which were recovered from within a meter of each other and can be refitted at the hinge fracture (Fiegel 1994:18). Although the site deposits within the project boundaries were deflated, Fiegel (1994:18) proposed that deeper, intact deposits may exist east of the project boundaries. Given the presence of two refitting fragments of a Beaver Lake point, and Fiegel's observations about site deposits located outside the project boundary, it seems likely that intact deposits may, in fact, be identified at this site.

NORTHERN BLUEGRASS SECTION

Eleven Paleoindian sites have been identified in the Northern Bluegrass Section (Table 3.1), most of which are open habitations without mound(s) (n=9 or 81.2 percent) (Table 3.9). Two additional sites have been identified as special activity sites (Table 3.9). Paleoindian sites have not yet been recorded in six counties in this section (Campbell, Carroll, Grant, Kenton, Pendleton, and Trimble).

While paleontological and archaeological investigations· have been conducted at Big Bone Lick for almost 200 years, no systematic evaluation has ever been made of

Paleoindian sites in or adjacent to the park. Big Bone Lick (15Be18 and 15Be269-272) is located approximately 32 km southwest of Cincinnati, Ohio. Historically, this area is known for its salt springs, paleontological deposits, and the academic involvement of famous scientists including Benjamin Franklin, Thomas Jefferson, George Cuvier, and Charles Lyell (Jillson 1936).

During the early Woodfordian (ca. 23,000 B.C.), Big Bone Lick was the location of a large, slightly saline, back water lake that attracted large herbivores. Among the identified species are musk ox, caribou, ground sloth, moose/elk, and mammoth. By the late Woodfordian (ca. 10,500 B.C.), the lake was reduced to a backswamp area with several saline springs. This environment continued to attract large gregarious herbivores including mastodon, horse, and bison. There is evidence to suggest that by ca. 8,550 B.C., early Paleoindians hunted these species; Clovis cultural material and the remains of megafauna occur in the deposits surrounding the saline springs (Tankersley 1985b, 1989b).

Clovis material has been collected from the surface of Big Bone Lick's late Pleistocene deposits for more than 180 years by investigators, such as Dr. William Goforth (1803-1807), Herbert Schiefer (1898), J. D. Moore (1930s), Ellis Crawford (1959) and Kenneth Tankersley (1985b) (Figure 3.1). These artifacts were manufactured from high-quality nonlocal raw materials whose source areas are located more than a hundred kilometers from the site.

The possibility that stratified Clovis deposits may be present was first suggested by the University of Nebraska's paleontological excavations (1962-1966) when cultural material was recovered from fossiliferous strata (Schultz et al. 1967). Limited excavations by undertaken by Kenneth Tankersley in the early 1980s documented heavily patinated retouched flakes in direct association with spirally fractured Late Pleistocene large mammal long bones. Unfortunately these remains were recovered from a stratum comprised of secondary deposits (Tankersley 1985b:43, 1987). While it may be argued that discovered cultural material and megafauna are contemporary, an *in situ* association has not been confirmed. In addition to these materials, possible chert artifacts were recovered in association with megafauna from cores drilled for a view stand at Site 15Be269 (Carl Shields, personal communication 2007).

EASTERN BLUEGRASS SECTION

Just over 15 percent of the Paleoindian sites in the Bluegrass Management Area are located in the Eastern Bluegrass Section (n=11 or 15.5 percent), all of which are open habitations without mound(s) (tables 3.1 and 3.9). Robertson County is the only county in this section for which no Paleoindian sites have been recorded. Given the number of saline springs in this section, however, there is a potential to record more Paleoindian sites, such as the Upper Blue Springs site (15Hr78) and Lower Blue Licks site (15Ni2).

UPPER KENTUCKY/LICKING MANAGEMENT AREA

Fewer Paleoindian sites have been documented in the Upper Kentucky/Licking Management Area than anywhere else in the state (n=12 or 3.3 percent) (Table 3.1). Almost sixty percent of these sites were recorded before 1987 (n=7 or 58.3 percent). More Paleoindian sites are located in floodplain settings (n=4 or 33.3 percent) than any other landform in this management area, with the remaining sites being located in hillside (n=3), terrace (n=2), dissected upland (n=2), and undissected upland settings (n=1) (Table 3.3). Although the total number of Paleoindian sites in this management area is low (n=12), it has more rockshelter sites from this period (n=5) than any other area of the state (Table 3.2). Few projects have specifically targeted Paleoindian research sites in the Upper Kentucky/Licking Management Area, and those that have were completed before 1990 (e.g., Bush 1988; Rolingson 1964). With additional research, it is likely that more Paleoindian sites will be identified in this management area, particularly if deeper intact deposits within protected rockshelters are investigated.

Table 3.10. Upper Kentucky/Licking: Site Type by Management Area.

Site Type	Gorge	Interior Mountains	Total	Percent
Open Habitation w/out mound(s)	4	2	6	50.0
Rockshelter	2	3	5	41.7
Mound Complex	1		1	8.3
Total	7	5	12	100.0
Percent	58.3	41.7	100.0	

GORGE SECTION

Slightly more Paleoindian sites are located in the Gorge Section (n=7 or 58.3 percent) than in the Interior Mountains Section (n=5 or 41.7 percent). Four of these sites are identified as open habitations without mound(s), while two are rockshelters (Table 3.10). At the mound complex site (15Po3), which has a Paleoindian component represented by an isolated artifact, the mounds are actually associated with later occupation of the site. There are four counties (Estill, Lee, Rowan, and Wolfe) in this section where Paleoindian sites have yet to be recorded.

INTERIOR MOUNTAINS SECTION

The few Paleoindian sites in the Interior Mountains Section are classified as open habitations without mound(s) (n=2 or 40.0 percent) and rockshelters (n=3 or 60.0 percent). Five counties in this section do not yet have any identified Paleoindian sites

(Jackson, Knott, Leslie, Letcher, and Rockcastle). Though few Paleoindian sites have been documented in this section, limited excavation of the Enoch Fork Rockshelter (15Pe50) documented the presence of a Paleoindian component at this site.

The Enoch Fork Rockshelter is fairly typical of rockshelters in Perry County. The surface area is small (12.5 x 8.5 m), partly wet, and covered with breakdown. A small portion of the site has been impacted by vandals. Bush (1987) describes and illustrates a small projectile point, similar to what has been called Wheeler, recovered at a depth of 68 cm below the surface and below Early Archaic materials. A radiometric assay of 9,010±240 B.C. that was obtained from deposits associated with a retouched blade (Bush 1988:60-61). This date and the associated blade were recovered from deposits stratigraphically below a Late Paleoindian lanceolate point, suggesting that this site may represent one the best examples of Early Paleoindian cave/shelter use in Kentucky. However, it is equally likely that the Enoch Fork deposits represent a Middle Paleoindian occupation (Evans 1995).

BIG SANDY MANAGEMENT AREA

Relatively few Paleoindian sites have been recorded in the Big Sandy Management Area (n=15 or 4.1 percent); only the Upper Kentucky/Licking Management Area has fewer (n=12 or 3.3 percent). All but one of these sites was reported before 1987. All of the Paleoindian sites in this management area have been identified as open habitations without mound(s) (Table 3.11). Most of the sites are located in floodplain settings (n=12 or 80.0 percent) with the remaining sites being located on terrace landforms (n=3 or 20.0 percent).

Table 3. 11. Big Sandy: Site Type by Management Area Section.

Site Type	Lower Big Sandy	Upper Big Sandy	Total	Percent
Open Habitation w/out mound(s)	13	2	15	100.0
Total	13	2	15	100.0
Percent	86.7	13.3	100.0	

As with the Upper Kentucky/Licking Management Area, this region is noted for its rugged terrain and abundant rockshelter formations, many of which contain evidence of prehistoric occupation (see chapters 4 and 5). To date none of the rockshelters in this management area have yielded evidence of Paleoindian occupation. It is, nonetheless, possible that such evidence exists, but simply has not yet been detected because it is either deeply buried or has been removed by looters. In addition, few projects have focused specifically on Paleoindian research in this management area. Systematic surveys and additional collector interviews of both the Lower and Upper Big Sandy sections should be conducted to determine whether the paucity of Paleoindian sites is based on a real pattern.

LOWER BIG SANDY SECTION

All of the known Paleoindian sites in the Lower Big Sandy Section were recorded before 1987. Within this section, no Paleoindian sites have been recorded in Carter, Elliott, or Martin County. One site worth noting is the Mayo site (15Jo14). Although the deposits are disturbed, as evidenced by the recovery of a Clovis and two Dalton projectile points from a Fort Ancient midden (Rolingson 1964), it is considered significant. No other site in this section has yielded as many Paleoindian diagnostics, much less from the Early and Late subperiods. The Mayo site is situated in the rugged, mountainous, cliff-lined valley of Paint Creek. Abundant, high-quality lithic material does not occur in the immediate vicinity of this site.

UPPER BIG SANDY SECTION

The Upper Big Sandy Section has fewer Paleoindian sites than any other section in the state (n=2 or 0.5 percent). Both of these sites are located in Pike County. The only Paleoindian site recorded since 1987 is represented by a proximal fragment of a Cumberland point, which was recovered from Cowpen Creek site (15Pi96) in Pike County (Baltz 1995).

PALEOINDIAN RESEARCH OBJECTIVES

The research objectives presented below for the Paleoindian period in Kentucky reflect cultural historical problems currently facing scholars of eastern North American prehistory. Some of these issues have concerned investigators since the beginning of archaeological research in the United States. Because of the long history of research into the Paleoindian period, the research objectives presented below draw heavily on the work of other archaeologists including Ronald Mason (1962), Martha Rolingson (1964), Douglas Schwartz (1967), John Walthall (1980), C. Vance Haynes (1982), Mark Seeman and Olaf Prufer (1982), George MacDonald (1983), William Gardner (1983), Gordon Willey (1985), Patrick Munson (1985), William Ritchie (1985), David Anderson (1990), Edward Smith (1990), Kenneth Tankersley (1990a, 1990b, 1996), Kenneth Tankersley and Barry Isaac (1990), and Jack Ray (1998, 1999, 2003).

1. CLASSIFICATION AND CULTURAL HISTORY

* Determine when early Paleoindian peoples arrived in Kentucky and the geographical extent of their occupation.
* Identify the locus of the origin of the early Paleoindian inhabitants of Kentucky.
* Determine how many Paleoindian cultures or industries (e.g., Clovis, Cumberland, Plano, and Dalton) are present in Kentucky.
* Determine the temporal parameters of Paleoindian cultures and assess their degree of contemporaneity.
* Identify and evaluate the significance of the Middle and Late Paleoindian assemblages in Kentucky and document their distribution.
* Determine which Paleoindian cultures migrated into Kentucky, and which Paleoindian cultures may represent indigenous developments.
* Understand the social, economic, and technological relationships among Paleoindian cultures of Kentucky and within the broader regional context of eastern North America.

2. MATERIAL CULTURE AND TECHNOLOGY

* Refine the known distribution of different Paleoindian projectile point types.
* Document tools, other than projectile points, that constitute Paleoindian toolkits.

* Identify Paleoindian raw material procurement locations and exploitation strategies.
* Determine the activities associated with the implements of Paleoindian toolkits (e.g., lithic use-wear analysis and microfossil residue analysis). Identify specialized technologies associated with unique cultural adaptations to certain paleoenvironments.
* Reconstruct the stages of manufacture for each element of the Paleoindian tool kit and document variations among Kentucky industries and those found elsewhere in the eastern United States.
* Identify Paleoindian raw material procurement locations and exploitation strategies.

3. SUBSISTENCE PATTERNS

* Obtain, where possible, a comprehensive paleoecological database for every physiographic region in Kentucky, including pollen sequences, as well as macro and micro vertebrate and invertebrate fossil assemblages.
* Establish a diachronic paleoenvironmental reconstruction, model, or biogeography of the predominant plant communities during the Paleoindian period, and evaluate the carrying capacity of each region.
* Establish the subsistence patterns of the Early, Middle, and Late Paleoindian subperiods within the different physiographic zones of the state, and understand those patterns in the context of changing environmental conditions that accompanied the Pleistocene/Holocene transition.
* Determine which Late Pleistocene faunal species, including megafauna, were contemporary with the different Paleoindian cultures in Kentucky.
* Document any changes and consistencies in subsistence strategies employed by Paleoindians of the Late Pleistocene and Archaic foragers of the Early Holocene.

4. SETTLEMENT PATTERNS

* Identify Paleoindian site location and regional distribution patterns.
* Undertake a survey of public and private collections to obtain data on the spatial distribution and characteristics of Kentucky Paleoindian artifacts.
* Document and describe the differences between Paleoindian sites, and attempt to determine the range of different site types that constituted regional settlement systems.

* Understand the patterns of initial migration and subsequent occupation of different regions of Kentucky.
* Assess the mobility patterns and settlement strategies of Early, Middle, and Late Paleoindian populations.
* Determine how Paleoindian settlement strategies may have articulated with changes in economic and technological organization, and the availability of natural and social resources.

5. EXCHANGE SYSTEMS

* Determine the extent to which nonlocal resources are represented in Paleoindian assemblages.
* Determine if the use of nonlocal resources by Paleoindian cultures represents exchange, overlapping territories, or highly-mobile foraging. If these nonlocal resources represent exchange, identify by what means those resources moved across the landscape, and what that implies about social interaction.

6. BIOANTHROPOLOGY

* Locate Paleoindian skeletal material.
* Describe Paleoindian skeletal material morphologically and metrically.
* Investigate biological distance between Kentucky Paleoindian populations and suggested source populations.
* Establish demographic and genetic profiles of Paleoindian populations.
* Apply stable isotope biochemistry and dental studies to reconstruct Paleoindian paleodiets.

7. MORTUARY PRACTICES

* Determine if Paleoindian remains were buried, cremated, or left exposed to the elements and if there is any evidence for preferential treatment by age or sex.

8. SOCIAL ORGANIZATION

* Identify contemporary Paleoindian sites. Determine how they may have been interrelated within a social system.
* Construct hypotheses concerning size, composition, and functions of social groups and the interactions among these groups. Test these hypotheses by investigating correlations among contemporaneous sites, such as intra- and inter-site spatial organization, economic activities, technology, and artifact styles.

9. IDEOLOGY

* Define the elements associated with Paleoindian ideology.
* Compare these ideological elements to those identified in contemporaneous Paleoindian populations elsewhere in North America, and in antecedent and subsequent cultures (i.e., Old World Upper Paleolithic and Midcontinent Early Archaic).

MAJOR ACCOMPLISHMENTS

Over the past 20 years, Paleoindian research in Kentucky has advanced primarily in terms of the increased number of sites that have been documented. With some notable exceptions (e.g., Creasman 1993; Lane et al. 1995; Ray 1998, 1999, 2003), very little new research has been conducted on Paleoindian sites during that time. However, the work that has been undertaken is consistent with archaeological studies conducted in other areas. This work has resulted in the recognition that the colonization of the Americas occurred earlier than previously thought and that it is quite likely that there are sites in Kentucky that predate Clovis. Based on the work that has been undertaken, it is evident that no one model can currently explain the process of colonization of Kentucky and the regionalization that followed. As people settled into Kentucky's diverse landscape during the Late Pleistocene and Early Holocene, they adapted to circumscribed localities and their corresponding natural resources. The challenge that lies ahead for Kentucky archaeology is to gather data that will address the various research objectives identified above, and to better understand Paleoindian populations who occupied this state in broader regional perspective.

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CHAPTER 4: THE ARCHAIC PERIOD

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INTRODUCTION

Archaic period (8,000-1,000 B.C.) hunter-gatherers of the North American midcontinent have been the focus of archaeological research for nearly 100 years. In Kentucky, archaeological sites that we now recognize as dating to the Archaic period were among the first in the Commonwealth to be intensively excavated (Moore 1916; Nelson 1917). During the late 1930s and early 1940s, William Webb's (1946, 1950a, 1950b; Webb and Haag 1947) investigations at many of the now famous Green River shell middens provided critical data for helping to define and refine the newly emerging "Archaic Concept" (Ritchie 1932). Important research on the cultural and biological materials resulting from those efforts continues to this day (Marquardt and Watson 2005a). In Eastern Kentucky (the Upper Cumberland, Upper Kentucky/Licking, and Big Sandy management areas), early twentieth century investigations at some of the numerous rockshelters dotting the steep bluff lines provided important data concerning how Archaic hunter-gatherers adapted to the rugged topography of the Cumberland Plateau (Webb and Funkhouser 1936). Since the 1980s, the large number of cultural resource management-related archaeological surveys and excavations conducted throughout the state have generated significant new information about Archaic period hunter-gatherer adaptative strategies.

During the past half century, archaeologists have written a number of statewide or regional overviews and syntheses of the Kentucky Archaic period. Douglas W. Schwartz (1967) wrote the first comprehensive discussion of the Commonwealth's Archaic hunter-gatherers in his landmark work *Conceptions of Kentucky Prehistory: A Case Study in the History of Archaeology*. Much of Schwartz's discussion drew heavily on research conducted by William S. Webb and his co-workers. In subsequent years, brief overviews of regional Archaic period research were written for several of the Commonwealth's management areas including the Upper Kentucky/Licking and Big Sandy (Blakeman 1971; Niquette and Henderson 1984), the Bluegrass (Goodell 1971), the Upper Cumberland (Allen 1971), and the Western Coalfield Section of the Green River (Marquardt 1971), as well as for the Falls of the Ohio River region (Anslinger 2001). In the mid-1980s, Jon Muller (1986) summarized Archaic period developments in the lower Ohio River Valley, including parts of the Purchase and Green River management areas in western Kentucky. In 1990, a statewide Archaic overview was written for the first Kentucky Heritage Council State Historic Preservation Comprehensive Plan (Jefferies 1990). Data on Archaic hunter-gatherers collected for the state plan was later rewritten and published as a chapter in *Kentucky Archaeology* (Jefferies 1996; Lewis 1996). The most recent addition to this list is a much more comprehensive analysis and discussion of western Kentucky Archaic hunter-gatherers (Jefferies 2008).

In addition to these syntheses of Kentucky prehistory, overviews of Archaic hunter-gatherer research in adjacent parts of southern Indiana (Stafford and Cantin 2008), southern Illinois (Butler 2008), and Ohio (Purtill 2008) have been published. While not specifically addressing Kentucky Archaic research issues, these works provide important data to help place the Kentucky Archaic in a broader regional context. Many of the ideas and concepts discussed in the following pages are based on research conducted by these and other scholars of Kentucky and Ohio Valley archaeology.

This chapter traces the development of the Archaic concept and discusses the history of Archaic period investigations in Kentucky. The present status of Archaic period research in the state is reviewed; what has been learned since the 1990 state plan was published is assessed; current ideas concerning technology, settlement, subsistence, social organization, and exchange are examined; and aspects of Archaic adaptation requiring additional research are identified.

THE ARCHAIC

Much of the following information on the development of the Archaic concept in both eastern North America and Kentucky is based on Marquardt's (1971) excellent discussion. The first appearance of the term "Archaic" in the archaeological literature was in reference to cultural materials from the Lamoka Lake site in New York (Ritchie 1932). About the same time, preceramic sites excavated in northern Alabama and Kentucky by Webb and his colleagues were recognized as having assemblages that were similar to that documented by Ritchie at the Lamoka Lake site, so they were also classified as Archaic (Webb and DeJarnette 1942:319). In 1936, the Archaic pattern was included as part of the newly developed Midwestern Taxonomic System (Stoltman 1978:708).

Five years later, Ford and Willey (1941:332) applied the term to the earliest known cultural horizon in the eastern United States. According to their model, cultures assigned to the Eastern Archaic stage lacked horticulture and pottery, and they noted that the quantity, diversity, and quality of artifacts were inferior to those of later times. Ford and Willey also recognized that many Archaic cultural elements extended into later periods, serving as a foundation for more complex developments.

Ford and Willey (1941:332) assigned a number of sites scattered throughout the eastern United States to their Archaic stage, including the Chiggerville site (15Ohl) in Ohio County (Webb and Haag 1939). They suggested that during the Archaic, groups of nomadic hunter-gatherers thinly populated the eastern United States. Large sites, like Chiggerville, simply marked spots where population stability and concentration was possible.

Diagnostic Archaic artifacts included stemmed chert projectile points, socketed antler or bone projectile points, deer ulna awls, and tubular shell beads. Items commonly used by Kentucky Archaic hunter-gatherers included expanded base chert drills, stemless and leaf-shaped chert knives, engraved bone pins with expanded heads, bannerstones, and full-grooved axes (Ford and Willey 1941:333).

Griffin (1946:42) objected to the use of the term "Archaic" on typological grounds, arguing that it would lead to misconceptions about the age of sites assigned to the Archaic stage. He later accepted the term, but referred to the Archaic as a period rather than a pattern or stage (Willey and Phillips 1958:104). Sears (1948) also voiced objection to the noncritical use of the term.

A few years later, Griffin (1952:354-356) divided the Archaic into early and late subdivisions. He suggested that Early Archaic people were organized into bands that ranged over specific hunting territories. They procured animals using the atlatl and javelin, traps, snares, and fish weirs. Mussels were an important food source for people living along the interior drainages, like Kentucky's Green River, while groups that lived along the coasts collected oysters, clams, and other marine shellfish. They also prepared an assortment of plant foods using groundstone mortars and pestles.

Early Archaic hunter-gatherers used chipped stone, bone, and shell tools to carry out many other extractive and maintenance tasks. Griffin (1952:354-355) indicated that the best examples of Early Archaic sites were the large shell middens along the Tennessee River in Alabama and the sites studied by Ritchie in New York state.

Griffin (1952:355-356) based the Late Archaic subdivision on the appearance of certain polished stone implements like grooved axes, atlatl weights, and tubular pipes. Some of these items were manufactured using nonlocal raw materials obtained from distant source areas, probably through some type of exchange network.

Willey and Phillips defined the Archaic as the second in a series of five developmental stages in the eastern United States, characterizing it as the "stage of migratory hunting and gathering cultures continuing into environmental conditions approximating those of the present" (1958:107). While these groups clearly depended on a variety of wild plants and animals for their subsistence, Willey and Phillips maintained that they also used specialized techniques to gather and prepare hard-shelled weedy seeds. This practice may have led to the development of horticulture by some Archaic groups. Other characteristics of the Archaic stage included heavy groundstone woodworking tools (axes, adzes, and wedges), stone vessels, and bone and antler artifacts (Willey and Phillips 1958:110).

About the same time that Willey and Phillips (1958) defined their Archaic stage, Joseph R. Caldwell (1958:18) described the Archaic stage as "the time when primary forest efficiency was achieved." He suggested that Archaic hunters became increasingly efficient as they grew more familiar with their surroundings and that they established a yearly cycle based on seasonally available foods.

By the late 1960s, both Willey (1966) and Griffin (1967) agreed that the Archaic period or stage extended from 8,000 to 1,000 B.C. They both divided the Archaic into early, middle, and late subdivisions having chronological and cultural significance, although they did not concur on the precise temporal boundaries of those subdivisions.

Clearly, as used by archaeologists, the term "Archaic" has taken on several different meanings since it was introduced more than 70 years ago. As Stoltman (1978) pointed out in his call for a new temporal framework for the Eastern Woodlands, “Archaic” was initially used to identify hunting and gathering cultures in the East (e.g., Webb and DeJamette 1942:319). Later, it took on temporal connotations when it was used as a chronological “period” (e.g., Griffin 1946, 1952), while simultaneously defining a developmental “stage” (e.g., Willey and Phillips 1958:107). In 1966, Willey (1966:247) used the term to identify a cultural "tradition." Today, its most common usage is as a period, but there is still considerable disagreement over how and when the Archaic period should be subdivided (Emerson et al. 2008; Stoltman 1978:708).

ARCHAIC PERIOD RESEARCH IN KENTUCKY

The origin and contents of Kentucky’s ancient mounds, earthworks, and middens have been the focus of intellectual curiosity for more than 200 years. As early as 1784, John Filson (1784) discussed the character of prehistoric remains in the Bluegrass Management Area. Most early references to these sites were very general and tended to focus on the more spectacular sites like mounds and earthworks. By the mid-nineteenth century, more systematic efforts to record Kentucky’s prehistoric remains led to a rapid accumulation of basic descriptive information. In 1848, Squier and Davis published their monumental work on the archaeology of the Ohio and Mississippi valleys. Much of the information that they reported about Kentucky archaeological sites had been published by Rafinesque (1824) 24 years earlier. Descriptive reports were published with increasing frequency during the late-nineteenth century, but these focused largely on the more spectacular and unusual aspects of the archaeological record (see discussion by Schwartz 1967:19-21).

C. B. Moore’s (1916) report on his investigations along western Kentucky’s Green River was the first widely distributed publication on Kentucky Archaic sites. The report contained descriptions of his excavations at ten shell middens in Edmonson, Butler, Henderson, McLean, and Ohio counties. At the most famous of these sites, Indian Knoll (15Oh2), Moore and his eight person crew excavated nearly 300 human burials within a 20 day period (Funkhouser and Webb 1928:155). In his report, Moore discussed the nature of prehistoric technology and the possible function of certain artifacts. For example, he incorrectly speculated that what are now recognized as atlatl hooks and weights were used to make fishing nets (Moore 1916:Figure 1). Moore’s excellent illustrations (some of which are in color) of the sites and their artifacts revealed the cultural complexity of these hunting and gathering societies.

In 1917, Nels C. Nelson published a report summarizing his investigations at Mammoth Cave and other cave and open sites in the Edmonson County area. Illustrated artifacts clearly indicate the existence of Archaic occupations in the Mammoth Cave area (Nelson 1917:Figures 1 and 15). Based on this work, Nelson identified a "culture" that predated and was more primitive than the widely known "Stone Grave" and "Mound Builder" groups. He suggested that this group lived off the naturally available foods and proposed that later agriculture-based groups evolved from the earlier culture (Nelson 1917:68-69). Nelson's identification of this "culture" appears to be the first description of what would later become known as the Kentucky "Archaic culture" (see discussion by Schwartz 1967).

The tempo of Kentucky's Archaic period research increased in the mid- to late 1920s with the growing involvement of two University of Kentucky faculty members, William S. Webb and William D. Funkhouser (Schwartz 1967). The two visited several large Green River shell middens in the summer of 1924, including Indian Knoll and "the mound at Chiggerville." At Chiggerville, they excavated a series of trenches through the shell midden.

Webb and Funkhouser were particularly intrigued with the artifacts that they found in the shell middens, especially the atlatl hooks, which they interpreted as netting needles, and the atlatl weights, which they thought were "mesh-spacers" for the making of nets. These functional assessments were the same as those proposed earlier by Moore (1916).

Aleš Hrdlička, a Smithsonian physical anthropologist, described the skulls from the Indian Knoll burials as "typical undeformed Algonquin skulls, evidently not Shawnee, although coming from a region ascribed in general to that tribe" (Funkhouser and Webb 1928:153). The Green River sites and their artifacts suggested to Funkhouser and Webb (1928:153) that the people responsible for the mounds were anglers and boatmen, so they referred to them as "River People".

In 1928, Funkhouser and Webb published *Ancient Life in Kentucky,* a summary of Kentucky prehistory as they interpreted it. They divided the archaeological record into six "cultures" to which they assigned a variety of archaeological, tribal, and linguistic names. None of the cultures was thought to be very ancient (Schwartz 1967:31-34). None of Funkhouser and Webb's six archaeological cultures fully equated with what is today called the Archaic period, though some of the sites attributed to the Algonquin group clearly date to that time. According to Funkhouser and Webb (1928:67), Algonquin tribes once thickly populated parts of central Kentucky along the Green River and westward, their former presence marked by the numerous large, river-edge shell middens (Funkhouser and Webb 1928:67).

Webb and Funkhouser published the results of their statewide archaeological survey in 1932. A more refined version of their culture area model appeared in the last chapter of their report in which they called the part of the Green River inhabited by the River People as the "Shell Mound Area." Webb and Funkhouser (1932:425) suggested that shell mound inhabitants subsisted entirely by fishing and hunting since no evidence of agriculture had been found. They also speculated that "these mounds may be among the oldest evidence of mound occupancy in this state."

As Schwartz later pointed out, the results of Moore's (1916) Green River work, Nelson's (1917) investigations in the Mammoth Cave area, and Webb and Funkhouser's (Funkhouser and Webb 1928; Webb and Funkhouser 1932) study of the Green River shell middens did not immediately lead to the definition of a Kentucky Archaic culture. This did not occur until it was first defined by Ritchie (1932) in New York (Schwartz 1967:80).

Research on Kentucky's Archaic hunter-gatherers greatly benefited from the 1935 passage of the Emergency Relief Act and the subsequent establishment of the Works

Progress Administration (WPA). The availability of a large labor pool made large-scale site excavations using standardized field and laboratory techniques possible for the first time (Milner and Smith 1986). The Herculean efforts of the workers employed by the WPA and other depression era employment programs yielded thousands of artifacts and volumes of excavation records from many different Kentucky site types. Their contributions were reflected by the 1,750 human skeletons and 48,000 artifacts curated by 1940 at the University of Kentucky Museum of Anthropology (Schwartz 1967:54, 56). Much of this work focused on the Green River Archaic middens, including Indian Knoll (Webb 1946, 1974) and Chiggerville (Webb and Haag 1939) and sites, such as Morris Village (15Hk49) and Parrish Village (15Hk45), that are located in the Tradewater drainage (Rolingson and Schwartz 1966).

In 1939, Webb and Haag published their findings from the Chiggerville site in which they separated the prepottery occupation responsible for most of the midden deposition from a later occupation containing shell-tempered pottery. They included a list of traits, in the spirit of the Midwestern Taxonomic System, for the newly defined "Shell Mound" complex and speculated that archaeologists would eventually define a Green River focus based on similar traits found at nearby Green River middens (Webb and Haag 1939:109).

By 1940, Webb and Haag (1940:109) had concluded, based on their investigations at the Cypress Creek villages (15McLll-12), that the sites' Archaic inhabitants were primarily hunters and fishers who built crude habitations, used the atlatl for hunting, lacked cooking vessels, and did not practice horticulture. Although no absolute dates were available, they suggested that the Archaic occupations occurred 1,000 to 2,000 years ago.

In his 1942 article on early horizons in the Southeast, Haag (1942) noted that the "Shell Heap" horizon postdated the Folsom-Yuma horizon, that similar shell heaps occurred throughout the southeastern United States, and that they were attributable to a widespread group of hunter-gatherers having common ancestry. He (Haag 1942:221-222) also contended that later, more complex agriculturalists derived some of their basic characteristics from shell heap groups and that certain shell heap traits extended into the Woodland period.

The United States' entry into World War II brought the WPA archaeological projects to an abrupt halt. Following the end of the war, Webb and his associates published several additional reports on their investigations at Kentucky Archaic sites, including Indian Knoll (Webb 1946, 1974), Carlston Annis (15Bt5) (Webb 1950a), Read (15Bt10) (Webb 1950b), Parrish Village (Webb 1951), and several sites in McLean County (Webb and Haag 1947). These reports contributed additional regional archaeological data to the rapidly growing Archaic database. In keeping with the prewar paradigm, these reports focused on expanding already lengthy trait lists, rather than on cultural reconstruction or dynamics (Schwartz 1967:83). Webb's Indian Knoll report (1946, 1974) represents the culmination of his years of research on the Green River Archaic shell middens.

Research on the Kentucky Archaic during the 1950s considerably differed from that of the prewar years. The need and funds for federally sponsored archaeological projects, like those of the Great Depression, were gone. Those large projects produced huge quantities of information and artifacts, but in the post-war era there was very little money available for cleaning, studying, reporting, or curating these important materials. Some still await study today.

The development and refinement of the radiocarbon dating technique during the late 1940s and early 1950s increased the time depth of eastern North America's archaeological record, expanding the temporal framework within which archaeologists worked by thousands of years. Because of these developments, archaeologists were able to compile a number of regional overviews that helped to synthesize and interpret the rapidly expanding Archaic period database (Fowler 1959; Lewis and Kneberg 1959; Maxwell 1952; Miller 1950; Morgan 1952).

One of these syntheses, Lewis and Kneberg's (1959) study of Archaic cultures of the Middle South, had particular relevance for Kentucky archaeology. In their article, they examined the cultural and temporal relationships among 22 Archaic sites in Kentucky, Tennessee, Alabama, and Georgia. Based on the analysis of their archaeological and statistical data, Lewis and Kneberg suggested that two contemporaneous Archaic traditions existed within this region. They assigned Late Archaic occupations at several Kentucky sites, including Read, Indian Knoll, Carlston Annis, Chiggerville, Ward, and Parrish Village, to either the Eastern or the Midcontinent tradition.

Archaeological investigations in nearby parts of the Midcontinent also influenced interpretations of the Kentucky Archaic. For example, based on his research at Modoc Rock Shelter in southwestern Illinois, Fowler (1959) proposed three adaptive stages—Initial Archaic (8,000-6000 B.C.), Local Adaptation (6,000-4,000 B.C.), and Specialized Adaptation (4,000-2,000 B.C.)—based on changes in food resource exploitation strategies. Initial Archaic strategies were generalized, exploiting all available foods. During the final stage, however, subsistence strategies focused on specific seasonally available foods. Fowler also noted that Archaic tool kits increased in complexity and specialization through time, reflecting changing exploitation strategies. He (Fowler 1959:46-55) assigned some Archaic levels at Parrish Village and Indian Knoll to the Local Adaptation stage, while he placed most of the Green River shell midden sites in the Specialized Adaptation stage.

During the 1950s and 1960s, the excavation of several deeply stratified sites in North Carolina, West Virginia, and Tennessee produced important chronological data for ordering the long Archaic cultural sequence (Broyles 1971; Coe 1964; Lewis and Lewis 1961). These findings also greatly influenced interpretations of the Kentucky Archaic period.

During the 1960s, the Federal government sponsored or assisted in the construction of several large reservoirs in Kentucky. Federal funding was used to pay for archaeological surveys of variable extent and intensity, and to excavate several sites. Reservoir archaeological projects that produced significant Archaic period data, include excavations at the Robert Dudgeon site (15Ta6) in the Green River Reservoir (Upper Green River Section) (Duffield 1966); survey and excavations in the Fishtrap Reservoir (Upper Big Sandy Section) (Dunnell 1966, 1972); archaeological investigations for the first of several proposed Red River reservoirs (Fryman 1967); a survey of Cave Run Reservoir (Hanson 1964) and excavation of several sites (Zilpo-15Bh37 [Rolingson and Rodeffer 1968b]; Deep Shelter-15Ro34 [Dorwin et al. 1970]) in the Cave Run Reservoir project area (Gorge Section) (Rolingson and Rodeffer 1968a; Marquardt 1970); and survey and excavation of selected sites in the Eagle Creek Reservoir (Northern Bluegrass Section) (Purrington and Smith 1966;

Rolingson 1968). Although coverage within a reservoir was often spotty and restricted to areas of good ground surface visibility, these projects investigated several sites that yielded significant Archaic period temporal and cultural data.

Other archaeological projects conducted in the 1960s that produced important Archaic period information include Rolingson and Schwartz's (1966) study of Early Archaic occupations at the Henderson, Roach, Morris, and Parrish sites (Lower Tennessee-Cumberland and Western Coalfield sections); Rolingson's (1967) reexamination of Late Archaic occupations in the Green River Management Area; Janzen's (1968) work at the Lone Hill site (15Jfl0) (Salt River Management Area), which provided data on Late Archaic adaptations in the Falls of the Ohio region; and Purrington's (1967) investigation of the cultural sequence for portions of the Big Sandy and Upper Kentucky/Licking management areas. Although research conducted by Watson and her associates (Watson 1969; Watson and Yarnell 1969) initially focused on the Early Woodland use of Salts Cave (Upper Green River Section), it eventually evolved into a long-term research program focusing on the potential role of cultigens in Late Archaic subsistence strategies.

Implementation of Federal environmental legislation in the mid-1970s that was intended to identify, evaluate, and excavate/protect significant cultural resources, dramatically increased our knowledge of Archaic hunter-gatherers. Throughout the 1980s and continuing into 1990s and 2000s both federally funded and permitted construction projects as well as research projects continue to have been undertaken at Archaic period sites. Projects in the Purchase and Green River management areas include further study of the Green River shell middens (Crothers 1999, Crothers and Bernbeck 2004; Hensley 1994; Herrmann 2002; Hockensmith et al. 1985; Marquardt 1972a, 1972b, 1985, 2005; Marquardt and Watson 1974, 1976, 1979, 1983a, 1983b; Marquardt and Watson 2005a; Watson 1976), the Lower Cumberland Archaeological project including the Morrisroe (15Lv156) and Whalen (15Lv48) sites (Conaty 1985; Conaty and Nance 1983; Nance 1977, 1981, 1986a; 1986b, 2001; Nance and Conaty 1982), survey and limited excavation of sites in the Cypress Creek drainage (Jefferies et al. 2005, 2007; Thompson 2001), the Shawnee Power Plant project (Butler et al. 1981); survey of 1255 ha of the Rough River Lake shoreline (Schenian and Mocas 1993); archaeological and geomorphological testing along the lower Cumberland River (Autry et al. 1989); and excavations conducted at several additional sites including (Clark [15Da32] and Abe Carter [15Da33] [Creasman 1993; Kreisa et al. 2002; Maggard and Pollack 2006; Schock et al. 1977]).

Information on the Archaic period in the Upper Cumberland Management Area comes from a number of survey and excavation projects. Among these are the archaeological surveys and limited site excavations conducted within the Big South Fork National River and Recreation area (Davis and Linebaugh 2001; Prentice 1995), excavation of sites within the Daniel Boone National Forest in McCreary County (Sussenbach 1997), evaluation of several sites in advance of construction of a federal prison in McCreary County (Meyers 2000), and archaeological investigations at the Main site (15Bl35) in Bell County (Creasman 1994) and several sites in Cumberland County (Bradbury and Day 1998).

Studies conducted in the Bluegrass and Salt River management areas that have contributed significant Archaic data include the Taylorsville Reservoir project (Ball and Bogan 1978; Driskell et al. 1984; Sorensen et al. 1980), the Southwest Jefferson County

Flood Protection project (Collins [ed.] 1979, Collins 1980; Dobbs and Dragoo 1976; Mocas 1976), the Mt. Sterling Industrial Park project (Boisvert et al. 1979), the J. K. Smith Power Station project in southeastern Clark County (Ison et al. 1982; Turnbow and Jobe 1981; Turnbow et al. 1983), the American Smelting and Refining Plant project (Allen and Cowan 1976; Cowan 1975a), the Big Bone Lick project (Boisvert 1982a, 1982b, 1982c), the Falls of the Ohio River project (Janzen 1971, 1977), and the Cedar Lake Reservoir project (Schock 1993). Several site specific mitigation projects, such as the Danville Tank site (15Bo16) (Boedy and Niquette 1987), the Kentucky Air National Guard site (15Jf267) (Bader and Granger 1989; Granger 1988), the Habich site (15Jf550) (Granger et al. 1992), and Railway Museum site (15Jf630) (Anslinger et al. 1994) also have contributed to our understanding of Archaic lifeways in the Salt and Bluegrass Management Areas. In addition, Ray's (1998) study of chert resources along the Upper Rolling Fork River has provided new insights on diachronic trends in chert procurement and use in west central Kentucky.

Some of the more important projects that have produced information about the Archaic period in the Upper Kentucky/Licking and Big Sandy management areas include the Paintsville Reservoir project (Adovasio 1982; Fitzgibbons et al. 1977; Vento et al. 1979); the proposed Red River Reservoir project and associated research (Cowan 1975b, 1976, 1979a, 1979b; Cowan et al. 1981; Wyss and Wyss 1977); the Bluestone archaeological project (Brooks et al. 1979; Fenwick 1976); a large-scale survey of portions of the Daniel Boone National Forest (O'Steen 1990); and several mitigation projects focusing of specific site excavations (Janzen 1989; Kerr et al. 1989 - Graham site [15La222]; Kerr et al. 2004 - Hart site [15La183), Ledbetter et al. 1991- Grayson site [15Cr73]; Mickelson 2001 - Gladie Creek [15Mf410]; Ahler 1988 - Hansen [15Gp14]; Edging et al. 1988 - Pine Fork [15Fd47]; Kerr et al. 1995 - Martin Justice [15Pi92]).

A variety of social, economic, and environmental factors have helped shape the nature and extent of previous Archaic period research conducted in Kentucky. Some regions, such as the Green River Management Area, have received considerable attention, which has generated a great deal of information on how Archaic groups adapted to changing social and environmental conditions during the 7,000 years of prehistory represented by this period. In other parts of the state, such as the Upper Cumberland Management Area, little is known about Archaic period adaptations.

THE KENTUCKY ARCHAIC PERIOD

As shown in the preceding discussion, Archaic period research in Kentucky has a long history, spanning nearly 100 years. The earliest investigation of sites containing Archaic material occurred well before archaeologists defined the Archaic concept. Through the years, the increasing volume and scope of archaeological research have led to a gradual refinement of our understanding of Archaic period hunter-gatherers. Today, it is recognized as that segment of eastern North American prehistory extending from ca. 8,000 to 1,000 B.C (Milner 2004:9).

Most researchers divide the Archaic period into Early, Middle, and Late subdivisions based on various technological, social, subsistence, and settlement criteria. However, archaeologists differ in their opinions about the lengths and temporal boundaries of the three subdivisions (Stoltman 1978:Figure 2). Since the rates of change of the various cultural characteristics used to define the periods are seldom uniform, establishing precise temporal boundaries is a difficult, often fruitless, task. In addition, differences between calibrated radiocarbon dates ("calendar dates") and "conventional dates" are another source of confusion (Milner 2004:9). Despite the problems associated with their use, these subdivisions are still the basic descriptive and comparative units for Archaic period research. All radiocarbon dates presented in this chapter are uncalibrated unless otherwise noted. For purposes of this discussion, the following temporal framework will be employed:

1. Early Archaic - 8,000 to 6,000 B.C.
2. Middle Archaic - 6,000 to 3,000 B.C.
3. Late Archaic - 3,000 to 1,000 B.C.

Paleoenvironmental and cultural data from Kentucky (Conaty 1985; Nance 1986a, 1986b) and from adjacent states (Brown and Vierra 1983; Cook 1976; Jefferies 1983; Styles et al. 1983; and others) suggest that a major shift in settlement and mobility strategies occurred near the end of the Hypsithermal around 3,000 B.C. Because of the size of the state of Kentucky and its physiographic and environmental diversity, the impact of even major climatic events, such as the Hypsithermal, probably varied from east to west and north to south across the state. Environmental variation, combined with regional cultural differences, limits the usefulness of temporal frameworks such as the one provided above. Because of their many limitations, they should be used only for general descriptive and comparative purposes.

TEMPORAL AND CULTURAL UNITS

Early Archaic (8,000-6,000 B.C.)

Archaeologists define the Early Archaic period by numerous technological, social, and economic changes that took place within hunting and gathering societies that inhabited eastern North America at the end of the last Pleistocene glaciation. The glacial retreat brought with it significant regional climatic changes, the transition from a circum-glacial coniferous forest to a mixed deciduous forest, and the extinction of Pleistocene megafauna, like mastodon, mammoth, and giant sloth.

Most significant advances in Early Archaic period research came from the excavation of deeply stratified deposits commonly found in alluvial or colluvial settings, or in rockshelters. Important stratified Early Archaic sites include St. Albans in West Virginia (Broyles 1971); Modoc Rock Shelter (Fowler 1959; Styles et al. 1983) and Koster (Brown and Vierra 1983) in Illinois; Rose Island, Icehouse Bottom, Carson-Conn-Short, and

Johnson-Hawkins in Tennessee (Boster and Norton 1996; Chapman 1975, 1976, 1977); Dust Cave in Alabama (Goldman-Finn and Driskell [eds.] 1994); several sites in the North Carolina piedmont (Coe 1964); and the Longworth-Gick site (15Jf243) in Kentucky (Collins 1979).

From the excavation of these deeply stratified Early Archaic sites, researchers gradually realized that similar projectile point sequences occurred over a wide portion of eastern North America. The distribution of corner and basal notched points, such as the Kirk and LeCroy types (Figure 4.1), the variety of raw materials used to make flaked stone tools, and the lack of evidence for long-term occupation, suggested that mobile hunting groups continued to exploit relatively large territories much like their Paleoindian predecessors. The paucity of Early Archaic plant food procurement and processing tools indicates that these subsistence activities were of relatively minor importance compared with hunting activities (Dragoo 1976:11).

Excavations during the 1990s in western Kentucky, southern Illinois, and southern Indiana have significantly refined our understanding of regional Early Archaic chronology, settlement-subsistence strategies, and social organization (Smith 1994 – Swan's Landing site [12Hr304]; Smith and Mocas 1995 – Paddy's West [12Fl46]; Stafford and Cantin 2008 - James Farnsley site [12Hr520] at Caesar's Palace; Wagner and Butler 2000 - Hills Branch Rock Shelter). In addition, new systematic analyses of Early Archaic settlement organization and site distribution have added significant information on early Holocene hunter-gatherer landscape utilization and demography (Jefferies et al. 2005; Stafford 1994).

The limited amount of Early Archaic material found at most sites, combined with a general absence of middens, features, and burials, suggests that most Early Archaic occupations were of short duration. Early Archaic social units were small, probably consisting of bands comprised of related individuals. The relatively high percentage of projectile points made from nonlocal cherts in Early Archaic assemblages suggests that these social groups were highly mobile. Early Archaic hunter-gatherers made these tools and incorporated them in their tool kits when groups traveled near the source areas. Tools made from these high quality cherts were used and rejuvenated for an extended time before they were eventually discarded far from their source area (see Binford 1979 for a discussion of "embedded procurement strategies" and the curation of tools in hunter-gatherer societies).

Kentucky Early Archaic data come from sites scattered throughout the state (Figure 4.2). Although these sites contain intact Early Archaic deposits, most Early Archaic artifacts come from culturally mixed deposits or surface collections.

Middle Archaic (6000 - 3000 B.C.)

The Middle Archaic subperiod was a time of increasing regionalization of cultures reflected by a variety of technological, settlement, subsistence, and social traits. One of the most distinctive characteristics was the development of regional projectile point styles (Figure 4.3) (Cook 1976; Fowler 1959; Lewis and Lewis 1961; Nance 1986b). A variety of specialized tools first appears during this period, reflecting the exploitation of a wide array of resources by Middle Archaic people and new processing techniques. The increased

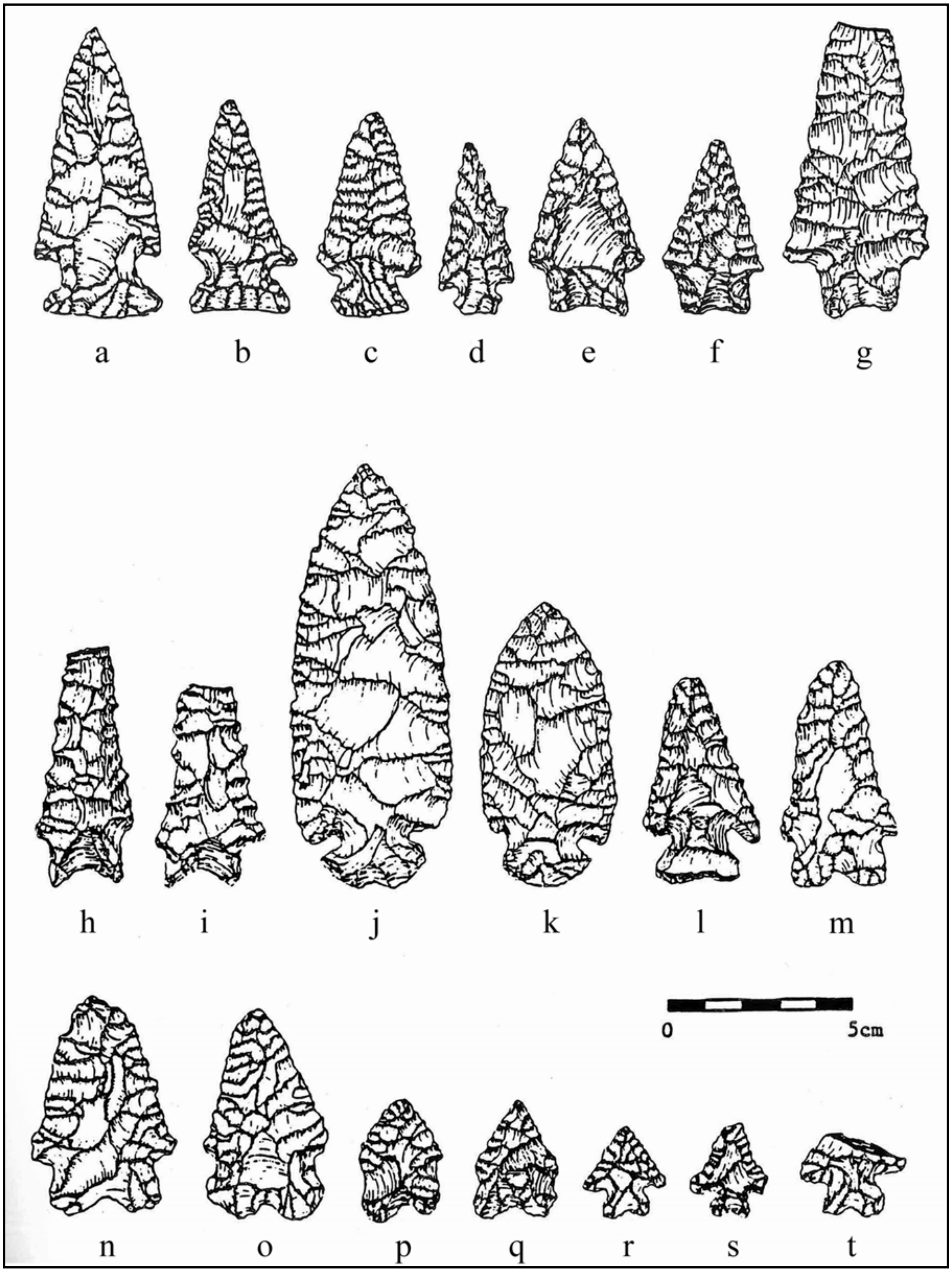

Figure 4.1. Early Archaic projectile points: a-d, Kirk Corner Notched; e,f, Kirk Stemmed; g-i, Kirk Serrated; j,k, Dovetail; l, Thebes Diagonal Notched; m-o, MacCorkle; p,q, LeCroy; r-t, Kanawha.

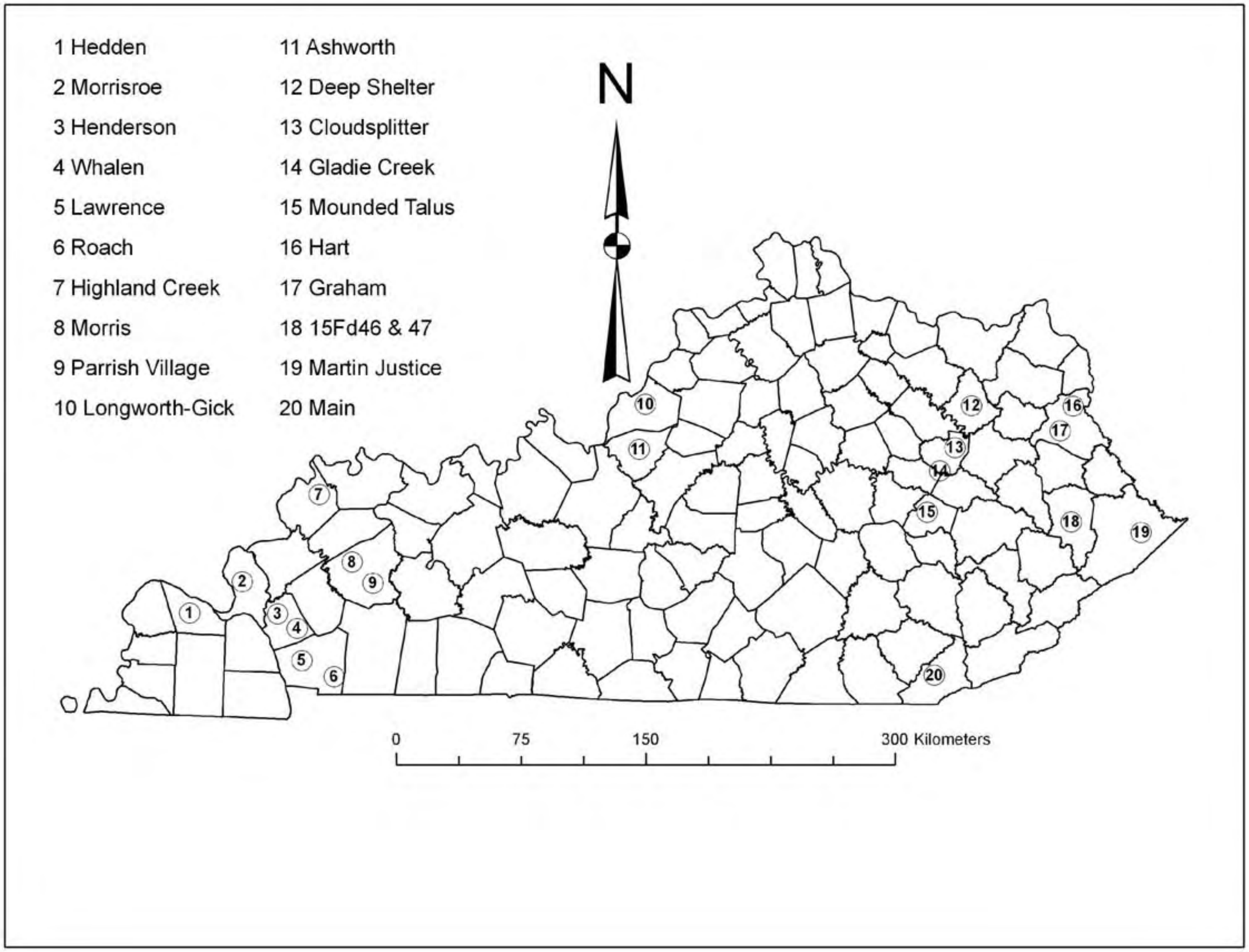

Figure 4.2. Major Early and Middle Archaic sites.

number and diversity of both formal and informal groundstone tools, many used for plant food processing, is particularly noticeable in many Middle Archaic assemblages.

By the beginning of the Middle Archaic subperiod, environmental remnants of the Pleistocene had disappeared and animal and plant communities more closely resembled those present at the time of Euro-American contact. Pollen records from some parts of the region indicate that drier climatic conditions associated with the Hypsithermal interval reached their maximum around 4,500 B.C. (King and Allen 1977; Wilkins et al. 1991). The reduction of arboreal communities and the influx of grass and herb communities appear to have had some impact on Middle Archaic settlement and population distributions (Conaty 1985; Janzen 1977; Jefferies 1983; Nance 1985).

In many areas, the ephemeral nature of most early Middle Archaic occupations suggests high group mobility, not unlike that found during the Early Archaic period (Jefferies et al. 2005). A partial explanation for the lack of early Middle Archaic components may be the difficulty of identifying diagnostic projectile points. Stafford and Cantin (2008) have suggested that archaeologists' uncertainty with respect to Middle Archaic projectile point styles (primarily those dating to the 6,000-4,500 B.C. era) has been a significant factor in the paucity of known early Middle Archaic components.

In contrast with the early Middle Archaic, the presence of large late Middle Archaic sites containing deep middens, a high diversity of tool types, and burials indicates that some locations were intensively occupied on a long-term or year-round basis (Bader and Granger 1989; Brown 1985; Brown and Vierra 1983; Conaty 1985; Crothers and Bernbeck 2004; Janzen 1977; Jefferies 1983; Jefferies et al. 2005; Nance 1985; Stafford 1994). Sites in the Southeast and Midwest containing major Middle Archaic components include Highland Creek (Maggard and Pollack 2006) and Morrisroe (Nance 1986a) in Kentucky; Eva (Lewis and Lewis 1961), Anderson (Dowd 1989) and Icehouse Bottom in Tennessee (Chapman 1977); Black Earth (Jefferies and Lynch 1983), Koster (Cook 1976) and Modoc Rock Shelter (Fowler 1959; Styles et al. 1983) in Illinois; and several sites in the North Carolina piedmont (Coe 1964); Archaeologists have identified several Middle Archaic phases at these sites based on the occurrence of morphologically distinctive projectile point types (Figure 4.3).

Coe (1964) identified three Middle Archaic phases for the North Carolina piedmont - Stanly (ca. 5,000 B.C.), Morrow Mountain (ca. 5,000-4,000 B.C.), and Guilford (ca. 4,500-3,200 B.C.) phases. A variety of primarily stemmed projectile points is associated with each of these phases.

Lewis and Lewis (1961) defined the Eva (pre-5,200 B.C.), Three Mile (4,200-2,000 B.C.), and Big Sandy (ca. 2,000 B.C.) phases for west Tennessee. Eva components are recognized by the presence of Eva, Cypress Creek, and Sykes points. The Three Mile phase is characterized by a shift from basal notched to side notched projectile points (Willey 1966:255). Late Middle Archaic (4,000-3,000 B.C.) occupations in southern Illinois yielded a variety of side notched point types, including Matanzas, Godar, and Faulkner (Fowler 1959; Jefferies and Lynch 1983).

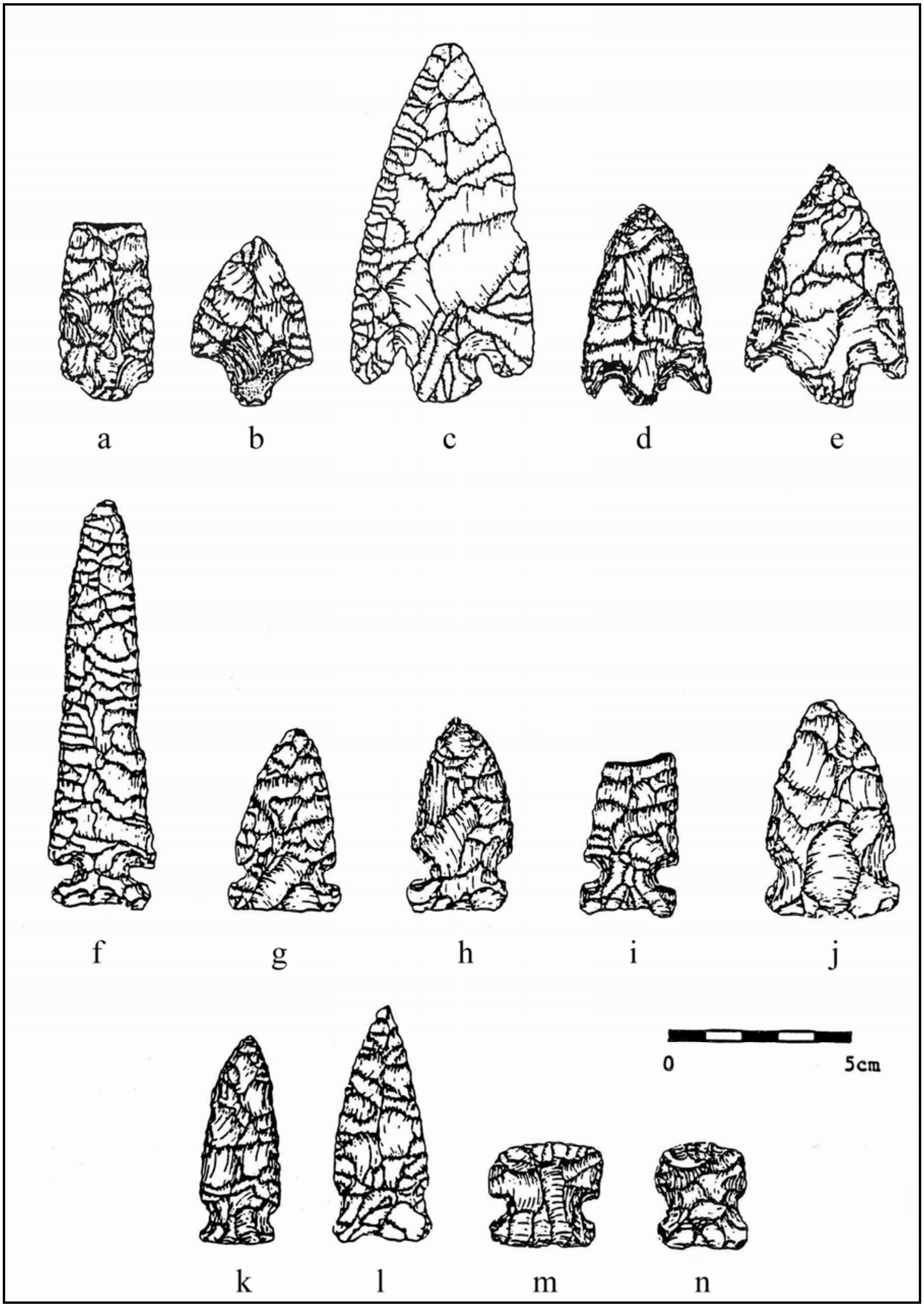

Figure 4.3. Middle Archaic hafted bifaces: a,b, Morrow Mountain II; c-e, Eva; f-j, Big Sandy/Godar; k,l, Matanzas; m,n, side notched endscrapers.

The Middle Archaic subdivision in Kentucky is very poorly understood. Middle Archaic occupations in the Bluegrass, Upper Kentucky/Licking, and Big Sandy management areas are recognized by the scattered occurrence of projectile point types, primarily Big Sandy II, Matanzas, and Morrow Mountain, which have been dated from 6,000 to 3,000 B.C. in nearby parts of the Midwest and Southeast. Most of these occurrences are quite ephemeral, suggesting short-term occupations by small groups. Based on currently available information, Middle Archaic adaptation in eastern and central Kentucky does not appear to have differed drastically from that of the Early Archaic.

Archaeologists have located more substantial Middle Archaic occupations in the Ohio River I and Lower Tennessee-Cumberland River sections of the Purchase Management Area (Nance 1986a, 1987). The character of the cultural deposits at some of these sites (e.g., Morrisroe) suggests that they served as Middle Archaic base camps where hunter-gatherers lived for an extended period or were reoccupied on a regular basis.

Analyses of hafted bifaces indicate that late Middle Archaic side notched bifaces are well-represented at some Green River midden sites including Andrews (Baker), Ward, Butterfield, Jimtown Hill, Jackson Bluff, and Barrett (Hensley 1994:Table 42; Jefferies et al. 2005:Table 2). The relatively large number of side notched bifaces found at these sites indicates that trends toward decreased hunter-gatherer mobility and longer occupations in resource rich areas seen in other parts of the Lower Ohio Valley were also underway in the Green River region during the late Middle Holocene (Hensley 1994:Figure 43; Jefferies et al. 2005). Analysis of materials from the Baker site (McBride 2000) provided important new insights on late Middle Archaic adaptive strategies in this part of the Commonwealth.

Many ideas about Middle Archaic adaptation in Kentucky must be inferred from the results of investigations conducted in nearby states. Environmental conditions in the lower Ohio River and middle Mississippi River valleys were generally similar to today's, but the composition and distribution of certain plant communities and their associated fauna may have differed because of the impact of the Hypsithermal. An investigation of paleoclimatic data from Jackson Pond in Larue County (Salt River Management Area) indicated that Hypsithermal conditions affected vegetation patterns in at least the west-central part of Kentucky (Wilkins 1985:104; Wilkins et al. 1991). Environmental indicators and cultural characteristics found at some Middle to Late Archaic sites in the Purchase and Green River management areas appear to reflect cultural responses to these changing climatic conditions (Marquardt and Watson 2005b:638-639). The impact of the Hypsithermal was probably greater in these management areas than those located in the eastern part of the state.

Variability in Middle Archaic artifact assemblages reflect different strategies for adapting to regionally distinctive environments. Middle Archaic hunter-gatherers appear to have developed more specialized tools and facilities to exploit new resources or more efficiently collect, process, and/or store those resources already being exploited. Included among these new tools were many groundstone implements, like grooved axes, that took considerable time to manufacture. But once completed, they had a much longer use-life than similar kinds of flaked stone implements. The increased abundance of some informal groundstone tools, like pitted cobbles and grinding stones, may be associated with the more intensive exploitation of plant foods, particularly nuts and seeds. Some researchers contend that the increased use of groundstone technology is linked to decreased residential mobility (Wright 1994).

Although very little is known about Middle Archaic subsistence practices in Kentucky, information from nearby states indicates a very generalized resource exploitation strategy that included the hunting of a variety of animals and the gathering of wild plants (Breitburg 1982; Fowler 1959; Gremillion 1996a; Lopinot 1982; Stafford et al. 2000; Styles and Klippel 1996; Styles et al. 1983). White-tailed deer and wild turkey are the most important meat sources identified at most sites. The Middle Archaic paleobotanical record is dominated by hickory nutshell, which underscores the dietary significance of this food source. Other varieties of nuts, along with fruits, starchy seeds, and a wide range of plant resources not preserved at open sites (greens, syrups, etc.) also contributed to the Middle Archaic subsistence base.

The small amount of information about Middle Archaic social organization in Kentucky comes from the analysis of a few small late Middle Archaic mortuary programs. For example, a small sample of late Middle Archaic burials were encountered during excavation of the KYANG site in Jefferson County (Bader and Granger 1989). Analysis of burial treatments suggested that the resident group was organized along egalitarian principles and that an individual's social position was largely determined by his or her personal accomplishment while living. Archaeologists have come to similar conclusions for other late Middle Archaic burial populations found in nearby parts of the Lower Ohio valley (Lynch 1982; Mayes 1997; Stafford et al. 2000).

Late Archaic (3,000-1,000 B.C.)

Late Archaic hunter-gatherer societies of eastern North America reflect a continuation of the trend toward greater regional specialization and adaptation first evident in the Middle Archaic. Adaptation to unique regional environmental conditions resulted in the development of specialized technologies with which to exploit efficiently locally available plant and animal resources. In many areas, Late Archaic settlement patterns are quite different from earlier Middle Archaic settlement patterns. Differences in the size, number, and distribution of settlements are suggestive of changes in Archaic settlement systems and social organization from the Middle to Late Archaic. In some parts of the region, Late Archaic sites appear to be more dispersed and less intensively utilized than during the late Middle Archaic (Ahler 1984; Conaty 1985; Cook 1976; Fowler 1959; Jefferies 1983; Nance 1985, 1986a, 1987, 1988). Investigations at some Late Archaic sites, especially the large Green River shell middens of west central Kentucky (Marquardt and Watson 2005a; Rothschild 1979; Webb 1946; Winters 1968), suggest that some late Holocene hunter-gatherer groups continued to increase in social complexity. The association of grave goods manufactured from nonlocal raw materials, like marine shell and copper, with some burials suggests special treatment of certain higher status individuals.

Late Archaic subsistence, as during the Middle Archaic, focused on hunting and collecting native animals and plants, with white-tailed deer and hickory nuts forming the core of the diet (Scarry 2003). In addition, a wide assortment of small mammals, birds, and fish contributed dietary protein and fat. In certain areas, mussels were an important source of food (Claassen 2005; Marquardt and Watson 2005b:633; Patch 2005). Besides hickory nuts, Late Archaic hunter-gatherers exploited a variety of other nuts, fruits, and seeds. The increased dietary significance of certain starchy seeds, such as goosefoot, marshelder, and knotweed, has been noted in some parts of the eastern United States (Cowan 1985:229-230). These seasonally available food resources were exploited at appropriate times during the group's annual settlement/subsistence cycle. Late Archaic hunter-gatherer societies structured their organization and movement to accomplish efficiently these tasks. The occasional presence of native and tropical cultigens suggests that some Late Archaic groups were experimenting with horticulture (Chomko and Crawford 1978; Cowan et al. 1981; Smith and Cowan 2003; Watson 1985).

Late Archaic hunter-gatherers used a variety of flaked stone, groundstone, antler, and bone tools to perform numerous specialized extractive and maintenance tasks. Late Archaic projectile point types include an assortment of large straight, expanding, and contracting stem points, and smaller stemmed and side notched types (Figures 4.4 and 4.5). The development of regional projectile point styles may partially reflect the decreased mobility and more restricted social interaction of some Late Archaic groups.

Sites assigned to the Late Archaic subdivision (Figure 4.6) are more numerous than Middle Archaic ones, and in many areas they are smaller and represent shorter, less intensive occupations than some Middle Archaic sites. Differences in settlement characteristics may reflect a population increase, changes in the way Late Archaic societies were organized, adaptation to changing environmental conditions, or a combination of some or all of these factors.

Archaeologists have derived insights into Late Archaic social organization from the analysis of burials, many of which come from the large shell middens located along Kentucky's Green River. The differential treatment of burials suggests a greater degree of social differentiation than during earlier portions of the Archaic period. Although it appears that social differences existed within these groups, analysis of archaeological and skeletal data indicates that Late Archaic societies were organized along essentially egalitarian lines.

The presence of artifacts manufactured from nonlocal raw materials, such as copper and marine shell, at several Green River Late Archaic sites demonstrates that some form of long distance exchange network existed. Although late Middle Archaic hunter-gatherers also participated in the exchange of these exotic materials, the volume of Late Archaic exchange, particularly of marine shell, increased dramatically. The preferential treatment of some burials found at these sites may reflect the hierarchy of individuals required to keep the far-reaching social network(s) operating through which people acquired these exotic materials.

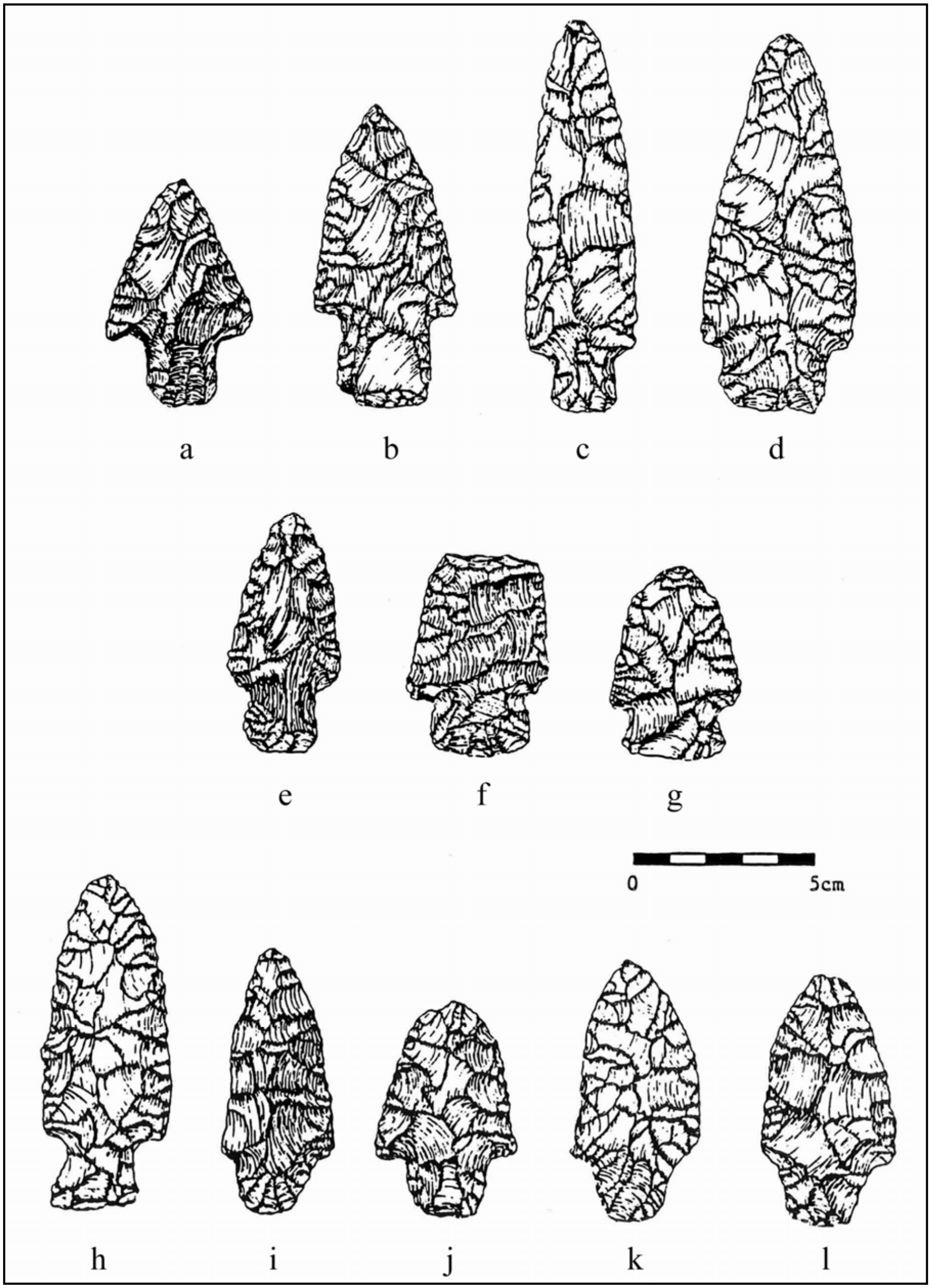

Figure 4.4. Late Archaic projectile points and hafted endscrapers: a-d, straight stemmed; e-h, expanding stemmed; i-l, contracting stemmed.

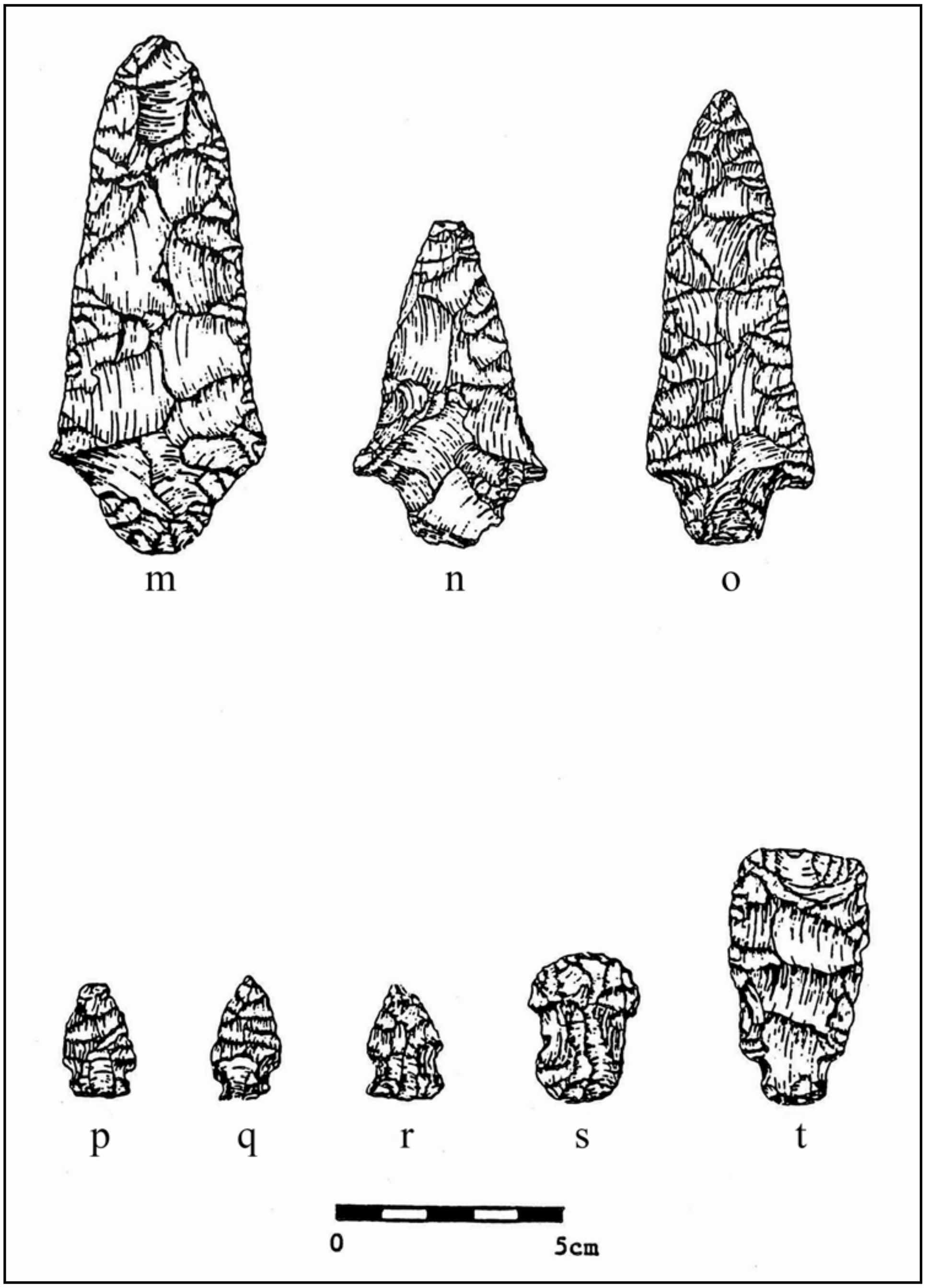

Figure 4.5. Late Archaic projectile points and hafted endscrapers: m-o Ledbetter; Merom-Trimble; s,t, hafted endscrapers.

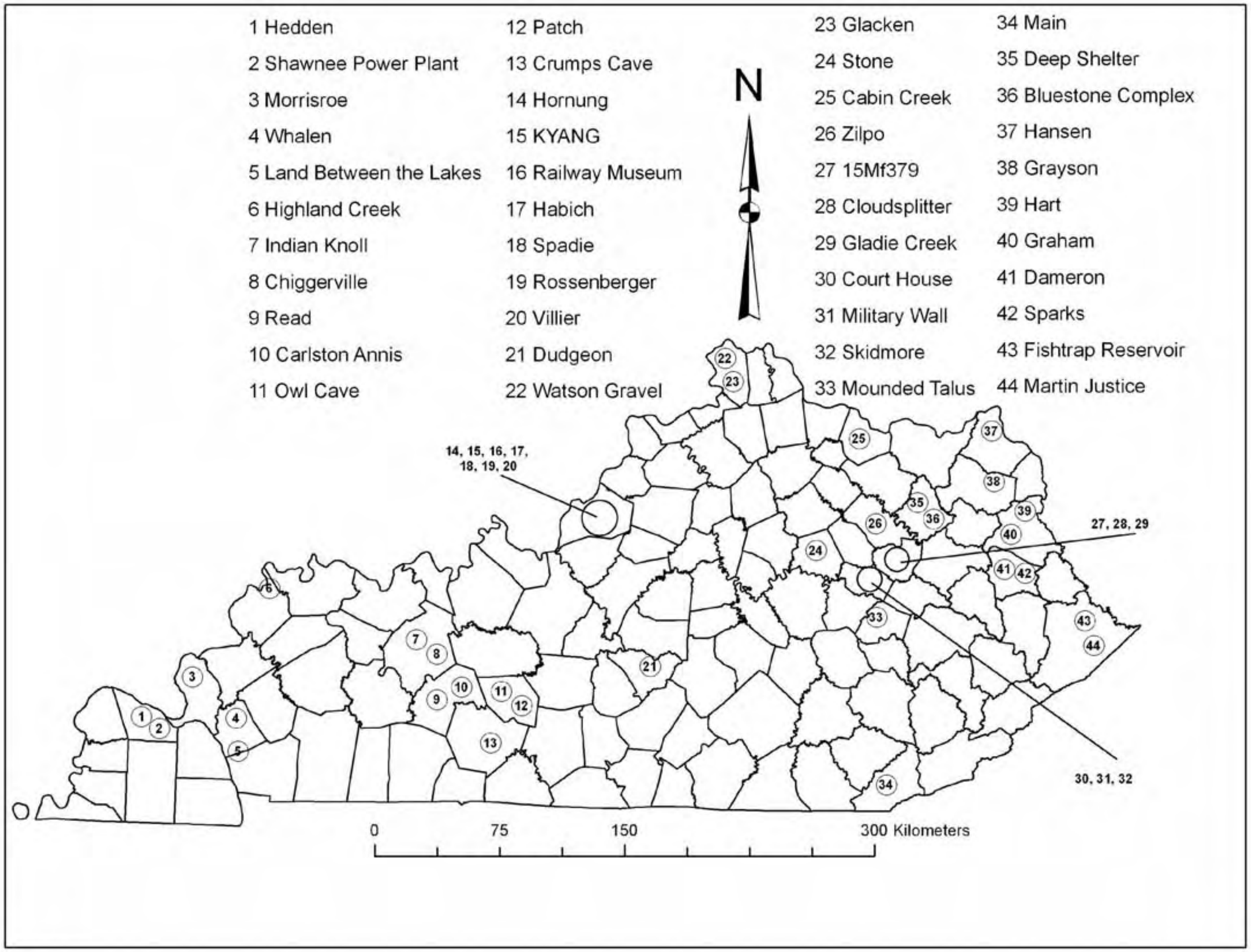

Figure 4.6. Major Late Archaic sites.

SITE DISTRIBUTIONS

As of mid-2006, archaeologists have recorded 4,703 Archaic components in Kentucky (Table 4.1). This figure is more than double the number recorded in 1990 (n=1,925) when the Kentucky Heritage Council published the first State Historic Preservation Plan (Pollack 1990). As in 1990, however, information on Kentucky's Archaic period hunter-gatherers is not evenly distributed across the Commonwealth. Considerable information on the Archaic Period exists for the Green River, Salt River, and Bluegrass management areas (Table 4.2). Although archaeologists have documented numerous Archaic sites in these management areas, in some cases, like in the Bluegrass, few have been investigated.

Table 4.1. Archaic Cultural Components.

Component	Total	Percent
Archaic	1,567	33.3
Early Archaic	951	20.2
Middle Archaic	544	11.6
Late Archaic	1,641	34.9
Total	4,703	100.0

Table 4.2. Archaic Components by Management Area.

Component	Big Sandy		Bluegrass		Green River		Purchase	
Archaic	65	35.9%	391	42.4%	577	40.1%	141	44.3%
Early Archaic	40	22.1%	185	20.0%	278	19.3%	39	12.3%
Middle Archaic	17	9.4%	67	7.3%	130	9.0%	30	9.4%
Late Archaic	59	32.6%	280	30.3%	455	31.6%	108	34.0%
Total	181	100.0%	923	100.0%	1440	100.0%	318	100.0%
Component	**Salt River**		**Upper Cumberland**		**Upper Kentucky/Licking**		**Total**	
Archaic	160	17.3%	149	26.9%	84	23.4%	1,567	33.3%
Early Archaic	187	20.2%	142	25.6%	80	22.3%	951	20.2%
Middle Archaic	202	21.8%	54	9.7%	44	12.3%	544	11.6%
Late Archaic	378	40.8%	210	37.8%	151	42.1%	1,641	34.9%
Total	927	100.1%	555	100.0%	359	100.1%	4,703	100.0%

Nearly 70 percent (n=3,290) of Kentucky's known Archaic sites occur in these three management areas. As of 2006, the Green River Management Area had the most recorded Archaic components (n=1440), accounting for 30.6 percent of the state's total. Webb and Funkhouser (1932) recorded many of these sites. Subsequent investigations have located many other Archaic sites (Hockensmith et al. 1985; Marquardt and Watson 2005a).

Much of the information about Archaic period adaptation in the Salt River Management Area can be attributed to the rapid expansion of the Louisville Metropolitan area, and cultural resource management and research efforts stemming from that growth.

Approximately 19.7 percent (n=927) of the state's recorded Archaic components occur in this management area.

In contrast to the Green River and the Salt River management areas, relatively little is known about the Archaic period in the Upper Kentucky/Licking, Big Sandy, and Upper Cumberland management areas. Collectively, these areas contain only 23 percent (n=1,095) of the state's known Archaic sites. Nevertheless, this is a substantial increase over the 14 percent (n=269) documented in these three management areas in 1990 (Jefferies 1990:Table 5). Despite the paucity of sites recorded, investigations of several important sites in the Upper Kentucky/Licking and Big Sandy management areas have generated important information on Archaic period adaptations in these areas. The low number of sites identified in both of these management areas, as well as the Upper Cumberland Management Area, reflects the relatively low level of economic development in these regions when compared to other parts of the state, and the region's rugged terrain, extensive ground cover, and lack of extensive floodplains that have been the focus of archaeological investigations in other parts of the state. Much of what is known about Archaic adaptation in Kentucky's mountainous areas comes from rockshelters containing stratified cultural deposits (Cowan et al. 1981; Dorwin et al. 1970; Ison 1988; Gremillion 1998, 1999; Schlarb and Pollack 2002). Excavations at the Main site in Bell County (Creasman 1994) and the Grayson site (Ledbetter and O'Steen 1992; Ledbetter et al. 1991) in Carter County have provided insights on Archaic adaptation in eastern Kentucky's river valleys.

Although examining the distribution of recorded Archaic sites provides some indication of the status of Archaic research in each management area, it is not a very accurate measure. The seven management areas vary in size and the percentage of land surveyed, so it is useful to calculate the density of recorded sites based on the percentage of land examined. Table 4.3 lists the seven management areas, the area of each, and the number of hectares surveyed in each management area. To date, archaeologists have surveyed 336036 ha of the Commonwealth, representing 3.2 percent of Kentucky. The percentage of each management area surveyed ranges from 1.3 percent (Bluegrass) to 6.6 percent (Upper Kentucky). When the total number of hectares surveyed is compared with the total number of recorded Archaic sites, the Bluegrass Management Area has the highest recorded site density (one site/33.6 ha), followed by the Green River (one site/47.2 ha), and the Salt River (one site/53.4 ha) management areas. The lowest density of recorded sites is in the Upper Kentucky Management Area (one site/329.5 ha surveyed), followed by the Big Sandy Management Area (one site/327.1 ha surveyed). The remaining management areas range from 101.2 to 140.7 ha surveyed per site. The density of Archaic sites for all of Kentucky is one site per 93.8 ha surveyed.

Table 4.1 shows the distribution of Archaic components by Early (n=951), Middle (n=544), and Late Archaic (n=1,641) subdivisions, along with those components that could be identified as just "Archaic" (n=1,567). Of the 3,136 components that have been assigned to an Archaic subdivision, 30.3 percent date to the Early Archaic, which represents 29 percent of the Archaic period (2,000 of 7,000 years). In contrast, Middle Archaic components comprise only 17.3 percent of the identified Archaic components, even though the Middle Archaic represents 43 percent (3,000 years) of the 7,000-year long Archaic period. Although the Late Archaic accounts for only 29 percent (2,000 years) of the Archaic period, Late Archaic components account for nearly 52.3 percent of all identified Archaic components. Tables 4.4-6 show the distribution of sites by site type (Table 4.4), landform (Table 4.5), and locality (Table 4.6) for each of the seven management areas.

Table 4.3. Area Surveyed by Management Area.

Management Area	Total Hectares	Hectares Surveyed	Percent
Big Sandy	847353.3	47096.2	5.56
Bluegrass	1883514.6	24199.9	1.28
Green River	3030926.6	53478.9	1.76
Purchase	935179.5	26107.6	2.79
Salt River	1139834.8	32962.8	2.89
Upper Cumberland	1251503.0	60909.0	4.87
Upper Kentucky	1380951.8	91281.1	6.61
Total	10469263.6	336035.5	3.21

Table 4.4. Archaic Sites by Site Type and Management Area.

Site Type	Big Sandy	Blue-grass	Green River	Pur-chase	Salt River	Upper Cumberland	Upper Kent-ucky	Total	Per-cent
Open Habitation w/out mounds	124	692	997	236	583	288	163	3,083	86.1
Isolated Find	0	2	15	1	2	2	0	22	0.6
Rockshelter	16	4	56	1	5	129	110	321	9.0
Cave	0	1	24	1	2	5	1	34	0.9
Quarry	1	0	2	1	0	2	0	6	0.2
Stone Mound	0	0	1	0	1	0	1	3	0.1
Earth Mound	0	2	5	3	4	0	0	14	0.4
Mound Complex	0	0	3	2	0	0	0	5	0.1
Petroglyph/Pictograph	0	0	0	0	0	1	0	1	0.0
Non-Mound Earthwork	0	2	0	0	0	0	0	2	0.1
Workshop	1	5	5	2	4	3	0	20	0.6
Isolated Burial	0	1	0	0	0	0	0	1	0.0
Cemetery	0	2	5	3	0	1	0	11	0.3
Specialized Activity Site	1	2	0	2	14	1	1	21	0.6
Open Habitation w/ Mounds	1	7	19	6	2	1	1	37	1.0
Total	144	720	1,132	258	617	433	277	3,581	100.0
Percent	4.0	20.1	31.6	7.2	17.2	12.1	7.7	100.0	

Radiocarbon dates presented in the following sections were obtained from original site documentation, supplemented by information from Turnbow (1981) and Maslowski et al. (1996).

Table 4.5. Archaic Sites by Landform and Management Area.

Landform	Big Sandy	Blue-grass	Green River	Pur-chase	Salt River	Upper Cumb-erland	Upper Kent-ucky	Total	Perc-ent
Unknown/Missing/ Other	7	6	25	3	30	11	7	89	2.5
Floodplain	74	174	269	109	251	60	38	975	27.2
Terrace	32	131	185	41	106	86	34	615	17.2
Hillside	15	76	181	24	45	90	55	486	13.6
Dissected Upland	15	250	300	72	122	151	121	1,031	28.8
Undissected Upland	1	83	172	9	63	35	22	385	10.8
Total	144	720	1,132	258	617	433	277	3,581	100.0
Percent	4.0	20.1	31.6	7.2	17.2	12.1	7.7	100.0	

Table 4.6. Archaic Sites by Locality and Management Area.

Locality	Big Sandy	Blue-grass	Green River	Pur-chase	Salt River	Upper Cumb-erland	Upper Kent-ucky	Total	Perc-ent
Unknown/Missing /Other	12	18	24	5	32	17	18	126	3.5
Level	85	292	297	118	220	125	52	1,189	33.2
Knoll	7	61	139	29	93	20	13	362	10.1
Depression	0	1	8	2	11	6	3	31	0.9
Bluff Crest	2	15	45	8	21	11	4	106	3.0
Bluff Base	14	5	20	1	37	79	36	192	5.4
Ridge	10	215	323	54	120	87	59	868	24.2
Slope	14	113	276	41	83	88	92	707	19.7
Total	144	720	1,132	258	617	433	277	3,581	100.0
Percent	4.0	20.1	31.6	7.2	17.2	12.1	7.7	100.0	

PURCHASE (MANAGEMENT AREA 1)

MISSISSIPPI RIVER SECTION

Table 4.7 is a listing of Archaic cultural components for the Purchase Management Area. Although 21 Archaic sites have been recorded in the Mississippi River Section (Table 4.8), major Archaic sites have yet to be located in this part of Kentucky. As a result, relatively little is known about how Archaic hunter-gatherers adapted to this floodplain-dominated part of Kentucky. There are currently no Archaic period radiocarbon dates available for the Mississippi River Section.

Table 4.7. Purchase Cultural Components by Management Area Section.

	Mississippi River		Ohio River I		Lower Tennessee/ Cumberland			
Component	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**
Archaic	11	47.8	60	42.6	70	45.5	141	44.3
Early Archaic	4	17.4	17	12.1	18	11.7	39	12.3
Middle Archaic	1	4.3	16	11.3	13	8.4	30	9.4
Late Archaic	7	30.4	48	34.0	53	34.4	108	34.0
Total	23	99.9	141	100.0	154	100.0	318	100.0

Table 4. 8. Purchase: Site Type by Management Area Section.

	Mississippi River		Ohio River I		Lower Tennessee-Cumberland			
Site Type	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**
Open Habitation Without Mound(s)	19	90.5	108	95.6	109	87.9	236	91.5
Isolated Find	0	0.0	0	0.0	1	0.8	1	0.4
Rockshelter	0	0.0	1	0.9	0	0.0	1	0.4
Cave	0	0.0	0	0.0	1	0.8	1	0.4
Quarry	1	4.8	0	0.0	0	0.0	1	0.4
Earth Mound	0	0.0	2	1.8	1	0.8	3	1.2
Mound Complex	1	4.8	0	0.0	1	0.8	2	0.8
Workshop	0	0.0	0	0.0	2	1.6	2	0.8
Cemetery	0	0.0	1	0.9	2	1.6	3	1.2
Specialized Activity Site	0	0.0	0	0.0	2	1.6	2	0.8
Open Habitation With /Mound(s)	0	0.0	1	0.9	5	4.0	6	2.3
Total	21		113		124		258	100.2
Percent	8.1	100.0	43.8	100.0	48.1	100.0		

Archaeological investigations conducted in southeastern Missouri and northeastern Arkansas provide some insights into Archaic cultures of the Mississippi River Valley. The Early and Middle Archaic subdivisions in northeastern Arkansas extend from 7,000 to 3,000 B.C. The period from 8,000 to 7,000 B.C., considered to be part of the Early Archaic subdivision in Kentucky, is assigned to the Dalton period in northeastern Arkansas. Projectile point types, such as Hardin, St. Charles, Graham Cave, and Cache River, are used to identify the scattered Early Archaic occupations found throughout the area. The presence of Eva-like or Calf Creek projectile points identify later Early Archaic sites. There is little evidence for habitation in much of northeastern Arkansas during the Middle Archaic, except for the presence of side notched projectile points. The Hypsithermal affected the northeastern Arkansas climate during this time, which resulted in a decrease in forest cover and an increase in the extent of grasslands (Morse 1982:22).

The Late Archaic was marked by a return to moister conditions and the expansion of deciduous forests. Diagnostic Late Archaic characteristics include Big Creek and Gary projectile points, Poverty Point objects, and a well-developed lapidary industry (Morse 1982:22).

For southeastern Missouri, Chapman (1975:157) reported that Early Archaic camps and collection stations occur on relic river levees or high points near small streams. He suggested that rockshelters and blufftops located along the Mississippi River would be good places to look for Early Archaic occupations, as would areas containing well-developed soil profiles, particularly those associated with old natural levees along small streams.

Archaeologists place southeastern Missouri's Late Archaic cultures in the O'Bryan Ridge phase, one of the region's first widespread cultural complexes (Lafferty and Price 1996: Figure 1.2). The presence of baked clay objects (i.e., Poverty Point Objects) and lapidary items indicate cultural connections between O'Bryan Ridge groups and groups associated with the Poverty Point culture of northeastern Louisiana (Gibson 1996, 2000; Lafferty and Price 1996:3). Radiocarbon dates associated with O'Bryan Ridge phase artifacts range from ca. 2,800 to 600 or 500 B.C. (Buchner 2003:52).

OHIO RIVER I SECTION

More than one hundred Archaic sites have been recorded in this section (Table 4.8). Important Archaic sites in the Ohio River Section include those listed in Table 4.9. Research conducted in the lower Tennessee-Cumberland-Ohio river region in 1980s by Nance and his associates has helped to refine our understanding of Early Archaic chronology, technology, and settlement strategies in this section (Conaty 1985; Nance 1985, 1986a, 1988, 2001). These investigations focused on several floodplain sites including the deeply stratified Morrisroe site (15Lv156). Early Archaic components in the Ohio River 1 Section contain Kirk Stemmed and Kirk Serrated points, with minor amounts of Palmer and Stanly types present in site collections. Earlier types, such as Kirk Corner Notched and various bifurcate base point types, are not as well represented as in eastern Kentucky, but a few examples have been collected in the research area (Nance 1986a).

Much of what is known about Archaic period adaptation in the Ohio River I Section stems from research conducted at the Morrisroe site located on the lower Tennessee River, some 18 km upstream from its confluence with the Ohio River (Figure 4.2). The Morrisroe excavations documented a late Early Archaic component that dated to ca. 6,200 B.C. and contained mostly Kirk Stemmed and Kirk Serrated points (Figure 4.1). The light midden deposit associated with this component is attributable to a somewhat ephemeral occupation (Nance 1986a).

Table 4.9. Important Sites: Ohio River I Section.

Site No.	Site Name	Site Type	Affiliation	References
15Lvl4	none	Open habitation	Late Archaic	O'Malley et al. 1983
15Lv83	none	Open habitation	Late Archaic	O'Malley et al. 1983
15Lv88	none	Open habitation	Mid-Late Archaic	O'Malley et al. 1983
15Lv92	none	Open habitation	Late Archaic	O'Malley et al. 1983
15Lvll0	Trail	Open habitation	Middle Archaic, Late Archaic	Nance 1982
15Lvl56	Morrisroe	Open habitation	Early Archaic-Late Archaic	Nance 1986a, 1986b
15Lv70	none	Open habitation	Middle-Late Archaic	Autry et al. 1989
15McN20	none	Open habitation	Late Archaic	Butler et al. 1981
15McN81	Hedden	Open habitation	Middle-Late Archaic	Rossen 2000

The Morrisroe data indicate that Early Archaic occupations (ca. 6,500 to 6,000 B.C.) along the lower Tennessee River were ephemeral and of short duration. Very little is known about pre-6,500 B.C. Archaic occupations in this section (Nance 1988).

The Morrisroe excavations also exposed a Middle Archaic occupation that spanned approximately 2,600 years between 6,200 and 3,600 B.C. Researchers identified four cultural strata (Strata 1-4) based on differences in projectile point styles and soil characteristics. They assigned Stratum 3, representing the period of most intensive site use, an early Middle Archaic affiliation. Radiocarbon determinations of 5,890±100 B.C. and 5,580±150 B.C. (Table 4.10) were obtained from the Stratum 3 occupation. Associated projectile points include Cypress Creek and Eva types, with Cypress Creek points being more numerous than Eva points in the lower levels. Cypress Creek points tend to be most common at Morrisroe from ca. 5,800 to 5,500 B.C., filling the typological and temporal hiatus between the earlier Kirk and bifurcate base point types and the later Eva types. The Morrisroe dates push back the earliest documented occurrence of Eva points in the lower Tennessee-Cumberland area about 700 years (Nance 1986a).

Stratum 2, which contained side notched and stemmed projectile points, represents a late Middle Archaic occupation. This stratum yielded a radiocarbon determination of 3,630±100 B.C. (Table 4.10) (Nance 1986a).

Late Archaic assemblages in this section are dominated by a variety of stemmed projectile points. Straight stemmed types are most common, comprising from 60 to 80 percent of the points in some terminal Late Archaic assemblages. Ledbetter-Pickwick and Adena-like projectile points also occur at some Late Archaic sites (Nance 1986a, 1988).

Although several researchers have proposed that some lower Tennessee-Cumberland River Late Archaic floodplain sites reflect semi-sedentary occupations (Coe and Fischer 1959:22), the absence of heavy grinding tools, features, and burials suggests that this is not the case (Nance 1977:14). Information from Morrisroe indicates that in contrast to Middle Archaic settlements, Late Archaic (post-3,500 B.C.) site use was short-term and sporadic (Nance 1988).

Table 4.10. Chronometric Dates: Purchase Management Area.

Lab. No.	Age (B.P.)	Uncalibrated Date	References
<u>**Mississippi River**</u>			
None			
<u>**Ohio River I**</u>			
Morrisroe (15Lv156)			
SFU-271	8220+100	6270 BC	Nance 1986a:42
Beta-10477	7840+100	5890 BC	Nance 1986a:42
SFU-130	7530+150	5580 BC	Nance 1986a:42
SFU-29	7450+150	5500 BC	Nance 1987:97
SFU-270	7180+130	5230 BC	Nance 1986a:42
SFU-121	7110+250	5160 BC	Nance 1986a:42
Beta-10476	6630+110	4680 BC	Nance 1986a:42
Beta-10475	6440+110	4490 BC	Nance 1986a:42
Beta-10474	5580+100	3630 BC	Nance 1986a:42
Crawford Lake (15McN18)			
ISGS-2153	6150+150	4200 BC	Paul Kreisa, personal communication 1992; Maslowski et al. 1996
Hedden (15McN81)			
Beta-93737	5130+ 50	3180 B.C	Rossen 2000
Beta-93734	4520+50	2570 BC	Rossen 2000
Beta-93733	4420+60	2470 BC	Rossen 2000
Beta-93735	4300+60	2350 BC	Rossen 2000
Beta-93738	4030+50	2080 BC	Rossen 2000
Beta-93736	3850+50	1900 BC	Rossen 2000
<u>**Lower Tennessee/ Cumberland**</u>			
Whalen (15Ly48)			
Beta-15080	9340+100	7390 BC	Nance 2001:12-13
SFU-221	8500+460	6550 BC	Nance 2001:12-13
SFU-249	7670+630	5720 BC	Nance 2001:12-13
Beta-20891	7150+80	5200 BC	Nance 2001:12-13
Beta -20892	7110+100	5160 BC	Nance 2001:12-13
SFU-252	7100+600	5150 BC	Nance 2001:12-13
Site 15Ml134			
Beta-56255	4020+170	2070 BC	Schenian and Mocas 1993:47
Lawrence (15Tr33)			
UGA-286	7470+85	5520 BC	Mocas 1977:66, 127, 1985:84-85
UGA-436	7325+125	5375 BC	Mocas 1977:66, 127, 1985:84-85
UGA-240	7265+305	5315 BC	Mocas 1977:66, 127, 1985:84-85

In some parts of the Midwest and Southeast, archaeologists have noted the long-term or repeated occupation of certain sites by late Middle Archaic groups (Brown and Vierra 1983; Cook 1976; Fowler 1959; Janzen 1977; Jefferies 1983). Many have suggested that this pattern is at least partially attributable to the impact of a warmer, drier Hypsithermal interval, which occurred between 6,000 and 3,000 B.C. (King and Allen 1977). Climatic changes during the Hypsithermal are thought to have altered the composition and distribution of critical plant communities and their associated fauna. Middle Archaic groups in some parts of the Midwest and Southeast responded to these changes by altering their exploitation strategies, resulting in the intensive use of areas having diverse, abundant, and reliable subsistence resources. Most commonly, these requirements were found near riverine floodplains or in areas adjacent to other kinds of wetlands. In some cases, like along portions of the lower Illinois and Mississippi River valley, these wetlands did not form until sometime in the middle Holocene (Brown 1985:213).

As the impact of the Hypsithermal lessened, the distribution of critical subsistence resources increased. The more dispersed settlement patterns associated with the Late Archaic in many areas reflect a cultural response to these changing conditions.

Undoubtedly, factors other than just environmental stress and resource abundance affected this major reorganization of hunter-gatherer settlement-subsistence strategies. Other possible influences proposed for this shift include population pressure and social risk (Brown 1985; Hitchcock 1982). Population increase and resource competition may have resulted in more circumscribed home ranges and, ultimately, reduced mobility. Increased efforts of late Middle Archaic hunter-gatherer groups to avoid risk may have required more food to meet the ritual demands of interacting and maintaining ties with other groups.

Conaty's (1985) analysis of 15 assemblages from six Archaic sites in the Lower Tennessee-Cumberland area revealed several distinctions between Middle and Late Archaic adaptive strategies. Morrisroe's Middle Archaic assemblages included abundant debitage attributable to all stages of flaked stone tool manufacture, and a wide variety of tool types. These characteristics were interpreted as reflecting a logistic mobility strategy (see Binford 1980 for further discussion of mobility strategies) that involved a relatively stable residential base (Morrisroe) supported by a network of smaller sites where more specialized activities were conducted (Conaty 1985:337). Hunter-gatherers probably occupied residential bases on a multi-seasonal or year-round basis. In contrast, Late Archaic assemblages suggested a residential mobility strategy characterized by smaller, more widely dispersed sites reflecting shorter occupations than those associated with a logistic strategy. Changes in Archaic mobility in this section also have been attributed to environmental changes during the Hypsithermal (Conaty 1985; Nance 1985).

Survey and testing for the Shawnee Atmospheric Fluidbed Conduction Power Plant in McCracken County identified a multicomponent site (Shawnee Power Plant [15McN20]) located on an alluvial ridge near the Ohio River (Figure 4.6). The site contained an intact Late Archaic deposit that extended to a depth of 90 cm below the surface. The Shawnee Power Plant site represents one of the few sites containing unmixed Late Archaic materials in this part of the lower Ohio Valley (Butler et al. 1981:122).

Limited excavations revealed large quantities of chert debitage and fire-cracked rock, along with a considerable amount of carbonized plant remains. Diagnostic Late Archaic materials consisted of straight stemmed projectile points similar to Winters' (1967:25) Saratoga Type Cluster and a smaller projectile point, which resembles the Trimble Side Notched type. Most of the Late Archaic artifacts were made of Mounds Gravel collected from nearby gravel bars. The occurrence of large percussion flakes and a high percentage of flakes with cortex, along with the relatively low frequency of finished tools, suggest that the processing of large Mounds Gravel cobbles was a major Late Archaic activity (Butler et al. 1981:60-71).

Archaeological and geomorphological investigations conducted at several locations along the lower Cumberland River in the late 1980s identified 19 new archaeological sites and revisited eight previously recorded ones (Autry et al. 1989). Most of the sites consisted of large, dense multicomponent surface scatters, but several contained either subplowzone features or intact buried cultural components. One site (15Lv70) contained buried intact components extending to as deep as 3m below surface. Diagnostic artifacts recovered from these buried cultural components, included Eva I, Matanzas (side-notched and expanding stem), Saratoga Parallel Stem, Pickwick, Gary, and Motley projectile points, indicating the potential for intact Middle-Late Archaic components.

All of the identified sites were situated below the Pleistocene-age T2 Brownfield Terrace, the highest terrace along the Lower Cumberland River. Sites were also located on the slightly lower T1 Pickneyville Terrace. Sites situated directly adjacent to the river or on the active Holocene floodplain were commonly located on natural levees formed from remnant point bars or overbank deposits (Autry et al. 1989).

Autry et al. (1989) proposed that rapid post-Pleistocene downcutting was responsible for initial floodplain development along this part of the Lower Cumberland River. Overbank deposition quickly buried cultural materials and features on the floodplain surface. The most deeply buried sites are located closest to the river. As distance to the river increases, the potential for buried components decreases. Consequently, models of Early Archaic settlement are probably skewed, with a bias toward sites located in the higher floodplain elevations. Most Early Archaic sites located closer to the river are deeply buried below the modern floodplain surface.

Field investigations at the Hedden site (15McN81) on the Tennessee River floodplain in McCracken County collected data that has helped to clarify the role of wetland resources in late Holocene subsistence strategies (Rossen 2000). A series of six radiocarbon dates place the site’s major occupation from 3,180 to 1,900 B.C. (Table 4.10). Among the plant remains associated with the Hedden site’s Late Archaic component were large quantities of nutshell, wild varieties of starchy and oily seeds, and several kinds of wetland plants. It appears that site inhabitants pursued a subsistence strategy that incorporated specialized nut collecting with generalized broad-spectrum foraging. Wetland plant resources played a particularly significant dietary role because of their predictability and availability during the winter months when other food resources are scarce (Rossen 2000:1).

Other than the work done at the Hedden site, little has been learned during the past 20 years about Archaic hunter-gatherers in this part of the Commonwealth. Clearly, more research is needed in the Ohio River I Section so that local Archaic adaptive strategies, landscape use, and social organization can be compared with that seen in other parts of the Ohio Valley.

LOWER TENNESSEE-CUMBERLAND SECTION

One hundred and twenty-four Archaic sites have been recorded in the Lower Tennessee-Cumberland River Section (Table 4.8). Important Archaic sites in the Lower Tennessee-Cumberland Section are listed in Table 4.11. Although relatively few Archaic sites have been recorded in the Lower Tennessee-Cumberland Section, research conducted at these sites has yielded significant information about Archaic adaptation in this part of Kentucky.

Table 4.11. Important Sites: Lower Tennessee-Cumberland Section.

Site No.	Site Name	Site Type	Affiliation	References
15Ly47	Henderson	Open Habitation	Early-Late Archaic	Rolingson and Schwartz 1966
15Ly48	Whalen	Open Habitation	Early-Late Archaic	Nance 1986a
15Tr10	Roach Village	Open Habitation	Early-Late Archaic	Rolingson and Schwartz 1966
15Tr33	Lawrence	Open Habitation, Cemetery	Early-Middle Archaic	Mocas 1977, 1985
15Tr50	none	Open Habitation	Late Archaic	Nance 1977
15Tr53	none	Open Habitation	Late Archaic	Nance 1977
15Tr56	none	Open Habitation	Late Archaic	Nance 1977
15Cw96*	Crick	Cache	Late Archaic	Schenian 1987
*See Chapter 5				

Rolingson and Schwartz's (1966) study of Paleoindian and Early Archaic occupations in western Kentucky produced the first synthesis of early prehistoric cultures in this part of the state. Analyses of artifacts from the Henderson and Roach sites, located in the Lower Tennessee-Cumberland Section, and the Morris and Parrish Village sites, located in the nearby Western Coalfield Section (Figure 4.2), demonstrated that Kirk Serrated projectile points represent from 1 to 3 percent of all projectile points at all but the Henderson Site (Rolingson and Schwartz 1966:Table 25).

Assemblages from Henderson and from the lower levels of Morris and Roach were grouped together to form the Henderson phase. These assemblages were thought to date to approximately 6,000 B.C. and to be similar to those associated with Fowler's (1959) Initial Archaic stage (Rolingson and Schwartz 1966:154).

Archaeological survey in the Land Between the Lakes area, situated between the lower Tennessee and Cumberland rivers, identified at least three sites that produced Early Archaic projectile points (Plevna, Kirk Serrated, and Decatur). These upland sites were small, did not contain deep midden deposits, and appeared to reflect different activities than the larger floodplain sites (Nance 1975).

Archaeological investigations conducted at the Whalen site (15Ly48), located on the lower Cumberland River in Lyon County (Figure 4.2), revealed cultural deposits extending at least 3 m below surface. Two distinct middens were identified consisting of a lower (310-350 cm below surface) early Middle Archaic deposit and an upper (130-250 cm below surface) Middle to Late Archaic zone. Radiocarbon dates from the lower zone ranged from 6,550 to 5,720 B.C.; dates for the lower part of the upper zone clustered around 5,150 B.C. (Nance 2001) (Table 4.10).

Both of the dark organic middens contained an abundance of lithic artifacts. The lower zone yielded Kirk and Cypress Creek projectile points, while Middle to Late Archaic side notched and straight stemmed points were common in the upper zone. Mussel shell impressions associated with the Early Archaic zone represent the only evidence of shellfish utilization at a lower Tennessee-Cumberland Early Archaic site (Nance 1986b, 1988, 2001).

Fieldwork at the Lawrence site (15Tr33), an open habitation site in the uplands east of the Cumberland River in Trigg County (Figure 4.2), revealed a major Early Archaic occupation (Mocas 1977). This component was characterized by a 17 cm thick midden and numerous pit features. Feature distributions suggested that the midden resulted from a series of sequential occupations rather than to one of extended length. Kirk-like projectile points were the principal diagnostic Early Archaic artifact associated with this component (Mocas 1977:124-127). Excavation of one of the Lawrence site features (Feature 72) revealed that it was an Archaic mortuary facility containing two males and associated grave goods (Mocas 1985). Both individuals, estimated to be between 22 and 28 years old, were placed in flexed positions. Charcoal collected from Feature 72 yielded a radiocarbon determination of 5,375±125 B.C (Table 4.10). This and other radiocarbon determinations placed this occupation at approximately 5,400 B.C. (Table 4.10), but there is considerable debate over these somewhat late dates for Kirk projectile points (Nance 1985).

Grave goods associated with one burial consisted of a heavily utilized and resharpened Kirk-like serrated projectile point and a cache of eight flaked stone tools including projectile points, drills, and scrapers. These flaked stone tools are similar to other Archaic implements found at the site, except that they are larger and appear to have been subjected to less modification and resharpening. The arrangement of the tools indicates that they were intentionally placed in the grave, not incidental inclusions in the pit fill. Both burials contained necklaces made of domesticated dog canines and beaver incisors (Mocas 1985:82-89).

Archaeologists working in the lower Tennessee-Cumberland area have collected considerable information on Middle Archaic occupation. Excavations at the Eva Site (Tennessee), located on the Tennessee River floodplain in what is now Kentucky Lake, identified two major Middle Archaic components (Lewis and Lewis 1961). The earliest, the Eva phase, was characterized by a high percentage of Eva I projectile points, along with lesser quantities of Kirk Serrated, Cypress Creek I, and Sykes projectile points. The later Three Mile phase contained Big Sandy Side Notched, Eva II, Cypress Creek II, Eva I, and Morrow Mountain I points (Lewis and Lewis 1961:13).

Archaeological investigations in the Land Between the Lakes National Recreation Area, located between the lower Cumberland and lower Tennessee rivers, identified a number of sites having Late Archaic components (Nance 1977) (Figure 4.6). Analysis of materials from sites along Crooked Creek, a tributary of the Cumberland River, revealed three broad site classes based on artifact quantity and diversity. Nance interpreted sites that contained primarily knives, scrapers, and flakes as single event loci, while sites having greater artifact diversity were considered to reflect more extended occupations. Diagnostic projectile points indicated that the major use of the Crooked Creek drainage occurred after 2,000 B.C. Late Archaic projectile points from these sites resembled those associated with the Big Sandy component (2,000-500 B.C.) at the Eva site (Nance 1977:11-12).

A comparison of artifacts from upland and floodplain sites suggests that Late Archaic hunter-gatherers conducted different activities in these two environmental zones. Upland site artifacts were associated with hunting and other related activities. Apparently, upland plant foods used by Late Archaic groups required little preparation prior to consumption or transport to other areas. Upland site activities largely consisted of making general-purpose flake tools from locally available cherts. Site inhabitants used projectile points from nonlocal material, reflecting the role of curational behavior in shaping the character of upland site assemblages (Nance 1977:13).

Floodplain site assemblages reflect activities found at upland sites, as well as tasks associated with animal and plant processing and general maintenance activities. The wide range of activities conducted at floodplain sites suggests that some served as base camps from which Late Archaic groups exploited both floodplain and upland resources (Nance 1977:13).

As in many other parts of western Kentucky, the past 20 years have witnessed little research on Archaic hunter-gatherers in the Lower Tennessee-Cumberland Section. More extensive survey is needed to identify significant Archaic sites in the region and a representative sample of those sites needs to be excavated to collect data that can be used to compare Purchase area Archaic hunter-gatherers with those that inhabited other parts of the North American midcontinent.

SITE DENSITY AND DISTRIBUTION PATTERSN

The 318 Archaic components recorded in the Purchase Management Area represent approximately 7 percent of the documented Kentucky Archaic components (Table 4.2). Examination of the distribution of sites among the three sections shows that only 8 percent are located in the Mississippi River Section, which reflects the general lack of information available from that part of Kentucky (Table 4.8). Archaic sites are better represented in the Ohio River I and Lower Tennessee-Cumberland sections, accounting for 44 percent and 48 percent, respectively, of those recorded for this management area (Table 4.8).

More than ninety percent of the Archaic sites recorded in this management area have been classified as open habitation sites without mounds (Table 4.8). Other site types represented in the area include a rockshelter, a quarry, a workshop, three cemeteries, and two special activity centers. Several open habitation sites with mounds and two mound complexes have been reported for the Purchase Management Area. Sites containing Archaic components with mounds are probably multicomponent.

Most of the recorded Archaic components in this management area occur on level floodplains (42 percent). This probably reflects the association of large, highly visible sites with this landform (Table 4.5). In addition, the intensive cultivation of many floodplain fields in this part of the state makes these sites more visible and, consequently, more likely to be observed by artifact collectors or during archaeological survey.

Sites located on dissected uplands and terraces account for 28 percent and 16 percent, respectively, of the recorded sites. Archaic sites are seldom found on hillsides (9 percent) or on undissected uplands (4 percent) (Table 4.5).

GREEN RIVER (MANAGEMENT AREA 2)

As of mid-2006, the Green River management area had 1,440 recorded Archaic components. Nineteen percent were Early Archaic, 9.0 percent were Middle Archaic, and 31.6 percent were Late Archaic. Forty percent were simply classified as “Archaic” (Table 4.12).

Table 4.12. Green River Cultural Components by Management Area Section.

	Ohio River II		Western Coalfield		Pennyroyal	
Component	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**
Archaic	92	24.6	189	46.0	195	50.8
Early Archaic	103	27.5	52	12.7	80	20.8
Middle Archaic	37	9.9	43	10.5	23	6.0
Late Archaic	142	38.0	127	30.9	86	22.4
Total	374	100.0	411	100.1	384	100.0

	Upper Green River			
Component	**Total**	**Percent**	**Total**	**Percent**
Archaic	101	37.3	577	40.1
Early Archaic	43	15.9	278	19.3
Middle Archaic	27	10.0	130	9.0
Late Archaic	100	36.9	455	31.6
Total	271	100.1	1,440	100.0

OHIO RIVER II SECTION

There are 314 Archaic sites recorded in the Ohio River II Section. This figure represents approximately 28 percent of the Archaic sites recorded in the Green River Management Area (Table 4.13). Important Archaic sites in this section include those listed in Table 4.14.

A variety of bifurcate base, Kirk Corner Notched, and Lost Lake projectile points are associated with the Early Archaic occupation of this part of Kentucky. Surface reconnaissance and limited excavations conducted along the Ohio River floodplain in Breckinridge County, 83 km down river from Louisville, located three sites (15Bcl6c, 15Bcl7, and 15Bcl8) containing Early Archaic artifacts (Allen and Cowan 1976; Cowan 1975a). Diagnostic Early Archaic materials found at these sites included a bifurcate base projectile point and three Kirk Corner Notched points. The presence of midden at some of the sites suggests that intact Early Archaic cultural deposits may be present at a few of these locations (Allen and Cowan 1976:59-60).

Relatively little is known about Middle Archaic period adaptation in the Ohio River II Section. Middle Archaic occupations should contain Big Sandy Side Notched and Matanzas projectile points, and possibly other kinds of points similar to those associated with the Middle Archaic occupation at both Morrisroe and Whalen, which are located in the Purchase Management Area (Nance 1988). A Middle Archaic component at Site 15Da60, located in Daviess County, contained a side notched hafted endscraper and a full-grooved axe (Weinland and Fenwick 1978:159).

Table 4.13. Green River: Site Type by Management Area Section.

Site Type	Ohio River II	Western Coalfield	Pennyroyal	Upper Green River	Total	Percent
Open Habitation w/o Mound(s)	291	282	258	166	997	88.1
Isolated Find	8	1	2	4	15	1.3
Rockshelter	8	15	8	25	56	4.9
Cave	0	1	11	12	24	2.1
Quarry	0	0	2	0	2	0.2
Stone Mound	0	1	0	0	1	0.1
Earth Mound	0	4	1	0	5	0.4
Mound Complex	0	1	2	0	3	0.3
Workshop	1	0	2	2	5	0.4
Cemetery	0	0	3	2	5	0.4
Open Habitation w/ Mound(s)	6	4	9	0	19	1.7
Total	314	309	298	211	1,132	100.0
Percent	27.7	27.3	26.3	18.6	100.0	

Table 4.14. Important Sites: Ohio River II Section.

Site No.	Site Name	Site Type	Affiliation	References
15Bcl6c	none	Open Habitation	Early Archaic, Late Archaic?	Allen and Cowan1976; Cowan 1975a
15Bcl7	none	Open Habitation	Early Archaic, Late Archaic?	Allen and Cowan 1976; Cowan 1975a
15Bcl8	none	Open Habitation	Early Archaic, Late Archaic?	Allen and Cowan 1976; Cowan 1975a
15Bc138	Rockmaker	Open Habitation	Middle Archaic, Terminal Archaic	Bader 1996
15Da32	Clark	Open Habitation	Middle-Late Archaic	Creasman 1993
15Da33	ABE Carter	Open Habitation	Middle-Late Archaic	Creasman 1993
15Da39	none	Open Habitation	Early Archaic, Late Archaic	Weinland and Fenwick 1978
15Da60	none	Open Habitation	Middle Archaic	Weinland and Fenwick 1978
15Hel60	Bluff City	Shell Mound	Late Archaic	Hockensmith et al. 1985; Moore 1916
15He580	none	Shell Mound	Late Archaic	Hockensmith et al. 1985
15He589	none	Shell Mound	Late Archaic	Hockensmith et al. 1985
15He635	none	Shell Mound	Late Archaic	Hockensmith et al. 1985
15He631	none	Shell Mound	Late Archaic	Hockensmith et al. 1985
15He638	none	Shell Mound	Late Archaic	Hockensmith et al. 1985
15Un127	Highland Creek	Earth Midden	Middle-Late Archaic	Maggard and Pollack 2006

Investigations conducted at the Rockmaker (15Bc138) (see also Chapter 5), Clark (15Da32), and ABE Carter (15Da33) sites in Breckinridge and Daviess counties in the early 1990s have provided some data on Middle Archaic activity in this part of the management area (Bader 1996; Creasman 1993). Excavations at the Clark site documented a large (ca. 50-60 m^2) late Middle to Late Archaic French Lick phase midden deposit. Researchers proposed that the midden was associated with a small residential base camp occupied during the fall or winter.

Field investigations at the nearby ABE Clark site also revealed a French Lick phase occupation. Like at Clark, site investigators suggested that the component represented a small fall or winter residential base camp (Creasman 1993).

An archaeological survey of Daviess County conducted in 1977 located 67 sites, 21 of which contained Archaic projectile points. Ten sites yielded undifferentiated Archaic components, three were identified as Early Archaic, six were classified as Late Archaic, and two multicomponent Archaic sites contained mixed Early and Late, and Middle and Late Archaic materials, respectively (Weinland and Fenwick 1978:170).

A number of Late Archaic shell middens are located along the lower Green River in Henderson County. C. B. Moore (1916) visited one of these, the Bluff City shell midden, during his investigation of the western Kentucky shell middens. A more detailed discussion of the Green River shell middens is presented in the Western Coalfield Section of this chapter.

Excavations conducted at the Highland Creek site (15Un127), located on a ridge in the Ohio River floodplain, revealed an extensive midden consisting of a dense accumulation of plant and animal remains and abundant burned clay (Maggard and Pollack 2006:1-4). Sixteen features (human burials, hearths, and large pits) were identified and excavated. Diagnostic artifacts included Etley Corner Notched, Pickwick, and Saratoga Parallel Stemmed projectile points (Maggard and Pollack 2006:100). A series of six radiocarbon dates (Table 4.15) place the site's Archaic occupation from 2,630 to 2,180 B.C. (Maggard and Pollack 2006:Table 4.2).

Like the Hedden site in McCracken County (Rossen 2000), the Highland Creek site yielded abundant evidence for a localized late Middle-early Late Archaic adaptation to the nearby wetland environment. The exploitation of a wide range of wetland plants and animals, combined with the intensive utilization of nuts, suggests increasing economic intensification during the late Middle/early Late Archaic in this part of the Lower Ohio Valley (Maggard and Pollack 2006).

Highland Creek site lithic manufacturing activities focused on middle to late stage bifacial reduction, with resource procurement focusing on locally available cherts. River gravels seem to have been the most important source of these cherts (St. Louis and Fort Payne varieties). Activities represented by the Highland Creek site flake stone tools included plant and animal processing, woodworking, and digging (Maggard and Pollack 2006:107).

The Highland Creek plant and animal remains suggest that while hunter-gatherers visited the site throughout the year, occupation probably consisted of a series of short visits

Table 4.15. Chronometric Dates: Green River Management Area.

Lab. No.	Age (B.P.)	Uncalibrated Date	References
<u>Ohio River II</u>			
Rim Rock Trail (15Bc341)			
Beta-13306	2830±50	800 BC	Schlarb et al. 2008
Beta-13307	2780±80	830 BC	Schlarb et al. 2008
Highland Creek (15Un127)			
Beta 134229	4580±80	2630 BC	Maggard and Pollack 2006:Table 4.2
Beta 134231	4470±80	2520 BC	Maggard and Pollack 2006:Table 4.2
Beta 134232	4440±70	2490 BC	Maggard and Pollack 2006:Table 4.2
Beta 134230	4380±70	2430 BC	Maggard and Pollack 2006:Table 4.2
Beta 134234	4310±70	2360 BC	Maggard and Pollack 2006:Table 4.2
Beta 134233	4130±70	2180 BC	Maggard and Pollack 2006:Table 4.2
<u>Western Coalfield</u>			
Carlston Annis (15Bt5)* (see Chapter 5:Table 5.12)			
UCLA-2117B	3330±80	1380 BC	Marquardt and Watson 2005c:Table 6.1
Beta 175337	4030±40	2080 BC	Marquardt and Watson 2005a:64
Beta 175338	4080±40	2130 BC	Marquardt and Watson 2005a:64
UCLA-1845B	4040±180	2090 BC	Marquardt and Watson 1974:7
UCLA-1845A	4250±80	2300 BC	Watson et al. 1974:235;
C-738	4289±300	2339 BC	Marquardt and Watson 1974:1
C-739	4333±450	2383 BC	Libby 1952:673; Marquardt and Watson 1974:7
UGa-3390	4350±85	2400 BC	Libby 1952:673; Marquardt and Watson 1974:7
UCLA-2117I	4500±60	2550 BC	Marquardt and Watson 2005c:Table 6.1
UGa-3395	4655±540	2705 BC	Marquardt and Watson 2005c:Table 6.1
UGa-3391	4670±85	2720 BC	Marquardt and Watson 2005c:Table 6.1
WIS-1301	4760±90	2810 BC	Marquardt and Watson 2005c:Table 6.1
C-251	4900±250	2950 BC	Arnold and Libby 1951:114; Marquardt and Watson 1974:7
UGa-3393	5030±85	3080 BC	Marquardt and Watson 2005c:Table 6.1
C-116	5149±300	3199 BC	Arnold and Libby 1951:114; Marquardt and Watson 1974:7
WIS-1302	5350±80	3400 BC	Marquardt and Watson 2005c:Table 6.1
UAZ-(1)	5730±640	3780 BC	Watson 1985
C-180	7374±500	5424 BC	Arnold and Libby 1951:114; Marquardt and Watson 1974:7
Deweese (15Bt6)			
Beta 104496	4570±80	2620 BC	Crothers 1999:196
Beta 104499	4320±50	2370 BC	Crothers 1999:196
Beta 104497	4650±50	2700 BC	Crothers 1999:196
Beta 104498	4760±70	2810 BC	Crothers 1999:196
Hayes (15Bt11)			
Beta 106447	4520±60	2570 BC	Crothers 1999:196
Beta 102649	4650±60	2700 BC	Crothers 1999:196
Beta 102650	4850±60	2900 BC	Crothers 1999:196
Beta 102648	5080±90	3130 BC	Crothers 1999:196
Read (15Bt10) (see Chapter 5:Table 5.12)			
ISGS 2246	3400±100	1450 BC	Haskins 1992
ISGS 2249	3350±70	1400 BC	Haskins 1992
Dr. Wan's Floodplain (15Bt45)			
Beta 59052	4200±100	2250 BC	Hensley 1994:139

Table 4.15. Continued.

Lab. No.	Age (B.P.)	Uncalibrated Date	References
York-Render (15Bt92)			
Beta 59053	4680±100	2730 BC	Hensley 1994:192
Beta 47623	5140±100	3190 BC	Hensley 1994:192
Beta 47624	5370±100	3420 BC	Hensley 1994:192
Beta 59054	4710±110	2760 BC	Hensley 1994:192
Beta 59056	4530±80	2580 BC	Hensley 1994:192
Beta 59057	4830±90	2880 BC	Hensley 1994:192
Beta 59055	4700±100	2750 BC	Hensley 1994:192
Barrett (15McL4)			
Beta 131956	5620±40	3670 BC	Herrmann 2002:63-64
Beta 131957	4520±40	2570 BC	Herrmann 2002:63-64
Ward (McL11)			
12-262	7714±50	5764 BC	Mensforth 1996
AA 31192	5600±100	3650 BC	Herrmann 2002:63-64
AA 30520	5120±90	3170 BC	Herrmann 2002:63-64
AA 30521	4800±65	2850 BC	Herrmann 2002:63-64
12-175	4134±60	2184 BC	Mensforth 1996
Kirkland (15McL12)			
ISGS 2297	3830±80	1880 BC	Haskins 1992
ISGS 2299	7320±80	5370 BC	Haskins 1992
Beta 82081	5680±80	3730 BC	Claassen 1996:238
ISGS 2304	3990±160	2040 BC	Haskins 1992
ISGS 2306	4240±150	2290 BC	Haskins 1992
ISGS 2298	6600±80	4650 BC	Haskins 1992
Indian Knoll (15Oh2)*			
C-741	3963±350	2013 BC	Libby 1952:673; Marquardt and Watson 1974:7
C-740	4282±225	2332 BC	Arnold and Libby 1951:114; Marquardt and Watson 1974:7
C-254	5302±300	3352 BC	Morey et al. 2002
TO 8792	4670±70	2720 BC	Herrmann 2002:63-64
AA 31194	4570±75	2620 BC	Morey et al. 2002
TO 8791	4460±90	2510 BC	Morey et al. 2002
TO 8794	4300±70	2350 BC	Morey et al. 2002
TO 8793	4230±80	2280 BC	Herrmann 2002:63-64
NSEC	3800±80	1850 BC	Herrmann 2002:63-64
AA 31193	3500±60	1550 BC	Arnold and Libby 1951:114; Marquardt and Watson 1974:7
Bowles Site (15Oh13)* (see Chapter 5:Table 5.12)			
UCLA-2117G	3440±80	1490 BC	Marquardt 1977:4
UAZ-(2)	4060±220	2110 BC	Watson 1985
Peter Cave (15Oh94)*			
UGa-3454	3415±105	1465 BC	Turnbow 1981:61
<u>Pennyroyal</u>			
15Ch302*			
UGa-290	4450±90	2500 BC	Noakes and Brandau 1974:136; Schock et al. 1977:18
15Wa601*			
UGa-1714	5465±75	3515 BC	Schock 1979
UGa-1713	6310±105	4360 BC	Schock 1979

Table 4.15. Continued.

Lab. No.	Age (B.P.)	Uncalibrated Date	References
15Wa916*			
UGa-1708	2860±270	910 BC	Schock 1979
Upper Green River			
Rogers Cave (15Ad70)			
Beta 16932	3560±110	1610 BC	DiBlasi 1987
Unknown Cave			
Beta 96145	3670±50	1720 BC	Watson unpublished, cited in Crothers et al. 2002:507-509
Mammoth Cave (15Edl)*			
UCLA-1730A	4120±70	2170 BC	Watson et al. 1974:235-236
Lee Cave Interior (15Edl75)*			
Beta 81337	4050±70	2100 BC	Crothers et al. 2002:506-509
Beta 81338	4100±60	2150 BC	Crothers et al. 2002:506-509
UCLA-1729A	4200±65	2250 BC	Watson et al. 1974:215, 236
UCLA-1729B	6050±60	4100 BC	Watson et al. 1974:215, 236
Short Cave (15Ed95)			
SI-NMNH			
Beta- 62567	2940±50	990 BC	Horton 2007:97
Beta-170519	2920±40	970 BC	Horton 2007:97
Beta-170520	2960±40	1010 BC	Horton 2007:97
Beta-170521	2910±40	960 BC	Horton 2007:97
McCoy Hollow Rockshelter (15Ed371)			
Beta 31384	5470±100	3520 BC	Prentice 1990:280; Maslowski et al. 1996
Beta 31117	5130±95	3180 BC	Prentice 1990:279; Maslowski et al. 1996
Jagger Ridge Rockshelter (15Ed69)			
Beta 31118	6400±90	4450 BC	Prentice 1990:147; Maslowski et al. 1996
Beta 31383	5175±70	3225 BC	Prentice 1990:144; Maslowski et al. 1996
Fisher Ridge Cave			
Smithsonian	3175±80	1225 BC	Kennedy et al. 1983:22, cited in DiBlasi 1996:48
Smithsonian	2750±85	880 BC	Kennedy et al. 1983:22, cited in DiBlasi 1996:48

* Dates obtained before 1981 from Turnbow (1981).
** All Salts Cave (15Ht4) and other Mammoth Cave (15Edl) dates are presented in Chapter 5:Table 5.12.

rather than one extended occupation. Nut collecting and processing appear to have been the predominant subsistence activities, along with collecting seeds and fruits, hunting, fishing, and collecting river mussels (Maggard and Pollack 2006:107-108). The presence of human burials at the site suggests that the Highland Creek locality held an important position on the cultural landscape, reflecting broader regional trends for decreased group mobility, the establishment of formal home territories, and more clearly defined social boundaries among hunter-gatherer groups.

A terminal Archaic component was documented at the Rim Rock Trail site in Breckinridge County, as reflected by radiocarbon dates of 800±50 B.C. and 830±80 B.C., obtained from a feature. Unfortunately, the only diagnostics artifacts associated with this feature were two Middle Archaic Raddatz Side Notched points, an unidentified corner notched point, and a Late Woodland Raccoon Notched point. The latter is probably intrusive, and the former points to earlier use of the site. Botanical remains associated with the feature consisted primarily of hickory nutshell. The only seeds recovered, were identified as pondweed, a plant that is associated with wetlands (Rossen 2000).

WESTERN COALFIELD SECTION

The 309 Archaic sites recorded in this section represent approximately 27 percent of the Archaic sites in the Green River Management Area (Table 4.13). Important Archaic sites in this section include those listed in Table 4.16.

Investigations conducted in the Cypress Creek watershed, a major tributary to the Green River, led to new insights on diachronic trends in Archaic hunter-gatherer land use and demography in this section (Jefferies et al. 2005; Thompson 2001). Survey of more than 600 ha in the Cypress Creek drainage identified 40 previously undocumented sites. These sites were associated four environmental zones. Analysis of these data, along with museum site collections and site file data, demonstrated that patterns of Archaic hunter-gatherer landscape use and demography varied over time (Jefferies et al. 2005).

Early Archaic sites, characterized by a few artifacts, were widely scattered throughout the study area, suggesting a highly mobile way of life characterized by the exploitation of a wide array of resource zones. This pattern continued through the early Middle Archaic (ca. 4,000 B.C.), but significant changes occurred after that time. Many late Middle and Late Archaic components are characterized by large, intensively or repeatedly occupied sites situated near the rivers and wetlands. The clustering of sites near wetlands, combined with their repeated occupation, reflects the increased importance of wetland resources during that time. Smaller sites scattered in the interior suggest that while hunter-gatherers used upland resources, these foods did not represent a major dietary component. The increasing economic importance of food-rich wetlands coincides with a growing regional population, a trend that is seen in other parts of the midcontinent at this time (Jefferies et al. 2005).

In contrast to the Early and early Middle Archaic sites, the late Middle to Late Archaic shell middens found along the Green River in the Western Coalfield Section and other nearby sections of the Green River Management Area represent one of the most thoroughly investigated aspects of Kentucky prehistory. Archaeological investigations conducted at these sites in the early 1900s by Moore (1916) and others have already been discussed in a previous section of this chapter. Webb's work in the Green River area and in northern Alabama during the late 1930s and early 1940s led to the definition of the Shell Mound Archaic, helping to refine concepts about the Archaic tradition in Eastern North America (Webb 1946, 1950a, 1950b; Webb and Haag 1939, 1940, 1947). The primary emphasis of Webb and his colleagues was identifying cultural traits with which to compare and contrast the contents of archaeological sites, with the eventual goal of establishing time-space relationships in the spirit of the Midwestern Taxonomic System.

Table 4.16. Important Sites: Western Coalfield Section.

Site No.	Site Name	Site Type	Affiliation	References
15McL7	Butterfield	Shell Mound	Early Archaic, Late Archaic	Webb and Haag 1947
15McL8	Reynerson	Open Habitation	Archaic	Webb and Haag 1947
15McL11	Ward	Open Habitation	Middle-Late Archaic	Webb and Haag 1940
15McL12	Kirkland	Open Habitation	Late Archaic	Webb and Haag 1940
15McL13	Yankee	Shell Mound	Late Archaic	Hockensmith et al. 1985
15McL15	Austin	Shell Mound	Late Archaic	Hockensmith et al. 1985; Moore 1916
15McL16	Rumsey	Shell Mound	Late Archaic	Hockensmith et al. 1985
15McL18	Wilson Seymour	Shell Mound	Late Archaic	Hockensmith et al. 1985
15McL22	none	Shell Mound	Late Archaic	Hockensmith et al. 1985
15McL24	Hollins	Shell Mound	Late Archaic	Hockensmith et al. 1985
15McL26	none	Shell Mound	Late Archaic	Hockensmith et al. 1985
15McL109	Crowe	Shell Mound	Late Archaic	Hockensmith et al. 1985
15McL121	Ebelhar	Shell Mound	Late Archaic	Hockensmith et al. 1985
15Mu12	Baker (Andrew's Run)	Shell Mound	Late Middle Archaic	Haag 1948; McBride 2000; Milner and Smith 1986; Rolingson 1967
15Bt5	Carlston Annis	Shell Mound	Late Archaic	Moore 1916; Webb 1950a
15Bt6	DeWeese	Shell Mound	Late Archaic	Crothers 1999; Hockensmith et al. 1985
15Bt10	Read	Shell Mound	Late Archaic	Webb 1950b
15Bt11	Hayes	Shell Mound	Late Archaic	Crothers 1999; Hockensmith et al. 1985
15Bt13	none	Shell Mound	Late Archaic	Hockensmith et al. 1985
15Bt18	Read	Rockshelter	Archaic	Webb 1950b
15Bt27	none	Rockshelter	Archaic	Milner and Smith 1986
15Bt29	none		Archaic	Milner and Smith 1986
15Bt41	Rayburn-Johnson	Shell Mound	Late Archaic	Hockensmith et al. 1985
15Bt67	Woodbury	Shell Mound	Late Archaic	Hockensmith et al. 1985
15Hk45	Parrish	Open Habitation	Early-Late Archaic	Webb 1951; Rolingson and Schwartz 1966
15Hk49	Morris Village	Open Habitation	Early-Late Archaic	Rolingson and Schwartz 1966
15Hk278	none	Open Habitation	Middle and Late Archaic	Olmanson 2003
15McL2/l 1	Ford	Shell Mound	Late Archaic	Hockensmith et al. 1985; Webb and Funkhouser 1932
15 McL4	Barrett	Shell Mound	Late Archaic	Rolingson 1967; Webb and Haag 1947
15McL5	Smith	Rockshelter	Early Archaic? Late Archaic	Webb and Haag 1947
15Mu41	none	Shell Mound	Late Archaic	Hockensmith et al. 1985
15Oh1	Chiggerville	Shell Mound	Late Archaic	Webb and Haag 1939
15Oh2	Indian Knoll	Shell Mound	Late Archaic	Moore 1916; Webb 1946, 1974
15Ohl0	Smallhouse	Shell Mound	Late Archaic	Hockensmith et al. 1985; Moore 1916
15Ohl2	Jackson Bluff	Shell Mound	Late Archaic	Rolingson 1967

Table 4.16. Continued.

Site No.	Site Name	Site Type	Affiliation	References
15Ohl3	Bowles	Shell Mound	Late Archaic	Rolingson 1967
15Ohl9	Jimtown Hill	Shell Mound	Late Archaic	Rolingson 1967
15Oh94	Peter	Cave	Late Archaic	Crawford 1982
15Oh95	Barnard	Shell Mound	Late Archaic	Hockensmith et al. 1985
15Oh97	none	Shell Mound	Late Archaic	Hockensmith et al. 1985
15Oh98	Taylor	Shell Mound	Middle-Late Archaic	Hockensmith et al. 1985

Between 1937 and 1941, Webb supervised the excavation of many shell middens, such as Carlston Annis (Webb 1950a), Read (Webb 1950b), Chiggerville (Webb and Haag 1939), Indian Knoll (Webb 1946, 1974), Jackson Bluff (Rolingson 1967), Bowles (Rolingson 1967), Jimtown Hill (Rolingson 1967), Baker (McBride 2000), Rolingson 1967), Butterfield (Webb and Haag 1947), and Barrett (Webb and Haag 1947). Excavations at Indian Knoll alone yielded over 55,000 artifacts and about 1,100 human burials (Hockensmith et al.1985).

The beginning of World War II brought a halt to fieldwork, laboratory analysis, and report writing for the Green River shell midden projects. Following the war's end, reports were completed for several of the interrupted projects (Webb 1946, 1950a, 1950b; Webb and Haag 1947), but material from several other sites remained unanalyzed for decades (McBride 2000). Even today, some collections (e.g., Jimtown Hill and Jackson Bluff) still await comprehensive and systematic analysis, and others (e.g., Chiggerville and Indian Knoll) are in desperate need of reanalysis.

The Kentucky archaeological site files currently list nearly 50 shell mounds, middens, heaps, or "shell and earth" middens along the Green River and its tributaries, the exact number depending on the specific criteria used to define this type of site. The antiquated terms "shell mound" and "shell heap" suggest that mollusk shell is the predominant constituent of these sites; however, shell often comprises a relatively small part of the midden matrix. For example, shell comprises only 17 percent of the Carlston Annis midden's volume. Some sites contain more shell, others less, but in no case is mollusk shell the majority component (Marquardt and Watson 2005b:632)

Radiocarbon dates associated with the Green River Archaic shell middens range from 5764 B.C (bone) at the Ward site (15McL11) to A.D. 130 (charcoal) at Bowles (15Oh13), however, the vast majority of the dates fall between 3,750 and 550 B.C. Calibrated radiocarbon dates from the large river-edge shell middens range from 4,650 to 1,450 B.C. (Hockensmith et al. 1985; Marquardt and Watson 2005b:631) (Table 4.15).

Archaic shell midden assemblages are characterized by a long list of traits defined by Webb (1974:236-240) for Indian Knoll. Some of the more common attributes include corner and side notched projectile points; straight-sided drills; bell-shaped pestles; bone awls, pins, and projectile points; shell beads and gorgets; atlatl weights; and full-grooved axes. Marquardt and Watson (2005b:632-635) provide a more up to date accounting of the Shell Mound Archaic material culture traits.

Feature types commonly found in shell middens include specially prepared clay floors, burned areas, tool caches, and burials (Hockensmith et al. 1985; Marquardt and Watson 2005b:632). Flexed burials are quite common at some sites, and often contain a variety of grave goods. Some burials contained artifacts made from nonlocal raw materials, such as copper and marine shell, which site inhabitants probably obtained through some type of exchange network. The few copper artifacts (fewer than 15) suggest weak social/economic connections with hunter-gatherer societies to the north, while the thousands of marine shell beads suggest much stronger and longer-lasting ties with southern groups (Goad 1980; Marquardt and Watson 2005b:632-635; Winters 1968). Some researchers have interpreted differences in the treatment of the dead at shell midden sites as reflecting social distinctions in Late Archaic society (Rothschild 1979; Winters 1968).

Rolingson's (1967) reassessment of the Green River shell midden material represented the first large-scale, systematic analysis of the Shell Mound Archaic collections since they were excavated in the 1930s and 1940s. Rolingson's primary goal was to determine if the middens gradually accumulated over a long period from sporadic, ephemeral occupations, or if they were attributable to short-term intensive occupations. She also was interested in identifying discrete cultural units and establishing a regional chronological sequence (Rolingson 1967:393).

Using a series of projectile point categories and clusters, Rolingson determined that the sites contained material dating from the Paleoindian to the Mississippi period. The results of her research suggested to her that the shell midden at these sites gradually accumulated, most of it prior to the introduction of pottery, that Late Archaic subsistence was based on the exploitation of several resources, one being river mussels, and that the Archaic yearly settlement/subsistence cycle was based on a central-based wandering strategy (Rolingson 1967:418-419).

Rolingson (1967:409-410) defined the Indian Knoll phase based on the distribution and context of diagnostic material at specific sites. She concluded that the Indian Knoll phase, roughly analogous to Webb's Indian Knoll focus, probably dated between 2,500 and 1,500 B.C. Its distribution was limited to the Middle Green River region, occurring at the Carlston Annis, Read, Bowles, Chiggerville, Indian Knoll, Ward, Kirkland, and Barrett sites. The phase is characterized by a diversified economy, seasonal site occupations, a variety of stemmed projectile points (Rolingson's Cluster V), and elaborate grave goods associated with a small percentage of burials. Winters' (1974) analysis of the Indian Knoll culture's settlement system provided further insights into Late Archaic adaptation in this part of Kentucky.

For the past 30 years, most of what we have learned about the Green River shell middens and associated sites has come from research conducted as part of the Shell Mound Archaeological Project (SMAP) conceived and directed by Patty Jo Watson and William H. Marquardt (Marquardt and Watson 1976, 1979, 1983b, 2005a). Their multidisciplinary research program has involved dozens of scientists who have studied the natural and cultural processes responsible for formation of the shell and dirt middens commonly called the "Green River shell mounds".

The SMAP research focused on the Carlston Annis site (15Bt5), a large shell midden located in the Big Bend of the Green River. Unlike the earlier WPA excavations that excavated the middens in 15 cm levels, Marquardt and Watson (2005) used a much finer-grained micro-stratigraphic approach to investigate midden formation processes at the Carlston Annis site (Figure 4.6). Their study investigated the stratigraphic relationships between datable carbon, artifacts, and native and tropical cultigens. The recovery of squash rind from this shell midden indicates that Late Archaic people in west-central Kentucky were experimenting with horticulture (Marquardt and Watson 2005b:633).

Crawford's (1982, 2005) analysis of carbonized plant remains from two Late Archaic shell middens, Carlston Annis and Bowles, and from Peter Cave (15Oh94) identified 73 plant taxa. Hickory nutshell comprised about 50 percent of the sample, with acorn, walnut, and a small quantity of carbonized seeds accounting for the remainder. Blackberry, grape, honey locust, persimmon, grass, and knotweed accounted for approximately 50 percent of the carbonized seed sample.

Bowles, Peter Cave, and Carlston Annis yielded 15 cucurbit rind fragments (Crawford 2005:196). At Peter Cave, a radiocarbon date of 1,465 B.C. (Table 4.15) was obtained from a level overlying the strata containing two squash rind fragments. A specimen from Level 12 at the Bowles site yielded an accelerator radiocarbon date of 2,110 B.C. This date is consistent with earlier interpretations that the rind fragment is older than the 1,490 B.C. radiocarbon date from a slightly higher excavation level (Level 11) (Table 4.15). Cucurbit rind also was found in Level 15 (Crawford 2005:196). No other cultigens, except for a possible sunflower achene from Carlston Annis, were identified (Crawford 1982:207-208).

Changes in the composition of the shell midden plant remains suggest alteration of Late Archaic subsistence practices through time. Lower levels at Carlston Annis were characterized by few plant remains and low seed diversity. Hickory nutshell comprised most of this material. Upper levels had a high ratio of acorn to hickory and contained most of the squash rind. These changes, along with those observed at Bowles, are not entirely consistent with a shift to food production. Crawford (1982:209) suggested that these changes might reflect a shift in the Late Archaic settlement system and a corresponding movement of plant procurement and processing activities away from the shell middens.

Chenopodium, a major constituent of the Early Woodland deposits at Salts Cave, was virtually absent at Bowles and Carlston Annis. In contrast, it was a common component of the Peter Cave deposits. The presence of squash rind and the abundance of chenopodium were interpreted as indicating a slightly more disrupted ecological situation than that proposed for Carlston Annis and Bowles. The Peter Cave pattern generally conforms to the pattern recorded for the Early Woodland deposits at Salts Cave (Crawford 1982:210, 2005). Investigations undertaken at the Ward site in the early 2000s yielded chenopodium seeds from Archaic contexts, but seed morphology generally conforms to what would be expected from wild species (Jefferies et al. 2005:19, 2008).

Plant remains from these three Late Archaic sites, along with those from Salts Cave, allow the comparison of Late Archaic and Early Woodland subsistence practices. Similarities and differences in the plant remains from these sites are providing new insights into the complex process of food production in the Ohio Valley area.

The Green River shell midden excavations yielded thousands of Late Archaic burials, which have been studied intensively by both archaeologists and bioarchaeologists.

Some archaeologists have used the differential treatment of burials to explore Late Archaic social differences (Rothschild 1979; Thiel 1972; Winters 1968), while others have used artifacts made from nonlocal copper and marine shell to investigate Late Archaic exchange networks (Goad 1980).

Specialized burial treatments also occur in nonshell midden contexts in the Green River region, as illustrated by a 45-year-old Late Archaic woman who was buried in nearby Short Cave (Horton 2007) (see Chapter 5). The woman was accompanied by a variety of faunal elements and seeds that were interpreted as ritual/medicinal items. All of these objects were apparently contained in a fiber bag, or medicine bundle, suggesting that the woman was a ritual specialist or a "medicine woman" (Horton 2007).

Initial studies by physical anthropologists focused on developing skeletal types based on morphological characteristics, as well as studying other physical traits including age, sex, and stature (Skarland 1939; Snow 1948). Subsequent bioarchaeological investigations have examined Late Archaic health (disease, trauma, and dental health) and demographic characteristics using more accurate aging and sexing techniques (Belovich 2005; Blakely 1971; Cassidy 1972, 1980, 1984; Glencross 2002; Herrmann 2002; Johnston 1961; Johnston and Snow 1961; Mensforth 1985, 2005; Nagy 2000; Perzigian 1976; Prewett and Wolf 1979; Ruff 1980; Sullivan 1977; Sundick 1971, 1972; Ward 2005; Wyckoff 1977).

Investigations by Cassidy (1984) and others have provided new insights into the health status of the Indian Knoll population. Dental caries commonly occurred across the adult population, but were infrequent on a per capita basis. A high degree of tooth wear was noted and was the primary cause of apical abscessing and antemortem tooth loss (see Ward 2005). Numerous cases of arthritis, attributable to degeneration of the joints, were observed.

Indian Knoll skeletal data indicate that the population was quite healthy, although it probably experienced some stress due to annually occurring dietary deficiencies. Similarities of disease experience for both males and females support the archaeologically derived hypothesis that Indian Knoll social organization was based on egalitarian principles (Cassidy 1984:324-326). Comprehensive studies of the Carlston Annis skeletal collection undertaken by several researchers (Belovich 2005; Mensforth 2005; Ward 2005) have provided important new insights on paleodemography, dental health, and trauma.

Herrmann's (2002) biological distance study of cranial non-metric traits was based on skeletal data from the Indian Knoll, Barrett (15McL4), Carlston Annis, Chiggerville (15Oh1), Read (15Bt10), and Ward sites in Kentucky and Site 40Bn12 in Tennessee. Herrmann quantified 24 traits for all adults in these populations, then used Mahalanobis distance measures to calculate group relatedness. The results demonstrated a strong geographic influence on the biological distance results. Herrmann concluded that females moved more often and farther in mating networks than did males, suggesting that these Late Archaic hunter-gatherers practiced a patrilocal post-marital residence pattern. Although his results were inconclusive, Herrmann's study clearly demonstrates the potentials for using biological distance measures for investigating past forms of social organization.

Crothers (1999) examined factors contributing to Archaic site distribution in the Green River region. He discussed Late Archaic hunter-gatherers in terms of modes of production, optimal foraging models, and institutional and organizational structures by comparing chronometric, artifact, site formation, and faunal data from the DeWeese (15Bt6) and Haynes (15Bt11) shell middens with comparable data from Carlston Annis (15Bt5). Crothers maintained that Archaic hunter-gatherers selected river-edge site locations based on proximity to food resources, particularly mussel shoals (Morey and Crothers 1998). Over time, hunter-gatherer groups established communal or kinship ownership of these locations, eventually passing access on to succeeding generations. These ties to the landscape were reinforced by continual use and the burial of deceased kin in the midden, eventually making the middens venerated parts of the landscape, regardless of their resource potential.

Although most Green River Late Archaic hunter-gatherer research has focused on the large, river-edge shell middens, studies conducted at contemporary sites located away from the river also are providing important information (Hensley 1994; Jefferies et al. 2007; Milner and Jefferies 1998). Hensley (1994) used archival data collected by WPA archaeologists, data from the SMAP, and survey and excavation data from non-shell middens to evaluate a series of models dealing with Middle to Late Archaic settlement, subsistence, and social organization.

Milner and Jefferies's (1998) reanalysis of the Read site (15Bt10) artifacts, skeletal materials, and excavation records focused on site occupation history, site function(s) in the regional settlement system, the nature of the mortuary program, and the demography and health status of its burial population. Overall, site characteristics indicate that Read was repeatedly occupied by hunter-gatherers for thousands of years during the late Middle and Late Archaic. While they were there, they performed a wide variety of domestic and ritual activities that included burial of their dead and veneration of their ancestors.

Field investigations at the Ward site undertaken in the early 2000s, along with the reevaluation of WPA excavation records and collections, were designed to determine the potential for future research at the site (Jefferies et al. 2007). Although the earlier WPA work was good for the time (Pedde and Prufer 2001; Webb and Haag 1940), depression era archaeologists did not retain many materials commonly collected today, such as plant and animal remains and lithic debitage. Work accomplished during the 2001 field season included defining the northern edge of the 1938 WPA excavation, systematic shovel probing to determine the extent of intact midden, and excavating two test units to collect botanical, faunal, and lithic materials. Despite the small size of the resulting artifact collection, materials are consistent with those described by Webb and Haag (1940). Recovered debitage suggested that most lithic production/maintenance activities focused on late-stage tool manufacturing and tool repair/resharpening (Jefferies et al. 2007).

Ward site flotation samples contained many well-preserved plant parts, including those from two taxa of hickory, walnut, and oak (Bonzani 2001). More significantly, the samples yielded relatively large numbers of chenopod (*Chenopodium* sp.; n=80) and purslane *(Portulaca oleracea*; n=37) seeds. All analyzed flotation samples contained chenopodium seeds, but the majority came from the deepest midden levels. Bruce Smith's (personal communication 2002) analysis of the Ward chenopodium seeds indicated a relatively narrow range of seed morphology, generally conforming to the wild morphotype (Jefferies et al. 2007).

Paleoethnobotanists have found few examples of either chenopodium or purslane at nearby Green River Archaic shell middens (Crawford 1982, 2005; Hensley 1994). The relative abundance of chenopodium at Ward suggests that the site's late Middle to Late

Archaic inhabitants were experimenting with plant cultivation, tolerating or encouraging plants to grow in the organically enriched and continually disturbed soil on and around the site. The fact that starchy seeds, like chenopodium, are more commonly found in the Green River uplands than on the floodplain suggests that their exploitation and initial domestication took place in disturbed upland settings like those that surrounded Ward (Jefferies et al. 2007).

PENNYROYAL SECTION

The Pennyroyal Section contains 298 recorded Archaic sites, representing approximately 26 percent of the Green River Management Area's Archaic sites (Table 4.13). Important Archaic sites in this section include those listed in Table 4.17. As in some other parts of western Kentucky, relatively little of the Pennyroyal Section has been systematically surveyed for cultural resources.

Table 4.17. Important Sites: Pennyroyal Section.

Site No.	Site Name	Site Type	Affiliation	References
15Ch66	none	Open Habitation	Archaic	Sanders and Maynard 1979
15Ch85	none	Open Habitation	Early Archaic	Sanders and Maynard 1979
15Ch89	none	Rockshelter	Early Archaic, Late Archaic	Sanders and Maynard 1979
15Chl83	Reeves Cave	Open Habitation/ Cave	Archaic	Sanders and Maynard 1979
15Chl97	none	Open Habitation	Early-Late Archaic	Sanders and Maynard 1979
15Ch237	none	Open Habitation	Early-Middle Archaic	Sanders and Maynard 1979
15Ch319	none	Open Habitation	Early-Late Archaic	Sanders and Maynard 1979
15Wa6	Crump	Cave	Late Archaic	Carstens 1980
15Loll	Savage	Cave	Late Archaic	Schenian 1985

Much of the available information about Archaic adaptation in the Pennyroyal Section comes from surveys conducted from the late 1970s through 2004. A 1977 survey of Christian County recorded 230 archaeological sites, 61 of which were classified as Archaic. Archaic components were identified at 29 percent of all recorded sites and at 73 percent of the sites where a cultural affiliation was assigned (Sanders and Maynard 1979:266). Early Archaic components were recognized by the presence of Palmer Corner Notched, Lost Lake, Kirk Corner Notched, Kirk Stemmed, Kirk Serrated, Cache River, and a variety of bifurcate base projectile points (Sanders and Maynard 1979:Table 7). Early Archaic components occurred at 24 sites, while an additional 21 contained artifacts suggesting an Early Archaic to Middle Archaic component (Sanders and Maynard 1979:272).

Middle Archaic components, identified by the presence of Eva, Cypress Creek II, and Stanly Stemmed projectile points, were found at only five sites, while Middle to Late Archaic components, represented by Benton Stemmed, Kays, and Mulberry Creek projectile points, occurred at only seven sites. Sanders and Maynard (1979:272) attributed the apparent Middle Archaic population decrease to the influx of the "Barrens" into Christian County, which resulted in a decrease in the coverage of deciduous trees in the uplands.

A variety of projectile point types, including Saratoga, Ledbetter, Elora, Plevna, Rowlett, and Gary, reflect a Late Archaic presence in the Pennyroyal Section. The number of Late Archaic sites (n=17) and Late Archaic to Early Woodland sites (n=27) approached that of the Early Archaic subdivision, suggesting another shift in the regional population distribution. Sanders and Maynard (1979:272) interpreted the increased number of sites during the Late Archaic subdivision as either a successful adaptation to the environmental changes that occurred during the Middle Archaic subdivision, or a return to the environmental conditions present during the Early Archaic.

An archaeological reconnaissance of portions of Fort Campbell Military Reservation in Christian County, Kentucky and Montgomery and Stewart counties, Tennessee, resulted in 21 sites being recommended for further evaluation. Several of these sites contained evidence for substantial Early and/or Late Archaic occupation. Notably, project archaeologists found no evidence for Middle Archaic habitation. All six of the sites that were identified as containing culturally significant deposits were located in the Tennessee portion of the project area (McNutt 2004).

UPPER GREEN RIVER SECTION

The 211 Archaic sites recorded in the Upper Green River Section comprise approximately 19 percent of Archaic sites in the Green River Management Area (Table 4.13). These figures sharply contrast with the number (n=64) and percentage (10 percent) of sites documented in the Upper Green River Section in 1990 (Jefferies 1990:175). Important Archaic sites in this section include those listed in Table 4.18.

Table 4.18. Important Sites: Upper Green River Section.

Site No.	Site Name	Site Type	Affiliation	References
15Ed42	Patch	Rockshelter	Late Archaic	Carstens 1980
15Ed43	Owl Cave	Cave	Late Archaic	Carstens 1980
15Edl75	Lee Cave	Cave	Late Archaic	Watson et al. 1974
15Ta6	Dudgeon	Open Habitation	Late Archaic	Duffield 1966
15Ad70	Rogers Cave	Mud Glyphs	Late Archaic	DiBlasi 1987

Information about Early Archaic adaptation in the Upper Green River Section is largely based on the distribution of sites containing diagnostic Early Archaic projectile points, combined with limited excavation of a few sites in Barren County (French et al. 2002; McNutt 2004; Schenian and Mocas 1993). Little or no information has been collected in this section on Early Archaic technology, subsistence, or social organization.

As with the Early Archaic, the character of Middle Archaic adaptation in the Upper Green River Section is poorly understood. Most of what is known about the Middle Archaic in this section is based on the distribution of regionally diagnostic Middle Archaic projectile points.

Archaeological investigations in the Central Kentucky karst area, near Mammoth Cave, identified several caves and rockshelters, such as Crump Cave (15Wa6), Owl Cave, (15Ed43), and Patch Rockshelter (15Ed42), that contained substantial Late Archaic deposits (Figure 4.6). Although Crump Cave is located in the Pennyroyal Section, it is included in this discussion because of its location near Mammoth Cave. Analysis of botanical and faunal remains recovered from these sites indicates that food procurement strategies were diffuse, with as many as seven different environmental zones being exploited. White-tailed deer was an important food source, especially during the early Late Archaic. The terminal Late Archaic diet was characterized by an increase in use of smaller game (turkey and raccoon) and a decrease in the use of hickory nut. Small side notched Merom and barbed or stemmed Buck Creek projectile points were associated with the Owl Cave Late Archaic occupation (Carstens 1980:190-191).

Prentice's (1996:17) modeling of site distribution in the Mammoth Cave National Park provides some interesting perspectives on site location attributes. Although he did not specifically address selection strategies used by Archaic hunter-gatherers, his results will be useful to those trying to examine hunter-gatherer activity/settlement variability in the region. Prentice's investigations identified six major prehistoric site types: 1) large rockshelters; 2) small rockshelters; 3) large multicomponent upland artifact scatters on ridgetops near the Green River; 4) small upland artifact scatters away from the Green River, often near small tributary confluences and ponds; 5) large bottomland sites near the confluence of large streams and the Green River; and 6) small bottomland sites on elevated parts of the floodplain away from tributary streams. Prentice also identified several open-air chert extraction sites.

DiBlasi (1996:46-47) maintains that the period of major cave use in the central Kentucky Karst was during the Late Archaic/Early Woodland periods, although later Mississippian use also has been documented. Late Archaic/Early Woodland drawings largely consist of geometric forms (zigzags, chevrons, and cross-hatching), zoomorphic figures, random lines, stroke marks, and herpetomorphic figures. Interestingly, geometric forms like those seen in cave drawings are very similar to designs engraved on late Middle to Late Archaic bone pins (Jefferies 1997).

Exploration of Rogers Cave (15Ad70), located in Adair County, revealed that the cave's floor and sides were covered with glyphs that prehistoric visitors had drawn in the soft mud. Investigators also observed cane torch fragments, human footprints, and possible knee impressions. Motifs drawn in the soft mud included zig-zags, an "X", chevrons, and several curvilinear patterns. Burned torch fragments yielded a radiocarbon determination of 1,610 B.C. (Table 4.15), coinciding with most other radiocarbon dates from deep cave contexts in the region. The glyphs found in Rogers Cave represent the largest number and earliest yet recorded in Kentucky (DiBlasi 1987).

Other caves in the Kentucky karst area have also yielded important information on the Late to Terminal Archaic cave use (DiBlasi 1996). Cross-hatching found in Fisher Ridge Cave in Hart County was associated with radiocarbon dates of 1225$\pm$80 and 800$\pm$85

B.C. (Patty Jo Watson, personal communications, cited in DiBlasi 1996:46; Kennedy et al. 1983) (Table 4.15).

Cave researchers also have recorded several charcoal drawings in parts of Mammoth Cave known to have been frequented during the Late Archaic/Early Woodland times. One of these drawings, known since the 1830s, is on an upright stone slab known as "The Devil's Looking Glass." Unfortunately, no one described the drawing in detail prior to its destruction by historic graffiti. The only recognizable part of the drawing now visible seems to be a broad zigzag on the lower part of the slab (DiBlasi 1996:46).

Ongoing investigations conducted in the extensive Mammoth Cave system are yielding new evidence for how Kentucky's prehistoric inhabitants went about mining minerals that crystallize on the cave's walls and ceiling. One such activity involved the stripping and processing of gypsum flowers and crust. Evidence of selenite mining also has been recognized in Mammoth Cave. Radiocarbon dates from these caves indicate that Native Americans mined these mineral resources as early as 1,000 B.C., and probably earlier (Crothers et al. 2002; Tankersley 1996;Tankersley et al. 1986).

Completion of the Green River Reservoir, located in south-central Kentucky, flooded 32 known archaeological sites. One of these, the Robert Dudgeon site (15Ta6), was excavated in 1965 and 1966 (Figure 4.6). The Robert Dudgeon site contained several Archaic components, some of which date to the Late Archaic subdivision. Perhaps the most significant aspect of the Dudgeon research was the definition of the Rowlett projectile point type. Duffield describes the Rowlett point as a relatively long, narrow-bladed biface having a slight shoulder and a stubby stem. He placed the type in the 3,000 to 2,000 B.C. time range based on morphological similarities to projectile points from other dated contexts (Duffield 1966).

In 1993, survey of ca. 1255 ha of seasonally inundated Rough River Lake shoreline identified 163 sites and 30 isolated finds, including five Early Archaic, six Early-Middle Archaic, two Middle Archaic, 27 Late Archaic, and 13 Late Archaic-Early Woodland sites. These sites were distributed along the major river channels as well as along minor tributaries and streams. This pattern sharply contrasts with that of later Woodland and Mississippian sites, which were located directly adjacent to the Rough River or one of its tributaries (Schenian and Mocas 1993).

SITE DENSITY AND DISTRIBUTION PATTERNS

The 1440 Archaic components recorded in the Green River Management Area represent approximately 31 percent of Archaic sites in Kentucky (Table 4.2). Examination of the distribution of these sites among the four sections comprising this management area shows a roughly equal distribution among the Ohio River II, Western Coalfield, and Pennyroyal sections, with each containing about 27 percent of the Archaic sites in the management area (Table 4.13). In contrast, the Upper Green River Section contains only about 19 percent of the sites.

More than 88 percent of the Green River Management Area Archaic sites are classified as open habitation sites without mounds (Table 4.13). Approximately 7 percent of the sites are caves or rockshelters, with 70 percent (n=56) of these occurring in the Pennyroyal and Upper Green River sections. Other site types represented in the area include quarries, a stone mound, five workshops, five cemeteries, and 15 isolated finds. Nineteen open habitation sites with mounds, three mound complexes, and five earth mounds have been reported, but the character of these Archaic sites is uncertain. Some may be earth and shell middens.

Archaic sites in this management area most commonly occur in the dissected uplands (27 percent) or on level floodplains (24 percent), but a considerable number have been located on terraces (16 percent), hillsides (16 percent), and undissected uplands (15 percent) (tables 4.5 and 4.6).

SALT RIVER (MANAGEMENT AREA 3)

Archaeological investigations conducted on the Ohio River floodplain and adjacent uplands near the Falls of the Ohio and throughout the Salt River drainage have provided abundant information on Archaic adaptations in this portion of Kentucky. The 617 Archaic sites documented in this management area contain 927 components (tables 4.19 and 4.20). Twenty percent of the components are Early Archaic, 22 percent are Middle Archaic, 41 percent are Late Archaic, and 17 percent are classified as "Archaic" (Table 4.20). Table 4.21 is a listing of important Archaic sites identified in this management area.

Table 4.19. Salt River: Site Type by Management Area Section.

Site Type	Total	Percent
Open Habitation w/o Mound(s)	583	94.5
Isolated Find	2	0.3
Rockshelter	5	0.8
Cave	2	0.3
Stone Mound	1	0.2
Earth Mound	4	0.6
Workshop	4	0.6
Special Activity Site	14	2.3
Open Habitation w/ Mound(s)	2	0.3
Total	617	100.0
Percent	100.0	

Table 4.20. Salt River Cultural Components by Management Area Section.

	Salt River	
Component	Total	Percent
Archaic	160	17.3
Early Archaic	187	20.2
Middle Archaic	202	21.8
Late Archaic	378	40.8
Total	927	100.1

Excavation of the Longworth-Gick site (15Jf243) located on a low floodplain ridge near the Falls of the Ohio River resulted in the identification of eight stratified Early Archaic components (Collins 1979) (Figure 4.2). Early Archaic material was recovered from Zone III down through at least Zone XIII, and perhaps to Zone XXXVII. Zones XIII through VII contained small varieties of Kirk projectile points associated with radiocarbon determinations of 7,540±230 B.C. and 6,490±380 B.C. Larger Kirks recovered from an overlying zone (Zone V) were dated to 6,490±125 B.C. Zone III yielded LeCroy and Kanawha bifurcate base projectile points associated with a date of 6,470±110 B.C. (Table 4.22). The Longworth-Gick projectile point sequence is similar to those in West Virginia and Tennessee, but the chronological placement of the Kentucky material varies to some degree, with respect to other regions (Collins and Driskell 1979:1024-1038).

Table 4.21. Important Sites: Salt River Management Area.

Site No.	Site Name	Site Type	Affiliation	References
15Bu33	none	Open Habitation	Late Archaic	Janzen 1977
15Bu236	Ashworth	Rockshelter	Early Archaic, Late Archaic	DiBlasi 1981
15Hd41	Bland	Cave	Late Archaic	
15Jf10	Lone Hill	Open Habitation	Late Archaic	Janzen 1977
15Jfl4	Spadie	Open Habitation	Middle-Late Archaic	Boisvert 1979
15Jfl8	Rosenberger	Open Habitation	Middle-Late Archaic	Driskell 1979
15Jf36	Minors Lane	Open Habitation	Middle-Late Archaic	Granger 1988
15Jf60	Hornung	Open Habitation	Middle-Late Archaic	Janzen 1977
15Jf110	Villier	Open Habitation	Middle-Late Archaic	Robinson 1979
15Jf200	McNeeley Lake	Rockshelter	Middle-Late Archaic	Granger 1988
15Jf20l	Durrett Cave	Rockshelter	Late Archaic	Granger 1988
15Jf206	Mill Creek Station I	Open Habitation	Late Archaic	Granger 1988
15Jf237	Arrowhead Farm	Open Habitation	Late Archaic	Granger and Mocas 1974
15Jf243	Longworth-Gick	Open Habitation	Early Archaic, Late Archaic	Collins 1979
15Jf267	KYANG	Open Habitation	Middle-Late Archaic	Bader and Granger 1989; Granger 1988
15Jf550	Habich	Open Habitation	Late Archaic	Granger et al. 1992
15Jf630	Railway Museum	Open Habitation	Late Archaic	Anslinger et al. 1994
15Jf674	Outer Loop	Open Habitation	Late Archaic	Kreinbrink 2008
15Lu31	none	Open Habitation	Early-Late Archaic	Pamela Schenian, pers. comm. 1987

In 1998, French evaluated Early Archaic hunter-gatherer mobility strategies using lithic data from the Longworth-Gick site. As part of his study, he compared diachronic trends in both lithic resource use and flaked stone tool technological organization with other possible indicators of group mobility/sedentism including feature diversity, rate of midden development, density of fire-cracked rock, and artifact diversity (French 1998:190). Examination of lithic resource data indicated that the settlement range during the Early Archaic within the Falls region was relatively restricted. With few exceptions, Early Archaic people living in this part of the Falls area made most of their flaked stone tools from local Wyandotte and Muldraugh cherts. They probably obtained the few seemingly nonlocal cherts from local secondary alluvial gravel deposits. Although all resident Early Archaic groups, as represented by different projectile point styles (e.g., Palmer, Kirk, and Bifurcate), exploited these two chert sources, the relative importance of the two varied through time. Interestingly, later Early Archaic groups, as represented by Bifurcate tradition points, appear to have made more extensive use of secondary alluvial deposits than did their predecessors (French 1998:191).

Analysis of a variety of archaeological indicators suggested that the role of the Longworth-Gick site in the regional settlement system changed through time. The earliest groups, marked by Palmer points (Zone VII), used the site as a limited activity field camp, as did earlier Hardaway people (Zone XIII). Later Kirk groups (Zone V) appear to have established residential base camps. The most intensive level of activity occurred during the subsequent Bifurcate occupation (Zone III) (French 1998:191-192).

At Longworth-Gick, Early Archaic materials appear to represent brief periods of site occupation that occurred between episodes of flooding and deposition. Flooding was least likely between late summer and winter, making that the preferred time for occupation (Collins and Driskell 1979:1024-1026).

The periods of most intensive site use, as indicated by the number of features, occurred in the Kirk (VII and V) and the Bifurcate Base (III) zones. The majority of features consisted of charcoal-filled pits and burned areas. The absence of a paleosol, combined with rapid alluviation, suggests that most Early Archaic occupations were short-lived and intensive, rather than extended occupations on stable floodplain surfaces (Collins 1979:581-582). Artifact analysis revealed greater assemblage diversity through time and an increase in plant food utilization at the expense of hunting (Collins 1979:582).

French (1998:192) suggested that changes in lithic technology coincided with apparent changes in site function. For example, earlier Palmer groups employed an exclusively "curated" technology, while later groups used more expediently produced tools.

Located across the river from the Longsworth-Gick site, excavations at the James Farnsley site (12Hr520), undertaken as part of the Caesars Archaeological Project in southern Indiana (Stafford and Cantin 2008), are helping to clarify the dating of Kirk and related Early Archaic point types in Kentucky. Radiocarbon dates from the lower Kirk zone ranged from ca. 7,740 to 6,830 B.C. The middle and upper components yielded dates of ca. 6,790 to 6,370 B.C., respectively.

Survey and excavation in the Taylorsville Reservoir, located along the Salt River 42 km southeast of Louisville, identified 30 Early Archaic components based on the presence of Kirk and bifurcate base projectile points (Collins 1980:7). These sites yielded, on average, fewer than two diagnostic artifacts, suggesting the intermittent or ephemeral use of this part of the management area by Early Archaic hunter-gatherers. Sites yielding only Early Archaic artifacts were small, generally covering less than 5,000 m^2 (Driskell et al. 1984:275). Archaeologists have identified at least three Early Archaic site types in the Salt River Management Area—riverine camps, rockshelters, and open sites (Driskell et al. 1984:288).

The Ashworth site (15Bu236), a rockshelter situated along a tributary to the Salt River in Bullitt County, yielded considerable evidence of Early Archaic occupation (DiBlasi 1981) (Figure 4.2). Archaeologists recovered a variety of bone/antler artifacts from the shelter's Early Archaic zone that included a bead and an antler flaker. Early Archaic projectile point types included Ashworth Corner Notched, which resembles Charleston Corner Notched points, and several Kirk varieties. Charleston Corner Notched points were associated with a 7,900 B.C. date at the St. Albans site (Broyles 1971). A flexed burial with an Early Archaic projectile point embedded in a thoracic vertebrae was located near the Ashworth Shelter's rear wall (DiBlasi 1981).

Excavations at the Rosenberger (15Jfl8), Spadie (15Jfl4), and Villier (15Jfll0) sites, located along the Ohio River floodplain downstream from Louisville, yielded a few diagnostic Middle Archaic artifacts from each site. These materials, which largely consisted of Big Sandy Side Notched and Pickwick-style projectile points, were scattered throughout the deposits and did not reflect well-defined Middle Archaic occupations (Collins and Driskell 1979:1026). The limited data from these sites, indicate that in this area, Middle Archaic groups preferred to live on clean, sandy point bar deposits, such as the Spadie and Villier sites, and higher floodplain ridges, including the Rosenberger site. The relatively few Middle Archaic artifacts found suggest that these occupations were quite ephemeral (Collins and Driskell 1979:1035-1036).

Part of the reason that Middle Archaic components, particularly those dating to the early Middle Archaic (ca. 6,000-4,500 B.C.), have been hard to find along this part of the Ohio River is because many are deeply buried below alluvial deposits. In addition, it is often difficult to assign projectile points found in those deeply buried contexts to existing Middle Archaic point types (Stafford 2005). Collectively, these two issues are major contributors to the under-representation of Middle Archaic components in this and other Kentucky management areas.

A number of sites, some with deep middens, have been located near the Falls of the Ohio (Janzen 1977). The lower levels of some sites, such as Reid, Hornung, and Miller, yielded radiocarbon dates falling between 4,000 and 3,000 B.C. (Table 4.22). These site assemblages resemble materials from sites in southern Indiana, southern and central Illinois, and eastern Missouri (Cook 1976; Fowler 1959; Jefferies and Lynch 1983; Miller 1941). Projectile points and engraved bone objects found at some of these sites are virtually identical to those found at many Salt River Management Area sites (Jefferies 1997).

The Salt River Management Area Middle-Late Archaic sites that Janzen investigated were located near the interface of at least two physiographic zones having considerable habitat diversity. Janzen (1977) proposed that the area's environmental diversity provided Archaic hunter-gatherers with an abundant, predictable, and reliable resource base that minimized the need for seasonal movement. The high level of resource diversity associated with these localities may have enabled part of the group to remain at a site on a year-round basis.

Janzen detected major differences in the archaeological record when he compared the content and distribution of sites dating from 4,000 to 3,000 B.C. with that of later sites. He suggested that these differences reflected adaptational responses to changing environmental conditions (Janzen 1977:140-141). Many of these sites are now included in the Old Clarksville phase (ca. 4,000-3,000 B.C.) (Bader and Granger 1989; Granger 1988).

Granger's (1988) investigation of Archaic settlement characteristics in the Falls of the Ohio River region resulted in the definition of the late Middle Archaic Old Clarksville (4,000-3,000 B.C.) and the Terminal Archaic Lone Hill (2,400-1,200 B.C.) phases. Data supporting this division were derived from the University of Louisville Archaeological Survey's work at several multicomponent Archaic sites including KYANG (Kentucky Air National Guard) (15Jf267), McNeeley Lake (15Jf200), and Mill Creek Station (15Jf206), as well as research conducted at other nearby sites (Bader 1992; Bader and Granger 1989; Granger et al. 1992; Janzen 1977; Kreinbrink 2008).

Table 4.22. Chronometric Dates: Salt River Management Area.

Lab. No.	Age (B.P.)	Uncalibrated Date	References
Site 15Bu33*			
UGa-806	5690±70	3740 BC	Janzen 1977:131-136
Bland Cave (15Hd41)*			
M-561	3030+250	2080 BC	Crane and Griffin 1958:1123
Site 15Hd478			
OCR	3909+117	1959 BC	Stallings and Ross-Stallings 1996
OCR	2959+88	1009 BC	Stallings and Ross-Stallings 1996
Lone Hill (15Jf10)*			
UGa-842	3935+95	1985 B.C	Janzen 1977:131, 136
UGa-841	4365+185	2415 BC	Janzen 1977:131, 136
Spadie (15Jf14)*			
TX-3013	3090+150	1140 BC	Boisvert 1979:877
Hornung (15Jf60)*			
UGa-261	4240+95	2290 B.C	Janzen 1977:133-134; Noakes and Brandau 1974:135
UGa-262	4315+60	2365 BC	Janzen 1977:133-134; Noakes and Brandau 1974:135
M-2464	5000+200	3050 B.C	Crane and Griffin 1972:162; Janzen 1977:133-134
M-2460	4900+200	2950 B.C	Crane and Griffin 1962
UGa-390	5085+85	3135 B.C	Noakes and Brandau 1974:136
UGa-401	5100+75	3150 B.C	Janzen 1977:136; Noakes and Brandau 1974:136
M-2461	5200+230	3270 B.C	Janzen 1977:133-134
Kentucky Air National Guard (15Jf267)			
Beta-29627	5010+90	3060 BC	Bader and Granger 1989:VI-10
Longworth-Gick (15Jf243)*			
TX-2951	8420+110	6470 BC	Collins 1979:579
UGa-1336	8440+125	6490 BC	Dobbs and Dragoo 1976:115
TX-3012	9490+230	7540 BC	Collins 1979:579
TX-3011	8440+380	6490 BC	Collins 1979:579
Habich (15Jf550)			
Beta-42898	3480+100	1530 BC	Granger et al. 1992:E-3
Beta-50950	4480+80	2530 BC	Granger et al. 1992:E-5
Railway Museum (15Jf630)			
Beta-70351	4720+70	2770 BC	Anslinger et al. 1994:132
Beta-70350	4780+80	2830 BC	Anslinger et al. 1994:132
Outer Loop (15Jf674)			
Beta-232837	4470+40	2520 BC	Kreinbrink 2008
Beta-232837	4470+40	2480 BC	Kreinbrink 2008
Site 15Md333			
Beta-60934	4840+100	2890 BC	Sussenbach 1993:15
Beta-60935	5550+140	3600 BC	Sussenbach 1993:13
Site 15Sp8*			
UGa-820	4550+85	2600 BC	Janzen 1977:131, 136
UGa-821	5390+220	3440 BC	Janzen 1977:131, 136
*Information obtained from Turnbow (1981).			

Investigation of the KYANG (Kentucky Air National Guard) site, located on a knoll overlooking a former marsh and sluggish stream, revealed two distinct midden zones (Bader and Granger 1989). The upper one contained a Lone Hill phase component; the lower one was assigned to the Old Clarksville phase. The two zones were separated by a shell midden, also attributable to the Old Clarksville phase occupation.

Excavation of the Old Clarksville phase midden yielded 32 burials, all arranged in a flexed position and placed in deep bowl-shaped pits. The numerous grave goods associated with the burials included engraved bone pins; bear, deer and wolf tooth necklaces; red ochre; and an assortment of chert implements. Diagnostic Old Clarksville projectile points included various side-notched specimens classified as Big Sandy, Salt River Side Notched, and Brewerton types (Granger 1988:190). A single radiocarbon date placed the occupation at ca. 3,060 B.C. (Bader and Granger 1989:Appendix C). Many of the projectile points and carved bone pins from KYANG's Old Clarksville component resemble artifacts from other late Middle to Late Archaic midden sites in the midcontinent (Cook 1976; Jefferies 1982, 1997; Jefferies and Lynch 1983; Stafford et al. 2000). Excavations conducted at the Meyer site (2004) in southern Indiana are providing additional information on Middle to Late Archaic mortuary practices in the Falls region (Bader 2004, 2005).

Additional information on Middle Archaic chronology and settlement in the Salt River Management Area came from limited excavation at Site 15Md333 in Meade County (Sussenbach 1993). Machine trenching for a sewer line and hand excavation exposed four features – two shallow basins and two large pits – along with midden deposits and diagnostic chipped and ground stone tools. Two charcoal samples from feature contents yielded radiocarbon dates of 3,600±140 and 2,890±100 B.C., suggesting a Middle to Late Archaic occupation (Table 4.22). Despite the earlier radiocarbon date, diagnostic artifacts suggest that the site was most intensively occupied during the Late Archaic.

Data from the Salt River Management Area suggest a sharp increase in the number of Late Archaic components (n=378; 41 percent) compared to Early (n=187; 20 percent) and Middle Archaic (n=202; 22 percent) sites (Table 4.20). Late Archaic artifacts were quite numerous at the Rosenberger, Spadie, and Villier sites (Figure 4.6), but occurred in lower quantities at the Longworth-Gick site (Collins and Driskell 1979:1026) (Figure 4.6).

By the beginning of the Late Archaic subdivision, the Ohio River floodplain in the Falls Area had attained its modern configuration. Dense stands of forest probably covered much of the area. The numerous sloughs and oxbow lakes undoubtedly supported a wide assortment of floodplain-dwelling plants and animals, which provided Late Archaic hunters and gatherers with a diverse, reliable food supply (Collins and Driskell 1979:1036).

Excavation of the Rosenberger site yielded a variety of Maple Creek phase projectile points including McWhinney, Merom-Trimble, and Brewerton-like types attributable to a terminal Late Archaic occupation (ca. 2,300-1,000 B.C.). Numerous contracting stem projectile points also were present. Other diagnostic Late Archaic traits, included atlatl weights and three-quarter grooved axes (Collins and Driskell 1979:1026).

Project archaeologists identified nearly 400 features (large and small circular pits, burned areas, debris scatters, artifact caches, and burials) at Rosenberger. Although they could not assign most a definite cultural affiliation, many are probably attributable to an intensive Late Archaic occupation. The more than 200 human burials, many of which date to the Late Archaic subdivision based on associated artifacts and demographic analysis, represent the most common feature type (Driskell 1979:801-803).

The Villier site Late Archaic assemblage contained a higher percentage of Merom-Trimble projectile points than did the Rosenberger and Spadie assemblages, suggesting cultural affinities with terminal Late Archaic Riverton culture and Maple Creek phase groups living across the Ohio River. Villier probably functioned as a seasonally or intermittently occupied campsite during much of the Late Archaic subdivision (Robinson and Smith 1979).

The Spadie site Late Archaic assemblage reflects a wide range of hunting, fishing, plant food processing, and flaked stone tool manufacturing activities. The diversity of these activities suggests that the site probably served as a Late Archaic base camp. The occurrence of Lamoka and Brewerton-like projectile points indicates that the Late Archaic component dates to about 2,000 B.C. Researchers found no Riverton style projectile points at Spadie, but a radiocarbon determination of 1140±150 B.C. (Table 4.22) obtained from a sealed pit reflects at least a limited terminal Late Archaic presence (Boisvert 1979).

Investigations in some parts of the Falls Area indicate a rapid decrease in the intensity of Late Archaic activity around 2,200 B.C. (Janzen 1977:139-141). Janzen suggested that apparent changes in Late Archaic occupation of this area may be related to oscillations in the post-Pleistocene climate and associated distributional changes in plant and animal communities.

In general, data collected from sites in the Salt River Management Area indicate a dramatic increase in the number of Late Archaic sites compared to earlier Archaic subdivisions. Surveys have identified several Late Archaic site types. Two basic floodplain site types, large shell middens and middens containing little or no shell, are known. These large Late Archaic sites, along with many additional smaller ones, constitute 31 percent of floodplain sites having identifiable cultural components. Several Late Archaic sites are located in the interior lowlands, with some having relatively large, deep middens

Granger (1988:199–203) identified at least six Archaic site clusters in the Falls area, largely consisting of Late Archaic components. Site clusters are associated with discrete ecological settings, possibly representing different components of Late Archaic settlement systems.

Granger and Bader's (Bader 1992; Bader and Granger 1989; Granger 1988) KYANG site investigations provided important new data on the Terminal Archaic Lone Hill phase (2,400-1,200 B.C.). Excavation of the Lone Hill phase occupation zone yielded nine human burials containing fewer spectacular artifacts than the Old Clarksville phase burials. Project archaeologists found a cache of three stemmed Rowlett/McWhinney projectile points with one burial. Rowlett/McWhinney points, along with other types of stemmed bifaces, are commonly associated with Lone Hill phase occupations (Granger 1988). Investigations conducted at other Salt River Management Area sites containing Lone Hill phase components have produced similar kinds of artifacts.

Granger et al.'s (1992) excavations at the Habich site (15Jf550), a large (ca. 30,000 m^2) site located on the Ohio River floodplain near Louisville, provided additional information on Late Archaic community organization. Hand excavation and machine stripping of the site's cultural deposits exposed 98 primarily Late Archaic cultural features including refuse pits, hearths, earth ovens, and 13 burial pits containing at least 24 individuals. Charcoal samples from two features yielded dates of 1,530±100 and 2,530±80 B.C. (Table 4.22) supporting the Late Archaic placement based on the artifact assemblage.

Archaeological investigations at the Railway Museum site (15Jf630), located on the edge of the Ohio River just upstream from the Falls of the Ohio, consisted of a large midden deposit containing numerous features and human burials (Anslinger et al. 1994). Site investigations exposed 52 cultural features, including storage and refuse pits, hearths, earth ovens, and shallow basins. Several of the pit features contained human remains, and in four cases, dog remains. The artifact assemblage included chipped and ground stone implements, bone and antler tools, faunal and botanical remains, and ceramics associated with later components. Analysis of two charcoal samples from feature contexts yielded radiocarbon dates of 2,830±80 and 2,770±70 B.C. (Table 4.22). Project archaeologists suggested that the Late Archaic component represented a fairly stable occupation based on the number and types of features (including burials), a full range of flaked stone tool manufacturing activities, the diversity of faunal and botanical resources, and the diversity of tool types (Anslinger et al. 1994).

SITE DENSITY AND DISTRIBUTION PATTERNS

As of mid-2006, archaeologists had recorded 617 Archaic sites in the Salt River Management Area (Table 4.19). The great majority (n=583; 95 percent) of these are classified as open habitation without mounds. Five rockshelters have been recorded. Other site types, such as caves, workshops, cemeteries and various kinds of mounds, are poorly represented in this management area.

Nearly 60 percent (n=357) of the Archaic sites in the Salt River management area are located on floodplain or terrace physiographic features, reflecting the importance of the Ohio River and its varied plant and animal resources. Much lower percentages are situated on hillsides (7 percent), dissected uplands (20 percent), and undissected uplands (10 percent) (Table 4.5).

UPPER CUMBERLAND (MANAGEMENT AREA 4)

The Upper Cumberland Management Area consists of the Lake Cumberland and Southeastern Mountains sections. Table 4.23 contains the distribution of Archaic components by Early, Middle, and Late Archaic subdivisions. Table 4.24 is a listing of site types by management area section.

Table 4.23. Upper Cumberland Cultural Components by Management Area Section.

Component	Lake Cumberland Total	Lake Cumberland Percent	Southeastern Mountains Total	Southeastern Mountains Percent	Total	Percent
Archaic	103	26.0	46	28.9	149	26.8
Early Archaic	99	25.0	43	27.0	142	25.6
Middle Archaic	39	9.8	15	9.4	54	9.7
Late Archaic	155	39.1	55	34.6	210	37.8
Total	396	99.9	159	99.9	555	100.0

Table 4. 24. Upper Cumberland: Site Type by Management Area Section.

Site Type	Lake Cumberland	Southeastern Mountains	Total	Percent
Open Habitation w/o Mound(s)	191	97	288	66.5
Isolated Find	1	1	2	0.5
Rockshelter	95	34	129	29.8
Cave	5	0	5	1.2
Quarry	2	0	2	0.5
Petroglyph/Pictograph	1	0	1	0.2
Workshop	3	0	3	0.7
Cemetery	1	0	1	0.2
Open Habitation w/ Mound(s)	1	0	1	0.2
Specialized Activity Site	1	0	1	0.2
Total	301	132	433	100.0
Percent	69.5	30.5	100.0	

LAKE CUMBERLAND SECTION

Archaeological investigations conducted over the past 20 years have contributed important new information on Archaic hunter-gatherer activities in this part of south-central Kentucky. As of 1990, 70 sites having Archaic components had been identified in this section (Jefferies 1990:Table 22). By 2006, this number had jumped to 301 sites with 396 Archaic components (tables 4.23 and 4.24). As an example, the number of recorded "open habitation sites without mounds" sites rose from 47 to 191, an increase of over 300 percent. Likewise, the number of "rockshelters" increased from 17 to 95, a 500 percent jump. The documentation of many of these sites is a result of extensive archaeological surveys carried out in the Daniel Boone National Forest and the Big South Fork National River and Recreation Area (Boedy 2001; Boedy and Sharp 1992; Davis and Linebaugh 2001). Important Archaic sites identified in this section are listed in Table 4.25.

Table 4.25. Important Sites: Lake Cumberland Section.

Site No.	Site Name	Site Type	Affiliation	References
15Cu31	none	Open Habitation	Early Archaic	Bradbury 1996
15McY412	Oil Well Branch Road	Open Habitation	Late Archaic	Des Jean 1993
15McY292	Tough Tree	Rockshelter	Early Archaic	Knudsen et al. 1985
15Mcy322	Campbell	Rockshelter	Early Archaic	Knudsen et al. 1985
15McY325	Singer	Rockshelter	Early-Late Archaic	Knudsen et al. 1985

Boedy and Sharp's (1992) survey of nearly 408 ha of timber sales areas in the London, Somerset, and Stearns Ranger District, Daniel Boone National Forest, recorded 38 sites, 24 of which contained prehistoric components. Most sites were located on ridgetops, upland saddles, and hillslopes. The majority of prehistoric components consisted of lithic scatters that occurred in rockshelters and open-air sites. Several sites yielded diagnostic projectile points dating to the Middle Archaic (Morrow Mountain II points) and Late Archaic (Wade and Saratoga Expanding Stem points) subdivisions.

An archaeological survey for four roads on the western side of the Big South Fork National Recreation Area in McCreary County identified eight unrecorded sites. Limited excavations were conducted at an additional 11 previously documented sites (Davis and Linebaugh 2001). All 19 sites consisted of open-air locations containing prehistoric cultural materials. Five sites yielded diagnostic artifacts ranging in age from Early through Late Archaic. Several sites contained intact subsurface cultural deposits. The results of these investigations suggest that Archaic period settlement within this part of the Big South Fork region focused on ridgetops and upland locations. Most of these sites represent small, short-term hunting camp sites. In contrast, two larger sites contained larger, more diverse artifact assemblages, suggesting that some differentiation existed in site type/function in Archaic upland settlement systems in southcentral Kentucky.

Early Archaic components in this part of Kentucky are recognized by the presence of Kirk, LeCroy, MacCorkle, St. Albans, and Charleston projectile points. The temporal placement of these types was firmly established by investigations at the St. Albans Site (Broyles 1971) in West Virginia, and the Icehouse Bottom, Calloway Island, Rose Island, and Bacon Farm sites (Chapman 1985:38) in Tennessee. In their overview of eastern Kentucky prehistory, Niquette and Henderson (1984) report that Early Archaic Kirk or Kirk-like projectile points are often recovered from sites in this part of Kentucky.

Limited excavations conducted at three prehistorically utilized rockshelters located in the Campbell Exchange, situated near the headwaters of Lick Creek in McCreary County, yielded limited information on Early Archaic adaptation in this section (Knudsen et al. 1985). Excavation of the Tough Tree Shelter (15McY292) yielded one MacCorkle, one Kirk Corner Notched, and one Kirk Stemmed projectile point. Radiocarbon dates associated with similar projectile points at other sites in the Southeast indicate that Archaic hunter-gatherers occupied the shelter between 7,000 and 6,400 B.C. The Campbell Shelter (15McY322), located approximately 200 m northeast of the Tough Tree Shelter, produced a single Kirk Corner Notched projectile point, indicating that it was also occupied during the Early Archaic subdivision (Knudsen et al. 1985:31-78).

The Singer Shelter (15McY325) is located approximately 1 km downstream from the Tough Tree and Campbell shelters. Excavations there indicated that the site contained deposits dating from the Early Archaic subdivision through the Fort Ancient period. The most intensive use of the shelter, which occurred during the Early Archaic, resulted in a thick deposit of cultural material that was designated Stratum IV. Artifacts from the Early Archaic zone included a small Kirk Corner Notched projectile point, a possible bifurcate base point, and a Big Sandy projectile point fragment. A basin-shaped pit, which measured 50 cm in diameter and 30 cm in depth and contained charcoal and fire-cracked rock, also was associated with the Early Archaic zone. A large variety Kirk Corner Notched point was found in another cultural stratum (Knudsen et al. 1985:100). The recovery of one complete and two broken Savannah River Stemmed projectile points from mixed deposits indicates that the Singer Shelter also was used by Late Archaic groups (Knudsen et al. 1985:90).

An archaeological survey conducted near these three rockshelters located an open ridgetop site (Kirk site) that contained an Early Archaic Kirk component (Knudsen et al. 1985:105). The close proximity of the Kirk site to the Campbell Shelter and the similarity of projectile points led Knudsen and Ison to suggest that the upland sites are the hunting camps of the Early Archaic groups that inhabited the nearby rockshelters (Knudsen and Ison 1984:41-43; Knudsen et al. 1985:102). The association of rockshelters and open ridgetop sites also has been noted at other McCreary County locations (Knudsen and Ison 1984:41-43).

Archaeological evaluation of two ridgetop sites in McCreary County (15McY570 and 15McY616) yielded Early Archaic Kanawha, Kirk Stemmed and LeCroy points, as well as later Archaic materials (Sussenbach 1997). Limited excavations at the Luna Moth Rockshelter in the Big South Fork National River and Recreation Area also yielded diagnostic Early Archaic artifacts including Kirk Corner Notched, LeCroy, Big Sandy I, and Rice Lobed points (Prentice 1995).

Excavations conducted prior to the construction of a new United States penitentiary in McCreary County provided new insights about Early Archaic hunter-gatherers in the Lake Cumberland Section (Meyers 2000). Site investigators first plowed and disked the site (15McY1151), then conducted a controlled surface collection. Analysis of the surface artifact distribution revealed three concentrations; however, subsequent removal of the plowzone exposed no features or intact cultural deposits. The surface collection and plowzone stripping yielded 11 diagnostic Early and Middle Archaic projectile points including examples of Palmer Corner-Notched, Kanawha, Big Sandy, Morrow Mountain, and Halifax Side-Notched forms. Several endscrapers and utilized flakes also were found. Project archaeologists concluded that the site was used for resource procurement and processing, and that Early to Middle Archaic hunter-gatherers occupied the site briefly, but repeatedly, during that time. Activities seem to have been most intensive during the Early Archaic, followed by a reduction in activities during the Middle Archaic.

Other than general site distribution data, relatively little information on Middle and Late Archaic activity exists for the Lake Cumberland Section. Existing information is based on the distribution of projectile points dated to the Middle and Late Archaic subdivisions at other Kentucky sites or at sites in adjacent states.

The Oil Well Branch Road site (15McY412) is an open habitation site located in the Big South Fork National Recreation Area that contains intact subplowzone deposits. This site, which in addition to containing a Late Archaic component also yielded transitional Late Paleoindian/Early Archaic materials (see Chapter 3), is situated on an upland saddle between two sandstone ridges. Limited excavation of this site documented the presence of a Late Archaic basin-shaped, rock-lined fire pit. Diagnostic artifacts from the feature include a Wade point, a Ledbetter point, a possible Merom point, and a lanceolate Spike cluster point. In addition, a drilled siltstone atlatl fragment and a 'thumbnail' scraper were recovered from the feature. A single radiocarbon date of 2,750 B.C. was obtained from a charcoal sample from the base of the feature (DesJean 1993).

Limited additional information on Middle and Late Archaic occupation in this section comes from work done at Site 15Cu31 in Cumberland County (Bradbury and Day 1998), the Sinking Creek site (15Pu294) in Pulaski County (Kerr 1994), and sites 15McY414 (Boedy and Sharp 1992) and 15McY570 (Sussenbach 1997) in McCreary County.

SOUTHEASTERN MOUNTAINS SECTION

The number of Archaic sites documented in the Southeastern Mountains Section also has dramatically increased, going from 51 in 1990 to 132 in 2006 (Table 4.24; Jefferies 1990:Table 22). At least 159 Archaic components have been documented in this section. The number of open habitation sites has increased from 43 to 97, while the number of rockshelters has risen from seven to 34. Important Archaic sites identified in this section include those listed in Table 4.27.

Despite this dramatic increase in the number of recorded Archaic sites, little is known about the Archaic period in the Southeastern Mountains Section compared to many other parts of Kentucky. The occurrence of diagnostic Archaic projectile points indicates that this part of the Commonwealth was continuously occupied from 7,000 to 1,000 B.C., but the specifics of how these hunter-gatherer groups adapted to the area's rugged topography still remain unclear.

Holland's (1970) archaeological survey of 18 counties in adjacent parts of southwestern Virginia has provided some insights on Archaic adaptations in this section. An Early Archaic presence was indicated by the widespread distribution of bifurcate base projectile points and the scattered presence of Cache Diagonal Notched and Palmer Corner Notched types. Middle Archaic sites were identified based on the presence of Big Sandy Side Notched, Morrow Mountain I and II, Guilford, Halifax, and Stanly projectile points. Late Archaic projectile points collected during the survey included Saratoga, Ledbetter, Savannah River, Riverton, and Merom types (Holland 1970:Table B).

Table 4.26. Chronometric Dates: Upper Cumberland Management Area.

Lab. No.	Age (B.P.)	Uncalibrated Date	References
<u>Lake Cumberland</u>			
Long (15Ru17)			
Beta-48501	3090±90	1120 BC	Lane 1991; Sulham 1993
Beta-48502	4400±100	2450 BC	Lane 1991; Sulham 1993
Beta-48503	3050±80	1100 BC	Lane 1991; Sulham 1993
Site 15McY348			
Beta-17153	3060±70	1110 BC	Gary Knudsen, pers. comm. 1987
Oil Well Branch (15McY412)			
Beta-64756	4700±?	2750 BC	Des Jean 1993
<u>Southeastern Mountains</u>			
Cumberland Ford I (15Bl59)			
Beta-30315	3140±110	1190 BC	Larry Kimball, pers. comm. 1992; Maslowski et al. 1996
Beta-90742	3060±70	1110 BC	Larry Kimball, pers. comm. 1992; Maslowski et al. 1996
Main (15Bl35) (see also Chapter 5:Table 5.21)			
Beta-56959	9150±70	7200 BC	Creasman 1994:Table 6-1
Beta-56434	8500±70	6550 BC	Creasman 1994:Table 6-1
Beta-59067	8450±120	6500 BC	Creasman 1994:Table 6-1
Beta-56436	8290±70	6340 BC	Creasman 1994:Table 6-1
Beta-59066	8190±110	6240 BC	Creasman 1994:Table 6-1
Beta-56438	8190±90	6240 BC	Creasman 1994:Table 6-1
Beta-56433	8030±100	6080 BC	Creasman 1994:Table 6-1
Beta-64370	5980±80	4030 BC	Creasman 1994:Table 6-1
Beta-60564	5400±130	3450 BC	Creasman 1994:Table 6-1
Beta-49233	5050±110	3100 BC	Creasman 1994:Table 6-1
Beta-56437	3930±80	1980 BC	Creasman 1994:Table 6-1
Big Shelter (15Ll188)			
Beta-72793	3420±60	1470 BC	Carmean 1994:40

Table 4.27. Important Sites: Southeastern Mountains Section.

Site No.	Site Name	Site Type	Affiliation	References
15Bl59	Cumberland Ford I	Open Habitation	Late Archaic	Autry 1984
15Bl135	Main	Open Habitation	Early Archaic, Late Archaic	Creasman 1994

Holland noted that Middle and Late Archaic sites were located in the valleys, on ridgetops, and on bluffs, but not on plateaus. Ridgetops were most commonly occupied during the Middle Archaic; more than 50 percent of the Guilford and Big Sandy points came from ridgetop sites. The diversity of site locations was interpreted as reflecting the exploitation of a wide range of habitats (Holland 1970:114).

During the 1980s, excavations at Site 15B159, located in Bell County, encountered a buried Late Archaic component estimated to date to between 2,000 and 1,000 B.C. (Autry 1984). Test excavations disclosed seven hearths, six small pits, and the remains of two steatite vessels.

Some of the best information on Southeastern Mountain Archaic hunter-gatherers comes from excavations conducted at the Main site (15Bl35) in Bell County (Creasman

1994). Field investigations were conducted in advance of the construction of a new bridge across the Cumberland River just downstream from Pineville. The Main site investigations documented six distinct occupation zones ranging in age from ca. 7,200 to 1,980 B.C. (Table 4.26). The Early Archaic zone yielded bifurcate base points (LeCroy and Kanawha Stemmed) that dated from 6,550 to 6,080 B.C. Two Late Archaic zones contained projectile points resembling Iddins Undifferentiated Stemmed that date from 3,450 to 1,980 B.C. (Table 4.26).

Excavations exposed numerous features, including trash dumps, hearths, postmolds, and storage pits. Project archaeologists interpreted the cultural materials as representing residential camps that were occupied for short periods during the late fall to early winter. Activities appear to have focused on game procurement and processing. Archaic materials found at the Main site most closely resemble those found in the Ridge and Valley region to the south (Creasman 1994).

Archaeological investigations at Site 15Hl21, located on the Cumberland River floodplain in Harlan County, documented a buried Late Archaic habitation site (Autry et al. 1988). Backhoe trenches excavated on the river's floodplain revealed a buried intact Late Archaic zone in a stratified, overbank levee deposit at ca. 55 cm below the surface. Cultural remains included a hearth and a concentration of fire-cracked rock within the Late Archaic zone. Investigations of the Cranks Creek site (15Hl58) also has yielded important data on Archaic hunter-gatherers of the upper Cumberland River watershed (Bradbury 2007).

Further to the west, limited excavations at three rockshelters in Laurel County revealed relatively consistent patterns of occupation and use starting in the Late Archaic and continuing intermittently through the Late Prehistoric period (Carmean 1994). One rockshelter (Big Shelter [15Ll188]) contained three hearths, two of which yielded radiocarbon dates of 1,470 and 460 B.C., respectively, indicating Late Archaic to Early Woodland use of the shelter (Table 4.26; see also Chapter 5:Table 5.21). Use of Rising Sun Shelter (15Ll189) and Groovey Shelter (15Ll190) was less intensive than at Big Shelter, but reflected a similar pattern of use.

SITE DENSITY AND DISTRIBUTION PATTERNS

The 433 Archaic sites recorded in the Upper Cumberland Management Area represent approximately 12 percent of the recorded Archaic sites in Kentucky (Table 4.24). Seventy percent of these sites are located in the Lake Cumberland Section, and 30 percent are located in the Southeastern Mountains Section. Sixty-seven percent of the Upper Cumberland Management Area Archaic sites have been classified as open habitations without mounds (Table 4.24). The distribution of sites by site type for the Lake Cumberland and Southeastern Mountains sections is similar; but the Lake Cumberland Section has a slightly higher percentage of Archaic components in rockshelters (32 percent vs. 26 percent). The higher percentage of rockshelters in the Lake Cumberland Section reflects the topographic and geological attributes of this rugged part of Kentucky. Five caves containing Archaic components have been recorded in the Lake Cumberland Section.

Not surprisingly, 21 percent of the Upper Cumberland Archaic sites were found on hillsides (Table 4.5). Over 41 percent occurred on bluff crests, at bluff bases, or on slopes, reflecting the large number of Archaic occupations in rockshelters (Table 4.6). Only 14 percent of the Archaic sites occurred on floodplains, a much lower percentage than recorded for most of the state's other management areas (Table 4.5). The relatively few floodplain sites recorded in this part of the state is probably attributable to the small drainages and narrow valleys found in the Upper Cumberland Management Area.

BLUEGRASS (MANAGEMENT AREA 5)

The 720 Archaic sites recorded in the Bluegrass Management Area represent roughly twice the number documented in 1990 (n=383) (Jefferies 1990:Table 27). These sites contain 923 Archaic components (tables 4.28 and 4.29). Over 62 percent (n=210) of the newly recorded sites are located in the Central Bluegrass Section, 32 percent (n=109) are in the Northern Bluegrass Section, and 5 percent (n=18) are in the Eastern Bluegrass Section. The dramatic increase seen in the Central and Northern Bluegrass sections is attributable to the rapid urban/suburban development of counties surrounding Lexington, Kentucky and Cincinnati, Ohio.

Table 4.28. Bluegrass Cultural Components by Management Area Section.

	Central Bluegrass		Northern Bluegrass		Eastern Bluegrass			
Component	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**
Archaic	256	46.9	97	41.0	38	27.1	391	42.4
Early Archaic	106	19.4	47	19.8	32	22.9	185	20.0
Middle Archaic	35	6.4	15	6.3	17	12.1	67	7.3
Late Archaic	149	27.3	78	32.9	53	37.9	280	30.3
Total	546	100.0	237	100.0	140	100.0	923	100.0

Table 4.29. Bluegrass: Site Type by Management Area Section.

Site Type	Central	Northern	Eastern	Total	Percent
Open Habitation w/o Mound(s)	425	172	95	692	96.1
Isolated Find	2	0	0	2	0.3
Rockshelter	3	0	1	4	0.6
Cave	1	0	0	1	0.1
Earth Mound	2	0	0	2	0.3
Non-Mound Earthwork	2	0	0	2	0.3
Workshop	2	3	0	5	0.7
Isolated Burials	1	0	0	1	0.1
Cemetery	1	0	1	2	0.3
Specialized Activity Site	1	1	0	2	0.3
Open Habitation w/ Mound(s)	6	0	1	7	1.0
Total	446	176	98	720	100.0
Percent	61.9	24.4	13.6	100.0	

CENTRAL BLUEGRASS SECTION

The 446 Archaic sites recorded in the Central Bluegrass Section represent 62 percent of the recorded Archaic sites in the Bluegrass Management Area. Important Archaic sites identified in this section are listed in Table 4.30.

Table 4.30. Important Sites: Central Bluegrass Section.

Site No.	Site Name	Site Type	Affiliation	References
15Ck43	none	Open Habitation	Middle Archaic	Gatus and Boisvert 1977
15Ck68	none	Open Habitation	Archaic	Gatus and Boisvert 1977
15Ck10	none	Open Habitation	Middle Archaic	Gatus and Boisvert 1977
15Ck89	Stone	Open Habitation	Late Archaic	Turnbow et al. 1983
15Ckl26	none	Open Habitation	Late Archaic	Ison et al. 1982
15Jsl9	none	Open Habitation	Early-Late Archaic	Weinland and Fenwick 1979
15Fr7	Hutcherson	Shell Midden	Middle-Late Archaic	Weinland 1976
15Ma144	Coy	Open Habitation w/ Mound	Early-Late Archaic	O'Shaughnessy and Wilson 1990

Although no sites with major Early Archaic components have been recorded in this section, archaeological surveys of Jessamine and Clark counties have identified sites that contain Early Archaic projectile points (Gatus and Boisvert 1977; Weinland and Fenwick 1979). The Jessamine County survey recovered corner or diagonally notched projectile points that resemble the Cache Diagonally Notched type. These Early Archaic points were found at sites 15Js36 and 15Js54. Another specimen, which resembles a Kirk Stemmed projectile point, was collected from Site 15Jsl9 (Weinland and Fenwick 1979:Figure 8). A survey of Clark County located one site (15Ck8) that contained a LeCroy and a Kirk projectile point (Gatus and Boisvert 1977:Table 2). Additional Early Archaic material was documented during survey of the area surrounding the Coy Mound in Madison County (O'Shaughnessy and Wilson 1990). Although the mound itself is thought to be of Adena origin, the area surrounding the Early Woodland mound was extensively utilized during the Archaic and Fort Ancient periods.

Two Jessamine County sites (15Jsl9 and 15Js32) each yielded one Middle Archaic side notched projectile point (Weinland and Fenwick 1979:Figure 8). One Stanly projectile point was found at Site 15Ck71 in Clark County, and Big Sandy Side Notched points were recovered from sites 15Ck43 and 15Ck70 (Gatus and Boisvert 1977:Table 2). Middle Archaic projectile points also were recovered from the previously mentioned Coy Mound in Madison County (O'Shaughnessy and Wilson 1990).

Late Archaic occupation of the Central Bluegrass Section is not well-represented in the artifacts collected during the Jessamine and Clark County surveys. One expanding stemmed point, which resembles the Motley or Ashtabula types, was collected from Site 15Jsl9 (Weinland and Fenwick 1979:Figure 8). Some of the stemmed projectile points collected during the Clark County survey also may date to the Late Archaic subdivision.

Obviously, the survey collections discussed above do not accurately reflect the quantity or distribution of Archaic sites in the Central Bluegrass Section. They do, however, provide a general indication of the kinds of artifacts associated with the Archaic period occupation of this part of Kentucky.

Central Kentucky Late Archaic settlements generally consist of small, short-term base camps located along the narrow floodplains of entrenched rivers and streams, smaller floodplain and upland open sites, and rockshelters. Most Late Archaic components reflect short-term occupation and a limited range of activities, including flaked stone tool production, hunting, butchering, and general manufacturing. The general lack of large, intensively occupied Late Archaic sites in this part of Kentucky may reflect a uniform distribution of plant and animal resources over the landscape. Such an environment would have provided many suitable site locations resulting in a more dispersed settlement system (Turnbow et al. 1983:29). Also, the karst topography found in parts of the Bluegrass, with its associated sinkholes and subterranean drainage systems, may have offered Archaic hunter-gatherers with fewer sources for fresh water than found in other parts of the Commonwealth.

Field investigations conducted as part of the J. K. Smith Power Station project located the Stone site (15Ck89), a small Skidmore phase campsite (Table 4.30). The Skidmore phase is defined later in this chapter (see Upper Kentucky/Licking Management Area). The Stone site assemblage contained scrapers, spokeshaves or notches, cores, unmodified debitage, bifaces, hammerstones, and contracted and straight stem projectile points. Food preparation and processing pits, a circular or oval structure, and two possible lean-to structures were identified (Turnbow et al. 1983:411).

Excavation conducted at Site 15Ck126, also located in the J. K. Smith Power Station project area, revealed a buried midden and associated features that date to the terminal Late Archaic (Ison et al. 1982; Turnbow et al. 1983:35). Two basin-shaped hearths, spaced 5 m apart, produced radiocarbon dates of l,010±60 B.C. and 990±60 B.C. (Table 4.31), respectively. Associated diagnostic artifacts included an expanding stemmed Wade projectile point, a type that has been dated to around 1,000 B.C. in the Normandy Reservoir in Tennessee (Keel 1974, cited in Turnbow et al. 1983:35).

Table 4.31. Chronometric Dates: Bluegrass Management Area.

Lab. No.	Age (B.P.)	Uncalibrated Date	References
<u>Central Bluegrass</u>			
Site 15Ckl26			
Beta-3868	2960±60	1010 BC	Ison et al. 1982:76
Beta-3866	2940±60	990 BC	Ison et al. 1982:78
<u>Northern Bluegrass</u>			
Ronald Watson Gravel (15Be249) (see Chapter 5:Table 5.26)			
Pitt-1046	3715±40	1765 BC	Trader 1992
AA 10462	3090±50	1140 BC	Trader 1992
Glacken (15Be272)			
Beta-5408	4090±60	2140 BC	Boisvert l986:Table VI-2
Beta-5409	2970±120	1020 BC	Boisvert 1986:Table VI-2
Beta-5690	3460±80	1510 BC	Boisvert l986:Table VI-2
Beta-5689	3770±80	1820 BC	Boisvert 1986:Table VI-2
Panther Rock (15Cl58)			
Beta-214401	4920±50	2970 BC	Engle and Schlarb 2006
Hayes (15Cl67)			
Beta-192389	3370±70	1420 BC	Hall 2005:78
Beta-192391	2460±50	510 BC	Hall 2005:78
<u>Eastern Bluegrass</u>			
Zilpo Cemetery (15Bhl03)			
Beta-15021	3830±70	1880 BC	Knudsen 1988; Maslowski et al. 1996

Archaeological investigations conducted in association with the development of the Little Mountain Industrial Park in Montgomery County used a variety of surface collection techniques to investigate three large lithic scatters (sites 15Mm49, 15Mm51, and 15Mm54). Site 15Mm54 yielded seven Late Archaic projectile points. Analysis of artifact distributions within this site defined several concentrations. One appeared to represent a Late Archaic campsite where inhabitants conducted activities, such as hunting, woodworking, making flaked stone tools, and cutting and piercing tasks. Other artifact concentrations at the site also were interpreted as small campsites. The Little Mountain project demonstrated, using controlled surface collections, that large lithic scatters may be comprised of several small concentrations that reflect discrete activity areas (Boisvert et al. 1979:57-88).

Site 15Li80, located during survey of a large tract (ca. 317 ha) in Lincoln County, contained evidence of a late Paleoindian and a substantial Late Archaic utilization or occupation (Schock 1993). Late Archaic materials also were recovered at the previously mentioned the Coy Mound site (O'Shaughnessy and Wilson 1990).

NORTHERN BLUEGRASS SECTION

The 176 Archaic sites documented in the Northern Bluegrass Section represent 24 percent of the Bluegrass Management Area's recorded Archaic sites (Table 4.29). Important Archaic sites identified in this section are listed in Table 4.32.

Table 4.32. Important Sites: Northern Bluegrass Section.

Site No.	Site Name	Site Type	Affiliation	References
15Be46	Ryle Village	Open habitation (possible Shell midden)	Middle-Late Archaic	Fenwick and Weinland 1978
15Be272	Glacken	Open Habitation	Late Archaic	Boisvert 1986
15Be249	Ronald Watson Gravel	Open Habitation	Late Archaic	Trader 1992
15Cl58	Panther Rock	Open Habitation	Late Archaic	Engle and Schlarb 2006
15Cl67	Hayes	Open Habitation	Late Archaic	Hall 2005

Fenwick and Weinland's (1978:Figure 4) survey identified three Archaic sites (15Be46, 15Be227, and Ronald Watson Gravel [15Be249]), adding to the total of 26 Archaic sites recorded prior to their investigations. Seven of these sites were classified as General Archaic, one as Early Archaic, two as Middle Archaic, and 19 as Late Archaic.

All three of Fenwick and Weinland's Archaic sites were located on bottomland. Reports from collectors of atlatl weights and grooved axes being found at Site 15Be46 (Ryle Village), and Fenwick and Weinland's recovery of a side notched (Brewerton) projectile point, indicate a substantial Middle and/or Late Archaic component(s) at this site. Projectile points collected from Site 15Be227 suggest an Early or Middle Archaic occupation of this location (Fenwick and Weinland 1978:115-116).

Archaeological surveys of the Greater Cincinnati International Airport property, located in Boone County, Kentucky, identified several small Early Archaic sites. The most common Early Archaic point type found at these sites was the Thebes Diagonal Notched type, followed by Kanawha and Kirk Stemmed types. It appears that small sites such as these reflect the character of prehistoric activity in uplands adjacent to the Ohio River. Sites that contained Middle and Late Archaic material were much less common, as were sites occupied by later prehistoric groups (Sussenbach 1986).

Rolingson's (1968) investigation of ten sites in the Eagle Creek Reservoir, located in Grant and Owen counties, yielded considerable evidence of Archaic occupation. She characterized most of these sites as sparse concentrations of artifacts lacking midden. Artifacts that reflected cutting and scraping tasks were common in site assemblages from this area (Rolingson 1968:89-95).

Kirk Serrated and bifurcated base projectile points reflected an Early Archaic presence in the reservoir basin. Middle to Late Archaic occupations were indicated by a variety of Brewerton points, which were found at nine of the 10 sites tested. Several stemmed point types, some of which resembled types associated with the Indian Knoll phase, reflected a Late Archaic presence in the Eagle Creek area (Rolingson 1968:91-92).

Rolingson described the Eagle Creek Late Archaic settlement pattern as consisting of sites located on the valley floodplain situated between the creek and the steep ridge slopes. The absence of midden and features suggested the kind of short-term occupation expected for mobile Archaic hunter-gatherer groups (Rolingson 1968:95).

Late Archaic projectile points found at sites situated along the central Ohio River Valley include McWhinney Heavy Stemmed, Merom-Trimble, Rowlett, Cogswell, and varieties of the Brewerton type. Much of what we know about central Ohio Valley Late Archaic adaptation in Kentucky is based on research conducted in southwestern Ohio (Vickery 1980). The earliest widely recognized Late Archaic complex, known as the Central Ohio Valley Archaic, dates between 2,750 and 1,750 B.C., based on radiocarbon determinations from three excavated sites. Diagnostic artifacts include McWhinney Heavy Stemmed projectile points and hafted endscrapers, which first appear in the region during the Middle Archaic, scrapers, atlatl hooks and weights, bell-shaped pestles, and grooved axes. The distribution of McWhinney projectile points minimally includes southwestern Ohio, northern Kentucky, and southeastern Indiana (Vickery 1980:35-36).

Vickery defined the Maple Creek phase for this region based on his excavations at the Maple Creek site, located along the Ohio River in Clermont County, Ohio. He identified three Late Archaic horizons containing living floors, pit features, and a variety of artifacts. A single radiocarbon determination of 1,310$\pm$330 B.C was obtained from an earth oven. At the time of his research, Vickery thought that the Maple Creek phase extended from 1,750 to 1,000 B.C. (Vickery 1980:27).

Diagnostic artifacts associated with Maple Creek phase components include McWhinney, Merom Expanding Stem, and Trimble Side Notched projectile points. These types also are associated with the terminal Late Archaic Riverton culture sites in Illinois (Winters 1969). A chipped stone microtool industry also may be a diagnostic Maple Creek trait. Vickery (1980:27-32) interpreted the Maple Creek site as an intensively occupied base camp. Floral and faunal remains from the three horizons suggest that the site was occupied during the summer, fall, and perhaps winter.

Relatively little is known about the geographical extent of the Maple Creek phase. Sites assigned to this phase are located in south-central Ohio and to the east and west along the Ohio River (Vickery 1980:30). The presence of Merom-Trimble projectile points in parts of north-central Kentucky may reflect a Maple Creek presence south of the Ohio River. Field investigations conducted in southern Indiana are helping to clarify the cultural and chronological parameters of terminal Archaic cultural manifestations, like Maple Creek and Riverton, in southern Indiana (Anslinger 1986; Stafford and Cantin 2008)

Archaeological investigations at the Glacken site (15Be272) (Figure 4.6), located in Boone County near the famous Big Bone Lick saline spring, revealed a dense concentration of Late Archaic artifacts, a disturbed midden, and 12 features (Boisvert 1982b, 1986). Pit features resembled those excavated by Vickery (1980) at the Maple Creek site in southern Ohio. Most of the pit features appear to have been used in food preparation. Faunal remains indicate that the Glacken site was occupied during the fall and winter. Four Glacken radiocarbon determinations ranged from 2,140±60 B.C. to 1,020±120 B.C (Table 4.31). A Merom-Trimble projectile point was associated with a date of 1,510±80 B.C., providing additional information on the temporal placement of this point type (Boisvert 1982c:7-8).

A feature at the Hayes Site (15Cl67) contained Merom Cluster points associated with a radiocarbon date of 1,420±70 B.C. A second radiocarbon date of 510±50 B.C. supports the presence of a Maple Creek phase component at this site (Hall 2005:201).

As in many other parts of the Commonwealth, the past 20 years have yielded little new information about the Archaic hunter-gatherers that inhabited the Northern Bluegrass Section. More intensive survey of this section is needed to identify potentially significant Archaic sites. Those deemed as culturally significant should be investigated to fill in major data gaps in our knowledge about hunter-gatherer adaptive strategies in this part of the Commonwealth. The rapid expansion of urban areas and extensive commercial development in this part of Kentucky makes the need for this work particularly urgent.

EASTERN BLUEGRASS SECTION

The 98 Archaic sites that have been recorded in the Eastern Bluegrass Section represent 14 percent of the Bluegrass Management Area's known Archaic sites (Table 4.29). Of these, 25 were located during an archaeological survey of Fleming County (Fenwick 1979). Important Archaic sites identified in this section are listed in Table 4.33.

Sites located as a result of Fenwick's survey were clustered along the Licking River floodplain in the southeastern part of Fleming County, along the middle section of Fleming Creek in the center of the county, and along Bush Run and Brushy Fork in the northeast part of Fleming County (Fenwick 1979:Figure 43). Eight sites contained Early Archaic components. Early Archaic diagnostics found at these sites, included Greenbriar, Kanawha Stemmed, Kirk Corner Notched, Kirk Stemmed, LeCroy, MacCorkle and Plevna projectile points. Middle Archaic components, defined by the presence of Morrow Mountain, Stanly, and a variety of side notched points, were recorded for at least three sites. Diagnostic artifacts associated with the Late Archaic components included a variety of straight and expanding stemmed projectile points, such as Savannah River and Ledbetter types, as well as smaller varieties like Merom. Archaeological investigations at sites 15F119a, 15F131, and 15F144 identified potentially significant Early to Late Archaic occupations (Fenwick 1979).

Table 4.33. Important Sites: Eastern Bluegrass Section.

Site No.	Site Name	Site Type	Affiliation	References
15Bh37	Zilpo	Open Habitation	Late Archaic	Rolingson and Rodeffer 1968b
15F119	none	Open Habitation	Early-Late Archaic	Fenwick 1979
15F127	none	Open Habitation	Early Archaic	Fenwick 1979
15F131	none	Open Habitation	Early-Late Archaic	Fenwick 1979
15F144	none	Open Habitation	Early-Late Archaic	Fenwick 1979
l5Ms31	Cabin Creek	Open Habitation	Late Archaic	Driskell 1976
15Bhl03	Zilpo Cemetery	Open Habitation	Early-Late Archaic	Knudsen 1988
15Bh24	none	Open Habitation	Late Archaic	Knudsen 1988

Archaeological investigations conducted prior to the construction of Cave Run Reservoir significantly added to the Late Archaic database in this section (Dorwin et al. 1970; Marquardt 1970; Rolingson and Rodeffer 1968a, 1968b). Excavations at the Zilpo site (15Bh37), located on the Licking River floodplain in Bath County, documented the presence of a substantial Late Archaic occupation (Figure 4.6). The Zilpo assemblage was characterized by Cogswell Contracting Stem and Cave Run Expanding Stem projectile points and a low frequency of pottery (Rolingson and Rodeffer 1968b:37-39). Both projectile point types are similar to points dated to the Late Archaic-Early Woodland subdivisions in other parts of the East.

Rolingson and Rodeffer defined two distinct cultural components at Zilpo based on the stratigraphic separation of an upper zone containing Cogswell points from a lower zone having Cave Run points. The small number of tool types represented in the assemblage, combined with the few features identified, indicates that Late Archaic hunter-gatherers camped at Zilpo on an intermittent basis (Rolingson and Rodeffer 1968b:35-39). Marquardt (1970) identified additional Late Archaic sites in Cave Run Reservoir based on the presence of Cogswell and Cave Run projectile points (Marquardt 1970) (See discussion of Upper Kentucky Management Area).

Investigations by U.S. Forest Service archaeologists at the Zilpo Cemetery Site (15Bhl03) (Knudsen 1988), situated on a ridgetop overlooking Cave Run Reservoir, yielded Early, Middle, and Late Archaic artifacts. The Early Archaic material consisted of several varieties of Kirk Corner Notched points and a MacCorkle bifurcate base projectile point. A Big Sandy Side Notched point may represent a Middle Archaic component. A radiocarbon determination of 1,880±70 B.C. (Table 4.31) obtained from charcoal collected from a hearth, combined with the presence of Cave Run and Merom projectile points, indicates that this site also was occupied during the Late Archaic subdivision.

Excavations at the Cabin Creek site (15Ms31) in Mason County revealed that the primary prehistoric occupation of this site occurred during the Late Archaic subdivision (ca. 2,000-1,000 B.C.) (Driskell 1976). Diagnostic projectile points from the Cabin Creek Site included Brewerton and Trimble Notched types. The diversity of feature types and flaked stone and groundstone implements suggests that inhabitants performed a variety of procurement and maintenance tasks at this site (Driskell 1976:56-57).

As with the Northern Bluegrass Section, research undertaken since 1987 on Archaic hunter-gatherers that inhabited the Eastern Bluegrass Section has been relatively limited. During the past 20 years, the towns of the Eastern Bluegrass have continued to grow and commercial development has continued to increase. Consequently, an increasingly large number of sites containing Archaic components are being threatened or destroyed. Additional survey is needed in this section to identify potentially significant Archaic sites and a representative sample of those sites needs to be investigated. Data resulting from this work will help to fill in critical data gaps in our understanding of Archaic adaptive strategies in the eastern part of the Bluegrass.

SITE DENSITY AND DISTRIBUTION PATTERNS

The 720 Archaic sites recorded in the Bluegrass Management Area (Table 4.29), represent approximately 20 percent of the Archaic sites documented in the state (Table 4.4). Most are located in the Central Bluegrass Section (62 percent), with the Northern and Eastern Bluegrass sections containing 24 percent and 14 percent, respectively (Table 4.29). The large number of recorded Central Bluegrass Archaic sites can probably be attributed to the rapid growth of the Lexington, Richmond, Nicholasville, and Winchester metropolitan areas in the last 30 years. Despite the large number of recorded sites, very few have been excavated.

Over 96 percent of the Bluegrass Management Area Archaic sites are open habitation sites without mounds (Table 4.29). Four rockshelters and one cave containing Archaic deposits also have been identified. Other Archaic components are associated with two earth mounds, two non-mound earthworks, five workshops, and seven open habitations with a mound. One group of isolated burials, two cemeteries, and two specialized activity sites also have been recorded. All of these associations point to sites that have Archaic and later Woodland or Fort Ancient components.

Approximately 41 percent of the recorded Archaic sites in this management area occur on level terrain (Table 4.6). Many of these are found on the floodplains and terraces of streams and rivers (Table 4.5). Roughly 46 percent of the Archaic sites are located on dissected or undissected uplands and 11 percent occur on hillsides. Sites located on ridges, slopes, and knolls account for 54 percent of all recorded Archaic sites in this management area (Table 4.6).

UPPER KENTUCKY/LICKING (MANAGEMENT AREA 6)

Archaeological investigations conducted in the rugged Upper Kentucky/Licking River Management Area have recorded 277 Archaic sites (Table 4.34), representing a dramatic increase over the 66 sites documented in 1990 (Jefferies 1990: Table 32). Forty-six percent (n=128) of these are in the Gorge Section, while the remaining 54 percent (n=149) are in the Interior Mountains Section. Table 4.35 lists the distribution of components by Archaic subdivision.

Table 4.34. Upper Kentucky/Licking: Site Type by Management Area Section.

Site Type	Gorge	Interior Mountains	Total	Percent
Open Habitation w/o Mound(s)	62	101	163	58.8
Rockshelter	64	46	110	39.7
Caves	1	0	1	0.4
Stone Mounds	0	1	1	0.4
Specialized Activity Site	1	0	1	0.4
Open Habitation w/ Mound(s)	0	1	1	0.4
Total	128	149	277	100.1
Percent	46.2	53.8	100.0	

Table 4.35. Upper Kentucky/Licking Cultural Components by Management Area Section.

	Gorge		Interior Mountains			
Component	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**
Archaic	40	24.4	44	22.6	84	23.4
Early Archaic	30	18.3	50	25.6	80	22.3
Middle Archaic	18	11.0	26	13.3	44	12.2
Late Archaic	76	46.3	75	38.5	151	42.1
Total	164	100.0	195	100.0	359	100.0

GORGE SECTION

Surveys and excavations associated with the construction or planned construction of several large reservoirs have yielded important data on Archaic sites in the Gorge Section. Of particular relevance is the research associated with the planned building of a dam in the Red River Gorge area and the construction of Cave Run Reservoir on the Licking River. Important Archaic sites identified in the Gorge Section include those listed in Table 4.36.

Archaeological investigations in the Red River area produced Early Archaic material from both open and rockshelter sites. Cowan (1976) identified two sites (15Po46 and 15Po49) that contained Early Archaic artifacts during his survey of the North Fork of the Red River floodplain. Test excavations conducted at these sites in 1974 yielded evidence of substantial Early Archaic occupations including Kirk Corner Notched and LeCroy bifurcate base projectile points (Cowan 1976:124).

Table 4.36. Important Sites: Gorge Section.

Site No.	Site Name	Site Type	Affiliation	References
15Ro34	Deep Shelter	Rockshelter	Early Archaic, Late Archaic	Dorwin et al. 1970
15Ro35-36	Bluestone	Open Habitation	Late Archaic	Brooks et al. 1979
15Mf36	Cloudsplitter	Rockshelter	Early Archaic	Cowan et al. 1981
15Mf410	Gladie Creek	Open Habitation	Early-Late Archaic	Mickelson 2001
15Le50	Cold Oak	Rockshelter	Late Archaic	Ison 1988
15Le44	Zachariah	Rockshelter	Early Archaic	O'Steen et al. 1991
15Le70	Pine Crest	Rockshelter	Middle Archaic	O'steen et al. 1991
15Le77	Mounded Talus	Rockshelter	Middle-Late Archaic	Mickelson 2002
15Pol7	Skidmore	Open Habitation	Late Archaic	Cowan 1985
15Po282	Military Wall	Rockshelter	Late Archaic	Schlarb and Pollack 2002
15Po322	Courthouse	Rockshelter	Late Archaic	Gremillion 1999
15Po331	Raised Spirits	Rockshelter	Late Archaic	Shields 1998; Pollack and Schlarb 2004
15Po404	none	Rockshelter	Late Archaic	Schlarb 2004
15Po406	none	Rockshelter	Late Archaic	Schlarb 2004

The rockshelters situated along the cliffs overlooking the Red River and nearby drainages have been the focus of archaeological investigations for more than 70 years (Funkhouser and Webb 1929, 1930; Webb and Funkhouser 1936). Excavation of these sites has produced a wide range of artifacts not usually preserved at open sites, including fabrics, sandals, wooden objects, and noncarbonized plant remains. Unfortunately, most of this work was done prior to the introduction of controlled, stratigraphic excavation techniques and radiocarbon dating, so little is known about the age of much of this material. Work conducted by Cowan and his associates (Cowan et al. 1981) in the late 1970s yielded data indicating that some of these shelters contain deposits dating to the Early Archaic subdivision.

Archaeological investigations at the Cloudsplitter Rockshelter (15Mf36), which overlooks the Red River in Menifee County, documented the presence of a buried pre-7,000 B.C. occupation (Figure 4.2). Associated cultural remains consisted of a few postholes and surface hearths, as well as Kirk-like corner notched points, a LeCroy bifurcate base point, and an unidentified notched type. A radiocarbon determination of 6,250±225 B.C. (Table 4.37) was obtained from one of the Early Archaic deposits. Although lacking diagnostic material, two hearths in adjacent portions of the Early Archaic deposit yielded radiocarbon determinations of 7,278±100 B.C. and 9,328±200 B.C., respectively (Cowan et al. 1981). Analysis of Cloudsplitter's paleoenvironmental data indicated that its Early Archaic inhabitants had adapted to a climate that was cooler and wetter than today's. Plant remains and pollen reflected the lingering effects of the Late Pleistocene environment. Although deciduous trees were present, hemlock and probably spruce were still growing in the upper elevations of this section. Analysis of Early Archaic faunal remains indicated that a full range of animals were present, including deer, elk, beaver, bird, and turtle (Cowan et al. 1981:73-74).

Table 4.37. Chronometric Dates: Upper Kentucky/Licking Management Area.

Lab. No.	Age (B.P.)	Uncalibrated Date	References
Gorge			
Crystal Creek (15Le31)*			
n/a	n/a	6000 B.C	Betty McGraw, personal communication 1977
Pine Crest (15Le70) (see Chapter 5:Table 5.32)			
Beta-10444	3310±60	1360 BC	O'steen et al. 1991
Newt Kash (15Mf1) (see Chapter 5:Table 5.32)			
Beta-11347	3400±150	1450 BC	Smith and Cowan 1987:355
n/a	3025±55	1975 BC	Gremillion 1995: 55, 1996b:523
Hooton Hollow (15Mf10) (see Chapter 5:Table 5.32)			
Beta-62662	3090±55	1140 BC	Gremillion 1995:55, 1996b:523
Beta-62663	3100±60	1150 BC	Gremillion 1995:55, 1996b:523
Cloudsplitter (15Mf36) (see Chapter 5:Table 5.32)			
GX-5874	8200±225	6250 BC	Cowan et al. 1981:63-64
UCLA-2313I	9228±100	7278 BC	Cowan et al. 1981:63-64
UCLA-2340I	11,278±200	9328 BC	Cowan et al. 1981:63-64
UCLA-2313J	3656+60	1778 B.C	Cowan et al. 1981:63-64
UCLA-2313H	3151±60	1201 B.C	Cowan et al. 1981:63-64
UCLA-2340M	5963±400	4013 BC	Cowan et al. 1981:63-64
UCLA-2340N	3471±100	1420 B.C	Cowan et al. 1981:63-64
GX-5871	3060±80	1110 BC	Cowan et al. 1981:63-64
UCLA-2313K	3728±80	1778 BC	Cowan et al. 1981:63-64
UCLA-2340H	4707±100	2757 BC	Cowan et al. 1981:63-64
UCLA-2340L	12,360±400	10,360 BC	Cowan et al. 1981:63-64
GX-5785	9215±290	7265 BC	Cowan et al. 1981:63-64
Beta-11348	3450±150	1500 BC	Smith and Cowan 1987:355
Site 15Mf379			
Beta-33101	3840±60	1890 BC	Cecil R. Ison, personal communication 1990
Beta-33102	2920±60	970 BC	Cecil R. Ison, personal communication 1990
Cold Oak (15Le50) (see Chapter 5:Table 5.32)			
Beta-22515	2930±70	980 BC	Gremillion 1998
Beta-58051	2900±100	950 BC	Gremillion 1993
Beta-76310	2840±70	890 BC	Gremillion 1998
Beta-10445	2830±60	880 BC	Ison 1988
Beta-84750	2760±60	810 BC	Gremillion 1998
Beta-76311	2710±60	760 BC	Gremillion 1998
Mounded Talus (15Le77)			
Beta-89809	7390±70	5440 BC	Mickelson 2002:315 (adapted from Gremillion and Mickelson 1996)
Beta-89810	7320±80	5370 BC	Mickelson 2002:315 (adapted from Gremillion and Mickelson 1996)
Beta-94095	6080±60	4130 BC	Mickelson 2002:315 (adapted from Gremillion and Mickelson 1996)
Beta-94097	3980±60	2030 B.C	Mickelson 2002:315 (adapted from Gremillion and Mickelson 1996)
Ray Hill (15Mo28)			
DIC-3195	4560±170	2610 BC	Adovasio et al. 1987:68; Maslowski et al. 1996
DIC-3198	3970±170	2020 BC	Adovasio et al. 1987:68; Maslowski et al. 1996
Skidmore (15Ro17)			
UCLA-2312L	3550±60	1600 BC	Turnbow et al. 1983:27

Table 4.37. Continued.

Lab. No.	Age (B.P.)	Uncalibrated Date	References
Deep Shelter (15Ro34)*			
RL-67	7240±550	5290 BC	Dorwin et al. 1970:130; Tucek 1977:255
RL-68	8520±470	6570 BC	Dorwin et al. 1970:130; Tucek 1977:255
Bluestone Site Complex (15Ro35 and 15Ro36)			
UG-2182	4130±160	2180 BC	Brooks et al. 1979:71-72, 154-155, 224
UG-2183	4425±720	2475 BC	Brooks et al. 1979:71-72, 154-155, 224
Military Wall Rockshelter (15Po282) (see Chapter 5:Table 5.32)			
Beta-159713	3020±60	1070 BC	Schlarb and Pollack 2002:Table 12
Beta-152834	5080±80	3130 BC	Schlarb and Pollack 2002:Table 12
Court House Rockshelter (15Po322)			
Beta-119167	3080±80	1520-1100 BC	Gremillion 1999:Table 1
Raised Spirits (15Po331)			
Beta-152836	4430±70	2480 BC	Pollack and Schlarb 2004
Beta-152837	4190±70	2240 BC	Pollack and Schlarb 2004
Beta-159714	2880±70	930 BC	Pollack and Schlarb 2004
Interior Mountains			
Combs (15Kt6)*			
I-2552	3500±110	1550 BC	Buckley and Willis 1969:78; Purrington 1967:138
Enoch Fork Shelter (15Pe50) (see Chapters 3 and Chapter 5:Table 5.32)			
Beta 27766	4200±100	2250 BC	Evans 1996:Table 3-1
Beta 27767	8740±130	6790 BC	Evans 1996:Table 3-1
Beta 15424	10,960±240	9010 BC	Bush 1988

*Dates prior to 1981 obtained from Turnbow (1981).

Cloudsplitter's restricted floor area implies that a relatively small group occupied the shelter. Early Archaic hunter-gatherers apparently occupied the shelter for relatively short periods in the fall of the year as part of their seasonal round of deer hunting and nut collecting (Cowan et al. 1981:74). In view of the rampant destruction of rockshelter deposits because of artifact looting and the lack of adequate field and laboratory techniques available to early archaeologists, Cowan's work at Cloudsplitter still represents some of the best information available on the Early Archaic occupation of these types of sites.

Excavations conducted for the Daniel Boone National Forest interpretive center in the Gladie Creek portion of the Red River Gorge focused on Site 15Mf410, which contained cultural material spanning the entire Archaic period (Mickelson 2001). Such a continuous record of prehistoric occupation is unusual in this part of Kentucky. The frequency of diagnostic projectile points suggests a substantial Early Archaic occupation, followed by a decrease in occupational intensity during the Middle Archaic. Activity rapidly increased at the end of the Middle Archaic, reaching a peak during the Late Archaic.

Analysis of the site's flaked stone tools revealed that implements associated with all of the Archaic components exhibited extensive evidence of reworking, suggesting a need or desire to conserve lithic materials. Surprisingly, cherts represented in the flaked stone tool inventory all derived from local sources. Mickelson (2001) speculates that chert procurement was embedded in the movement of logistical groups, and that tools were brought to the site in a highly reduced form.

An Early Archaic presence also was documented at Deep Shelter (15Ro34), a stratified rockshelter located along the Licking River in what is now Cave Run Reservoir (Figure 4.2). Excavations conducted during 1969 disclosed a virtually undisturbed series of superimposed Early Archaic living and activity zones in the shelter's lower levels (Dorwin et al. 1970:132).

Carbonized wood from two features yielded radiocarbon determinations of 6,570±470 B.C. and 5,290±550 B.C. (Table 4.37). The earliest date was associated with a living surface, while the later one came from a pit feature that contained a LeCroy projectile point (Dorwin et al. 1970:127). Projectile points resembling small Kirk Corner Notched, Kirk Stemmed, and St. Albans Side Notched types also were recovered. Debitage from this site reflects a strong Early Archaic preference for locally available Paoli chert.

The repeated Early Archaic occupation of Deep Shelter is attributed to the diversity of nearby habitats and their associated flora and fauna (Dorwin et al. 1970:33). None of the excavated Cave Run Reservoir open sites yielded Early Archaic material, suggesting that rockshelters were the preferred location for long-term or repeated occupations at that time (Dorwin et al. 1970:137).

Excavations conducted in connection with the development of the Big Sinking Creek oil field in Lee County identified an Early Archaic occupation in the Zachariah shelter (15 Le44). A bifurcate base projectile point (O'Steen et al. 1991) indicated the presence of early Holocene hunter-gatherers.

In view of the results of these and other projects, it is apparent that the Early Archaic inhabitants of this section used rockshelters on a regular basis. This work also demonstrates that even rockshelters that have been disturbed by looting have the potential to provide important cultural data.

The Middle Archaic is very poorly defined in this section, resulting in very few sites being assigned to this subdivision. Archaeological investigations in the Red River Gorge located more than 200 sites, but sites dating to the Middle Archaic were exceedingly rare (Cowan et al. 1981:74). Test excavations at one open site (15Po46) revealed a possible Middle Archaic component, but identification of the projectile points as Middle Archaic was at best tenuous (Cowan 1975b:124-126). Excavations at Cloudsplitter Rockshelter revealed no Middle Archaic occupation, in spite of the long time span represented by its deposits.

The Late Archaic in the Red River Gorge is marked by substantial floodplain occupations. Based on excavations at the Skidmore site (15Pol7) (Figure 4.6), some Late Archaic floodplain sites are characterized by diverse artifact assemblages, sizeable earth oven features, and midden deposits that contain large quantities of fire-cracked rock. The Skidmore assemblage contains an assortment of flaked stone tools that includes projectile points and cutting and perforating implements. In addition, numerous groundstone tool types such as grooved axes, pitted stones, and pestles, as well as a large quantity of debitage and fire-cracked rock, are common (Cowan 1985:236).

Excavations at the Skidmore site revealed two stratified Late Archaic zones (Zone C and B); a third intact zone (Zone A), overlying the lower two, contained transitional

Archaic/Woodland artifacts. The oldest of these, Zone C or Archaic Zone 1, occurred at a depth of approximately 1 m below the surface, overlying a sterile sand deposit. Zone C, which ranged from 20 to 25 cm in thickness, was characterized as dark brown or black soil containing abundant cultural material. Features from this zone consisted of fire-cracked rock concentrations and earth ovens (Cowan 1976). A radiocarbon date from the Skidmore site places the Zone C occupation to l,600$\pm$60 B.C. (Table 4.37) (cited in Turnbow et al. 1983:27).

The Zone C stemmed projectile points are similar to Late Archaic points from southern Ohio that are often associated with Brewerton-like projectile points (Cowan 1976:69). They also resemble projectile points found in a feature dated to 2,475$\pm$720 B.C. (Table 4.37) at Site 15Ro36 in Rowan County (Brooks et al. 1979:154-155). Based on these dates, Skidmore Zone C probably dates to between 3,000 and 2,000 B.C.

Zone B, or Archaic Zone 2, consisted of a hard, dark sandy layer that ranged from 15 to 42 cm thick. Zone B diagnostic artifacts included five small expanding stem projectile points similar to the Merom-Trimble types and two broad triangular blade, expanding stemmed points that resemble Savannah River or Susquehanna points. Cowan proposed, based on the occurrence of these projectile point types, that Zone B dates to between 3,000 and 1,000 B.C. (Cowan 1976:69-70). The presence of Merom-Trimble projectile points suggests that the Zone B occupation extended to ca. 1,000 B.C.

Other Zone B artifacts included a hafted endscraper made from a stemmed projectile point, gravers, cores, utilized flakes, and fragments of a tubular limestone pipe. Zone B features consisted of two fire-cracked rock concentrations (Cowan 1976).

Zone A, referred to as the Woodland Zone, was a dark brown sand layer that ranged from 15 to 60 cm thick. Zone A yielded 16 limestone tempered plain pottery sherds, none of which could be assigned to extant ceramic types. The cooccurrence of a terminal Late Archaic/Early Woodland Cogswell projectile point with these sherds suggests that the pottery probably dates to the Early Woodland subdivision (Cowan 1976:71).

The Skidmore site investigations documented differences in feature distribution that may reflect changes in Late Archaic technology. All the earth ovens were associated with the Zone C occupation, suggesting that these cooking facilities played an important role in food processing. In contrast, Zone B food processing activities involved fires built on sandstone hearths (Cowan 1976:71-72).

Skidmore site projectile points were manufactured from Boyle chert collected from outcrops located from 40 to 50 km from the site. Inhabitants made crude bifacial tools from locally available Haney chert (Cowan 1985:236).

Though the Late Archaic in this section marked the establishment of large floodplain sites, rockshelters continued to be heavily utilized. That the Red River Gorge rockshelters were occupied during the Late Archaic is evidenced in the Cloudsplitter stratigraphic profile. Radiocarbon determinations place this occupation between 2,500 and 1,000 B.C. (Table 4.37). Diagnostic artifacts, include McWhinney Stemmed and Merom-Trimble Notched projectile points (Cowan et al. 1981:63).

By the beginning of the Late Archaic, the forests surrounding Cloudsplitter were comprised of mixed oak, hickory, and chestnut species. Botanical studies indicate an increased use of chestnut and hickory by Late Archaic groups living in the Gorge area. Site investigators also noted the continued exploitation of large and small mammals and aquatic resources. A desiccated squash rind, collected from a context dated to l,778±80 B.C. (Table 4.37), indicates that squash was being grown by some of eastern Kentucky's Late Archaic residents (Cowan et al. 1981:74-75).

Late Archaic utilization of rockshelters in the Cave Run vicinity was documented at the Deep Shelter (Figure 4.6). Diagnostic artifacts, consisting of Cogswell and Cave Run Stemmed projectile points, were present in disturbed deposits inside the shelter (Dorwin et al. 1970:137).

Marquardt (1970) proposed a hypothetical Late Archaic settlement system for the Cave Run Reservoir area in which Late Archaic people lived in rockshelters during part of the year and moved to the river terraces when proper conditions existed to exploit lowland habitats. Special-purpose task groups occupied these open sites while they hunted and collected floodplain food resources (Marquardt 1970:85).

The Bluestone Archaeological Project yielded information about Late Archaic adaptation along the Licking River just outside the Cave Run Reservoir (Brooks et al. 1979) (Figure 4.6). Excavations at the 15Ro35-36 site complex revealed areas of dense Late Archaic midden that contained large quantities of burned sandstone and charcoal. Researchers identified forty-two features at the site consisting of circular or semicircular pits, chipping stations, pitted or groundstone features, and hearths (Brooks et al. 1979:108-120). Charcoal samples from two features yielded radiocarbon determinations of 2,180±160 B.C. (15Ro35) and 2,475±720 B.C. (15Ro36) (Table 4.37) (Brooks et al. 1979:155).

The most common and widely distributed diagnostic artifact was a stubby stemmed projectile point (Type 1) that resembled some Skidmore site specimens from Powell County (Brooks et al. 1979:71). Similarities of the Bluestone Type 1 points to Cogswell and Cave Run projectile points found at the Zilpo site also were noted. One Type 1 point from a feature at Site 15Ro36 was associated with the 2,475±720 B.C. date, suggesting that the point type may be older than originally thought (Brooks et al. 1979:154-155). A comparison of projectile point types indicated that the 15Ro35-36 Late Archaic occupation predated the Late Archaic Zilpo site components (Brooks et al. 1979:128).

The Bluestone project also yielded information with which to evaluate Marquardt's (1970) and Dorwin et al.'s (1970) hypotheses concerning seasonal movements between open lowland sites and rockshelters. They proposed that floodplain sites should reflect short-term occupations during which inhabitants conducted a narrow range of specialized tasks. In contrast, the quantity and diversity of material from the 15Ro35-36 site complex, which reflected a wide range of hunting and gathering tasks, indicated that this floodplain site complex served as a base camp (Brooks et al. 1979:138). Chert source analysis revealed that most of the raw materials came from the nearby Paoli chert deposits, suggesting that resource procurement strategies focused on the local area (Brooks et al. 1979:156).

Archaeological investigations at the Skidmore and Bluestone sites, located along the Red and Licking rivers, respectively, combined with data collected at the J. K. Smith Power Station in the Central Bluegrass Section, led to the definition of the Skidmore phase.

Projectile points having contracted to straight stems and long ovate blades, chert adzes, and grinding stones characterize occupations assigned to this phase. Skidmore phase base camps generally contain abundant fire-cracked rock associated with circular earth ovens and roasting pits. Upland and floodplain Skidmore phase sites contain similar types of artifacts, but upland sites tend to produce less debitage and fire-cracked rock, and exhibit less artifact diversity than do floodplain sites. Upland sites sharing these traits are commonly interpreted as limited activity, short-term occupation sites, while floodplain sites producing evidence of more intensive occupations, such as the Skidmore and Bluestone sites, are interpreted as base camps. The proposed dates for the Skidmore phase extend from 2,400 to 1,650 B.C. (Turnbow and Jobe 1981:468-471).

Archaeological investigations conducted at the Cold Oak Shelter (15Le50), located in Lee County, identified a Terminal Archaic occupation that contained a variety of perishable plant remains (Ison 1988; Gremillion 1993, Gremillion 1998). The Terminal Archaic stratum, designated Zone III, was characterized by a series of overlapping, irregularly shaped lenses of ash and sandy loam. Cultural material recovered from Zone III included Cogswell and Wade projectile points, twisted fiber, wooden artifacts, faunal remains, and a wide range of plant remains, such as charred and uncharred hickory nut, acorn and chestnut shell, and sunflower, goosefoot, marshelder, knotweed, and possibly maygrass seeds. Wood charcoal from a Zone III hearth yielded a radiocarbon determination of 880±60 B.C. (Table 4.37). This date closely conforms to dates associated with Wade projectile points at other Kentucky and Tennessee sites (Ison et al. 1982). The recovery of Cogswell projectile points from Zone III also supports their Terminal Archaic cultural affiliation (Ison 1988). Investigations conducted in the Natural Bridge State Park, Powell County, also have documented several rockshelters (15Po404 and 15Po406) containing Terminal Archaic Cogswell phase components (Schlarb 2004).

Because of its well-preserved and abundant plant remains, the Cold Oak Shelter was revisited in 1994 to conduct additional paleoethnobotanical research (Gremillion 1998). Terminal Archaic cultural deposits yielded remains of gourd/squash (*Cucurbita pepo*), maygrass (*Phalaris caroliniana*), and sumpweed (*Iva annua*); however, researchers noted that the quantities of these plants were low compared to those from Woodland contexts (see Chapter 5). These findings support the hypothesis that while Late Archaic hunter-gatherers initiated plant husbandry, it did not become a significant food source until some time after 1,000 B.C. (Gremillion 1999:36).

Archaeological investigations at the Courthouse Rock Shelter (15Po322) in Powell County also yielded important information on Late Archaic plant use in the Gorge Section (Gremillion 1999). The recovery of an Adena Stemmed projectile point suggested that the occupation dated to the Early Woodland subdivision (ca. 800-300 B.C.), however, radiocarbon dates suggest an earlier period of site use (Table 4.37). Plant remains from the rockshelter included sunflower (*Helianthus annus*), sumpweed (*Iva annua*), chenopod (*Chenopodium berlandieri*), Cucurbita gourd, and bottle gourd (*Lagenaria siceraria*). Of particular note, a feature associated with a pre-1,000 B.C. date yielded a possible seed cache containing giant ragweed (*Amborsia trifida)*, sumpweed, and sunflower achenes (Gremillion 1999:2).

Archaeological investigations conducted at the nearby Military Wall Rockshelter (15Po282) also yielded well preserved plant remains dating to the end of the Archaic or beginning of the Woodland period (Schlarb and Pollack 2002). Cultural deposits, largely consisting of ash from cleaning out hearths, yielded a variety of plant remains including nutshell and wild and cultivated plant seeds (chenopod, maygrass, marsh elder, erect knotweed, and sunflower). Surprisingly, excavations yielded few artifacts, suggesting that the primary focus of rockshelter activities during this period of prehistory was plant food processing (Schlarb and Pollack 2002:61-62). Radiocarbon dates from the Military Wall Rockshelter are listed in Table 4.37.

Investigations conducted by O'Steen et al. (1990) also focused on a series of rockshelters and open air sites, some of which were located in the Gorge Section (Menifee and Rowan counties). Project archaeologists noted the association of occupied rockshelters and ridgetop site clusters, complementing research conducted by Knudsen and Ison (1984:41-43), who proposed that upland sites represented hunting camps associated with nearby rockshelters. O'Steen et al.'s (1990) survey results suggest an increasing use of eastern Kentucky's rugged mountainous terrain during Late Archaic and Early Woodland times. Fifty-eight percent of the survey's Archaic components were in rockshelters, increasing to 94 percent during the Woodland period. They suggest that this shift in settlement strategies was associated with an increase in slash and burn agricultural practices on nearby ridgetops during the Early Woodland.

Compared to Early and Middle Archaic hunter-gatherer activity in the Gorge, Late Archaic activity is much more common, as indicated by relatively dense clusters of features in alluvial settings like those at the Bluestone and Skidmore sites. By about 2,000 B.C., local hunter-gatherers were starting to cultivate crops and either occupying rockshelters for extended periods or repeatedly returning to the shelters as part of an annual series of residential moves. Late Archaic inhabitants of the gorge also stored food in some of the dry rockshelters (Gremillion 1999:37).

Unlike in some parts of Kentucky, archaeologists have learned a considerable amount about the Archaic people who inhabited the Gorge Section. Much of this research has focused on the utilization of rockshelters located in the Daniel Boone National Forest. Other projects, like the work done for the Gladie Creek Visitors Center, investigated open-air sites located near major drainages. Collectively, these projects are starting to clarify how Archaic hunter-gatherer groups adapted to the rugged landscape of the Gorge Section.

INTERIOR MOUNTAINS SECTION

Archaeological investigations conducted in the Interior Mountains Section over the past 20 years have resulted in a rapid increase in knowledge about the Archaic hunter-gatherers that inhabited this rugged part of eastern Kentucky. This growth in knowledge is reflected by an increase from the 36 Archaic sites recorded in 1990 to the present count of 149 sites (Table 4.34). Important Archaic sites identified in the Interior Mountains Section include are listed in Table 4.38.

An archaeological survey of Perry County conducted in 1977 (Gatus and Sanders 1978) provided a limited amount of information about the character of Archaic adaptations in this section of the Commonwealth. The survey team located 33 new sites, six of which contained Archaic components. These sites were located on floodplains, terraces, mountain lobes, and hillsides (Gatus and Sanders 1978:110).

Table 4.38. Important Sites: Interior Mountains Section.

Site No.	Site Name	Site Type	Affiliation	References
15Br200	none	Open Habitation	Late Archaic	Richmond 2001
15Cy24	none	Rockshelter	Early Archaic-LateArchaic	Bush 1988
15Cy166	Little Spring Creek	Open Habitation	Early-Middle Archaic	Boedy and Faulkner 2001
15Ja239	none	Open Habitation	Late Archaic	Meyer et al. 1992
15Ja248	none	Open Habitation	Late Archaic	Meyer et al. 1992
15Ow100	Hawk View	Rockshelter	Early and Late Archaic	Boedy and Faulkner 2001
15Pel0	none	Open Habitation	Early-Late Archaic	Gatus and Sanders 1978
15Pel3	none	Open Habitation	Early-Late Archaic	Gatus and Sanders 1978
15Pe33	none	Open Habitation	Archaic	Gatus and Sanders 1978
15Pe50	Enoch Fork	Rockshelter	Late Archaic	Bush 1988

Early Archaic material from two Perry County sites (15Pel0 and 15Pe23) included Kirk Serrated and LeCroy bifurcate base projectile points. Middle Archaic diagnostics recovered from three sites (15Pel0, 15Pe23, and 15Pe33) included Big Sandy Side Notched, Stanly, and Morrow Mountain projectile points. Late Archaic projectile points from the Perry County area included Merom-Trimble, Cogswell, and other straight or expanding stem types (Gatus and Sanders 1978).

Archaeological investigations conducted on U.S. Forest Service land in Clay and Perry counties also have yielded considerable evidence of Early Archaic utilization of rockshelters. Excavations at Site 15Cy24 produced a Kirk Corner Notched, a Kanawha Stemmed, and a St. Albans Side Notched projectile point from an Archaic level. Collectively, these three point types suggest an occupation dating to between 7,000 and 6,000 B.C. A Brewerton Corner Notched point also was found in this level, but in an area that had been disturbed by rodent activity (Bush 1988:48-56).

Test excavations conducted at the Enoch Fork Shelter (15Pe50), located in Perry County, produced transitional Paleoindian and Archaic materials. A projectile point resembling a Wheeler Excurvate point, associated with transitional Paleoindian occupations in Alabama, was found in Zone IV. The point occurred below Early Archaic material and above a carbon sample that yielded a date of 9,010±240 B.C. (Table 4.37). The upper portion of Zone IV produced three Kirk Stemmed projectile points and a point resembling a Kanawha Stemmed point (Bush 1988:61).

In 1996, Evans (1996) examined raw material procurement strategies practiced by the Enoch Fork Shelter's Paleoindian through Late Prehistoric inhabitants. He discovered that the shelter's earlier inhabitants used both local and nonlocal high quality chert to make expediently produced and formal tools. In contrast, later groups relied on locally available, low quality chert.

Information on Archaic hunter-gatherers in the Interior Mountains Section also comes from upland open air sites. Myers et al.'s (1992) investigations at three upland lithic scatters in Breathitt County identified several Archaic components. At Site 15Ja248, investigators discovered a deep, well-preserved cultural deposit containing a high density of flaked stone tools and debitage. Diagnostic bifaces dated to the Early and Late Archaic subdivisions. Debitage associated with the later stages of biface production dominated the lithic assemblage. Accompanying tools included projectile points, end scrapers, unhafted bifaces, cores, and informal flake tools. High density areas of lithic material may indicate activity areas (Meyers et al. 1992). A very similar site (15Ja239) yielded both Late Archaic and Late Woodland artifacts. Like Site 15Ja248, this site had deep, intact stratigraphy that contained a high density of late-stage biface production debris (Meyers et al. 1992).

Excavations at the Little Spring Creek site (15Cy166), an open air site situated on a saddle ridge in the Daniel Boone National Forest, yielded cultural materials dating from the Early to Middle Archaic, as well as older and younger artifacts (Boedy and Faulkner 2001) (see Chapter 5). Lithic debitage seemed to be associated with the maintenance and rejuvenation of curated tools. The abundance of non-local cherts in the assemblage supports this interpretation.

The Hawk View Shelter (15Ow100), a bottomland rockshelter located in Owsley County, contained well preserved cultural deposits that yielded Early and Late Archaic artifacts, along with those of subsequent Woodland occupations (Boedy and Faulkner 2001) (see Chapter 5). Early site occupants relied on both local and nonlocal cherts, while later Archaic and Woodland inhabitants primarily exploited lower quality local cherts. Flaked stone technology emphasized late stage biface production, along with the manufacture of expediently produced tools (Boedy and Faulkner 2001).

Archaeological investigations at Site 15Br200 in Breathitt County provide information on Late Archaic hunter-gatherer activity along the North Fork of the Kentucky River (Richmond 2001). The site, located on a flat alluvial terrace, contained a Late Archaic cultural horizon buried below an historically deposited layer of alluvium. The buried Late Archaic stratum contained abundant lithic material, tools, charcoal, and fire-cracked rock. A single Merom Cluster projectile point places this component in the Late or Terminal Archaic. Site investigators suggested that the buried horizon represented a series of short-term occupations where core reduction and limited flaked stone tool manufacturing took place.

SITE DENSITY AND DISTRIBUTION PATTERNS

The Archaic sites that have been recorded in the Upper Kentucky/Licking Management Area represent a little more than 7 percent of all recorded Archaic sites in the state. Forty-six percent of these sites occur in the Gorge Section; 54 percent are in the Interior Mountains Section. Fifty-nine percent of the management area's Archaic sites have been classified as open habitations without mounds (Table 4.34). Rockshelters comprise 40 percent of the total. The Gorge Section contains a somewhat higher percentage of rockshelters (50 percent) than does the Interior Mountains Section (31 percent). One open habitation site with a mound, one cave site, one stone mound site, and one specialized activity site also have been recorded in this management area (Table 4.34).

In contrast to the high percentage of Archaic sites located on the floodplains in some management areas (Purchase, Salt River, and Big Sandy), only 14 percent of the Archaic sites in the Upper Kentucky/Licking Management Area occur on that topographic feature (Table 4.5). Only 19 percent are located on level terrain of any type (Table 4.6). Fifty-five percent of the sites are situated on either slopes or ridges, reflecting the general character of the terrain in this part of southeastern Kentucky.

BIG SANDY (MANAGEMENT AREA 7)

LOWER BIG SANDY SECTION

The Lower Big Sandy Section has 144 recorded Archaic sites (Table 4.39). Much of what was initially known about Archaic period adaptations in this extreme eastern part of the state was based on excavations conducted in rockshelters (Fitzgibbons et al. 1977; Vento et al. 1980). In the past 20 years, however, the excavation of several open habitation sites has provided important complementary data (Ahler 1988; Kerr et al. 1989; Kerr et al. 2004; Ledbetter et al. 1991). Important Archaic sites identified in this section are listed in Table 4.40.

Table 4.39. Big Sandy: Site Type by Management Area Section.

Site Type	Lower	Upper	Total	Percent
Open Habitation w/o Mound(s)	98	26	124	86.1
Rockshelter	16	0	16	11.1
Quarry	1	0	1	0.7
Workshop	1	0	1	0.7
Specialized Activity Site	0	1	1	0.7
Open Habitation w/ Mound(s)	1	0	1	0.7
Total	117	27	144	100.0
Percent	81.3	18.8	100.0	

Table 4.40. Important Sites: Lower Big Sandy Section.

Site No.	Site Name	Site Type	Affiliation	References
15Cr61	none	Open Habitation	Middle-Late Archaic	Janzen 1989; Stallings et al. 1995
15Cr68	none	Open Habitation	Late Archaic	Janzen 1989
15Cr73	Grayson	Open Habitation	Late Archaic	Ledbetter et al. 1991
15Gp20	Shepard	Rockshelter	Archaic	Milner and Smith 1986
15Jol9	Sparks	Rockshelter	Late Archaic	Fitzgibbons et al. 1977
15Jo23a	Dameron	Rockshelter	Late Archaic	Vento et al. 1980
15Gp14	Hansen	Open Habitation	Late Archaic	Ahler 1988
15La183	Hart	Open Habitation	Early-Late Archaic	Kerr et al. 2004
15La222	Graham	Open Habitation	Middle-Late Archaic	Niquette 1989

Early Archaic components are recognized by the presence of Kirk, LeCroy, MacCorkle, St. Albans, and Charleston projectile points (Figure 4.1). Broyles (1971) firmly established the temporal placement of these types with her work at the nearby St. Albans site. In their overview of eastern Kentucky prehistory, Niquette and Henderson (1984) reported that Early Archaic Kirk or Kirk-like projectile points occur in surface collections from many sites in this section. Bifurcate base projectile points also have been recovered from some sites (Niquette and Henderson 1984:35). Among the other types of Early Archaic projectile points sometimes found in eastern Kentucky are Lost Lake, St. Charles, Thebes, Pine Tree, and Decatur (Justice 1987:Maps 19-21, 32, and 33). In some cases, considerable morphological similarity exists among specimens assigned to the aforementioned types.

An archaeological survey of Greenup County conducted as part of the Kentucky Heritage Council's statewide survey focused on the Ohio River floodplain. Most of the sites that were assigned a cultural affiliation were classified as Archaic, the majority being Early Archaic (Maynard and Gatus 1979, reported in Henderson 1985).

A survey of the shoreline surrounding Grayson Lake, located in Carter and Elliot counties, covered 142 ha and located 63 sites (Garst 2002). Most of the sites were heavily impacted by shoreline erosion. Only one Early Archaic component was identified during the survey, indicated by a bifurcate base point from Site 15El54, suggesting that this part of the Lower Big Sandy drainage was not intensively utilized by early Holocene hunter-gatherers.

Additional information on Early Archaic hunter-gatherers came from investigations at the Hart site (15La183) in Lawrence County (Kerr et al. 2004). Hart site components ranged in age from Early Archaic to Late Prehistoric, but research focused on the site's buried Early Archaic occupation(s). Cultural materials associated with the Early Archaic component included lenses of rock, charcoal, lithic debitage and tools, and features with associated scatters of rock and charcoal.

Researchers identified Early Archaic cultural deposits in two parts of the Hart site. The southern portion was excavated, resulting in the identification of 12 Early Archaic features - seven pit hearths, two surface hearths, one rock concentration, one charcoal concentration, and one shallow basin. Radiocarbon dates associated with these features ranged from 6,690 to 5,770 B.C. (Table 4.41). Based on the absence of overlapping features, low tool diversity, and little evidence for secondary refuse disposal, investigators concluded that Early Archaic people occupied the site for a short period during their annual cycle of movement. Evidence of the conservation of high-quality chert supports the argument for a high level of group mobility (Kerr et al. 2004).

The Middle Archaic subdivision is poorly documented in the Lower Big Sandy Section, as it is for most of eastern Kentucky. What is known about Middle Archaic adaptation is based on the distribution of diagnostic projectile points such as the Big Sandy, Morrow Mountain, and Stanly types. Excavations at the Graham site (15La222) in Lawrence County exposed a minor Middle Archaic occupation represented by a few projectile points (Kerr et al. 1989). A small Middle Archaic component also was identified at Site 15Cr61, a lowland site situated along the AA Highway corridor in Carter County (Janzen 1989).

Late Archaic components in this section are more numerous, or at least more visible, than Early and Middle Archaic ones (Table 4.42). Survey of the Grayson Lake shoreline (Garst 2002) identified several Late Archaic sites based on the presence of Matanzas, Late Archaic Stemmed, and Terminal Archaic Barbed points. Researchers attributed the increased evidence for Late Archaic hunter-gatherer activity in this area to a greater use of aquatic resources that supported a shift to a broad-spectrum diet. The relatively low density of lithic material found at these sites suggests that it is unlikely that this area supported large permanent settlements (Garst 2002).

Table 4.41. Chronometric Dates: Big Sandy Management Area.

Lab. No.	Age (B.P.)	Uncalibrated Date	References
<u>Lower Big Sandy</u>			
Site 15Cr61 (see Chapter 5:Table 5.37)			
Beta-64038	5180+100	3230 BC	Stallings et al. 1995:Table 11
Beta-28420	4870+340	2920 BC	Janzen 1989:46
Beta-64037	3820+70	1870 BC	Stallings et al. 1995:Table 11
Beta-64037	3720+70	1770 BC	Stallings et al. 1995:Table 11
Site 15Cr 68			
Beta 28421	3640+130	1690 BC	Janzen 1989:87
Grayson (15Cr73) (see Chapter 5:Table 5.37)			
UGA-6073D	4615+80	2665 BC	Ledbetter et al. 1991:Table 8-12
UGA-6055D	3561+86	1611 BC	Ledbetter et al. 1991:Table 8-12
UGA -6131D	3410+142	1460 BC	Ledbetter et al. 1991:Table 8-12
UGA-6077	3168+59	1218 BC	Ledbetter et al. 1991:Table 8-12
UGA-6072D	3062+160	1112 BC	Ledbetter et al. 1991:Table 8-12
UGA-6076D	3052+52	1102 BC	Ledbetter et al. 1991:Table 8-12
UGA-6123	3036+58	1086 BC	Ledbetter et al. 1991:Table 8-12
Hansen (15Gp14) (see Chapter 5:Table 5.37)			
Beta-14574	4010+90	2060 BC	Ahler 1988:Table 7.1
Beta-15083	3880+90	1930 BC	Ahler 1988:Table 7.1
Sparks Rockshelter (15Jol9)*			
SI-3168	3185+60	1235 BC	Fitzgibbon et al. 1977:23
SI-3170	3680+85	1730 B.C	Fitzgibbon et al. 1977:23
SI-3166	4290+210	2340 BC	Fitzgibbon et al. 1977:21-22
Dameron Rockshelter (15Jo23a)*			
SI-3687	3020+90	1070 BC	Vento et al. 1979:31, 39, 251-253
SI-3679	4020+80	2070 BC	Vento et al. 1979:30, 39, 251-253
SI-3683	4305+65	2355 BC	Vento et al. 1979:39, 251-253
Hart (15La183)			
Beta 191423	8640+90	6690 BC	Kerr et al. 2004:Table 5.2
Beta 191424	8090+170	6140 BC	Kerr et al. 2004:Table 5.2
Beta 153285	7720+160	5770 BC	Kerr et al. 2004:Table 5.2
<u>Upper Big Sandy</u>			
Slone Site (15Pi11)*			
I-1782	3840+120	1890 BC	
Thacker Site (15Pil6)*			
Y-1804	5270+80	3320 BC	
Martin Justice (15Pi92) (see Chapter 5:Table 5.37)			
Beta-79600	5400+110	3450 BC	Kerr et al. 1995
Beta-79596	4190+80	2240 BC	Kerr et al. 1995
Beta-79601	4090+90	2140 BC	Kerr et al. 1995
*Dates prior to 1981 obtained from Turnbow (1981).			

Archaeological investigations conducted at a number of Lower Big Sandy Late Archaic sites have resulted in the identification of several Late Archaic phases and site types. Archaeological investigations conducted prior to construction of the Paintsville Reservoir in Johnson and Morgan counties revealed Late Archaic occupations in several rockshelters. Excavations at the Dameron Rockshelter (15Jo23a) documented the presence of a largely Late Archaic occupation that contained a midden or refuse area and several fire pits (Figure 4.6). Radiocarbon determinations of 2,355+65 B.C., 2,070+80 B.C., and l,070±90 B.C. (Table 4.41) were associated with three Late Archaic features. This shelter appears to have been used for a variety of hunting, collecting, and food processing activities throughout the Late Archaic (Vento et al. 1980:186-187; see also chapters 5 and 7).

Table 4.42. Big Sandy Cultural Components by Management Area Section.

Component	Lower Big Sandy Total	Lower Big Sandy Percent	Upper Big Sandy Total	Upper Big Sandy Percent	Total	Percent
Archaic	52	36.9	13	32.5	65	35.9
Early Archaic	29	20.6	11	27.5	40	22.1
Middle Archaic	10	7.1	7	17.5	17	9.4
Late Archaic	50	35.5	9	22.5	59	32.6
Total	141	100.0	40	100.0	181	100.0
Percent		77.9		22.1	100.0	

The Sparks Rockshelter (15Jol9) (Figure 4.6), also located in the Paintsville Reservoir, contained a Late Archaic-Early Woodland occupation dating from 2,340±210 B.C. to 860±70 B.C., with the most intensive occupation occurring from 1,700 to 800 B.C. Associated artifacts included side notched and corner notched projectile points, a steatite sherd, and a sandstone tempered sherd (Fitzgibbons et al. 1977, cited in Niquette and Henderson 1984:40).

Archaeological investigations conducted at the Grayson site (15Cr73), situated on a broad terrace adjacent to the Little Sandy River in Carter County, encountered a significant Late Archaic occupation (Ledbetter et al. 1991). Diagnostic Late/Terminal Archaic artifacts, included Matanzas Side-Notched, Brewerton Side and Corner Notched, Brewerton Eared Triangular, Merom-Trimble, Cogswell Contracting Stemmed, Wade, Little Bear Creek, and Straight Stemmed projectile points (Ledbetter and O'Steen 1992; Ledbetter et al. 1991; see also Chapter 5).

The Grayson site excavations documented the presence of two midden areas that contained nearly 300 pit features, 125 of which were excavated. At least 35 features were associated with the site's Late or Terminal Archaic occupation. Artifacts and features were concentrated on several knolls that rose above the lower terrace surface. Excavation of the two highest knolls revealed four circular clusters of postmolds and associated pits. At least three of the clusters were interpreted as Late Archaic or Terminal Archaic structures. Flaked stone tool production focused on the use of local Newman chert. Technological attributes of the flaked stone tool assemblage suggest that Late Archaic Grayson site inhabitants were involved in manufacturing and distributing lithic materials within a large settlement system. The site appears to have served as a seasonal base camp where inhabitants constructed several structures during the Late Archaic and Terminal Archaic. Associated radiocarbon dates range from 2,665 to 1,086 B.C. (Ledbetter et al. 1991; Ledbetter and O'Steen 1992; see also Chapter 5:Table 5.37).

Excavations at the Graham site (15La222) revealed a substantial Late Archaic occupation consisting of several hearths and lithic hunting implements (Kerr et al. 1989). Project archaeologists interpreted the Late Archaic component as representing a repeatedly occupied transient hunting camp. Nut collecting also appeared to be an important subsistence task.

Archaeological investigations conducted at the Hansen site (15Gp14) on the Ohio River floodplain in Greenup County revealed a deeply buried Late Archaic component dating to ca. 2,000 B.C. (Ahler 1988). Diagnostic Late Archaic artifacts included Rowlette, Cave Run, and Merom projectile points. Several thick ovate/triangular specimens from this stratum are probably also Late Archaic (Ahler and Henderson 1988:247). Analysis of the lithic assemblage indicated that the site's Late Archaic inhabitants conducted a limited range of activities associated with short-term residential occupations. Most activities probably occurred from the late spring through early fall when the river level was low.

Davis (1998) used projectile points from the Lower Big Sandy (Johnson and Lawrence counties) and Gorge (Morgan County) sections to examine diachronic trends (Paleoindian to Late Prehistoric) in chert use and mobility. Part of his study included information on Archaic hunter-gatherer strategies. Davis's results suggest that mobility may have had a greater effect on the composition of lithic assemblages during the Archaic period than during Woodland or Late Prehistoric periods. However, even for the Archaic period, the effect of mobility is questionable. Davis (1998:162) suggests that mobility had less of an effect on the acquisition of nonlocal cherts than previously thought, and that other variables, such as the environment, subsistence, technology, trade, and social organization, had a greater influence on the resource composition of prehistoric lithic assemblages.

UPPER BIG SANDY SECTION

Although archaeologists have recorded only 27 Archaic sites in the Upper Big Sandy Section (Table 4.39), a considerable amount is known about this area. Important Archaic sites identified in this section include those listed in Table 4.43.

Table 4.43. Important Sites: Upper Big Sandy Section.

Site No.	Site Name	Site Type	Affiliation	References
15Fdl7	none	Open Habitation	Archaic	Sanders and Gatus 1977
15Fdl8	none	Open Habitation	Archaic	Sanders and Gatus 1977
15Fd20	none	Open Habitation	Archaic	Sanders and Gatus 1977
15Fd46	none	Open Habitation	Early Archaic	Rossen 1985
15Fd47	none	Open Habitation	Early Archaic	Edging et al. 1988; Rossen 1985
15Pill	Slone	Open Habitation	Late Archaic	Dunnell 1972
15Pi92	Martin Justice	Open Habitation	Middle to Late Archaic	Kerr et al. 1995

An archaeological survey of Floyd County, conducted in 1977 as part of the Kentucky Heritage Council's state-wide survey, located six sites (15Fd2, 15Fdl4, 15Fdl7, 15Fdl8, 15Fd20, and 15Fd83) with Archaic components. Four of the sites were located on the floodplain, one was on a terrace, and one was on a hilltop. All six were described as open sites. Additional Archaic artifacts were documented in private collections from the general area of Middle Creek and from near the mouth of Goose Creek (Sanders and Gatus 1977:103).

Early Archaic components were identified by the presence of Kanawha Stemmed, Kessel Side Notched, St. Albans Side Notched, and Kirk-like projectile points; Big Sandy Side Notched points identified Middle Archaic components. As in other parts of Kentucky, Late Archaic components in this section contain a variety of relatively large straight and expanding stem types, as well as smaller Merom-Trimble types (Sanders and Gatus 1977).

Archaeologists have long recognized Early Archaic occupations along eastern Kentucky's floodplains and bluff lines, but until the 1980s, Early Archaic sites atop mountain ridges had gone unreported. In the mid-1980s, an archaeological survey for a proposed coal mine in Floyd County identified two ridgetop sites (15Fd46 and 15Fd47) (Figure 4.2) that yielded Kirk, LeCroy, and Pine Tree projectile points. Unfortunately, most of this material was in the possession of the artifact collectors who had looted these sites, or it was recovered from their backdirt piles. The presence of middens and features, and the absence of more recent cultural material, suggest a relatively intensive Early Archaic occupation in this remote area (Rossen 1985:14).

Subsequent work at Site 15Fd47, now known as the Pine Fork site (Edging et al. 1988) revealed rock concentrations, rock-filled pits, and flaked stone tools and debitage indicative of a short-term Early to Middle Archaic occupation. Primary activities included tool production and maintenance, and plant and animal resource processing. Site investigators proposed that the Pine Fork site served as a logistical base camp for populations living at lower elevations. The existence of the site underscores the importance of the eastern Kentucky mountains in early to middle Holocene hunter-gatherer settlement-subsistence strategies (Edging et al. 1988).

The site distribution observed in Floyd County and reported for other parts of eastern Kentucky resembles that described for adjacent portions of West Virginia (Wilkins 1977). Surveys of mountaintops in Boone County, West Virginia, located several archaeological sites containing high percentages of Early Archaic projectile points. Hunter-gatherer exploitation of mountaintop habitats may be associated with the establishment of Early Holocene deciduous forests. Occupation of mountaintop sites probably occurred during the fall, corresponding to the season of maximum food availability (Wilkins 1977:3-8).

There is little evidence for Middle Archaic activity in the Upper Big Sandy Section. One of the few exceptions comes from the Martin Justice site (15Pi92) in Pike County (Kerr et al. 1995). Temporally diagnostic projectile points and multiple radiocarbon dates indicate that the site was occupied from the Middle Archaic through the Late Woodland subdivisions. Three radiocarbon dates associated with the Archaic occupation range from 3,450 to 2,140 B.C. (Table 4.41).

Artifacts from the Martin Justice site suggest that it served as a base camp intermittently occupied for short periods during the Middle and Late Archaic, with activities focusing on daily food procurement and processing rather than on the processing and storage. Flaked stone tool manufacturing activities seem to have centered on late-stage biface reduction and tool rejuvenation.

Upper Big Sandy Section Late Archaic sites are identified by the presence of a variety of stemmed projectile points and knives. Unlike the earlier part of the Archaic period when chert was the preferred raw material for manufacturing these implements, Late Archaic knappers in this section used several different raw materials including silicified shales, quartzite, siderite, and ferruginous sandstone (Ison and Pollack 1982). The increased importance of siderite during the Late Archaic in some parts of eastern Kentucky (Dunnell 1972) has not been noted in the extreme southeastern part of the state (Southeastern Mountain Section) (Gatus 1981:91).

A Late Archaic tradition consisting of three phases, Slone, Thacker, and Sim's Creek, was defined by Dunnell (1972) for the Fishtrap Reservoir area, located along the Levisa Fork of the Big Sandy River (Figure 4.6). These phases share similar settlement-subsistence patterns, characterized by seasonally occupied floodplain settlements from which hunter-gatherers exploited a wide range of animals and plants. Dunnell's (1972) approach is somewhat confusing, since pottery was associated with the two later phases. These would be assigned to the Woodland period in more traditional cultural classifications (see Chapter 5).

The pre-ceramic Slone phase, the earliest of Dunnell's phases, is generally considered to be Late Archaic. Slone phase occupations were identified by the presence of five-holed pestles, chipped stone axes, bifacially asymmetrical knives, a variety of stemmed projectile points, and a preference for using siderite, or ironstone, for making flaked stone tools. The preference for siderite is the only attribute characterizing all Slone phase occupations. The lack of substantial structures and assemblage differences suggested to Dunnell (1972:27-32) that the Slone phase components represented seasonally occupied special activity sites.

Slone phase subsistence was closely tied to hunting and collecting, with nut collecting and processing also representing important activities. Nuts were prepared using pestles, manos, and nutstones, then cooked in large sandstone-filled earth ovens (Dunnell 1972:27-32). A radiocarbon determination of l,890±120 B.C. (Table 4.41) was obtained from the Slone phase occupation at Site 15Pi11 (Dunnell 1972:92).

SITE DENSITY AND DISTRIBUTION PATTERNS

The 144 Archaic period sites recorded in the Big Sandy Management Area (Table 4. 39) represent approximately 4 percent of the recorded Archaic period sites in Kentucky. Approximately 81 percent of these are located in the Lower Big Sandy Section; the remaining 19 percent being in the two counties comprising the Upper Big Sandy Section. Slightly more than 86 percent of the management area's Archaic sites are classified as open habitation sites without mounds, and 11 percent are rockshelters (Table 4.39). Table 4.42 shows the distribution of Upper Big Sandy cultural components by Archaic subdivision.

Seventy-four percent of the recorded Big Sandy sites are found on either floodplains or terraces (Table 4.5). The rest are associated with hillsides or dissected and undissected uplands. Fifty-nine percent of the sites are located on level terrain, reflecting the high percentage of floodplain sites in this management area (Table 4.6). The remaining sites are situated on knolls (5 percent), bluff crests (1 percent), bluff bases (10 percent), ridges (7 percent), and slopes (10 percent). Gardner (1978) has discussed the distribution of Archaic sites in adjacent parts of Virginia.

FUTURE RESEARCH GOALS AND OBJECTIVES

GENERAL DATA NEEDS

Kentucky's 1990 State Historic Preservation Comprehensive Plan (Jefferies 1990; Pollack 1990), contained an archaeological overview or context for the Archaic period that was statewide in scope. The contents of the overview reflected the extent and character of Archaic period investigations that archaeologists had conducted in Kentucky up to that time. Information presented in the overview was then used to define 10 topical research issues or domains that related to informational needs that, if addressed, should provide future archaeologists with an improved understanding of Archaic period adaptations in Kentucky. These research domains consisted of: 1) classification and culture history; 2) environment; 3) material culture and technology; 4) subsistence; 5) settlement patterns; 6) exchange; 7) social organization and paleodemography; 8) biological anthropology; 9) mortuary practices; and 10) cave archaeology (Jefferies 1990:220-228; Pollack 1990:16-17).

In the intervening 17 years since the first statewide plan was published, the intensity of archaeological investigations across Kentucky has dramatically increased, resulting in the identification of more than 1,600 previously undocumented Archaic sites. Many of these sites contain multiple components dating to different Archaic subdivisions. In addition, some parts of the state for which little information on Archaic adaptations existed in 1990 are now much better known, helping archaeologists understand the diversity of hunter-gatherer societies that were once scattered across the Kentucky landscape. This greatly expanded Archaic database has allowed archaeologists to address some of the research issues first identified in 1990, but for many topics more data are still needed. In addition, continued work on Archaic archaeological sites and collections has resulted in the identification of new research questions. The following is a discussion of Archaic period topical research issues that reflects data collected since 1990.

Nearly 100 years of archaeological investigations have clearly demonstrated that Early to Late Archaic components are present in all of Kentucky's management areas. Field investigations conducted at some of these sites have produced significant information about Archaic hunter-gatherer material culture, subsistence practices, settlement organization and landscape use, social organization, and economics, as well as about the changing environment in which these groups lived.

Most of what we know about Archaic hunter-gatherers applies to those groups present during the late Middle and Late Holocene (late Middle and Late Archaic). In contrast, we know much less about the Early and early Middle Holocene (Early to early Middle Archaic) groups that preceded them. Much of the disparity in data reflects a shift in hunter-gatherer mobility strategies. Early hunter-gatherer groups tended to be highly mobile and did not focus their activities on any particular part of the landscape. As a consequence, their material remains are few and widely scattered. In contrast, many later hunter-gatherer groups tended to be less mobile and focused their activities on more circumscribed parts of the landscape, resulting in the accumulation of highly visible sites and a relatively well-preserved material culture. Nevertheless, exceptions did occur, particularly in the dry rockshelters of eastern Kentucky where archaeologists have found the well-preserved remains of Early and Middle Holocene hunter-gatherers, as well as those of later groups.

Despite many advances in Archaic hunter-gatherer research, much remains to be learned. Although large multicomponent plowzone sites can yield valuable information on patterns of Archaic land and resource use, they usually do not provide much insight on other, more specific aspects of Archaic hunter-gatherer adaptation. To do this, archaeologists need to identify places on the landscape where well-preserved subplowzone cultural deposits are most likely to be found. This requires a thorough understanding of Archaic settlement practices, as well as knowledge of the geological, fluvial, and other natural processes that buried or otherwise preserved intact, unmixed cultural strata. The reconstruction of Early, Middle, and Late Holocene landscapes using these data will help to identify places that are most likely to yield the kinds of data needed to investigate the previously defined research domains.

Identifying and investigating floodplain settings that have a high probability for containing stratigraphically distinct Archaic cultural deposits should be a high priority for Kentucky researchers. The work of Collins (1979) and Nance (1986a, 1987, 2001) in Kentucky, and Stafford (2005) in southern Indiana, has clearly demonstrated the potential of buried floodplain sites for clarifying many aspects of Archaic hunter-gatherer culture change and variability. This work has been particularly important for identifying temporally diagnostic artifacts for the elusive early Middle Archaic portion of Kentucky's archaeological record (Stafford 2005). Publication of research findings stemming from the Shell Mound Archaeological Project (Marquardt and Watson 2005) has helped to clarify different aspects of Late Archaic hunter-gatherer adaptation along the Green River. Although not well-documented in Kentucky, research in nearby states has demonstrated the potential for well-preserved Archaic deposits to be situated along valley margins where colluvial processes have sealed and preserved earlier Holocene occupation surfaces (Brown and Vierra 1983; Cook 1976).

Clearly, archaeological sites in floodplain and valley edge settings have a high potential for containing intact Archaic cultural deposits, however, Kentucky's Holocene hunter-gatherers also occupied many other parts of the landscape. Obtaining a balanced view of these societies means that archaeologists also need to document their activities in upland and other non-fluvial settings. Rockshelters found in the more rugged parts of Kentucky, particularly the Upper Kentucky/Licking and Upper Cumberland management areas, have yielded important information on Archaic hunter-gatherer settlement and subsistence (Cowan et al. 1981; Dorwin et al. 1970; Ison 1988; Gremillion 1996b; Schlarb and Pollack 2002). In particular, dry rockshelters have the potential for containing many kinds of cultural materials, like fabrics, basketry, and wooden objects, not commonly preserved at open-air sites. While most of the investigated rockshelters are in the eastern part of Kentucky, researchers have documented rockshelters containing Archaic materials in all seven management areas (e.g., Olmanson 2003).

Small, single component upland Archaic sites also represent potentially important sources of information. For many years, archaeologists largely ignored these kinds of sites because of their limited artifact contents and lack of midden. In contrast, researchers are beginning to explore the potential of these small sites, especially when they are considered as part of a broad, regionally-focused settlement study (Jefferies et al. 2005; Stafford 1994;

Thompson 2002). Small sites have the potential to inform us about specific tasks conducted in the uplands that are not represented in other environmental settings or are masked by materials from subsequent activities at larger, multicomponent sites. Although agricultural activities have disturbed most of these sites, intact subplowzone features may still be present. Data recovery strategies should focus on piece-plotting artifacts and removing plow disturbed deposits to locate features.

Cultural and environmental data collected from sites like those discussed above can be used to study a variety of research questions. Most of what is known about Early Holocene hunter-gatherers comes from the study of flaked stone artifacts and their distribution across the landscape. The analysis of Early Holocene lithic technologies can lead to insights into hunter-gatherer mobility strategies, the relationships between site settings and hunter-gatherer activities, and tool manufacturing and maintenance strategies. In order to refine our models, we need better information on the kinds and sources of lithic materials used to make Early Archaic implements. Analytical techniques that can more accurately identify the sources of lithic materials used by Kentucky's hunter-gatherers need to be identified or developed. Similar questions about lithic technology also should be addressed for Middle and Late Archaic hunter-gatherers.

Adaptive strategies used by Middle Archaic hunter-gatherers are poorly understood across the state. This is particularly true for the first half of the Middle Archaic subdivision, largely because archaeologists have been unable to identify components dating to that time. Investigation of stratified floodplain sites in southern Indiana have identified several projectile point types associated with early Middle Archaic radiocarbon dates (Stafford 2005). Most of these bifaces are very similar to types usually associated with the Early or Late Archaic subdivision. Therefore, when found in mixed surface contexts, most would be given an earlier or later affiliation, resulting in an under enumeration of early Middle Archaic components.

Emphasis should be placed on identifying parts of the landscape likely to have buried Middle Holocene occupation surfaces. These efforts have been successful in some parts of Kentucky as exemplified by Nance's research at the Morrisroe site in western Kentucky (Nance 1986a).

More research needs to be conducted on changes in hunter-gatherer settlement strategies during the Archaic period. The number, type, and distribution of Early, Middle, and Late Archaic sites suggests that hunter-gatherer populations and their associated settlement-subsistence strategies significantly shifted during this roughly 7,000 year-long portion of prehistory (Jefferies et al. 2005). Archaeologists have attributed these shifts to cultural (increased population and smaller, more circumscribed hunting territories) and environmental (the impacts of the Hypsithermal interval) factors. These changes can be effectively studied by tracking long-term variation in site frequency, environmental setting, and associated cultural materials over broad portions of the Kentucky landscape. Of particular interest is the transition from a highly mobile way of life to one characterized by decreased mobility and the establishment of smaller home territories, greater social circumscription, increased cultural complexity, and the appearance of intensively occupied sites observed for some late Middle/early Late Archaic hunter-gatherers.

As Archaic period research progresses in Kentucky, it is recommended that greater emphasis be placed on identifying spatial and temporal variability in Archaic subsistence practices, particularly as related to the manipulation and eventual domestication of native plants. Why do hunter-gatherers who lived in some parts of Kentucky appear to have more actively pursued low level plant food production as a subsistence strategy than contemporary groups that lived in other parts of the Commonwealth? What effect did the adoption of horticulture have on other aspects of Archaic social and political organization?

Changes in hunter-gatherer social organization can be addressed through the study of mortuary practices, and changes in community structure and organization. Studies conducted elsewhere in the midcontinent (Buikstra and Charles 1999; Lynch 1982) have examined factors, such as burial location, positioning, and the differential distribution of burial goods, particularly those made from nonlocal materials, as a way of measuring social, economic, and/or political differences among individuals interred on Archaic sites. Investigation of these topics will help to clarify the emergence of social differences/inequalities within hunter-gatherer societies. In other parts of eastern North America, archaeologists are investigating a variety of Middle to Late Archaic mounds, earthworks, and shell rings to help determine the level of social complexity and inequality of the hunter-gatherers who constructed them (Gibson 2004, Russo 2004, Saunders 2004; Thomas et al. 2004; Thompson 2006).

Researchers also need to identify the kinds of social and economic relationships that existed among local and distant hunter-gatherer groups. The expansion of intra- and intergroup social networks during the late Middle and early Late Holocene reflects changes in the kind, extent, and intensity of interaction among increasingly complex hunter-gatherer societies. While the exchange of "exotic" items and materials is the most obvious evidence for the existence of these networks, they undoubtedly served a variety of other social, economic, and political purposes as well. Researchers can study the extent and intensity of these important intergroup and interpersonal relationships by analyzing the spatial distributions of stylistically distinctive artifacts (atlatl weights, bone pins) and exotic materials (copper, marine shell, "exotic" cherts and other nonlocal lithic materials) that moved through these networks (Burdin 2004; Jefferies 1997; Marquardt and Watson 2005b). Analyses of Archaic skeletal populations and assessments of their health status will provide valuable insights into the nature of social change and the biological impacts of changes in subsistence strategies.

TOPICAL RESEARCH ISSUES

The general data requirements discussed in the preceding pages are divided into 10 specific research domains consisting of 1) classification and culture history; 2) environment; 3) material culture and technology; 4) subsistence; 5) settlement patterns; 6) exchange; 7) social organization and paleodemography; 8) biological anthropology; 9) mortuary practices; and 10) cave archaeology. The following section consists of a series of research objectives, topics, and questions for each of the research domains that Kentucky archaeologists need to address if we are to better understand the diachronic culture change and synchronic variability represented in Kentucky's rich archaeological record of Archaic hunter-gatherers.

1. Classification and Culture History

Cultural units, such as components, phases, and cultures, have traditionally served as the building blocks of archaeological research. Once archaeologists have established the temporal, spatial, and cultural relationships among these units, analyses of their cultural dimensions (i.e., technology, subsistence strategy, settlement organization, etc.) can yield new insights into synchronic and diachronic differences, and the factors responsible for that variability.

Archaeologists who study Kentucky's Archaic hunter-gatherers now have a rudimentary chronology based on several hundred radiocarbon dates. While this is a good start, the distribution of these dates in time and space is very uneven. For example, more than 60 radiocarbon dates exist for late Middle/Late Archaic midden sites in the Green River Management Area (Table 4.15). The number of dates reflects long-term research interests in the region's rich archaeological record and the intensity with which archaeologists have studied it. In contrast, many other management areas, like the Bluegrass (Table 4.31) and the Upper Cumberland (Table 4.26), have only a few dates from widely scattered sites for the same time span.

Because of the lack of absolute dates, archaeologists working in most parts of the state must rely on "temporally diagnostic" artifacts whose ages are defined by research done in other parts of the Ohio Valley or beyond. Establishing contemporaneity based on the presence of these artifacts is risky when the temporal range of the artifact style is based on a few radiocarbon dates and the artifact style spans thousands of years. If archaeologists are to develop a better understanding of hunter-gatherer culture change and variability across Kentucky, they must work to find sites containing cultural deposits that are suitable for dating (i.e., single component or multiple vertically stratified components) and pursue an active program of establishing a fine-grained chronology for the entire Archaic cultural sequence. Once this task is completed, researchers will be able to investigate the rates and directions of culture change among hunter-gatherer groups across the Commonwealth.

* Refine Archaic cultural units (components, phases, and cultures) both spatially and temporally. This is particularly important for poorly understood segments of the Archaic sequence, such as the late Early and early Middle Archaic.
* Develop and/or refine local and regional cultural-chronological sequences to facilitate the identification and investigation of intra- and interregional cultural variability.
* Refine the temporal and spatial parameters for diagnostic cultural attributes for each cultural unit.
* Define archaeological assemblages for each cultural unit.
* Document regional temporal variation in major aspects of hunter-gatherer culture change, such as the transition from a Paleoindian to an Archaic adaptive strategy; the

shift from residential to logistical mobility; and the adoption of plant cultivation/gardening.

* Investigate the temporal relationships between hunter-gatherer culture change and episodes of environmental change.

2. Environment

In order to understand the cultural dynamics of hunter-gatherer societies that once occupied Kentucky's Holocene landscapes, we must first document the range of environmental variability represented and the processes responsible for transforming that landscape during the past 12,000 years.

While the environment was certainly not the only factor that contributed to diachronic changes in Kentucky's Archaic hunter-gatherers, it undoubtedly had some impact. Of particular importance is understanding the extent of regional and local climate changes. Data from a variety of geological and archaeological contexts in the North American midcontinent, including Kentucky, have documented general trends in climatic variation during the Holocene (Delcourt and Delcourt 1981, 1985; King and Allen 1977; McMillan and Klippel 1981; Wilkins et al. 1991). Of particular importance for the study of Archaic hunter-gatherers is the impact of the Hypsithermal interval (Middle Holocene) on Middle Archaic settlement-subsistence strategies. Since Kentucky is a large state, particularly from east to west, it is likely that there was considerable spatial variation in the impact of the Hypsithermal, as well as other kinds of environmental change. Therefore, researchers need to collect multiple samples of paleoenvironmental data from all of the state's management areas if we are to understand the complexities of local environmental diversity and change. For example, investigation of paleoenvironmental data from Cliff Palace Pond in southeastern Kentucky indicates increased humidity and precipitation during the Middle Holocene whereas data from the western part of the state indicates drier conditions (Delcourt et al. 1998:274-275; Wilkins et al. 1991:236).

In most cases, significant, or sometimes even subtle, environmental modifications are reflected by changes in local and regional plant and animal communities. Since the mid-1980s, a great deal has been learned about Archaic subsistence strategies. The recovery and analysis of paleobotanical and paleofaunal specimens from other reliable early Late Holocene cultural and geological contexts will continue to contribute to an understanding of changes in the distribution and diversity of Kentucky's prehistoric plant and animal communities.

In addition to producing changes in plant and animal communities, environmental forces also shaped the very landscape on which Archaic hunter-gatherers lived. Understanding the geomorphological and fluvial processes that transformed these landscapes will help archaeologists identify exposed land surfaces that were occupied during different parts of the Archaic period. Some of these localities are now destroyed; others are deeply buried below alluvial or colluvial deposits. Development of new landscape models will help researchers identify environmental settings that have a high probability for containing intact Archaic cultural deposits. Landscape reconstructions conducted in southern Indiana have clearly demonstrated the potential for this kind of research with respect to locating Archaic sites (Stafford 1994, 2005).

* Identify regional environmental characteristics during the Early, Middle, and early Late Holocene.

* Identify and evaluate the relative importance of different environmental factors that influenced the placement of sites on the landscape, the kinds of activities conducted there, and how the relative importance of those factors changed through the Holocene.

* Reconstruct the paleoenvironmental setting for each of the Archaic cultural units and determine how those conditions varied across the Kentucky landscape.

* Assess the impact of the Hypsithermal interval on Middle Archaic hunter-gatherer adaptive strategies and how that impact varied across the state.

* Identify environmental contexts having a high potential for containing intact Archaic cultural deposits.

* Assess the relationships between climate change and the apparent reorganization of hunter-gatherer mobility strategies during the Middle Archaic.

3. Material Culture and Technology

The study of temporally, functionally, or stylistically diagnostic artifacts has the potential to provide researchers with important data relating to many different aspects of Archaic hunter-gatherer adaptation. This includes artifacts, such as projectile points, atlatl weights, grooved axes, and carved bone pins, that have been dated to specific parts of the Archaic cultural sequence. Analyses of these and other well-dated artifact types has yielded important data concerning hunter-gatherer technological organization, exchange and interaction, and social organization (Burdin 2004; Jefferies 2004; Sassaman 1996). Unfortunately, most Archaic components are represented only by artifacts from mixed surface deposits. Unless it is a single component site, much of the material culture inventory cannot be differentiated from that of previous or subsequent occupations. Identification and excavation of additional single component Archaic sites, either surface or buried, will enhance our ability to study other aspects of hunter-gatherer material culture. The careful dating of these components may reveal subtle technological or stylistic differences in material culture that are not evident in poorly defined assemblages.

Specific aspects of Archaic material culture and technology that need to be further investigated include raw material variability and source identification, qualitative and quantitative variation in artifact assemblages, edge-wear and edge-residue analyses to determine tool use, and, where possible, the investigation of the nonlithic components (textiles, wooden items, bone and antler objects, etc.) of hunter-gatherer technologies.

* Investigate the organization (resource acquisition, manufacture, maintenance, recycling, etc.) of Archaic flaked stone, ground stone, bone, antler, and shell technologies.

* Assess the temporal and spatial variability of these technologies across the state.

* Identify the complete material culture assemblage associated with each Archaic cultural unit.
* Document the appearance of ground stone technology in Kentucky and how its appearance correlates with changes in Archaic social and economic organization.
* Document the introduction of the atlatl and how it affected animal exploitation strategies.
* Document how the increasing dietary significance of plant foods during the Archaic is reflected in the organization of technology.
* Assess the relationships between tool morphology and function using macroscopic and microscopic techniques.
* Refine Early, Middle, and Late Archaic projectile point typologies, with particular emphasis on clarifying the types used by early Middle Archaic hunter-gatherers.
* Identify other diagnostic items of material culture for each cultural unit.
* Investigate the role of exchange and interaction in the acquisition of nonlocal resources.

4. Subsistence

The collection and study of well-preserved plant and animal remains from dated archaeological contexts will continue to yield new insights into the nature and rate of subsistence change during the Archaic. Subsistence data needs to be collected from across the state to investigate regional differences in the relative importance of different plant and animal resources. The study of subsistence remains also will yield important environmental data that archaeologists can use to reconstruct local and regional landscapes.

When first defined, the Archaic period was characterized by a subsistence strategy that focused on hunting and gathering/collecting naturally available plants and animals. Researchers now know that by the end of the Archaic, some Archaic groups had domesticated several local plants and were growing them in small gardens. Therefore, Kentucky archaeologists are presented with the rare opportunity to study the plant domestication process, a development that occurred in only a few places around the world. The continued study of plant remains collected from well-dated contexts can make a significant contribution toward a better understanding of this complex process in the eastern woodlands. When feasible, domesticated plants recovered from Archaic deposits should be directly dated.

* Determine the range of plant and animal resources exploited by Archaic hunter-gatherers.
* Document the subsistence base of each Archaic cultural unit.
* Determine if subsistence strategies vary across the Archaic landscape: Wetland vs. Upland foci.
* Identify techniques used to procure, process, and preserve/store subsistence resources.

* Document the increasing importance of plant cultivation during the Archaic. Determine if the adoption of plant food cultivation varied across the state. Document temporal differences for its first appearance.
* Determine the relationship between the emergence of plant cultivation and other kinds of culture change (social, political, and economic).
* Investigate the cultural and environmental factors that contributed to the increased dietary significance of shellfish during the late Middle and Late Archaic.
* Determine the extent to which the introduction of the atlatl and other new innovations (e.g., groundstone technologies) affected hunter-gatherer plant and animal procurement strategies.

5. Settlement Patterns

In the past 20 years there has been a dramatic increase in the number of recorded Archaic sites in Kentucky. In some cases, this new information filled in gaps where no settlement data previously existed. Where settlement data already existed, it has helped to refine our understanding of the synchronic and diachronic variability of Archaic landscape use.

Information on Archaic settlement can be used to address a number of specific research questions related to hunter-gatherer demography, mobility, subsistence, social organization, exchange, and interaction. Where sufficient settlement data exist, researchers can investigate how various cultural landscapes evolved across Kentucky from the Early through the early Late Holocene. For example, examination of site locations/activity areas with respect to various natural (caves, sinkholes, mountains, rivers, etc.) and cultural (mounds, earthworks, etc.) features may shed light on diachronic changes in how hunter-gatherers interpreted and used different portions of their physical environment.

Further defining the characteristics of Archaic site types and settlement systems will produce new insights concerning how hunter-gatherer groups adapted to Kentucky's diverse environment. Information about Early Holocene site types and distributions can be used to develop models concerning how highly mobile hunter-gatherer groups adapted to the post-Pleistocene landscape.

A variety of archaeological data suggests that significant changes in hunter-gatherer settlement took place during the late Middle and Late Holocene. Better information on the nature and distribution of early Middle Archaic sites would serve as a good background against which to examine late Middle Archaic settlement characteristics. To do this, we must develop better criteria for identifying early Middle Archaic components and formulate better models to predict their locations.

In some parts of Kentucky, the adoption of horticulture during the Late Archaic may have contributed to changes in preferred site locations. For example, evidence from eastern Kentucky suggests that some Archaic rockshelter occupations may have been paired with hillside localities that were used for gardens (Ison 1991).

The study of Archaic settlement systems requires a representative sample of sites reflecting the entire range of hunter-gatherer activities. This is best done in a regional setting where patterns of landscape use can be documented and diachronic changes can be explored. This means that sites of all sizes and from all utilized habitats need to be represented. In some cases, certain site categories may be under-enumerated in the site files, particularly sites situated on landscapes that are now buried by depositional processes.

* Document regional differences in site distributions and investigate the cultural and environmental variables contributing to those differences.
* Expose large portions of Archaic sites to define structures and determine community size and composition (Marquardt and Watson 2005:639).
* Conduct regional studies and assess the relationships among sites (Marquardt and Watson 2005:639).
* Document the relationships between changes in site distribution and changes in environment, subsistence, population, and social organization.
* Document the range of site variability represented in Early, Middle, and Late Archaic settlement strategies.
* Investigate intra-site artifact and feature distributions as a way of documenting Archaic activity patterns.
* Develop models that can be used to identify high probability settings for buried Archaic cultural deposits.

6. Exchange and Interaction

Distributional studies of artifacts made from nonlocal materials and items made in regionally distinctive styles can provide important insights about patterns of social interaction and exchange. Since the 1980s, archaeologists have borrowed or developed several models of Archaic procurement systems, including direct procurement, embedded procurement, and exchange between trading partners. Archaeological investigations at several Lower Ohio Valley Archaic sites suggest that some or all of these strategies operated concurrently.

The presence of nonlocal or “exotic” materials far from their sources reflects a complex series of social relationships that a group had with both local and distant groups. Analysis of the source of these materials can provide information on the extent and complexity of these social networks. Likewise, the spatial distribution of stylistically distinctive artifacts, like carved bone pins (Jefferies 1997) and groundstone atlatl weights (Burdin 2004), can be used to define the size and limits of social networks. Preliminary results of these kinds of studies suggest that Archaic hunter-gatherers participated in extensive social networks that spanned hundreds of miles across eastern North America. Relationships maintained among individuals and groups that participated in these networks provided a variety of social, economic, and political benefits including assistance in times of need, potential marriage partners, political allies, and ritually important objects. The archaeological correlates of these far-reaching networks are the presence of nonlocal materials, like marine shell and copper, far from their points of origin. Variation in the sources or kinds of items exchanged through these networks may indicate changes in the relationships among participating groups that formed the Holocene social landscape.

* Investigate ways to identify and measure the kinds and extent of interaction among Archaic hunter-gatherer groups.

* Define the size and boundaries of hunter-gatherer social networks. Determine if networks changed during the Archaic.

* Investigate the strategies used by Early, Middle, and Late Archaic groups to establish and maintain social connections with nearby and distant groups.

* Identify the sources of nonlocal materials that were exchanged through these networks.

* Document the extent to which Archaic groups in different parts of Kentucky participated in interregional exchange and interaction.

* Investigate the kind, intensity, and direction of social interaction between Kentucky Archaic groups and those that inhabited the surrounding regions.

* Document the differential distribution of nonlocal materials across Kentucky as a way of investigating interregional social connections.

7. Bioarchaeology

Bioarchaeology continues to be a very important source of information for the study of Archaic hunter-gatherers. The development of new analytical techniques makes it possible to examine chemical and physical properties of human bone. In particular, the development of new techniques to analyze mitochondrial DNA from archaeological specimens of human bone is providing new perspectives on the biological relationships that existed among Eastern Woodland Archaic hunter-gatherers.

Information about prehistoric diet, disease, trauma, mortality, and morbidity can be used to explore the impact of an evolving physical and cultural landscape on hunter-gatherer populations. Studies of the health status of more sedentary late Middle and Late Archaic groups and the affects of an increasingly horticulture-based diet on health status will be particularly informative.

* Determine the biological characteristics of Archaic hunter-gatherers that lived in each of the state's Archaic cultural units.

* Document the incidence of disease and trauma in Archaic skeletal collections.

* Assess the overall health status of Archaic populations.

* Document mortality rates for Archaic hunter-gatherers.

* Document change in diet using trace element, chemical, and other appropriate analytical techniques.

* Investigate the health status of Archaic populations with respect to changes in demography, settlement strategies, and social organization.

* Investigate the genetic relationships within and between Archaic groups using metric, nonmetric, and DNA analyses. Determine the biological relationships

between Archaic groups that lived in Kentucky and those that lived in the surrounding regions.

* Conduct a more thorough investigation of Archaic skeletal collections from non-shell midden contexts.

8. Mortuary Practices

Archaeological investigations conducted throughout the Lower Ohio Valley indicate that Archaic mortuary rituals were highly variable. In some places, Early Archaic groups cremated their dead and buried their remains away from areas of domestic activity (Cochran et al. 1998; Tomak 1979). Others buried the deceased in caves (DiBlasi 1981). By the late Middle and Late Archaic, some hunter-gatherer groups were interring their dead in the same domestic locations where the living conducted many of their daily activities (Bader and Granger 1989; Milner and Jefferies 1998).

The differential treatment of the dead has been successfully employed to investigate questions concerning Archaic social organization, status differentiation, and social inequality. Attributes such as age and sex, body positioning and orientation, placement of the burial on the landscape, and the number, kind, and source of associated grave goods have proven to be useful in these kinds of studies (Buikstra 1981; Buikstra and Charles 1999; Charles and Buikstra 1983; Lynch 1982). The findings of most of these studies suggest that Archaic hunter-gatherers were organized along egalitarian lines, however, evidence for greater social differentiation is suggested by the treatment of some Late Archaic individuals. Future research needs to investigate the relationships between decreased mobility, population increase, changes in settlement-subsistence strategies, and changes in hunter-gatherer mortuary practices.

* Document differences in the preferred location of mortuary areas/cemeteries during the Archaic period.
* Document spatial and temporal variations in Archaic mortuary practices in all management areas.
* Investigate the range of hunter-gatherer status variation as indicated by mortuary practices.
* Assess the relationships between changes in the treatment of the dead and changes in hunter-gatherer social organization.

9. Social Organization and Paleodemography

Despite nearly 100 years of studying Archaic hunter-gatherers, we still know very little about the internal organization of local groups, or how local groups affiliated themselves with other nearby and distant groups. The investigation of internal group (site) organization is based largely on the analysis of mortuary practices. Variations in the treatment of the dead are usually interpreted as reflecting status differences among the living.

In Kentucky, most efforts to investigate hunter-gatherer social organization and demography have focused on the large Green River Archaic skeletal collections (Meindl et al. 2001; Milner and Jefferies 1998; Rothschild 1979; Thiel 1972; Winters 1968). These well-preserved materials allow researchers to examine subtle biological and genetic differences as a way of assessing intra- and inter-group social relationships. Some researchers have interpreted the association of "exotic" marine shell and copper artifacts with some of the deceased as reflecting social or status differences. Additional studies of these skeletal collections, as well as those dating to earlier parts of the Archaic, should provide researchers with information about status differences, as well as how the organization of Archaic groups changed through time. The investigation of biological traits, such as stature, bone constituents, stress indicators, and evidence for trauma, should also provide data on intra- and intergroup social and biological differences.

* Conduct comparative studies of skeletal collections for the Green River shell middens and other relevant sites to refine our understanding of Middle to Late Archaic populations (Marquardt and Watson 2005:640).
* Document diachronic changes in Archaic hunter-gatherer social organization.
* Document the spatial organization of features, structures, and activity areas at Archaic sites as a way of reconstructing site/community/social organization.
* Investigate the distributions and origins of nonlocal materials and artifacts found in Archaic mortuary contexts.
* Document mortality profiles for Early, Middle, and Late Archaic groups.
* Document the demographic characteristics of Early, Middle, and Late Archaic social units.
* Document evidence for regional differences in Archaic social organization.
* Investigate the application of various geophysical survey techniques for defining patterns of internal site organization (community organization).

10. Cave Archaeology

Kentucky archaeologists have long recognized the research potential of deep caves for contributing information about ancient Native American cultures (Nelson 1917). This awareness continues today (Sherwood and Simek 2001). Examination of cultural deposits found in the cave systems of west central Kentucky indicates that Late Archaic hunter-gatherers occasionally visited these subterranean zones. Most of these caves are in the Upper Green River Section of the Green River Management Area, such as Mammoth Cave (Watson 1974), Owl Cave (Carstens 1980), and Rogers Cave (DiBlasi 1987). Although not well-documented, the potential for Archaic cultural material also exists in the "dark zones" of some of eastern Kentucky's dry rockshelters.

Late Archaic cave use seems to have varied to some extent. At Mammoth Cave, the primary purpose of cave trips probably focused on the collection of various minerals, such as gypsum and selenite, which formed on the caves' walls (Tankersley et al. 1986; Tankersley 1996; Watson 1974). The motifs scratched on the walls of Rogers Cave (DiBlasi 1987, 1996; Watson 1996) suggest that caves may have been involved in the Late Archaic belief systems and associated rituals. Nearby, in north central Tennessee, Terminal Archaic hunter-gatherers mined 3rd Unnamed Cave for chert nodules (Franklin 2001). Cave archaeologists need to develop new techniques for dating cave art (visual images) and for interpreting the meaning of represented images (Simek and Cressler 2001).

Perhaps the most significant contribution of these subterranean cultural deposits has been in the area of subsistence. The preservation of human feces and desiccated bodies has provided paleobotanists with excellent data on the composition of the Late Archaic/Early Woodland diet, and has provided new insights into the role of horticulture in prehistoric subsistence strategies (see Muller 1986:79-80; Carstens and Watson 1996).

Research in the area of cave archaeology involves identifying those portions of the state where deposits are likely to exist and protecting the fragile environment in which the deposits are preserved from accidental or purposeful destruction. Topics to be addressed using information collected from caves include:

* Identify caves and portions of caves that have a high potential for containing well-preserved Archaic cultural deposits (Sherwood and Goldberg 2001).
* Investigate caves as possible lithic source areas.
* Investigate Late Archaic subsistence practices by examining the contents of human feces, and the stomach and intestines of desiccated bodies.
* Document technological and social tasks represented by artifacts manufactured from "perishable" materials (wood, plant fibers, etc.) not normally preserved in open sites.
* Investigate the role of caves and their contents in the Late Archaic worldview and belief system.
* Determine which cave resources Late Archaic people used and how they used them.

MAJOR ACCOMPLISHMENTS

The past 20 years have witnessed considerable advances in our understanding of Archaic hunter-gatherer societies that once inhabited Kentucky. Survey efforts have doubled the number of Archaic sites documented in the state site files. Increased numbers of sites mean a better representation of the kinds of activities conducted by Archaic people, as well as the locations of where different tasks were carried out.

Although the site files contain many more Archaic sites, the distribution of those newly documented sites across the Commonwealth is uneven. In some areas, like the Green River and Salt River Management Areas, survey has been very intensive and we have acquired a lot of important new information about Archaic peoples and their cultures. In contrast, archaeologists have recorded relatively few new Archaic sites in the Upper Kentucky/Licking, Big Sandy, and Upper Cumberland Management Areas. Nevertheless, even the small numbers of sites recorded in these management areas represent a substantial increase over the numbers reported in the 1990 State Plan.

The question remains, "What do we know now about Archaic hunter-gatherers that we did not know in 1990?" The answer is "Quite a bit!" First, the dramatic increase in the number of recorded sites means that archaeologists have a much better representation of the kinds and locations of places used by Archaic hunter-gatherers. Using these data, researchers can examine diachronic patterns of activity loci, raw material acquisition and utilization, and trade and interaction to assess how the organization and operation of hunter-gatherer societies evolved during the Holocene. Due to the legal constraints of where archaeological surveys and site assessments are and are not conducted, archaeologists still do not have a truly representative sample of Archaic sites/activity loci. However, it is a much better sample than existed in 1990. Archaeologists need to continue to investigate parts of the Commonwealth that are not subject to legally mandated environmental impact assessments to fill in the gaps in our knowledge.

Archaic period research in Kentucky during the last 20 years has contributed greatly to what we know about hunter-gather adaptations in Kentucky. In particular, three trends/findings stand out, and they are summarized below.

1. In 1990, it was generally accepted that much of the Commonwealth experienced a population decline during the early Middle Archaic because of the dearth of projectile points dating to ca. 6,000-4,500 B.C. However, investigations in southern Indiana (Stafford 2005) have demonstrated that hafted bifaces manufactured during this time are not morphologically distinct from many types made before and after that time. If this same condition applies to nearby parts of Kentucky, which it probably does, then it is not a matter of a population decrease, but archaeologists' inability to distinguish early Middle Archaic material culture from that of earlier and later groups. This is a problem of typology not demography. Clearly, this issue needs a lot more research. Archaeologists must continue to search for topographic setting where sites dating to the early Middle Archaic are preserved. The intensity

and extent of excavations at those sites need to be sufficient to collect data relevant to this research issue.

2. A second area concerns the social world in which Archaic hunter-gatherers operated. Research during the past 20 years has generated a great deal of new information on the size of hunter-gather social networks, and the extent and intensity of their social contacts. Examination of stylistically distinctive artifacts, like carved bone pins and groundstone atlatl weights (a.k.a. bannerstones), have documented that hunter-gatherer social connections, particularly during the late Middle and Late Archaic, were extensive and far-reaching. Bone pins stylistic data suggest that hunter-gatherers who lived hundreds of kilometers apart participated in common social networks. These networks provided inter-personal connections that Archaic hunter-gatherers relied on for a variety of social and economic needs.

   Atlatl weight stylistic data suggest even broader connections than do the pin data. Different patterns of interaction reflected by the atlatl weight and pin data may be attributable to various social networks maintained by different categories of people (for example, female networks vs. male networks). These kinds of studies have the potential to place Archaic hunter-gatherers in a much broader regional context than has been possible in the past. Archaeologists need to continue to collect data that contribute to the identification of Archaic social networks and to identify new attributes that can be used expand our knowledge of hunter-gatherer social interaction.

3. A third area where archaeologists have greatly expanded our knowledge over the past 20 years is the establishment of eastern Kentucky as a center of plant domestication. Much of the new data used to do this comes from research carried out in the dry rockshelters found in Daniel Boone National Forest and adjacent areas. Collectively, botanical materials preserved in the rockshelters and open-air sites are helping to refine our understanding of when and how Archaic hunter-gatherers domesticated the area's native cultigens. Based on this research, the Red River Gorge area is taking a place alongside Mesoamerica, the Andes, China, and southwest Asia as a center of plant domestication. Clearly, this is a very important area of research that needs to be continued.

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CHAPTER 5: WOODLAND PERIOD[1]

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The Woodland period (1000 B.C. to A.D. 1000) in Kentucky was a time of cultural continuities as well as cultural innovations. Food collection remained the prevailing subsistence pursuit, populations lived in mostly small communities for varying lengths of time, utilitarian tools were used for a variety of domestic tasks, and inter-regional contacts including long-distance trade continued. Overlaying these continuities, however, were technological, social, and ideological developments or intensifications, most notably the adoption or elaboration of pottery and textile industries, introduction of the bow and arrow, cultivation of indigenous plants, development of substantial housing and nucleated settlements, construction of earthworks, and elaboration of mortuary-ritual activities. The pace and impacts of these cultural changes varied widely across Kentucky.

This chapter begins with brief summaries of the Woodland concept and Woodland research in Kentucky. Then Woodland chronological, formal, and culture-historical units are outlined. An overview of Woodland site inventories is followed by detailed information on the status of Woodland research in each management area. The chapter concludes with a summary of the major accomplishments in Woodland archaeology over the last two decades and a discussion of future research goals and objectives.

HISTORICAL DEVELOPMENT OF THE WOODLAND CONCEPT

References to Woodland first appeared in the archaeological literature in the 1930s and largely are products of the culture history paradigm in American archaeology. In 1935, "Woodland" was taken from the "Eastern Woodlands culture area" moniker to describe nonMississippian archaeological complexes in eastern North America (Griffin 1986). Deuel (1935) used the Woodland Basic Culture in reference to one of two pottery-bearing cultures of the Mississippi Valley. Following the Midwestern Taxonomic Method terminology, archaeologists designated the Woodland Pattern (a.k.a. Woodland Cultural Pattern, Woodland Basic Pattern, and Basic Woodland) as a series of phases exhibiting determinant traits related primarily to artifact types and mortuary

[1] Adapted from Railey 1990

treatment but also settlement (Cole and Deuel 1937; Jennings 1941; McKern 1937, 1939). Archaeologists compiled a list of 81 traits for the Woodland Pattern at the first Woodland Conference in Chicago (Baker et al. 1941). Subsequent to these early writings, however, Woodland was most frequently conceived as a developmental stage or a chronological period (Anderson and Mainfort 2002a).

Willey and Phillips (1958) viewed Woodland as a part of a developmental stage, the Formative. Similarly, Willey (1966) classified Woodland as a major cultural tradition distinguished by pottery manufacture, earthwork construction, and farming subsistence. Others (e.g., Caldwell 1962; Yerkes 1988) defined a Woodland (or Northern) Tradition using a more diverse set of traits within an ecological or adaptational perspective. Silverberg (1968), employing Willey and Phillips' (1958) systematics, referred to three Woodland traditions (though he also used the term "phases") in the Ohio Valley: Early Woodland, Middle Woodland, and Late Woodland.

The work of James Griffin (1946, 1952, 1967, 1978) was instrumental in designating the Woodland as a chronological unit. Initially, Griffin (1946:39; emphasis added) sought to identify "successive cultural *stages* … on the basis of local stratigraphy, the interchange of specific cultural items and the common possession of definite cultural concepts at specific chronological *periods*." For example, he identified Transitional, Early, and Middle subperiods of the Woodland pattern. In 1952, Griffin constructed five subperiods for Eastern Woodlands prehistory, three of which were Early Woodland, Middle Woodland, and Late Woodland-Mississippi. In a seminal 1967 article, Griffin separated the Late Woodland and Mississippi periods and proposed absolute beginning and ending dates for each of the periods.

In the archaeological literature, then, there are references to Woodland, Woodland culture, Woodland pattern, Woodland tradition, and Woodland period; these are sometimes used in combination in the same article. In Kentucky and in this chapter, Woodland is used as a chronological unit.

OVERVIEW OF WOODLAND RESEARCH IN KENTUCKY

In the Southeast, most archaeological research on the Woodland has focused on "culture-historical reconstruction and sequence building" (Anderson and Mainfort 2002a:2). Similarly, both foci have been goals of Woodland research in Kentucky, with research on the former outpacing investigations of the latter. Early (ca. 1930s-50s) interests in Woodland archaeology in Kentucky focused on particular types of sites (e.g., burial mounds with elaborate tombs, earthen enclosures, and rockshelters and caves with well-preserved organics) and artifact classes (e.g., pottery, stone tools, and grave goods). William S. Webb, the dean of Kentucky archaeology, resisted using the Woodland concept, so early interpretations were framed largely within the concept of Adena instead (Schwartz 1967).

Since the 1960s, the Woodland concept has increasingly entered into archaeological discourse in Kentucky, and the goals of Woodland research in Kentucky have expanded. Especially as a result of reservoir projects in the 1960s-70s and academic and compliance archaeology projects since then, archaeologists have documented a wider range of Woodland site types in more parts of the Commonwealth. Advances in archaeological data recovery techniques resulted in the documentation and recovery of more diverse artifact assemblages, including faunal and floral remains, lithic production debris, and rock art. Analytical advances in areas like dating, pollen analysis, raw material sourcing, and artifact typology moved Woodland research in new directions. As new theoretical paradigms like culture process and evolutionary ecology were adopted, archaeologists reexamined old data sets and considered new ones.

Prior to these historical developments in Kentucky Woodland research, antiquarians and others conducted pre-scientific investigations in selected areas of Kentucky. The early work set the stage for later research on what would come to be known as "Woodland." As early as the 1820s, Constantine Rafinesque documented earthwork sites in the Lexington area. Decades later, Ephriam Squier and Edwin Davis mapped earthworks in major river drainages. In the late nineteenth century, geologists like R. H. Loughridge and William Marcus Linney reported on earthworks and other sites as part of regional-scale geological surveys, and citizens who dug into mounds reported their findings to academic institutions. Anthropological investigations, including more systematic excavations, were initiated in the 1910s-20s. Examples include Nels Nelson's work in Mammoth Cave and Gerald Fowke's excavations in Greenup-Lewis counties. Statewide inventories of archaeological sites, such as Bennett Young's 1910 publication, offered syntheses of prehistoric occupations in the Commonwealth. A culminating development was William D. Funkhouser and William S. Webb's entry into archaeology and their 1932 county-by-county survey of archaeological sites in Kentucky. Though the inventory of then-known sites contained inaccuracies and site type biases, as demonstrated by Clay (1985a) and Milner and Smith (1988), the publication represents the only documentation of some Woodland sites that are now destroyed.

WOODLAND SYSTEMATICS

Systematics is the process of creating and defining units of scientific analysis, which may be accomplished by classification or grouping (Dunnell 1971). Classification involves the creation of *a priori*, subjective, universal units (e.g., period, phase, horizon, and tradition), while grouping involves the creation of *a posteriori*, objective, particularistic units (e.g., Adena and Hopewell). Woodland research in Kentucky has involved both approaches to archaeological systematics, as demonstrated in the following discussion of chronological, formal, and cultural-historical units used by Woodland researchers in the Commonwealth.

CHRONOLOGICAL UNITS

In Kentucky, the Woodland period spans 1900-2000 years and is dated from 1000 B.C. to A.D. 900 or 1000. The lower boundary marker is the adoption of pottery technology, which occurred as early as cal 1606-802 B.C. in the Salt River Section, cal 1258-829 B.C. in the eastern Ohio River II Section, and cal 1432-950 B.C. in the Southeastern Mountains Section. The development of shell tempered pottery and the adoption of maize-based field agriculture demarcate the upper boundary of the Woodland period in Kentucky.

Following Griffin's (1967) scheme, archaeologists in Kentucky recognize three Woodland subperiods. Though there is debate about the absolute beginning and ending dates for each, the Early Woodland subperiod often is bracketed from 1000 to 200 B.C., the Middle Woodland subperiod from 200 B.C. to A.D. 500, and the Late Woodland subperiod from A.D. 500 to A.D. 900 or 1000. The Late Woodland subperiod begins and ends slightly earlier in western Kentucky than in eastern Kentucky. Boundary markers, variations in time ranges, and brief lifeways reconstructions for the three subperiods are discussed below.

Early Woodland (1000 to 200 B.C.)

There is some variation in the beginning and ending dates for the Early Woodland subperiod across Kentucky. Kreisa and Stout (1991), Duerksen et al. (1994, 1995), and O'Steen et al. (1991) bounded the subperiod at 1000-200 B.C. in the Mississippi River, Northern Bluegrass, and Lower Big Sandy sections. In the Ohio River II Section, deNeeve (2004) placed the end points at 1000-150 B.C. Schlarb (2005) bracketed the Early Woodland at 1000 B.C.-A.D. 1 in the Central Bluegrass. Time ranges of 800-200 B.C. and 1000-300 B.C. were suggested for the Gorge and Lower Big Sandy sections (Gremillion 1993a, 1998; Ison 1988; O'Steen et al. 1991; Railey 1991a).

Pottery technology, the defining characteristic of the Early Woodland subperiod, was adopted at different times across the Commonwealth. While chronometric determinations place pottery in some parts of Kentucky at or before 1000 B.C., there are few dates before 600 B.C. and many more after 400 B.C. As a result, there are aceramic Early Woodland sites (and a small number of pottery-bearing Late Archaic sites) in Kentucky. Not only did the timing of pottery adoption vary, the impact of pottery on cultural adaptations varied. For instance, pottery had little impact on technology in rugged portions of the Upper Green River Section, probably because it would have been too difficult to carry pottery vessels in the rough terrain when baskets and squash/gourd containers offered light-weight alternatives (Carstens 1996:10).

In the Salt River Management Area, the earliest date for pottery is cal 1606-802 B.C., and early Early Woodland pottery includes Chenaultt/Dexter and Arrowhead Farm types. In adjacent portions of the Ohio River II Section pottery was recovered from feature contexts dated cal 1258-829 B.C. In portions of the southeast, pottery from early Early Woodland sites includes quartzite tempered plain and cordmarked forms of the Pine Mountain series, dated as early as cal 1432-950 B.C. Information on early Early Woodland pottery types is limited for other parts of Kentucky.

In central and northeastern Kentucky, sites pre-dating ca. 600-400 B.C. typically yield small assemblages of very fragmentary sherds. Most of these specimens are thick and grit tempered with cordmarked, plain, or fabric-impressed surfaces. The earliest pottery in western Kentucky is late Early Woodland (post 500 B.C.) and includes Baumer and Alexander series types.

Two other technological changes that roughly coincide with the beginning of the Woodland subperiod are a shift from the grooved axe to the ungrooved celt, and a shift from chipped stone end scrapers to bone beamers. The grooved axe was lashed to a split haft and probably became frequently loosened during use, requiring constant re-securing of the assembly. A celt, on the other hand, is inserted into a socket carved out of a solid wooden haft, and, based in this way on the wedge principle, becomes more firmly secured to its haft during use.

During Paleoindian and Archaic times, hide working and other activities involving scraping were performed using chipped stone scrapers, a tradition reflected by the large number of hafted end scrapers (reworked projectile points) recovered from Middle and Late Archaic sites. During Early Woodland times, chipped stone endscrapers appear to have been replaced by bone beamers. Both the ungrooved celt and bone beamer continued in use until the Historic period.

Regarding other material culture, Early Woodland projectile point types in Kentucky are mostly notched and stemmed forms used as spear or dart tips. Types recovered from dated Early Woodland contexts are Wade (cal 1381-1008 B.C and cal 1373-978 B.C. [Ison et al. 1982]), Gary/Cogswell (cal 1493-849 B.C. [Fiegel et al. 1992] and cal 996-790 B.C. [Grench et al. 2007]), Buck Creek (1114-810 B.C. [Ledbetter and O'Steen 1992] and cal 769-207 B.C. [Carstens 1996]), Kramer (cal 767-411 B.C., cal 754-406 B.C. [French et al. 2007], and cal 761-403 B.C. [Duerksen et al. 1995]), and Turkey Tail (cal 789-394 B.C., cal 781-413 B.C., and cal 389 B.C.-A.D. 72 [Schock and Dowell 1981]). Point types associated with early Early Woodland site components are Merom, Late Archaic Stemmed cluster, Ledbetter, Saratoga/Cave Run, Savannah River/Swannanoa, Cotaco Creek, and Motley. Other types are found primarily in late Early Woodland assemblages: Cresap, Robbins, Adena Stemmed, Little Bear, and Cypress Creek. Other types of Early Woodland chipped stone tools are scrapers, knives, drills, and gravers.

Other than the aforementioned shift to celts, groundstone tools used during the Early Woodland subperiod did not differ significantly from those utilized during the previous period. Pestles and nutting stones were used in plant processing, hunting tools included atlatl weights, and hammerstones and abraders were used in tool manufacturing. Nonutilitarian items include gorgets and tubular smoking pipes. Steatite vessels are primarily known from sites in the Lake Cumberland and Lower Big Sandy sections. The extraction and modification of barite and galena minerals began after 800 B.C. in the Bluegrass Management Area.

Objects manufactured from bone and shell have been recovered from Early Woodland sites. Awls are one of the most prevalent bone artifact types; these were commonly made from deer ulnae or scapulae. Other antler/bone items are flakers, reamers, handles, and bowls. Shell spoons, scrapers, beads, and gorgets have been found in some Early Woodland contexts.

The earliest textiles known in Kentucky were recovered from Terminal Archaic-Early Woodland sites. Caves and rockshelters in the Upper Green River and Gorge sections yielded the oldest dated specimens, but early Early Woodland textiles also are known from the Lower Big Sandy Section. Head and foot gear, bags and pouches, clothing, and other items were woven using a variety of techniques. Other objects made from plant materials like grasses, cane, and wood during the Early Woodland subperiod include sleeping mats, soil stabilizers, torches, digging sticks, baskets, bowls, and cradleboards.

Though trade networks existed since the Late Archaic, the use of exotic raw materials is evidenced infrequently at early Early Woodland sites. Copper is known from only one such site in the Interior Mountains Section, where a worked copper object was found with a burial. Mica is not documented at Early Woodland sites until after about 600 B.C. Toward the end of the Early Woodland, however, there was a notable increase in the frequency of copper, mica, and exotic cherts at Kentucky sites. These items were often used in mortuary-ritual contexts.

Early Woodland subsistence patterns in Kentucky changed little from Late Archaic times. Hunting and gathering continued as the main subsistence activities, with garden products supplementing the diet. Animal protein was obtained from a variety of sources, including deer, box turtle, small mammals, birds, and, in some areas, fish and mussels. As in the Archaic period, nuts were gathered and stored for year-round consumption. An important development that occurred during Early Woodland times was the intensified utilization and cultivation of weedy plants and cucurbits.

Plant husbandry, which began during the Late Archaic, was markedly intensified during the Early Woodland. Part of this process involved an increase in the exploitation of seeds relative to nuts, a trend that continued throughout the Woodland period and had a major impact on not only subsistence strategies, but on ceramic vessel form as well. Indigenous plant cultigens of the Eastern Agricultural Complex (EAC) found at Early Woodland sites are sunflower, sumpweed, goosefoot, maygrass, giant ragweed, and erect knotweed. Gourd and squash, some species of which were indigenous cultivars, also are found in Early Woodland plant assemblages.

Most Early Woodland populations resided in dispersed, un-nucleated settlements in upland, ridge top, and floodplain zones, as well as in rockshelters and cave vestibules. Midden deposits and/or clusters of artifacts and features, including, in few cases, the remains of temporary structures, demarcate domestic loci at Early Woodland open-air habitation sites. Rockshelters were used intensively in eastern and western Kentucky during the Early Woodland subperiod.

Cave exploration and mineral mining began during the Late Archaic but peaked during the Early Woodland. In the Upper Green River, Pennyroyal, and Lake Cumberland sections, small groups of miners used hammerstones, scrapers, torches, baskets, and bowls to extract and collect gypsum, mirabilite, and epsomite from cave walls, ledges, and sediments. Such practices are best documented at Mammoth and Salts caves in the Upper Green River Section.

Another archaeological characteristic of the Early Woodland is the appearance of social or ritual sites that are spatially segregated from domestic habitations. Initially, several forms of mortuary sites were utilized. In western Kentucky, individual graves were constructed in cave vestibules, and communal secondary interments were placed in pit caves. In eastern and western Kentucky, rockshelters contain primary and secondary burials. In other areas, isolated open-air mortuary sites were represented by a single burial or a limited number of interments, either as in-flesh burials or cremations. These graves often were associated with offerings, ranging from a few items to caches of bifacial blades or other materials. By about 500-400 B.C., groups in some parts of Kentucky began to construct burial mounds and irregularly shaped enclosures; these sites were typically associated with Adena. Mortuary processing camps, lacking earthworks and burials, also were part of the Adena settlement system.

In most parts of the Southeast and Midwest the upper boundary marker for the Early Woodland subperiod is the development of Hopewell (Anderson and Mainfort 2002a; Applegate 2005; Griffin 1967; Seeman 1986). In Kentucky, however, Hopewell did not have the pervasive effects on Woodland populations as it did elsewhere. As such, the cultural traits marking the boundary between the Early and Middle Woodland subperiods are not clearly delineated and considerable continuity exists. Presently, the division at 200 B.C. should be viewed as a mostly arbitrary one, not linked to the development of a particular artifact or site type(s).

Middle Woodland (200 B.C. to A.D. 500)

Like the previous subperiod, there is some variation in the beginning and ending dates for the Middle Woodland in Kentucky. Kreisa and Stout (1991) bounded the subperiod at 200 B.C.-A.D. 400 in the Mississippi River Section. In the Ohio River II Section, deNeeve (2004) bracketed the subperiod at 150 B.C.-A.D. 500. Richmond and Kerr (2005) and Schlarb (2005) proposed ranges of 400 B.C.-A.D. 400 and A.D. 1-500, respectively, for the Central Bluegrass Section. Gremillion (1993a) bracketed the Middle Woodland subperiod in the Gorge Section from 300 B.C.-A.D. 500. Some archaeologists recognize two subdivisions of the Middle Woodland subperiod: early (200 B.C.-A.D. 250) and late (A.D. 250-500).

Early Middle Woodland ceramics include conoidal, barrel-shaped, or flower pot-shaped jars with flat, rounded, subconoidal, or pointed bases. In general, ceramic vessels in the Bluegrass, Upper Kentucky/Licking, and Big Sandy areas tend to have plain exterior surfaces, while vessels with cordmarked, cord-wrapped dowel-impressed, or fabric-impressed exterior surfaces are more common in the Purchase, Green River, and Upper Cumberland areas. Small quantities of sherds that exhibit Havana-like or Hopewellian decoration, in the form of nodes and/or zoned incised-punctated or incised-dentate stamped, were found at sites in the Salt River and Ohio River I sections. Southeastern stamped ceramics were recovered in low frequencies from sites located in all areas of the state.

Late Middle Woodland ceramic vessels are predominantly subconoidal or subglobular jars, with outflaring, recurved, or direct rims. Most jars have cordmarked or plain exterior surfaces, while fabric or cord-wrapped dowel-impressed types and vessels with flat bases are extremely rare. Small quantities of simple stamped or check stamped sherds are often present, and complicated stamped, brushed, or rocker stamped sherds were recovered from late Middle Woodland sites. Although the latter occur in relatively small frequencies, they are useful indicators for this temporal unit.

Some projectile point types recovered from Early Woodland sites also are found at early Middle Woodland sites, and several are associated with absolute dates. These include Robbins, Motley, Gary, and Adena Stemmed (cal 88 B.C.-A.D. 239 [Dowell 1981]). Triangular/Lanceolate forms such as Copena and Copena Triangular are diagnostic of the Middle Woodland subperiod, as are broad corner-notched forms like Snyders (cal 1258 B.C.-A.D. 425 [Mocas 1992]) and Affinis Snyders. Expanding stemmed and shallow side notched types derive from late Middle Woodland contexts and include Steuben, Bakers Creek, Lowe, and Chesser (cal A.D. 268-887 [Crane and Griffin 1966]) types. Besides projectile points, chert bladelets are diagnostic of the Middle Woodland subperiod. Other types of chipped stone tools were largely unchanged from the previous subperiod.

Similarly, utilitarian groundstone, bone, and shell tools from Middle Woodland sites are similar to those from Early Woodland sites. Changes were more prevalent in nonutilitarian artifacts. The use of groundstone smoking pipes, gorgets, steatite objects, and barite-galena items continued, but with greater frequency. Engraved and unengraved tablets derive from mortuary contexts. Groundstone discoidals and objects made of cannel coal were found at Middle Woodland sites, as were cut and modified canid/feline mandibles, bone combs, and shell gorgets.

The use of exotic raw materials, first evidenced during the Woodland period in Kentucky towards the end of the Early Woodland, peaked during the early Middle Woodland and continued to a lesser extent into the late Middle Woodland. Copper bracelets and breastplates/gorgets, copper and mica head ornaments, marine shell beads, and Vanport (Flint Ridge of Ohio) chert bladelets are among the types of items found almost exclusively in mortuary-ritual contexts.

There is less information about Middle Woodland subsistence compared to earlier and later subperiods. Research at sites in the Mississippi River, Lower Tennessee-Cumberland, Lake Cumberland, Southeastern Mountains, Central Bluegrass, Lower Big Sandy, and Upper Big Sandy sections has helped to remedy this disparity. In these sections, Middle Woodland faunal and floral assemblages indicate a generalized economy based on food collection and food production. Middle Woodland groups continued to rely more heavily on wild foods than on cultigens. The Middle Woodland diet in the Upper Green River Section, on the other hand, was characterized as focal.

Regarding settlement strategies, in many parts of Kentucky there was an increased focus on floodplain zones during the Middle Woodland. Habitation sites dating to this subperiod often contain midden deposits and feature clusters that suggest the presence of activity areas. At some sites in the Central Bluegrass, Eastern Bluegrass, Lower Big Sandy, and Upper Big Sandy sections, postmold patterns delineate small, single- and double-post circular and square/rectangular houses. In western Kentucky, habitation sites were sometimes associated with earthworks, while in central Kentucky the two site types remained spatially distinct. Rockshelter occupations declined considerably in the Gorge

Section during the Middle Woodland. Evidence of the development of settlement hierarchies has been noted in the Mississippi River and Ohio River II sections. During the late Middle Woodland, there appears to be a trend toward nucleation of settlements in the Bluegrass, Upper Kentucky/Licking, and Big Sandy management areas.

Archaeologists have documented several types of Middle Woodland mortuary-ritual sites. Best known are conical burial mounds, which date predominantly to the early Middle Woodland in the Bluegrass and Big Sandy management areas and to the late Middle Woodland elsewhere. Stone mounds and the use of stone in earthen mound construction were more common during the late Middle Woodland. Though uncommon, geometric earthworks and hilltop enclosures date predominantly to the late Middle Woodland and have been documented in several sections. Another mortuary-ritual site type that has been documented in the Central Bluegrass Section consists of nonmound ceremonial sites without burials. Middle Woodland sites in the Central Bluegrass Section also provide evidence of ritualistic feasting and ceremonial plant use.

Like the lower boundary, the upper boundary of the Middle Woodland subperiod traditionally has been demarcated by Hopewell-related criteria. These include declines in mound building activities, mortuary elaboration, and long-distance exchange. Again, the limited evidence of Hopewell in Kentucky creates challenges for applying these boundary criteria. Perhaps changes in pottery technology, like the development of subconoidal and subglobular cordmarked jar vessel forms, or other material culture traits would be more effective for delineating the Middle and Late Woodland transition in Kentucky.

Late Woodland (A.D. 500 to 1000)

"The Middle to Late Woodland transition in Kentucky does not appear to have been abrupt. Instead it was a gradual process, linked to changes in plant subsistence practices and hunting technology, a decline in long-distance exchange networks, and changes in ritual expression" (Pollack and Henderson 2000:615). There is more consensus among archaeologists about dates for the Late Woodland compared to the two earlier subperiods. Except in the Purchase Management Area, where the subperiod is dated from A.D. 400 to 900, in other parts of Kentucky the Late Woodland is dated from A.D. 500 to 1000 (deNeeve 2004; Gremillion 1993a; Kreisa and Stout 1991; O'Steen et al. 1991; Schlarb 2005). Some archaeologists use early Late Woodland (A.D. 400/500-800) and terminal Late Woodland (A.D. 800-900/1000) for finer temporal control.

The Late Woodland in the Southeast was "a time of appreciable cultural change," including population increase, development of bow-and-arrow technology, changes in the amount of mound construction, shifts in social organization, and subsistence change (Anderson and Mainfort 2002a:15). This was the case in some but not all parts of Kentucky, too. In the west and northeast, by the terminal Late Woodland there developed a great deal of regional diversity in pottery styles, subsistence strategies, settlement strategies, and social organization.

Spatially, the Late Woodland in western, northern, and eastern Kentucky is better documented than that in southern Kentucky. Accordingly, most of Kentucky's Late Woodland cultures are more midwestern than southeastern in terms of cultural expression. In the Ohio River valley, the Falls of the Ohio at Louisville functioned as a cultural boundary and may be used to demarcate two Late Woodland regions, the lower Ohio River valley and the middle Ohio River valley (Pollack and Henderson 2000).

In most areas, early Late Woodland artifact assemblages are essentially similar to late Middle Woodland artifact assemblages. The former, however, usually lack Hopewellian decorated ceramics and other diagnostic Hopewell traits. Throughout most of Kentucky, early Late Woodland ceramics consist mainly of subconoidal and subglobular cordmarked jars. Vessel rims are unmodified and lips are usually flattened and plain except for occasional occurrences of diagonal or perpendicular notching. Decoration on vessel necks and bodies is extremely rare. Angular shoulders are one diagnostic trait of the widely distributed Newtown series.

Pottery from terminal Late Woodland contexts varies across Kentucky, though plain and cordmarked forms are common. Collared rims, carinations, and simple castellations are diagnostic traits of terminal Late Woodland vessels in several sections. In the lower Ohio River valley, pottery vessels with zones of incised geometric designs on the jar necks are common. In far western Kentucky, pottery attributes that are diagnostic of the Mississippi period, such as pan-shaped vessels and red film surface treatment, gradually appear in terminal Late Woodland assemblages. Vessels with angular shoulders continued in use in the Bluegrass Management Area.

Lowe cluster and occasionally Copena projectile points, which first appeared in the late Middle Woodland, are found at early Late Woodland sites. Unexpectedly, Adena Stemmed points have reported from early Late Woodland contexts by several researchers (Ahler 1987; Carstens 1996; Ison and Ison 1985; Kreinbrink 1992); an uncalibrated date of A.D. 540 was obtained for an Adena-bearing feature in western Kentucky (Dowell 1981). In some parts of Kentucky, bladelet production extended into the early Late Woodland.

The development of "true arrowheads" is considered a determinant trait for the terminal Late Woodland in Kentucky. Point types found at Late Woodland sites, including several from dated contexts, are Jacks Reef (cal A.D. 442-776, cal A.D. 548-859 [Ahler 1987], and cal A.D. 675-938 [Ledbetter and O'Steen 1992]), Raccoon (cal A.D. 663-1151 and cal A.D. 695-1223 [Lebetter and O'Steen 1992]), Hamilton (cal A.D. 223-592 and cal A.D. 569-768 [Des Jean 2004]), and Levanna. Throughout the Late Woodland, other chipped stone tool types are similar to those from earlier periods.

During the early Late Woodland wild plants and animals continued to be the mainstay of the subsistence economy. Cultivation of native plants continued and may have intensified, but plant husbandry contributed a small percentage of the diet. Though small amounts of maize are present in Middle and early Late Woodland contexts, it was not until the terminal Late Woodland (ca. A.D. 800) that it became a significant component of regional diets. In Kentucky, maize cultivation occurred primarily in portions of western Kentucky (Purchase and Green River management areas) during the terminal Late Woodland.

In general, Late Woodland settlement patterns exhibit a great deal of regional variability. Domestic structures include rectangular and circular single-post forms and a possible Late Woodland wall trench structure documented in the Pennyroyal Section. In the Bluegrass Management Area, the typical environmental setting of Late Woodland sites is upland ridges, but in other areas the shift to floodplain zones, especially along trunk streams, continued. Early Late Woodland rockshelter components and smaller open habitation sites indicate that seasonal dispersal of local groups was an on-going element of regional settlement systems. Nucleated villages are present in some areas of Kentucky, including the Purchase Management Area, where two- and three-tiered settlement hierarchies have been documented. These sites date primarily to the terminal Late Woodland. In central and northeastern Kentucky, on the other hand, nucleated settlements, some of which were circular with central open areas, are more common in the early Late Woodland than in the terminal Late Woodland.

Although some burial mounds date to the early Late Woodland, the construction and use of large earthen or stone enclosures appears to have ceased by A.D. 500, if not earlier. Construction of stone mounds, which may have functioned as isolated mortuary-ritual locales, increased during the Late Woodland. Stone box grave cemeteries, often located adjacent to habitation areas, became common in western, southern, and parts of northern Kentucky.

There are several upper boundary markers for the Late Woodland subperiod. Shell tempered pottery is a widespread and useful diagnostic. The development of large nucleated settlements and maize agriculture are other boundary markers. In general, though, there are few indications that the Late Woodland to Mississippi/Fort Ancient transition was abrupt in Kentucky.

Other Chronological Units

Railey (1991b) proposed an alternative set of Woodland chronological units for sections in the Bluegrass Management Area. The model is based on diachronic variation in settlement strategies and delineates three Woodland subperiods. The Adena subperiod (400 B.C.-A.D. 250) spans portions of two traditional Woodland subperiods in Kentucky, Early Woodland and Middle Woodland, based on radiocarbon dates. Diagnostic artifacts of this chronological unit are carved paddle-marked pottery, tetrapodal vessels, platform pipes, and Middle-Woodland-like points of unspecified types (Railey 1991b).

The Newtown subperiod (A.D. 250-700) spans the traditional Middle Woodland and Late Woodland subperiods and is indicated by expanded stem points, pottery, and Hopewell materials, all of unspecified types. The Terminal Woodland subperiod (A.D. 700-1000) is poorly known but associated with bow-and-arrow technology. The upper boundary is marked by the adoption of maize agriculture (Railey 1991b).

FORMAL AND CULTURAL-HISTORICAL UNITS

Cultural Phases

Woodland phases in Kentucky are used in the tradition of Willey and Phillips' (1958) systematics - in which a phase refers to a series of similar components from multiple sites - rather than the Midwestern Taxonomic Method. It is important to emphasize that cultural phases are formal, not chronological, units in Willey and Phillips' (1958) systematics. Phases typically are defined by assemblages of artifacts, though settlement patterns or subsistence strategies may be included. Though they have chronological dimensions, just as they have spatial dimensions, phases are intended not to divide the temporal continuum but to delineate formal similarities in artifact assemblages.

Though phases represent a fundamental means of classifying archaeological data, the designation of Woodland phases in Kentucky has been uneven temporally and spatially. There are few phases that subsume artifact assemblages from the earliest Woodland sites. There are five sections where Woodland phase development is lacking entirely: Western Coalfield, Upper Green River, Lake Cumberland, Southeastern Mountains, and Interior Mountains.

Four Woodland phases were delineated for the Mississippi River Section: Unnamed, LePlant or Belmont, Berkley, and Cane Hills. In the Ohio River I Section archaeologists defined Mulberry Creek and Lewis phases. The Baumer phase is recognized in the Lower Tennessee-Cumberland Section. The Mann complex/phase and the Yankeetown phase apply to assemblages in the Ohio River II Section. The Plum Springs phase was designated in the Pennyroyal Section, and the Riverside phase applies to assemblages in the Salt River Management Area. Archaeologists recognize the Cogswell phase in the Gorge and Lower Big Sandy sections. With assemblages throughout the Bluegrass and in the Salt River, Lower Big Sandy, and Gorge sections, the Newtown phase is the most widely distributed Woodland phase in Kentucky. Archaeologists defined the Everman phase in the Lower Big Sandy Section, and the Thacker and Sim's Creek phases in the Upper Big Sandy Section. These phases are described later in the chapter.

Integrative Culture-Historical Units

Culture-historical units serve to integrate large data sets and often cross the boundaries of archaeologists' spatial or temporal units, like Kentucky's management areas and the three Woodland subperiods. Two important culture-historical units in Kentucky Woodland research are Adena and Hopewell, which are group units defined in the pre-science era of archaeology. Two others are the Crab Orchard and Archaic traditions, with tradition defined as a class unit subsuming similar phases across a long time period but a limited spatial area (cf., Willey and Phillips 1958).

Adena

Named for a burial mound near Chillicothe (Mills 1902), the Adena unit developed as a result of excavations at burial mounds in southern Ohio. Greenman (1932) prepared the first synthesis of Adena, presented as a list of 59 formal traits observed at 70 mounds in the Ohio Valley. The Adena trait list grew over time, culminating in 1957 with Webb and Baby's 241-item trait list based on over 200 earthwork and rockshelter sites in several states. The research of Webb and his colleagues was instrumental in describing and explaining Adena, and Clay (2005) provided interesting insights into the larger academic milieu that influenced Webb's views. The following discussion of Adena reviews the defining formal characteristics of the unit, outlines the temporal and spatial dimensions of sites designated as Adena in Kentucky, and summarizes attempts by archaeologists to incorporate Adena into modern classificatory schemes and theoretical paradigms.

The **defining traits** of Adena largely relate to earthwork construction, mortuary practices, and material culture. Regarding earthwork construction, a quintessential Adena trait is the conical mound, occurring in isolation or in groups. They may represent a single construction episode or accretional stages of construction. In either case, basket-loads of earth, sometimes incorporating rocks and logs, were used to cover burned areas, previous "village" occupations, and burials. Another diagnostic earthwork type is the circular embankment with interior ditches, a flat interior surface, and a raised "causeway" between the interior and exterior. Several irregular elliptical embankments with interior ditches are documented. The variously shaped embankments were constructed of largely sterile soils and did not cover burials but in some cases covered structural remains (Webb and Baby 1957).

Mortuary traits are an important defining component of Adena. Those related to body placement include extended burials, communal cremations, and redeposited or secondary individual cremations. Grave types are diverse but commonly include log tombs, puddled clay basins, and bark-lined pits. Submound structures ("houses") were circular (and occasionally rectangular) in shape and constructed of vertical or outward-slanting wooden posts set as pairs in pre-dug holes. Individuals were interred with burial furniture, red ochre, and associated artifacts. Other artifacts are commonly recovered from mound fill (Webb and Baby 1957).

The material culture component of the Adena trait list included not only classes of artifacts but formal characteristics within a particular class of artifacts. Worked items of rocks/minerals, clay, bone, shell, copper, and mica, mostly deriving from mortuary contexts, were listed. Many of the items were made from materials obtained through long-distance exchange networks. Among the many diagnostic lithic artifacts are reel-shaped and expanded-center bar gorgets, leaf-shaped and stemmed points (e.g., Cresap, Kramer, Robbins, and Adena Stemmed), tubular pipes, celts, engraved and unengraved tablets, and hemispheres or cones. Adena Plain, Fayette Thick, Wright Check Stamped, and Montgomery Incised pottery characterize Adena assemblages; at most mound sites. These ceramic vessels were primarily recovered from mound fill, and were rarely found in direct association with a burial or feature. Bone and shell diagnostics are awls, combs, flakers, handles, beads, spoons, and cut mandibles. Copper bracelets, beads, rings, pins, as well as copper and mica head ornaments, are important Adena traits. Other material culture traits relate to textiles and food remains (Webb and Baby 1957). The Adena trait list included artifacts also found in nonmortuary contexts, allowing for nonearthwork sites (e.g., eastern Kentucky rockshelters) to be designated as Adena.

With regard to **temporal dimensions**, Adena has long been associated with the Early Woodland subperiod in Kentucky and the middle Ohio Valley. Early archaeologists considered Adena a precursor, both chronologically and developmentally, of Hopewell. While a linear relationship between Adena and Hopewell has been documented for southern Ohio, with the former being restricted to the Early Woodland and the latter the Middle Woodland (Greber 2005; Seeman 1986), such a situation did not exist in Kentucky. Although some Kentucky Adena sites date to the Early Woodland, others have been assigned to Middle Woodland as determined by chronometric dating or diagnostic artifacts.

Most Kentucky archaeologists concur that Adena spans the late Early Woodland to early Middle Woodland subperiods (Clay 1985b; Henderson et al. 1988; Pollack et al. 2005; Railey 1991b, 1996; Richmond and Kerr 2005; Schlarb 2005). Haag (1942) was among the first to recognize the late temporal placement of some Adena sites. The occurrence of Paintsville Simple Stamped sherds from C and O Mounds Jo2, which probably derived from one trade vessel, "lends some support to placing the Adena of eastern Kentucky in the same time horizon as Deptford, Copena, and, perhaps, Marksville" (Haag 1942:349), all of which are Middle Woodland archaeological manifestations.

The vast majority of chronometric dates for Adena earthwork sites in Kentucky fall between 500 B.C. and A.D. 250 (Anderson and Mainfort 2002a; Clay 1980, 1983, 1991; Crane and Griffin 1972; Fenton and Jefferies 1991; Griffin 1974, 1978; Hemmings 1978; Seeman 1986; Stoltman 1978). Two divergent and suspiciously early calibrated dates for Adena sites are 1735-548 B.C. for Auvergne Mound (15Bb16) (Clay 1983) and 1258-393 B.C. for the Dover Mound (15Ms27) (Webb and Snow 1959) (see Table 5.26). The widely divergent calibrated date of A.D. 603-1169 for the Drake Mound (15Fa11) (Arnold and Libby 1951; Libby 1955) is equally suspect (see Table 5.26). In these three cases, other chronometric dates for the sites fall within the date range for other earthworks (see Table 5.26).

Other archaeologists continue to view Adena as a largely Early Woodland archaeological manifestation. For example, Seeman (1986) set a terminal date of A.D. 1 for Adena based on artifactual differences between Adena and Hopewell site collections in southern Ohio, including the absence in Adena mounds of Hopewell items such as rocker-stamped pottery, chert bladelets, platform pipes, and obsidian. As discussed below, such items are known from mortuary sites in Kentucky, though not in the abundance documented at sites north of the Ohio River.

Dragoo (1963, 1976) recognized variation among Adena mound sites in terms of size, stratigraphic complexity, tomb types, presence/absence of submound structures, and grave goods. Considering these differences to be temporal, he divided Adena into early and late "phases." Webb and his colleagues also noted Adena variation interpreted as temporal. For example, in Kentucky bark-lined tombs are more characteristic of early-middle Adena, and log tombs are typical of late Adena (Webb and Snow 1959).

Clay (1991) proposed a "developmental trajectory" for Adena in the Ohio Valley. The three stages of Adena represent "*both temporal* stages and *levels* of organization" in mortuary and ritual activity (Clay 1991:35; emphasis original). Early Adena (500-150 B.C.) is the least complex of the three Adena organizational types. Sites like Fisher Mound in the Central Bluegrass exhibit the simple accretion of mortuary events, the inclusion of nonlocal grave goods, and the absence of spatial patterning in grave placement, submound structures and activity areas, and associated domestic sites (Figure 5.1). Within the broader settlement and social systems, mounds functioned as non-residential "communal mortuary facilities" for local related populations (Clay 1991).

Spatial separation of mortuary and nonmortuary sites continues with Middle Adena (150 B.C.-A.D. 1) (Figure 5.1). Two forms of Middle Adena ritual sites are mounds and mortuary camps, and mounds were located on the edges of social territories. Most Middle Adena sites like Robbins Mound (Northern Bluegrass), Morgan Stone Mound (Eastern Bluegrass), and C and O Mounds (Lower Big Sandy) are characterized by prepared floors, cremations, and submound mortuary camps with circular "screened enclosures." This elaboration of ritual activity, marked by "protracted mortuary cycles" at multiple locations, *may* indicate increased social complexity (Clay 1991).

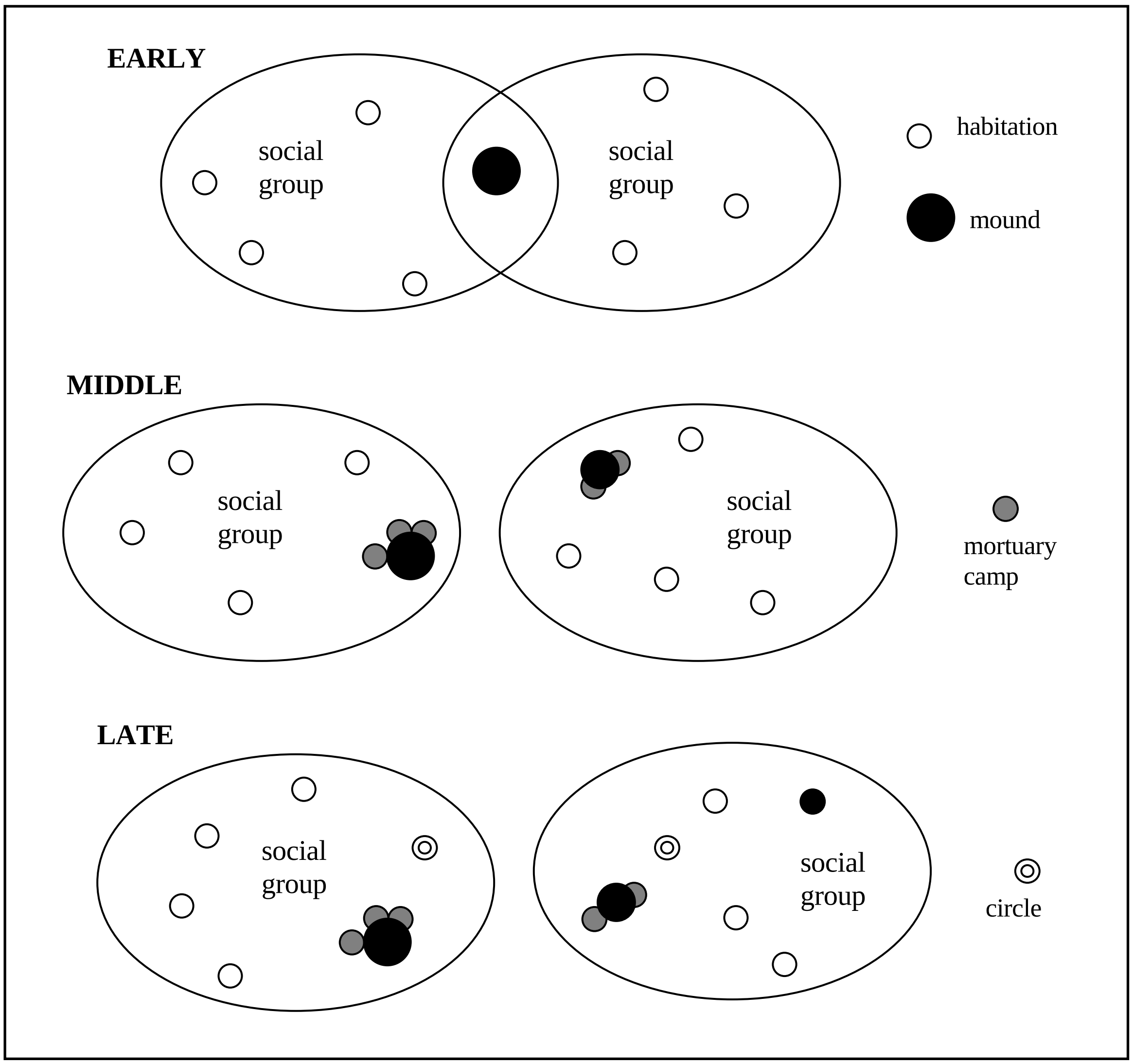

Figure 5.1. Adena Organizational Types (after Clay 1991).

Late Adena (A.D. 1-250) is the most complex stage of ritual organization, in which new mortuary activities are added to the preceding levels of organization (Figure 5.1). Separation of ritual and domestic space continued. Late Adena sites like Wright Mound Mm6 (Central Bluegrass Section) are characterized by overlapping submound enclosures, log tombs that were reused for multiple interments, and fewer individuals per mound. Some Late Adena sites like Auvergne Mound, on the other hand, were comparatively "simple." Circular embankments like Mt. Horeb Enclosure were earthen representations of screened enclosures and may have functioned as permanent, nonmortuary ritual features (Clay 1991).

Research at Central Bluegrass Section sites has produced data that may be used to revise Clay's (1991) model (Figure 5.2). First, Schlarb et al. (2007) investigated a ritual site without earthworks, screened enclosures, or burials. The Evans site (15Mm192) is located near a mound and dates to ca. 400-200 B.C. (Table 5.26), which would fall within Clay's Early Adena. This site provides evidence of a second mortuary-ritual site type in Early Adena (in addition to burial mounds); artifacts indicate it served as a mortuary camp but separated from a mound not under one (and with no screened enclosure).

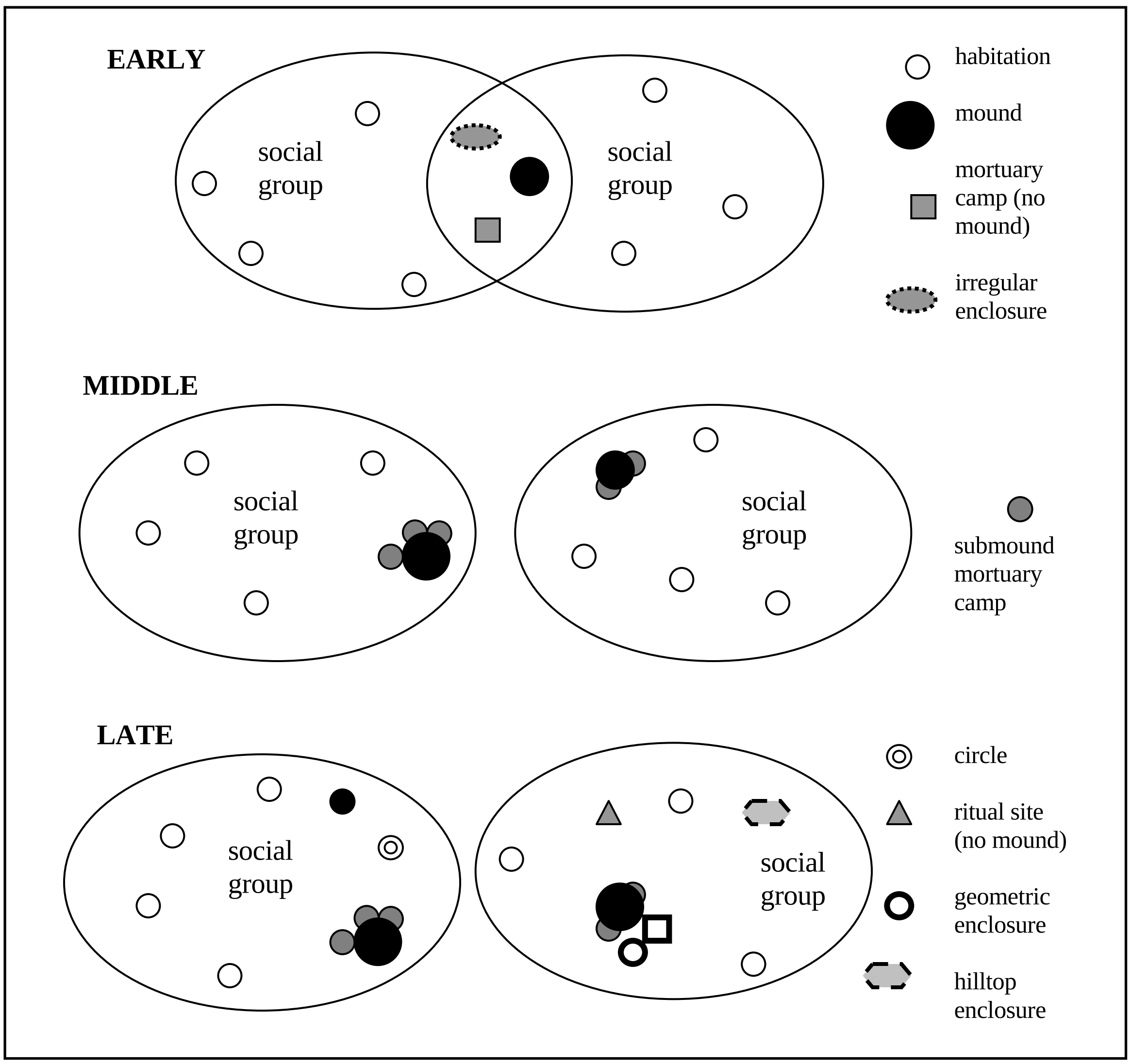

Figure 5.2. Revised Adena/Woodland Organizational Types (modified from Clay 1991).

Second, irregular enclosures like Peter Village (15Fa166) and Grimes Village (15Fa14) and hilltop enclosures like Indian Fort Mountain (15Ma25) have not been incorporated into the model. Radiocarbon dates for Peter Village (Clay 1985b, 1988) place it in Early Adena (see Table 5.26). There are no dates for Grimes Village, but it is structurally and artifactually similar to Peter Village. A calibrated radiocarbon date of 39 B.C.-A.D. 236 was obtained for Indian Fort Mountain, which places the site in Late Adena (Figure 2), though it may not be related to Adena (i.e., hilltop enclosures in southern Ohio typically are associated with Hopewell).

Third, Richmond and Kerr (2005) documented a ritual site without earthworks or burials, an additional Late Adena mortuary-ritual site type. Not only that, but Amburgey (15Mm137) may indicate the presence of different populations practicing different mortuary-ritual regimes during that time frame. Wright-Greene Mounds (15Mm6-8) are Adena, while nearby Camargo (15Mm30-33) (with mounds and geometric enclosures) and Amburgey (Figure 2) are "Hopewell-related" sites, yet all three are contemporaneous based on radiocarbon dates (see Table 5.26) (Richmond and Kerr 2005). Other geometric enclosures, like those at Old Fort Earthworks (15Gp1) and O'Byam's Fort Earthwork (15Fu37, 15Fu39-44), likely are Late Adena or contemporaneous with Late Adena sites.

Regarding **spatial dimensions**, "the Adena type of ritual organization developed roughly upstream from the Falls of the Ohio" (Clay 1991:35). Excluding nonmound sites yielding Adena Stemmed and Adena Plain pottery but few or no other diagnostic Adena traits, sites identified as Adena have been documented in several management areas in Kentucky. The core area, meaning the area with the largest percentage of sites rather than the developmental center, is the Central Bluegrass Section. There are a number of Adena earthwork sites in the Northern Bluegrass and Eastern Bluegrass sections, and the Salt River Management Area. Others are documented in the Lower Big Sandy Section. Adena sites in the Gorge Section are rockshelters, as delineated by Webb and Baby (1957).

Research on Adena profoundly affected Woodland investigations in Kentucky, leading to **critical reevaluations** of the unit. As more and more information was gathered on Early-Middle Woodland mortuary and ritual practices and, to a lesser extent, on technology, exchange, skeletal morphology, and paleopathology, little was learned about subsistence, settlement, and everyday lifeways. However, Webb and his colleagues recognized this bias (e.g., Haag 1974). "Mounds erected over log tomb burials … are today our chief source of information relative to the Adena complex, known largely even yet as a 'burial complex'" (Webb et al. 1942). Adena can (or should) only be used to characterize mortuary-ritual sites. This concern continued to be expressed by later researchers (e.g., Clay 1991; Fitting and Brose 1971), and the issue was among those discussed at a landmark symposium on Adena (Swartz 1971).

A second major critique of Adena focused on the trait list approach to defining Adena. Some archaeologists (e.g., Clay 2005; Fitting and Brose 1971) have concluded that the trait-list approach led to *less* clarity in what Adena is. It actually did more to demonstrate variability, not commonalities, in Adena. What is curious is that Webb recognized the shortcomings of the trait list approach yet continued to employ it. Webb and his colleagues recognized variation in Adena. For instance, Webb (1941a:191) remarked that Drake Mound "is so small and so unique that a trait list has little value by way of comparison with trait lists of other sites." Webb and Haag (1947b:52) noted that the information learned from Fisher Mound (15Fa152) "could have been obtained nowhere else" because the mortuary practices evidenced there were so unique. Further, Webb and Funkhouser (1940) concluded that Ricketts was more like the Adena Mound in Ohio than the general Adena trait list. "We should consider Adena a dynamic cultural expression, one characterized by variability in mortuary treatment" (Pollack et al. 2005:75).

As archaeologists grappled with these issues, and with the tendency to equate Adena with a group of people or a culture in the ethnographic sense, they also attempted to incorporate Adena into prevailing classificatory schemes and theoretical paradigms. Some researchers (e.g., Caldwell 1962; Griffin 1943; McKern 1936), and even Webb and Funkhouser (1940:262) and Haag (1942:349) referred to Adena as an aspect using the Midwestern Taxonomic Method. Others (e.g., McMichael and Mairs 1969; Seeman 1992; Shane 1975; Shane and Murphy 1975) associated Adena with the phase unit, and O'Steen et al. (1991) classified Adena as a horizon, in both cases using Willey and Phillips' (1958) systematics. One problem with these attempts is that Adena already is a unit, a particularistic group that stands alone, while the other units are universal classes (Applegate 2005). The many problems with the Adena concept led Clay (2005) to propose abandoning Adena as a unit altogether.

Hopewell

As an archaeological construct, Hopewell shares a similar developmental history and definitional focus with Adena. Like Adena, Hopewell subsumes mortuary-ritual traits to the exclusion of other cultural traits. The concept of Hopewell developed as a result of excavations of several burial mounds and earthworks in southern Ohio (Mills 1907, 1909, 1917a, 1917b, 1922; Shetrone 1925, 1926; Shetrone and Greenman 1931) in the pre-scientific era of archaeological research. Researchers subsequently applied the Hopewell unit to archaeological sites and assemblages across much of the Eastern Woodlands (Sieg and Hollinger 2005), though to a lesser extent in Kentucky given Webb's classification of almost all excavated burial mounds as Adena. The following discussion of Hopewell reviews the defining formal characteristics of the unit, considers current archaeological interpretations about Hopewell systematics, delineates temporal boundaries of Hopewell, and outlines evidence of Hopewell traits at Kentucky Woodland sites.

Regarding **formal characteristics**, Hopewell descriptions, like those for Adena, focus on earthwork construction, mortuary practices, and material culture. Dancey (2005:129), however, cautioned that "there is no consistent 'Hopewell package' containing all elements of the list of diagnostics." Hopewell mounds tend to occur in groups, were constructed of a mixture of largely sterile soils, and were erected in a single episode. The mounds were constructed to cover burials that accumulated over time on the horizontal ground surface under the mound. In some river valleys stones were incorporated into mound construction, and platform mounds are documented in some areas. Another characteristic earthwork form is the geometric enclosure, also built of specially selected and layered sterile soils and often associated with conical mounds. Squares and circles, sometimes conjoined, are most common. Hilltop enclosures, or linear mounds of earth and stone paralleling the contours of hilltops, represent another Hopewell earthwork type. Both types of enclosures are associated with interior ditches and have openings or "gateways" punctuating the earthen walls (Anderson and Mainfort 2002a; Dancey 2005; Greber 2005; Sieg 2005; Sieg and Hollinger 2005).

Hopewell mortuary practices emphasized special structures used in protracted burial events pre-dating mound construction. The mostly rectangular, single-post structures vary in size and layout. Complex structures were individual or conjoined roofed structures or unroofed enclosures with individual partitions. Often destroyed by fire, the structures are referred to as charnel houses. The deceased were placed in individual burial features, typically extended in pits or cremated in clay-lined basins, under Hopewell mounds. In many cases individuals were buried with numerous noteworthy grave goods (Anderson and Mainfort 2002a; Dancey 2005; Greber 2005; Sieg and Hollinger 2005). "In the early mound excavations [in the middle Ohio Valley] the finding of cremations was considered sufficient evidence to classify the site as Hopewell" (Webb et al. 1942). Later research revealed that it was more so the type of cremation (primary individual cremation) that was diagnostic of Hopewell.

Hopewell material culture includes diagnostic lithic, clay, bone, shell, copper, and mica artifacts. Whole pottery vessels placed in graves included zoned rocker-stamped types. Barite boatstones and groundstone platform and modified tubular pipes are distinctive. Chert items include bladelets, prepared bladelet cores, and projectile points like Snyders and Ross. Bear canines, shark teeth, pearls, and conch shell dippers, as well as modified human remains, are common organic artifacts. Spoonbill bird and cross-hatch-filled zones are common decorative motifs engraved on stone, bone, and/or pottery. Copper items include breastplates, bicymbal ear spools, bracelets, finger rings, celts, and cut-outs. The latter also were made of mica. Other items are panpipes and terra cotta figurines. In addition to copper, mica, and marine products, other exotic raw materials are obsidian, galena, meteoric iron, and Knife River flint (Dancey 2005; Greber 2005; Sieg and Hollinger 2005).

Reevaluation of the Hopewell concept has focused on incorporating the pre-science unit into contemporary classification schemes and theoretical paradigms. Attempts by archaeologists to do so have been as diverse and nonconsensual as with Adena. A number of archaeological units have been associated with Hopewell, including phase (in the Midwestern Taxonomic Method), ethnographic culture, climax, tradition (in the Willey and Phillips scheme), complex, or cult (Applegate 2005; Sieg and Hollinger 2005).

Two other interpretations of Hopewell garnered wider acceptance. Because exotic materials are prevalent at Hopewell sites, it became widely viewed by archaeologists as an "interaction sphere" defined in terms of ideological or economic exchange (Blosser 1996; Brown 1977; Caldwell 1964; Richmond and Kerr 2005; Seeman 1977; Struever 1964, 1968; Struever and Houart 1972). Others (e.g., Dancey 2005; Sieg and Hollinger 2005) proposed that Hopewell is best conceived as a horizon, or a set of contemporaneous phases that encompass a wide geographic area but a short temporal span (cf., Willey and Phillips 1958). Because it covered such a large geographic area, the Hopewell horizon was not "a unitary social organization" representing "a distinct Culture" (Dancey 2005:129).

One thing that has been consistent among archaeologists regarding Hopewell is the general **time frame**. They largely agree that Hopewell is a Middle Woodland archaeological manifestation. In fact, as discussed previously, the Middle Woodland subperiod is defined in part in relation to Hopewell, creating a bit of a tautology. The beginning and ending dates for Hopewell vary across space (Dancey 2005; Sieg and Hollinger 2005). Proposed time ranges are A.D. 1-500 or various 300-400-year intervals within this range (Dancey 2005; Greber 2005; Seeman 1986). In Kentucky, sites with Hopewell traits span ca. A.D. 1-350.

In the Eastern Woodlands the **spatial distribution** of Hopewell is discontinuous within the area of "Ontario to the Gulf of Mexico and from the Atlantic to the Plains" (Sieg and Hollinger 2005:132). Kentucky typically is not included in this distribution. Webb and his colleagues occasionally identified formal similarities between Ohio Hopewell and Kentucky earthwork sites, burial mounds, and material culture. Other researchers have made additional observations, sometimes anecdotal and sometimes thoroughly documented. But in general, Kentucky Hopewell studies have lagged behind those in neighboring states, and the distribution of Hopewell traits has not been systematically documented.

Applegate (2006) offered an initial attempt, outlining Hopewell traits at three dozen sites unevenly distributed throughout all management areas. Hopewell earthwork traits documented at Kentucky Woodland sites are groups of mounds, associated mounds and geometric earthworks, platform mound, stone used in mound construction, and use of special soils. With respect to mortuary practices, documented traits are individual primary cremations, rectangular submound structures, partitioning of space within submound structures, burning of submound structures, puddled clay platforms, and grave features on the submound surface. Hopewell material culture traits are hooked-beak bird motif; mica head ornaments and other cut mica; copper head ornaments, rings, gorgets or breastplates, solid bracelets, celts, and ear spools; modified human remains; marine and mussel shell spoons and dippers; cut canid or feline mandibles; Snyders and Affinis Snyders points; bladelets, including some made of Vanport (a.k.a. Flint Ridge of Ohio) chert; platform and modified tubular pipes; and stamped or cordmarked tetrapodal pottery vessels (Applegate 2006).

A number of Kentucky Woodland sites showing Hopewell influence are in the Central Bluegrass Section. Limestone slabs were used in the construction of Fisher Mound (15Fa152), and mortuary items include modified human remains. Webb and Haag (1947b) noted similarities between copper head ornaments, copper and barite boatstones, barite and hematite cones, and modified tubular pipes from Fisher with those from Tremper, Hopewell, Mound City, and other Ohio mounds. Copper celts were found as grave goods in the mound (Webb and Haag 1947b).

Copper breastplates/gorgets and barite boatstone fragments were recovered from Drake Mound (15Fa11) (Webb 1941a). Hopewell traits at Bullock Mound (15Wd10) are a rectangular submound structure marked by 80 postmolds and one bladelet made of Vanport chert (Schlarb 2005). Cremations, Vanport bladelets, and an Affinis Snyders point were documented at Walker-Noe (15Gd56) (Pollack et al. 2005). A complete modified tubular pipe was found at a three-mound complex on the property of Thomas Jones (no assigned site number) in Bourbon County (Webb and Haag 1947b).

At Ricketts Mound (15Mm3), Funkhouser and Webb (1935) noted similarities in puddled clay platform graves and a primary cremation in a square clay basin with those at Edwin Harness Mound in Ohio. "The copper [bracelets], together with the stone gorgets and the clay graves strongly suggest a northern influence if not actually representing a Hopewell influence on Adena culture" (Funkhouser and Webb 1935:100), the earliest published reference by Webb to Hopewell traits in Kentucky. Primary cremations, bladelets, and mica were found at the Evans site (15Mm182) (Schlarb et al. 2007), and solid copper bracelets and a copper breastplate/gorget reportedly were found in Mt. Sterling Mound (15Mm1) (Putnam 1882 as reproduced in Webb 1940).

At Wright-Greene Mounds (15Mm6-8), three mounds occurred in a group. Hopewell-like material culture includes mica and copper head ornaments, copper rings, modified tubular pipes, cut mandibles, and shell spoons. Webb (1940:127) described an engraved tablet with a hooked-beak bird motif as Adena but with a "Hopewell connection." Fenton and Jefferies (1991) characterized the Camargo Earthworks complex (15Mm30-33) as Hopewell related. The complex includes circular, square and hexagonal enclosures and two mounds, one of which had a low lobe that yielded a Connestee series tetrapodal vessel, part of a platform pipe, and mica fragments. One mound covered two *in situ* crematory features. At Amburgey, another Hopewell-related site, Richmond and Kerr (2005) recovered copper ear spools, a copper celt with mica fragments, a Snyders point, and a Connestee series tetrapodal vessel. These three Montgomery County sites were contemporaneous.

In the Northern Bluegrass Section at the Crigler (15Be20 and 15Be27) and Robbins (15Be3 and 15Be14) sites, conical earthen mounds occurred in groups. At both sites the larger of the two mounds covered charnel houses; though both were round, the submound structure at Robbins was associated with a rectangular occupation floor and the one at Crigler was internally partitioned. Artifacts from Crigler are mica head ornaments, platform pipe, and Snyders-like point, and artifacts from Robbins include mica head ornaments, copper ring, and shell spoon (Webb 1943a; Webb and Elliott 1942). Railey (1996) identified the Crigler pipe as Seeman's Hopewell-17 type. Another site, Riley Mound (15Be15), covered a rectangular submound structure and produced a copper breastplate/gorget (Webb 1943b). Stone was used in constructing Hartman Mound, which covered a primary cremation and yielded a copper ring (Webb 1943a).

The mound at the Rogers site complex (15Be33-35) was constructed with stone and covered burial features placed at one level on the submound surface. Diagnostic Hopewell artifacts are platform pipe, cut mica, cut mandibles, and bladelets (Kreinbrink 1992). A copper ear spool and galena fragments were recovered from Chilton (Funkhouser and Webb 1937).

In the Eastern Bluegrass Section, Webb and Snow (1959:70) recovered mica head ornaments and other cut mica items, a cut mandible, and solid copper bracelets that "link Adena and Hopewell cultures at this mound." At the Morgan Stone Mound (15Bh15), Webb (1941b) uncovered an elaborate primary cremation with two pottery vessels in a (circular) charnel house. Copena Triangular points also were recovered.

In the Lower Big Sandy Section, the Old Fort Earthworks (15Gp1) is a square enclosure that is part of the Portsmouth Works. The geometric enclosure with gateways is associated with several mounds. Boatstones and mica fragments were found at the enclosure, and copper breastplates/gorgets reportedly were found by local residents. Bentley (15Gp15) and Hansen (15Gp14), two nearby habitation sites whose relationship to the earthwork complex is unclear, yielded imported Hopewellian Connestee Series pottery that suggest "a certain degree of participation by Newtown peoples in the Hopewellian exchange network" (Henderson et al. 1988:79).

At the C and O Mounds (15Jo2 and 15Jo9), the smaller southern mound yielded copper finger rings, Copena Triangular bifaces, mica fragments, and a perforated human parietal bone gorget. The northern mound was constructed in three stages using layers of sediments that varied in color and texture. The first stage was a "truncated pyramid" or flat-topped mound (Webb et al. 1942). Simple-stamped pottery with tetrapodal supports was recovered from the northern mound (Haag 1942).

Bladelets were recovered from the Brisbin site (15Bd311A), including some made of Vanport chert (Aument 1985; Dowell 1979b; Schock and Foster 1976). Ison and Ison (1985:130) documented a pair of sites reflecting "Hopewellian mortuary practices." A cremation with mica and simple stamped pottery were found at the Carroll Shelter (15Cr57), and mica was among the items in a nearby cache at Site 15Cr58.

In the Salt River Management Area, a copper ear spool reportedly was found in a Marion County mound (no assigned site number) (Richmond and Kerr 2005). Few sites in the Upper Cumberland Management Area have yielded Hopewell diagnostics. The Reiny (15Ru27) site in the Lake Cumberland Section yielded stamped pottery and Copena points (Railey 1990). In the Southeastern Mountains Section, mica, stamped pottery, and large corner-notched points were found at Site 15Bl52 (Niquette 1985).

Hopewell traits at Woodland sites in the Ohio River II Section are limited to stamped pottery sherds, such as those found at Site 15He315B (Schock and Stone 1985), and chert bladelets and prepared cores, such as those recovered from Sites 15He33, 15He34, 15He315B, and 15He323B (Dowell 1979b). In the Western Coalfield Section, the Ashby site (15Mu4) includes two earthen mounds, the larger of which incorporated stone and covered a (circular) charnel house with a prepared clay floor. A mica sheet and a piece of barite/galena were found in the mound (Hoffman 1965; Rolingson 1967). The Jones Mound (15Hk11) covered a circular earthwork [or perhaps a doughnut-shaped embankment like those at Drake Mound and C and O Mound Jo2] and smaller elongated mounds and yielded rocker stamped pottery (Purrington 1966b; Rolingson 1967).

A mica cut-out reportedly was found at Hidden River Cave (15Ht69) in the Upper Green River Section (Applegate 2001). Two sites in the Pennyroyal Section indicate possible Hopewell or Copena connections. The Watkins (15Lo12) site includes a pair of mounds, the larger of which yielded cut mica fragments, bladelets, Copena points, a conch shell dipper, an incised tetrapodal vessel, and a copper breastplate/gorget (Applegate 2000c; Ray n.d.). Cut mica was recovered from the Campbell Mound (15Wa324A) (Schock and Dowell 1991).

In the Mississippi River Section, the O'Byam's Fort Earthwork (15Fu37, 15Fu39-44) complex includes a three-sided square enclosure, a pair of linear earthen walls, and six conical mounds (Mainfort and Carstens 1987). An unnamed mound (no assigned site number) in Ballard or Carlisle County excavated by Fain and Blanche King contained five copper celts (King 1939; Muller 1986).

In sum, the distribution of Hopewell diagnostic traits in Kentucky is discontinuous. There are a few sites that are identified as Hopewell or Hopewell-related (e.g., Camargo, Amburgey, Rogers, and Old Fort Earthworks), but most sites simply yielded some Hopewell diagnostics. Sites in the Bluegrass Management Area and the Ohio River area of the Lower Big Sandy Section reflect relationships with Ohio Hopewell. Other sites in the Lower Big Sandy Section and Upper Cumberland Management Area evidence interactions with Hopewell in the Appalachian summit. Green River Management Area and Mississippi River Section sites reflect inter-regional relationships with Copena of the lower Mississippi River valley. The smaller number of sites with Hopewell diagnostics in the lower Ohio River valley suggests comparatively limited interactions with Illinois Hopewell (Applegate 2006).

The Relationship Between Adena and Hopewell

With respect to similarities in Adena and Hopewell diagnostics, and the occurrence of Hopewell traits at otherwise Adena sites, Webb and his colleagues interpreted the relationship as developmental and sequential. Webb and Haag (1947b) proposed that late Adena was contemporaneous with early Hopewell, and some Hopewell traits first developed in Adena but were elaborated with Hopewell. For instance, "if the use of antler headdresses had a significant place in the symbolism of Ohio Hopewell, it is important to find evidence of its existence in Adena as a further confirmation of what seems to be established that many important Hopewell traits *find their beginnings* in Adena" (Webb and Haag 1947b:83; emphasis added). As another example, Webb and Haag (1947b:88) posited that "while the occurrence of cones and boat stones in an early Ohio Hopewell site such as Tremper points to close cultural associations with late Adena sites such as Fisher, and in point of time probably to partial contemporaneity, it suggests that these traits may have come to Tremper by way of Adena."

Clay (1991:35) has interpreted "Hopewell as an extension of the complexity that developed in Adena." Adena levels of organization "probably persisted into Hopewell," with Adena being comparatively less complex (Clay 1991:35). "Adena and Hopewell are products of the same set of factors. These are involved with the substantial modification of existing Eastern Woodlands social and political structures. They are expressed in enhanced inter-regional trade and resource exploitation, the construction of both 'defensive' and 'ceremonial' earthworks, and the elaboration of burial ritual" (Clay 1985b:41). Based on the occurrence of Hopewell traits at several Kentucky Woodland sites, Railey (1996:100) concluded that "Adena should be viewed as an early regional expression of Hopewell rather than as its predecessor."

Applegate (2006) suggested a similar interpretation. Adena developed during the late Early Woodland in Ohio and Kentucky. By early Middle Woodland times in Ohio, the Adena mortuary-ritual complex morphed into or was supplanted by Hopewell. In Kentucky, on the other hand, the predominate mortuary-ritual complex continued to be Adena with limited and uneven influences from Ohio Hopewell, Appalachian summit Hopewell, Copena Hopewell, and, to a lesser extent, Illinois Hopewell. The distinction between Adena and Hopewell in Kentucky is much murkier than in Ohio, as might be expected in an area that was a “hinterland” or “periphery” for an archaeological manifestation like Hopewell.

Crab Orchard Tradition

Moreau Maxwell (1951) defined Crab Orchard based on materials recovered during WPA-sponsored excavations near Carbondale, Illinois. Originally formulated as a focus in the Midwestern Taxonomic Method, Struever (1964) redefined Crab Orchard as a tradition related to the Hopewell interaction sphere. Maxwell's initial work remained the basic descriptive reference for Crab Orchard until Winters (1967:49-52) described the Crab Orchard tradition in the lowermost portion of the Wabash Valley.

Formally, pottery is the primary criteria used by researchers to assign sites to the Crab Orchard tradition. As discussed later in the chapter, Crab Orchard series includes cordmarked, fabric impressed, plain, cord-wrapped stick impressed, and decorated types. It includes types previously classified as Baumer. Lithic diagnostics are chert bladelets and stemmed and corner notched projectile points. Point types include Late Archaic-Early Woodland straight stemmed forms like Saratoga; contracting stemmed types of the Dickson cluster; and expanding stemmed Manker, Motley, and Snyders/Affinis Snyders types. Exotic raw materials are found in Crab Orchard tradition assemblages (Bell 1958; deNeeve 2004; Maxwell 1951; Montet-White 1968; Scully 1951; Winters 1967).

The Crab Orchard tradition is documented in northwestern Kentucky, southwestern Indiana, southern Illinois, and southeastern Missouri. Unlike Adena and Hopewell, Crab Orchard was defined primarily from large habitation sites. These sites often consist of dense concentrations of midden and subsurface features. Smaller, open habitation sites and rockshelter occupations also are known. In Kentucky, Crab Orchard tradition sites are located in the Purchase (Lower Tennessee-Cumberland Section) and Green River (Ohio River II and Western Coalfield sections) management areas (Allen 1976; deNeeve 2004; Mocas 1977; Myers 1981; Nance 1985; O'Malley et al. 1983).

Regarding temporal dimensions, the Crab Orchard tradition spans the Early and Middle Woodland subperiods, ca. 600 B.C. to A.D. 250 (Butler and Jefferies 1986; deNeeve 2004). Most discussions of the Crab Orchard tradition, however, have assigned it to the Middle Woodland subperiod (Bader 1996; Butler and Jefferies 1986; Jefferies and Butler 1982; McNerney 1975; Muller and Davy 1977). Chronological variation within the Crab Orchard tradition relates to changes in pottery temper, vessel thickness, surface treatment, and decorations (Butler and Jefferies 1986; Denny 1972; Hargrave 1982; Maxwell 1951; Winters 1967).

Archaic Tradition

Based on work along middle Levisa Fork in Pike County, Dunnell (1972) delineated four phases that are associated with two traditions. Using “tradition” in the sense of Willey and Phillips (1958), the Archaic tradition in the Fishtrap Reservoir area of the Upper Big Sandy Section subsumes the Slone, Thacker, and Sim's Creek phases, which represent "arbitrary stylistic divisions of a continuum" (Dunnell 1972:63).

Subsistence strategies associated with the Archaic tradition focused on gathering and hunting, with considerable reliance on nut resources and limited evidence of plant cultivation. Seasonal camps, residential mobility, generalized tool kits, and limited use of nonutilitarian items characterize the tradition. Major trends within the Archaic tradition are (1) increased number of artifact types, perhaps indicating expanded external contacts; (2) increased hunting activity, though wild plant resources remained more important than animals throughout the tradition; and (3) increased diversity of plant foods, including at least one cultigen, that may be related to use of pottery containers. Dunnell (1972) concluded that the Archaic tradition is an "extensive" or "generalizing" pattern, comparable to Cleland's (1976) "diffuse economy" (but more stable) and Caldwell's (1958) "primary forest efficiency" without residential permanence.

The 34 components of the Archaic tradition span a time frame from about 3000 B.C. to A.D. 1000 (Dunnell 1972), or the Late Archaic through Woodland periods. Of the three phases comprising the tradition, Slone is aceramic and falls within the Late Archaic subperiod. Thacker and Sim's Creek fall within the Woodland period as currently defined, with the former dating to the Early Woodland and the latter, Middle-Late Woodland. The change from the Archaic to the subsequent Fort Ancient tradition, according to Dunnell (1972), likely was due to population movements, with groups maintaining the Archaic lifeways moving to upland portions of the Levisa drainage.

WOODLAND SITE INVENTORY

A review of site inventory files at the Office of State Archaeology indicates that 2,920 Woodland period sites have been documented in Kentucky (Table 5.1). Woodland sites and site components are unevenly distributed across Kentucky. The largest number (25.6 percent) are located in the Green River Management Area, closely followed by the Bluegrass Management Area (22.6 percent) (Table 5.1), with these two management areas accounting for almost fifty percent of the documented Woodland sites in Kentucky. About 14.0 percent of the sites are located in the Salt River Management Area. Comparable percentages of 11.8 percent and 11.4 percent, respectively, of Woodland sites are located in the Upper Cumberland and Upper Kentucky/Licking management areas. Only 8.5 percent and 6.1 percent, respectively, of the sites are located in the Purchase and Big Sandy management areas.

Table 5.1. Woodland Sites by Management Area.

Management Area	No. Sites	Percent	Area (sq km)	Sites/km^2	Sites/acre*
Purchase	248	8.5	8,868	0.028	0.004
Green River	748	25.6	30,065	0.025	0.006
Salt River	410	14.0	11,261	0.036	0.005
Upper Cumberland	346	11.8	12,150	0.028	0.002
Bluegrass	659	22.6	18,686	0.035	0.011
Upper Kentucky/Licking	332	11.4	13,740	0.024	0.001
Big Sandy	177	6.1	8,438	0.021	0.002
Total	**2,920**	**100.0**	**103,208**	**0.028**	**0.004**
* number of sites per acre surveyed					

In order to standardize the percentages, the number of sites per sq km for each management area was calculated (Table 5.1). The average density of Woodland sites statewide is 0.028 sites per sq km. The Salt River and Bluegrass management areas have the highest densities at 0.036/sq km and 0.035/sq km, respectively. Site densities in the Purchase and the Upper Cumberland management areas are at the statewide average, and site densities in the Green River, Upper Kentucky/Licking, and Big Sandy management areas are below average.

Another standardization measure is the number of sites per acre surveyed in each management area (Table 5.1). The overall statewide density is 0.004 site/acre surveyed. The Bluegrass Management Area has the highest site density at 0.011 site/acre. Three other management areas have densities between 0.004-0.006 site/acre: Green River, Salt River, and Purchase. The Upper Cumberland, Upper Kentucky/Licking, and Big Sandy management areas - among the most rugged portions of Kentucky associated with the Cumberland Plateau - have below average site densities at 0.001-0.002 site/acre.

Among the seven management areas, Woodland sites and components are most common in the Bluegrass Management Area. This management area has the highest density of sites per acre surveyed, accounts for the second highest percentage of Woodland sites and site components, and has the second highest density of sites per sq km within the management area (Table 5.1). Other management areas with relatively high Woodland sites densities are the Salt and Green rivers.

There are several overall patterns in Woodland site distributions in terms of environmental contexts. Regarding landform, about 29 percent and 28 percent of Woodland period sites are associated with dissected uplands and floodplain zones, respectively. The remaining sites are associated with hillsides (18 percent), terraces (14 percent), and undissected uplands (8 percent). Landform is not known for 3 percent of Woodland sites. Regarding locality, almost three-quarters of Woodland sites are (in decreasing order) associated with level ground (33 percent), slopes (22 percent), and ridgetops (18 percent). About 17 percent of the sites are located at the base of a bluff and/or on knolls (8.5 percent each). A small percentage of sites are associated with bluff crests (4 percent), depressions (1 percent), or unspecified localities (5 percent).

About 70.2 percent of Woodland sites are open habitations without mounds. Rockshelters account for 18.7 percent of the sites, and about 4.9 percent are earth mounds. Small percentages of Woodland sites are open habitations with mounds (1.6 percent), caves (1.1 percent), mound complexes (0.8 percent), nonmound earthworks and specialized activity sites (0.5 percent each), workshops (0.4 percent), cemeteries and isolated finds (0.3 percent each), quarries, stone mounds, isolated burials (0.2 percent each), and petroglyphs/pictographs (0.1 percent).

The Woodland sites recorded in Kentucky encompass 3,614 components (Table 5.2). About 46 percent of the components are unassigned. Of the remaining 1,954 components, 47.0 percent have been assigned to the Early Woodland, 40.7 percent the Middle Woodland, and 12.3 percent to the Late Woodland subdivision. These percentages are similar to those reported in 1990. Many of the unassignable components represent small Woodland assemblages that lack sufficient numbers of diagnostic artifacts for assignment to a temporal subdivision. On the other hand, the low number of Late Woodland components is probably due to a relative lack of Late Woodland research in Kentucky, the poor definition of diagnostic Late Woodland attributes, and the difficulty distinguishing Late Woodland sites from earlier and later sites.

Table 5.2. Woodland Components by Management Area.

Management Area	Unassigned		Early		Middle		Late		Total	
Purchase	159	10%	61	7%	58	7%	38	16%	316	9%
Green River	369	22%	266	29%	231	29%	75	31%	941	26%
Salt River	148	9%	218	24%	145	18%	18	8%	529	15%
Upper Cumberland	207	12%	94	10%	96	12%	19	8%	416	12%
Bluegrass	444	27%	153	17%	153	19%	30	12%	780	22%
Upper Kentucky/Licking	227	14%	77	8%	66	8%	26	11%	396	11%
Big Sandy	106	6%	50	5%	46	6%	34	14%	236	6%
Total	**1,660**	**100%**	**919**	**100%**	**795**	**99%**	**240**	**100%**	**3,614**	**100%**

The percentages of site components (Table 5.2) follow the same distributional pattern as the total number of sites (Table 5.1). About 26 percent are located in the Green River Management Area and 22 percent are associated with the Bluegrass Management Area. About 15 percent of the Woodland components are located in the Salt River

Management Area. Comparable percentages of Woodland components are associated with the Upper Cumberland (12 percent), Upper Kentucky/Licking (11 percent), and Purchase (9 percent) management areas. About 6 percent of the Woodland components are located in the Big Sandy Management Area (Table 5.2).

The following sections on each management area provide additional details about the distributions of Woodland sites and site components. Information about each management area includes previous archaeological investigations, site density and distribution patterns, and chronometric determinations, as well as descriptions of important Woodland sites for each section. The site descriptions are arranged in chronological order and include information about cultural phases, material culture, subsistence and settlement strategies, exchange, social organization, mortuary-ritual activities, and beliefs and artistic expression, whenever such information is known.

PURCHASE (MANAGEMENT AREA 1)

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

The earliest information pertaining to a Woodland site in this management area is Loughridge's (1888) description of the “Tuning Fork” earthwork (15Fu37) in Fulton County. Large-scale investigations, however, were not conducted at any Woodland sites in this area until the late 1930s, when excavations were undertaken in the Kentucky Lake impoundment area along the lower Tennessee River. Later, in the late 1950s and early 1960s, investigations were conducted in the nearby Barkley Lake impoundment area along the Cumberland River. Woodland pottery assemblages from both reservoir projects were described by Clay (1963a). His study represented the first comprehensive attempt to deal with Woodland remains in the area. Schwartz's (1962a) publication on the Driskill site (15Ly9) provided information on this Late Woodland settlement. A subsequent publication by Rolingson and Schwartz (1966) described the Woodland materials from the Roach site (15Tr10).

During the late 1960s and early 1970s, Clay (1971) conducted an archaeological survey along the Ohio River in Ballard and McCracken counties. As a result of this study 35 sites were recorded, including several that contained large Woodland components. Excavations at the Dedmon (15Ml68) and Owen (15Ml69) sites by the University of Kentucky in 1969-70 produced information on Middle and terminal Late Woodland occupation of the Lower Tennessee-Cumberland Section (Allen 1976). The next major investigation took place between 1969 and 1972, when the University of Louisville conducted excavations at the Lawrence site (15Tr33) (Mocas 1977).

During the late 1970s and early 1980s, survey and/or testing projects in the Purchase Management Area resulted in the identification and assessment of several Woodland sites. A survey of Ballard County by the Kentucky Heritage Council recorded 37 sites with Woodland components, including two mounds (Weinland and Gatus 1979). The Kentucky Department of Transportation's survey of the Great River Road between Ballard and Fulton counties (McGraw 198l) also resulted in the identification of several Woodland sites, and some previously recorded sites were revisited.

Several research projects conducted during the 1980s made important contributions to the Woodland database. Murray State University conducted field school excavations at the Reed site (15McN51), a stratified Woodland-Mississippian site (Hensley-Martin 1982). Nance's work in the Lower Tennessee/Cumberland Section, though focused on the Archaic period (see Chapter 4), resulted in the identification and investigation of several Woodland components (Nance 1977, 1985). The University of Illinois' work at Indian Camp Lake, Marshall (Sussenbach and Lewis 1987), and in the Reelfoot Lake area (Kreisa 1987) produced information on Woodland chronological developments, settlement patterns, and subsistence patterns.

Autry et al. (1989) surveyed the floodplain of selected bends along the Lower Cumberland River in Livingston, Lyon, and Crittenden counties of the Purchase and Green River management areas. They discovered or revisited 27 archaeological sites, several of which have Woodland period components. Most of these sites were located on the lowermost terrace or on levees in the bottoms. Middle and Late Woodland occupations tend to be associated with large multicomponent surface artifact scatters, while Early Woodland components have the highest potential to be preserved in subsurface deposits.

Since the late 1980s, several Woodland sites have been documented in the Purchase Management Area, with most of this work taking place in Livingston County. The Chestnut Lake site (15Lv222) was occupied during the Early, Middle, and Late Woodland subperiods (Herndon 2003). An Early Woodland occupation was identified at Site 15Lv208 (Schock 1994), and Site 15Lv204 yielded artifacts diagnostic of the Middle and Late Woodland subperiods (Anderson et al. 1992). Henderson and Pollack (1996; Pollack and Henderson 2000) documented the early late Woodland McGilligan Creek Village (15Lv199) and over 90 mounds at the nearby McGilligan Creek Mound Complex (15Lv203). Located on a ridge near the confluence of the Clarks and Tennessee rivers, Site 15McN116 is an intact early Late Woodland (ca. A.D. 500-800) settlement (Carstens 1999). Terminal Late Woodland ceramics were recovered from the Three Ponds Bluff site (15Hi74), a Cane Hills phase settlement in Hickman County (Schlarb 2002).

SITE DENSITY AND DISTRIBUTION PATTERNS

The 248 Woodland sites in the Purchase account for 8.5 percent of the Woodland sites in Kentucky (Table 5.1). Over 90 percent of the sites are open habitations without mounds, and almost 4 percent are earth mounds; open habitations with mounds, mound complexes, nonmound earthworks, rockshelters, caves, quarries, cemeteries, and workshops each comprise small percentages of Woodland sites in the Purchase Management Area (Table 5.3).

Table 5.3. Woodland Site Types by Section in the Purchase Management Area.

Site Type	Miss River	Ohio River I	Tenn-Cumb	Total	Percent
Open Hab w/o Mounds	70	74	80	224	90.3
Open Hab w/ Mounds	1	1	2	4	1.6
Rockshelter	0	1	0	1	0.4
Cave	0	0	1	1	0.4
Quarry	1	0	0	1	0.4
Earth Mound	8	0	1	9	3.6
Mound Complex	1	0	2	3	1.2
Nonmound Earthwork	3	0	0	3	1.2
Cemetery	0	0	1	1	0.4
Workshop	0	0	1	1	0.4
Total	84	76	88	248	100.0
Percent	33.9	30.6	35.5	100.0	

The three sections of the Purchase Management Area have roughly equal numbers of Woodland sites, with the Lower Tennessee-Cumberland containing slightly more than the other two sections. There are 88 sites (35.5 percent) in the Lower Tennessee-Cumberland Section, 84 sites (33.9 percent) in the Mississippi River Section, and 76 sites (30.6 percent) in the Ohio River I Section (Table 5.3). In general, the distributions of site types in each section are similar to those for the entire management area (see above). However, the Mississippi River Section is the only one with quarry and nonmound earthwork sites, and earth mounds are much more abundant. The Ohio River I Section is the only one with a Woodland rockshelter. Cave, cemetery, and workshop sites are exclusive to the Lower Tennessee-Cumberland Section (Table 5.3).

The 316 Woodland components associated with Purchase Management Area sites account for 9 percent of the Woodland components in Kentucky (Table 5.2). Over half (n=159) of Purchase Management Area components are unassigned, 19 percent (n=61) and 18 percent (n=58) are Early and Middle Woodland, respectively, and 12 percent (n=38) are Late Woodland (Table 5.4). The Purchase has the highest percentage of Late Woodland site components of any management area. Early Woodland components have the highest potential to be preserved in subsurface deposits, while Middle and Late Woodland occupations tend to be associated with large multicomponent surface artifact scatters.

Table 5.4. Woodland Site Components by Section and Subperiod in the Purchase Management Area.

Subperiod	Mississippi River		Ohio River I		Lower Tenn-Cumb		Total	
Late Woodland	16	15.8%	16	15.0%	6	5.6%	38	12.0%
Middle Woodland	26	25.7%	14	13.1%	18	16.7%	58	18.4%
Early Woodland	9	8.9%	26	24.3%	26	24.1%	61	19.3%
Unassigned	50	49.5%	51	47.7%	58	53.7%	159	50.3%
Total	101	100.0%	107	100.0%	108	100.0%	316	100.0%

As with the entire management area, about half of the Woodland site components in each of the three sections of the Purchase Management Area are unassigned (Table 5.4). However, some other patterns are evident among the sections. The Ohio River I and Lower Tennessee-Cumberland sections have almost three times as many Early Woodland components as does the Mississippi River Section. There are more Middle Woodland components in the Mississippi River Section than in the other two sections. The Mississippi River and Ohio River I sections have almost three times as many Late Woodland components as does the Lower Tennessee-Cumberland Section.

CHRONOMETRIC DETERMINATIONS

Chronometric determinations for the Purchase Management Area are provided in Table 5.5. Unfortunately, the number of sites yielding Woodland radiocarbon dates in this management area is very small, with only one to four dated Woodland sites per section. There are few dated Early Woodland components, as a majority of the sites for which absolute dates are available are Middle or Late Woodland. Unless otherwise indicated, all radiocarbon dates reported here and throughout the chapter are two-sigma calibrated dates. Standard radiometric ages were converted to calendar dates using the radiocarbon calibration program Calib v. 5.0.1 (Stuiver and Reimer 2005). Ages were calibrated using the IntCal04 data set (Reimer et al. 2004). No sample age span or additional error variance was used to calibrate the dates.

Table 5.5. Chronometric Dates for the Purchase Management Area.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
Mississippi River Section			
Indian Camp Creek (15Ce19)			
ISGS-1542	3220±70	1681-1673, 1670-1379, 1336-1322 BC	Sussenbach and Lewis 1987
Ohio River I Section			
Twin Mounds (15Ba2) (see Chapter 6)			
ISGS-1728	1100±130	AD 667-1179	Kreisa 1988
Site 15Lv97			
Beta-3865	2060±60	345-322 BC, 205 BC-AD 69	O'Malley et al. 1983
Bridge (15Lv98)			
Beta-13416	2310±90	754-685, 668-609 B.C., 599-168 BC	Nance 1987
McGilligan (15Lv199)			
Beta-73164	1360±70	AD 548-783, 788-817, 843-859	Henderson and Pollack 1996
Beta-73165	990±0	AD 896-923, 940-1210	Henderson and Pollack 1996
Lower Tennessee-Cumberland Section			
Site 15Ml134			
Beta-56257	2660±100	1054-507, 460-452, 440-418 BC	Schenian and Mocas 1993a
Beta-56256	2170±70	384-53 BC	Schenian and Mocas 1993a
Owen (15Ml69)			
UGa-255	2040±80	352-295, 229-220, 211-128 BC	Allen 1976
not reported	1940±85	167 BC-AD 251	Nance 1974
UGa-256	1875±185	357-284, 256-248, 234 BC-AD 546	Allen 1976
Lawrence (15Tr33)			
UGa-242	2320±95	758-683, 670-173 BC	Mocas 1977
UGa-690	2100±90	370 BC-AD 60	Mocas 1977

MISSISSIPPI RIVER SECTION

The 84 Woodland sites documented in the Mississippi River Section contain 101 Woodland components. The vast majority of sites are open habitations without mounds, and nearly all earth mounds and all the nonmound earthworks in the management area are located in this section (Table 5.3). The number of Middle Woodland components outnumbers that of Late Woodland components, and few Early Woodland components are documented (Table 5.4). Substantial Woodland sites recorded in this section are listed in Table 5.6. Few significant sites have been reported since ca. 1990 (Kreisa and Stout 1991).

The Early Woodland (1000-200 B.C.) archaeological record in this section is poorly understood and no cultural phases have been identified. The oldest pottery dates to circa 500 B.C. in the section, so some Early Woodland sites are aceramic (Kreisa and Stout 1991). The multicomponent Indian Camp Lake site (15Ce19), for example, yielded a calibrated radiocarbon date that ranges from 1681 to 1322 B.C. (Table 5.5) (Sussenbach and Lewis 1987). Generally small (2 ha or less) in size, Early Woodland sites are found in floodplain, loess bluff, tributary stream valley, and dissected upland contexts, though fewer sites are documented in the latter. There is insufficient data to evaluate Early Woodland site functions, and therefore settlement systems, at this time, though site types probably included small villages, base camps [cf. Binford 1980], and extractive locations. The absence of significant variation in material culture across site types during the Early Woodland subperiod in this section suggests that major changes in social organization did not occur over this time span (Kreisa and Stout 1991). There is no evidence of Early Woodland mortuary facilities or ritual sites in the Mississippi-Ohio confluence area.

Table 5.6. Important Woodland Period Sites in the Mississippi River Section.

Site No.	Site Name	Site Type	Affiliation	References
15Ce19	Indian Camp Lake	open habitation	MW, LW	Sussenbach and Lewis 1987
15Ce27	Marshall	open habitation (with mounds?)	LW	Sussenbach and Lewis 1987
15Fu3	Sassafras Ridge	open habitation with mounds	LW	Kreisa 1987; Lewis 1986a
15Fu4	Adams	open habitation (with mounds?)	LW	Lewis 1986a
15Fu15	Amburg Mounds	mound complex	MW	McGraw 1981; Railey 1985a
15Fu16	none	open habitation	MW, LW	McGraw 1981; Schwartz and Sloan 1960
15Fu17	none	open habitation	EW, MW	McGraw 1981; Schwartz and Sloan 1960
15Fu18	Rice	open habitation with mounds	LW	Kreisa 1987
15Fu24	White	open habitation	unassigned	Sussenbach and Lewis 1987
15Fu37, 39-44	O’Byam’s Fort	mounds, enclosures	MW	Carstens 1982; Mainfort and Carstens 1987
15Hi12	none	mound	unassigned	McGraw 1981
15Hi16-30	none	open habitation	unassigned	McGraw 1981
15Hi74	Three Ponds Bluff	open habitation	LW	Schlarb 2002

Though more is known about Middle Woodland (200 B.C.-A.D. 400) settlement in this section, this information is primarily derived from large, often multicomponent sites. All ecological zones continued to be occupied, though most sites larger than 1 ha are found on floodplains and near backwater lakes (Kreisa and Stout 1991). Specific plant and animal resources utilized during this phase were hickory, black walnut, American lotus, white-tailed deer, small mammals, geese, fish, and reptiles. There are few reports of nonlocal materials from Middle Woodland sites in this section. However, an unnamed burial mound, located near Wickliffe[2] and presumably Middle Woodland in age, excavated in the 1930s by Fain and Blanche King contained a central burial with 619 solid copper nugget beads, six elongated [rolled] copper beads, five solid copper celts,

[2] The county in which this mound was located was not clearly indicated by King (1939:147), who described the location as “a short distance from the King [Wickliffe] Mounds near Wickliffe, Kentucky.” Since Wickliffe is located near the Ballard–Carlisle border, it is possible that this mound was located in Carlisle County.

and lithic tools (King 1939; Muller 1986). Echoing a contention made by Mainfort and Carstens (1987), Kreisa and Stout (1991) argued that Middle Woodland populations in this section, along with those in nearby Tennessee (e.g., inhabitants of Pinson Mounds), were comparable to Ohio Hopewell socio-politically and religiously. The Middle Woodland subperiod in this section has been divided into two phases, only one of which has been assigned a phase name and described in the literature.

Kreisa and Stout (1991) identified an unnamed phase with unspecified formal traits and an early Middle Woodland time range of 200 B.C. to A.D. 200 in the Mississippi River Section. Two site types - large ceremonial centers and small habitation sites - characterize the early Middle Woodland settlement system. According to Kreisa and Stout (1991:103), sacred "space was defined by geometric enclosures or the placement of conical burial mounds." Large ceremonial sites with earthworks may or may not be associated with habitation debris. Small (ca. 1 ha) Middle Woodland habitations on floodplains are associated with the larger ceremonial centers (Kreisa and Stout 1991).

The Amburg Mounds site (15Fu15) in the Big Bottoms, for example, has two conical earthen mounds that were partially vandalized (McGraw 1981) and a light artifact scatter. Ceramics from looter dirt piles and an associated habitation area include very fragmentary grog tempered cordmarked or plain sherds and a single incised and punctated sherd. The site likely dates to the Middle Woodland subperiod (Railey 1985a). Few details about mound construction, mortuary practices, and bioarchaeology are available for Amburg and other mound sites in the Mississippi River Section, such as Site 15Hi12. A Hopewell-like punctated sherd was recovered from a looter dirt pile at this small conical mound, which may be affiliated with several small habitation sites in the vicinity (McGraw 1981).

With a late Middle Woodland date range of A.D. 200-400, the LePlant or Belmont phase was identified by Sussenbach and Lewis (1987) based on materials recovered from the Indian Camp Lake, a multicomponent site with thick midden deposits and features, and nearby sites. Diagnostic artifacts include Crab Orchard series cordmarked and plain pottery with interior nodes and rim folds and chipped stone tools made from local cherts. Habitation sites occupied by foragers tend to be small and occur in a variety of physiographic zones. LePlant/Belmont phase components are found at sites in Carlisle and Fulton counties (Kreisa and Stout 1991).

Located in the Obion Creek drainage paralleling the Mississippi River, O'Byam's Fort consisted of a geometric enclosure (15Fu37) and nine conical mounds (15Fu39-15Fu44; two mounds lack state site numbers and 15Fu41 subsumes two mounds) that were largely destroyed by agricultural activities. The larger northern element of Site 15Fu37 is a three-sided enclosure with rounded corners and open to the north; there may have been an embankment formerly along the northern side. The smaller southern element of Site 15Fu37 consists of two parallel embankments with a slightly rounded gateway at the southern end. Taken together, the two elements of Site 15Fu37 resemble a tuning fork. A low density of cultural materials representing a LePlant/Belmont phase assemblage was associated with this earthwork complex. Pottery types, which varied in proportions within the enclosure vs. around the mounds, include Baytown Plain and

Mulberry Creek Cordmarked. The site complex likely dates to the Middle Woodland subperiod, ca. A.D. 1-300 (Kreisa and Stout 1991; Mainfort and Carstens 1987).

The Late Woodland subperiod in the Mississippi River Section is divided into early and terminal Late Woodland units, each of which is associated with a cultural phase. Berkley phase components and sites date between A.D. 400-600. Diagnostic ceramic types include Mulberry Creek Cordmarked and Baytown Plain with minor amounts of Larto Red also being present. Berkley phase ceramic assemblages contain higher percentages of decorated rims (e.g., notches or punctations on simple or folded rims, dowel-impressed lips) than earlier LePlant/Belmont phase assemblages. Some sites also yielded baked clay objects of an unspecified function. Projectile points are notched and triangular forms (Table 5.7), and local cherts were preferentially used in tool manufacture (Kreisa 1987; Kreisa and Stout 1991).

Most food resources associated with Berkley phase assemblages are wild species, especially white-tailed deer and nuts. Fish and waterfowl were utilized but not extensively. There is no evidence of Eastern Agricultural Complex cultigens or maize. The settlement pattern did not differ significantly from that of the late Middle Woodland subperiod with occupations spanning all ecological zones, though fewer sites are found in the dissected uplands. In addition to Indian Camp Lake, several open habitation sites in Carlisle and Fulton counties yielded Berkley phase assemblages (Kreisa 1987; Kreisa and Stout 1991). For example, the Berkley phase occupation at Marshall (15Ce27), a predominantly Mississippian open-air habitation situated on the bluffs overlooking the Mississippi River floodplain, is marked by midden deposits and several types of cultural features (Sussenbach and Lewis 1987; see also Chapter 6).

Dated to the terminal Late Woodland subperiod (A.D. 600-900), the Cane Hills phase was defined by Kreisa (1987) based on research at the Rice site (15Fu18). While the pottery types are the same as those associated with the Berkley phase, Cane Hills phase pottery assemblages have smaller percentages of Mulberry Creek Cordmarked, larger proportions of Baytown Plain, some Yankeetown types, limited use of shell temper, more forms of jars and bowls, and new vessel forms (e.g., pans and funnels) (Kreisa 1987). Production of notched and triangular points continues, though the presence of previously undocumented nonlocal cherts, such as Dover from the south and Mill Creek from the north, suggests increased inter-regional interactions. A greater diversity of animal resources was utilized in the terminal Late Woodland, especially white-tailed deer, migratory waterfowl like geese, and terrestrial birds like turkey, prairie chicken, and bobwhite. Limited use of maize is documented at Late Woodland sites after A.D. 700, and maize becomes more abundant after A.D. 800 at terminal Late Woodland sites like Marshall (15Ce27) and Hoecake in Missouri (Kreisa and Stout 1991). Sites with Cane Hills phase assemblages were documented in Fulton and Hickman counties (Kreisa 1987; Schlarb 2002).

As with earlier phases, Cane Hills phase sites outside the Big Bottoms spanned all ecological zones, with larger sites in the floodplain and bluff zones (e.g., Marshall, cal A.D. 691-1013 to A.D. 1043-1382 [see Table 6.5]) and smaller seasonally occupied sites in tributary stream valleys and dissected uplands (e.g., Three Ponds Bluff site [15Hi74]) (Kreisa and Stout 1991; Schlarb 2002; Sussenbach and Lewis 1987). Within the Big

Table 5.7. Spatial Distribution of Woodland Projectile Point Types in Kentucky.

	Purchase			Green River				Salt	Upper Cumberland		Bluegrass			Upper Ky-Licking		Big Sandy	
Point Type	MR	ORI	LTC	ORII	WC	PR	UGR	River	LC	SEM	CBG	NBG	EBG	GOR	IM	LBS	UBS
Hamilton						x	x		x							x	
Levanna							x							x	x	x	
Madison						x	x				x	x		x	x	x	
Triangular	x	x	x	x		x		x	x	x		x	x	x	x	x	x
Raccoon												x		x		x	
Jacks Reef				x				x	x		x	x		x		x	
Chesser						x		x	x	x		x		x	x	x	
Lowe FB		x				x	x	x				x		x		x	
Bakers Creek		x		x		x	x	x				x		x		x	x
Steuben		x				x	x	x						x			
Lowe cluster	x		x						x	x	x	x		x		x	x
Copena				x		x	x		x	x		x	x	x			x
Snyders				x			x	x	x					x			
Motley			x			x	x		x			x		x			
Cypress								x									
Little Bear							x							x		x	
Adena			x		x	x	x	x	x	x	x	x	x	x	x	x	
Gary/Cogswell				x		x	x	x					x	x	x	x	
Dickson cluster				x		x					x	x	x	x			
Robbins					x	x	x	x	x		x	x	x	x		x	
Cresap								x			x			x			
Kramer							x	x			x			x			
EW Stemmed		x	x						x			x		x		x	
Cotaco Creek							x									x	
Buck Creek						x		x						x	x	x	
Wade			x	x			x		x	x	x	x		x		x	
Delhi						x			x					x			
TA Barbed							x							x		x	
Turkey Tail			x	x	x	x	x	x			x	x		x		x	
Savannah R										x							
Saratoga							x		x	x			x	x			
Ledbetter							x		x								
LA Stemmed		x							x					x		x	

Bottoms, on the other hand, changes in both settlement pattern and settlement system are documented for Cane Hills phase sites. The number of sites and site types increased. The density of floodplain and bluff crest sites increased, possibly to allow more use of productive agricultural lands (Kreisa and Stout 1991).

The Cane Hill phase settlement system in the Big Bottoms consisted of a two- (Kreisa and Stout 1991) or three-level (Kreisa 1987) hierarchy. Villages with multiple earthen mounds are exemplified by Rice. Covering 15 ha, this site complex includes an extensive midden, a possible plaza area, and three mounds (Kreisa and Stout 1991). The Rice site may have functioned as the major political center within the Big Bottoms area of the central Mississippi River valley during the terminal Late Woodland subperiod (Kreisa 1987). Villages with single mounds are exemplified by Site 15Fu16, a 3.5 ha Late Woodland-Mississippian site with an extensive midden, Site 15Fu17, a 5.9 ha Late Woodland site with an extensive midden, and Sassafras Ridge (15Fu3), a 1 ha Late Woodland-Mississippian site (Kreisa and Stout 1991). The Adams site (15Fu4) also had a substantial terminal Late Woodland component (Lewis 1986a). Hamlets, 31 of which were documented within the Big Bottoms, lack earthen mounds and dense midden deposits and encompass less than 1 ha (Kreisa and Stout 1991).

In the floodplain zone of the Big Bottoms, archaeologists documented "neighborhoods consisting of many small sites covering less than 1 ha and grouped around a few larger often mounded sites" that may have functioned as "ceremonial centers" (Kreisa and Stout 1991:103). Kreisa (1987) described three such Late Woodland clusters. The western cluster, dubbed the Sassafras Ridge district, includes the Sassafras Ridge site and 16 hamlets. The Rice site district, located in the south-central Big Bottoms, includes Rice and ten hamlets. An unnamed eastern cluster near the bluffline includes two villages (Sites 15Fu16 and 15Fu17) and four hamlets (Kreisa 1987). Most of these sites are associated with natural levee landforms along the Mississippi River, which afforded well-drained, fertile soils protected from flooding. In general, the Cane Hill phase Late Woodland settlement system foreshadowed that which existed during the subsequent Mississippi period (Kreisa 1987) (see Chapter 6).

OHIO RIVER I SECTION

The 76 Woodland sites documented in the Ohio River I Section contain 107 Woodland components (Table 5.3). Nearly all of the Woodland sites in this section are open habitations without mounds (Table 5.8). All Woodland subperiods are represented and Early Woodland components are most numerous (Table 5.4), though most of the important Woodland sites have Middle and/or Late Woodland components (Table 5.8). More is known about Woodland material culture and settlement strategies than subsistence, exchange, mortuary-ritual activities, and artistic expression in the Ohio River I Section.

Projectile points associated with Early Woodland occupations in the section, such as at the Chestnut Lake site in Livingston County (Herndon 2003), include Late Archaic Stemmed and Early Woodland Stemmed clusters (Table 5.7). Early Woodland pottery assemblages, however, are largely undated, such as that recovered from Site 15Lv208, a multicomponent site along the lower Tennessee River near the Ohio River confluence. The Early Woodland occupation at this site lacked midden deposits but included a shallow circular refuse pit, from which excavators collected grog or limestone tempered cordmarked sherds from at least three vessels. Occupations were infrequent and of limited duration, and chipped stone tool production and food processing activities were spatially undifferentiated (Schock 1994). Little is known about Early Woodland subsistence in the Ohio River I section. Generally speaking, wild resources, such as deer and nuts, were obtained from forested areas, while fish and waterfowl were acquired from streams, oxbow lakes, and sloughs in the floodplain zone (Railey 1996). There are no reports of plant cultigens from Early Woodland sites in the section.

Table 5.8. Important Woodland Period Sites in the Ohio River I Section.

Site No.	Site Name	Site Type	Affiliation	References
15Ba2	Twin Mounds	open habitation (with mounds?)	LW	Burks and Stout 1996; Kreisa 1988
15Ba10	none	open habitation	LW	Weinland and Gatus 1979
15Ba14	Sandy Slough	open habitation	LW	Weinland and Gatus 1979
15Ba26	none	open habitation	MW, LW	Weinland and Gatus 1979
15Ba28	none	open habitation	LW	Weinland and Gatus 1979
15Ba41	none	open habitation	LW	Kreisa 1988
15Ba48	none	open habitation	LW	Weinland and Gatus 1979
15Ba54	none	open habitation	LW	Weinland and Gatus 1979
15Ba55	none	open habitation	LW	Weinland and Gatus 1979
15Ba60	none	open habitation	LW	Kreisa 1988
15Lv70	none	open habitation	EW, MW, LW	O’Malley et al. 1983
15Lv81	none	open habitation	LW	O’Malley et al. 1983
15Lv89	none	open habitation	EW, MW, LW	O’Malley et al. 1983
15Lv97	none	open habitation	EW, MW	O’Malley et al. 1983
15Lv98	Bridge	open habitation	EW, MW	Nance 1985
15Lv199	McGilligan Creek Village	open habitation with stone mound	LW	Henderson and Pollack 1996; Pollack and Henderson 2000
15Lv203	McGilligan Creek Mound Complex	stone mound complex	LW	Henderson and Pollack 1996; Pollack and Henderson 2000
15Lv204	none	open habitation	MW, LW	Anderson et al. 1992
15Lv208	none	open habitation	EW	Schock 1994
15Lv222	Chestnut Lake	open habitation	EW, MW, LW	Herndon 2003
15McN51	Reed	open habitation	MW, LW	Hensley-Martin 1982
15McN69	Puckett	open habitation	LW	Kreisa 1988
15McN116	none	open habitation	LW	Carstens 1999

The Middle Woodland subperiod in the Ohio River I Section has long been associated with Baumer and Crab Orchard units. The continued use of the Baumer pottery series and the assignment of sites to a Baumer phase, however, are somewhat problematic. In the 1950s-60s the Baumer phase was identified primarily by Baumer series pottery assemblages from southern Illinois and the lower Tennessee-Cumberland drainage. Since the late 1980s, most archaeologists have reclassified Baumer pottery as Crab Orchard (e.g., deNeeve 2004) and Baumer phase assemblages as Crab Orchard phase assemblages. But some archaeologists continue to classify some Early and Middle Woodland ceramics as Baumer (Anderson et al. 1992; Herndon 2003; Schenian and Mocas 1993a - see next section).

The most important diagnostics of the Middle Woodland subperiod in the Ohio River I Section are pottery types. Crab Orchard (Baumer) series pottery assemblages were recovered from several sites in this section, including Site 15Lv97, Bridge (15Lv98), Site 15Lv204, Chestnut Lake (15Lv222), and Reed (15McN51) (Anderson et al. 1992; Henderson 1983; Hensley-Martin 1982; Herndon 2003; Nance 1985). At Site 15Lv97, which is located adjacent to the Ohio River near the mouth of the Cumberland River, Crab Orchard ceramics were recovered from a pit feature buried under alluvial deposits (Henderson 1983:311-317). Most of the sherds found at this site are limestone tempered, have cord-wrapped dowel-impressed exterior surfaces, and are from vessels that had flat bases. A few plain sherds, which may represent the upper portions of these vessels, also were recovered (Henderson 1983:315). Based on sherd thickness, the use of limestone temper, and a calibrated radiocarbon date of 345 B.C. to A.D. 69 (Table 5.5), an early Crab Orchard affiliation was suggested for this component (Henderson 1983; O'Malley et al. 1983).

Test excavations at the Bridge site (15Lv98) on the lower Tennessee River revealed a deeply stratified (over 1 m in thickness) sequence of prehistoric strata, including a Middle Woodland component with grit or sand tempered Crab Orchard sherds (Nance 1985). Exterior surfaces are overwhelmingly cord-wrapped dowel-impressed, with some cordmarked specimens also present. The few rims recovered are unmodified and direct. Decoration is restricted to occasional punctations located just below the rim. A single calibrated radiocarbon date of 754-168 B.C. (Table 5.5) was obtained from the lower-middle portion of the midden, and Nance (1985:8) suggested a temporal span of 400-100 B.C. for the Bridge site deposits. The size of the site (approximately 1 ha) and the intensity and nature of the cultural deposits suggest that it represents a base camp [cf., Binford 1980] or small village (Nance 1985).

Located along the lower Tennessee River, Site 15Lv204 is a multicomponent site that yielded artifacts diagnostic of the Middle and Late Woodland subperiods, including Crab Orchard or Baumer and Mulberry Creek pottery. Subsurface midden deposits and two pit features suggest low intensity occupations that were infrequent and of short duration. The limited range of activities at the site, including chipped stone tool manufacture and food processing, were not spatially differentiated (Anderson et al. 1992).

The Chestnut Lake site is a multicomponent site that was occupied during the Early, Middle, and Late Woodland subperiods. As with Site 15Lv204, this site is characterized by low intensity occupations during the Middle Woodland subperiod. Diagnostic artifacts include Baumer [Crab Orchard] and Lewis series pottery and Early Woodland Stemmed and Lowe cluster projectile points. In addition to sherds, excavators found two fired clay ear spools and one ear pin in subsurface contexts. Plant remains were recovered from the site (Herndon 2003). By the Late Woodland subperiod in the Ohio River I Section, native plant cultigens were added to the diet but comprised a minor component (Railey 1996).

One of two early Late Woodland phases in this section is Mulberry Creek, a poorly defined phase identified by Mulberry Creek series pottery and dated to ca. A.D. 500-800 (Carstens 1999). Mulberry Creek pottery has been recovered from sites across the section, including Twin Mounds (15Ba2), Site 15Lv204, Reed (15McN51), and 15McN116 (Anderson et al. 1992; Burks and Stout 1996; Carstens 1999; Hensley-Martin 1982; Kreisa 1988; Railey 1990). Located on a ridge near the Clarks-Tennessee river confluence, Site 15McN116 measured 28 x 50 m and contained a 25 cm thick midden. Chipped stone debitage and cores, fire-cracked rock, and pottery, including grog tempered Mulberry Creek Plain and Mulberry Creek Cordmarked ceramics, were recovered from this site. Multiple multi-season domestic habitations were dispersed across the ridge (Carstens 1999).

Other early Late Woodland sites, some of which produced Lewis phase assemblages, are located in upland ridge contexts and are characterized by more intense occupations (Pollack and Henderson 2000). The Lewis focus was defined by Richard MacNeish (1944) and published in relation to excavations at the Kincaid site in southern Illinois (Cole et al. 1951). Muller (1986) updated the Lewis description and changed the unit from a focus to a phase. Diagnostic artifacts are Lewis series pottery, Lowe cluster points, chert hoes, and, in some cases, triangular points (Butler 2007). Sites yielding Lewis phase assemblages are found in the Lower Ohio valley in counties in Illinois, Indiana, and Kentucky that border the river. The distribution of sites with Lewis phase assemblages in Kentucky beyond Livingston and McCracken Counties is poorly understood but in addition to the Ohio River I Section it may include the area around the Green River-Ohio River confluence and into the Purchase. Sites are located in floodplain and upland contexts and include small, low-intensity open-air habitations, rockshelters, caves, and stone forts. The remains of rectangular, single-post structures, which differ from the typical Late Woodland form as documented elsewhere, are found at Late Woodland sites yielding Lewis phase artifacts (Butler 2007; Butler and Wagner 2000). Muller (1986) dated the Lewis phase at A.D. 600-900, though in Kentucky such assemblages likely fall within the early part of this range as indicated by research at McGilligan Creek Village (Pollack and Henderson 2000).

McGilligan Creek Village (15Lv199) is a 1.6 ha settlement that covers two broad upland ridges and appears to have been organized around a central plaza. The presence of structural remains, hearths, well-developed midden deposits, and a possible stone mound point to a rather intensive occupation. The village's association with a mesa-like feature is suggestive of a concern for defense in residents' selection of a location for their village. (A similar site, the Fort Ridge site complex [15Ca57-60], was documented in the Pennyroyal Section.) Located below McGilligan Creek Village is the McGilligan Creek Mound Complex (15Lv203), which includes two clusters of a total of 94 stone mounds (Henderson and Pollack 1996; Pollack and Henderson 2000).

Ceramics recovered from McGilligan Creek Village are predominately grog tempered and cordmarked. Rims are notched and some vessel necks were decorated with incised lines. These ceramics are similar to Lewis phase materials from southern Illinois. Diagnostic chipped stone tools are Lowe Flared Base projectile points. Polished hoe flakes and a high density of starchy-oily seeds point to an increased reliance of native cultigens. Of the two calibrated radiocarbon dates from this site, the date of A.D. 548-

859 is associated with the Lewis phase component at this site, while the A.D. 896-1210 date (Table 5.5) appears to post-date this occupation as it is not consistent with the material culture recovered from McGilligan Creek Village (Henderson and Pollack 1996; Pollack and Henderson 2000).

In addition to McGilligan Creek Village, early Late Woodland Lewis series sherds were recovered from several nearby rockshelters (e.g., 15Lv37, 15Lv160, 15Lv200), as well as Chestnut Lake (Herndon 2003), Reed (Hensley-Martin 1982), and other sites along the Ohio River. Tempered with clay or crushed sherds, vessels are thin and cordmarked. Rims are notched from the exterior. Rim folding and lip lugs are traits that developed later in time. Some specimens exhibit punctations or wide-lined incised decorations on cordmarked surfaces (Butler 2007; Butler and Wagner 2000).

A number of important terminal Late Woodland sites are documented in the Ohio River I Section, especially in Ballard County. During their county-wide survey, Weinland and Gatus (1979) documented several Late Woodland sites in the Barlow and Oscar bottoms of the Ohio River floodplain: Sandy Slough, and Sites 15Bal0, 15Bal6, 15Ba22, 15Ba26, 15Ba28, 15Ba54, and 15Ba55. None of the unnamed sites were excavated, but materials from surface collections do permit some preliminary statements regarding their cultural-historical affiliation, which show affinities to terminal Late Woodland materials from southern Illinois (Railey 1990).

Sandy Slough (15Ba14), a major Late Woodland village site in Ballard County, yielded grog tempered, cordmarked ceramics with collared rims (i.e., folded rims and/or applied strips), many of which exhibit punctations or shallow notches on the lip. These ceramic attributes are comparable to those of the terminal Late Woodland Dillinger phase in southern Illinois (Maxwell 1951; see also Hargrave 1982; Butler and Wagner 2000). In contrast to the Sandy Slough site assemblage, some sites in the Barlow and Oscar bottoms (15Bal6, 15Ba26, and 15Ba28) have yielded much higher percentages of plain sherds, as well as small amounts of red-filmed pottery and grog tempered incised sherds (Clay 1971) that may be related to terminal Woodland types such as Yankeetown Incised and Lewis Incised (Cole et al. 1951:180-181). The Oscar Bottom sites may post-date the occupation at Sandy Slough and likely represent the immediate predecessor of Mississippian occupation of this region.

Terminal Late Woodland components were documented at Twin Mounds and several nonmound village sites, including Reed, Puckett (15McN69), Site 15Ba41, and Site 15Ba60 (Burks and Stout 1996; Hensley-Martin 1982; Kreisa 1988; Stout et al. 1996). Baytown Plain pottery was recovered from the Reed site (15McN51) (Hensley-Martin 1982; Railey 1990), as well as Ballard County sites (Burks and Stout 1996; Stout et al. 1996). Twin Mounds (15Ba2), located on a levee of the Ohio River at Barlow Bottoms, is best known as a Mississippian regional administrative center (see Chapter 6). However, a triangular projectile point, small percentages of Baytown Plain, Mulberry Creek Cordmarked, and Larto Red pottery sherds, and a calibrated radiocarbon date of A.D. 667-1179 (Table 5.5) indicate there is a terminal Late Woodland component at the site that may be affiliated with the previously described Cane Hills phase (Burks and Stout 1996; Kreisa 1988; Sussenbach and Lewis 1987). At Twin Mounds “the Late

Woodland material is primarily located on a ridge to the southwest of the Mississippian mound and plaza complex" (Burks and Stout 1996:235).

LOWER TENNESSEE-CUMBERLAND SECTION

The 88 Woodland sites documented in the Lower Tennessee-Cumberland Section contain 108 Woodland components. This section has the widest variety of Woodland site types in the Purchase Management Area, with open habitations without mounds predominating (Table 5.3). Early Woodland components outnumber later ones (Table 5.4), and over half of the important sites recorded in this section have Early Woodland components (Table 5.9). Compared to the other two sections in the Purchase Management Area, the number of Late Woodland components is considerably lower in the Lower Tennessee-Cumberland Section (Table 5.4).

Table 5.9. Important Woodland Sites in the Lower Tennessee-Cumberland Section.

Site No.	Site Name	Site Type	Affiliation	References
15Cw96	Crick	Cache	EW	Schenian 1987
15Ly9	Driskill	open habitation	MW, LW	Nance 1974; Schwartz 1962a
15Ly18	Tinsley Hill*	open habitation	MW, LW	Nance 1974
15Ly49	none	open habitation	EW	Nance 2001
15Ml8	Birmingham*	open habitation	EW, MW	Clay 1963a; Nance 1974
15Ml14	Goheen*	open habitation	LW	Clay 1963a
15Ml68	Dedmon*	open habitation	MW, LW	Allen 1976; Nance 1974
15Ml69	Owen	open habitation	MW, LW	Allen 1976; Nance 1974
15Ml77	Ford #5	open habitation	EW, MW	Carstens 1979
15Ml134	none	open habitation	EW	Schenian and Mocas 1993
15Tr1	Canton*	open habitation	LW	Bradbury 2006; Stout et al. 1996
15Tr10	Roach	open habitation	EW	Rolingson and Schwartz 1966
15Tr17	Rodgers*	open habitation	LW	Clay 1963b
15Tr33	Lawrence	open habitation	EW, MW	Mocas 1977

*Sites primarily known for their Mississippian components - See Chapter 6.

Diagnostic artifacts associated with the earliest Woodland occupations in the Lower Tennessee-Cumberland Section are projectile points, including Terminal Archaic and Early Woodland Stemmed clusters (Table 5.7), such as those recovered from Canton (15Tr1) (Bradbury 2006; Stout et al. 1996). Another common type is Turkey Tail, specimens of which were recovered from Crick (15Cw96) (Schenian 1987), Lawrence (15Tr33) (Mocas 1977), and a number of other sites in this section. Alexander and Crab Orchard (Baumer) series ceramics are associated with late Early Woodland sites.

The Crick site (15Cw96) is situated on a knoll in the dissected uplands near tributaries of Jonathan Creek and Clarks River in the Tennessee River drainage. A cache of 81 Terminal Archaic-Early Woodland Turkey Tail points was discovered at the special-purpose site. Manufactured of St. Louis chert that resembled Wyandotte, the Crick site points were classified as Harrison (*var. Marshall*), Fulton (*var. Ross*), and other types (Schenian 1987). King (1939) reported a cache of 31 Turkey Tail points from an unnamed and unrecorded Marshall County site in the cliff line overlooking the Ohio River floodplain. The single specimen pictured by King (1939) resembles the Harrison type. Six other lower Tennessee-Cumberland river valley sites yielded Turkey Tail caches. Though previous researchers interpreted Turkey Tail caching as evidence of mortuary rituals but without the physical remains of the deceased, Schenian (1987) suggested that Turkey Tail caches may be associated with alliance rituals or ceremonies. Alternatively, the caches may not be ceremonial at all but, instead, represent the storage of future trade items (Schenian 1987).

Many Early Woodland sites in the Lower Tennessee-Cumberland Section represent low-intensity domestic habitations: Ford #5 (15Ml77) (Carstens 1979), Birmingham (15Ml8) (Clay 1963a; Nance 1974), Dedmon (15Ml68) (Allen 1976; Nance 1974), Owen (15Ml69) (Nance 1974), and Site 15Ly49 (Nance 2001). Wild plant and animal remains were recovered from Early Woodland contexts at one of these sites, Owen, where the assemblage included nut, deer, and bison species but few shellfish remains. Because floral remains outnumbered faunal, the Owen site may provide evidence of increased plant use in the Early Woodland subperiod (Nance 1974).

On the other hand, three open-air sites provide evidence of settlement aggregation during the Early Woodland subperiod. Multi-season occupations at the upland Lawrence site (15Tr33) were substantial, marked by the construction of pits and at least two temporary structures. Ceramics recovered from the Lawrence site, which are similar to early Crab Orchard materials, include cordmarked, fabric-marked or plain quartzite- or flint tempered specimens that lack decoration. Projectile points include Turkey Tail, Wade, Adena Stemmed, and Motley types. Along with two calibrated radiocarbon dates of 758-173 B.C. and 370 B.C.-A.D. 60 (Table 5.5), the diagnostic artifacts suggest occupations potentially spanning the Early Woodland subperiod at Lawrence (Mocas 1977).

Site 15Ml134 was discovered eroding out of the bank of the Tennessee River. The open habitation site encompassed two stratigraphically distinct midden layers with domestic features. The less intense, aceramic Early Woodland component, dated to cal 1054-418 B.C. (Table 5.5), was evidenced by a sheet midden, hearth feature, and artifact assemblage indicating short-term occupations and a limited range of activities. The more intense, multi-season early Middle Woodland component yielded a calibrated date of 384-53 B.C. (Table 5.5). A daub structure lacking internal posts and features was associated with a sheet midden and two hearths, all external to the structure. Site activities involved chipped stone tool manufacture and processing/consumption of wild and cultivated foods. Sand tempered ceramics recovered from the site were classified as a regional variant of Crab Orchard, but the early Middle Woodland assemblage was assigned to the Baumer phase. Macrobotanical remains from a hearth included a high percentage of nut shell, especially hickory, and small percentages of wild fruit seeds and domesticated goosefoot fruits (Schenian and Mocas 1993a), the only report of weedy cultigens from important Woodland sites in the Lower Tennessee-Cumberland Section.

Situated on a terrace in the Ewes Branch floodplain, Roach (15Tr10) is a multicomponent site with a substantial late Early to early Middle Woodland deposit but few features. During this occupation the site functioned as a small habitation site. Diagnostic artifacts are Adena Stemmed points and Alexander series and O'Neal Plain pottery, making Roach the only site in this section to yield Alexander series pottery (Clay 1963a; Rolingson and Schwartz 1966). Rolingson and Schwartz (1966) also recovered drilled rectangular and expanded bar gorgets, which co-occurred spatially with Alexander series pottery, from the Early Woodland component at Roach.

Besides Crab Orchard series pottery, Middle Woodland diagnostics in the Lower Tennessee-Cumberland Section are other local ceramics like Mulberry Creek series and O'Neal Plain. In addition to Site 15Ml134, Crab Orchard (Baumer) sherds were recovered from Birmingham (15Ml8), Goheen (15Ml14) (Clay 1963a), Dedmon (15Ml68) (Allen 1976), and Ford #5 (15Ml77) (Carstens 1979). Mulberry Creek sherds were recovered in small amounts from Tinsley Hill (15Ly18), Driskill (15Ly9), Birmingham, Goheen, Rodgers (15Tr17), Canton (15Tr1) (Clay 1963a, 1963b), and Dedmon (Allen 1976). In addition to Roach, Driskill and Goheen yielded small samples of O'Neal Plain (Clay 1963a; Lewis 1988). Besides Adena, Motley, and Lowe cluster projectile point types (Table 5.7), another potential Middle Woodland diagnostic from this section is a black steatite bird effigy platform pipe collected in about 1920 from the Land Between the Lakes area of Trigg County (McCoy 1984).

Limited evidence of Middle Woodland subsistence was derived from floated deposits at Dedmon (15Ml68). In addition to wild seeds and nuts, Nance (1974) recovered a high percentage (80 percent) of deer bones, as well as elk, wolf, fox, raccoon, opossum, squirrel, beaver, turkey, fish, and shellfish remains.

The multicomponent Owen site (15Ml69) was intensively occupied during the Middle-Late Woodland subperiods. The village or base camp covered an area of 3 ha and was occupied over multiple seasons. The Crab Orchard-like pottery assemblage consists primarily of cordmarked, cord-wrapped-dowel impressed, or plain sherds. Vessels with flat or rounded bases are present, as are jar rims with notched lips. Projectile points from Owen are dominated by expanded stem forms that may be Lowe cluster. While these artifacts suggest a late Middle and/or early Late Woodland component, calibrated radiocarbon dates of 352-128 B.C., 167 B.C.-A.D. 251, and 357 B.C.-A.D. 546 (Table 5.5) support an early Middle Woodland affiliation for this component at Owen (Allen 1976; Nance 1974).

A post-A.D. 600 Late Woodland occupation was documented at the Canton site (15Tr1), which is located on the east side of the Cumberland River, now Lake Barkley. Diagnostic artifacts are Baytown Plain sherds and small triangular points. The chipped stone tool assemblage is dominated by local cherts, especially Warsaw, which crops out below the site, and St. Louis, which was acquired from two quarries about 5 km from the site (Bradbury 2006; Stout et al. 1996).

Other than Dedmon, Owen, and Canton, there is little information about late Middle and early Late Woodland (ca. A.D. 250-800) occupations in the Lower Tennessee-Cumberland Section. One problem relates to the absence of diagnostic artifacts. There are few Middle Woodland point types from sites in the section (Table 5.7). Also, if there is a general lack of decorated Middle Woodland ceramics (e.g., noded Crab Orchard, Havana/Hopewellian, and southeastern stamped ceramics) in this area, as present evidence seems to suggest (see Allen 1976:70-71), then it would be difficult to distinguish many Middle Woodland occupations from early Late Woodland components. Second, because large-scale excavations have tended to focus upon large and intensively occupied sites, smaller settlements in this section have been generally overlooked.

Information on terminal Late Woodland occupations in the section derives primarily from three sites: Dedmon (15Ml68) (Allen 1976; Nance 1974), Driskill (15Ly9) (Clay 1963a; Schwartz 1962a), and Tinsley Hill (15Ly18) (Nance 1974). The Dedmon site is a small (about 0.65 ha) but intensive habitation that contained the remains of terminal Late Woodland subperiod and early Mississippi period components (Allen 1976). Late Woodland ceramics from Dedmon are Baytown Plain, Yankeetown Incised, and Larto Red-Filmed types. Most vessels represent large subconoidal or globular jars, though shallow bowls also are common. Projectile points from Dedmon consist primarily of small triangular forms (Allen 1976; Nance 1974).

The upper component at the stratified Driskill site (15Ly9) (Schwartz 1962a) encompassed an oval area approximately 0.5 ha in extent. Cultural features are an ash lens, storage pit, hearth, and postmold (Nance 1974; Schwartz 1962a). Materials from this component, which Clay (1963a) designated Driskill #2, included Dillinger-like clay tempered ceramics (cf., Hargrave 1983; Maxwell 1951), a few Yankeetown sherds, and numerous small triangular points. Blue Lake Cordmarked pottery and a fired clay smoking pipe bowl also were recovered from terminal Late Woodland contexts at the Driskill site (Clay 1963a).

The Dillinger-like ceramics from Driskill are similar to those from Dedmon. No radiocarbon dates are available for the terminal Woodland components at either Dedmon or Driskill, but stylistic comparisons with materials from dated contexts at other sites provide for reliable cross-dating of both components. Dillinger components in southern Illinois date to the tenth century (see Hargrave 1982:1237), and Yankeetown ceramics also are associated with dates of A.D. 800-1100 (see the Ohio River II Section for radiocarbon dates associated with Yankeetown pottery).

Terminal Late Woodland subsistence information is lacking from both Dedmon and Driskill. However, data from southern Illinois and the Foster site (15Da68) in the Ohio River II Section suggest that there was some variability in the types of plants used by terminal Late Woodland groups. While some groups relied on seed-bearing plants, such as goosefoot and maygrass, and two varieties of maize (Lopinot 1982; Sussenbach 1992), others continued to rely primarily on nuts and only a few seed-bearing plants (Cremin 1985).

Tinsley Hill (15Ly18) was located near the confluence of Eddy Creek and Cumberland River on floodplain and low bluff landforms. Though known primarily for Mississippi period occupations, Nance (1974) reported the discovery of two Late Woodland subperiod structures at the site. The two structures, which measured 1 m and 2 m in length, were demarcated by a total of 12 postmolds, which ranged in diameter from 8.0 to 11.5 cm. The postmold features were covered with 15 cm of sterile soil, over which was constructed a Mississippian platform mound (Nance 1974).

GREEN RIVER (MANAGEMENT AREA 2)

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

One of the earliest archaeological investigations in the Green River Management Area was Nelson's (19l7a, 19l7b) excavations at Mammoth Cave (15Ed1), as well as surrounding cave and rockshelter sites. Nelson's work was one of the first to employ stratigraphic techniques and, as such, it made a significant contribution to the development of field methodology in American archaeology. Later research determined that the most intensive prehistoric use of Mammoth Cave occurred during the early part of the Woodland period (Crothers et al. 2002; Watson 1986, 1997).

In the 1930s, the University of Kentucky, under the auspices of the WPA, investigated several archaeological sites in the Green River Management Area. Although these investigations focused upon the Archaic shell midden sites located along the Green River and its tributaries (see Chapter 4), several of the investigated sites also contained Woodland components (Webb 1946, 1950a, 1950b; Webb and Haag 1939, 1947a).

Following the WPA era of Kentucky archaeology, the Green River Management Area experienced somewhat of a hiatus in Woodland period research. Work resumed in this region in the late 1950s and 1960s. During this period, the University of Kentucky conducted investigations within the areas to be impounded by construction of Rough River Lake (Schwartz et al. 1958a, 1958b), Barren River Reservoir (Sloan and Schwartz 1960), and Green River Lake (Duffield 1965; Hanson and Dunnell 1964). Schwartz's (1960) archaeological survey for the Nolin River reservoir located 55 sites, 15 of which were identified tentatively as Woodland based on diagnostic artifacts such as pottery and projectile points. Of these, 13 are open habitations ("villages" or "camps") and two are rockshelters (Schwartz 1960; Schwartz et al. 1960). An extensive survey and testing project conducted in the mid 1960s by the University of Kentucky along the Ohio River in Union, Henderson, and Daviess counties (Hoffman 1966) resulted in the identification of a number of Woodland sites, some with deep midden deposits.

Amateur/Nonprofessional studies undertaken within the Green River Management Area included investigations at several rockshelter and cave sites (Dossett 1965; Guthe 1964; Ray 1965, 1972; Vietzen 1956), and excavations at Watkins Mound A (15Lo12) by the now disbanded Southern Kentucky Chapter of the Tennessee Archaeological Society (Applegate 2000c, 2002; Dowell 1979; Ray n.d.). Watkins is one of the few Hopewellian mounds known in Kentucky and was one of only two sites from Kentucky included in Seeman's (1979:290) analysis of the Hopewell Interaction Sphere.

Two Woodland mound sites, Ashby (15Mu4) (Hoffman 1965; Rolingson 1967) and Jones (15Hk11) (Purrington 1966b), were excavated by archaeologists in the 1960s. Beginning in the late 1960s and continuing to the present, Washington University faculty and students conducted several research projects in the Green River Management Area. Although much of this work has focused upon the Archaic period (see Chapter 4), data on the Woodland period has been obtained as a result of investigations in the Mammoth Cave area (Horton 2003; Watson et al. 1969; Watson 1997), in the surrounding karst region (Carstens 1980; Haskins 1988a, 1988b; Hemberger 1985), and at Green River shell midden sites such as Carlston Annis (15Bt5) and Bowles (15Oh13) (Marquardt and Watson 1983).

During the 1970s and 1980s, most of the archaeological work conducted in the Green River Management Area involved small-scale, cultural resource management projects. One of the larger projects was a survey of two large tracts located on the border of Breckenridge and Hancock counties (Turnbow et al. 1980). Of the 163 sites documented, 14 had one or more Woodland components. Elsewhere, the Kentucky Heritage Council conducted surveys of four counties: Adair (Boisvert and Gatus 1977), Christian (Sanders and Maynard 1979), Daviess (Weinland and Fenwick 1978), and Hopkins (Weinland and DeLorenze 1980). The Kentucky Heritage Council also funded a survey along the Ohio River in Union, Henderson, and Daviess counties (Ottesen 1981). This project was aimed at identifying settlement trends through time within the study area (Ottesen 1985). Murray State University's acquisition of Savage Cave (15Lo11) prompted a renewed interest in this site, with one result being a published description of the Woodland pottery (Lawrence 1985). Schock and Langford (1982) conducted excavations in the Barren River Reservoir in Barren, Allen, and Monroe counties, recovering data from six multicomponent sites threatened by wave erosion. Five of the sites yielded artifactual evidence of Woodland period occupations, mostly from surface contexts.

Haskins (1988a, 1988b) conducted an archaeological survey of Prewitt's Knob in Barren County. Her research involved examination of Late Archaic-Early Woodland artifact assemblages collected by landowners, archaeological survey of the knob surface, recovery of human remains from caves in the knob, and bioarchaeological analysis of human remains. The knob is best known for three mortuary caves: Crystal Onyx Cave (15Bn20), Roger's Discovery (15Bn55), and Pit of the Skulls (15Bn51). The knob surface (15Bn56) yielded chipped stone artifacts, including Turkey Tail and Wade points, manufactured of local chert types. A chert outcrop on the knob may have been quarried in prehistory (Haskins 1988a, 1988b; Hemberger 1985).

Archaeologists conducted several important excavations and surveys during the early 1990s. Sussenbach's (1992) research at the Foster site (15Da68) revealed important information about Late Woodland Yankeetown phase material culture, subsistence, and settlement. Schenian and Mocas (1993b) conducted a shoreline survey of Rough River Lake on the border of Grayson and Breckinridge counties. They documented 163 sites within a 3100 acre area along Rough River and its tributaries. Of these, 13 have Late Archaic-Early Woodland components, four are Middle Woodland, five are Middle-Late Woodland, and nine are Late Woodland-Late Prehistoric.

Prentice (1993) surveyed almost one-fourth of the more than 50,000 acres encompassed by Mammoth Cave National Park, including visits to sites recorded previously by Watson and Carstens (1982). The cultural site inventory for the park includes 223 prehistoric sites and 349 prehistoric site components (Prentice 1993). Of the 69 Woodland sites, 58 are rockshelters or caves, nine are upland artifact scatters, and two are bottomland artifact scatters. There are 43 Early Woodland, 31 Middle Woodland, 27 Late Woodland, 13 Late Woodland-Mississippi, and six unspecified Woodland components (Prentice 1993).

In the late 1990s, archaeologists working in Breckenridge County located several Woodland period sites, especially along or near the Ohio River. Three associated sites are in northern Breckenridge County in the Chenaultt Bottoms: Rockmaker (15Bc138), Yellowbank (15Bc164), and Chenaultt Crematory Pit (Bader 1996b).

Versluis (2003) surveyed 1645 acres a few km south of the Green River in Henderson County. Of the 32 sites recorded, three have Early Woodland components, four are Middle Woodland, and one is Late Woodland. Several temporally unassigned petroglyphs were documented. Adena Stemmed points and Adena Plain pottery are diagnostic Woodland artifacts recovered from the sites. One Early-Middle Woodland (15He847) site with subsurface features yielded a calibrated date of 356 B.C.-A.D 121 and Site 15He852 yielded a calibrated date of A.D. 344-541 (Table 5.12).

Building on Ottesen's (1985) study of settlement strategies in northwestern Kentucky, DeNeeve (2004) re-examined Crab Orchard settlement patterns and settlement systems in Daviess, Henderson, and Union counties. He also re-evaluated Crab Orchard systematics, including pottery types and culture-historical units.

Applegate (2007) surveyed the 671 acres of the Western Kentucky University Upper Green River Biological Preserve in Hart County a few km upstream from Mammoth Cave National Park. Of the 12 prehistoric sites, two yielded chronologically sensitive artifacts including Woodland diagnostics. The Gardner House site (15Ht83), an upland lithic scatter about 1 km south of Green River, had one Woodland pottery sherd of an uncertain type. The multicomponent Wild Onion site (15Ht92), a denser lithic scatter in a plowed field on a hill overlooking the Green River floodplain, produced a Cresap Stemmed point and bladelets indicating Early and Middle Woodland occupations.

SITE DENSITY AND DISTRIBUTION PATTERNS

The 748 Woodland sites in the Green River Management Area account for 25.6 percent of the Woodland sites in Kentucky, the largest percentage of the management areas (Table 5.1). Over 70 percent of the Woodland sites in the section are open habitations without mounds and almost 12 percent are rockshelters. At about 2.5 percent each, caves and open habitations with mounds are the next most abundant Woodland site types. Additional Woodland site types are (in decreasing order) earth mounds, cemeteries, mound complexes, quarries, isolated finds, workshops, and other types including single examples of rock art and specialized activity sites (Table 5.10). No Woodland stone mounds or earthen enclosures are recorded in the Green River Management Area.

Of the four sections of the Green River Management Area, the Ohio River II Section has the largest percentage (38.5 percent) of Woodland sites, followed by the Pennyroyal (24 percent) and Upper Green River (22 percent) sections, then the Western Coalfield Section (15.5 percent). The Upper Green River Section has the largest numbers of Woodland period rockshelters and caves, and the smallest numbers of isolated, grouped, or habitation-associated earthen mounds. Cave, quarry, and workshop sites are exclusive to the Pennyroyal and Upper Green River sections (Table 5.10).

Table 5.10. Woodland Site Types by Section in the Green River Management Area.

Site Type	Ohio River II	Western Coalfield	Penny-royal	Upper Green	Total	Percent
Open Hab w/o Mounds	222	82	122	102	528	70.6
Open Hab w/ Mounds	6	3	8	0	17	2.3
Rockshelter	16	14	23	36	89	11.9
Cave	0	0	7	11	18	2.4
Quarry	0	0	2	2	4	0.5
Earth Mound	3	5	3	0	11	1.5
Mound Complex	1	2	2	2	7	0.9
Cemetery	2	0	6	1	9	1.2
Workshop	0	0	2	2	4	0.5
Isolated Find	2	1	0	1	4	0.5
Other	36	8	7	6	57	7.6
Total	288	115	182	163	748	100.0
Percent	38.5	15.4	24.3	21.8	100.0	

The 941 Green River Management Area Woodland components account for 26 percent of the Woodland components in Kentucky (Table 5.2). About 39 percent (n=367) of the components are recorded in the Ohio River I Section, 22.5 percent (n=212) each in the Pennyroyal and Upper Green River sections, and 16 percent (n=150) in the Western Coalfield (Table 5.11). The low percentages of Woodland sites (see above) and site components in the Western Coalfield Section relative to the preceding Archaic period (see Chapter 4) may reflect differences in Archaic and Woodland settlement patterns and/or spatial biases in previous archaeological research within the management area.

Table 5.11. Woodland Site Components by Section and Subperiod in the Green River Management Area.

Subperiod	Ohio River I		West Coalfield		Pennyroyal		Upper Green		Total	
Late Woodland	43	11.7%	9	6.0%	7	3.3%	16	7.5%	75	8.0%
Middle Woodland	102	27.8%	34	22.7%	37	17.5%	58	27.4%	231	24.5%
Early Woodland	93	25.3%	51	34.0%	60	28.3%	62	29.2%	266	28.3%
Unassigned	129	35.1%	56	37.3%	108	50.9%	76	35.8%	369	39.2%
Total	367	100.0%	150	100.0%	212	100.0%	212	100.0%	941	100.0%

About 39 percent (n=369) of the Woodland components in the Green River Management Area are unassigned, 28 percent and 25 percent are Early and Middle Woodland, respectively, and 8 percent are Late Woodland (Table 5.11). Within the management area, the Pennyroyal Section has a significantly higher proportion of unassigned Woodland components and lower proportions of Middle and Late Woodland components than the other sections. The Ohio River I Section has the largest percentages of Middle Woodland (44 percent) and Late Woodland (57 percent) components in the management area, whereas the Early Woodland components are more evenly distributed among the four sections.

CHRONOMETRIC DETERMINATIONS

One of the most extensive Woodland radiocarbon series in Kentucky is for the Mammoth-Flint cave system in the Upper Green River Section (Table 5.12). There are 40 dates for Salts Cave, 18 for Mammoth Cave, two for Lee Cave, and two for Fisher Ridge Cave (DiBlasi 1996; Watson 1997). The dated materials represent a variety of artifact types that were obtained from various distances, up to several km, from the cave entrances. The two-sigma calibrated range for all sites is 2885 B.C. to A.D. 427, or Late Archaic through Middle Woodland, though most dates fall in the Early Woodland subperiod (Kennedy 1996). According to Kennedy (1996:79), "the major problem with the … series is one of precision." Therefore, "it seems prudent to regard these dates at the very least at their two sigma uncertainty" (Kennedy 1996:80).

In addition to the Mammoth-Flint cave sites, radiocarbon dates are reported for several other caves and rockshelters in the Upper Green River Section. There are absolute dates for Woodland occupations at seven-eight sites in each of the Ohio River II and Pennyroyal sections. Three of the four dated sites in the Western Coalfield Section are shell middens (Table 5.12).

OHIO RIVER II SECTION

The 288 Woodland sites documented in the Ohio River II Section contain 367 Woodland components. Open habitations without mounds account for a large percentage of the Woodland sites, followed by unspecified/other site types and rockshelters (Table 5.10). There are twice as many Early Woodland and Middle Woodland components as Late Woodland components in this section (Table 5.11). About half of the important Woodland period sites in the section are located in Henderson and Union counties, and no substantial Woodland sites are reported for Crittenden County (Table 5.13).

Most information about Early Woodland occupations in the Ohio River II Section derives from sites in Breckenridge County. The Beech Fork site (15Bc168) occupies a narrow ridge spur overlooking the bottoms of Beech Fork, a tributary of Clover Creek several km south of the Ohio River. Intact shallow deposits and one hearth feature likely dating to the Late Archaic-Early Woodland transition were documented at the site. The site yielded a Gary Contracting Stemmed point from the hearth. Storage features, postmolds, and refuse pits were not found, nor were groundstone tools or pottery. The low intensity occupations were short in duration and involved a limited range of activities, including chipped stone tool manufacture (Bader 1991).

Three other important Early Woodland sites are located in the Chenaultt Bottoms. Rockmaker (15Bc138) is a multicomponent site on the second terrace of the Ohio River floodplain at the confluence with Write's Branch. The Early Woodland component(s) are evidenced by Wade, Turkey Tail, and Dickson cluster points found in association with Arrowhead Farm (Zorn Punctate) and Chenaultt/Dexter series pottery. Both pottery types appear to have been used for mortuary-related activities at the site. Radiocarbon dates of

Table 5.12. Chronometric Dates for the Green River Management Area.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
<u>Ohio River II Section</u>			
Rockmaker (15Bc138)			
Beta-49085	2840±80	1258-1232, 1218-829 BC	Bader 1996a, 1996b
Beta-49084	2495±60	789-482, 467-415 BC	Bader 1996a, 1996b
Beta-49086	2450±60	763-680, 673-405 BC	Bader 1996a, 1996b
Yellowbank (15Bc164)			
Beta-70923	2310±80	750-687, 666-641, 593-172 BC	Bader 1996a, 1996b
Chenaultt Crematory Pit (no state site number)			
Beta-49084	2495±60	789-482, 467-415 BC	Bader 1996a, 1996b
Foster (15Da68)			
Beta-42594	980±50	AD 973-1180	Sussenbach 1992
Beta-42593	840±50	AD 1044-1098, 1119-1142, 1147-1274	Sussenbach 1992
Site 15He847			
Beta-185504	2060±80	356-285, 255-249, 234 BC-AD 87, 104-121	Versluis 2004
Site 15He852			
Beta-185503	1620±40	AD 344-541	Versluis 2004
Slack Farm (15Un28)			
Beta-62693	1960±60	107 BC-AD 181, 187-214	deNeeve 2004
Beta-62691	1850±50	AD 53-259, 295-322	deNeeve 2004
Beta-62692	1460±60	AD 434-493, 506-520, 527-666	Pollack 1993
Beta-62696	1240±50	AD 699-889	Pollack 1993
Stull (15Un95)			
GX-7903	860±130	AD 897-922, 941-1322, 1348-1392	Ottesen 1981
<u>Western Coalfield Section</u>			
Carlston Annis (15Bt5) (see Chapter 4:Table 4.15)			
UCLA-2117D	2515±80	799-477, 474-413 BC	Marquardt and Watson 1977
C-152	2336±250	1004 BC-AD 174, 192-211	Webb 1950a
Read (15Bt10) (see Chapter 4:Table 4.15)			
ISGS-2245	2470±200	1040-1032, 1030-85, 80-54 BC	Haskins 1992
Annis Village (15Bt20) (see Chapter 4:Table 4.15)			
Beta-186154	2270±70	515-161, 132-118 BC	Hammerstedt 2005
Bowles (15Oh13) (see Chapter 4:Table 4.15)			
UCLA-2117F	2420±200	991, 979-37, 28-23, 10-3 BC	Marquardt and Watson 1977
UCLA-2117E	1820±300	522 BC-AD 827, 839-865	Marquardt and Watson 1977
<u>Pennyroyal Section</u>			
Site 15Al22			
ISGS-6029	2790 ± 80	1192-1175, 1164-1143, 1132-802 BC	Henry and Crothers 2007:42
ISGS-6030	2720 ± 70	1040-1032, 1030-788 BC	Henry and Crothers 2007:42
ISGS-6031	2800 ± 90	1249-1244, 1212-802 BC	Henry and Crothers 2007:42
Site 15Al329A (see Chapter 6:Table 6.8)			
UGa-4479	1170±70	AD 687-992	Schock and Langford 1982
Savage Cave (15Lo11)			
UGa-3594	2115±65	361-271, 263 BC-AD 5, 12-16	Lawrence 1985:92
UGa-3593	1765±100	AD 34-35, 53-465, 482-533	Lawrence 1985:92
UGa-3596	1735±35	AD 231-401	Lawrence 1985:92
UGa-3592	1495±65	AD 428-652	Lawrence 1985:92
Site 15Si7			
UGa-3689	2455±90	789-394 BC	Schock and Dowell 1981
UGa-3690	2485±70	781-413 BC	Schock and Dowell 1981

Table 5.12. Continued.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
Crumps Cave (15Wa6)			
(Vestibule)			
UGa-1840	2365±95	769-347, 318-207 BC	Carstens 1980, 1996
UGa-1839	1920±150	356-286, 252-250, 234 BC-AD 424	Carstens 1980, 1996
(Interior)			
not reported	1980±60	165 BC-AD 134	Crothers et al. 2002; Davis 1996; Faulkner 1997
Beta-116408	1840±80	AD 5-12, 16-383	Crothers et al. 2002
Coca Cola (15Wa963)			
UGa-1712	1965±110	350-305, 209 BC-AD 262, 279-327	Schock 1979
UGa-1711	745±465	AD 435-491, 508-518, 528-1956	Schock 1979
Plum Springs (15Wa981)			
UGa-3742	2110±105	389 BC-AD 72	Schock and Dowell 1981
UGa-3291	2015±65	186 BC-AD 93, 97-125	Schock and Dowell 1981
n/a	1930±65	88-77 BC, 55 BC-AD 239	Schock and Dowell 1981
UGa-3741	1475±145	AD 252-874	Schock and Dowell 1981
n/a	1410*	* standard deviation not reported	Schock and Dowell 1981
<u>Upper Green River Section</u>			
Crystal Onyx Cave (15Bn20)			
ISGS-1665	2770±70	1113-1098, 1090-804 BC	Haskins 1988a, 1988b
ISGS-1673	2710±70	1024-774 BC	Haskins 1988a, 1988b
Teledyne 1971	2630±95	1003-504, 493-489, 462-450, 441-417 BC	Haskins 1988a, 1988b
ISGS-1675	2620±70	925-537, 528-524 BC	Haskins 1988a, 1988b
ISGS-1674	2330±90	757-684, 669-197 BC	Haskins 1988a, 1988b
ISGS-1676	2050±70	350-302, 226-225, 209 BC-AD 86, 107-118	Haskins 1988a, 1988b
Jewell (15Bn21, 15Bn349, 15Bn384, 15Bn390) (see Chapter 6:Table 6.8)			
UGa-4475	1340±340	41 BC-AD 1297, 1375-1375	Schock and Langford 1982
Mammoth Cave (15Ed1)			
(Upper Mammoth)			
X-9	2370±60	756-684, 699-360, 274-260 BC	Watson et al. 1969
X-8	2230±40	387-203 BC	Watson et al. 1969
(Lower Mammoth)			
UCLA-1730A	4120±70	2885-2562, 2535-2493 BC	Kennedy 1996
UCLA-1730B	3000±70	1413-1039, 1033-1029 BC	Kennedy 1996
SI-6890A	2920±60	1308-970, 961-933 BC	Kennedy 1996
SI-6890B	2495±80	791-413 BC	Kennedy 1996
(Mummy)			
SI-3007A	2395±75	772-364 BC	Watson et al. 1969
SI-3007C	1965±65	157-135, 114 BC-AD 179, 188-213	Watson et al. 1969
(Other)			
AA-11085	2700±80	1112-1101, 1086-1063, 1058-753, 685-668, 611-597 BC	Gremillion and Sobolik 1996
AA-16566	2675±50	926-781 BC	Crothers et al. 2002
Beta-47292	2630±55	914-748, 688-665, 643-589, 580-558 BC	Crothers et al. 2002
AA-10084	2605±70	914-517 BC	Gremillion and Sobolik 1996
AA-10081	2575±65	891-879, 844-505, 492-490, 462-450, 441-417 BC	Gremillion and Sobolik 1996
Beta-47470	2500±55	791-485, 464-416 BC	Kennedy 1992

Table 5.12. Continued.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
AA-10080	2485±70	781-413 BC	Gremillion and Sobolik 1996
AA-10083	2485±70	781-413 BC	Gremillion and Sobolik 1996
AA-10082	2365±70	759-683, 670-355, 290-232 BC	Gremillion and Sobolik 1996
AA-10079	2335±40	537-528, 525-355, 288-233 BC	Gremillion and Sobolik 1996
Patch Rockshelter (15Ed42)			
UGa-1837	1425±100	AD 408-782, 788-813, 844-857	Carstens 1980, 1996
Site 15Ed52			
UGa-1838	820±80	AD 1030-1291	Carstens 1980, 1996
Kingbird Rockshelter (15Ed162)			
Beta-31114	2585±65	897-513 BC	Prentice 1993
Beta-31115	2385±70	766-362, 269-264 BC	Prentice 1993
Salts Cave (15Ht4)			
(Mummy)			
M-2258	1960±160	365 BC-AD 390	Crane and Griffin 1972
M-2259	1920±160	359-275, 260 BC-AD 427	Crane and Griffin 1972
(Vestibule)			
GaK-2767	3490±110	2131-2085, 2051-1527 BC	Watson et al. 1969
GaK-2766	3410±100	1958-1493, 1476-1460 BC	Watson et al. 1969
GaK-2764	3360±220	2282-2249, 2232-2218, 2214-1112, 1100-1087, 1063-1059 BC	Watson et al. 1969
GaK-2765	2940±120	1427-893, 876-847 BC	Watson et al. 1969
GaK-2622	2660±100	1054-507, 460-452, 440-418 BC	Watson et al. 1969
Beta-4080	2520±70	800-482, 467-415 BC	Gardner 1987:359
Beta-4652	2510±60	796-485, 464-416 BC	Gardner 1987:359
Beta-4649	2470±60	767-411 BC	Gardner 1987:359
Beta-4651	2430±50	755-684, 669-607, 601-401 BC	Gardner 1987:359
Beta-4083	2410±60	756-684, 669-394 BC	Gardner 1987:359
Beta-4082	2380±60	756-684, 669-373 BC	Gardner 1987:359
Beta-4650	2340±60	748-687, 666-644, 590-578, 562-348, 317-207 BC	Gardner 1987:359
Beta-4081	2200±60	393-107 BC	Gardner 1987:359
(Upper Cave)			
I-256	3075±140	1632-968, 963-930 BC	Kennedy 1996
M-1586	2840±150	1434-760, 682-671 BC	Crane and Griffin 1968; Watson et al. 1969
M-1574	2570±140	1025-382 BC	Crane and Griffin 1968; Watson et al. 1969
M-1587	2520±140	974-955, 942-357, 284-256, 247-234 BC	Crane and Griffin 1968; Watson et al. 1969
M-1584	2510±140	970-961, 933-355, 289-232 BC	Crane and Griffin 1968; Watson et al. 1969
M-1585	2430±130	818-343, 324-205 BC	Crane and Griffin 1968; Watson et al. 1969
M-1777	2270±140	765-678, 674-37, 29-21, 11-2 BC	Crane and Griffin 1968; Watson et al. 1969
M-1573	2240±200	805 BC-A.D. 137, 200	Crane and Griffin 1968; Watson et al. 1969

Table 5.12. Continued.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
(Middle Cave)			
M-1770	2660±140	1188-1181, 1155-1145, 1130-405 BC	Crane and Griffin 1968; Watson et al. 1969
M-1577	2350±140	797-111 BC	Crane and Griffin 1968; Watson et al. 1969
(Lower Cave)			
M-1589	3140±150	1749-996, 986-980 BC	Crane and Griffin 1968
M-1588	2720±140	1267-506, 461-451, 440-418 BC	Crane and Griffin 1968
(Other)			
Beta-32685	2790±70	1127-807 BC	Tankersley et al. 1994
Beta-87915	2760±40	1002-825 BC	Kennedy and Watson 1997
AA-11738	2705±60	996-985, 980-793 BC	Gremillion and Sobolik 1996
AA-10088	2605±80	922-504, 493-489, 462-450, 441-417 BC	Gremillion and Sobolik 1996
AA-10089	2590±70	903-509, 437-421 BC	Gremillion and Sobolik 1996
AA-10090	2580±70	896-507, 459-453, 439-419 BC	Gremillion and Sobolik 1996
AA-10086	2570±70	840-484, 464-416 BC	Gremillion and Sobolik 1996
AA-10091	2500±80	793-413 BC	Gremillion and Sobolik 1996
AA-10087	2410±70	764-679, 674-390 BC	Gremillion and Sobolik 1996
Beta-47472	2495±60	789-482, 467-415 BC	Tankersley et al. 1994
Beta-47471	2490±60	786-480, 469-414 BC	Tankersley et al. 1994
Beta-60067	2410±90	792-360, 273-261 BC	Ruppert 1994
Beta-32684	2410±60	756-684, 669-394 BC	Tankersley et al. 1994

materials associated with the pottery are cal 1258-829 B.C. and cal 763-405 B.C. (Table 5.12) (Bader 1996a, 1996b), making the former one of the earliest absolute dates for pottery and the earliest date for mortuary use of pottery in Kentucky. The site yielded another radiocarbon date of cal 789-415 B.C. (Bader 1996a, 1996b).

The 25 features at Rockmaker consisted of 17 rockpiles, six hearths, one stratified pit with thermal debris, and one lithic production locus. Bader (1996a, 1996b) noted physical but not functional similarities between the rockpiles at Rockmaker, which she interpreted as fish smoking or drying features, and those described by Clay (1985) at Peter Village in the Central Bluegrass Section, which Clay interpreted as hot-rock cooking features. Bader (1996a, 1996b) concluded that the Rockmaker site functioned primarily as a short-term lithic workshop occupied during the fall. High-quality cherts were acquired from local sources and transported to the site, where blanks and finished bifacial tools were produced.

Located near and associated with Rockmaker is Yellowbank (15Bc164), a low intensity site that lacked cultural features. Dated at cal 750-172 B.C. (Table 5.12), Early Woodland occupations were of short duration and occurred primarily in the late fall and early spring. A narrow range of activities were related to chert acquisition, chipped stone tool manufacture, and riverine resource acquisition/processing/consumption. Lithic production activities at Yellowbank were similar to those at Rockmaker. Diagnostic artifacts recovered from Yellowbank are Turkey Tail and Dickson cluster points (Bader 1996b; Evans et al. 1994).

Table 5.13. Important Woodland Period Sites in the Ohio River II Section.

Site No.	Site Name	Site Type	Affiliation	References
15Bc98	none	open habitation	MW	Turnbow et al. 1980
15Bc138	Rockmaker	open habitation	EW, LW	Bader 1996a, 1996b
15Bc164	Yellowbank	open habitation	EW	Bader 1996b; Evans et al. 1994
none	Chenaultt Crematory	mortuary (nonmound)	EW	Bader 1996b
15Bc168	Beech Fork	open habitation	EW	Bader 1991
15Da26	none	open habitation	unassigned	Hoffman 1966; Marquardt 1971; Weinland and Fenwick 1978
15Da39	none	open habitation with mounds	MW, LW	Ottesen 1981; Weinland and Fenwick 1978
15Da61	none	open habitation	EW, LW	Weinland and Fenwick 1978
15Da68-69	Foster	open habitation	LW	Sussenbach 1992
15Ha114	none	rockshelter	EW, MW	Turnbow et al. 1980
15Ha151	none	open habitation	EW, MW, LW	Turnbow et al. 1980
15He13	none	open habitation	MW	Hoffman 1966; Marquardt 1971
15He16	Smith	open habitation with mound	MW	Hoffman 1966; Marquardt 1971
15He33	none	open habitation	MW-LW	Dowell 1979b
15He34	none	open habitation	MW-LW	Dowell 1979b
15He35	none	open habitation	LW	Hoffman 1966
15He48	none	open habitation with mound	LW	Hoffman 1966; Marquardt 1971
15He157	none	open habitation	LW	Ottesen 1981
15He315B	none	open habitation	EW, MW-LW	Dowell 1979b; Schock and Stone 1985
15He323B	none	open habitation	MW-LW	Dowell 1979b
15He847	none	open habitation	EW-MW	Versluis 2004
15Un28	Slack Farm	open habitation	MW	Pollack 1993; Pollack and Munson 1989
15Un30	none	open habitation	LW	Marquardt 1971
15Un31	Y-in-the-Road	open habitation	LW	DiBlasi and Sudhoff 1978
15Un32	none	open habitation	EW, LW	Marquardt 1971
15Un39	none	open habitation	EW, MW, LW	Marquardt 1971
15Un40	none	cemetery?	EW, MW	Marquardt 1971
15Un95	Stull	open habitation	LW	Ottesen 1981
15Un109	none	rockshelter	MW, LW	Ottesen 1981
15Un111	none	mound	MW, LW	Ottesen 1981
15Un113	none	open habitation	LW	Ottesen 1981

The Chenaultt Crematory Pit (no site number assigned) is an isolated, nonmound mortuary site located on the Ohio River floodplain/terrace between the Yellowbank and Rockmaker sites. Cremated human remains, some in a flat-bottomed Zorn Punctate bowl, were found in a subsurface pit measuring 1 m across. The grit tempered vessel exhibited two rows of inverted, joined triangles with incised horizontal lines above and below. The feature yielded a calibrated radiocarbon date of 789-415 B.C. (Table 5.12).

Grave goods associated with the cremation are a barite bar gorget, a granitic gorget, a boatstone fragment of unspecified material, three celt or ax fragments, and a bone awl fragment. Fire-altered rock, burned clay, and burned nut shell and animal bone were also found in the crematory (Bader 1996b). The latter may evidence ritual feasting associated with mortuary activities, as is known from Woodland sites in the Bluegrass Management Area.

Regarding settlement strategies, Early Woodland occupations in the Chenaultt Bottoms involved short-term use of camps where limited ranges of activities occurred, as none of the sites had storage or refuse pits, structural remains, or deep midden deposits. Site locations were selected with respect to proximity to chert and food resources, and long parallel levees and terraces in the Ohio River floodplain were preferred locations for settlement. No Early Woodland base camps [cf., Binford 1980] have been documented in this portion of the Ohio River II Section, though such sites probably are located in tributary valleys between the uplands and bottoms, perhaps in rockshelters (Bader 1996b; Evans et al. 1994). While the short-term camps and lithic workshops likely were contemporaneous components of "a logistical mobility pattern," it is possible that the Early Woodland sites were used during different seasons (camps in warm seasons, lithic workshops in cold seasons) as part of "a residential mobility pattern" (Bader 1996b:109).

In contrast to the Breckenridge County sites, the multicomponent Site 15Ha151, which is located on the first terrace of the Ohio River in Hancock County, may have functioned as a base camp [cf., Binford 1980] during the Early Woodland subperiod. Fifteen Early Woodland features included eight fire-cracked rock clusters, three amorphous soil stains, one large circular pit, and three postmolds from a circular, single-post structure of undetermined size. There were no interior postmolds or other features associated with the structure, and overall the features lacked any patterning that would indicate activity areas at the site. The pit feature yielded a single Crab Orchard (Baumer) Cordmarked rim sherd (Turnbow et al. 1980).

Another high intensity habitation in the eastern Ohio River II Section is Site 15Bc98. The early Middle Woodland site is exposed on the bank of the Ohio River, where erosion revealed a buried midden with a high concentration of chipped stone artifacts, ceramics, burned rocks, mussel shell, and charcoal (Turnbow et al. 1980).

To the west, low intensity late Early to early Middle Woodland occupations were documented at Site 15He847, an open habitation on a small knob. The site was used frequently, but periods of occupation were short in duration and involved a limited range of activities. The site functioned as a locale for chipped stone tool manufacture and maintenance, food acquisition/processing, wood processing, and hide tanning. Refuse pits, hearths, and postmolds were clustered in such a way as to suggest activity areas. Diagnostic artifacts are Adena Stemmed points and Adena Plain pottery (Versluis 2004).

Several early Middle Woodland sites classified as base camps [cf., Binford 1980] or small villages are recorded in Daviess County. Located within alluvial floodplain zones and adjacent upland bluffs, Sites 15Da26 and 15Da61 are marked by extensive midden deposits and/or subsurface features. The multicomponent Stull site (15Un95) contains an early Middle Woodland habitation (Ottesen 1981). Other early Middle

Woodland habitations in Union County are Sites 15Un32, 15Un39, and 15Un40 (Marquardt 1971).

More than 30 Crab Orchard tradition/phase sites have been documented in the Ohio River II Section (deNeeve 2004). Those dating to the late Early-early Middle Woodland subperiods (ca. 600-150 B.C.) are found in Henderson and Union counties. Pottery types from these sites are Crab Orchard Cordmarked, Crab Orchard Fabric Impressed, and Sugar Hill Cordmarked. The latter type, which dates to about 600-300 B.C. in Kentucky, is characterized by thick walls (12-30 mm), coarse grit temper, and cordmarked exterior surfaces. Crab Orchard sites dating to the Middle Woodland (ca. 100 B.C.-A.D. 300) in northwestern Kentucky are associated with assemblages of Crab Orchard Cordmarked, Crab Orchard Fabric Impressed, Crab Orchard Plain, Crab Orchard Cord-Wrapped Stick Impressed, and Crab Orchard Decorated pottery (deNeeve 2004).

Crab Orchard assemblages and occupations at Site 15Da39, Smith (15He16), Slack Farm (15Un28), and Site 15Ha114 are well documented (deNeeve 2004; Ottesen 1981; Turnbow et al. 1980). Crab Orchard ceramics also are reported from Site 15Un109, a rockshelter (Ottesen 1981), and Site 15He13, a high intensity early Middle Woodland habitation (Hoffman 1966; Marquardt 1971).

Site 15Da39 contained a substantial early Middle Woodland component with extensive cultural deposits representing a base camp [cf., Binford 1980] or small village. A possible mound at the site has not been investigated. Diagnostic artifacts are Crab Orchard series pottery and a Snyders point (Weinland and Fenwick 1978).

Located at the confluence of the Ohio and Green rivers, Smith (15He16) is a large early Middle Woodland habitation site with an earthen mound that has not been excavated. A large assemblage of Crab Orchard cordmarked, plain, fabric impressed, and decorated pottery was recovered from this site (deNeeve 2004; Hoffman 1966; Marquardt 1971).

Slack Farm (15Un28) is situated opposite the confluence of the Ohio and Wabash rivers. Though the site encompasses over 12 ha, the Crab Orchard component is primarily restricted to a 3 ha area. Within this area several large pit features and a 20 cm thick midden were documented (Tune 1991). Calibrated radiocarbon dates of 107 B.C.-A.D. 214 and A.D. 53-322 (Table 5.12) were obtained from two of the Crab Orchard pits. Crab Orchard pottery types recovered from Slack Farm are cordmarked, fabric impressed, plain, and decorated (deNeeve 2004). A variety of botanical remains were recovered from Crab Orchard features at Slack Farm (Rossen 1995; see also deNeeve 2004). Cultigens include chenopod, maygrass, erect knotweed, and squash. A few maize kernels were recovered, but it is quite possible that they are associated with the late Mississippian Caborn-Welborn component (see Chapter 6). The high frequency of hickory nutshell relative to other nut taxa is similar to that documented at the Rose Hotel site in southern Illinois, but the high densities of native cultigens at Slack Farm distinguish it from the typical southern Illinois plant use pattern (Parker 1999:408).

Site 15Ha114 is a rockshelter with four spatial concentrations of chipped stone, pottery, faunal, and fire-altered rock artifacts dating to the Early and Middle Woodland (and possibly Archaic) subperiods. Diagnostic artifacts include Crab Orchard pottery. Archaeologists documented hand and foot climbing holds and three areas of petroglyphs at the shelter. Regarding the latter, one part of the shelter had multiple geometric elements arranged in four clusters, and two other areas of the shelter had geometric renderings (Turnbow et al. 1980).

deNeeve (2004) studied settlement variation in 31 Crab Orchard sites within a 2123 ha study area in the western Ohio River II Section. Of these, 23 are located on floodplains, six on terraces, and two in uplands; three date to the Early Woodland, 18 to the Middle Woodland, nine to both periods, and one is undated. For all the sites, deNeeve (2004) reported statistically significant relationships between site locations and four of seven tested environmental variables: elevation, location within 120 m of high relief zones, distance to major stream, and landform. Crab Orchard sites are preferentially located at low elevations that provide easy access to upland zones and edge environments, are within 1 to 3 km of major streams, and on nonterrace floodplain landforms. According to deNeeve (2004:103), Crab Orchard site distributions reflect "perhaps an attempt to maximize returns by locating settlements within an area where productive floodplain and oak-hickory forest resource bases converge."

deNeeve (2004) documented temporal variation in the numbers, sizes, and distribution of Early Woodland and Middle Woodland Crab Orchard sites. The small number (n=12) of Crab Orchard sites with Early Woodland components are clustered in northwestern and northeastern Henderson County. Sites are dispersed within the two clusters. Floodplain sites near the Ohio River vastly outnumber terrace and upland sites, the numbers of the latter being roughly equal. Based on ceramic densities, deNeeve (2004) classified the Early Woodland Crab Orchard sites as very small and small. Site characteristics suggest low population density (deNeeve 2004).

The larger sample (n=27) of Crab Orchard sites with Middle Woodland components cluster in seven locations: northwestern Daviess County, northern Union County, and northwestern, north-central (two clusters), central, and northeastern Henderson County. All sizes of habitation sites, from very small to large, plus one burial mound are documented, though small sites predominate. Most sites are located close to the Ohio River and edge environments on floodplains and terraces. The two large-sized Middle Woodland sites, Slack Farm and Smith, are located near the confluences of the Ohio-Wabash and Ohio-Green rivers, respectively. The small camps probably were used seasonally or over several years, though no evidence of structures has been found yet. Middle Woodland Crab Orchard sites are more clustered with roughly equal spacing among sites. Site characteristics suggest increased population size (deNeeve 2004).

Ottesen (1985) found correlations between Middle Woodland Crab Orchard site distributions and soil drainage but not soil fertility in northwestern Kentucky. Like deNeeve (2004), Ottesen (1985) documented a preference for lowlands, where 87 percent of the Middle Woodland sites in her sample are located; the lowlands focus represents a decline in the breadth of environmental zones occupied compared to the Archaic period. All of the Middle Woodland sites are located along minor tributaries. The sites are evenly distributed within the Ohio and Green river drainages, with none documented in the Tradewater River drainage (Ottesen 1985).

Regarding the Middle Woodland Crab Orchard settlement system, Ottesen (1985) identified two Middle Woodland site types where different activities took place.

Considering that there is only one type of Archaic site type, temporary camps, in her study area, while not very complex the Crab Orchard settlement system represents the beginning of a trend toward "increasing diversity of functional site types" (Ottesen 1985:185). Mound/Burial sites, which are located in lowlands, yielded a greater diversity and percentage of artifact types. For example, all Middle Woodland pottery and faunal artifacts and about 75 percent of the manuports, projectile points, and other lithic artifacts were recovered from mound/burial sites. Temporary camps, which are found equally in lowland and uplands, produced small densities of a narrow range of artifact types. Temporary camps in the Green River drainage produced more projectile points than those in the Ohio River drainage (Ottesen 1985).

Other Middle Woodland sites in the Ohio River II Section may be affiliated with the Crab Orchard tradition and/or the Mann complex/phase. Dowell (1979b) proposed that a cluster of four sites on two ridges in the Ohio River floodplain of Henderson County functioned as "small communities" or low intensity domestic habitations. The absence of features and midden deposits indicate that occupations were of short duration at Sites 15He33, 15He34, 15He315B, and 15He323B. In decreasing ubiquity, Bakers Creek/Lowe cluster, small triangular, Copena, Jacks Reef Corner Notched, and Turkey Tail points were recovered from these sites. Metric data for Bakers Creek and Copena specimens were reported. Each site had bladelets, including over 70 plus a prepared bladelet core from Site 15He33. Other chipped stone artifacts from the sites include scrapers, knives, bifaces, drill, utilized flakes, and debitage. Groundstone artifacts include a two-hole slate gorget, a slate blade, utilized and nonutilized slate flakes, a sandstone abrader, and a pitted stone of unspecified rock. Crab Orchard (Baumer) series and/or untyped cordmarked, plain, stamped, and zoned local and nonlocal ceramics were recovered from the sites. Site occupants were engaged in a limited range of activities, including chipped stone tool manufacture, hunting, faunal/floral processing and preparation, hide preparation, and personal ornamentation. A small number of human remains were recovered from nonfeature contexts at Site 15He315B. The molar and femur fragments represent a least one adult of undetermined sex (Dowell 1979b; Schock and Stone 1985).

Site 15He315B may be associated with the Hopewell-related Mann complex/phase (Dowell 1979b; Schock and Stone 1985). Diagnostic Mann traits are plain, cordmarked, and decorated Mann pottery, Lowe cluster points, bladelets, platform pipes, obsidian debris, and anthropomorphic terra cotta figurines. Mann complex sites include large "corporate-ceremonial centers" with burial mounds and geometric earthworks, habitation sites in floodplain and terrace zones, and small aceramic logistic camps. Mann sites provide evidence of hunting-gathering and horticulture subsistence strategies (deNeeve 2004; Kellar 1979). Mann complex/phase components date to the late Middle Woodland subperiod, ca. A.D. 250-300 (Kellar 1979) or A.D. 300-500 (deNeeve 2004). While most Mann sites are located on the north side of the Ohio River in the Evansville-Owensboro vicinity, such sites are recorded in Union and Henderson counties in Kentucky (deNeeve 2004).

Based on the site sample examined by Ottesen (1985), the settlement pattern for the Mann complex/phase differs considerably compared to that of the early Middle Woodland Crab Orchard tradition. At 97 percent, the proportion of lowland sites peaked, and sites are found in all zones of river systems (e.g., main river, major tributaries, minor tributaries, and headwaters), though sites along main river trunks are most common. A high proportion of sites are in the Ohio River drainage, with a small percentage in the Tradewater and none in the Green River drainage.

The Mann complex/phase settlement system is characterized by three site types, marking a continued increase in site type diversity and a greater degree of sedentism associated with food production. Upland temporary camps continue to be used but expanded into in all river zones within the Ohio and Tradewater drainages. Lowland habitation sites include hamlets, which are found along main rivers and minor tributaries, and small villages, both of which are found in the Ohio drainage only. Unlike the early Middle Woodland settlement system, there are no special-purpose mounds/burial sites (Ottesen 1985).

The early Late Woodland subperiod is poorly documented in the Ohio River II Section, but a number of sites with Yankeetown phase assemblages are recorded. Yankeetown components are most readily identified by their highly distinctive ceramics, which are well-consolidated, well-fired, and tempered with clay grog. Surface treatment includes smoothing and, less commonly, cordmarking. Distinctive stylistic elements of Yankeetown pottery are decorations, typically applied to the shoulder and neck. Incising was executed within a decorative zone delineated by parallel horizontal lines. Within the decorative field are primary parallel lines that demark smaller zones, which in turn are infilled with secondary lines at right or diagonal angles, though other forms of incising are known. Other decorative elements are complicated stamping, filigree, nodes, rim folds, lip notches, and punctations, which usually occur in zoned arrangements on individual vessels. Common vessel forms are jars, bowls, and sometimes pans. Large vessels have lugs or loop handles (Blasingham 1965; Clay 1963a; Curry 1954; Dorwin and Kellar 1968; Sussenbach 1992; Vickery 1970). Diachronic changes in Yankeetown ceramics include an increase in bowls and pans, a decrease in cordmarking, a decrease in folded rims, and incorporation of shell tempering (Sussenbach 1992).

Other diagnostic Yankeetown phase artifacts are unserrated and unnotched triangular points, abraders, celts, hammerstones, clay tempered pottery beads, anthropomorphic terra cotta figures, cannel coal disks, and cannel coal pendants. Typical site types are small dispersed hamlets or homesteads less than 1 ha in size, and bell-shaped pits are common cultural features (Blasingham 1965; Muller 1986; Seeman and Munson 1980; Vickery 1970). Yankeetown components in Kentucky, which date between A.D. 700 and 1100, were documented at Site 15Ha151 (Turnbow et al. 1980), Site 15He35 (Hoffman 1966), Site 15Un30 (Marquardt 1971), Y-in-the-Road (15Un31) (DiBlasi and Sudhoff 1978), and Site 15Un109 (Ottesen 1981).

An early Yankeetown phase occupation was identified at Slack Farm (15Un28). Radiocarbon dates indicating an early Late Woodland component are cal A.D. 434-666 and A.D. 699-889 (Table 5.12). Small amounts of maize were recovered from Late Woodland contexts, though it is possible the specimens are intrusive from later Mississippian occupations (Pollack 1993; Pollack and Henderson 2000) (see Chapter 6).

The multicomponent Stull site (15Un95) included a substantial terminal Late Woodland occupation. Midden deposits and six cultural features yielded late

Yankeetown phase materials, including Yankeetown pottery tempered with grog or grog and shell. Cordmarking was a minor surface treatment on the sherds. A calibrated radiocarbon date for the occupation is A.D. 897-1392 (Table 5.12) (Ottesen 1981; see also Chapter 6).

Located on a terrace overlooking the Green River near the Ohio River confluence, the Foster site (15Da68-69) produced Yankeetown phase diagnostics from feature and other contexts. A large, stratified, bell-shaped pit produced Yankeetown sherds with a high frequency of cordmarking or smoothed-over cordmarking. Ceramic disks, small triangular points, hoe flakes and other debitage made of Dover and other cherts, hammerstones, abraders, a mano, a stone discoidal, and worked cannel coal were found in the pit. Site occupants practiced a hoe-based agricultural economy supplemented by wild foods. Maize and hickory were the most abundant plant species recovered from the pit. Other cultigens are goosefoot, maygrass, and little barley, while other wild plants are pecan, walnut, acorn, beans, goosefoot, grape, persimmon, blueberry, and black- or raspberry. Faunal remains were burned and fragmented, but several taxa were identified: deer, raccoon, beaver, gray squirrel, opossum, bird, turtle, snake, and fish. Calibrated radiocarbon dates of A.D. 973-1180 and A.D. 1044-1274 (Table 5.12) indicate a terminal Late Woodland affiliation for the Foster site (Sussenbach 1992).

WESTERN COALFIELD SECTION

The 115 Woodland sites recorded in the Western Coalfield Section contain 150 Woodland components. There is a low diversity of Woodland site types in this section, with only seven site types recorded. In decreasing order of abundance, site types are open habitations without mounds, rockshelters, other/unspecified, earth mounds, open habitations with mounds, mound complexes, and isolated finds (Table 5.10). Early and Middle Woodland components greatly outnumber Late Woodland components in this section (Table 5.11). Important Woodland sites are reported for all counties in the section except Webster (Table 5.14). A number of these sites are shell middens that are better known for their Archaic period occupations (see Chapter 4).

The early Early Woodland subperiod is poorly documented in the Western Coalfield Section. Other than Turkey Tail forms, there are few diagnostic projectile point types recorded at early sites (Table 5.7). Further, the earliest pottery in the section dates to the late Early Woodland subperiod. Therefore, without chronometric dating, it is difficult to identify early Early Woodland sites. An early Early Woodland component at Read (15Bt10) is indicated by calibrated radiocarbon dates spanning 1946-1457 B.C. to 1040-54 B.C. (Table 5.12) (Haskins 1992).

The earliest pottery in the Western Coalfield Section is, in general, similar to early Crab Orchard-like materials from the Ohio River II Section to the north. These types of ceramics were recovered from the upper levels of shell midden sites such as Butterfield (15McL7), Jimtown Hill (15Ohl9), and Barrett (15McL4) (Rolingson 1967:390-391; Marquardt and Watson 1977; Watson 1985:118-119). Crab Orchard sherds, as well as Turkey Tail and Adena Stemmed points, are reported from Carlston

Annis (15Bt5), where radiocarbon dates place the late Early Woodland occupation at 799-413 B.C. (Marquardt and Watson 1977) and 1004 B.C.-A.D. 211 (Webb 1950a) (Table 5.12).

Table 5.14. Important Woodland Period Sites in the Western Coalfield Section.

Site No.	Site Name	Site Type	Affiliation	References
15Bt2, 20	Annis Village and Mound#	open habitation with mound	LW	Hammerstedt 2005; Young 1962
15Bt5	Carlston Annis*	open habitation	EW, MW, LW	Watson 1985; Webb 1950a
15Bt6	DeWeese*	open habitation	EW	Hensley 1991
15Bt10	Read*	open habitation	EW, MW	Rolingson 1967; Webb 1950b
15Bt40	Baby Track	rockshelter	LW	Coy et al. 1997
15Hk11	Jones Mound	mound	MW	Purrington 1966b; Rolingson 1967
15Hk22	Andalex Village#	open habitation	LW	Niquette 1991
15Hk49	Morris Village+	open habitation	EW, MW, LW	Rolingson and Schwartz 1966
15Hk279	none	rockshelter	MW, LW	Olmanson 2003
15McL4	Barrett*	open habitation	E-MW, LW	Rolingson 1967; Watson 1985; Webb and Haag 1947b
15McL7	Butterfield*	open habitation	EW-MW	Rolingson 1967; Watson 1985; Webb and Haag 1947b
15McL11	Ward*	open habitation	EW-MW	Rolingson 1967; Watson 1985; Webb and Haag 1947b
15McL12	Kirkland*	open habitation	EW, MW, LW	Rolingson 1967
15McL26	none	open habitation	LW	Hensley 1991
15Mu4	Ashby	mound complex	MW-LW	Hoffman 1965; Rolingson 1967
15Mu41	none	open habitation	MW, LW	Hensley 1991
15Oh1	Chiggerville*	open habitation	MW, LW	Rolingson 1967; Webb and Haag 1939
15Oh2	Indian Knoll*	open habitation	EW, MW, LW	Rolingson 1967; Watson 1985
15Oh13	Bowles*	open habitation	EW, MW	Hensley 1991; Rolingson 1967
15Oh19	Jimtown Hill*	open habitation	EW, MW, LW	Rolingson 1967; Watson 1985
15Oh50	Pleasant Point	open habitation	EW	Myers 1981

*These sites are primarily known for their Archaic components - See Chapter 4;
#These sites are primarily known for their Mississippian components - See Chapter 6;
+This site is primarily known for its Archaic and Mississippian components - See Chapters 4 and 6.

One the best known Crab Orchard habitations in this section is Pleasant Point (15Oh50), a single-component site located adjacent to Green River in Ohio County. In addition to Crab Orchard ceramics, diagnostic Adena Stemmed, untyped square stemmed, and slightly expanding stemmed points were recovered from the site. One of the few Western Coalfield Woodland sites yielding subsistence data, flotation samples from Pleasant Point yielded a variety of wild plant remains, especially hickory nutshell. No native cultigens were identified in the plant assemblage. Though no radiocarbon dates have been reported for this site, based upon comparisons with similar materials from dated contexts at other sites, the Pleasant Point site dates to ca. 500-200 B.C. (Myers 1981).

Rolingson and Schwartz (1966) recovered Crab Orchard series ceramics from the multicomponent Morris Village site (15Hk49), which is located on a terrace in the Sugar Creek floodplain of the Tradewater drainage. Among the ceramic materials was a small cylindrical jar with a flat base, thin walls, outflaring rim, and cord-wrapped dowel-impressed exterior surface. According to Lewis (1988), the site also yielded one complicated stamped sherd. There are no chronometric dates for the Woodland occupation at Morris Village, but Railey (1990) suggested a range of 200 B.C. to A.D. 250 based on pottery attributes.

Besides Crab Orchard-like materials, sand tempered sherds of the contemporary Alexander series (including Alexander Incised, O'Neal Plain, and Columbus Punctated) have been recovered from the upper levels of several shell midden sites, including Indian Knoll (15Oh2), Ward (15McLll), Butterfield, Jimtown Hill, and Barrett (Rolingson 1967:390-391; Watson 1985:118-119). Although Rolingson (1967) suggested that the Alexander series post-dated Crab Orchard (Baumer) pottery in the Green River Management Area, comparative chronometric evidence indicates that both types of ceramics date between ca. 600 and 100 B.C. and that Crab Orchard ceramics persisted later in time than the Alexander series (cf., Butler and Jefferies 1986; Jenkins et al. 1986:552).

Hensley (1991), who noted Woodland components were present at 16 of the 50 known Archaic shell midden sites in the Western Coalfield Section, concluded that the Woodland use of these sites was of short-term duration and occurred sporadically. Railey (1990) concurred, noting that midden deposits at the small number of Woodland sites indicate a dispersed settlement system or one that involved more frequent shifting of habitation loci during the Woodland period. As Jefferies (1988:24) noted, "the presence of grit tempered pottery at shell midden sites was a matter of concern for Webb and his associates." Given Hensley's research, the explanation proposed by Webb and his colleagues that the pottery evidenced transient occupations of the shell mounds by post-Archaic occupants is more likely than their explanation that the pottery was used by the comparatively more sedentary Archaic occupants (Jefferies 1988).

Few early Middle Woodland habitation sites have been documented in the Western Coalfield Section, but some of the Crab Orchard ceramics recovered from the upper levels of Archaic shell middens, as noted above, date to the early portion of the Middle Woodland subperiod. One of few such sites with chronometric dates, Bowles (15Oh13) yielded calibrated radiocarbon dates of 991-3 B.C. and 522 B.C.-A.D. 865 (Marquardt and Watson 1977). In addition to these sites, two Middle Woodland mounds (Jones and Ashby) have been excavated in this section.

The Jones Mound (15Hk11) was located on an upland ridge just east of Madisonville. Artifactual evidence including projectile points and pottery suggests this mound, which measured 12 x 18 m across and 1.2 m high, was constructed in the late Middle Woodland subperiod (Purrington 1966b; Rolingson 1967). Excavations revealed three sub-floor rectangular burial pits containing extended burials. These pits had been covered by two small elongated mounds that had been enclosed by a circular earthwork. Subsequent mound stages covered both the small mounds and the circular enclosure. Three additional (possibly intrusive) burials were encountered in the third mound stage (Purrington 1966b; Rolingson 1967). Though not identified as such, the "circular earthwork" at Jones Mound sounds reminiscent of earthen rings surrounding central mortuary features underlying Drake Mound (Central Bluegrass Section) and C and O Mounds Jo2 (Lower Big Sandy Section).

Ceramics recovered from the Jones Mound included grit tempered sherds, most of which were cordmarked, and a few clay and quartz tempered sherds, two of which had rocker stamped exterior surfaces and another that exhibited wide, incised lines parallel to the rim. Most of the projectile points recovered from the Jones Mound are either expanded stemmed [possibly Lowe cluster] or wide, straight stemmed forms, but Robbins-like and Adena/Turkey Tail-like specimens are also present in the assemblage (Purrington 1966b; Rolingson 1967:321). The exact temporal placement of the Jones Mound within the Middle Woodland temporal unit is difficult to assess, but the presence of rocker stamped sherds suggests that the site dates later than A.D. 1.

The Ashby site (15Mu4) was a Middle Woodland to early Late Woodland mound complex located near the Green River. Investigators documented two small mounds spaced about 100 m apart and a low-density artifact scatter at the site. Mound A was the larger of the two, measuring 21 m in diameter and having a height of about 1.5 m. It covered a central feature consisting of a circular depression of white clay surrounded by a darkened rectangular area that measured about 3 m. Upright sandstone slabs were situated on the northern and western edges of the darkened area (Hoffman 1965; Rolingson 1967). Although it was not identified as such, the darkened area may represent the remains of a charnel house, if the soil darkening resulted from burning. Grave goods associated with the central feature include two stone gorgets, one mica sheet, one piece of barite/galena, two miniature copper celts, and two copper awls (Hoffman 1965; Rolingson 1967).

Mound B at Ashby was somewhat smaller, measuring about 15 m in diameter. It yielded no identifiable human remains, but did contain a "thin layer of whitish earth" and a "hearth area" within the mound strata (Hoffman 1965; Rolingson 1967). Though not specified as such, these deposits may represent cremations. Materials from Ashby Mound B, included three "caches" of flint debris and sandstone pebbles, as well as a broken cordmarked vessel (Hoffman 1965; Rolingson 1967). This vessel is an elongated jar with a slightly flattened base and an outflaring rim. The general form of the untyped vessel is very similar to that of late Middle Woodland and early Late Woodland outflaring jars from other portions of the Ohio Valley (cf., Fowler 1957:Plate Ia,d; Hargrave 1982:Plate 143; Prufer and McKenzie 1965:19-24, 45-49).

A light scatter of artifactual remains in the vicinity of the Ashby mounds suggests that a small settlement or mortuary camp may have been associated with the mounds. Expanded stem and contracting stem projectile point forms were recovered from the surface of the site and from the fill of both mounds (Hoffman 1965; Rolingson 1967). Although no chronometric data are available from Ashby, the recovered artifactual assemblage may date to the late Middle Woodland (ca. A.D. 250-500) (Railey 1990).

The Late Woodland subperiod in the Western Coalfield Section is poorly documented. Site 15Mu41 is reported to contain a Middle to Late Woodland component, and Site 15McL26 a Late Woodland component (Hensley 1991). Baby Track Rockshelter (15Bt40) is one of few confirmed Woodland rock art sites in Kentucky. The petroglyphs are five human feet produced by pecking/grinding on a roof fall boulder. A hominy hole and Late Woodland artifacts were documented at the site (Coy et al. 1997).

Though few Late Woodland sites have been excavated in this section, early Late Woodland Rough River series pottery has been found at several sites in the Western Coalfield Section. Sites in Butler and Hopkins County, such as Annis Mound (15Bt20) and Morris (15Hk49), have produced Rough River Plain and Rough River Cordmarked samples (Clay 1963a; Lewis 1988). Rough River Smoothed-Over Cordmarked and Rough River Simple Stamped types are not known from sites in this section.

Yankeetown series pottery is associated with a terminal Late Woodland occupation at Andalex Village (15Hk22) (Niquette 1991), which is situated on a bluff overlooking Pond River. A calibrated radiocarbon date of A.D. 435-856 may be associated with this component (see Chapter 6). Yankeetown pottery also was recovered from Annis Village and Mound (15Bt2 and 15Bt20), located adjacent to the Green River. Other Woodland pottery types recovered from the Annis site complex are Mulberry Creek, Baytown Plain, O'Neal Plain, and Wright Check Stamped (Lewis 1988). A calibrated radiocarbon date of 515-118 B.C. (Table 5.12) from Annis Village is suggestive of an Early-Middle Woodland component, as well (Hammerstedt 2005). Both Andalex Village and Annis Village later became small Mississippian regional administrative centers with single platform mounds (see Chapter 6). A single specimen of Yankeetown pottery was found at the Barrett site (15McL4) (Rolingson 1967).

PENNYROYAL SECTION

The 182 Woodland sites recorded in this section contain 212 components. This section contains the greatest diversity of Woodland site types in the Green River Management Area, though many sites are open habitations without mounds and rockshelters (Table 5.10). Important Woodland sites include a large number of caves (Table 5.15). Like the Western Coalfield, in the Pennyroyal Section Early and Middle Woodland components vastly outnumber Late Woodland components (Table 5.11).

While Turkey Tail and Terminal Archaic Barbed cluster points are reported from ephemeral or multicomponent sites in the section (Table 5.7), there are few substantial early Early Woodland sites in the section. One exception, however, is Site 15Al22, where Henry and Crothers (2007) documented evidence of cave mineral mining (see also Upper Green River Section). Mining occurred in several parts of the cave, suggesting systematic exploitation of mineral resources: east passage, north passage, Crystal Palace, Bat Avenue, and Bat Avenue alcove. Circular pits with digging stick marks indicate that sulfate minerals were extracted from cave sediments. Torches were used as light sources, and fragments of burned river cane, sticks, and cordage (torch ties), as well as stoke marks, were found in areas of digging activity. Three dates obtained from river cane and stick fragments collected from undisturbed contexts near digging areas indicate that mining activities occurred during the early Early Woodland subperiod: cal 1192-802 B.C., cal 1040-788 B.C., and cal 1249-802 B.C. (Table 5.12) (Henry and Crothers 2007).

Site 15Si7 is one of the earliest pottery-producing sites documented in the Pennyroyal Section. Very fragmentary human remains were recovered from a simple pit grave at this nonmound mortuary site. The burial feature was circular in shape and measured 1 m in diameter and had a depth of 0.5 m. Body placement was not indicated, but given the size and shape of the crypt it likely was a flexed in-flesh burial or a secondary bundle burial. Grave goods include Turkey Tail and Big Sandy points and an untyped cordmarked pottery sherd. If not intrusive, the Early Archaic Big Sandy point suggests curation behavior. Radiocarbon dates of cal 789-394 B.C. and 781-413 B.C. (Table 5.12) indicate a middle Early Woodland affiliation (Schock and Dowell 1981).

Table 5.15. Important Woodland Period Sites in the Pennyroyal Section.

Site No.	Site Name	Site Type	Affiliation	References
15Al22	none	cave	EW	Henry and Crothers 2007
15Al329A	none	cemetery	LW	Applegate and Cannon 2003; Applegate and DeDominico 2002; Schock and Langford 1982
15Ch20	none	open habitation with mounds	LW	Sanders and Maynard 1979
15Ch50	Campbells	cave	unassigned	Sanders and Maynard 1979
15Ch314	Cedar Bluff	cave	EW	Sanders and Maynard 1979
15Ch315	Glovers	cave	unassigned	Sanders and Maynard 1979; Vietzen 1956
15Lo11	Savage	cave	EW, MW, LW	Lawrence 1985; Schenian 1988
15Lo12	Watkins	open habitation with mounds	MW, LW	Applegate 2000, 2002; Chapman 1972; Dowell 1979; McEuen 1978a, 1978b; Ray n.d.
15Si7	None	cemetery	EW	Schock and Dowell 1981
15Wa6	Crumps	cave	EW, MW, LW	Carstens 1980, 1996; Crothers et al. 2002; Davis 1996
15Wa316	None	cemetery	unassigned	Foster 1972
15Wa324A	Campbell Mound	mound	unassigned	Dowell 1979a; Schock and Dowell 1991
15Wa374	Dunkleau	mound complex and cemetery	LW	Foster 1972
15Wa963	Coca Cola	cemetery	EW, MW	Schock 1979a
15Wa981	Plum Springs	open habitation	EW, MW, LW	Applegate and McCray 2006; Dowell 1981; Schock 1979a

In addition to the Early Woodland use of caves to mine minerals, caves were used for ritual activities by at least the Middle Woodland subperiod. Located about 10 km southwest of Mammoth Cave in Warren County, Crumps Cave (a.k.a. Cave Springs Cave and Smiths Grove Cave [15Wa6]) is about 2050 m of passageways carved in the St. Louis limestone formation and entered through a sinkhole. This site is one of only 11 mud glyph sites in the Southeast. Crumps Cave contains a variety of anthropomorphic, zoomorphic, geometric, and weaponry motifs incised into sediments coating a 90 m stretch of cave passage about 1 km from the entrance (Davis 1996). Glyphs on the east wall of the passageway are horned snake, ax blade, stacked chevrons, two humans, bird, shield, barred oval, nested circles, and hand in a circle. The west wall has a turtle, individual and grouped humans, swastika, serpents, weeping eye and snake, and cross.

Also preserved in the sediments are imprints of a forearm, container, fabric, and rope. Though some of the motifs resemble icons of the Southern Ceremonial Complex, calibrated radiocarbon dates of 165 B.C.-A.D. 134 and A.D. 5-383 (Table 5.12) for a cane torch fragment embedded in one incised glyph and a torch smudge associated with the glyphs place at least some of the artwork in the early Middle Woodland subperiod (Crothers et al. 2002; Davis 1996; DiBlasi 1996; Faulkner 1997).

While no temporally diagnostic artifacts were recovered from the mud glyph portion of Crumps Cave, excavations in the vestibule yielded Buck Creek, Turkey Tail, and Adena Stemmed point types. The upper portion of a limestone tempered simple stamped Rough River series vessel with an incurved rim and a flattened and slightly crenulated lip was recovered below a stratigraphic level with a calibrated date of 356 B.C.-A.D. 424 (Table 5.12), an early date for Rough River pottery in western Kentucky. Coupled with another calibrated radiocarbon date of 769-207 B.C. (Table 5.12) for material recovered from the vestibule, the chronometric data indicate middle Early Woodland-Middle Woodland occupations (Carstens 1996).

Though primarily known for its Paleoindian and Archaic components (see chapters 3 and 4), the entrance to Savage Cave (a.k.a. Cooks Cave [15Lo11]) yielded Woodland period artifacts. Archaeologists from the Carnegie Institution conducted excavations at this site in the 1950s-1960s, and owner Genevieve Savage accumulated a large collection of artifacts from the cave. Woodland point types recovered from Savage Cave are primarily Middle to Late Woodland forms such as Copena Triangular (a.k.a. Greenville), Bakers Creek, Mud Creek, and Swan Lake (a.k.a. Chesser Side Notched) (Schenian 1988). A fiber tempered sherd from Savage Cave reportedly recovered from pre-600 B.C. contexts (Lawrence 1985) is suggestive of an Early Woodland component. The presence of Wright Checked Stamped and Rough River Series ceramics, the latter found in association with a Bakers Creek point, suggests that other site materials date to the Middle Woodland or early Late Woodland subperiods. Some of the Rough River rims exhibit lip notching. Calibrated radiocarbon dates are mostly Middle Woodland and range from 361 B.C.-A.D.16 to A.D. 428-652 (Table 5.12), but the site was occupied during all prehistoric time periods (Lawrence 1985).

One of the more extensive investigations of a Woodland site in this section was undertaken at the Plum Springs site (15Wa981), located on the Barren River floodplain of Beech Bend. This work resulted in the documentation of 72 postmolds and 54 pit and thermal features. Thirty-one of the latter were excavated, and 20 of these yielded Early-Middle Woodland diagnostics (Plum Springs series pottery and Turkey Tail, Adena Stemmed, Robbins, and Gary points) and/or calibrated radiocarbon dates of 389 B.C.-A.D. 72, 186 B.C.-A.D. 125, and A.D. 252-874 (Table 5.12). Of note was the long use of Adena Stemmed points at this site; three such points were recovered from two feature contexts, one with a date of cal 88 B.C.-A.D. 239 and another with a date of uncal A.D. 540 (standard deviation not reported) (Table 5.12) (Dowell 1981). The presence of Copena Triangular, Lowe Flared Base, Chesser Notched, and Bakers Creek points from surface contexts indicate that occupations continued into the late Middle-early Late Woodland subperiods (Applegate and McCray 2006; Dowell 1981; Schock 1979a).

The Plum Springs phase was defined by Schock and Dowell (1981) based on research at Plum Springs and other sites in the Barren River drainage. Diagnostic artifacts are Plum Springs ceramics associated with Turkey Tail and Adena Stemmed points. The pottery series consists of three main types (Plum Springs Cordmarked, Plum Springs Smoothed-Over Cordmarked, and Plum Springs Plain) and three minor types (Plum Springs Fabric Impressed, Plum Springs Brushed, and Plum Springs Trailed). Though characterized as largely grit or rock tempered, Plum Springs pottery can contain a wide variety of tempering materials used in various combinations. Vessel forms are characteristically conical jars with flat narrow bases, and decorations, when present, consist of pinching and incising (Dowell 1981). Based on his work in the Upper Green River Section, Prentice (1993) noted formal similarities between Plum Springs and Crab Orchard pottery, suggesting that the relationship between the two should be examined.

Regarding patterns of chert use and chipped stone tool production associated with Early to early Middle Woodland features, the occupants of the Plum Springs site relied primarily on locally available chert resources, especially St. Louis, Ste. Genevieve, and Fort Payne. Bifacial items (projectile points, hafted scrapers, perforators, hoes, performs) were made primarily from these cherts, and all unifacial scraping tools, marginally modified flakes, and utilized flakes were manufactured from St. Louis chert. Debitage representing all stages of lithic reduction characterize the St. Louis, Fort Payne, and Ste. Genevieve samples. Two nonlocally available cherts (Haney and Elizabethtown) are represented predominantly by debitage from the late stages of lithic reduction. A small number of bladelets, some made from exotic Ohio Vanport (Flint Ridge) chert, were recovered from the site (Applegate and McCray 2006).

The Early to Middle Woodland component at Plum Springs represents the most intense occupation at the multicomponent site. Regarding intrasite patterning, two linear and three to five circular/semi-circular postmold clusters that may represent structural remains were documented. One possible interpretation is that the post clusters represent domestic windbreaks or drying racks. On the other hand, if Plum Springs was associated with the nearby Western Kentucky Coca Cola site, as Schock (1979a) suggested, it is possible that the structural remains at Plum Springs were used as screens for mortuary/ritual activities, such as feasting. This activity has been documented at other Early-Middle Woodland sites in Kentucky (e.g., Clay 1983, 1986, 1998a; Richmond and Kerr 2005), sans the mound construction. The rare occurrence of overlapping features, the apparently temporary nature of the "structures," and the limited range of tool types recovered suggest that the Plum Springs site was used frequently for short periods of time by groups engaged in a narrow range of activities (Applegate and McCray 2006).

Located near the Plum Springs site, Western Kentucky Coca Cola (15Wa963) was a late Early to early Middle Woodland mortuary site. Though at least half of the cemetery was destroyed by construction prior to archaeological investigation, 22 pit and stone-lined pit features were documented in the northern portion of the cemetery. Only seven of the features yielded human remains, which have not yet been analyzed. No grave goods were associated with any of the human remains. Two calibrated radiocarbon dates of 350 B.C.-A.D. 327 and A.D. 435-1956 (Table 5.12) are ambiguous (Schock 1979a) or indicate temporally distinct episodes of cemetery use.

One of the best documented mortuary sites in the Pennyroyal Section is the Watkins site (15Lo12), a mound-habitation complex on Clear Fork Creek in the Gasper River drainage. Mound A, the larger (22 x 15.5 x 1.5 m) of two earthen mounds, contained 48 burials. Over 80 percent of the individuals in Mound A were extended fleshed burials, though several flexed fleshed, cremated, and bundled burials were found; the latter two likely represent secondary interments. Most of the individuals were interred in stone box graves (70 percent) or in pits with one to two limestone slabs and/or a limestone cap rock (16 percent); pit graves are an uncommon crypt form (14 percent) (Applegate 2000c, 2002; Ray n.d.).

Forty-six of the 48 burials were assigned to one of two zones based on their depth and associated grave goods. The lowermost Zone I (n=28) contained 11 adult females, seven adult males, six other adults, one subadult, and three infants. Grave goods included a variety of mostly Middle Woodland diagnostics, including limestone tempered sherds classified as Mulberry Creek or Candy Creek, a tetrapodal pottery vessel, three elbow pipes, bladelets, mica, conch dipper, and Adena, Motley, and Bakers Creek points. The uppermost Zone II (n=18) included five adult males, one adult female, four other adults, two infants, and six individuals of undetermined age/sex. These burials yielded late Middle Woodland to early Mississippian artifacts, such as limestone and shell tempered sherds and Bakers Creek and small triangular points. The property owner reportedly collected a copper breastplate from the mound (Applegate 2000c, 2002; Ray n.d.).

The complete tetrapodal vessel recovered from an adult female burial warrants special mention. Though it was not classified, many characteristics suggest it is a Middle Woodland or Hopewellian type: four sides, tetrapodal supports, and incised decorative motif. The smoothed exterior was decorated with a circle and curved line motif repeated eight times around the upper body within a zone demarcated by pairs of horizontal lines. Each of the eight circles had 5-13 shallow punctations or indentions. The straight-necked vessel measured 22.8 cm tall and 17.7-18.8 cm across. Podes measured 12 mm and the lip was five-six mm thick. The vessel had two pairs of mending holes (Ray n.d.; Schock and Dowell 1991). The decorative motif may represent a series of stylized migratory birds (Railey 1990).

Chapman's (1972) study of paleopathologies and osteometric variation in the Watkins Mound A burial population represents one of the few Woodland bioarchaeological studies in the Pennyroyal Section. Among the earlier Zone I burials, one adult male had two fused thoracic and lumbar vertebrae and lesions on thoracic vertebral bodies. Another adult male had a lesion in the nasal cavity and several skeletal changes associated with severe osteoarthritis. A bony growth was observed in the maxillary sinus of a third adult male. Among the later Zone II burials, two adult males had lesions on the vertebral bodies, and one of them also had two fused lower vertebrae and a humerus broken by a spear point (Chapman 1972).

Applegate (2000c, 2002) analyzed Chapman's (1972) osteometric data for 43 traits to study sexual dimorphism in the Middle Woodland Zone I burial population. Among other patterns, the average percentage of sexual dimorphism in stature is 8.3 percent, which is comparable to averages for food collecting populations in Ohio (Sciulli et al. 1991) and Europe (Frayer 1980). According to Applegate (2000c, 2002), the sexual dimorphism reflects sexual division of labor, an interpretation corroborated by analysis of differential mortuary treatment, as opposed to nutritional stress or sexual selection (Brown 1970; Hamilton 1982; Murdock and Provost 1973).

Applegate (2000c, 2002) documented inter- and intrazonal variation in mortuary treatment in the Mound A burials at the Watkins site. Zone I Middle Woodland burials have more elaborate grave offerings than Zone II late Middle Woodland-Late Prehistoric burials, indicating that some variation in Mound A burials can be explained by chronological factors. Data suggest that during all periods of mound use social status within the Watkins community was achieved rather than ascribed. In each zone, adults were interred with a much wider range of items, no subadults were interred with manufactured items, and a substantially higher percentage of adults have grave goods at all, as well as noteworthy items. Among the Zone I burials, there are statistically significant differences between males and females in types of grave goods, again suggesting sexual division of labor. Whereas females were associated with pottery, males were preferentially interred with lithic tools, copper, groundstone celts and adzes, chipped stone scrapers, bone bracelets, bone gorgets, and clay pipes.

Additional mortuary data was unearthed at Watkins Mound A. Features found during the course of excavation are two fire pits and a small hearth or remains of a funerary meal. Postmolds found to the northwest of the mound, some of them in a "double post" pattern, were interpreted as a "hut site" in a residential area (Ray n.d.). Ritual feasting associated with mortuary activities is known at several central Kentucky Woodland sites (see Bluegrass Management Area), and such activities apparently occurred at Watkins as well. The "double post" pattern sounds like the submound structures so common at Adena mounds and sacred circles elsewhere in Kentucky. Though not found under Mound A, the Watkins pattern actually was on the side of the mound opposite the known habitation area; perhaps, then, it represents the remains of a ritual structure.

The habitation area at Watkins covered an area of at least 370 x 400 m east of the two earthen mounds. Of the 44 typed points recovered from the habitation area, over 70 percent are potentially Woodland types that span the period: Delhi, Turkey Tail, Dickson cluster, Copena, Motley, Chesser, Steuben, Lowe Flared Base, Hamilton, and Madison. Chipped stone tool manufacture focused on two locally available cherts, St. Louis and Fort Payne. Nodular and tabular cores of chert were small in size, and the debitage reflects all stages of reduction. Other chert items are preforms, biface fragments, utilized flakes, hoe fragments, and bladelets (Applegate 2000c).

Of particular significance, Schock (1977, 1987, 1989b) discovered in the Watkins habitation area a rectangular corner-post wall-trench structure that measured 7.5 x 9.5 m. Two wall trenches and one corner post yielded limestone tempered pottery, and one wall trench also had a Bakers Creek point. Similar pottery was found in five hearth/pit features inside or west of the house, including one hearth inside the house footprint that also produced an Adena or Robbins point. Schock concluded that the Watkins house remains were Middle Woodland and the earliest evidence of such constructions in south-central Kentucky. Applegate (2000c) argued that the structure may instead date to a later period (see Chapter 6); the later site occupants dug the house structure into older deposits, and the earlier diagnostics became incorporated into the features as backfill. Two additional wall trench segments found at the site were devoid of diagnostic artifacts.

Campbell Mound (15Wa324A) was situated on the colluvial slope about 235 m from the north bank of Barren River, overlooking the comparatively broad floodplain of

Beech Bend on the south side of the river near Bowling Green. Because it was excavated by citizens and later destroyed, there is little documentation of the nature of the mortuary activities that were conducted at this site. There are no records about mound size, mound construction, mortuary preparation, body placement, or crypt types. Schock and Dowell (1991), however, did record information about selected grave items donated to Western Kentucky University: Bakers Creek point, chert biface, four groundstone celts, one cupstone (the only item from known burial contexts), one cut mica sheet measuring 6 mm thick, three beads of unspecified raw material, one conch shell cup/dipper, and four conch shell gorgets. Each gorget is circular in shape and has a pair of small drilled holes for suspension. Two of the gorgets have large holes in the center, giving the appearance of a ring shape. The other two gorgets have small holes in the center, creating a disk-like appearance. One of the disk-like gorgets is incised with an elaborate stylized design resembling a masked human figure and stained with pigment (Schock and Dowell 1991). The artifacts suggest a late Middle-early Late Woodland affiliation for Campbell Mound.

Though the early Late Woodland subperiod is poorly documented in the Pennyroyal Section, some stone box grave cemeteries may date to the terminal Late Woodland. Site 15Al329A is a Late Woodland-Mississippian mortuary site situated across the Barren River from the Jewell site (15Bn21, 15Bn349, 15Bn384, and 15Bn390), a Mississippi period administrative mound center (see Upper Green River Section below and Chapter 6). The cemetery probably is associated with an unexcavated/ undocumented habitation located upslope. Artifacts collected from the surface, disturbed burial contexts, and the upslope habitation are Bakers Creek and Jacks Reef points, other chert tools, shell tempered and shell/grit tempered pottery, and groundstone tools. Radiocarbon dates were obtained from two of the graves. One grave yielded calibrated dates of A.D. 687-992 and A.D. 899-1282, and the other a calibrated date of A.D. 1258-1625 (Table 5.12) (Applegate and DeDominico 2002; Schock and Langford 1979, 1982).

Of the 25 stone box graves documented at 15Al329A, 18 were excavated, and 10 of these yielded poorly preserved human remains. With the exception of a hexagonal crypt, the stone box graves were rectangular in shape. None contained grave goods (Schock and Langford 1982). Skeletal analyses are ongoing, but at least 21-22 individuals were interred in eight of the graves. Mortuary preparation included disarticulation and defleshing. Skeletal alterations (e.g., rodent gnawing) suggest that many burials are secondary interments; some individuals were placed as bundle burials, while the remains of others were restored to approximate anatomical order for interment. The in-flesh inhumations were extended burials (Applegate and Cannon 2003; Applegate and DeDominico 2002).

The skeletal remains from two of the graves were analyzed in depth (Applegate and Cannon 2003; Applegate and DeDominico 2002). A rectangular, partially stone-lined grave contained the commingled remains of at least two individuals, one subadult and one adult female who exhibited a number of dental pathologies. A roughly hexagonal stone-lined grave contained the commingled remains of at least seven individuals (including at least one adult male, one adult female, and one adolescent of unknown sex) and represents a secondary interment. At least two-three individuals exhibited dental pathologies. Other traumas/pathologies are a possible finger dislocation with one individual and neurocranial lesions suggestive of syphilis on an adult female.

Individuals in both graves, including the seemingly extended female burial in the rectangular grave, exhibited cut marks associated with disarticulation and defleshing, including scraping, slicing, and chopping marks.

Other stone box grave sites in the Pennyroyal are poorly reported. Site 15Wa316 contained 10 stone box graves and was assigned to the Woodland period (Foster 1972). The evidence used to make the chronological determination was not indicated, nor were the mortuary features or human remains described in detail. Dunkleau (15Wa374) is a Mississippi period cemetery that also has a Woodland component. Six mounds and 17 stone box graves were documented at the site (Foster 1972). The temporal affiliations of the site elements are unclear, but the site did yield a calibrated radiocarbon date of A.D. 1227-1435 (See Chapter 6:Table 6.8). Foster assumed that all the mound and mortuary constructions were late in time, but the aforementioned Woodland sites suggest this may not be the case.

UPPER GREEN RIVER SECTION

The 163 Woodland sites in this section contain 212 Woodland components. In addition to open habitations without mounds, the site inventory includes many rockshelters and caves but few earthworks (Table 5.10). Early and Middle Woodland components are comparable in number and exceed Late Woodland components (Table 5.11). Table 5.16 lists important Woodland sites recorded in the Upper Green River Section. These sites are concentrated in certain portions of the section, as substantial Woodland sites are not reported for Casey, Green, Metcalfe, and Taylor counties.

Occupations dating to the early Early Woodland subperiod in the Upper Green River Section are indicated by Ledbetter, Saratoga cluster, Turkey Tail, and Terminal Archaic Barbed cluster projectile point types (Table 5.7). Early pottery types are late Early to early Middle Woodland Crab Orchard and Plum Springs, two series originally defined in bordering sections. Early Woodland sites yielding these diagnostics are recorded in many counties throughout the Upper Green River Section.

Four important Woodland sites (15Bn303, 15Bn30A, 15Bn332B, and the Jewell site complex [15Bn21, 15Bn349, 15Bn384, and 15Bn390]) are located along Skaggs Creek and Peter Creek, which are tributaries of the Barren River. Schock and Langford (1982) assigned the Early Woodland components at sites 15Bn303 and 15Bn30A to the Plum Springs phase. Site 15Bn303 contained two Early Woodland pit features and yielded Adena Stemmed and Turkey Tail projectile points, and limestone and grit tempered cordmarked sherds. Undated burials also were documented at this site. Site 15Bn30A yielded one grit tempered eroded sherd and one fragment of a steatite vessel, both of which may date to the Early Woodland subperiod. Three stone box grave features at this site could not be dated (Schock and Langford 1982), but other such features in the vicinity are Late Woodland-Mississippian.

Adena and Bakers Creek points and grit tempered, cordmarked sherds were recovered from Site 15Bn332B, suggesting occupations during at least the Middle Woodland subperiod but potentially spanning the entire Woodland period. Though best known for

Table 5.16. Important Woodland Period Sites in the Upper Green River Section.

Site No.	Site Name	Site Type	Affiliation	References
15Ad59	none	mound	MW	Boisvert and Gatus 1977
15Bn20	Crystal Onyx	cave	EW	Applegate et al. 2001; Haskins 1988a, 1988b
15Bn21, 349, 384, 390	Jewell*	open habitation with mounds	EW, MW, LW	Hanson 1970; Lowthert et al. 1998; Schock and Langford 1982
15Bn30A	None	open habitation	EW	Schock and Langford 1982
15Bn51	Pit of the Skulls	cave	unassigned	Hemberger 1985
15Bn55	Roger's Discovery	cave	unassigned	Applegate et al. 2001; Haskins 1988a, 1988b
15Bn56	Prewitts Knob	open habitation	EW	Haskins 1988b
15Bn303	None	open habitation	EW	Schock and Langford 1982
15Bn332B	None	open habitation	EW	Schock and Langford 1982
15Ed1	Mammoth	cave	EW	Bryant 1997; Nelson 1917a, 1917b; Watson 1997; Watson and Carstens 1996
15Ed41	Nelson's	rockshelter	unassigned	Prentice 1993
15Ed42	Patch	rockshelter	EW, MW	Carstens 1980, 1996
15Ed43	Owl	cave	EW, LW	Applegate 2000; Carstens 1980
15Ed49	Martin	cave	EW	Prentice 1993
15Ed52	not disclosed	rockshelter	MW, LW	Carstens 1980, 1996
15Ed56	not disclosed	rockshelter	EW, MW, LW	Prentice 1993
15Ed61	not disclosed	rockshelter	EW, MW-LW	Prentice 1993
15Ed71	Mammoth Cave Fields	open habitation	unassigned	Nelson 1917a, 1917b; Prentice 1993; Schwartz and Sloan 1960;
15Ed85	Old Guides Cemetery	open habitation	EW, LW	Watson and Carstens 1982; Prentice 1993
15Ed95	Short	cave	EW	Horton 2003
15Ed162	Kingbird	rockshelter	EW, LW	Prentice 1993
15Ed163	not disclosed	rockshelter	EW	Prentice 1993
15Ed169	Lone Point	rockshelter	EW	Prentice 1993
15Ed176	Bluff	cave	EW, MW	Prentice 1993; Watson 1997
15Ed218	Ovenbird	rockshelter	EW	Prentice 1993
15Ed225	Dixon	cave	unassigned	Prentice 1993
15Ed367	Blue Heron	rockshelter	MW-LW	Prentice 1993
15Ed371	not disclosed	rockshelter	EW, MW-LW	Prentice 1993
None	Hilda Martin	rockshelter	LW	Applegate 2001
15Gy12	Rough River	rockshelter	MW, LW	Schlarb et al. 2008; Schwartz et al. 1958; Schwartz and Sloan 1960
15Gy32	Haycraft	open habitation	unassigned	Marquardt 1971; Schwartz et al. 1960
15Ht4	Salts	cave	EW	Watson et al. 1969; Watson 1997
15Ht14	Bratcher	open habitation	LW	Marquardt 1971; Schwartz et al. 1960
15Ht16	Higdon	rockshelter	EW, MW, LW	Marquardt 1971; Schwartz et al. 1960
15Ht26	Salts Cave Field	open habitation	EW	Carstens 1980; Watson et al. 1969; Watson 1997
None	Fisher Ridge	cave	EW	Crothers et al. 2002; DiBlasi 1996; Kennedy et al. 1983
15Ht69	Hidden River	cave	EW, MW, LW	Applegate 2000, 2009

*Site primarily known for its Mississippian component - See Chapter 6.

its Mississippian component (see Chapter 6), Woodland materials from the Jewell site complex (15Bn21, 15Bn349, 15Bn384 and 15Bn390) consist of Wade, Motley, Adena, and Lowe cluster points and limestone tempered cordmarked sherds. A pit feature at Site 15Bn21 yielded a calibrated radiocarbon date of 41 B.C.-A.D. 1375 (Table 5.12) (Schock and Langford 1982). The large standard deviation associated with this date makes it somewhat suspect.

Near Glasgow, Woodland components at Site 15Bn82 yielded chipped stone points, scraper, and unifacial tools. Diagnostics Woodland points are Delhi, Gary Contracting Stem, Chesser Notched, Lowe Expanded Base, and Madison. Analysis of chipped stone tool manufacture during the Woodland, especially the Early Woodland subperiod when occupations were most intense, at Site 15Bn82 represents one of few systematic studies of lithic production systems in the section. Activities focused on amorphous core reduction and biface reduction using locally available cherts. The debitage assemblage is dominated by late-stage flakes (French et al. 2002).

In the Mammoth Cave National Park area, Early or Early-Middle Woodland surface, rockshelter, and cave sites yielded numerous Wade, Saratoga cluster, Turkey Tail, Adena Stemmed, Gary, and Little Bear Creek points, as well as small numbers of Epps or Motley, Ledbetter, Cotaco Creek, Kramer, and Robbins specimens (from Prentice 1993). Crab Orchard Fabric Impressed sherds occur in small numbers in pottery assemblages from Early or Early-Middle Woodland sites. Plum Springs Cordmarked and Plum Springs Plain are more prevalent at these sites than is Plum Springs Smoothed-Over Cordmarked (Prentice 1993). Within the Upper Green River Section, Prentice (1993) proposed two new Plum Springs varieties: Plum Springs Cordmarked, *var. Plum Springs,* and Plum Springs Cordmarked, *var. Green River.*

Evidence of Woodland period cave use was documented at six sites in Mammoth Cave National Park: Mammoth Cave (15Ed1), Salts Cave (15Ht4), Dixon Cave (15Ed225), Bluff Cave (15Ed176), Owl Cave (15Ed43), and Martin Cave (15Ed49). Though occupations span the Late Archaic to Late Prehistoric (Table 5.12), they were most intensive and extensive during the Early Woodland subperiod (Carstens and Watson 1996; Crothers et al. 2002; Prentice 1993; Tankersley 1996; Watson 1997). Traffic was most intense at Mammoth Cave followed by Salts Cave, especially the upper levels of both. Prehistoric cavers ventured more than one mile into both caves. A wide range of Woodland activities (habitation, exploration, mineral mining, ceremony-ritual, and burial) are evidenced at Mammoth and Salts caves, while fewer activities occurred at other caves. Preservation of normally perishable materials, including textiles and extensive paleofecal and archaeobotanical assemblages, is excellent (Crothers et al. 2002; Watson 1996, 1997). Caves were visited year-round, but the most intense use occurred during the spring-summer seasons. For example, pollen from a small sample of Mammoth Cave paleofeces suggests late spring-early summer and late fall-winter foci of cave use (Bryant 1997).

Archaeological investigations of Mammoth Cave (15Ed1) span almost a century. Following early excavations by Nelson (1917a, 1917b) and artifact analyses by Orchard (1920) and Neumann (1938), intense research resumed in the 1960s in and around the cave (Prentice 1993; Watson 1997). The upland ridge immediately outside the cave entrance was utilized prehistorically, including during the Woodland period, and is designated as two sites: Mammoth Cave Fields (15Ed71) and Old Guides Cemetery

(15Ed85) (Nelson 1917a, 1917b; Prentice 1993; Sloan and Schwartz 1960; Watson 1997; Watson and Carstens 1982).

Evidence of domestic and mortuary activities was documented in the Mammoth Cave Vestibule. Nelson (1917a, 1917b) described the habitation materials as "camp refuse," which included faunal and floral remains, pottery sherds, digging sticks, tied cane bundles, groundstone tools, bone implements, chert tools and debitage, and Wade, Dickson, and Lowe point types (Prentice 1993; Watson 1997). Several individuals were interred in the vestibule. According to Robbins (1997), Nelson found the remains of at least three individuals (adult female, subadult, fetus) from unspecified contexts during his excavations. Four additional individuals, who were interred in three grave features, were found by construction workers in the vestibule during the 1930s. The burials lacked grave goods and there are no chronometric dates, so their chronological/cultural affiliations are unclear (Prentice 1993). One individual was a flexed 18- to 19-year-old female interred in a shallow pit on a layer of burned grass or fiber, possibly a woven mat. Neumann's (1938) osteological analysis revealed a slightly long head, narrow face, and small but high cranial vault that, according to Robbins (1997), more closely resemble known Archaic rather than Woodland populations. Another individual of unspecified sex and age also was placed in a pit lined with grass or a fiber mat. Finally, a primary burial contained the commingled remains of an adult female and a 20- to 25-year-old adult male (Prentice 1993).

Additional human remains, as well as artifacts associated with cave exploration, mineral mining, and ceremonial-ritual activities, were found in dry levels of Mammoth Cave passageways, where most calibrated radiocarbon determinations for organic artifacts range from 1413-1029 B.C. to 387-203 B.C. (Table 5.12) (Kennedy 1996; Watson et al. 1969; Watson 1997). The mummified remains of a middle-aged male were found in 1935 under a large boulder, which became dislodged and crushed him as he mined cave minerals. The man carried a woven bag and wore a woven loin/breech cloth and a shell pendant (Prentice 1993). Previous osteological analyses by Neumann (1938) indicated that the man was about 45 years old and stood 160 cm tall. Craniometric traits include round head, high vault, broad face, and narrow forehead. Perimortem injuries are fractured right humerus, broken ribs, and skull fracture (Robbins 1997). Calibrated radiocarbon dates for this individual range from 772-364 B.C. to 157 B.C.-A.D. 213 (Table 5.12) (Watson et al. 1969). The desiccated body of a person of unspecified age and sex was found in Audubon Avenue of Mammoth Cave in 1814 and reburied in 1840. These remains were not scientifically analyzed, nor was information about the burial context published. Another individual from Mammoth Cave is represented by an adult skull cap found on the surface in the cave passageways (Robbins 1997).

Wood, cane, and textile objects were found on the surfaces of interior passageways in Mammoth Cave. The latter include slippers, torch ties, and cordage (King 1997). Upper Mammoth Cave yielded cane torch fragments, other fuel fragments, wood fragments, three climbing poles, gourd and warty squash fragments (possibly from containers), and torch stoke marks (Watson 1997). Carstens and DiBlasi (2004) described a partial cane flute (or flageolet) recovered from Upper Mammoth Cave. Because it exhibited signs of burning, the broken four-hole flute probably was reused by the prehistoric cavers as torch material. The likely Early Woodland item is only the second documented cane flute in the Eastern Woodlands, the other deriving from a rockshelter in the Ozarks (Carstens and DiBlasi 2004). Pictographs were documented nearby on a breakdown boulder in the Devil's Looking Glass area of Upper Mammoth Cave. The cross-hatching, rectilinear, and spiral geometric designs were rendered with cane torch charcoal (Carstens and DiBlasi 2004; Crothers et al. 2002; DiBlasi 1996).

In Lower Mammoth Cave, a well-preserved split-cane basket, which had been damaged and repaired prehistorically, was recovered from East Ganter Avenue in an area of cave mineral mining. That passageway also produced a weed stalk, a wood/twig fragment, a gourd fragment, and torch smudges. Other items are cane and weed stalks and wood fragments from Jessup Avenue and Flint Alley (Watson 1997).

Evidence of gypsum, epsomite, and mirabilite mining in Mammoth Cave derives from the three uppermost dry levels of passageways, though most mining occurred in the middle level. Battering marks and mussel shell scrapers/spoons provide evidence of mining in Upper Mammoth Cave. In Lower Mammoth Cave, including Jessup Avenue, Ganter Avenue, and Flint Alley, archaeologists documented battering and ledge mining of gypsum, as well as limestone hammerstones (Tankersley 1989, 1996; Watson 1997). In addition, chert was mined from bedrock in the latter passageway (Watson 1997).

Watson (1997; Watson et al. 1969) led extensive investigations at Salts Cave (15Ht4), located on Flint Ridge and entered through a deep sinkhole, and the surrounding site Salts Cave Field (a.k.a. Salts Cave Surface [15Ht26]). The latter site yielded chipped stone tools and debitage from plow zone deposits. Knapping activities likely occurred near the sink, but it is unclear if they were related to cave use. Point types from Salts Cave Field are Saratoga Expanding Stemmed, Turkey Tail, and Early Woodland Stemmed cluster (Watson 1997).

Prehistoric activities are documented in all parts of Salts Cave. The vestibule contained a complex sequence of cultural deposits separated by natural strata marking periods between human occupations. Calibrated radiocarbon dates from these deposits span the Late Archaic and Middle Woodland subperiods, ca. 2131-1527 B.C. to 393-107 B.C. (Table 5.12) (King 1997; Watson 1997). Calibrated radiocarbon ranges for materials from the three levels of passageways are comparable, with Upper Salts at 1632-930 B.C. to 805 B.C.-A.D. 200; 1188-405 B.C. to 797-111 B.C. for Middle Salts; and 1749-980 B.C. to 1267-418 B.C. for Lower Salts (Table 5.12) (Kennedy 1996; Watson 1997). There are numerous additional calibrated radiocarbon dates for materials from Salts Cave (Table 5.12).

Like Mammoth Cave, at Salts Cave the vestibule was the focus of domestic and mortuary activities, while activities in the passageways involved exploration, mining, and ceremony-ritual. Unlike Mammoth Cave, however, the nature of domestic activities is thoroughly reported and mortuary practices were considerably different at Salts Cave. Vestibule occupations involved short-term, frequent visits by small groups, perhaps hunting parties. There are no architectural features in the vestibule, though two features may be postholes. Other features are pits, artifact clusters, midden pockets, and ash lenses. The vestibule artifact assemblage is diverse, but highly fragmented and burned faunal remains are ubiquitous. Other artifact types are chert celts, two of which exhibited plant polish, utilized flakes, and retouched flake tools; groundstone pestles, celts, atlatl weights, and two tubular pipes; mussel shell pendants, bead, and spoons or scrapers

(Watson 1997); and a bone bead, perforated raccoon canine tooth necklace, awls, needle, atlatl hook, and spatulate (Duffield 1997).

While the Mammoth Cave Vestibule held primary interments in formal grave features, in the Salts Cave Vestibule the commingled and fragmented remains of at least 41 individuals were recovered from domestic contexts. All major age groups are represented, with adults slightly outnumbering subadults. Of the adults, females and males are almost equally represented. Some of the more than 2000 skeletal specimens were unmodified while others were carbonized, calcined, cut, polished, crushed, or worked. Many cut marks suggest defleshing and scalping related to mortuary preparation, others are randomly oriented, while one may be an intentionally incised design. Three human long bone fragments were manufactured into awls, the first known case from a Kentucky cave (Robbins 1997).

Robbins (1997) offered two possible explanations for the Salts Cave Vestibule human skeletal assemblage. The first emphasized pre-interment mortuary preparation. The deceased were defleshed and the bones broken outside the cave, the remains were placed in the soft vestibule midden, and some bones were burned by subsequent occupations. The absence of significant meat protein levels in Salts Cave paleofecal specimens supports this explanation. The second explanation involves cannibalism, though whether it was ritual or nutritional is uncertain. That human and other animal bones were treated and disposed of in a similar manner, and the absence of comparable sites in the area, suggested that the deceased may have been consumed (Robbins 1997).

In addition to the human remains found in the vestibule, in 1875 a desiccated eight- to ten-year-old boy was found in Upper Salts Cave (Watson 1997). Soft tissue and associated organics yielded calibrated radiocarbon dates of 365 B.C.-A.D. 390 and 359 B.C.-A.D. 427 (Table 5.12), indicating his association with Middle Woodland use of Salts Cave (Kennedy 1996). Skeletal similarities with Adena burial mound populations include round head, high cranial vault, and occipital and frontal flattening. He consumed hickory, sumpweed, goosefoot, and meat protein (possibly grubs) prior to death, perhaps from a fatal injury (Robbins 1997).

Elsewhere in the interior, wood and cane objects from all three levels of Salts Cave include torch and other fuel items like twigs, cane, and weed stalks such as *Gerardia*; grass, vine, bark, and fiber torch ties; torch smudges; and squash and/or gourd container fragments. Some of the latter reportedly were charred and perhaps held fuels. Textiles recovered from Salts Cave include grass and bark torch ties (Watson 1997), "bags, what appears to be a tumpline, a band or belt, baskets or 'headdresses,' and possible mats or blankets as well as cordage and fiber bundles" (King 1997:31).

A variety of manufacturing techniques have been documented in the Salts and Mammoth textile assemblages. The slippers or shoes, which are the most common textile class, were mostly close twined, while the bag, blanket, and loincloth textiles are spaced or open twined. Other techniques are braiding, weaving, knotting, sewing, and twilling. Tassels, dyeing, and bird feather ornamentation were reported by previous researchers. Rattlesnake master (*Eryngium yuccafolium*) was the preferred plant fiber (King 1997). Chevron weaving patterns are present in many slipper specimens, which were woven in one piece with the slipper shape determined by the wefts (Orchard 1920). At least 68 slippers from Salts Cave are curated at universities and museums (Watson 1997).

In Upper Salts Cave, where mineral mining was most extensive, gypsum and other mineral crusts were scraped from the walls, crystals were recovered from cave sediments, and minerals were collected from ledges. Tools associated with mining activity, such as mussel shell scrapers or spoons, have been recovered from the upper passageways. There are mined areas in Middle Salts Cave, and "sporadic" evidence of mining in Lower Salts Cave includes an epsomite crystal and other minerals, a worked mussel shell spoon or scoop, and battered walls (Watson 1997). Regarding the nature of mining activities in Lower Salts Cave, "it is possible that the [artifactual] remains represent reconnaissance trips, and that the quantity of mineral available in Lower Salts was not adequate to justify regular work crews going there to remove it" (Watson 1997:70).

As with Mammoth Cave, rock art has been documented in Salts Cave at three locations up to 0.84 km from the entrance. Most ubiquitous are cross-hatched designs that were incised or drawn in charcoal. Another geometric motif consists of linear pictographs. Zoomorphic motifs in charcoal include a turtle, herpetomorphic, and an unidentified species (Crothers et al. 2002; DiBlasi 1996).

Regarding health, one paleofecal specimen from Salts Cave Interior contained nematode larva of an unidentified species, but the parasitic nature of the larva is unclear (Dusseau and Porter 1997). Other specimens yielded roundworm (*Ascaris lumbricoides*) eggs, likely derived from oral contact with "feces-contaminated soil, food, or drink" (Fry 1997:61). Only three paleopathologies were evidenced in the Salts Cave Vestibule burial population: osteoporosis, kidney stone, and dental hypoplasias (Molnar and Ward 1997; Robbins 1997).

Presently Salts and Mammoth caves hold the largest and most complete body of evidence available for Early Woodland subperiod hunting-gathering and horticulture in Kentucky (Kennedy 1996). The faunal, macrobotanical, paleofecal, and pollen evidence suggests a fairly uniform and limited range of foods were consumed (Watson 1997). Though a diverse range of animal species were consumed, animal foods comprised only 5-10 percent of the largely vegetarian diet (Duffield 1997; Watson 1997; Yarnell 1997a, 1997b).

Wild plant remains recovered from Upper and Lower Mammoth Cave and Upper Salts deposits, from the Salts Cave mummy, and from Salts Cave paleofeces are dominated by hickory nut shell. Other species are oak/acorn, hazelnut, *Gerardia* (perhaps used as torch fuel), panic grass and other unidentified grasses, portulaca, carpetweed, purslane, viburnum, honey locust, holly, poke, sumac, blueberry, elderberry, blackberry, strawberry, grape, and ground cherry. Pollen from Mammoth and Salts caves paleofeces represents intentional digestion of wild plants including dandelion, lily, sweetflag, grasses, cactus, iris, *Rosaceae sp.*, aryllis, and unspecified flowers. Other plants likely were used during spring-summer, while nuts were used in fall-winter or stored for year-round consumption. Some early spring plants may have been used for medicinal or ritual purposes. Though 29 percent of the wood charcoal from the Salts Cave Vestibule flotation samples was walnut, chestnut, beech, and cherry species, there is no indication that nuts from these trees were consumed, suggesting incomplete use of potential foods (Bryant 1997; Marquardt 1997; Schoenwetter 1997; Stewart 1997; Watson 1997; Yarnell 1997a, 1997b).

Faunal remains were recovered from Salts Cave vestibule sediments and paleofecal specimens, and there are differences in the species represented in assemblages from the two contexts. The former produced evidence of at least 19 consumed animals: deer, elk, turkey, opossum, raccoon, red fox, gray fox, dog or wolf, groundhog, striped skunk, Eastern cottontail, Eastern gray squirrel, field mouse, Hispid cotton rat, rice rat, box turtle, bass, catfish, and mussels (Duffield 1997; Stansberry 1997; Watson 1997). Faunal remains from Salts Cave paleofecal specimens are snake bones, fish scales, insect fragments, frog bones, unidentified remains (Stewart 1997), and mice, sparrow, salamander, and bobcat bones (Duffield 1997). Mammoth Cave paleofecal remains provided limited evidence of animal consumption. Bones from amphibians, reptiles, rodents, and a turkey foot suggest reliance on small vertebrates (Watson 1997).

Duffield (1997) reconstructed patterns of animal procurement based on the Salts Cave Vestibule faunal assemblage. The overall picture is one of a diffuse economy, as Carstens (1996) also postulated for the Early Woodland of the central Kentucky karst. While some species (deer, raccoon, and turkey) were intentionally hunted, other species were opportunistically exploited. The level of bone processing may indicate attempts to increase nutritional returns in the face of protein shortages (Duffield 1997). Aquatic resources like fish and mussel supplemented the largely terrestrially derived diet. Earlier occupations are associated with exploitation of animals from diverse environments, while species from the upper horizon were derived largely from closed or semi-open deciduous forest or forest edge zones (Duffield 1997; Stansberry 1997), patterns corroborated by plant pollen analyses (Schoenwetter 1997). The following diachronic trends in vertebrate animal exploitation at the Salts Cave Vestibule are evident in the data tables presented by Duffield (1997:Table 5.17.2). Over time there were substantial decreases in species diversity and minimum numbers of individuals, and a moderate decline in turkey exploitation. Food yields (measured in pounds of meat) are highest in the lower horizon and lowest in the middle horizon. Large mammals constitute a high percentage of faunal assemblages across time, and the level of deer exploitation varies little over time.

Cultivars were an important component of the Early Woodland diet of the Salts Cave occupants (Watson 1997). Except for a few bottle gourd seeds, the Salts Cave Vestibule flotation sample was comprised almost exclusively of Eastern Agricultural Complex species (Yarnell 1997a). Intensified use of seeds in the Early Woodland subperiod continued into the Middle Woodland at Salts, perhaps in response to environmental and demographic factors. There is a correlation between increased weedy seed use and development of open oak-hickory woodlands corresponding to the period of intensive cave use. The causal relationship between the two events, however, is not known at this time (Watson 1997).

Indigenous cultivars recovered from Salts Cave paleofecal specimens are sunflower, goosefoot, maygrass, sumpweed, squash, erect knotweed, giant ragweed, and amaranth (Schoenwetter 1997; Stewart 1997). Goosefoot, maygrass, and sunflower (with hickory) were among the four most common species (by weight) recovered from Mammoth and Salts paleofeces. Goosefoot was the most ubiquitous species, even in comparison to wild species (Marquardt 1997). Sunflower and sumpweed specimens from Salts and Mammoth caves qualify as cultigens, but the status of goosefoot and maygrass is unclear (Yarnell 1997b), though goosefoot "was at least an encouraged (harvested and stored) weed" associated with gardens (Watson 1997:234). Sizeable amounts of sumpweed and goosefoot were recovered from the intestines of the mummified Salts Cave boy (Watson 1997; Yarnell 1997a, 1997b).

According to Yarnell (1997b), intentional garden cultivation (sunflower, sumpweed, cucurbits) accounted for about 42 percent of the diet at Salts Cave, while opportunistically harvested cultivars (goosefoot and maygrass) accounted for about 32 percent. "The indication is that garden production, fallow or otherwise, contributed two-thirds, more or less, of the total food supply. This estimate may turn out to be too high, but it should be obvious that the amount was somewhat greater than has generally been suspected for a subsistence pattern of this age in eastern North America" (Yarnell 1997b:122).

While Mammoth and Salts caves are the most thoroughly documented Woodland cave sites in the Upper Green River Section, other caves in and near Mammoth Cave National Park provide evidence of Woodland resource procurement, material culture, subsistence, mortuary practices, and belief systems. Undated but possibly Woodland period evidence of mineral mining derives from two other caves in Mammoth Cave National Park. Little is known about prehistoric mineral mining in Dixon Cave (15Ed225), located near Mammoth Cave. Despite significant disturbance, possible evidence of prehistoric mining activities includes a digging stick (Prentice 1993).

Prehistoric exploration of Bluff Cave (15Ed176), situated in Doyel Valley, is indicated by torch fragments, charcoal, and smoke-blackened walls. Torches were made of *Gerardia* and cane stalks, wood, and possibly solidago. Battering marks indicate where gypsum crusts were mined prehistorically. No diagnostic artifacts were recovered from Bluff Cave, but the mining activity there may have been contemporaneous with that at Salts and Mammoth caves (Late Archaic-Early Woodland subperiods) (Crothers et al. 2002; Prentice 1993; Tankersley 1996; Watson 1997).

> Prehistoric Indians entered this rather uncomfortable little cave and mined gypsum from it using weed stalk torches for light (presumably there were no cane stands nearby). So far, no textile fragments, squash or gourd remains, human paleofecal specimens, or other artifacts have been found in Bluff Cave, but it is possible that intensive and extensive removal of breakdown would reveal some of these items (Watson 1997:222).

There are two important caves in Woolsey Valley, also in Mammoth Cave National Park. Owl Cave (15Ed43) is a limestone cave with the entrance situated in the large Cedar Sink sinkhole. From the vestibule the wide trunk passageway drops substantially in elevation to a pool of water. Prehistoric artifacts are concentrated in the cave vestibule, with a scatter outside the cave entrance. In addition to chert tools/debitage and plant and animal remains, artifacts recovered from the vestibule are Late Archaic Stemmed cluster, Early Woodland Stemmed cluster, Delhi, and Steuben points, indicating occupations during the Early and late Middle-early Late Woodland subperiods (Applegate 2000b; Carstens 1980).

Regarding one of the few studies of archaeoastronomy in Kentucky, professional employees of Mammoth Cave National Park and cave scientists have documented a solar alignment at Owl Cave. On the equinoxes they observed that the sun aligns directly with the entrance of the cave. Beams of sunlight pass through the sloping main trunk, strike the pool of water at the bottom of the passage, and reflect onto the back wall of the cave. The scientists suggested that this phenomenon may have had ritual significance for prehistoric cave occupants (Chris Groves, personal communication 2000).

To the southeast, the vestibule of Martin Cave (15Ed49) contains deep and, in some places, intact cultural deposits including components spanning the Middle Archaic to Middle Woodland subperiods. Excavations by Watson and Carstens (1982, as cited by Prentice 1993) revealed six pottery-bearing strata yielding limestone tempered cordmarked, smoothed, fabric-impressed, and simple-stamped sherds. Other artifacts include projectile points and other chipped stone tools, groundstone tools, faunal remains including mussel shells and abundant deer bones, and hickory nut shell. The presence of human skeletal remains indicates mortuary use of the cave, in addition to domestic habitation during the fall-early winter months. There was no evidence of prehistoric mining.

To the east and south of Mammoth Cave National Park are six important caves that provide evidence of Early Woodland and later occupations: Short Cave (15Ed95), Crystal Onyx Cave (15Bn20), Roger's Discovery (15Bn55), Pit of the Skulls (15Bn51), Hidden River Cave (15Ht69), and Fisher Ridge Cave (no state site number). The latter is the only one of several caves in the Northtown area that has been reported by archaeologists. This rock art site contains geometric motifs in the form of cross-hatching. With calibrated radiocarbon determinations of 1657-1223 B.C. and 1187-783 B.C. (Chapter 4:Table 4.15), cave occupations date to the Terminal Archaic-Early Woodland transition (Crothers et al. 2002; DiBlasi 1996; Kennedy et al. 1983; see also Chapter 4).

Short Cave (15Ed95) is a short, mostly horizontal, single-trunk passageway several miles south of Mammoth Cave. Evidence of prehistoric use comes from the vestibule and consists of four intentional burials. Besides providing information about mortuary activity, the site yielded evidence of textile manufacture, medicinal plant use, and religious beliefs. Calibrated radiocarbon dates for one of the burials overlap between 1260 and 1041 B.C. (Chapter 4:Table 4.15), placing the site at the Late Archaic-Early Woodland transition (Horton 2003, 2007).

In the early 1800s saltpeter miners discovered four desiccated individuals buried in the Short Cave Vestibule. The poorly preserved remains of an infant, consisting largely of the cranium, reportedly were wrapped in deerskin. An adolescent boy, allegedly with an occipital fracture that may have been the cause of death, was wrapped with grave goods in a deerskin. A subadult or young adult female was recovered from a prepared grave. These three individuals were not scientifically studied, and today the remains are either unaccounted for or destroyed. The flexed remains of an adult woman wrapped in deerskin were recovered in 1811 from an alleged stone box grave in the vestibule. After being displayed for a short time in Mammoth Cave, the woman was transferred to several museums and, in 1914, was defleshed (Horton 2003, 2007; Robbins 1997). Detailed bioarchaeological analyses have not been conducted on the remains.

Little is known about the burial context of the Short Cave mummy, and only a portion of the grave goods reportedly associated with this woman was curated. Lost items are textiles and hides, cane whistles, and worked animal bones (Horton 2003, 2007; Powell 1996). The two cane whistles reportedly measured about 20 cm in length, had flat reeds placed in the openings in the tubes, and were tied together (Bullitt 1844 as cited in Carstens and DiBlasi 2004) like a panpipe.

The Short Cave woman reportedly was wrapped in two decorated deerskins and a bark sheet. Textiles included foot gear, woven bags, and a woven head cap (Powell 1996). Three of the existing textile fragments may be remnants of a wrap and/or bags woven of rattlesnake master, milkweed (*Asclepias sp.*), or some bast fiber, the latter processed by vetting. Fiber material, three strands of cordage, and a box of additional cord fragments revealed a predominance of Z-spin direction in cordage and S-spin direction in plied cords. Different fibers were used for different types (diameters) of cordage (Horton 2003, 2007; Powell 1996).

Faunal remains reportedly found with the Short Cave mummy include a headdress of seven Coopers hawk (*Accipiter cooperii*) feathers, two rattlesnake (*Crotulas horridus*) skins, a pierced raptor (eagle?) claw on a cord, a pierced bear jaw on a cord, seven bone needles or awls, deer sinew, and 20 leather pieces on a string (Powell 1996). Horton (2003) confirmed the existence of a leather object on a cord, seven small leather objects that may be the "fawn hooves," four Coopers hawk feathers plus additional strung feathers and feather fragments, and one fragment of a rattlesnake skin. The other items were not found in current museum collections.

Powell (1996) and Horton (2003, 2007) interpreted the Short Cave woman's burial items as evidence of her status as a medicine woman. The special items placed with the woman were in woven bags separate from the body. Feathers of Coopers hawk, part of one to two headdresses and streamers, may have represented "sky" and perhaps were part of a costume for "performative activities." The rattlesnake may signify "underworld." Motifs painted on deer hide may have had special significance. Cane whistles may have had "performative" functions. Plants with medicinal properties were associated with the woman; seeds of green dragon (*Ariseama dracontium*) or jack-in-the-pulpit (*Ariseama tripyllum*) strung on cordage may have been used to treat female afflictions. These plants are ammenorrheas, which relieve illness associated with pregnancy or cessation of menses, and contraceptive or abortifacients, which prevent or end pregnancies (Horton 2003; Powell 1996). They also may have been used in divination ceremonies (Horton 2003).

To the southeast of Short Cave, Prewitts Knob near Cave City is dotted with 16 caves, three of which yielded archaeological material including human skeletal remains dated to the Late Archaic-Early Woodland subperiods. Crystal Onyx Cave (15Bn20), a show cave for the last several decades, is the most extensive of the three caves with three levels and about 700 m of passageways. Six calibrated radiocarbon dates from the site range from 1113-804 B.C. to 350 B.C.-A.D. 118, though the dates cluster at the early end of this range (Table 5.12). Roger's Discovery (15Bn55) is a pit cave with five levels and 50 m of passageways, and Pit of the Skulls (15Bn51) is another pit cave with four levels and over 80 m of passageways (Haskins 1988a, 1988b; Hemberger 1985). The knob surface (15Bn56) produced Turkey Tail and Late Archaic-Early Woodland points, and a potential Ste. Genevieve chert quarry was identified on the northwestern edge of the knob (Haskins 1988b).

Of the Prewitts Knob sites, Crystal Onyx Cave yielded the largest burial population. Haskins (1988a, 1988b) identified a minimum of 36 commingled individuals in a sample of 678 highly fragmented bone specimens and Applegate et al. (2001) identified a minimum of 33 individuals in a sample of 919 specimens. An unspecified number of specimens, including two partial crania, from Pit of the Skulls represent a minimum of five individuals (Hemberger 1985). The Roger's Discovery sample of 308 specimens represents a minimum of six individuals (Applegate et al. 2001). Individuals of both sexes and all major age groups are represented in the three burial populations. Adults comprise 74 percent of the minimum number of individuals, subadults 19 percent, and infants 7 percent. Of the 33 adults for whom sex could be determined, 55 percent are males and 45 percent are females. The demographic data indicate that interment in caves was not limited by age or sex in Late Archaic-Early Woodland society.

The three Prewitts Knob caves were special-purpose sites, as evidence of human activity relates solely to human burials. The interments are secondary in nature, and postmortem mortuary processing in the form of disarticulation and dismemberment, which presumably occurred at another location, occurred prior to burial in the caves. Though a variety of formation processes significantly impacted the distributions of human remains in the caves, the remains were commingled in each assemblage, suggesting a communal or "ossuary" character to the burial grounds. There is no indication that the human remains were buried in cave sediments but, instead, were deposited on the cave ground surfaces (Applegate et al. 2001; Haskins 1988a, 1988b; Hemberger 1985). Whether the bones were thrown into the caves or placed there by hand is unknown, though Haskins (1988b) suggested the former.

Overall, the individuals represented in the Prewitts Knob burial populations enjoyed good health. Paleopathologies documented in the samples include bone fractures, infectious diseases and reactions, nutritional stress indicators, and degenerative afflictions including arthritis and dental attrition. Small sample sizes and bone fragmentation prevented detailed analyses of age-related and sex-linked differences in paleopathology, but an estimated eight of the adults and subadults in the three assemblages exhibited traumas or pathologies (Applegate et al. 2001; Hemberger 1985).

Regarding cultural modifications, occipital flattening is apparent on two skulls from Pit of the Skulls (Hemberger 1985) and "a few skulls" from Crystal Onyx Cave (Haskins 1988b:242). One adult male from Pit of the Skulls exhibited grooving of a molar with a large cary, which may have been a means of medical treatment. He and another male exhibited excessive wear, flaking, and displacement of the front teeth resulting from using the mouth as a vice to grip materials as they were pulled upward and outward (Hemberger 1985). Cut marks indicating postmortem defleshing and disarticulation were documented for adults and subadults at Crystal Onyx Cave and adults at the two pit caves. Very limited evidence of burning, which may indicate cremation, was noted in the Crystal Onyx Cave and Roger's Discovery assemblages (Applegate et al. 2001; Haskins 1988a, 1988b; Hemberger 1985).

Located about 15 km east of Mammoth Cave in downtown Horse Cave, Hidden River Cave (15Ht69) is a show cave entered through a large sinkhole. Beyond the wide cave entrance the main passageway slopes down steeply to an active underground river. Excavation of a 2 x 3 m area on the sinkhole floor revealed intact but secondary prehistoric deposits, as well as mixed deposits (Applegate 2000a). Excavation of 12 m^2 on the plateau surface produced additional prehistoric materials but no midden or cultural features (Applegate 2008). Diagnostic artifacts indicate that all Woodland subperiods are represented. Point types from the sinkhole and plateau are Saratoga cluster, Turkey Tail, Delhi, Motley, Kramer, Robbins, Gary, Adena, Copena, Lowe, Steuben, and Madison (Applegate 2000a, 2008). Pottery sherds from the sinkhole are untyped coarse and fine limestone tempered plain, limestone and sand tempered plain, sand tempered plain, limestone tempered incised, limestone and sand tempered incised, limestone tempered cordmarked or fabric impressed, and limestone, chert and shell tempered plain. A mica cutout reportedly was recovered from the sinkhole (Applegate 2000a).

In addition to caves, Woodland materials have been recovered from several rockshelters in and around Mammoth Cave National Park: Site 15Ed163, Site 15Ed56, Nelson's Rockshelter (15Ed41), Kingbird Rockshelter (15Ed162), Patch Rockshelter (15Ed42), Site 15Ed52, Ovenbird Rockshelter (15Ed218), Lone Point Rockshelter (15Ed169), Blue Heron Rockshelter (15Ed367), Site 15Ed61, Site 15Ed371, and Hilda Martin Shelter (no state site number). Most of these shelters yielded primarily chipped stone tools and debitage, with the Ovenbird Rockshelter and Lone Point Rockshelter each yielding a single point perhaps representing magico-religious offerings. Pottery, groundstone tools, and organic tools were recovered from some of these shelters. Six shelters contained intact human burials (sites 15Ed41 and 15Ed163) or disturbed human remains (sites 15Ed56, 15Ed61, 15Ed367, and 15Ed371) (Applegate 2001; Carstens 1980, 1996; Prentice 1993).

In addition to Early and Early-Middle Woodland point and pottery types mentioned previously, Mammoth Cave area rockshelters yielded diagnostics of the Middle and Late Woodland subperiods. Prevalent point types are Copena cluster, Lowe cluster (Lowe Flared Base, Bakers Creek, Steuben, and Chesser), and small triangular types including Madison and Hamilton; Snyders points are infrequently documented (Table 5.7) (from Prentice 1993). Pottery types are Mulberry Creek series, Rough River series, Wright Checked Stamped, Baytown Plain, and Yankeetown Incised and Burnished Ware (Applegate 2001; Carstens 1980, 1996; Prentice 1993). Based on his work in the park, Prentice (1993) defined three pottery varieties: Mulberry Creek Cordmarked, *var. Kingbird*, Mulberry Creek Plain, *var. Kingbird*, and Rough River Cordmarked, *var. Blowing Springs*.

Woodland period rockshelters in the Mammoth Cave area yielded faunal and floral remains indicative of food collection. Animal species are deer, bear, squirrel, raccoon, opossum, fox, dog/wolf, beaver, rabbit, duck, box and other turtles, gar, terrestrial gastropods, and several species of mussel. Plant species are exclusively nuts, especially hickory but also black walnut. The shelter assemblages evidence exploitation of multiple habitats, from riverine to uplands. To date, no plant cultigens have been recovered from Woodland contexts at these shelters, which is curious given the relative abundance of cultigens in similarly aged deposits at Mammoth and Salts caves (Carstens 1996; Prentice 1993). The difference may be due to season of occupation (caves were spring-summer and shelters were fall) and nature of site activities (mineral mining in caves and nut/deer acquisition at shelters) (Prentice 1993).

Concerning diachronic subsistence trends, Carstens (1996) characterized the Early Woodland subsistence strategy in the Mammoth Cave area as diffuse. Deer use continued, and there was a slight increase in hickory, walnut, and acorn utilization. There was an "increase in the number of environmental habitats exploited" (Carstens 1996:9). The Middle and Late Woodland subsistence strategies were focal. During the former, only “open woodland, transitional forest edge, and riverine (Green River)” habitats were used, and deer exploitation was prominent. During the latter, deer hunting and hickory continued, and box turtle were opportunistically collected (Carstens 1996).

Among the most significant of the Mammoth Cave area rockshelters is Site 15Ed163, which contained a 20 cm thick midden both inside and outside the dripline. The Late Archaic-Early Woodland deposit yielded Late Archaic Stemmed and Dickson cluster points and other artifacts. No pottery or features were discovered in the 2 sq m excavation area. Site 15Ed56 is a southwest-facing shelter that measures 14 x 11 x 5 m in size. Despite considerable looting, a 25 cm thick subsurface midden was preserved in the dry deposits. In addition to unspecified human remains and nondiagnostic artifacts, diagnostic items from the midden are Plum Springs and Mulberry Creek pottery and Lowe cluster and small triangular points, indicating occupations potentially spanning the Woodland period. Elsewhere in the Mammoth Cave area, an adult female in a stone box grave was discovered by Nels C. Nelson at Nelson’s Shelter (15Ed41). The primary burial did not contain grave goods, but artifacts such as grit tempered sherds found elsewhere in the shelter suggest a Woodland affiliation (Prentice 1993).

Surface collection and excavation of 3 m^2 at Kingbird Rockshelter (15Ed162) produced a number of Woodland period artifacts and revealed two intact subsurface deposits. The Early-Middle Woodland stratum produced Plum Springs and Mulberry Creek pottery, burned clay and daub, lithics, and faunal remains. Two storage pits are associated with this occupation, the larger of which yielded Mulberry Creek, Blue Lake, and Rough River pottery; burned clay and daub; Ledbetter drill, Lowe cluster point, and other point fragments; and hickory nutshell and faunal remains reflecting exploitation of diverse habitats. Calibrated radiocarbon dates for the large pit are 897-513 B.C. and 766-264 B.C. (Table 5.12). The Late Woodland layer contained a primary burial, Lowe Flared Base and Madison points, other chert items, and faunal remains. The flexed burial was a robust, young adult (18-25 years) female placed on her side in a pit and covered with sandstone slabs. There were no grave goods. The burial is significant because it is the only rockshelter interment placed outside the dripline found in the Mammoth Cave area (Prentice 1993).

Excavation of 4 m^2 at Patch Rockshelter (15Ed42) revealed six strata from two major occupational episodes. Woodland period occupations spanned ca. 500 B.C.-A.D. 500, though Adena Stemmed and Bakers Creek points and Rough River, Mulberry Creek, and Wright Checked Stamped pottery suggest a primary Middle Woodland component. A calibrated radiocarbon date of A.D. 408-857 (Table 5.12) was obtained for a feature with Rough River series pottery (Carstens 1980, 1996). A small triangular point, a shell pendant, and other artifacts were recovered from the shelter (Prentice 1993).

Excavation of 22.5 m^2 at Site 15Ed52 revealed a subsurface midden about 15 cm thick and a refuse pit. Projectile points representing all Woodland subperiods are Cotaco Creek, Adena Stemmed, Copena, Bakers Creek, Steuben, Levanna, and Madison. Pottery types are Rough River series, Yankeetown Burnished Ware, and Baytown Plain. Sherds of the latter were recovered from contexts that yielded a calibrated date of A.D. 1030-1291 (Table 5.12). Middle-Late Woodland activities, which predominated at this multicomponent site, included hickory nut processing, deer hunting, and opportunistic collecting of box turtles (Carstens 1996; Prentice 1993). According to Watson and Carstens (1980 as cited in Prentice 1993), the shelter was occupied by a nuclear family during the mid-late fall for perhaps several months, and food acquisition activities involved a sexual division of labor.

In sum, Prentice (1993, 1996) found that selection of rockshelters in the Mammoth Cave area was based primarily on size; for large shelters, habitability and accessibility were additional relevant variables. Rockshelters with 10-50 m^2 area of usable space tend to be single component sites with relatively lower densities of artifacts representing limited types of activities. Shelters measuring at least 100 m^2 tend to be multicomponent sites with relatively higher densities of artifacts representing more diverse activities. For large shelters, dry and accessible sites were used preferentially; these sites tend to be located at the heads of hollows. Exposure direction (i.e., aspect) and rocky substrate were not found to be significant factors influencing shelter site selection (Prentice 1993, 1996). Regardless of size, Applegate (2001) found that rockshelters in Edmonson County served similar functions (e.g., chipped stone tool manufacture and maintenance, hunting, mussel collecting, and food preparation) with the frequency of shelter utilization declining throughout the Woodland period.

Prentice (1993) also documented several open habitation sites within Mammoth Cave National Park. These sites varied in size and occupational intensity by topographic location, with the highest site densities in the park associated with the bottomland zone. Large upland sites are situated within 1 km of the Green River or near springs. These sites are multicomponent artifact scatters lacking features but representing relatively long-term occupations compared to other open sites but less permanent than large rockshelters. They likely functioned as locales for fall hunting and nut harvesting. Small upland sites are located away from the Green River but within 1 km of water sources like ponds or intermittent stream confluences. They are characterized by lithic scatters representing single component, short-term occupations where lithic production activities occurred. Large bottomland sites representing repeated occupations are located near the confluences of the Green River with its tributaries, where the floodplain is relatively wide and occupants had easy access to uplands. Small bottomland sites were used infrequently and are found on levee and ridge topographic features away from stream confluences. Chert extraction activities occurred predominantly in upland valleys south of the Green River at about 213 m in elevation (Prentice 1993, 1996).

According to Prentice (1993), groups occupying the Mammoth Cave National Park area during the Middle Woodland subperiod did not participate in the ritual [mortuary] ceremonialism that is documented in other parts of Kentucky and the Ohio Valley. Schwartz et al. (1958b) made a similar observation, based on the results of their survey of portions of Hardin, Breckenridge, and Grayson counties in advance of construction of the Rough River reservoir. They noted that while they documented extensive Woodland use of this region, they found no evidence of mound construction or ceremonial elaboration (Schwartz et al. 1958b:17). Burial mounds, however, have been documented in other portions of the Upper Green River Section.

For instance, Site 15Ad59 is an Adair County burial mound located in the southeastern part of the section. Though it was not professionally investigated prior to its destruction, artifacts observed in a private collection provided some information about goods interred with the dead at this site. The items include an elbow pipe of unspecified material, seven Copena Triangular points, a copper bead, a rectangular drilled gorget fragment, two large scraps of mica, and plain pottery (Boisvert and Gatus 1977). The material assemblage from this mound, which shares similarities with the Watkins Mound A assemblage in the Pennyroyal Section, suggests affinities with the Copena Complex of northern Alabama (Walthall 1979). In middle Tennessee, Copena traits such as triangular/ lanceolate points are restricted to the early Middle Woodland McFarland phase (ca. 100 B.C.-A.D. 200), with expanded stem and weakly notched points characterizing the subsequent early Owl Hollow phase (A.D. 200-400) (Cobb and Faulkner 1978; Dillehay et al. 1984; Kline et al. 1982). Based upon these phases, Site 15Ad59 likely dates to the early Middle Woodland subperiod.

Late Woodland occupation of the Upper Green River Section is not nearly as well documented as that of the Early and Middle Woodland subperiods. As noted previously, Baytown Plain and Yankeetown Incised ceramics were recovered from rockshelter sites and Lowe cluster and small triangular points from caves and shelters in the Mammoth Cave area. Late Woodland components were recorded at open habitation sites in the Barren River Lake vicinity, many of which, such as the Jewell site complex (15Bn21, 15Bn349, 15Bn384, and 15Bn390), have significant Mississippian occupations (see Chapter 6). At these sites Lowe cluster and small triangular points are prevalent.

One of the best known early Late Woodland sites is Rough River (15Gy12) in Grayson County. This rockshelter overlooks an intermittent tributary near its confluence with Rough River. The central 174 sq m of the 57.9 x 7.6 x 3.1 m shelter was accessible and contained prehistoric occupation debris about 86 cm deep. The upper 30 cm of the site contained predominantly late Middle to Late Woodland/early Mississippian materials; these deposits were underlain by about 15 cm of mixed Archaic-Woodland strata. Features include ash and ash-charcoal lenses, fire-hardened floors, and burials, though the relative ages of each were not clearly delineated. The secondary burial of a 30-year-old male was discovered in Woodland levels at this site (Schwartz et al. 1958a). This secondary burial was associated with abundant shells and was partly mixed with an underlying, possibly Archaic burial (Schwartz et al. 1958a; Schwartz and Sloan 1960). No other details about the interment, such as the type of shell (e.g., mussel and gastropod) and whether or not the shells represented incidental inclusions or grave goods, were given.

A majority of projectile points from the Rough River site are triangular (Hamilton Incurvate and Madison) and reflect more extensive or intensive use of the shelter after about A.D. 800, though only a few shell or mixed shell and limestone tempered sherds were recovered. The triangular points also may be associated with the small amount of clay/grog tempered ceramics found at this site. Though these ceramics could not be assigned to an established type, they may represent Yankeetown or Mulberry Creek Cordmarked/Baytown Plain (Schlarb et al. 2008).

Other Woodland point types recovered from the Rough River site are Bakers Creek, Lowe Flared Base, and Chesser Notched (Schlarb et al. 2008). These points may be associated with the limestone tempered ceramics that dominate the site ceramic assemblage. Middle/Late Woodland limestone tempered Rough River Series ceramics (Rough River Cordmarked, Rough River Plain, and Rough River Simple Stamped) are present and the Rough River shelter is the type site for the series (Schlarb et al. 2008; Schwartz and Sloan 1960). Of the three types, Rough River Simple Stamped ceramics is somewhat different from Rough River cordmarked or plain specimens, being tempered only with white limestone, exhibiting consistently thinner vessel walls, and, of course, having stamped exteriors. These three pottery types are known from sites elsewhere in the section, such as in Edmonson County. In the Mammoth Cave area, Rough River Cordmarked is the earliest type of the series, and it is more prevalent than the other types. A fourth type, Rough River Smoothed-Over Cordmarked, is identified in these site assemblages (Applegate 2001; Carstens 1996; Prentice 1993). As discussed previously, sites in the Western Coalfield and Pennyroyal sections also yielded Rough River series pottery.

The temporal placement of Rough River pottery is unclear, but it may span the Woodland period. Many archaeologists assign it to the Middle-Late Woodland, and Lawrence (1985; see also Schlarb et al. 2008) observed that the Rough River series was most popular during the late Middle Woodland, ca. A.D. 400-600. Based on a review of the literature, however, the possible time range for sherds assigned to this series ranges from 769 B.C. (Crumps Cave) to A.D. 1291 (Site 15Ed52) (Table 5.12). Other calibrated absolute dates for contexts yielding Rough River pottery are 356-A.D. 424 at Crumps Cave and A.D. 408-857 at Patch Rockshelter (Table 5.12) (Carstens 1996). "The origin of this ceramic type and its morphological relationship to other Early Woodland ceramics is not currently known" (Carstens 1996:9), but the cordmarked type may be a limestone tempered precursor to clay tempered Mulberry Creek Cordmarked (Carstens as cited in Lawrence 1985).

SALT RIVER (MANAGEMENT AREA 3)

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

In the late nineteenth century William Marcus Linney conducted geological-archaeological surveys of 11 Kentucky counties including several in the Salt River Management Area. He reported on prehistoric sites in the Danville-Harrodsburg area in an 1881 letter to the Smithsonian Institution, recording 37 Woodland-Late Prehistoric earthworks, graves, rock piles, workshops, and villages in Boyle and Mercer counties (Clay 1985). According to Clay (1985:211), "the detail of Linney's survey data was ahead of its time." Few additional archaeological studies, however, were conducted in the Salt River Management Area until the 1970s.

More counties in the management area were surveyed by Funkhouser and Webb (1932) as part of their state-wide archaeological inventory. One of the few Woodland site archaeological excavations undertaken between the 1930s and 1970s involved salvage work at Zorn Avenue Village (15Jf250) (Matthews 1958; Mocas 1988). This site, which was located on a bluff top 30 m above the floodplain about 1.4 km south of the Ohio River, was discovered during construction of a Louisville subdivision in the 1950s. It was a substantial Middle Woodland habitation with features.

During the 1970s, several cultural resource management archaeological investigations were undertaken in this management area. Much of this work was conducted by the University of Louisville, and information on Woodland occupations was obtained from several sites, including Hornung (15Jf60), Site 15Jf161, McNeeley Lake (15Jf200), Bates Island (15Jf258), and Hunting Creek (15Jf268) (Mocas 1988, 1992, 1995). In 1974, excavations were conducted at the early Late Woodland SARA site (15Jf187), which is located on the central of three parallel ridges in the broad alluvial valley of the Ohio River floodplain. Work also was conducted at the nearby Early Woodland Arrowhead Farm site (15Jf237), which is located in a similar topographic setting as the SARA site (Mocas 1995).

The University of Kentucky's investigation of Archaic sites in southwestern Jefferson County (Collins 1979) produced important Early Woodland data. Woodland components were documented at Spadie (15Jf14), Rosenberger (15Jf18), Longworth-Gick (15Jf243), and Villier (15Jf110). In the Fort Knox area, O'Malley et al. (1980) identified a large number of habitation sites. Of these, sites 15Bu358, 15Hd229, and 15Md152 were assigned to the Woodland period based upon the occurrence of Adena, Turkey Tail, expanding stemmed points, or chert tempered ceramics. Site 15Hd126 is a mound that may date to the Woodland period.

In the early 1980s the University of Kentucky conducted limited excavations at the Old Bear site (15Sh18) in Shelby County, and in the early 1990s the Kentucky Heritage Council excavated the nearby Shelby Lake site (15Sh17). These projects, along with the University of Kentucky's work at Withrow Creek (15Ne55) in Nelson County (Davis et al. 1997) and Mocas' (1995) reporting on the SARA site (15Jf187), generated new information on the Late Woodland subperiod in this management area. To the southeast, Early Woodland data was recovered from the Danville Tank site (15Bo16) in Boyd County

(Boedy and Niquette 1987) and a buried Woodland-Mississippian midden was documented at Site 15Sp26 (Driskell et al. 1984).

Since 1990, a number of investigations have been undertaken in Jefferson County, the best-documented portion of the Salt River Management Area. In the early 1990s, Early Woodland materials were recovered from the Railway Museum site (16Jf630), which is located on a terrace of the Ohio River in Louisville (Ross-Stallings 1995). Located on the south bank of the Ohio River, the Shippingport site (15Jf702) is a multicomponent site with a significant Early Woodland occupation. Over 140 pits, thermal features, and postmolds indicate repeated site use (French et al. 2007). Mocas (1976, 1988, 1992, 1995) analyzed a number of Woodland ceramic assemblages from the Greater Louisville Area. In addition to this work, early, Middle, and Late Woodland assemblages have been recovered from Site 15Mn361 in Marion County (Bybee 2001).

SITE DENSITY AND DISTRIBUTION PATTERNS

The 410 Woodland sites in the Salt River Management Area account for 14 percent of the Woodland sites in Kentucky. This management area, however, has the highest density of Woodland sites per square km, and the density of Woodland sites per acre surveyed is slightly higher than the state average (Table 5.1).

Regarding site type, the vast majority (87 percent) of Woodland sites in the management area are open habitations without mounds. Rockshelters, earth mounds and mound complexes, and specialized activity sites each account for 2 percent of the Woodland sites. About 4 percent and 3 percent of the sites are unspecified types and other types, respectively. The low incidence of mounds and the absence of nonmound earthworks in this management area contrasts sharply with the adjacent Bluegrass Management Area, which contains an abundance of such sites. This pattern may reflect differences in social integration and expression between the two areas during the Woodland period.

The 529 Woodland components associated with sites in the Salt River Management Area account for 15 percent of the Woodland components in Kentucky. Over 41 percent of the Salt River components are Early Woodland, the highest percentage for all management areas. About 28 percent and 27.5 percent of the Salt River components are Middle Woodland and unassigned, respectively. Only about 3.5 percent are Late Woodland, which represents the smallest percentage of Late Woodland sites within any management area, though only slightly smaller than the percentage for the Bluegrass (Table 5.2).

CHRONOMETRIC DETERMINATIONS

Chronometric determinations for the Salt River Management Area are provided in Table 5.17. The dates, including some acquired through thermoluminescence, span all

Table 5.17. Chronometric Dates for the Salt River Management Area.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
Riverwood (15Bu265)			
M-2462	2870±150	1436-788 BC	Crane and Griffin 1972; Janzen 1977
M-2463	2450±140	890-880, 844-336, 331-203 BC	Crane and Griffin 1972; Janzen 1977
Site 15Hd478			
OCR Dating	2959±88	1009 ± 88 BC *	Stallings and Ross-Stallings 1996
OCR Dating	2837±85	887 ± 85 BC *	Stallings and Ross-Stallings 1996
Villier (15Jf110)			
Tx-3010	2390±70	766-369 BC	Robinson and Smith 1979
SARA (15Jf187)			
Beta-12721	2250±70	479-470, 414-95 BC	Mocas 1995
UGa-1231	2065±60	347-318, 207 BC-AD 67	Mocas 1976
Beta-12720	1400±70	AD 442-452, 461-483, 533-776	Mocas 1995
Arrowhead Farm (15Jf237)			
UGa-677	2965±175	1606-1574, 1558-1551, 1538-802 BC	Mocas 1976
UGa-699	1285±70	AD 635-894, 927-934	Mocas 1976, 1995
UGa-678	920±245	AD 624-627, 631-1454	Mocas 1976
Site 15Jf246			
UGa-1337	2055±75	353-293, 230-218, 213 BC-AD 86, 106-120	Dobbs and Dragoo 1976
Hunting Creek (15Jf268)			
UGa-1259	2300±350	1258-1233, 1217 BC-AD 425	Mocas 1992
Long (15Jf549)			
Beta-42897	2440±60	761-682, 671-403 BC	Granger et al. 1992
Shippingport (15Jf702)			
Beta-215667	2470±60	767-411 BC	French et al. 2007:33
Beta-215903	2440±40	754-685, 668-610, 598-406 BC	French et al. 2007:33
Beta-215875	2420±60	757-684, 669-397 BC	French et al. 2007:33
Custer (15Jf732)			
Beta-24090	1520±40	AD 430-617	Anne T. Bader pers. comm. 2008
Site 15Mn361			
Beta-155127	2130±50	359-276, 259-42 BC	Bybee 2001
Withrow Creek (15Ne55)			
Beta-96394	1540±60	AD 410-637	Davis et al. 1997
Shelby Lake (15Sh17)			
Beta-73118	1480±60	AD 433-495, 503-656	Hockensmith et al. 1998
Beta-73162	1430±60	AD 437-488, 531-689, 752-761	Hockensmith et al. 1998
Old Bear (15Sh18)			
UGA-3706	1440±100	AD 392-780, 792-804	Brooks 1985
Site 15Sp26			
82-5-228-1*	1960±140	10±140 BC (TL date)	Driskell et al. 1984
82-5-228-2*	1940±250	AD 10±250 (TL date)	Driskell et al. 1984
Beta-4786	1695±125	AD 73-603	Driskell et al. 1984
82-5-B021-2*	1590±100	AD 360±100 (TL date)	Driskell et al. 1984
82-5-B021-1*	1550±110	AD 400±110 (TL date)	Driskell et al. 1984
82-5-346-1*	1320±100	AD 630±100 (TL date)	Driskell et al. 1984
Beta-4786	1080±65	AD 777-1045, 1094-1120, 1141-1147	Driskell et al. 1984
Beta-4787	595±55	AD 1288-1422	Driskell et al. 1984

* University of Missouri

subdivisions of the Woodland period, especially the early Middle, late Middle, and early Late Woodland subperiods.

REGIONAL SEQUENCE

Most previous research on Woodland sites in the Salt River Management Area has been conducted the Falls region, with some important sites excavated in nearby Shelby, Nelson, and Marion counties (Table 5.18). In the upper reaches of the Salt River drainage, some work has been undertaken in Boyle County, but a large portion of this management area has received limited attention, and there are no substantial Woodland sites reported for Anderson, Larue, Mercer, Oldham, and Washington counties.

Table 5.18. Important Woodland Period Sites in the Salt River Management Area.

Site No.	Site Name	Site Type	Affiliation	References
15Bo16	Danville Tank	open habitation	EW	Boedy and Niquette 1987
15Bu265	Riverwood	rockshelter	EW, LW	Granger 1988; Janzen 1977
15Bu358	none	open habitation	EW	O'Malley et al. 1980
15Hd126	none	mound	unassigned	O'Malley et al. 1980
15Hd229	none	open habitation	EW, MW	O'Malley et al. 1980
15Hd478	none	open habitation	EW	Stallings and Ross-Stallings 1996
15Jf14	Spadie*	open habitation	EW, MW	Mocas 1988, 1992, 1995
15Jf18	Rosenberger*	open habitation	EW	Driskell 1979
15Jf60	Hornung*	open habitation	EW	Mocas 1988, 1992, 1995
15Jf110	Villier*	open habitation	EW	Robinson and Smith 1979
15Jf161	none	open habitation	unassigned	Mocas 1988, 1992, 1995
15Jf187	SARA	open habitation	EW, MW, LW	Mocas 1995
15Jf200	McNeeley Lake*	open habitation	MW	Mocas 1988, 1992, 1995
15Jf237	Arrowhead Farm*	open habitation	EW, MW, LW	Mocas 1988, 1995
15Jf243	Longworth-Gick*	open habitation	EW	Collins 1979
15Jf246	none	open habitation	MW	Dobbs and Dragoo 1976
15Jf250	Zorn Avenue Village	open habitation	MW	Matthews 1958; Mocas 1988, 1992
15Jf258	Bates Island	open habitation	unassigned	Mocas 1988, 1992, 1995
15Jf268	Hunting Creek	open habitation	EW, MW	Mocas 1992
15Jf549	Long	open habitation	EW	Granger et al. 1992
15Jf630	Railway Museum*	open habitation	EW	Stallings 1995
15Jf702	Shippingport	open habitation	EW	French et al. 2007
15Jf732	Custer	open habitation	MW-LW	Bader pers. comm. 2007
15Md152	none	open habitation	EW	O'Malley et al. 1980
15Mn361	none	open habitation	EW, MW, LW	Bybee 2001
15Ne55	Withrow Creek	open habitation	MW, LW	Davis et al. 1997
15Sh17	Shelby Lake	open habitation	LW	Hockensmith et al. 1998
15Sh18	Old Bear	open habitation	LW	Brooks 1985
15Sh33	Old Christianburgh Station	open habitation	LW	Hilgeman 1985
15Sp26	none	open habitation	LW	Driskell et al. 1984
*These sites are primarily known for their Archaic components - See Chapter 4.				

Some of the earliest Woodland sites in the Salt River Management Area produced assemblages of the Riverwood phase, the only Woodland phase designated in the management area. Besides the type site of the same name (15Bu265), Riverwood phase components have been documented at Arrowhead Farm (15Jf237), Hornung (15Jf60), Rosenberger (15Jf18), Villier (15Jf110), Longworth-Gick (15Jf243), and Spadie (15Jf14), most of which are described below. Spanning the Terminal Archaic and Early Woodland subperiods, Riverwood phase components date to ca. 1200 to 300 B.C. The phase may be associated with Adena (Granger 1988), though there are few mounds and no enclosures in the management area and most Adena sites post-date ca. 500 B.C. Unfortunately, the Riverwood phase remains poorly defined and diagnostic artifact types are not clearly delineated. Artifact types that the aforementioned Riverwood phase sites have in common are thick grit tempered pottery and Adena Stemmed, Cogswell-like, and other stemmed points.

Regarding these diagnostic artifacts, Early Woodland Stemmed and Dickson cluster points are common at other Early Woodland sites in the Salt River Management Area (Table 5.7). According to Mocas (1988), some of the Early Woodland pottery from Jefferson County sites shares similarities with Crab Orchard series from the Ohio River II Section, but the Falls materials lack dowel-wrapped cordmarking. Some early sherds are classified as Zorn Punctate, such as three sherds representing two vessels and six pinched sherds from Rosenberger (15Jf18) and Hornung (15Jf60), respectively (Mocas 1988). The temporal affiliation of Zorn Punctate is unclear, however. Zorn Punctate sherds were recovered from several dated Early Woodland contexts in the Salt River Management Area (Mocas 1988; Robinson and Smith 1979) and Ohio River II Section (Bader 1996b), and Mocas (1988) indicated that Zorn Punctate probably was coeval with or pre-dated Fayette Thick, an Early Woodland pottery type in the adjacent Bluegrass Management Area. Despite these data, many archaeologists view Zorn Punctate as a Middle Woodland pottery type based on evidence outlined later.

Arrowhead Farm (15Jf237) is located on a linear ridge in the Ohio River floodplain. The multicomponent site is associated with a calibrated radiocarbon date of 1606-802 B.C. (Table 5.17), the earliest chronometric determination for Woodland sites in the management area. The dated charcoal sample was associated with Zorn Punctate pottery, which was recovered from mortuary and nonmortuary contexts at the site. Mocas (1988), however, considered the very early date suspect and instead associated the pottery with the Middle Woodland component at Arrowhead Farm. If the date and association are correct, the Arrowhead Farm pottery is among the oldest in Kentucky.

Riverwood Rockshelter (15Bu265) in Bullitt County yielded Early Woodland calibrated radiocarbon dates of 1436-788 B.C. and 890-203 B.C. (Table 5.17). Both dates were obtained from charcoal reportedly associated with thick, grit tempered pottery (Janzen 1977:138). Reexamination of these ceramics, however, suggests that they may actually date to the Late Woodland subperiod (Stephen T. Mocas, personal communication 1987).

Located on the south bank of the Ohio River, the Shippingport site (15Jf702) is a multicomponent site with a significant Early Woodland component. Point types are Buck Creek, Turkey Tail, Kramer, Cypress Stemmed, and Gary. Two features with Kramer points yielded calibrated radiocarbon dates of 754-406 B.C. and 767-411 B.C. (Table 5.17). French et al. (2007) recovered pottery tempered with coarsely ground gravel from

Early Woodland features at the Shippingport site. Some specimens exhibit cordmarked exterior surfaces, while other sherds have both exterior and interior cordmarking similar to Marion Thick wares. Grit tempered sherds were found in a feature with a two-sigma calibrated radiocarbon date of 757-397 B.C. (Table 5.17) (French et al. 2007).

Features associated with the Shippingport Early Woodland component indicate repeated site use and consist of 15 large pits, 47 thermal features (e.g., hearths, smoking/roasting pits, and stone oven), and 83 postmolds. Some postmolds are clustered but are not patterned in such a way as to suggest structures; perhaps they are associated with temporary single-post lean-tos. Most features tend were found outside the possible lean-tos. Some hearths are paired (French et al. 2007).

At the Villier site (15Jf110), Early Woodland materials were recovered from the upper levels of an 80 cm thick stratum, the bulk of which yielded Late Archaic occupation debris. Early Woodland diagnostics are Adena-like projectile points and thick, chert or limestone tempered sherds including Zorn Punctate. A calibrated radiocarbon date of 766-369 B.C. (Table 5.17) was obtained from an Early Woodland pit feature at this site (Collins 1979; Mocas 1988; Robinson and Smith 1979).

Joseph Granger surface collected and undertook limited excavations at the Hunting Creek site (15Jf268) in the 1970s. This bluff-top site overlooking Harrods Creek is 4.5 km east of the Ohio River. Six of the approximately 20 features documented at the site were excavated. The one radiocarbon date from this site has a very large standard deviation, which resulted in a calibrated date of 1258 B.C.-A.D. 425 (Table 5.17). This date, which is suggestive of an Early or Middle Woodland component, was obtained from a small charcoal sample recovered from a feature. Diagnostic artifacts from feature contexts, which may be associated with a Middle Woodland component, are Falls Plain pottery and Snyders cluster/variant points (Mocas 1992).

Other sites in this management area yielded Early Woodland chronometric dates. In Jefferson County, the Long site (15Jf549) produced a calibrated radiocarbon date of 761-403 B.C. (Table 5.17) (Granger et al. 1992). Though not identified as Riverwood phase, a likely contemporary site in Hardin County is 15Hd478, which yielded materials OCR dated at 1009±88 B.C. and 887±85 B.C. (Table 5.17) (Stallings and Ross-Stallings 1996). Early-Middle Woodland occupations at Site 15Mn361 in Marion County are indicated by a calibrated radiocarbon date of 359-42 B.C. (Table 5.17) (Bybee 2001). Similarly, an Early-Middle Woodland component dated at cal 479 B.C.-A.D. 95 and cal 347 B.C.-A.D. 67 (Table 5.17) is evidenced at the SARA site (15Jf187) (Mocas 1995).

Several Early Woodland sites in the Salt River Management Area lack chronometric dates but yielded diagnostic artifacts. The Railway Museum site (16Jf630) is located on a terrace of the Ohio River in Louisville. Though primarily a Late Archaic habitation with burials (see Chapter 4), an Early Woodland component is evidenced by three sherds classified as Mid-Valley Cordmarked. One of the grit tempered sherds also had crushed quartzite temper and two also had crushed igneous rock temper. One of the latter had fingernail impressions over the cordmarking (Stallings 1995). Based on Mocas' (1988) description, the Railway Museum sherds fall within the formal range of Zorn Punctate.

Early Woodland materials were recovered from the uppermost zones of the deeply stratified Longworth-Gick site (15Jf243), which is located on a ridge in the Ohio River floodplain. Early Woodland diagnostics associated with this component include Adena, Cogswell-like, and other stemmed points, along with grit tempered cordmarked or plain ceramics including Zorn Punctate. Dark midden staining and features, including small fire pits, were uncovered in the Early Woodland zone at the site (Collins 1979; Mocas 1988).

In the upper reaches of the Salt River drainage, Early Woodland materials were recovered from the Danville Tank site (15Bo16) in Boyle County. Though this is a large multicomponent site, the most substantial occupations occurred during the Late Archaic and Early Woodland subperiods. Artifacts were mixed vertically, but horizontal integrity was judged adequate. Lithic artifacts reflect a reliance on locally available cherts for tool production, supplemented by the use of tools of imported exotic cherts, during the Early Woodland subperiod. The Early Woodland occupation at Danville Tank reflects frequent reuse for short intervals of time. The site functioned as a hunting camp where stone tools were manufactured and maintained. The near absence of features indicates low occupational intensity (Boedy and Niquette 1987).

In the Upper Rolling Fork River valley, a tributary of Salt River in Marion County, Early Woodland knappers used a wide range of cherts, especially Muldraugh but also Boyle, Harrodsburg, and Gilbert cherts, each of which was locally available in residual and alluvial sources like gravel bars. Use of nonlocal St. Louis chert increased significantly during the Early and Middle Woodland subperiods, signaling expansion of socio-economic relations or trade networks beyond the local area. Though still secondary to Muldraugh, Boyle chert utilization increased during the Middle and Late Woodland subperiods. Due to their relatively poor quality and limited availability, Harrodsburg and Gilbert cherts were used infrequently over time. Heat treatment was employed throughout the Woodland period (Ray 2000).

Our knowledge of Woodland mortuary and ritual activity in the Salt River Management Area is limited. Archaeologists have documented only seven mounds, two mound complexes, and two open habitations with mounds in the Salt River Management Area. Further, few mounds have been investigated by professional archaeologists. For example, William Marcus Linney (1881 as cited in Clay 1985) recorded a complex of four earthen mounds in Mercer County. Based on the recovery of a copper bead from one of the mounds, this complex may date to the Early-Middle Woodland (Clay 1985).

There are no stone mounds, cemeteries, or isolated burials recorded in this management area, but three rock pile sites with burials were documented by Linney (1881 as cited in Clay 1985) in Boyle and Mercer counties. Owing to their similarity to the C. L. Lewis Mound in Indiana, Clay (1985) proposed a Woodland affiliation for the sites. Linney (1881 as cited in Clay 1985) also reported a stone box grave with mica sheets in Mercer County, a likely Early or Middle Woodland site (Clay 1985). Other exotic or unique artifacts that reportedly were found at Woodland mortuary sites in this management area are a copper ear spool from Marion County in the 1880s (Richmond and Kerr 2005) and a slate reel-shaped gorget reported from an unspecified Jefferson County site (Webb 1941a). There are no known earthen enclosures or rock art sites in this management area.

A large number of Middle Woodland or late Early-early Middle Woodland habitation sites are now reported in the Salt River Management Area, including the eight significant sites described below. Regarding diagnostic artifacts, Lowe cluster points are common at these sites (Table 5.7). During the Early and Middle Woodland subperiods, "relatively little change can be identified in the local ceramic sequence," perhaps because the ceramics were utilitarian wares that did not change very much (Mocas 1988:137). Pottery assemblages from Middle Woodland sites include Zorn Punctate and Falls Plain, while Newtown series pottery derives from late Middle to early Late Woodland sites. Mocas (1988) tentatively dated the former at ca. 200 B.C.-A.D. 200. For example, Zorn Punctate pottery was recovered from a pit feature at Site 15Jf246 that yielded a calibrated date of 353 B.C.-A.D. 120 (Table 5.17). This site is located adjacent to Longworth-Gick (15Jf243) in the Ohio River floodplain (Dobbs and Dragoo 1976:137). Mocas (1988) proposed a range of ca. A.D. 0-400 for Falls Plain pottery. However, subsequent research revealed that Zorn Punctate and Falls Plain are not exclusively Middle Woodland. As noted previously, Zorn Punctate has been recovered from Early Woodland contexts at sites in this management area.

Falls Plain pottery, which has been recovered from 10 sites in Jefferson County (Mocas 1992, 1995), may extend into the late Early Woodland and early Late Woodland subperiods. Falls Plain sherds are associated with Turkey Tail, Saratoga, Lowe cluster, and Snyders cluster points in dated feature contexts at four Falls area sites, though the former points may be intrusive (Mocas 1992, 1995). "The combination of limestone temper and smoothed surface treatment on ceramics from the Falls of the Ohio River region appears to be significant on a local level. The lack of other pottery types in association with Falls Plain and the frequent co-occurrence of Snyders cluster projectile points with these ceramics indicate Falls Plain pottery may be a useful cultural and temporal marker" (Mocas 1992:76). As use of Falls Plains declined, production of cordmarked wares resurged. Though there is some overlap, "Falls Plain occupies a temporal and stylistic position between the local grit tempered cordmarked and/or punctated pottery, typified by Zorn Punctate ceramics, and the Late Woodland limestone or siltstone tempered cordmarked pottery" (Mocas 1992:77) of the Falls area.

Matthews (1958) documented a substantial Middle Woodland component at the Zorn Avenue Village site (15Jf250), located on a bluff overlooking the Ohio River floodplain. Most of the projectile points recovered from features at this site are Adena Stemmed and Middle Woodland-like corner notched points. The pottery is mostly Zorn Punctate, but Falls Plain sherds also were identified. Zorn Avenue Village is the type site for Zorn Punctate and one of four type sites for Falls Plain (Matthews 1958; Mocas 1988). There are no absolute dates for Woodland occupations at the habitation site.

Similar artifacts were recovered from late Middle Woodland to early Late Woodland contexts at the multicomponent Arrowhead Farm site (15Jf237). Diagnostic artifacts include a Lowe Flared Base point, and Zorn Punctate and Falls Plain pottery. Features containing mostly pinched Zorn Punctate ceramics are a refuse pit, a bundle burial, and a funerary fire. A calibrated radiocarbon date of A.D. 635-934 (Table 5.17) was obtained from a circular pit feature that unfortunately lacked diagnostics (Mocas 1976, 1988, 1995).

Located on the narrow floodplain at the confluence of Salt River and Candy Creek at Taylorsville Lake, Site 15Sp26 contained a buried midden deposit with features. Five thermoluminescence dates ranging from 10±140 B.C. to A.D. 630±100 and a calibrated radiocarbon date of A.D. 73-603 (Table 5.17) are suggestive of a late Middle to early Late Woodland occupation. Artifacts recovered from the midden are chipped stone tools and debitage, pottery, fire-altered rock, and charcoal. Daub recovered from the site provided tentative evidence of structural remains. Vegetal processing likely occurred at the site, based on the recovery of hickory, black walnut, bedstraw, and goosefoot remains. The site may represent a temporary campsite occupied in the fall (Driskell et al. 1984).

Custer (15Jf732) is a late Middle Woodland or early Late Woodland site with intact subsurface midden and features. Diagnostic artifacts are Lowe Flared Base points, a Copena-like biface, a clay figurine fragment, and Wyandot bladelets and prismatic cores. Postmold, which may be part of a structure, yielded check-stamped pottery and mica. Most of the Newtown-like ceramics are thin, cordmarked, and tempered with limestone or limestone and shale/siltstone. Some of the rims exhibit lip notching. Large and small mammal bones and fish remains were recovered from subsurface contexts. The Custer site has yielded a calibrated AMS date of A.D. 430-617 (Table 5.17) (Anne Tobbe Bader, personal communication 2007, 2008).

Withrow Creek (15Ne55) is a multicomponent site located on a ridge crest in the uplands of Nelson County. Lowe, Steuben, and Chesser points and Newtown-like ceramics, as well as a calibrated radiocarbon date of A.D. 410-637 (Table 5.17), indicate late Middle to early Late Woodland occupations. Other tools are hafted end scrapers, drills, and bladelets. Plant remains include abundant nuts and two cultigens, goosefoot and maygrass. Several concentrations of pit and hearth features were uncovered in areas distinct from postmold clusters. Three semi-circular patterns of postmolds represent overlapping structures, one of which had been rebuilt. In general, occupations were of somewhat low intensity. Though the site was frequently reused, the duration of each occupation was short (up to several months). A limited range of activities occurred at the site, including chipped stone tool manufacture and food processing/consumption (Davis et al. 1997).

Two contemporaneous early Late Woodland sites in the Clear Creek drainage are Shelby Lake (15Sh17) and Old Bear (15Sh18). The former site, located on an upland ridge crest, covered an area of 100 x 156 m. Excavations focused on 10 refuse-filled cooking and storage pits within an area of 40 x 60 m on the west side of the site. Calibrated radiocarbon dates of A.D. 433-656 and A.D. 437-761 were obtained from two of the features (Table 5.17). Lowe cluster points, chert bifaces, a drill, a celt, flake tools, and bladelets were recovered from Shelby Lake. The flake sample represents all stages of reduction and use of both soft- and hard-hammer percussors. Newtown series pottery exhibited a low frequency of castellated rims. Shelby Lake is one of few Woodland sites in the Salt River Management Area that yielded worked bone; utilitarian tools include bird and mammal awls, mammal rib scraper, and polished and drilled mammal bones (Hockensmith et al. 1998).

Reliance on wild plant and animal species was documented at the Shelby Lake site. At least 19 individuals representing 12 animal species/groups were utilized: white-tailed deer, black bear, mountain beaver, turkey, spiny soft-shell turtle, eastern box turtle, raccoon, cougar, elk, pit viper snakes, colubrid snakes, and unidentified fish. The faunal assemblage indicates the use of “first line food sources” primarily from forest edge environs. Despite the use of flotation recovery, the near absence of fish and mussel specimens indicates little use of aquatic resources. About one-fourth of the faunal specimens were burned and a small percentage exhibited cut marks. Because fewer than 25 percent of the specimens exhibited pathologies, the Shelby Lake site occupants selected young, healthy animals for consumption. Marrow extraction was practiced (Hockensmith et al. 1998).

Ten tree species were represented in the wood charcoal sample from Shelby Lake, indicating the presence of a mixed hardwood oak-hickory forest. Most of the wild plant remains are nut shells, with hickory remains greatly outnumbering those of black walnut, hazelnut, acorn, and butternut. A small number of fleshy fruit seeds were recovered: nightshade, sumac, blackberry, and persimmon (Hockensmith et al. 1998). The archaeobotanical remains evidence a “strong focus on potentially storable plant foods, especially hickory nuts” (Hockensmith et al. 1998:145). Of the wild plants from Shelby Lake, nightshade, sumac, and persimmon have medicinal properties. The site yielded 27 maygrass seeds and six goosefoot seeds, though the biological status of the latter (i.e., wild or domesticated) could not be determined. Other cultigens are 29 squash and one gourd rind fragments (Hockensmith et al. 1998).

The Old Bear site (15Sh18) had two refuse-filled roasting pit features and an artifact scatter covering 40,000 m^2. The single component early Late Woodland site produced a calibrated radiocarbon date of A.D. 392-804 (Table 5.17). Newtown phase diagnostics are Newtown Cordmarked pottery and Lowe cluster and Jacks Reef projectile points. The former lacked angular shoulders, and rim sherds exhibited carinations and a low frequency of castellations. Ste. Genevieve chert was transported to and worked at the site. Debitage from all stages of chipped stone tool manufacture were found, and the chipped stone lithic assemblage may have been produced by two knappers, one skilled and one novice. Other tools include sandstone and igneous hammerstones, bone pressure flakers, and a possible beaver incisor from a socketed antler tine (Brooks 1985).

Besides domestic activities, the Old Bear site was used for mortuary purposes. The remains of one young adult of undetermined sex were recovered from two pit features at the site. Cultural modifications to the bones, including burning and bone breakage presumably for marrow extraction, suggested cannibalism (Brooks 1985). Brooks (1985) also reported the discovery of two extended burials near the two pit features at Old Bear, but no details about these interments were provided.

Almost exclusive use of wild animal and plant species during the early Late Woodland subperiod was evidenced at the Old Bear site. A minimum of 25 individuals representing 11 species of animals were utilized: white-tailed deer, raccoon, black bear, gray squirrel, turkey, woodchuck, skunk, *Canis sp.*, beaver, soft-shell turtle, and terrapin. The damaged nature of the animal bones was consistent with intensive marrow extraction. The faunal remains suggest occupations spanning September to March and reliance on resources from two habitats: streams/stream valleys and upland ridges/drainages. The animals would have yielded 579 kg of edible meat and could have sustained an extended family or small band during a short-term occupation at the site.

Plant remains recovered from two pit features included four nut species used as food and fuel (walnut, butternut, hickory, and acorn) and honey locust seeds (Brooks 1985). The latter have medicinal properties. One squash/gourd seed, the only cultigen evidenced at the site, was recovered from a pit feature (Brooks 1985).

Shelby Lake and Old Bear were short-term habitation sites, not villages, occupied by small groups of people, perhaps one-two households. Plant and animal remains from Shelby Lake together were available during all seasons, though plants suggest late fall-winter and fauna indicate late winter-early spring foci (Hockensmith et al. 1998). In relating the two sites to other early Late Woodland sites in north-central Kentucky, Hockensmith et al. (1998) offered two hypotheses: (1) small sites like Shelby Lake and Old Bear represent a dispersed strategy that was contemporaneous with a nucleated settlement strategy as evidence by large/village sites like Pyles and Gillespie, or (2) small sites were occupied during cold seasons and large sites during warm seasons.

The SARA site (15Jf187) is located on the central of three parallel ridges in the broad alluvial valley of the Ohio River floodplain of the Falls area. Nine Woodland features, which may have been located near the former living area, included five refuse pits, two fire pits, and two of unknown function. Other cultural materials at the site (e.g., scattered features and debris scatter) were not investigated. The assemblage may represent a localized variant of the Newtown phase, though it has not yet been formally classified as such. Lowe cluster points, and Falls Plain and Newtown-like limestone tempered cordmarked and plain sherds were recovered from a refuse pit with a calibrated radiocarbon date of A.D. 442-776 (Table 5.17). Knappers manufactured specialized flake tools and reworked tools at the site, and there was little evidence in the features of extensive lithic reduction activities resulting in the production of large volumes of debitage. The predominant chert type used for chipped stone tool manufacture was Wyandotte, though other local cherts like Muldraugh, Boyle, and Salvisa were used on a limited basis. Unsystematic collection of plant remains from features yielded mostly wild species, including hickory, acorn, black walnut, sumac, and purslane (Mocas 1995). In addition to nutritional value, the latter two plants also have medicinal properties. Sunflower was the only cultigen recovered from feature fill (Mocas 1995).

Little is known about the terminal Late Woodland subperiod in the Salt River Management Area. Yankeetown phase materials were recovered from the Arrowhead Farm site (15Jf237), which yielded a calibrated radiocarbon date of A.D. 624-1454 (Table 5.17) (Brooks 1985; Mocas 1976). Artifacts and a calibrated radiocarbon date of A.D. 777-1147 (Table 5.17) from Site 15Sp26 are suggestive of a terminal Late Woodland component (Driskell et al. 1984).

UPPER CUMBERLAND (MANAGEMENT AREA 4)

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Archaeological research in the Upper Cumberland Management Area began in the late 1940s, when the University of Kentucky excavated several sites that were going to be impacted by the impoundment of the Cumberland River to form Lake Cumberland (formerly known as the Wolfe Creek Reservoir). One of the sites investigated as a result of this project was the Reiny site (15Ru27), a Middle Woodland settlement that contained a dense thick midden.

Since the late 1970s, cultural resource management-related projects generated additional information on the Woodland period. Investigations by the University of Tennessee in the Big South Fork Recreation Area (Ferguson et al. 1983) identified several rockshelters that contained Woodland components, and although the Kentucky Heritage Council's survey of Pulaski County (Gatus 1983) did not recover any ceramics, Woodland projectile points were recovered from several sites. Investigations by National Forest Service archaeologists in McCreary County resulted in the investigation of Woodland components at Tough Tree Shelter (15McY292) and Campbell Shelter (15McY322) (Knudsen 1985), and excavation of Sites 15Bl52 and 15Bl59 by Barcon (Autry and Duvall 1985) documented the presence of Woodland components.

Additional research in the Big South Fork River and Recreation Area by Prentice (1995) and Des Jean (2004) involved excavations at several rockshelter and open-air sites with Woodland components. Creasman (1994, 1995), Stokes and Shields (1999), and Hand (2000) recorded substantial Early-Middle Woodland habitations in Bell County, including Main (15Bl35), Mills (15Bl80), Bailey (15Bl100), Caldwell (15Bl103), and Site 15Bl105. Other cultural resource management projects resulted in the documentation of additional Woodland rockshelters and open-air sites in Cumberland (Bradbury 1996; Bradbury and Day 1998; Sussenbach 1993), Knox (Updike 1996), Laurel (Carmean 1994; Carmean and Sharp 1998), and Pulaski (Kerr 1994; Schock 1999) counties.

SITE DENSITY AND DISTRIBUTION PATTERNS

The 346 Woodland sites in the Upper Cumberland Management Area account for 11.8 percent of the Woodland sites in Kentucky. The density of sites per sq km in the Upper Cumberland is equal to that of the entire Commonwealth, but the density per acre surveyed is lower than the overall state average and the averages for most other management areas (Table 5.1).

The majority (54.9 percent) of Woodland sites in the Upper Cumberland Management Area are rockshelters (Table 5.19), which comprise over one-third (34.8 percent) of all Woodland rockshelter sites in Kentucky. Open habitation sites without mounds account for an additional 39.0 percent of the Woodland sites in this management area. About 2.3 percent of the Woodland sites are caves. Very small percentages (0.6 percent each) of Woodland sites in the management area are quarry, earth mound, rock art, and specialized activity area sites. Open habitations with mounds, mound complexes, isolated burials, workshops, and isolated finds each account for only 0.3 percent of the Woodland sites (Table 5.19). There are no Woodland stone mounds or enclosures recorded in the Upper Cumberland Management Area.

Table 5.19. Woodland Site Types by Section in the Upper Cumberland Management Area.

Site Type	Lake Cumberland	Southeastern Mtns	Total	Percent
Open Hab w/o Mounds	96	39	135	39.0
Open Hab w/ Mounds	1	0	1	0.3
Rockshelter	133	57	190	54.9
Cave	8	0	8	2.3
Quarry	2	0	2	0.6
Earth Mound	0	2	2	0.6
Mound Complex	1	0	1	0.3
Isolated Burial	1	0	1	0.3
Rock Art	2	0	2	0.6
Special Activity Site	1	1	2	0.6
Workshop	1	0	1	0.3
Isolated Find	0	1	1	0.3
Total	246	100	346	100.0
Percent	71.1	28.9	100.0	

The Lake Cumberland Section has more than twice as many Woodland sites as does the Southeastern Mountains Section (Table 5.19). There are 246 sites (71.1 percent) in the Lake Cumberland Section and 100 sites (28.9 percent) in the Southeastern Mountains Section. The Lake Cumberland Section also has a greater diversity of Woodland site types with 10, whereas only five site types (including isolated finds) are recorded in the Southeastern Mountains Section (Table 5.19).

The 416 Woodland components in the Upper Cumberland Management Area account for 11.5 percent of the Woodland components in Kentucky (Table 5.2). Half of the Upper Cumberland components are unassigned. Nearly equal percentages of Early Woodland (22.6 percent) and Middle Woodland (23.1 percent) components have been recorded. Only about 4.6 percent of the Upper Cumberland components have been assigned to the Late Woodland subperiod (Table 5.20).

About two-thirds (67.0 percent) of the Woodland components in the Upper Cumberland Management Area are documented at sites in the Lake Cumberland Section, with about one-third (33.0 percent) being found in the Southeastern Mountains Section (Table 5.20). The distribution of Woodland components by subperiod for the Lake Cumberland Section is comparable for the entire management area, with nearly equal percentages of Early Woodland (24.0 percent) and Middle Woodland (22.7 percent) components and a small percentage (5.9 percent) of Late Woodland components. In the Southeastern Mountains, however, Middle Woodland components (24.1 percent) outnumber Early Woodland components (18.5 percent), and only one site with a Late Woodland component (0.9 percent) has been documented (Table 5.20).

Table 5.20. Woodland Site Components by Section and Subperiod in the Upper Cumberland Management Area.

Subperiod	Lake Cumberland		Southeastern Mountains		Total	
Late Woodland	18	5.9%	1	0.9%	19	4.6%
Middle Woodland	70	22.7%	26	24.1%	96	23.1%
Early Woodland	74	24.0%	20	18.5%	94	22.6%
Unassigned	146	47.4%	61	56.6%	207	49.8%
Total	308	100.0%	108	100.0%	416	100.0%

CHRONOMETRIC DETERMINATIONS

The number of chronometric determinations for Woodland sites in the Upper Cumberland Management Area (Table 5.21) has increased significantly over the last two decades. There are eight dated sites in the Lake Cumberland Section and seven in the Southeastern Mountains Section, the latter including an extensive chronometric series from the Main site (15Bl35) (Creasman 1994). Many of the dates for the management area fall within the Early and Middle Woodland subperiods.

LAKE CUMBERLAND SECTION

Over the past 15 years archaeologists have collected considerable information about the Woodland record in the Lake Cumberland Section. Currently there are 246 sites with 308 Woodland components from all subperiods documented in this section (Table 5.20). Rockshelter sites significantly outnumber open-air habitations, and site types unique to this section within the management area are caves, quarries, open habitations with mounds, mound complexes, isolated burials, rock art sites, and workshops (Table 5.19). Many important Woodland sites are located in McCreary and Cumberland counties, and there are no substantial Woodland period sites reported for Clinton, Monroe, and Wayne counties (Table 5.22). There are no Woodland phases designated in the Lake Cumberland Section.

Early Woodland occupations at sites in the Lake Cumberland Section are indicated by diagnostic projectile point types, with Terminal Archaic Stemmed cluster (e.g., Wade and Delhi) and Adena Stemmed being most common (Table 5.7). Though Middle Woodland point types are not ubiquitous at sites in this section, they most commonly include Copena and Snyders. Lowe cluster and small triangular points are common types in Late Woodland lithic assemblages in the Lake Cumberland Section. Nearly all Woodland pottery assemblages from major sites in the Lake Cumberland Section are untyped, and none are associated with chronometric dates.

Table 5.21. Chronometric Dates for the Upper Cumberland Management Area.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
<u>Lake Cumberland Section</u>			
Wolf River Rockshelter (15Cu23)			
Beta-64370	2570±60	838-508, 457-455, 438-420 BC	Sussenbach 1993
15Cu27			
Beta-114711	2230±60	401-163, 130-119 BC	Kerr et al. 2004
Beta-107300	2020±80	351-300, 227-224, 210 BC-AD 138, 197-207	Kerr et al. 2004
Beta-114710	1500±70	AD 421-655	Kerr et al. 2004
Site 15Cu110 (see also Chapter 6:Table 6.20)			
Beta-210619	1460±40	AD 540-654	Jones 2006
Tough Tree Shelter (15McY292)			
Beta-11586	910±60	AD 1019-1227, 1233-1241, 1247-1251	Knudsen 1985
Campbell Shelter (15McY322)			
Beta-11588	2400±60	756-684, 669-606, 604-389 BC	Knudsen 1985
Site 15McY325			
Beta-11587	2260±70	506-460, 452-440, 418-149, 140-112 BC	Ison pers. comm. 1990
Bare Bones Shelter (15McY414)			
Beta-28203	1780±50	AD 128-384	Boedy and Sharp 1992
Beta-33099	970±50	AD 984-1185	Boedy and Sharp 1992
Beta-28204	740±50	AD 1186-1202, 1205-1312, 1358-1387	Boedy and Sharp 1992
Wet Ledge Rockshelter (15McY837)			
Beta-96790	1650±80	AD 223-592	Des Jean 2004
Beta-96789	1380±50	AD 569-717, 743-768	Des Jean 2004
Site 15Pu299			
Beta-116132	1520±50	AD 428-633	Schock 1999
Beta-116133	1460±50	AD 441-484, 533-662	Schock 1999
<u>Southeastern Mountains Section</u>			
Main (15Bl35) (see also Chapter 4:Table 4.27)			
Beta-55107	2990±90	1432-976, 951-950 BC	Creasman 1994
Beta-62840	2990±60	1398-1048 BC	Creasman 1994
Beta-62838	2940±70	1379-1336, 1322-973, 958-939 BC	Creasman 1994
Beta-62837	2930±80	1380-1335, 1323-923 BC	Creasman 1994
Beta-56443	2920±60	1308-970, 961-933 BC	Creasman 1994
Beta-56447	2890±60	1263-916 BC	Creasman 1994
Beta-52009	2870±80	1290-1280, 1270-842 BC	Creasman 1994
Beta-62836	2850±70	1255-1237, 1214-842 BC	Creasman 1994
Beta-56446	2840±60	1207-1203, 1195-1141, 1134-843 BC	Creasman 1994
Beta-56441	2800±80	1194-1142, 1133-806 BC	Creasman 1994
Beta-56444	2780±60	1189-1179, 1157-1145, 1130-799 BC	Creasman 1994
Beta-62839	2770±70	1113-1098, 1090-804 BC	Creasman 1994
Beta-56445	2730±70	1047-792 BC	Creasman 1994
Beta-56442	2680±80	1044-747, 688-665, 644-588, 581-555 BC	Creasman 1994
Beta-56440	2540±100	889-881, 843-401 BC	Creasman 1994
Beta-56439	2500±90	799-407 BC	Creasman 1994
Beta-56431	2440±60	761-682, 671-403 BC	Creasman 1994
Beta-56435	2340±110	773-175 BC	Creasman 1994
Beta-56432	2320±70	748-687, 665-644, 590-579, 559-197 BC	Creasman 1994

Table 5.21. Continued.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
Site 15Bl52			
Beta-90739	2540±70	810-483, 466-415 BC	Maslowski et al. 1995
Beta-90740	2510±100	817-399 BC	Maslowski et al. 1995
Beta-90738	2500±80	793-413 BC	Maslowski et al. 1995
Mills (15Bl80)			
Beta-61319	2730±60	1007-799 BC	Creasman 1995
Beta-56449	2710±70	1024-774 BC	Creasman 1995
Beta-56452	2710±60	997-795 BC	Creasman 1995
Beta-56451	2330±60	745-689, 664-647, 551-341, 326-204 BC	Creasman 1995
Beta-56448	2190±60	390-94 BC	Creasman 1995
Beta-56450	2120±60	359-275, 260 BC-AD 0	Creasman 1995
Bailey (15Bl100)			
Beta-125415	2890±60	1263-916 BC	Stokes and Shields 1999
Beta-125414	2060±60	345-322, 205 BC-AD 69	Stokes and Shields 1999
Site 15Kx91			
Beta-96277	1920±70	91 BC-253 AD	Updike 1996
Beta-96278	1780±70	AD 69-421	Updike 1996
Big Shelter (15Ll188) (see also Chapter 4:Table 4.26)			
Beta-72794	2410±60	756-684, 669-394 BC	Carmean 1994; Carmean and Sharp 1998
Rising Sun Shelter (15Ll189)			
Beta-76836	1690±70	AD 143-148, 171-193, 210-539	Carmean 1994; Carmean and Sharp 1998

Table 5.22. Important Woodland Period Sites in the Lake Cumberland Section.

Site No.	Site Name	Site Type	Affiliation	References
15Cu21	Wolfe	rockshelter	EW, MW, LW	Lane et al. 1995
15Cu23	Wolf River	rockshelter	EW	Sussenbach 1993
15Cu27	none	rockshelter	EW, MW, LW	Bradbury and Day 1998; Kerr et al. 2004
15Cu110	none	open habitation	MW, LW	French 2004; Jones 2006
15McY292	Tough Tree	rockshelter	MW, LW	Knudsen 1985
15McY322	Campbell Shelter	rockshelter	EW, LW	Knudsen 1985
15McY403	none	rockshelter	EW, MW, LW	Boedy 2001
15McY409	none	rockshelter	LW	Boedy 2001
15McY414	Bare Bones	rockshelter	MW, LW	Boedy and Sharp 1992
15McY837	Wet Ledge	rockshelter	EW, LW	Des Jean 2004
None	Oil Well Branch Road	open habitation	EW	Des Jean 1993
None	One Sherd Shelter	rockshelter	unassigned	Knudsen 1985
15Pu294	Sinking Creek	open habitation	MW, LW	Kerr 1994
15Pu299	none	open habitation	LW	Schock 1999
15Ru27	Reiny	open habitation	MW	Railey 1990

Early Woodland components are documented at both rockshelter and open-air sites in the Lake Cumberland Section. At the Early Woodland Wolf River Rockshelter (15Cu23), midden deposits, unspecified pits, and thermal features were recorded. One of the thermal features yielded a calibrated radiocarbon date of 838-420 B.C. (Table 5.21). Expedient flake tools were made from locally available cherts. Sherds from pottery vessels made and used on-site include chert tempered plain and cordmarked, and siltstone tempered fabric impressed forms. Wild food resources include deer, squirrel, box turtle, mussels, hickory, walnut, and fleshy fruits like persimmon. Wolf River Rockshelter is one of few Lake Cumberland Section Woodland sites with cultivars; small amounts of goosefoot and maygrass seeds were identified. The shelter was used for long periods of time and/or frequently reoccupied by small groups of people who engaged in a wide range of activities including stone tool production, pottery production, hunting, gathering, and gardening (Sussenbach 1993).

Two sites in the Big South Fork National River and Recreation Area contained Early Woodland components. Located in the McCreary County uplands on a saddle between two sandstone ridges, the aceramic Oil Well Branch Road site (no state site number) yielded Wade, Ledbetter, Merom, and Spike cluster points from a feature. Subsurface deposits around the feature produced a drilled sandstone atlatl weight fragment and a large amount of lithic debitage. Site activities included chipped tool maintenance and hunting (Des Jean 1993).

Situated in Hunting Camp Hollow near a number of rockshelter and ridge top sites, the multicomponent Wet Ledge Rockshelter (15McY837) contained intact midden deposits and one nut processing feature. The Early Woodland component was indicated by Adena Stemmed points, as well as limestone tempered plain and sand tempered cordmarked sherds. One Hamilton Incurvate point was recovered from early Late Woodland contexts dated at cal A.D. 223-592 and A.D. 569-768 (Table 5.21), the latter date being more in line with the expected range for Hamilton points. Other artifacts from the Woodland deposits are scrapers, bifaces, blades, and a burned piece of daub with a finger impression (Des Jean 2004).

Three sites in the Lake Cumberland section produced evidence of substantial Early and Middle Woodland occupations. One such shelter that has been extensively investigated is Site 15Cu27, located at the base of a bluff line above the Big Renox Creek floodplain. The multicomponent rockshelter contained 85 cm of midden deposits, storage pits, hearths, and grave features spanning several Woodland components. The primary occupations occurred during the Early and Middle Woodland subperiods, when the site was used repeatedly as a mortuary, food and pottery caching, and temporary field camp. Calibrated radiocarbon dates range from 401-119 B.C. to A.D. 421-655 (Table 5.21). The minor Late Woodland-Late Prehistoric occupation reflects intermittent use for specialized procurement of deer plus stone tool production and maintenance (Bradbury 1996; Bradbury and Day 1998; Kerr et al. 2004). Important food sources during all Woodland occupations were deer, walnut, and hickory (Kerr et al. 2004).

Regarding Woodland lithic assemblages from Site 15Cu27, there was a shift over time from an emphasis on core production in the Early Woodland to tool production in the Late Woodland. Several local cherts were preferred during the Early and Middle Woodland occupations, while nearly all Late Woodland tools were made of local Fort Payne chert. Early-Middle Woodland tools were used for actions involving longitudinal motions on soft materials and transverse motions on medium-hardness materials. Late Woodland tools were used as arrowheads and for on-site deer butchering (Bradbury and

Day 1998; Kerr et al. 2004). Pottery from Site 15Cu27 includes Early Woodland shale tempered smoothed-over cordmarked and fabric impressed, early Middle Woodland grit tempered cordmarked and fabric impressed, Early-Middle Woodland limestone tempered cordmarked, and Late Woodland limestone tempered cordmarked sherds (Kerr et al. 2004).

One Early-Middle Woodland primary burial plus isolated human remains were discovered at Site 15Cu27. A 35-45-year-old male was placed in a vertically flexed position in a shallow grave within the shelter. The oval pit was bordered by limestone slabs representing natural roof fall rather than intentionally placed rocks. The grave fill contained various artifacts including grit tempered sherds, none of which were identified as grave goods. A calibrated radiocarbon date of 351 B.C.-A.D. 207 was obtained for the burial (Table 5.21). Isolated human remains represented at least three individuals, including one adult of undetermined sex and one infant aged less than six months. The disarticulated skeletal remains may evidence a mortuary program that involved rockshelter interment followed by removal for reinterment elsewhere. The four individuals from Site 15Cu27 were in good health, with only degenerative diseases like arthritis evidenced (Bradbury and Day 1998; Clay 1998; Kerr et al. 2004).

Site 15Cu110 is a multicomponent open-air habitation site. The most intense Woodland habitation occurred during the late Middle Woodland to early Late Woodland subperiod and was marked by a midden with a stone-lined hearth. A calibrated date of A.D. 540-654 (Table 5.21) was obtained from the Woodland midden. Diagnostic artifacts include Lowe cluster projectile points and pottery tempered with grit, limestone, or sand that resembles Owl Hollow materials from north-central Tennessee (French 2004; Jones 2006; see also Chapter 6).

Shallow but intact cultural deposits were uncovered outside the dripline at a multi-component rockshelter near the headwaters of Barren Fork River. The primary occupations at Site 15McY403 date to the Early and Middle Woodland subperiods. Diagnostic artifacts are siltstone tempered plain pottery and Late Archaic Stemmed cluster, Delhi, Adena Stemmed, Snyders-like, and small triangular points. Other chert artifacts include drills or perforators and utilized flakes. The shelter was used frequently for short periods of time by small (i.e., five-six individuals) special-task groups or nuclear family units engaged in hunting, food processing, and chipped stone tool manufacture (Boedy 2001).

The Reiny site (15Ru27) is a substantial Middle Woodland habitation in Russell County. Diagnostic artifacts include Copena and expanding stemmed points and pottery. Most sherds are fragments of thick, clay or mudstone tempered, cordmarked vessels with flat bases and inslanting or slightly outflaring rims with flattened lips. Thinner, plain vessels with flat bases also are represented, and the assemblage includes a few sherds with check stamped, simple stamped, or cord-wrapped dowel impressed exterior surfaces and at least one noded/punctated rim. The time range of occupation was estimated at 200 B.C. to A.D. 250 (Railey 1990).

In addition to several of the multicomponent Early Woodland sites discussed previously, evidence of Middle-Late Woodland occupations is documented at a number of other rockshelter and open-air sites in the Lake Cumberland Section, especially in

McCreary County. Middle-Late Woodland occupations at the multicomponent Bare Bones Shelter (15McY414) were indicated by Hamilton Incurvate points and cordmarked or plain ceramics tempered with limestone. Calibrated radiocarbon dates are A.D. 128-384 and A.D. 984-1185 (Table 5.21). Species represented in the faunal assemblage are deer, black bear, turkey, and box turtle (Boedy and Sharp 1992).

Knudsen (1985) investigated two rockshelters near a permanent water source on an unnamed tributary of Licking Creek in the South Fork Cumberland River drainage. Campbell and Tough Tree shelters may have been used by the same social group, based on similarities in pottery and projectile points, during different seasons of the year in the Middle-Woodland subperiods. Isolated human teeth recovered from the shelters suggest mortuary use during the Middle-Late Woodland subperiods.

Campbell Shelter (15McY322) is a partly dry shelter with multiple components. Woodland diagnostics from intact portions of one of three stratigraphic zones represent the most intense periods of occupation, and archaeologists uncovered two hearth features of unspecified age. Diagnostic Woodland artifacts are Adena Stemmed, Robbins, Chesser Notched, Jacks Reef, and small triangular points, as well as Wright Check Stamped and plain limestone and sandstone tempered sherds. Two steatite vessel fragments were recovered from Early Woodland contexts, which yielded a calibrated radiocarbon date of 756-389 B.C. (Table 5.21). Campbell Shelter yielded abundant deer and turtle bones, as well as other mammal, bird, mussel, hickory, and walnut remains. Site occupations were most intense during the Early and Late Woodland subperiods, when the site was used during cold seasons by small groups of perhaps 10-12 individuals. Lithic production, pottery manufacture, food preparation, wood and bone working, hide cleaning, and tailoring occurred inside and outside the dripline. Materials recovered outside the dripline likely represent peripheral activities (Knudsen 1985).

Tough Tree Rockshelter (15McY292) contained a dry area of 80-90 m^2 with cultural deposits up to 30 cm thick. Despite extensive disturbance from looting, at least four components, including Middle and Late Woodland, were evidenced. Occupations were most intense during the latter component, which was associated with a calibrated radiocarbon date of A.D. 1019-1251 (Table 5.21). Diagnostic artifacts are Chesser Notched and small triangular points, as well as Wright Check Stamped and sherds tempered with limestone, siltstone, shale, and sandstone and having plain, cordmarked, and check-stamped exterior surfaces. Food remains include unspecified mammal, snake, turtle, bird, mussel, and hickory species. A possible Middle-Late Woodland domestic structure was marked by an arrangement of rocks; no postmolds were found inside the rock enclosure. Middle-Late Woodland activities that occurred inside and outside the dripline are chipped stone tool manufacture and maintenance, pottery manufacture, wood and bone working, hide preparation, and sewing. There were no apparent special activity areas. The shelter likely was occupied during warm seasons by an extended family of about six-eight individuals (Knudsen 1985). One Sherd Shelter (no state site number), across the drainage from Tough Tree, yielded a single limestone tempered, cordmarked sherd and may represent a female special-purpose site (Knudsen 1985).

Wolfe Rockshelter (15Cu21) is located on Oil Fork, a tributary of the Cumberland River. Pockets of intact deposits produced evidence of Woodland period occupations, including Saratoga, Motley, Copena, Lowe or Jacks Reef cluster, and small triangular points, as well as nonshell tempered sherds. An unspecified number of burial features in the shelter were attributed to the Woodland occupations, possibly spanning the Middle Woodland to Late Prehistoric subperiods (Lane et al. 1995).

Site 15Pu299 in northeastern Pulaski County is an open habitation site with midden deposits surrounding an open plaza. The midden, which ranged in thickness from 8 to 15 cm in thickness, contained ceramics, lithics, animal bone, and fire cracked rock. A large number of postmolds were documented within the midden, with at least two circular structures being identified (Schock 1999:24). Calibrated radiocarbon dates of A.D. 428-633 and A.D. 441-662 (Table 5.21) are suggestive of a late Middle Woodland/early Late Woodland occupation. Ceramics recovered from this site were predominately tempered with limestone and had plain or cordmarked exterior surfaces. Decoration was limited to notches or punctations associated with jar lips. Projectile points were predominately Bakers Creek and Copena-like. Botanical remains recovered from this site consisted primarily of hickory nuts (Schock 1999).

Shallow but intact cultural deposits were uncovered outside the dripline of Site 15McY409, a rockshelter near the headwaters of Barren Fork River. Archaeologists recovered a bar-shaped shale gorget, a small triangular point, other chipped stone artifacts, and faunal remains dated to the Late Woodland-Late Prehistoric periods. The component represents short duration, frequent reuse of the shelter by small (i.e., five-six individuals) special-task groups or nuclear family units engaged in a narrow range of activities, including chipped stone tool manufacture. While not a sedentary occupation, the late component at Site 15McY409 was comparatively more intense than earlier Archaic components (Boedy 2001).

SOUTHEASTERN MOUNTAINS SECTION

As in the Lake Cumberland Section, archaeological research in the Southeastern Mountains over the last 15 years has substantially expanded our understanding of the Woodland period in this part of Kentucky. There are 100 sites with 108 Woodland components in the section, and the site type diversity is low with rockshelters and open habitations without mounds predominating (Table 5.19). Early and Middle Woodland components greatly outnumber Late Woodland components in this section (Table 5.20). A small number of significant sites, including both open-air sites and rockshelters, yielded intact deposits and/or features (Table 5.23). The Bailey (15Bl100), Mills (15Bl80), and Main (15Bl35) sites, in particular, provide a great deal of information about Woodland adaptations in the Southeastern Mountains Section, especially during the Early and Middle Woodland subperiods. However, archaeologists have not reported substantial Woodland sites in Harlan and Whitley counties, and there are no Woodland phases defined for the Southeastern Mountains Section.

Early Woodland diagnostics common at sites in the Southeastern Mountains Section are Adena Stemmed points, while Lowe cluster types predominate at Middle-Late Woodland sites (Table 5.7). Like the Lake Cumberland Section, there have been few pottery studies in the Southeastern Mountains and many Woodland pottery assemblages are not typed. Unlike the Lake Cumberland Section, however, in the

Southeastern Mountains two local Woodland pottery series have been identified: Early Woodland Pine Mountain and Middle Woodland Mills. Further, imported wares have been documented, including Early Woodland Swannanoa pottery. There are limited reports of groundstone and organic tools from Woodland sites in the section.

Table 5.23. Important Woodland Sites in the Southeastern Mountains Section.

Site No.	Site Name	Site Type	Affiliation	References
15Bl35	Main	open habitation	EW, MW	Creasman 1994, 1995
15Bl52	none	open habitation	EW, MW	Autry and DuVall 1985; Maslowski et al. 1995
15Bl59	none	open habitation	EW, MW	Autry and DuVall 1985
15Bl80	Mills	open habitation	EW, MW	Creasman 1994, 1995
15Bl100	Bailey	open habitation	EW, MW	Stokes and Shields 1999
15Bl103	Caldwell	open habitation	MW	Stokes and Shields 1999
15Bl105	none	open habitation	EW, MW	Hand 2000
15Kx17	none	mound	MW	Hockensmith 1980; Railey 1985d
15Kx91	none	open habitation	MW	Updike 1996
15Ll188	Big Shelter	rockshelter	EW, MW, LW	Carmean 1994; Carmean and Sharp 1998
15Ll189	Rising Sun	rockshelter	EW, MW	Carmean 1994; Carmean and Sharp 1998
15Ll190	Groovey	rockshelter	LW	Carmean 1994; Carmean and Sharp 1998

One example of a single component Early Woodland site in the Southeastern Mountains is Site 15Bl59. This stratified site yielded Swannanoa-like pottery and other artifacts consistent with the Watts Bar complex, which is dated to ca. 900-600 B.C. in eastern Tennessee, and the Swannanoa phase of the Appalachian Summit (Autry and DuVall 1985). The Watts Bar complex and related Swannanoa phase (Keel 1976) are characterized by thick ceramics that are cordmarked or fabric-impressed and densely tempered with crushed quartz, quartzite, or coarse sand. Watts Bar projectile points are predominately triangular in form, with Adena Stemmed and deeply corner notched specimens also present. Substantial base camps with thick midden deposits characterize the Watts Bar complex (e.g., Lafferty 1978; Lewis and Kneberg 1957; Smith and Hodges 1968).

Bailey (15Bl100) is an open-air site in Pine Mountain State Park. Initially classified as a low-density surface lithic scatter, additional excavations documented 27 features (hearths, earth ovens, pits, and postmolds) that date to the Early or Middle Woodland subperiods. A calibrated radiocarbon date of 1263-916 B.C. was obtained from an Early Woodland feature and a date of 345 B.C.-A.D. 69 was obtained from a Middle Woodland feature (Table 5.21). Diagnostic artifacts include Swannanoa Stemmed (a.k.a. Savannah River), Adena Stemmed and Lowe cluster points, and quartzite tempered cordmarked and siltstone tempered plain pottery. Occupational intensity at the Bailey site increased somewhat over time. During the earlier component the site was used by small groups during the fall for a limited set of activities, especially nut harvesting. This pattern is similar to the early and late Early Woodland occupations at the Main site (see below). Longer (but not sedentary) and more diverse occupations occurred during the Middle Woodland subperiod, when the site was used over multiple seasons, especially summer to fall, by small groups engaged in food production as well as food collection (Stokes and Shields 1999).

Diachronic changes in plant collecting were documented at the Bailey site. During the Early Woodland occupation plant use was specialized, focusing on several types of nuts, especially hickory and black walnut. Plant use was more generalized during the Middle Woodland occupation. Wild species include fruits (e.g., grape, sumac, blackberry, and elderberry) in addition to nuts. Substantial quantities of cultigens were recovered from Middle Woodland contexts. Both Eastern Agricultural Complex species and cucurbit species were identified. Among the most numerous cultigens were domesticated sumpweed, goosefoot, and maygrass, as well as cultivated erect knotweed. Fewer sunflower seeds were found. Limited numbers of domesticated squash and gourd remains also were recovered (Stokes and Shield 1999).

Three other sites (Main, Mills, and Site 15Bl52) with Early-Middle Woodland components in Bell County were documented adjacent to the Cumberland River floodplain or tributary valleys in Bell County. The stratified Main site (15Bl35) contained Early and Middle Woodland components that had associated calibrated radiocarbon dates ranging from 1432-950 B.C. to 748-197 B.C. (Table 5.21). The two intact Early Woodland horizons point to repeated occupation of this locality. Diagnostic artifacts are Pine Mountain series pottery and Ebenezer, Saratoga, and other stemmed and lanceolate points. During the early Early Woodland, the site served as a short-term residential camp that was used during the late fall-early winter in association with hunting and animal processing activities. Occupational intensity increased during the middle Early Woodland, when Main functioned as a logistical base camp. In addition to refuse pits and hearths, storage pits and postmolds associated with habitation structures were constructed at Main, one of only two Woodland sites in the Southeastern Mountains with structural remains. More diverse tool types indicate a wider range of activities, which were conducted at the site for longer intervals of time, perhaps spanning several months. Occupations during the early Middle Woodland subperiod again involved use of the site as a short-term residential camp. Mills series pottery and Greenville (a.k.a. Copena Triangular) and Nolichucky points were recovered from the early Middle Woodland horizon, the latter suggesting affiliations with the Ridge and Valley province to the south (Creasman 1994).

Similar occupations were recorded at the Mills site (15Bl80). Calibrated radiocarbon dates range from 1024-774 B.C. to 359 B.C.-A.D. 0 (Table 5.21). The Early Woodland component is associated with Swannanoa pottery from midden and feature contexts, again reflecting affiliations with the Ridge and Valley province to the south. Mills Plain and Mills Check Stamped pottery types are associated with the early Middle Woodland component at the site. Characterized as a short-term residential camp, the Mills site was occupied during the late fall-early winter by small groups engaged in a limited range of activities including food collection (Creasman 1994, 1995).

Site 15Bl52 contained intact deposits and cultural features associated with domestic activities. Although calibrated radiocarbon dates of 810-415 B.C., 817-399 B.C., and 793-413 B.C. (Table 5.21) obtained from Area C indicate the presence of an

Early Woodland component, most of the materials and features at this site date to the Middle Woodland subperiod. Diagnostic Middle Woodland artifacts include check-stamped pottery and corner-notched projectile points. Postmold patterns delineated a circular structure measuring 7.8 m in diameter. The structure was associated with a cluster of both interior and exterior features, including rock oven pits and fire-cracked rock and lithic debitage concentrations (Autry and DuVall 1985). In terms of size, shape, and feature associations, the 15Bl52 structure is very similar to houses of the Middle Woodland McFarland phase (150 B.C.-A.D. 150) in middle Tennessee (Kline et al. 1982) and the Hill Lake phase (A.D. 0-300) of the American Bottom (Fortier et al. 1984). Mica fragments, the only incidence of nonlocal materials reported for Woodland sites in the Southeastern Mountains, were recovered from Site 15Bl52 in the vicinity of the structure (Autry and DuVall 1985).

Located on the floodplain of Mill Creek in the Cumberland River drainage, Site 15Bl105 is an open-air site with an intact midden up to 50 cm thick. Dated to the transitional Early-Middle Woodland subperiods based on siltstone tempered Mills Cordmarked pottery sherds, the site yielded mostly chipped stone artifacts (Hand 2000).

Carmean (1994) and Carmean and Sharp (1998) documented three Laurel County rockshelters with similar lithic assemblages (e.g., scrapers, cores, and late-stage debitage) and feature types indicating low intensity Woodland components. Located on Wollum Branch in the Rockcastle River drainage, occupations at the multicomponent Big Shelter (15Ll188), Rising Sun Shelter (15Ll189), and Groovey Shelter (15Ll190) at least partly overlapped in time during the Middle Woodland subperiod. The shelters were used repeatedly for short-term domestic activities. Seasons of occupation were not indicated (Carmean and Sharp 1998), but plant and animal remains suggest fall and late spring-early summer occupations. The shelters either served as special-purpose sites associated with larger settlements used by one social group, or the shelters were part of a residentially mobile strategy practiced by a group of people distinct from those who occupied more permanent settlements nearby (Carmean and Sharp 1998). Carmean and Sharp (1998) favored the latter interpretation.

Big Shelter (15Ll188) encompasses an area of 87 m^2, about three-quarters of which was occupied. Excavation of 5 m^2 documented the presence of two hearths, one of which yielded a calibrated date of 1888-1536 B.C. and the other a date of 756-394 B.C. (Table 5.21; Chapter 4:Table 4.26). Diagnostic points are Wade, Adena Stemmed, Chesser Notched, and small triangular types. A small ceramic assemblage of thin sherds representing at least three vessels included limestone tempered plain, siltstone tempered plain, and siltstone tempered cordmarked forms that may be Middle-Late Woodland or, more likely, Late Woodland in age. The Early Woodland hearth contained a sandstone nutting stone, charred black walnut shell, nine seeds from unidentified wild fleshy fruits, and one squash rind fragment. The few animal bones recovered from other contexts were too fragmentary to identify beyond the mammal class (Carmean 1994; Carmean and Sharp 1998).

Excavation of 2 m^2 at Rising Sun Shelter (15Ll189) revealed one Woodland feature and a cluster of four Boyle chert bifaces that may represent a cache. The feature yielded a Middle Woodland date of cal A.D. 143-539 (Table 5.21), and a small assemblage of limestone tempered sherds, charred hickory and walnut, and deer, turkey and snakes. Though most of the ceramic assemblage consisted of plain body sherds, one recurved rim had a flat lip with rounded corners. Four horizontal lines had been incised at an oblique angle to, and below, the lip. The rim sherd had an orifice diameter of 15 cm (Carmean 1994; Carmean and Sharp 1998).

At the Groovey Shelter (15Ll190) 3 m^2 were excavated within this 40 m^2 rockshelter. No features were documented, but two parallel abrading marks on a boulder were noted. An assemblage of 200 artifacts, mostly chipped stone debitage, was recovered. Chesser Notched points and two body sherds with undetermined temper, one with a plain exterior and one with a lug or podal support, suggest occupations during the Middle-Late Woodland subperiods (Carmean 1994; Carmean and Sharp 1998).

Site 15Kx91 is an open habitation site with intact midden deposits. Limited excavations documented the presence of two refuse pits and two hearths. Radiocarbon dates of 91 B.C.-A.D. 253 and A.D. 69-421 (Table 5.21) place the site in the late Middle Woodland subperiod. Pottery sherds recovered from feature and other contexts include sandstone tempered plain and cordmarked forms. Like some components at the Main and Bailey sites, during the Middle Woodland subperiod Site 15Kx91 functioned as a short-term residential habitation occupied by small groups (Updike 1996).

Little is known about one other potentially significant Middle Woodland site in the Southeastern Mountains Section. The Cobb Mound (15Kx17) in Knox County is a Middle Woodland mound that has not been professionally investigated (Hockensmith 1980; Railey 1985d).

Except for Late Woodland components reported at Big and Groovey shelters, as summarized above, little is known about this subperiod in the Southeastern Mountains Section.

BLUEGRASS (MANAGEMENT AREA 5)

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

During the nineteenth century, many Woodland mounds and earthworks were recorded in the Bluegrass Management Area (e.g., Linney 1881; Rafinesque 1824; Squier and Davis 1848;). C. S. Rafinesque, a naturalist and a professor at Transylvania University in Lexington, surveyed, mapped, and described Peter Village (15Fa166) and other Woodland sites in the Elkhorn Creek drainage (Tune 1985). Private citizens investigated several burial mounds, often reporting their findings to academic institutions (e.g., Peter 1871 as reproduced in Webb 1943b).

During the 1930s, University of Kentucky professors William S. Webb and William D. Funkhouser completed large-scale excavations at Woodland sites with the assistance of federal funding. Besides providing a program to employ those affected by the Great Depression, archaeological excavations funded by the New Deal in Kentucky also had a scientific goal. "Webb believed that archaeological investigations were justified on the basis of the pursuit of knowledge and the development of museum collections for educational purposes" (Milner and Smith 1988:3).

The primary Woodland period sites investigated during the New Deal era were Adena burial mounds in the Bluegrass Management Area. Webb's previous "experience with the Copena sites to the south was a factor in the choice of Adena mounds in Kentucky as prime sites for excavation" (Milner and Smith 1988:4). The particular mounds selected for investigation depended on a number of factors, including labor supply, unemployment rates, funding, weather conditions, research goals, previous looter activity, and input from the federal administrators (Clay 2005; Milner and Smith 1988). The mound sites were excavated between 1935-1942 and include Ricketts (15Mm3) (Funkhouser and Webb 1935; Webb and Funkhouser 1940), Wright (15Mm6-8) (Webb 1940), Drake (15Fa11) (Webb 1941a), Fisher (15Fa152) (Webb 1941a, 1943b; Webb and Haag 1947b), Morgan Stone (15Bh15) (Webb 1941b), Robbins (15Be3, 15Be14) (Webb and Elliott 1942), Crigler (15Be20, 15Be27), Hartman (15Be32) (Webb 1943a), Riley (15Be15), Landing (15Be17) (Webb 1943b), and Dover (15Ms27) (Webb and Snow 1959). Webb and his colleagues also investigated circular enclosures like Mt. Horeb Earthworks (15Fa1) (Webb 1941a, 1943b). The publications that stemmed from these investigations constitute a significant contribution to the archaeology of eastern North America. Webb and his colleagues did not publish the results of other investigations at Woodland sites (e.g., Bullock Mound [15Wd10] and Camargo Earthworks [15Mm30-33]), but other archaeologists later examined those collections and published the findings (Fenton and Jefferies 1991; Schlarb 2005).

Work at Adena burial mounds and other Woodland sites like Chilton (15Hy1), a Middle-Late Woodland mortuary site (Funkhouser and Webb 1937), was funded through three New Deal programs. The first archaeological project in Kentucky funded by New Deal initiatives was Ricketts Mound (15Mm3), where excavations were conducted in 1934 by Federal Emergency Relief Administration (FERA) workers under the direction of University of Kentucky supervisors. Additional research at the site and many other mounds was supported by the Works Progress/ Projects Administration (WPA) in 1937-1942, with the excavations peaking in 1938-1939. Civilian Conservation Corps (CCC) projects in 1940-1942 focused on reservoir surveys and emphasized Late Prehistoric rather than Woodland sites (Funkhouser and Webb 1935; Milner and Smith 1988; Webb and Funkhouser 1940).

For two to three decades following the WPA era, few investigations were undertaken at Woodland sites in the Bluegrass Management Area, as large reservoir projects in other areas of the state commanded the attention of archaeologists. One exception in the Northern Bluegrass was Crawford's (1959) investigation of the Rogers site complex (15Be33-35) in Boone County, which Kreinbrink (1992) re-evaluated in the early 1990s. In the Eastern Bluegrass Section, Rolingson and Rodeffer (1968) and Marquardt (1970) documented an Early Woodland component with midden and features at Zilpo (15Bh37).

In the 1970s and 1980s, cultural resource management-related projects and academic-sponsored research generated new information on Woodland period adaptations in the Bluegrass Management Area. Regarding contract projects, the University of Kentucky's investigation of the J. K. Smith Power Station in Clark County documented several Woodland sites including the Early Woodland Stone site (15Ck89) (Turnbow et al. 1983). Investigations in Bourbon County revealed a late Middle-early Late Woodland habitation with a mound (Jackstown [15Bb68]), a Late Woodland habitation with a mound (Site 15Bb58), and a Late Woodland habitation without mounds (Stringtown [15Bb67)]) (Estes 1983a, 1983b, 1983c).

In the Eastern Bluegrass Section, Schock (1984) recorded a substantial Middle Woodland component at the Gibson Greeting Card site (15Ke4). Archaeologists documented several significant Woodland sites on the Ohio River floodplain of Lewis County, including Site 15Lw5, a late Middle-early Late Woodland habitation with a large earth oven feature (Maslowski 1980; Turnbow 1981). As part of the Carrs Power Plant survey, Schock and Langford (1980, 1981) investigated several multicomponent open habitation with mostly Middle-Late Woodland components and some with structural remains: Site 15Lw301C, Site 15Lw302A, Site 15Lw314C, Site 15Lw315A, Site 15Lw316A, Site 15Lw325E, and Site 15Lw353.

Research-oriented projects included Clay's (1983, 1985b, 1986, 1987) investigations of the Auvergne Mound (15Bb16) and Peter Village (15Fa166), Milner and Jefferies' (1987) reexamination of the materials recovered in the 1930s from the Wright (15Mm6) and Robbins (15Be3) mounds, and Jefferies' (1987) research in the vicinity of Greene Mound (15Mm8). County-wide surveys conducted by the Kentucky Heritage Council documented Woodland sites in Boone (Fenwick and Weinland 1978) and Franklin (Sanders and Weinland 1976) counties. Also during this period, the William S. Webb Archaeological Society investigated the Pyles (15Ms28), Gillespie (15Ms50), and Mayslick (15Ms53) sites in Mason County (Collins 1980; Railey 1984).

Since 1990 research in the Central and Northern Bluegrass sections resulted in the documentation of additional Woodland open habitation sites and off-mound ritual sites that compliment previous investigations focused on mound sites. In the Central

Bluegrass Section, features at the Evans (15Mm182) and Amburgey (15Mm137) sites yielded artifacts associated with nonmound ritual activities, including late Early Woodland mortuary preparation and feasting at Evans (Schlarb et al. 2007) and late Middle Woodland feasting and ritual offerings at Amburgey (Richmond and Kerr 2005). The Kentucky Archaeological Survey excavated about 65 percent of a deflated Middle Woodland mound at Walker-Noe (15Gd56) in the Paint Lick drainage (Pollack et al. 2005). Elmore and Stallings (2006; Ross-Stallings and Stallings 2007) documented late Middle Woodland features and midden at the Miller site (15Gd44), an open habitation near Walker-Noe and other mounds. McBride and Fenton (2007) documented the presence of a Late Woodland Newtown habitation locale at the Dreaming Creek site (15Ma97).

In the Northern Bluegrass Section, excavations were conducted at sites in Boone and Carroll counties. In Boone County Duerksen et al. (1994, 1995) documented Early Woodland subplowzone features at the West Runway site (15Be391). Other Woodland habitation sites excavated in this county since 1990 are the M. B. Green site (15Be485), an early Woodland habitation/mortuary locality (Purtill et al. 2006); Site 15Be509, a late Middle-early Late Woodland habitation (Breetzke 2001); Wackenstein (15Be467), a Middle Woodland habitation (Walley et al. 1997); and Big Bone Lick (15Be269), a Late Woodland habitation located directly adjacent to a salt lick (Lowthert 1998; Miller and Duerksen 1995).

Research in the Ohio River and Kentucky floodplain of Carroll County resulted in the documentation of several important Woodland sites, each of which encompassed midden and/or cultural features. The Panther Rock site (15Cl58) yielded evidence of Early Woodland and Middle Woodland components (Stallings 2007). A late Middle Woodland component was documented at the Hayes site (15Cl67) (Hall 2005) and Middle-Late or Late Woodland occupations were recorded at Site 15Cl44 (Doershuk et al. 1992) and Froman (15Cl51) (Hockensmith et al. 1998; Ross-Stallings and Stallings 1996; Stallings and Ross-Stallings 1993).

SITE DENSITY AND DISTRIBUTION PATTERNS

The 659 Woodland sites in the Bluegrass Management Area account for over 22 percent of the Woodland sites in Kentucky, representing the second highest percentage after the Green River Management Area. Adjusting for differences in area, the Bluegrass Management Area has the highest density of sites per acre surveyed and the second highest density of sites per sq km of any management area (Table 5.1).

Though there is a diverse range of Woodland site types in the Bluegrass Management Area, over 75 percent are open habitations without mounds. Earth mounds account for 16 percent of the Woodland sites in this management area; further, about 74 percent of all Woodland earth mounds in Kentucky are located in the Bluegrass Management Area. Open habitations with mounds comprise about 2.5 percent of the Woodland sites, and rockshelters, enclosures, and mound complexes each comprise over

1 percent. Stone mounds, caves, isolated burials, workshops, special activity areas, and isolated finds together account for less than 2 percent of the Woodland sites (Table 5.24).

Table 5.24. Woodland Site Types by Section in the Bluegrass Management Area.

Site Type	Central	Northern	Eastern	Total	Percent
Open Hab w/o Mounds	343	98	58	499	75.7
Open Hab w/ Mounds	9	4	4	17	2.6
Rockshelter	7	0	2	9	1.4
Cave	1	0	0	1	0.2
Stone Mound	1	3	0	4	0.6
Earth Mound	59	29	18	106	16.1
Mound Complex	1	2	5	8	1.2
Enclosure	8	0	1	9	1.4
Isolated Burial	2	0	0	2	0.3
Workshop	1	0	1	2	0.3
Specialized Activity Site	1	0	0	1	0.2
Isolated Find	1	0	0	1	0.2
Total	434	136	89	659	100.0
Percent	65.9	20.6	13.5	100.0	

Most (65.9 percent) of the Woodland sites in this management area are located in the Central Bluegrass Section, followed by the Northern Bluegrass and Eastern Bluegrass sections (Table 5.24). The Central Bluegrass Section also has the highest diversity of Woodland site types.

Similar patterns are evident with Woodland site components in the Bluegrass Management Area. The 780 Woodland components in the Bluegrass comprise 22 percent of the Woodland components in Kentucky. The highest percentage of unassigned Woodland components in Kentucky is recorded for sites in the Bluegrass Management Area (Table 5.2). About 57 percent of the Woodland components in the Bluegrass Management Area are unassigned, 19.5 percent each are Early Woodland and Middle Woodland, and almost 4 percent are Late Woodland (Table 5.25).

Table 5.25. Woodland Site Components by Section and Subperiod in the Bluegrass Management Area.

Subperiod	Central Bluegrass		Northern Bluegrass		Eastern Bluegrass		Total	
Late Woodland	23	4.4%	5	3.3%	2	1.9%	30	3.8%
Middle Woodland	98	18.8%	38	25.0%	17	16.0%	153	19.6%
Early Woodland	98	18.8%	29	19.1%	26	24.5%	153	19.6%
Unassigned	303	58.0%	80	52.6%	61	57.5%	444	56.9%
Total	522	66.9%	152	19.5%	106	13.6%	780	100.0%

At 67 percent, the largest proportion of Woodland components is recorded for sites in the Central Bluegrass Management Area. About 19.5 percent of the Woodland components are in the Northern Bluegrass Section and 13.5 percent in the Eastern Bluegrass Section. In the Central Bluegrass Section, equal percentages of Early and Middle Woodland components greatly outnumber Late Woodland components, though of all three sections the Central Bluegrass Section has the highest percentage of Late Woodland components. In the Northern Bluegrass Section Middle Woodland components predominate, and in the Eastern Bluegrass Section Early Woodland components outnumber later components (Table 5.25).

CHRONOMETRIC DETERMINATIONS

Chronometric determinations for the Bluegrass Management Area are provided in Table 5.26. Nearly three dozen dated sites include mounds, other earthworks, nonmound mortuary/ritual sites, and open habitations. Though the radiocarbon dates span the Woodland period, there are few early Early Woodland and terminal Late Woodland determinations. Excluding three outlying dates from Auvergne Mound (15Bb16), Bullock Mound (15Wd10), and Dover Mound (15Ms27), mounds in the Bluegrass Management Area date from cal 833-113 B.C. (Hartman Mound [15Be32]) to cal A.D. 28-890 (Gaines Mound [15Be23]) and cal A.D. 268-887 (from a sheet midden adjacent to a mound at the Rogers site complex [15Be33-35]).

CENTRAL BLUEGRASS SECTION

Archaeologists have recorded 434 Woodland sites in the Central Bluegrass Section. Within the management area, caves, isolated burials, specialized activity areas, and isolated finds are unique to this section, though open habitations without mounds predominate (Table 5.24). Of the 522 Woodland components at the Central Bluegrass sites, equal proportions are Early Woodland and Middle Woodland, while a small percentage are Late Woodland (Table 5.25).

Long known mostly for earthwork sites, an important development in Woodland archaeology in this section is the detailed examination of residential habitation sites, including Stringtown (15Bb67) and Jackstown (15Bb68) in Bourbon County, Sheep House Rockshelter (15Ma137) in Madison County, Miller (15Gd44) in Garrard County, Site 15Js151 in Jessamine County, and Dreaming Creek (15Ma97) in Madison County. These and other significant Woodland sites are listed in Table 5.27.

Little is known of the early Early Woodland subperiod in the Central Bluegrass, and few artifacts diagnostic of this time are reported at Woodland sites. One possible exception, however, is Site 15Ck126, an aceramic open habitation site where a Wade point was recovered from subplowzone deposits dated at cal 1381-1008 B.C. and cal 1373-978 B.C. (Table 5.26), the earliest Woodland radiocarbon dates in this section (Ison et al. 1982; see also Chapter 4).

The late Early Woodland subperiod is better documented in the Central Bluegrass Section. Diagnostic point types include Early Woodland Stemmed (Kramer, Cresap, Robbins) and Dickson (Adena Stemmed) clusters, the use of which extended into the early Middle Woodland subperiod (Table 5.7). For example, Stone (15Ck89) is an open

Table 5.26. Chronometric Dates for the Bluegrass Management Area.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
<u>Central Bluegrass Section</u>			
Auvergne Mound (15Bb16)			
UGa-1239	2945±225	1735-1713, 1694-739, 689-663, 648-548 BC	Clay 1983
UGa-3617	1680±115	AD 87-104, 121-602	Clay 1983
Stone (15Ck89)			
DIC-2334	2390±50	751-686, 667-637, 622-614, 595-387 BC	Turnbow et al. 1983
Drake Mound (15Fa11)			
M-19	2200±250	827 BC-AD 340	Dragoo 1963; Libby 1955; Webb and Baby 1957
C-126	1168±150	AD 603-1169	Arnold and Libby 1951; Libby 1955
Peter Village (15Fa166)			
Beta-7758	2560±90	891-879, 844-409 BC	Clay 1985b
Beta-7755	2260±60	409-171 BC	Clay 1985b
Beta-7757	2220±100	516 BC-AD 1	Clay 1985b
Beta-7756	2140±110	399 BC-AD 68	Clay 1985b
Miller (15Gd44)			
Beta-166112	1940±60	86-79, 54 BC-AD 229	Elmore and Stalling 2006
Beta-166113	1970±60	162-132, 117 BC-AD 139, 154-169, 195-209	Elmore and Stalling 2006
Walker-Noe (15Gd56)			
Beta-152838	2000±60	166 BC-AD 93, 97-125	Pollack et al. 2005
Beta-152839	1990±60	165-127, 123 BC-AD 129	Pollack et al. 2005
Indian Fort Mountain (15Ma25)			
Beta-2861	2530±130	917-960, 935-375 BC	Moore 1982
Beta-2862	1910±60	39-7, 5 BC-AD 236	Moore 1982
Dreaming Creek (15Ma97)			
Beta-93739	1460±40	AD 540-654	Fenton and McBride 2007
Beta-93740	1380±60	AD 560-730, 735-772	Fenton and McBride 2007
Beta-93741	1380±70	AD 536-782, 789-810, 848-854	Fenton and McBride 2007
Gate Eleven (15Ma218)			
Beta-111633	1710±80	AD 132-468, 479-534	French and Bader 2001
Wright Mound (15Mm6)			
not reported	1900±50	AD 3-235	Crane and Griffin 1972
M-2238	1740±140	19-13, 1 BC-AD 600	Crane and Griffin 1972
Camargo Mound (15Mm32)			
Beta-33159	1780±60	AD 88-103, 122-397	Fenton and Jefferies 1991
Beta-33160	1600±60	AD 264-275, 332-596	Fenton and Jefferies 1991
Amburgey (15Mm137)			
Beta-158296	1890±40	AD 28-39, 49-230	Richmond and Kerr 2005
Beta-174892	1720±60	AD 133-433, 500-500	Richmond and Kerr 2005
Site 15Mm140			
Beta-174893	2120±40	352-295, 229-220, 211-42 BC	Anderson 2003
Beta-174895	1970±40	48 BC-AD 93, 97-125	Anderson 2003
Beta-174894	990±80	AD 891-1216	Anderson 2003
Evans (15Mm182)			
ISGS-6034	2150±70	385-5 BC	Schlarb pers. comm. 2007
ISGS-6035	2350±70	753-685. 668-610, 598-350, 306-209 BC	Schlarb pers. comm. 2007
ISGS-6036	2300±140	771-50 BC	Schlarb pers. comm. 2007
ISGS-6037	2090±80	360-273, 261 BC-AD 62	Schlarb pers. comm. 2007

Table 5.26. Continued.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
DeGaris (15Sc154)			
Beta-106284	1070±60	AD 780-791, 806-1046, 1091-1121, 1140-1148	Henderson 1997
Site 15Sc230			
Beta-173854	1180±130	AD 662-1052, 1081-1128, 1134-1152	Haag et al. 2004
Beta-187113	1100±60	AD 778-1025	Haag et al. 2004
Bullock Mound (15Wd10)			
Beta-180784	190±40	AD 1645-1699, 1721-1818, 1833-1880, 1915-1953	Schlarb 2005
<u>Northern Bluegrass Section</u>			
Robbins Mound (15Be3)			
M-2242	2100±140	411 BC-AD 237	Crane and Griffin 1972; Webb and Elliott 1942
Gaines Mound (15Be23)			
M-908	1975±200	406 BC-AD 469, 477-534	Crane and Griffin 1960
M-1075	1560±200	AD 28-39, 50-890	Crane and Griffin 1962
Hartman Mound (15Be32)			
M-2241	2400±150	833-154, 137-113 BC	Crane and Griffin 1972
Rogers - South Village (15Be35)			
M-1353	2380±130	800-180 BC	Crane and Griffin 1966
M-1351	1440±130	AD 268-271, 335-887	Crane and Griffin 1966
M-1352	500±100	AD 1285-1529, 1543-1634	Crane and Griffin 1966
Ronald Watson Gravel (15Be249) (see also Chapter 4:Table 4:31)			
AA-10459	1805±50	AD 83-342	Huebchen 2006; Trader 2003
AA-10457	1655±45	AD 258-298, 319-472, 476-534	Huebchen 2006; Trader 2003
AA-10458	1285±45	AD 655-827, 839-864	Huebchen 2006; Trader 2003
AA-10460	1235±50	AD 668-893	Huebchen 2006; Trader 2003
Pitt-1047	1195±40	AD 692-749, 764-899, 918-954, 957-961	Huebchen 2006; Trader 2003
Pitt-1048	1110±35	AD 785, 828-838, 866-1017	Huebchen 2006; Trader 2003
West Runway (15Be391)			
Beta-56397	2720±90	1188-1181, 1155-1146, 1130-752, 686-667, 632-625, 612-596 BC	Duerksen et al. 1994, 1995
Beta-65613	2590±60	895-868, 856, 850-536, 533-521 BC	Duerksen et al. 1994, 1995
Beta-65616	2560±160	1111-1102, 1084-1064, 1057-355, 288-233 BC	Duerksen et al. 1994, 1995
Beta-65614	2440±60	761-682, 671-403 BC	Duerksen et al. 1994, 1995
Beta-65615	2400±60	756-684, 669-606, 604-389 BC	Duerksen et al. 1994, 1995
Beta-65617	1790±70	AD 79-397	Duerksen et al. 1994, 1995
Beta-66429	980±70	AD 898-920, 946-1214	Duerksen et al. 1994
Wackenstein (15Be467)			
ISGS-3537	1970±70	164-128, 121 BC-AD 179, 188-213	Walley et al. 1997
Beta-101738	1790±80	AD 63-416	Walley et al. 1997
M. B. Green (15Be485)			
Beta-216458	2300±40	412-347, 318-207 BC	Purtill 2008
Site 15Be509			
Beta-157384	2010±85	347-318, 207 BC-AD 180, 187-214	Breetzke 2001
Beta-157382	1810±110	44 BC-AD 436, 490-509, 517-529	Breetzke 2001
Beta-157383	1720±90	AD 91-99, 124-538	Breetzke 2001

Table 5.26. Continued.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
Site 15Cl44			
Beta-51426	1360±60	AD 563-779, 795-799	Doershuk et al. 1992
Beta-51425	920±80	AD 989-1261	Doershuk et al. 1992
Beta-50976	880+30	AD 1043-1106, 1118-1221	Doershuk et al. 1992
Beta-50975	420±80	AD 1327-1342, 1394-1649	Doershuk et al. 1992
Froman (15Cl51)			
Beta-73118	1440±60	AD 436-489, 511-516, 530-682	Ross-Stallings & Stallings 1996
Beta-73115	1410±70	AD 441-484, 532-730, 735-772	Ross-Stallings & Stallings 1996
Beta-73114	1400±50	AD 549-692, 749-763	Ross-Stallings & Stallings 1996
Beta-73117	1380±60	AD 560-730, 735-772	Ross-Stallings & Stallings 1996
Beta-59844	890±70	AD 1023-1260	Ross-Stallings & Stallings 1996
Beta-73116	430±50	AD 1411-1525, 1557-1632	Ross-Stallings & Stallings 1996
Hayes (15Cl67)			
Beta-192389	1810±60	AD 74-380	Hall 2005:78
Gibson Greeting Card (15Kt4)			
Beta-65617	1790±70	AD 79-397	Duerksen et al. 1994
<u>Eastern Bluegrass Section</u>			
Site 15Lw5			
DIC-996	1450±45	AD 538-662	Maslowski 1980
DIC-997	1370±85	AD 468-480	Maslowski 1980
Site 15Lw315A			
UGa-3525	3080±110	1606-1573, 1558-1550, 1538-1013 BC	Schock and Langford 1981
UGa-3526	1310±80	AD 585-894, 929-931	Schock and Langford 1981
Site 15 Lw316A			
UGa-3028	1990±95	348-316, 207 BC-AD 240	Schock and Langford 1980
UGa-3528	1620±285	349-314, 208 BC-AD 995, 1008-1011	Schock and Langford 1981
Site 15Lw325E			
UGa-3529	1680±120	AD 85-110, 116-604	Schock and Langford 1981
Dover Mound (15Ms27)			
C-759	2650±170	1258-1232, 1218-393 BC	Crane and Griffin 1972
M-2239	2260±140	759-683, 670 BC-AD 0	Crane and Griffin 1972
C-760	2169±175	755-684, 669-607, 600 BC-AD 141, 149-171, 193-210	Dragoo 1963; Libby 1955
Pyles (15Ms28)			
not reported	1590±120	AD 143-147, 171-193, 210-662	Railey 1984
not reported	950±260	AD 566-1456	Railey 1984
not reported	850±230	AD 669-1477	Railey 1984

habitation discovered during investigations at the J. K. Smith Power Station. A mid-late Early Woodland component at this aceramic site was indicated by a calibrated radiocarbon date of 751-387 B.C. (Table 5.26) and an Adena Stemmed point. Postmolds delineated a small structure (4.5 m in diameter) with an interior hearth and several exterior cooking pits and a two-post rack or lean-to. This component also yielded charred nutshell, wood charcoal, and a few carbonized seeds (Turnbow et al. 1983).

Table 5.27. Important Woodland Period Sites in the Central Bluegrass Section.

Site No.	Site Name	Site Type	Affiliation	References
15Bb1	Lebus Circle	enclosure	EW-MW	Funkhouser and Webb 1932
15Bb16	Auvergne	mound	EW	Clay 1983
15Bb58	none	open habitation with mound	LW	Estes 1983b
15Bb67	Stringtown	open habitation	LW	Estes 1983c
15Bb68	Jackstown	open habitation with mound	LW	Estes 1983a
15Ck1	Indian Fort	enclosure	unassigned	Fiegel 2005
15Ck7	none	mound	unassigned	Fiegel 2005
15Ck10	Nelson Gay	mound	EW-MW	Weinland 1976
15Ck89	Stone	open habitation	EW	Turnbow et al. 1983
15Ck126	none	open habitation	EW	Ison et al. 1982
15Fa1A	Mt. Horeb	enclosure	EW-MW	Webb 1941a, 1943a
15Fa1D	none	enclosure	unassigned	Webb 1941a, 1943a
15Fa4	Rockefeller	mound	unassigned	Clay 1987
15Fa11	Drake	mound	EW-MW	Webb 1941a
15Fa12	Elam	mound	unassigned	Clay 1987
15Fa14	Grimes Village	enclosure	EW-MW	Webb 1943b
15Fa15	Tarlton	mound	EW-MW	Webb and Haag 1947b
15Fa152	Fisher	mound	EW-MW	Webb 1941a; Webb and Haag 1947b
15Fa166	Peter Village	enclosure	EW-MW	Clay 1985b, 1988; Webb 1941a, 1943a
15Fr21	none	mound	EW-MW	Sanders and Weinland 1976
15Gd44	Miller	open habitation	MW	Ross-Stallings & Stallings 2007
15Gd56	Walker-Noe	mound	MW	Pollack et al. 2005
15Hr4	none	mound complex	EW-MW	Stafford 1985
15Js151	none	open habitation	LW	Bybee 1999
15Ma14	Noland	mound	MW	Clay and Stafford 1982; Funkhouser and Webb 1932
15Ma24	Round Hill	mound	MW	Webb and Baby 1957
15Ma25	Indian Fort Mountain	enclosure	MW	Burroughs 1926; Moore 1982; Tincher 1973; Young 1910
15Ma44	Bogie Circle	enclosure	MW	Stafford 1983
15Ma45	Robbins Stone	mound	EW-MW	O'Malley and Jefferies 1998a
15Ma70	Harvey Tudor	open habitation	EW-MW	Brenyo 1983
15Ma97	Dreaming Creek	open habitation	LW	Fenton and Lozny 1995
15Ma112	Corneilison	mound	MW	O'Malley and Jefferies 1998b
15Ma137	Sheep House	rockshelter	LW	not available
15Ma177	none	open habitation	EW	Ensor et al. 1996; French and Bader 2001
15Ma196	none	open habitation with mound	MW	Ensor et al. 1996; French and Bader 2001
15Ma218	Gate Eleven	open habitation	EW, MW, LW	Ensor et al. 1996; French and Bader 2001
15Mm1	Mount Sterling	mound	EW-MW	Funkhouser and Webb 1932; Webb 1940
15Mm3	Ricketts	mound	EW-MW	Funkhouser and Webb 1935; Rafferty 2005; Webb and Funkhouser 1940

Table 5.27. Continued.

Site No.	Site Name	Site Type	Affiliation	References
15Mm5	Gaitskill	mound	EW-MW	Funkhouser and Webb 1935; Webb 1940
15Mm6-8	Wright-Greene	mound complex	EW-MW	Jefferies 1987; Rafferty 2005; Webb 1940
15Mm30-33	Camargo	earthwork complex	MW	Fenton and Jefferies 1991
15Mm137	Amburgey	specialized activity	MW	Richmond and Kerr 2005
15Mm140	none	open habitation	EW, MW, LW	Anderson 2003
15Mm182	Evans	specialized activity	EW	Schlarb et al. 2007
15Sc154	DeGaris	open habitation	LW	Henderson 1997
15Sc230	none	open habitation	LW	Haag et al. 2004
15Wd10	Bullock	mound	MW	Schlarb 2005

The earliest pottery in the Central Bluegrass dates to the late Early Woodland subperiod. These materials are classified as Fayette Thick, which predates Adena Plain and Montgomery Incised types (Clay 1985b; Duerksen et al. 1995). Griffin (1943) published the type description for Fayette Thick based on materials recovered from Peter Village (15Fa166) and Grimes Village (15Fa14). The singular trait of Fayette Thick pottery is its thickness, followed by the large size of temper particles, which Tune (1985) used to delineate chert from limestone tempered varieties. Fayette Thick sherds from dated contexts in the Central and Northern Bluegrass sections have a the time range of is ca. 650 to 300 B.C. (Clay 1985b; Duerksen et al. 1995) (Table 5.26). Based on ditch stratigraphy, radiocarbon dates, and spatial patterning within the excavation block at Peter Village, Fayette Thick and Adena Plain overlapped in time, and the transition between the two types occurred around 300-200 B.C. (Clay 1985b:30).

Adena Plain was one of the first types of siltstone tempered Woodland pottery to be defined in Kentucky. Haag (1940, 1941) developed the type description for Adena Plain using materials from the larger Wright Mound (15Mm6) and nearby Morgan Stone Mound (15Bh15, Eastern Bluegrass Section). Clay (1985b, 1988) and Tune (1985) further defined Adena Plain based on materials from Peter Village and Grimes Village. Tempered with finely crushed limestone, Adena Plain vessels are smoothed, burnished, or plain, and several forms of decoration (e.g., applied paired conical nodes) are documented. Rims are outflaring and exhibit exterior rim folds, rim strips, rolled rims, or rim thickening (Clay 1985b, 1988; Haag 1940, 1941; Tune 1985). Adena Plain pottery traditionally is considered a late Early Woodland type with a beginning date of ca. 300-200 B.C. (Clay 1985b, 1988).

A large number of late Early-early Middle Woodland Adena mounds and enclosures plus several potentially contemporaneous habitation sites have been documented in the Central Bluegrass Section. To facilitate description of these sites, they are grouped into five clusters: North Elkhorn Creek, Town Branch-South Elkhorn Creek, Paint Lick Creek-Silver Creek, Muddy Creek, and Somerset Creek-Hinkston Creek-

Brush Creek-Sycamore Creek. The remaining sites are discussed individually within general geographic divisions of the section.

North Elkhorn Creek Cluster

The North Elkhorn earthwork group in Fayette County includes the Mt. Horeb complex, Grimes Village (15Fa14), Tarleton Mound (15Fa15), Rockefeller Mound (15Fa4), Elam Mound (15Fa12), and Site 15Fa159, the latter three representing presumed Adena mounds about which little is known. The Mt. Horeb complex includes three enclosures (Peter Village [15Fa166], Mt. Horeb Enclosure [15Fa1A], Site 15Fa1D) and one mound (Fisher Mound [15Fa152]) situated along/near the bluff edge overlooking North Elkton Creek. According to a map made by Rafinesque in 1820 (as reproduced in Clay 1987), there were additional earthworks, including an unidentified mound, in this cluster. Archaeologists have not documented substantial Woodland habitation sites near this earthwork group.

Peter Village (15Fa166, formerly 15Fa1B) is the largest of the three enclosures and likely the oldest element of the Mt. Horeb Earthworks complex. The irregular earthwork, which encompasses an area of 9.2 ha, is an elliptical enclosure measuring 347-372 m across with an exterior ditch up to 1.8 m deep; there is no "causeway" (Peter 1871 as reproduced in Webb 1943b; Clay 1985b, 1988). Surface collections produced stemmed and other projectile points, drills, gravers, reamers, scrapers, hafted cutters, knives, celts, hammerstones, rectangular items, and cores. Groundstone items are quartzite and sandstone tubular pipe fragments, worked pipestone, unengraved sandstone tablet fragment, igneous celts and abraders, slate pendant fragment and gorgets, hematite cones/hemispheres, unworked cannel coal fragments, quartz and quartzite celts, sandstone whetstone, and groundstone anvil and hammerstones. Items of barite or galena are boatstones or atlatl weights, beads, and cones/hemispheres. Fayette Thick and Adena Plain ceramics were recovered from the surface (Griffin 1943; Webb 1941a, 1943b).

Subsurface contexts at Peter Village yielded similar artifacts. Clay (1985b, 1988; see also Tune [1985]) excavated a trench across the ditch and placed a small excavation block just inside the enclosure. He discovered evidence of a wooden stockade that predated construction of the ditch-embankment. Despite its name (Webb 1941a), Peter Village did not function as a habitation site. Nor was it a sacred circle or burial mound like other Adena earthworks. Instead, the stockade and ditch-embankment features could have served defensive functions and/or defined "an area for secular or sacred purposes" (Clay 1985b:22). Peter Village was special activity site or "defensive resource exploitation center" where barite/galena was acquired from a vein deposit and processed into rectangles and cones that commonly occur as grave goods at Adena mortuary sites (Clay 1985b:39). Food preparation and mortuary feasting, pottery manufacture, and chipped stone tool manufacture also occurred at the site. Accepted calibrated radiocarbon dates range between 409-171 B.C. and 399 B.C.-A.D. 68 (Table 5.26) (Clay 1988), making Peter Village the only chronometrically dated site in this cluster.

Measuring 91.4 m across, the circular Mt. Horeb Enclosure (15Fa1A) consists of an outer earthen embankment, a ditch, a flat interior area representing the original ground surface, and a causeway on the west side (Webb 1943b). The remains of a circular, mostly paired-post structure were discovered in the hardpan of the original ground surface in the center of the enclosure. The large size (29.6 m diameter) and absence of internal postmolds indicated that the structure was not roofed, and there was no apparent opening or entranceway. The structure may have been a wooden wall or stockade scaled by a ladder. Archaeologists recovered few artifacts from the Mt. Horeb Enclosure. A single sherd classified as Adena Plain was recovered from the ditch. Other items are seven projectile points (photographs of which resemble Adena Stemmed and triangular forms), a scraper, a knife, and a grooved granite ball. The enclosure was not a defensive or mortuary site, though human tooth fragments were recovered during WPA excavations. Instead, the "sacred circle" and circular structure may have functioned as a location for meetings of kin groups (Webb 1941a).

Dr. Robert Peter described the third enclosure, Site 15Fa1D, in an 1871 letter to the Smithsonian Institution. The circular enclosure is situated in a hollow between the two hills on which the Mt. Horeb Enclosure and Peter Village are located. The smallest of the three enclosures in the earthwork complex, the interior portion and shallow ditch measure 25 m across (Peter 1871 as reproduced in Webb 1943b). The low exterior embankment measures 38.1 m in diameter and only 0.6 m in relief. A "gateway" or unmodified ground surface is located in the southwest (Webb 1941a). This site has not been excavated.

Fisher Mound (15Fa152, formerly 15Fa1C) is the fourth element of the Mt. Horeb Earthworks complex. The 21.3 m wide and 0.8-1.2 m high mound was excavated by the landowner and by WPA crews. There are no chronometric dates for the mound, but Webb and Haag (1947b) assigned it to Late Adena and Dragoo (1963), Early Adena. Fisher Mound was constructed of relatively sterile fill with limestone slabs over six burial features and a thermal feature on the relict humus layer. Red ochre stains with artifacts on the submound floor may represent three more interments. Two additional graves were added after mound construction or in a second, now-eroded mound layer. The remains of one individual represented a secondary cremation, and at least five individuals were presumably extended, in-flesh burials (Webb and Haag 1947b). Due to the fragmentary nature of the remains, few details about the Fisher Mound burial population are known.

Seven of the eight formal grave features at Fisher Mound yielded grave goods, two of which only contained red ochre. Items include a single sherd of Adena Plain, modified human bones, sandstone pipes and atlatl weights, drilled barite, hematite and barite cones or hemispheres, igneous celts and ax, chert celts, shell beads, antler tools, and unmodified faunal remains. Copper artifacts are a battered breast plate or gorget, battered boatstone, folded and battered bracelet, two celts, and five folded and battered bars with ears or horns that were part of antler headdresses (Peter 1871 as reproduced in Webb 1943b; Webb 1943b; Webb and Haag 1947b). Projectile points pictured resemble Early Woodland Stemmed and Dickson cluster and possibly Turkey Tail types (Webb and Haag 1947b).

Known locally as Grimes Field, Grimes Village (15Fa14) is an irregularly shaped earthen enclosure. It is located opposite the mouth of a bend in North Elkhorn Creek, about two km northwest of the Mt. Horeb Earthworks complex. No subsurface investigations have been conducted at Grimes Village, but surface materials were collected in the 1870s by local residents and in the 1940s by Webb and his associates. In addition to barite/galena items and a unengraved sandstone tablet, a thin sheet of copper was collected from the surface inside the earthen enclosure. The chipped- and groundstone artifact assemblages, the overall form of the site, and presumably the site function and age are similar to nearby Peter Village (Webb 1943b).

Tarlton Mound (15Fa15), which measured 15 m across and 1 m high, is about 1.5 km southwest of the Mt. Horeb Earthworks complex. Excavations were conducted by Dr. Robert Peter and his sons in October 1872 (Peter 1871 as reproduced in Webb 1943b; Webb and Haag 1947b). The cremated remains of at least one adult male and a second individual were found, and no mention was made of skeletonized remains being uncovered. The calcined bones of the former were mixed with red ochre and associated with a cache of leaf-shaped chert blades. Some of these blades were intentionally broken before being covered with red ochre. The calcined bones of the second individual were mixed with red iron oxide and charcoal inside an oval arrangement of leaf-shaped chert blades placed end-to-end and slightly overlapping one another. Other artifacts found in the mound include additional leaf-shaped blades and other chert tools, barite/galena, copper bead, sandstone tubular pipe and whetstone fragments, slate pendant fragment, and diorite celt (Peter 1872 as reproduced in Webb 1943b). A projectile point recovered from the mound (Webb 1943b; Webb and Haag 1947b) resembles a Kramer point and suggests that mound dates to the late Early Woodland subperiod.

Town Branch-South Elkhorn Creek Cluster

Several sites along Town Branch and South Elkhorn Creek in western Fayette County and eastern Woodford County constitute another late Early-early Middle Woodland earthwork cluster. Two professionally investigated sites are Drake Mound and Bullock Mound, neither of which has credible chronometric dates. An unnamed earthwork site, located 0.5 mi southwest of Drake Mound at the confluence of South Fork and Town Fork of North Elkhorn Creek, was recorded by Rafinesque (1820) and Squier and Davis (1848) (Webb 1941a). There are no substantial Early-Middle Woodland habitation sites reported near this cluster.

Situated on a hilltop in the Town Branch drainage, Drake Mound (15Fa11) measured 15.2 m across and 1.3 m high. A minimum of eight individuals were interred in a central subsurface pit feature within this unique earthen mound, which was constructed of three mostly sterile strata on the relict humus layer. Four individuals are extended in-flesh inhumations and four are secondary cremations. The burial population included four young adult females, one young adult male, one adult of undetermined sex, one two-six-month-old infant, and one additional individual (Webb 1941a). Calibrated radiocarbon dates of 827 B.C.-A.D. 340 and A.D. 603-1169 (Table 5.26) suggest that the Drake Mound was used throughout the Woodland period, and are thus not very informative. Projectile points recovered from mound fill (Webb 1941a) resemble Dickson cluster and possibly Lowe cluster types. Dragoo (1963) classified Drake Mound as Late Adena.

Among the grave goods found with five individuals at the aceramic Drake Mound were barite fragments, a sandstone gorget, large shell disk beads, and small *Olivella* shell beads. Copper artifacts are rolled cylindrical beads, two gorgets or breast plates, one of which was folded and battered, and one dagger or knife in a wooden handle secured with withes. The latter was wrapped in two layers of textiles, which were preserved on one side of the dagger blade (Carey 1941; Webb 1941a). Four strips of varying widths were wrapped and wound diagonally around the dagger blade to form the innermost textile layer. Comprised of bast fiber, possibly milkweed (*Asclepias sp.*), the textile cords were two-twisted strands woven by multiple-ply braid plaiting. The textile forming the outer layer also was wrapped diagonally around the blade and consisted of double-twisted strands, but the cords were woven by lattice (bird-cage) twining and comprised at least partly of cedar bark. This was the first example of cedar bark textiles documented in Kentucky (Carey 1941).

The Bullock Mound (15Wd10) is located on a ridge overlooking an unnamed tributary of South Fork Elkhorn Creek. It is the largest of a three-mound complex, measuring 20 x 10 x 2.6 m when Haag excavated the mound in 1947 under Webb's direction. A rectangular structure, a burned clay floor, five features, and several isolated postmolds were found under the mound, which was constructed to cover cremations. Woodland diagnostics from Bullock Mound are Adena Plain sherds and a Vanport chert bladelet. Archaic period points, bifaces, hafted scrapers, a chert adze, flakes, and a sandstone abrader recovered from mound fill (Schlarb 2005).

Below the mound 80 postmolds demarked an 8 x 15 m rectangular submound structure, which distinguishes Bullock Mound from other central Kentucky Adena sites and is suggestive of Hopewell interaction. A burned clay floor extended within the postmold pattern, perhaps resulting from burning of the structure. Three postmolds and five features were documented within the postmold pattern. Two pits and one ash deposit were devoid of artifacts. A centrally located rectangular crematory pit surrounded by baked clay contained calcined and carbonized human bone, copper fragments, and pottery sherds. It is unclear if the human remains represent a primary or secondary cremation. A soil sample from a rectangular fire-burned basin feature, which was capped with limestone slabs, yielded small fragments of calcined human bone, pottery, chert, red ochre, charcoal, and ash. At least one female adult was interred in Bullock Mound (Schlarb 2005).

Paint Lick Creek-Silver Creek Cluster

Another Central Bluegrass earthwork cluster is in the Paint Lick Creek and Silver Creek drainages, which are tributaries of the Kentucky River in western Madison County and eastern Garrard County. Mortuary-ritual sites include Round Hill (15Ma24), Indian Fort Mountain (15Ma25), Bogie Circle (15Ma44), Robbins Stone Mound (15Ma45), Corneilison Mound (15Ma112), and Walker-Noe (15Gd56). Of these, only Walker-Noe and Indian Fort Mountain have been investigated by professional archaeologists. The Miller site (15Gd44) is an open habitation site associated with this cluster.

Walker-Noe (15Gd56) is a multicomponent site covering almost 50 ha on Walker Branch, a tributary of White Lick and Paint Lick creeks in Garrard County. The site includes a small Middle Woodland Adena earthen burial mound measuring 10 m across and 0.3-0.4 m high. Calibrated radiocarbon dates of 166 B.C.-A.D. 125 and 165 B.C.-A.D. 129 (Table 5.26) point to its use as a mortuary facility during the early portion of the Middle Woodland subperiod. Calcined human remains were recovered from a large thermal feature under the mound. At least 17 individuals of all ages were cremated in the central burned area and then buried to the periphery; the last cremations, however, were left in the burned area. Most represent fleshed cremations, but some appear to have been defleshed prior to cremation. This mortuary facility probably functioned as a charnel house or crematorium for a limited time frame, perhaps one or several seasons or years.

Domesticated (erect knotweed, goosefoot, maygrass, sunflower, marsh elder, squash, gourd), cultivated (sumac), and wild (grape, grasses, persimmon, honey locust, bedstraw, blackberry/raspberry, spike rush, hickory, other nuts) plant remains associated with the cremated remains at Walker-Noe suggest mortuary feasting that involved the use of several pottery vessels (Adena Plain and Wright Check Stamped). Adena Stemmed and Affinis Snyders points, bladelets, a sandstone pipe fragment, copper beads, and other artifacts were recovered from the submound floor, mound fill, and plow zone. Some of these items likely were grave goods (Pollack et al. 2005).

Pollack et al. (2005) concluded that Walker-Noe is similar to other Adena mounds in that mortuary preparation involved cremation, which is especially common for individuals interred near the bottoms of other mounds. However, at Walker-Noe cremation is the *only* form of mortuary treatment as there were no extended burials. In addition, Walker-Noe is unlike other Adena mounds in that it lacked circular submound structures, had no log- or bark-lined pit graves, and did not occupy a prominent geographic location.

Located on a ridgetop in the Paint Lick Creek drainage near several mounds including Walker-Noe, the Miller site (15Gd44) is a residential hamlet with intact Middle Woodland midden and associated features. Calibrated radiocarbon dates of 86 B.C.-A.D. 229 and 162 B.C.-A.D. 209 associated with the Middle Woodland component are similar to those obtained from Walker-Noe (Table 5.26). Affinis Snyder, Snyder, and Lowe cluster points, Adena Plain pottery, and faunal and botanical remains but no ceremonial objects were associated with the Middle Woodland component. Miller is one of the few Woodland sites in Kentucky where there is definitive evidence of dog consumption in the form of butchered dog bones, though several other site assemblages contain canid remains. Carbonized seeds of sumpweed and goosefoot as well as sunflower and amaranth pollen were recovered from the Miller site (Elmore and Stallings 2006).

Indian Fort Mountain (15Ma25), not to be confused with Indian Fort Earthworks (15Ck1), is an irregularly shaped hilltop enclosure with one-two m high stone and earth walls that encompass approximately 25 ha. Located in the Knobs physiographic province, descriptions and speculations concerning the earthwork and its function were provided by Burroughs (1926), Young (1910), and Tincher (1973). Limited research at Indian Fort Mountain was conducted by Moore (1982), who excavated a small trench across a section of the enclosure wall. Although no diagnostic materials were recovered, information was obtained on wall construction techniques and several features were recorded. Radiocarbon samples were collected from two of these features. Moore (1982) discounted the date of 580 B.C. (uncalibrated; standard deviation unavailable) as too early, but he accepted a later calibrated date of 39 B.C.-A.D. 236 (Table 5.26).

Muddy Creek Cluster

A cluster of Woodland mortuary-ritual and open habitation sites is located in the north-south-trending Muddy Creek drainage of eastern Madison County. The former include the Noland Mound (15Ma14) and Moberly Mound (no state site number). Several habitation sites (Harvey Tudor [15Ma70], Site 15Ma177, Site 15Ma196, and Gate Eleven [15Ma218]), which may be coeval with these mounds, have been recorded at or within the vicinity of the Bluegrass Army Depot.

Moberly Mound (no state site number) was excavated in 1897 by Colonel Bennett Young. Constructed of approximately 3,000 cubic yards of earth, this burial mound covered six burials. The grave of an older adult male, who may have died from a projectile point embedded in his left femur, was interred with a grooved syenite ax, flint scraper, groundstone whetstone, clay tubular pipe wrapped in mica, and ochre (Young 1910).

Harvey Tudor (15Ma70) is an Early-Middle Woodland open habitation site (Brenyo 1983). Site 15Ma177 is a Late Archaic-Early Woodland base camp. It may be associated with nearby Adena sites. Site 15Ma196 is an open habitation with a mound that probably dates to the Middle Woodland subperiod and may be associated with Adena or Hopewell (Ensor et al. 1996; French and Bader 2001).

The Gate Eleven site (15Ma218) is an open habitation site with subsurface deposits and Early, Middle, and Late Woodland components. Thin limestone tempered plain and cordmarked ceramics, Lowe Flared Base/Chesser Notched and Copena projectile points, and mica were recovered from several Middle Woodland features. Maygrass, squash, and hickory nut shell also was recovered from these features, one of which yielded a calibrated radiocarbon date of A.D. 132-534 (Table 5.26) (Bader and French 2001; Ensor et al. 1996).

Thicker limestone tempered plain and cordmarked ceramics recovered from the Gate Ellen site may be associated with a terminal Late Woodland component. An appendage scar was observed on one sherd, and one had fine incised lines on the exterior surface. Mica also was recovered from one of the terminal Late Woodland features, as was a single kernel of maize (Bader and French 2001; Ensor et al. 1996).

Somerset Creek-Hinkston Creek-Brush Creek-Sycamore Creek Cluster

A fifth Central Bluegrass Early-Middle Woodland site cluster is associated with several streams (Somerset Creek, Hinkston Creek, Brush Creek, and Sycamore Creek) in Montgomery County that are tributaries of the Licking River. Most are burial mounds, including Mount Sterling (15Mm1), Gaitskill (15Mm3), Ricketts (15Mm5), and Wright-Greene (15Mm6-8). Other sites in the cluster are enclosures, such as Camargo (15Mm30-33), and nonmound ritual sites, such as Amburgey (15Mm137) and Evans (15Mm182). With the exception of Site 15Mm140, few late Early Woodland-early Middle Woodland habitation sites are associated with this cluster.

The Mount Sterling Mound, known locally as “Little Mountain,” was located in the community of Mt. Sterling prior to its destruction in the 1840s for clay to make bricks. It measured about 30.5 m in diameter and 6.1-7.6 m in height. This presumed Adena mound reportedly held the remains of a single individual and associated grave goods. Among the items donated in the late 1800s to the Peabody Museum were a broken stone smoking pipe, a copper bracelet, and a copper breastplate (Putnam 1882 as reproduced in Webb 1940; Webb 1940).

Gaitskill Mound is located north of Mt. Sterling in the Hinkston Creek drainage. The sugar-loaf-shaped mound measures 30 x 9-12 x 9 m. Amateur excavations in the 1880s or early 1900s uncovered an apparent cremation with grave goods about 6 m below ground surface. Noteworthy items include complete engraved sandstone and clay tablets, large mica sheets, an unspecified number of copper bracelets, and an unspecified number of soapstone or limestone tubular pipes. The mound has not been investigated by professional archaeologists, but detailed descriptions and interpretations of the engraved tablets have been published. The clay tablet was incised on one side with anthropomorphic motifs, and the sandstone tablet bore a zoo-anthropomorphic motif (Funkhouser and Webb 1932; Webb 1940).

Located south of Mt. Sterling, the Ricketts Mound was a steeply sloping but eroded mound that lacked internal stratification and measured 27.4-30.5 m in diameter with a height of 3.7 m. There are no chronometric dates for the Ricketts site, but recovered projectile points resemble Cresap and Robbins and thus suggest an Early-Middle Woodland age. Rafferty (2005) proposed an early Middle Woodland affiliation (ca. 200 B.C. and A.D. 1), concurring with Dragoo's (1963) placement of the mound in Late Adena. Ricketts Mound was constructed in two episodes (Rafferty 2005) of local yellow clay deposited as 25-pound basket loads on a relict ground surface. In addition to grave features, sandstone rocks, rock piles, and fire pits were documented in the mound (Funkhouser and Webb 1935; Webb and Funkhouser 1940).

At the Ricketts Mound at least 43 individuals were interred in puddled clay graves, log tombs, crematory basins or pits, simple pits, a square clay basin, and a bark-lined pit. The burial population was dominated by comparable numbers of male and female adults, but included subadults and infants. Most were in-flesh extended inhumations, though some cremations were documented. Almost half of the individuals (mostly adults) were interred with grave goods, and about one-fourth had elaborate items like groundstone smoking pipes, celts, and gorgets; shell gorgets, beads, and spoons; bone beads, combs, and other items; freshwater pearls; and copper bracelets, rings, and beads. Pottery was conspicuously absent in the Ricketts mound (Funkhouser and Webb 1935; Webb and Funkhouser 1940). Rafferty (2005) concluded that adornment artifacts were more common than tools/weapons. The latter were placed only with adults and cremated individuals and were more abundant at Ricketts than at the nearby Wright Mound.

Also located near Mt. Sterling on a hilltop near Somerset Creek, the Wright-Greene Mounds group consists of three mounds (and possibly a fourth) (Jefferies 1987; Webb 1940). The larger Wright Mound (15Mm6) stood 9.4 m high and 51.8-57.9 m across, and the smaller (15Mm7) stood 16.2 m high and 18.3 m across (Webb 1940). Two calibrated radiocarbon dates of 19 B.C.-A.D. 600 and A.D. 3-235 obtained from Wright Mound Mm6 place it in the late Middle Woodland subperiod (Table 5.26) (Jefferies 1987; Rafferty 2005) or Late Adena. The Greene Mound (15Mm8), the only extant mound of the group, measures 18.0 m across and 2.5 m high and is surrounded by a shallow ditch (Jefferies 1987). There is a low "lobe" that extends from the otherwise conical outline of Greene Mound (Fenton and Jefferies 1991).

Excavation of Wright Mounds Mm6 and Mm7 generated important information about Woodland ritual structures, mound construction, crypt types, body placement, and grave goods. The smaller Wright Mound (15Mm7) was constructed in one phase over a complete paired-post, circular postmold pattern. Two single interments were placed in oval pit graves; one was extended and one was cremated. The latter was associated with three unengraved sandstone tablets, two bone flakers, and a bone comb. The mound fill yielded chert points, blanks, scrapers, and a drill; groundstone celts, cupstones, a discoidal, a drilled sandstone, and a nonengraved sandstone tablet; and a bone comb, flakers, chisels, and awls (Webb 1940).

In his analysis of Adena tomb types, grave goods, and demography, Rafferty (2005:159) concluded that, unlike some Adena mounds in the Scioto and upper Ohio valleys, Wright Mound Mm6 "represents a highly formulaic mortuary program." The submound hard pan under this mound contained one complete and five partial paired-post, circular postmold patterns and one partial single-post rectangular postmold pattern (Webb 1940). The internal stratigraphy of Wright Mound Mm6 revealed four stages of construction, each of which was separated by an interval of humus formation (Jefferies 1987; Webb 1940). Of the 21 single interments in Wright Mound Mm6, two-thirds were placed in four types of log tombs; other individuals were buried in simple pits or unprepared graves. Seventeen of the individuals were extended in-flesh inhumations and four were represented by fragmentary remains (Webb 1940).

A wide range of grave goods were placed with the deceased at Wright Mound Mm6. These include copper bracelets and a concentric headdress; bone or shell disk beads, *Marginella* beads, combs, a spatulate, and a conch shell; mica crescents and fragments; groundstone tubular pipes, a whetstone, a cylinder, and a spatula; fabric, leather, and other textile fragments; red ochre; snake bones; and a cane stalk bundle (Webb 1940). Two-thirds of the individuals were interred with "adornment artifacts," such as shell necklaces and copper bracelets. Tools/weapons were not commonly placed in graves (Rafferty 2005), though they were recovered from mound fill and submound contexts. The stage 1 fill contained, among other artifacts, items that likely were displaced grave goods: a cut wolf mandible, a shell spoon, a partial limestone engraved tablet, a copper pin and a ring (Webb 1940), and polished galena (Webb 1943b). The motif on the tablet may represent a raptorial bird (Webb 1940) or a pair of turkeys (Carter 2007).

Though a variety of artifacts were recovered from the mound fill, some of these materials may predate its construction. Of the almost 250 points about one-third are weak-shouldered, stemmed forms resembling Dickson cluster types. Other chert tools are, in decreasing abundance, scrapers, knives, blanks, hammerstones, gravers, cores, and a celt. Groundstone items, several of which are made of barite, are gorgets, saws, cupstones, celts, cones/hemispheres, atlatl weights, hammerstones, hoes, anvils, abrading stones, a bead, a discoidal, and smoking pipe fragments. Faunal items are animal teeth including bear; bone awls, a hook, and a handle; turtle carapace; antler flakers and a drift; and a shell spoon, a ring, and a polished shell (Webb 1940).

Wright Mound Mm6 is the type site for Wright Check Stamped pottery. The diagnostic trait of this type is its exterior surface treatment, which involved impressing with stamps bearing a square or rectangular checkerboard pattern. Some specimens exhibit S-twist cordmarking, and interior surfaces are smoothed. Jars and other vessels were tempered primarily with crushed limestone, though some specimens were tempered with siltstone or grit. Wright Check Stamped dates primarily to the Middle Woodland subperiod in Kentucky, but it continued to be manufactured into the early Late Woodland (Carstens 1996; Dunnell 1972; Haag 1940; Henderson and Pollack 1985). In addition to Wright Check Stamped, a few Montgomery Incised sherds were recovered from the fill of Wright Mound Mm6 (Haag 1940).

Of the two excavated Wright-Greene Mounds, osteological data is available only for Wright Mound Mm6. The burial population of 21 individuals was not considered demographically representative of the larger community. All but three of the individuals are adults, with three times as many males as females. Traumas and pathologies include fractures, cribra orbitalia, osteomyletis, periostitis, and heavy tooth wear. Skeletal modifications include occipital flattening and squatting facets (Hertzberg 1940b).

The ritual patterning evident at Wright Mound Mm6 and Ricketts Mound, both considered chronologically late (post-300 B.C.) Adena sites, has three fundamental characteristics (Rafferty 2005). First, both are accretional and represent the remains of multiple ritual events. Though simple with few stages of construction, mound construction at both was preceded by use of mortuary camps, which were particularly intensively used at Wright Mound Mm6. Second, there were abundant grave goods, especially adornment items, placed with the deceased. Adults had more grave goods than subadults, and male and female adults were equally likely to have items. The grave goods pattern suggests “collective representation,” meaning group identity is emphasized over individual status. Third, reusable, log-lined tombs were used for cycling bodies (Rafferty 2005). The latter, however, is only evidenced at Ricketts, where five of the seven log tomb contained the remains of two to three individuals (Funkhouser and Webb 1935; Webb and Funkhouser 1940). None of the 14 log tombs at Wright Mm6 held the remains of multiple individuals (Webb 1940).

Jefferies’ (1987) research provided important information about off-mound activities at the Wright-Greene Mounds complex, especially around the Greene Mound. Shovel probes and hand excavated units documented a discontinuous “lightly stained midden deposit” and artifact scatters (Jefferies 1987:23). Chipped stone artifacts, which included an Adena Stemmed and a corner-notched point fragment, were concentrated between Wright Mound Mm6 and Greene Mound. The low density of pottery sherds suggests that either ceramics were used away from Greene Mound or most sherds were incorporated into the mound fill (Jefferies 1987). Similarities between the thin, siltstone tempered sherds from off-mound contexts and those recovered from Wright Mound Mm6 suggest that “the Greene Mound material is at least contemporary with the construction of the Wright Mound, if not predating it” (Jefferies 1987:30). Jefferies (1987) noted similarities between Greene Mound sherds and Inez Plain pottery, suggesting an early Middle Woodland date for the mound.

The Camargo Earthworks complex on Brush Creek south of Mt. Sterling, now mostly destroyed, consisted of three enclosures and two mounds. Tate C. Page led WPA-funded excavations at three elements of the complex in 1941, but the results of this research were not published for fifty years. The three enclosures were circular (15Mm30), square (15Mm31), and hexagonal (15Mm33) in shape. The two mounds included 15Mm32 and an un-numbered mound. The former measured 20-30 m in diameter and 1.5-2.0 m high, and the conical outline was interrupted by "a low, southwest-extending lobe" (Fenton and Jefferies 1991:46). Of the two calibrated radiocarbon dates from submound features, one ranges from A.D. 88-397 and the other from A.D. 264-596 (Table 5.26) (Fenton and Jefferies 1991).

About 286 m^2 of Camargo Mound Mm32, excluding the center of the mound, was excavated, providing information about late Middle Woodland crypt types, mortuary preparation, and grave goods. Of the 38 features documented at this site, 32 were postmolds arranged in no apparent pattern, except for two that appeared to be paired. A rectangular basin that may have functioned as an *in situ* crematorium was found under the mound lobe; feature fill yielded small calcined human bones, mica traces, Adena Plain sherds, charcoal, and ashes. Another submound feature, a circular pit with calcined human bone, mica, pottery, charcoal, and ash, was interpreted as a crematory pit. Mound Mm32 also yielded a reconstructed Connestee Simple Stamped or Brushed vessel, a platform pipe fragment, a partial engraved sandstone tablet, and expanding-stemmed and corner-notched points. Tempered with micaceous and ferric sand, the Connestee vessel had four panels with stamped or brushed surface treatment (Fenton and Jefferies 1991).

The circular enclosure at Camargo Earthworks measured less than one m high and 50 m in diameter, encompassing an area of 1850 m^2. About 13 percent of the circular enclosure, both inside and outside the embankment, was excavated. The interior of the enclosure, referred to as a "plaza," was surrounded by a ditch of unspecified depth. The earthen embankment surrounded the ditch, and there was an unmodified "opening" in the northwest. Several prehistoric postmolds and burned features were documented. Chipped stone tools and debitage, pottery, and botanical artifacts were recovered, including Robbins, Merom-Trimble, and straight- and expanding-stemmed projectile points. The density of artifacts was greater on the outside of the enclosure than on the inside; chipped stone tools were more abundant on the inside and debitage on the outside (Fenton and Jefferies 1991).

The square enclosure at Camargo measured 45 m on each side with a possible opening in the southeast corner. About 8 percent of the 2025 m^2 of the enclosure was excavated. Like the circular enclosure, the square consisted of an open "plaza" area, an interior ditch, and a low embankment. Cultural materials were scarce and included three postmolds and three artifacts (Fenton and Jefferies 1991). The Camargo hexagonal enclosure was not described.

Evans is a nonburial ritual site located to the north of Mt. Sterling on an upland ridge in the Hinkston Creek drainage. Four calibrated radiocarbon dates from this site overlap between about 400 and 200 B.C. (Table 5.26). Late Early Woodland features at Evans were arranged around a central activity area marked by yellow clay, concentrations of ash and fire cracked rock, two postmolds, and two pits. This space may have served as a cremation area, with cremated remains transported off-site for interment, perhaps in a mound (15Mm11) 350 m west of the site. To the northeast and southeast of the central activity area were two large, irregularly shaped pits lined with artifact-bearing organic soil and filled with sterile clay. These features may represent storage areas for special symbolic clays, perhaps used for off-site mound construction. To the southwest of the central activity area was a cluster of pits and postmolds, the latter representing racks or screens. The pit features, which may have been used for food storage, food preparation, and/or food offerings, yielded artifacts commonly found as grave goods at Early-Middle Woodland sites (mica, barite, stemmed points, leaf-shaped blades, bladelets, and a celt), as well as Adena Plain pottery, wild plants (nuts, purslane, and persimmon), and cultigens (goosefoot, sunflower, and maygrass). American chestnut dominated the wood charcoal sample. Site activities involved processing and offering food, storing special clays, and cremating the deceased for transport to a nearby burial location (Schlarb et al. 2007).

Another nonburial ritual site located to the north of Mt. Sterling is Amburgey (15Mm137), which is situated on a high ridge overlooking Sycamore Creek. Amburgey was used as a ritual locality where nonburial features and artifacts were concentrated in an area of less than 400 m^2. Calibrated radiocarbon dates of A.D. 28-230 and A.D. 133-500 indicate this late Middle Woodland site was contemporaneous with nearby Wright Mounds and Camargo Earthworks (Table 5.26). The spatial distribution of features at Amburgey and their associated artifacts provide a unique perspective on Woodland ritual activity in central Kentucky (Richmond and Kerr 2005). The site has "characteristics of a Middle Woodland mortuary facility but lacks … burials" (Richmond and Kerr 2005:91). Perhaps "feasting in conjunction with ritual offerings constituted the major Middle Woodland activities at Amburgey," with associated mortuary facilities located nearby (Richmond and Kerr 2005:91).

A temporary structure or screen at Amburgey was evidenced by 11 postmolds arranged in an oval pattern measuring 12 x 17.5 m. One large central postmold with artifacts in the fill was located within this oval structure, though its association with the structure was unclear. The central postmold yielded debitage and a small number of dock, goosefoot, knotweed, marsh elder, and purslane seeds, which may represent incidental inclusions in the feature fill. The goosefoot did not appear to be of a domesticated form. Feature 2, also located within the structure, was interpreted as a ritual artifact cache. In addition to debitage, plant remains, and charcoal, one complete and one fragmentary copper bicymbal ear spools were found beneath a Connestee Brushed tetrapodal vessel in the feature. Stylistically, the ear spools resemble Styles 6-9 in Katherine Ruhl's (1992; Ruhl and Seeman 1998) seriation, corresponding to the middle to end of her relative chronology. The complete ear spool was manufactured in four pieces (three plates and one stem). Cordage associated with the copper ear spools is bast from an unidentifiable species; the type of twisting and number of strands were not reported. The four-paneled Connestee vessel, tempered with crushed granitic rock and mica, was decorated with brushing and herringbone incising on the exterior surfaces. Squash, goosefoot, bedstraw, sticky catchfly, and purslane were recovered from Feature 2 fill (Richmond and Kerr 2005).

Feature 5 was a thermal feature found outside the oval structure. This food preparation and processing feature, which may have been associated with ritual feasting, yielded fire cracked rock, a celt made from folded sheets of hammered copper, mica fragments, a Snyders point, and burned plant and animal remains. The latter included nutshell, goosefoot, pokeberry, chokeberry, bedstraw, sticky catchfly, St. John's wort, and eastern redbud plant remains, and calcined white-tailed deer, canid, bird, and other mammal bones. The thermal and artifact cache features at Amburgey provide evidence of ceremonial and medicinal plant use. Bedstraw may have been used for medicine or incense/fragrance, and sticky catchfly and St. John's wort have medicinal properties (Richmond and Kerr 2005). Purslane, dock, and marsh elder also have curative properties (Williams 2000).

In addition to the mortuary and ritual sites, a Woodland habitation site is associated the Somerset-Hinkston-Brush-Sycamore Creek cluster. At Site 15Mm140 Early, Middle, and Late Woodland components were documented. Though a variety of feature types were documented at this site, only four could be assigned to the Woodland period. They consisted of an Early-Middle Woodland thermal feature (cal 352-42 B.C.), a Middle Woodland refuse pit (cal 48 B.C.-A.D. 125), a Late Woodland feature with a Jacks Reef point, and a terminal Late Woodland-Fort Ancient earth oven (cal A.D. 891-1216) (Table 5.26) (Anderson 2003).

Other Adena Sites

Woodland earthwork and mound sites in Bourbon County include Lebus Circle (15Bb1), Auvergne Mound (15Bb16), and an unnamed mound. The former has never been excavated, so little is known about this likely Adena circular enclosure. A complete modified tubular pipe was found on the property of Thomas Jones, three km north of North Middleton on Stoner Creek, where there were three stone mounds. The pipe was found in a presumably Woodland period mound that also yielded disintegrated human bones, a flint celt, and point fragments (Webb and Haag 1947b).

Auvergne Mound measured 12 m in diameter and 0.6 m high (Clay 1983). Charcoal recovered from mound fill yielded a calibrated radiocarbon date of 1735-548 B.C. (Table 5.26), a date that Clay (1983:111) considered "extraordinarily early," especially since artifactual remains pointed to a more recent date. Another calibrated date of A.D. 87-602 (Table 5.26) was considered acceptable and placed Auvergne Mound in late Middle Woodland subperiod (Clay 1983:11). The Late Adena Auvergne Mound was considered an "atypical" Adena mound because it lacked multiple accretional burials, copper and mica artifacts, and Adena Stemmed points (Clay 1983).

Excavation of Auvergne Mound provided data about mound construction, crypt types, body placement, and grave goods. The burial mound was associated with an "ephemeral" settlement, which is evidenced by concentrations of pottery sherds and small numbers of chipped stone and faunal artifacts in a shallow deposit. There was no evidence of pre-mound modification of the ground surface or construction of submound structures, though a single postmold was found south of the single burial feature. It is likely the mound was used in a single event. Unlike other early mounds, midden from the post-mound-construction occupations contributed to mound deposits (Clay 1983).

One adult individual was interred in an extended position in a simple, shallow pit under Auvergne Mound. The pit was then infilled, a 30 cm mound was constructed, and fires were burned on the mound surface north of the burial pit. A second thin layer of soil, which was scraped from the surrounding area producing a borrow pit, was deposited on the mound. Grave goods included a cluster of chert debitage, which may have been placed in a small bag on the chest of the one interred individual. Crude points, several other chert tools, and a triangular sandstone palette were associated with post-mound occupations. Over 300 Adena Plain sherds were recovered from burial pit fill and other contexts at Auvergne (Clay 1983). Rim specimens have a rolled appearance rather than the more typical collaring of classic Adena Plain sherds. This unique rim form may represent a late Adena Plain variant (R. Berle Clay, personal communication 1986).

Finally, a number of Woodland earthen and stone constructions in Clark County have been documented but none have been investigated professionally. For example, Indian Fort Earthworks (15Ck1) is located on an escarpment overlooking Upper Howard Creek. The circular embankment-ditch enclosure, described as a "sacred circle," measures 47 x 50 m across. An elevated "causeway" leading across the ditch is located in the southeast quadrant. An interior mound measures 22 m across and has been reduced to about 0.5 m high. An associated unnamed mound, Site 15Ck7, that is adjacent to the enclosure measures 16 x 25.5 in diameter and less than 1 m high. The earthworks have been degraded significantly since they were originally recorded (Fiegel 2005). Nelson Gay Mound (15Ck10) is an irregularly shaped, well-preserved Woodland mound (Weinland 1976).

In sum, archaeologists know quite a bit about the late Early and Middle Woodland subperiods in the Central Bluegrass, especially mortuary-ritual activities. Since the 1990s, however, more attention has been paid to Late Woodland sites located in the Central Bluegrass Section. For example, Dreaming Creek (15Ma97) is a large, single component habitation site with subplowzone features and discrete activity areas. Calibrated radiocarbon dates of A.D. 540-654, A.D. 560-772, and A.D. 536-854 (Table 5.26) place this site in the early Late Woodland subperiod. Artifacts were recovered from three distinct clusters, where a small number of large and small pits, hearths, and postmolds were found. No house patterns were apparent in the postmolds. The eastern artifact/feature cluster represented one activity area, and two activity areas were documented in the central cluster. Newtown phase artifacts include Lowe cluster points and Newtown series pottery, which exhibits properties in common with sites to both the northeast (check stamping) and the west (castellations). Debitage indicates that biface reduction occurred at the site (Fenton and Lozny 1995; Fenton and McBride 2007).

Faunal remains recovered from feature contexts at Dreaming Creek include deer, raccoon, other small- and medium-sized mammals, and turkey. Significantly, the Dreaming Creek site provided evidence that during summer and early fall site occupants relied on cultigens more so than nuts, the opposite of the usual Woodland pattern. Equally important is the co-occurrence of EAC crops (e.g., maygrass and goosefoot), tropical species (e.g., maize and tobacco), and cucurbits (e.g., squash) at a site with a short time span of use. Further, the tropical domesticates from Dreaming Creek are among the oldest (ca. A.D. 550-650) found to date in Kentucky (Fenton and Lozny 1995; Fenton and McBride 2007).

Site 15Sc230 is another large Late Woodland site. It is located in Scott County to the west of Georgetown and south of North Elkhorn Creek. Mechanical removal of the plowzone from a portion of this site documented several features. Of interest were three large features, two of which were C- or U-shaped with dark brown clay silt and charcoal inclusions surrounding a yellowish brown clay. Though somewhat smaller, these features are reminiscent of the clay storage facilities documented at the Evans site (15Mm182) in Montgomery County (Schlarb et al. 2007) (see above). The other feature had a diameter of 1.4 m. It contained dark brown/black clay soil with a zone of charcoal at a depth of 30 below the base of the surface; at a depth of about 75-80 cm below the surface a layer of burned limestone was encountered above subsoil. The walls of the feature had been fired a bright orange/red. Calibrated radiocarbon dates of A.D. 662-1152 and A.D. 778-1025 were obtained from this feature (Haag et al. 2004).

The only diagnostic artifacts recovered from features at Site 15Sc230 were 10 sherds. All were tempered with limestone or limestone and other types of crushed rock. Based on thickness of the sherds and their overall similarity to the Beals Run series (see Chapter 7), and taking into consideration the radiocarbon dates, Henderson (2004) argued that they date to the terminal Late Woodland/early Fort Ancient. Though no projectile points were recovered from feature contexts, 36 of the 50 blades found at the site were associated with features. Single specimens of Chesser Notched, Steuben Expanded Stem, and Snyders points were recovered from the surface of Site 15Sc230 (Haag et al. 2004).

Sites like Jackstown (15Bb68) and Site 15Bb58 may provide evidence for a settlement trend toward nucleation during the late Middle Woodland/Late Woodland (post A.D. 250) similar to that observed for the Northern Bluegrass Section (see below). The Jackstown site consists of an oblong midden stain and a low mound. Surface collections at the site produced a large number of expanded stem points, as well as limestone tempered cordmarked body sherds and rims with notched lips (Estes 1983a). Site 15Bb58 also contains a mound and has yielded expanded stem and Jacks Reef Comer Notched points along with thin, limestone tempered cordmarked pottery (Estes 1983b). Neither site has been excavated, but both have the potential to yield important information on late Middle/Late Woodland settlement patterns.

Another Late Woodland component is Stringtown (15Bb67). This site, which postdates Jackstown and Site 15Bb58, is marked by a surface scatter of materials and includes one area of light midden. Artifacts collected from the surface include several Jacks Reef Pentagonal points and limestone tempered cordmarked and plain ceramics (Estes 1983c). Stringtown has not been excavated.

Though little currently is known about the terminal Late Woodland subperiod in the Central Bluegrass Section, further investigation of sites, such as Old Springs (15Fa20), Paddock 9 (15Wd84), and DeGaris (15Sc154), the latter yielded a calibrated radiocarbon date of A.D. 780-1148 (Table 5.26), may provide information on the transition from Late Woodland to Fort Ancient (Henderson 1997, 1998) (see Chapter 7). The presence of angular shoulders on large jars with direct or recurved rims at the Muir site (15Js86) in Jessamine County (Sharp and Turnbow 1987; Turnbow and Sharp 1988) and several other very early Fort Ancient sites suggests a linear temporal relationship between Newtown and early Fort Ancient ceramics similar to that observed by Riggs (1986) in southwestern Ohio.

In conclusion, Railey (1991b) proposed a Woodland settlement model for the Central Bluegrass and surrounding sections. Between ca. 400 B.C.-A.D. 250, the settlement system was dispersed and habitation and ritual sites were spatially distinct. Isolated ritual sites continued to be used ca. A.D. 250-700, though most ritual facilities (including stone mounds) were associated with nucleated settlements (Railey 1991b) with a variety of intrasite patterns (Pollack and Henderson 2000). "The construction of a single mound within or adjacent to a village was a marked change from Middle Woodland mound-building practices" (Pollack and Henderson 2000:628). In addition, smaller habitation sites without ritual facilities, such as Dreaming Creek, also are present (Fenton and Lozny 1995; McBride and Fenton 2007). After ca. A.D. 700, the settlement system was again dispersed and spatial separation of habitation and ritual sites resumed (Railey 1991b).

NORTHERN BLUEGRASS SECTION

The 136 Woodland sites documented in the Northern Bluegrass Section contain 152 Woodland components. Though there is less site type diversity than in the Central Bluegrass Section, the proportions of earthen mounds and open habitations without mounds are less disparate in this section (Table 5.24). Slightly more than half of the Woodland components in this section are not assigned to a subperiod. Of the assigned sites, the largest proportion are Middle Woodland, followed closely by Early Woodland components. As in other section, few components have been assigned to the Late Woodland subperiod (Table 5.25).

In the Northern Bluegrass Section significant Woodland sites include burial mounds, residential habitations, temporary encampments, and resource extraction sites (Table 5.28). In addition to several important sites in Carroll County, a great deal of what we know about the Woodland period in this section is based on research at sites in Boone County. Most Woodland mound sites in Boone County have one or two burial mounds with no associated residential loci: Robbins, Riley, Landing, Crigler, and Hartman. These sites date to the late Early-early Middle Woodland subperiods. In other cases, mounds were associated with habitation areas, such as at the Rogers and Ogden-Moore site complexes, which date to the late Middle-Late Woodland subperiods.

In the Northern Bluegrass Section, early-middle Early Woodland diagnostics include Turkey Tail, Wade, and Early Woodland Stemmed cluster points, especially Kramer (Table 5.7). Pottery may be as old as the middle Early Woodland in this section. For example, at the West Runway site (15Be391), which is located on a level upland ridgetop in the Gunpowder Creek drainage, sherds from one broken Fayette Thick vessel were recovered from contexts with calibrated radiocarbon dates of 895-521 B.C., the oldest date for Fayette Thick in Kentucky, and 761-403 B.C. (Table 5.26) (Duerksen et al. 1995:85). The Fayette Thick assemblage from West Runway is distinguished from contemporary assemblages in the Central Bluegrass Section by an absence of finger pinching (Clay 1985b; Duerksen et al. 1995). Evidence of an association between Fayette Thick pottery and Kramer points was found at West Runway, where they occurred in the same dated pit feature (Duerksen et al. 1995; Wall et al. 1995).

In addition to the large number of Kramer specimens, other point types from West Runway are Cresap, Robbins, and Adena Stemmed. Most points were made of Wyandotte, Vanport, and local glacial drift cobbles. Experimental and use-wear analyses

Table 5.28. Important Woodland Period Sites in the Northern Bluegrass Section.

Site No.	Site Name	Site Type	Affiliation	References
15Be3, 14	Robbins	mound complex	MW	Webb and Elliott 1942
15Be15	Riley	mound	MW	Webb 1943b
15Be17	Landing	mound	MW	Webb 1943b
15Be20, 27	Crigler	mound complex	MW	Webb 1943a
15Be23	Gaines	mound	MW	Crane and Griffin 1962
15Be32	Hartman	mound	MW	Webb 1943a
15Be33-35	Rogers	open habitation with mounds	MW-LW	Crawford 1959; Kreinbrink 1992
15Be50-52	Ogden-Moore	open habitation with mounds	MW-LW	Henderson 1995
15Be61	none	open habitation	EW, MW	Fenwick and Weinland 1978
15Be228	none	open habitation	MW	Fenwick and Weinland 1978
15Be229	none	open habitation	unassigned	Fenwick and Weinland 1978
15Be232	none	open habitation	unassigned	Fenwick and Weinland 1978
15Be249	Ronald Watson Gravel	open habitation	LW	Huebchen 2006; Trader 2003
15Be252	Stephens	mound	MW	Fenwick and Weinland 1978
15Be269	Big Bone Lick	open habitation	MW	Lowthert 1998; Miller and Duerksen 1995
15Be391	West Runway	open habitation	EW, MW	Duerksen et al. 1995
15Be410	Bob Schwenke	open habitation	unassigned	Henderson 1995
15Be416	Cosmic View	open habitation	LW	Henderson 1995
15Be431	none	open habitation	LW	Henderson 1995
15Be467	Wackenstein	open habitation	MW	Walley et al. 1997
15Be485	M. B. Green	open habitation	EW	Purtill et al. 2006
15Be509	none	open habitation	MW	Breetzke 2001
15Cl44	none	open habitation	LW	Doershuk et al. 1992
15Cl51	Froman	open habitation	MW-LW	Ross-Stallings and Stallings 1996
15Cl58	Panther Rock	open habitation	MW	Stallings 2007
15Cl67	Hayes	open habitation	MW	Hall 2005
15Hy1	Chilton	cemetery	MW-LW	Funkhouser and Webb 1937
15Ke4	Gibson Greeting Card	open habitation	MW	Duerksen et al. 1994; Schock 1984
15On50	none	open habitation	MW-LW	Schock 1989a

revealed that Kramer and Robbins points were used in hunting, butchering, and hide preparation. Kramer points also were used for boring hide, boring bone/antler, grooving bone/antler, and planing wood (Wall et al. 1995).

Investigation of over 765 m^2 at West Runway revealed seven "individual depositional loci" below the plowzone (Duerksen et al. 1995:85), with calibrated radiocarbon dates clustered in the Early Woodland subperiod (between 1188-596 B.C. and 756-389 B.C.) and one late Middle Woodland subperiod date of A.D. 79-397 (Table 5.26). Each locus represents an individual occupation episode, and the loci were associated with five pits and two shallow basins of unspecified functions. Artifacts from each locus evidenced a consistent variety of domestic activities: knapping, wood and bone working, animal processing, feature use and maintenance, and ceramic use. The West Runway site was reused frequently for short periods of time by small groups of mobile hunter-gatherers who performed similar sets of activities. The pottery recovered from the site was made, used, and discarded on site, as opposed to being transported by the transient occupants. Evidence of plant use is represented by an unspecified number of maygrass seeds from a pit feature with a calibrated radiocarbon date of 1188-596 B.C. (Table 5.26) (Duerksen et al. 1995), the earliest date for cultigens in this section.

M. B. Green (15Be485) is another important nonmound Early Woodland site. Limited excavations at this site recovered thick quartz tempered plain ceramics from intact sub-plowzone midden deposits. These materials, which are associated with a calibrated radiocarbon date of 412-207 B.C. (Table 5.26), postdate the Fayette Thick ceramics from the West Runway site, but predate Adena Plain. Of interest was the presence of a human tibia. The association of ceramics and human bone with fire cracked rock and debitage may represent an example of a late Early Woodland nonmound burial/crematory locale (Purtill 2008; Purtill et al. 2006).

Though no identifiable Adena habitation sites have been documented in the Northern Bluegrass Section, several late Early to early Middle Woodland Adena mounds have been excavated. Of these, Robbins Mound Be3 was biggest and contained the largest number of burials (Webb and Elliott 1942). The earliest absolute dates were obtained from the Hartman Mound (15Be32) (Webb 1943a) (Table 5.26), the earliest dated mound in Kentucky. Other excavated mound sites are Riley (15Be15), Landing (15Be17), Crigler (15Be20 and 15Be27), and the smaller Robbins Mound Be14 (Milner and Jefferies 1987; Webb 1943a, 1943b; Webb and Elliott 1942).

Hartman Mound (15Be32) was located at the bluff edge overlooking the Ohio River floodplain and the confluence with the Great Miami River. The mound measured 18 m across and 0.9 m high, but plowing had reduced its original height and increased its diameter. A calibrated radiocarbon date of 833-113 B.C. (Table 5.26), Fayette Thick-like pottery, and points that resemble Turkey Tail and Adena Stemmed types from mound fill indicate a middle-late Early Woodland affiliation. Hartman Mound provides information about mortuary features, mound construction, mortuary preparation, body placement, and grave goods. The former included a central burial pit and two peripheral features (oval crematory pit and hearth), but no postmolds. The primary mound was a ring constructed of excavated earth plus rocks around the central burial pit (Webb 1943a).

Fourteen individuals, possibly representing two different populations based on mound context and skull traits, were interred in eight numbered burials in Hartman Mound. Other than an adolescent male and an infant, most of the individuals are adults. Twice as many adult males as females were interred in the mound. Several individuals exhibited traumas, pathologies, or occipital flattening. Three individuals are in-flesh extended burials, two are secondary bundle burials, which are not documented at other Kentucky Adena mounds, one is a cremation, one is an *in situ* burial of unknown form, and seven are displaced burials of unknown form. Only two individuals were found in formal mortuary features. A young adult male in the central burial pit was interred with large and small shell beads, groundstone gorgets and reel, worked animal bones, worked wood item, a copper ring, textiles, and burned red ochre. Another individual was buried with an antler point and a bone awl, twined bast fiber textiles were found with one individual, and two others were associated with red ochre and a ferric iron compound. A smoothed, modified wooden stick that may be part of a bow or atlatl was placed with another individual (Snow 1943b; Webb 1943a).

Robbins Mounds were two Adena mounds located on a ridge crest near several springs in the dissected uplands about three km northeast of the Ohio River. Testing on the ridge around the mounds failed to produce evidence of associated habitations. The smaller Robbins Mound Be14 was located 280 m south of the larger mound. Plowing reduced the mound to only 0.6 m high and so blurred the mound edges that the diameter could not be determined. The mound contained a single burial feature that probably was a log tomb with one to several individuals, though no organic material was preserved at the site. One copper bracelet was recovered from the fill, the only grave good recovered from the mound (Webb and Elliott 1942). Robbins Mound Be14 represents short-term mound use, probably a single ritual event, and it adds to our knowledge of variation in Woodland mortuary behavior in that respect.

Robbins Mound Be3, which measured 38-41 m across and 6 m high, provided evidence of mound construction, submound structures, crypt types, mortuary preparation, and grave goods. Consisting of three major stratigraphic zones, 15Be3 represents long-term mound use with multiple episodes of mortuary activities. The initial mortuary event at Robbins Mound Be3 involved construction of a circular, outward-slanting, paired-post structure containing secondary cremations covered by a small primary mound (Webb and Elliott 1942). A calibrated radiocarbon date of 411 B.C.-A.D. 237 (Table 5.26) was obtained for a feature associated with the submound structure (Milner and Jefferies 1987). A secondary mound was constructed over the burned structure, and log and other tombs were built in the secondary mound. Over several decades or centuries, additional graves were constructed in earth rings around the secondary mound, which finally was capped with a layer of soil (Milner and Jefferies 1987; Webb and Elliott 1942).

Three temporally distinct patterns of mortuary preparation and tomb types at Robbins Mound Be3 are communal cremation in the submound structure, interment in bark-lined graves, and construction of log tombs. Most of the 52 log tombs held the remains of single individuals, while some tombs had none, two, or three individuals. Log tombs vertically overlaid each other, though lateral similarities in tomb depth suggest contemporaneous intervals of tomb construction. Most in-flesh inhumations in the bark and log tombs were extended with the bodies oriented northeast-southwest (Webb and Elliott 1942).

At least 100 individuals were buried in Robbins Mound Be3, with adults outnumbering subadults by almost six times (Snow 1942). Snow (1942) concluded that there were three times as many adult males as females, but Milner and Jefferies (1987) found sexual parity. And while Snow (1942) estimated most adult ages at 21-35 years, Milner and Jefferies (1987) found both young and old adults. Cultural modifications are occipital flattening, red ochre coatings, and defleshing. Traumas and pathologies include arthritis, squatting facets, bone fractures, metabolic disorders, infectious diseases and reactions, and dental pathologies (Snow 1942). An adult male had a projectile point embedded in his lumbar vertebrae (Webb and Elliott 1942).

Grave goods were placed with only 13 of the 89 individuals in log tombs and bark graves at Robbins Mound Be3. Seven individuals had copper items; five each had shell objects, groundstone tools, or red ochre fragments; two each had projectile points, graphite lumps, or textiles; and one each had mica, worked bone, or chert blade cache. Worked items recovered from the floor of the structure include pottery sherds, chipped stone tools, worked and unworked bone, and a sandstone tablet. Artifacts recovered from mound fill and unspecified contexts include chipped stone and groundstone tools, sherds, worked bone/shell, and copper. Noteworthy items from the various contexts of Robbins Mound Be3 include copper bracelets, "pendants," and ring; mica crescent head ornaments; shell beads and spoon; stone gorgets, smoking pipe, and unengraved tablet; Robbins points and leaf-shaped blades; and Adena Plain pottery (Webb and Elliott 1942). Projectile points were placed only with individuals older than 15 years, while shell beads, copper bracelets, and red ochre were found with both subadults and adults (Milner and Jefferies 1987).

Situated almost 1 km northwest of Robbins Mounds on the crest of a long ridge is Riley Mound (15Be15). It is about three km north of the Ohio River, which is visible from the top of the mound. The plowed and deflated mound measured 18 m across and 1.8 m tall. It was constructed over an intact humus layer containing chert and groundstone tools, pottery, and faunal remains (Webb 1943b). No absolute dates are available for Riley Mound, but Adena Plain pottery and Robbins and other Early Woodland stemmed types from the submound humus suggest a possible late Early to early Middle Woodland affiliation. Riley Mound generally is considered a Late Adena site.

Riley Mound provides information about Woodland submound structures and mortuary features, body placement, and grave goods. An unspecified number of mostly paired postmolds marked, from oldest to youngest, one partial spiral, one circular, and one rectangular submound structures. Other submound features are two pits and three thermal features. Eight burials were uncovered within the footprints of the circular and rectangular submound structures at Riley Mound, but none of the individuals were found in formal crypts. Three were in-flesh extended inhumations, one a secondary cremation, and four unknown. Six are young adults (three males, one female) and age could not be determined for two individuals. Only one worked item was found in association with a burial at Riley Mound, a young adult male who was buried with a copper gorget (Webb 1943b).

Landing Mound (15Be17) was situated about midway between Robbins Mounds and Riley Mound. It was located at the end of a narrow ridge about 450 m from Landing Spring and 2.5 km north of the Ohio River. The unplowed conical mound measured 18 m across and 2.1 m high. Landing Mound was erected in one episode of mostly sterile sandy clay over an artifact-bearing humus zone, which yielded Adena Plain pottery and a point resembling an Early Woodland Stemmed or Gary cluster type. Nineteen postmolds under the mound probably indicate the presence of a submound structure, though excavators were unable to delineate a pattern in the postmolds (Webb 1943b).

Fifteen likely contemporaneous burials were found under Landing Mound, including five in a central pit, seven ringing the pit on the humus zone, and three isolated skulls. Excluding the latter, all individuals were in-flesh extended burials. Ten are adults (including seven males and two females), two are subadults, and three are of undetermined ages (Snow 1943d; Webb 1943b). Based on osteological analyses, Snow

(1943d) concluded that individuals buried in Landing Mound were the same population as individuals interred in nearby sites Robbins Mound Be3 and Riley Mound. Other than red ochre, only one burial under Landing Mound contained grave goods. An adult male in the central pit was interred with three diorite celts and one cut antler handle (Webb 1943b).

Crigler Mounds (15Be20 and 15Be27) were a pair of Adena earth mounds about 76 m apart on a north-facing bluff edge overlooking the Ohio River. There are no chronometric dates for either mound, but at least the larger Crigler Mound 15Be20 is considered Late Adena. The dimensions of the smaller Crigler Mound 15Be27 could not be determined due to severe deflation from cultivation. The low mound of unstratified, homogenous fill covered the secondary cremains of an adult with red ochre, two points, and a one-hole sandstone gorget (Webb 1943a).

Crigler Mound 15Be20 was an elongate earthen mound that measured 29 x 49 m across and 4.6 m in height. It was constructed of local, mostly sterile soils over an artifact-bearing humus zone. A series of mortuary-ritual activities occurred at the site, beginning with the construction of a paired-post circular structure that measured 17 m across. This special-purpose structure with out-slanting walls was internally partitioned with a log-clay platform and flanking seating or stalls along the perimeter. Of the six mortuary features, three are log crypts, one is associated with a clay floor, one is an earth wall crypt, and one an unspecified crypt (Webb 1943a).

Crigler Mound Be20 held the remains of at least 19 individuals. Fifteen are adults, including seven males and one female, and four are subadults. Of the 10 individuals buried in the prepared graves, seven were extended in-flesh interments and three were cremations. In addition, the remains of three cremated individuals were found on the structure floor and two fleshed individuals were found above a collapsed log tomb in the mound fill. Several pathologies and traumas were noted in the Crigler Mound Be20 burial population (Snow 1943a; Webb 1943a).

Grave goods were associated with five individuals in Crigler Be20. The most elaborate burial was that of a young adult male, who was interred in the log tomb where the platform inside the structure formerly stood. He had copper bead bracelets, mica crescent fragments, a projectile point, red ochre, and graphite. Other individuals were associated with a possible Motley point, shell beads, slate/shale pendants, and cut/perforated mica. A cache feature had two abrading stones and numerous mica fragments. Under the mound skirt investigators found fragments of a platform pipe and a cannel coal ring. Burned limestone, flakes, and animal bones were found in the ash deposit at the center of the structure. The mound fill contained a possible unengraved tablet fragment, other groundstone tools, points and other chert items, and a copper pin fragment. At least six partial Adena Plain pottery vessels (Webb 1943a) and a possible Motley point indicate a late Early to early Middle Woodland affiliation.

Finally, other mounds in the Northern Bluegrass Section may be related to Adena, though little is known about these sites. The Gaines Mound (15Be23) has calibrated radiocarbon dates of 406 B.C.-A.D. 534 and A.D. 28-890 (Table 5.26). Site 15Be228 is an open habitation that may have been associated with the nearby Stephens Mound

(15Be252). Both sites, neither of which has been excavated, date to the Middle Woodland subperiod (Fenwick and Weinland 1978).

While Adena burials mounds were the focus of Webb's work in the Northern Bluegrass Section, several early Middle Woodland habitation sites have been documented in Boone, Kenton, and Carroll counties. Though some were contemporaneous, currently there is no direct connection between any of the mortuary and domestic sites. The Middle Woodland Wackenstein site (15Be467) is located about three km southwest of the Ohio River on an interior ridgetop. The three features excavated at this site consisted of a possible house floor with two associated pits. Diagnostic artifacts are thin, limestone tempered plain sherds assigned to the Miami Series. These ceramics, along with calibrated radiocarbon dates of 164 B.C.-A.D. 213 and A.D. 63-416 (Table 5.26), are suggestive of a Middle Woodland occupation, ca. A.D. 50 to 200 (Walley et al. 1997).

Site 15Be509 yielded similar calibrated radiocarbon dates, which range from 347 B.C.-A.D. 214 to A.D. 91-538 (Table 5.26). This site, which contained intact subplowzone deposits, was used on a temporary basis by small groups of people as a procurement station for the acquisition of local food resources. Scattered cultural features relate to plant and animal processing, and chipped stone tool manufacture was another activity at the site (Breetzke 2001).

The Gibson Greeting Card site (15Ke4) consisted of a sub-plowzone midden deposit, three pits, and a hearth within a small area measuring 7 m in diameter. Artifactual debris was concentrated near the features, suggesting activity areas. A projectile point resembling Affinis Snyders or Lowe Flared Base, limestone tempered plain and cordmarked pottery, and a calibrated radiocarbon date of A.D. 79-397 (Table 5.26) suggest a Middle Woodland affiliation (Duerksen et al. 1994; Schock 1984).

The Panther Rock site (15Cl58) is located along an old terrace line of the Ohio River floodplain near the confluence with Four-Mile Creek. Most residential activities during the Early and Middle Woodland subperiods occurred along and downslope of the former terrace line. Site use during the Middle Woodland subperiod may have been associated with mounds reported on the nearby bluffs. Middle Woodland pit features were deep, flat-bottomed, steep-walled storage pits filled with secondary refuse. These pits tended to be much larger than the earlier Late Archaic-Early Woodland features documented at the site. They were patterned in four-five clusters, suggesting activity areas across the site. In addition to lithics, faunal, and floral remains, the pottery assemblage from Panther Rock is dominated by Adena Plain sherds, which represent at least four-five vessels. A complete, tetrapodal Connestee Cordmarked or Connestee Cord Impressed vessel was recovered from a Woodland pit feature (Stallings 2007; see also Chapter 4).

Early Middle Woodland deposits consisting of a 50 cm thick midden were documented at the Hayes site (15Cl67) (Hall 2005). This component yielded a calibrated radiocarbon date of A.D. 74-380 (Table 5.26). Ceramics recovered from the midden were primarily tempered with limestone, had plain exterior surfaces, and were relatively thick (8.5 mm). In general, these ceramics are similar to Falls Plain (Myers 1989). A small number of smoothed cordmarked limestone tempered sherds and two grit tempered sherds also were recovered. The latter were interpreted as representing trade items and were tentatively classified as McGraw Cordmarked (Prufer 1968), though similarities also were noted with the Kope and Miami Series (Hawkins 1996). Of interest was a concentration of ceramics that may represent a "pot drop." Three Lowe Flared Base projectile points were associated with this component (Hall 2005).

Subsistence activities at the Hayes site focused on the collection of nuts and wild fruits, such as grape and pin cherries, the cultivation of tobacco, goosefoot, and maygrass, (corn phytoliths were identified in residue associated with Falls Plain pottery) and the hunting of white-tailed deer. A secondary juvenile burial was documented within the Middle Woodland midden, but was not excavated. This individual was not interred in a formal burial pit. Nor were any grave goods associated with this subadult (Hall 2005). As at the earlier M. B. Green site in Boone County (see above), the Hayes site represents one of the few instances of Middle Woodland mortuary behavior not directly associated with a mound in the Northern Bluegrass Section.

Several late Middle Woodland and early Late Woodland sites have been excavated in the Northern Bluegrass Section. Of these, the Rogers Site Complex (15Be33-35), Cosmic Vista (15Be416), Site 15Be431, and Froman (15Cl51) have been assigned to the Newtown phase (Henderson 1995; Kreinbrink 1992; Ross-Stallings and Stallings 1996; Stallings and Ross-Stallings 1993). Other possible Newton sites are the Ogden-Moore Mound and Village Complex (15Be50-52), Big Bone Lick (15Be269), and Site 15On50 (Henderson 1995; Lowthert 1998; Miller and Duerksen 1995; Schock 1989a).

Newtown as a cultural unit was first used by Griffin (1956:187) in reference to cultural materials recovered from a Late Woodland component at the Turpin site in southwestern Ohio (Oehler 1973). Although Griffin did not use McKern's (1939) nomenclature in direct reference to Newtown, the unit came to be classified as a focus in the regional literature (Oehler 1973; Prufer 1964b; Reidhead and Limp 1974). It is now defined as a phase in the Willey and Phillips (1958) scheme. In addition to the Bluegrass Management Area, Newtown components have been documented in the Salt Creek, Upper Kentucky/Licking, and Big Sandy management areas (Ahler 1987; Brooks 1985; Burdin and Pollack 2006; Collins 1980; Hockensmith et al. 1998; O'Steen et al. 1991). Newtown phase assemblages in Kentucky have been dated from the late Middle to early Late Woodland subperiods, ca. A.D. 300-800 (Pollack and Henderson 2000).

The diagnostic artifact of the Newtown phase is Newtown series pottery, including plain, cordmarked, and check-stamped types. Typical Newtown vessels are collarless, limestone or grit tempered subconoidal or subglobular jars with angular shoulders and flattened lips. Angular shoulders are a critical defining character. Newtown phase assemblages often are associated with local and imported stamped and brushed pottery, including Newtown Check Stamped, Wright Check Stamped, Hopewell series, Chillicothe Rocker Stamped, Miami series, McGraw series, Turner Simple Stamped, Pickwick/Mann Complicated Stamped, and Connestee series (Ahler 1987; Brooks 1985; Collins 1980; Henderson and Pollack 1985; Hockensmith et al. 1998; Kreinbrink 1992; O'Steen et al. 1991).

Projectile points associated with Newtown phase assemblages are Lowe cluster (Lowe Flared Base, Steuben Expanding Stemmed, Chesser Notched, and Bakers Creek), Jacks Reef Pentagonal and Corner Notched, and large triangular types. Newtown assemblages also may include chert bladelets, limestone hoes, chert adzes, chipped stone pick-like objects, expanded-center polished stone bars, rectangular bone and slate gorgets, groundstone celts and manos, and large quantities of fire altered rock.

Floral and faunal remains associated with Newtown components indicate a generalized hunting-gathering-horticultural subsistence base. Sites with Newtown components can be nucleated communities, including circular villages with central plazas (Railey 1984) or smaller camps (Hockensmith et al. 1998). Nucleated villages in the Bluegrass have intrasite artifact patterns (e.g., spatially distinct artifact clusters and segregation in chert type usage) that may be indicative of kin groups or social divisions (Railey 1991b). Newtown structures are rectangular, oval, or circular in outline, and posts often are chinked with sandstone (Ahler 1987; Henderson and Pollack 1985). In general, Newtown sites in this section tend to be larger and were occupied for longer periods of time than earlier Woodland sites. Stone or earth-stone mounds are associated with some Newtown habitations (Pollack and Henderson 2000), such as the Rogers Site Complex.

Located on a glacial terrace of the Ohio River, the Rogers Site Complex consists of an earth and stone burial mound (15Be33), an “upper village” or a sheet midden north of the mound (15Be34), and a “lower village” or southerly sheet midden (15Be35). Calibrated radiocarbon dates from the lower village of 800-180 B.C. and A.D. 268-887 (Table 5.26) point to occupations during the Early Woodland subperiod and the Middle-Late Woodland boundary. The latter date is supported by diagnostic artifacts - including Newtown and Connestee series pottery; Lowe, Jacks Reef, and large triangular points; bladelets; and platform and elbow pipes - from all three sites that point to a primary late Middle Woodland-early Late Woodland component. Rogers is one of few sites in Kentucky where Newtown pottery was recovered from both domestic and mortuary contexts (Kreinbrink 1992).

The two sheet middens at the Rogers Site Complex each cover several hundred square meters (Kreinbrink 1992) and their spatial distinctions may provide evidence of moieties (Railey 1991b). Six large, deep pits with no apparent spatial patterning were found in the southern sheet midden, which was a habitation area associated with the mound. The northern sheet midden encompassed postmolds in four clusters around a large storage or cooking pit feature with a trough-like trench radiating out from it. At least one postmold cluster may represent a circular structure. Other features are one large and six small storage or cooking pit features (Kreinbrink 1992).

The mound at the Rogers Site Complex, which measured either 21.3 m in diameter or 15 x 20 m and had a height of only 1.2 m, was built of unstratified local sandy soil covered with limestone slabs and concretions. The mound contained 39 mortuary features (13 pits, nine stone box graves, and 17 unspecified), all but one of which were constructed at the same stratigraphic level in this “horizontal cemetery” (Kreinbrink 1992). Lateral “clustering of burials within the mound is suggestive of kin-related burial areas” (Kreinbrink 1992:94). Of the 43 individuals, most (n=34) are in-flesh extended inhumations, seven are secondary bundle burials, and two are secondary cremations. Over half (n=24) were adults, four were subadults, and 15 could not be aged. Sex was determined for 15 adults and included almost three-fourths males and one-fourth females (Kreinbrink 1992).

Grave goods were found with 18 individuals, especially the extended burials, and two individuals had a substantially larger number of items compared to the others. The most prevalent class of grave goods was modified and unmodified bone items, at least one of which was recovered with 16 individuals. One adult male in a stone box grave was buried with a Newtown Cordmarked bowl. Five bladelets were recovered from three burials, and one burial contained seven projectile points, including two Lowe Flared Base or Chesser Side Notched. Other notable grave goods are six slate gorget fragments, two sandstone elbow pipes (one from mound fill), one beaver platform pipe (found outside an empty stone box grave), and two mica sheets (Kreinbrink 1992).

Another example of an early Late Woodland open habitation with mounds is the Ogden-Moore Mound/Village Complex, which includes Boh Mound (15Be50), Ogden-Moore Village (15Be51), and Gregory Mound (15Be52). This complex differs in several ways from the Rogers site complex. For example, not all of the complex components are contemporaneous, with Late Woodland occupations documented at the village and Gregory Mound only. These occupations may be related to the Newtown phase. Boh Mound is middle Fort Ancient (Henderson 1995).

Other Newtown or possible Newtown open habitation sites without mounds are documented in Boone County. Two important open habitation sites, which were discovered during a survey in the Ohio River bottoms zone, may be parts of the same site. Newtown phase artifacts such as Newtown series ceramics were recovered from the Cosmic Vista site (15Be416) and Site 15Be431. Both sites are classified as hamlets (Henderson 1995). The Big Bone Lick site (15Be269) is located several meters above Big Bone Creek about “50 m southeast of an intact saline spring” (Miller and Duerksen 1995:138). Late Woodland occupations at this multicomponent site are represented by thin, limestone tempered cordmarked pottery and two Raccoon Notched points. Most chipped stone items were made of locally available glacial drift cobbles, with small percentages of Wyandotte and Vanport artifacts. Debitage from all stages of reduction are indicative of material conservation due to small core sizes (Miller and Duerksen 1995). It is possible that the Big Bone Lick site contains a Newtown component, but more work is needed to confirm this.

In northeastern Carroll County, extensive excavations were conducted at the Froman site (15Cl51), an open habitation on the Ohio River floodplain (Ross-Stallings and Stallings 1996; Stallings and Ross-Stallings 1993). A thin subsurface midden measuring 30 x 15 m was bordered to the south by a postmold cluster and associated pits and to the north by a single postmold and several pit features. Within the excavation area artifacts were concentrated in a semi-circular pattern, which may extend outside the project area. Newtown phase artifacts from Froman are Newtown series pottery, bladelets and patterned cores, and Copena Triangular, Chesser, Steuben, Bakers Creek, Lowe, Jacks Reef Corner Notched, and large triangular points (Ross-Stallings and Stallings 1996). Diagnostic artifacts and calibrated radiocarbon dates ranging from A.D. 436-682 to A.D. 560-772 (Table 5.26) indicate a Middle-Late Woodland affiliation. Though Newtown sherds were recovered from a pit with an associated calibrated date of A.D. 1023-1260 (Table 5.26), which represents the oldest absolute date for Newtown pottery in Kentucky, Ross-Stallings and Stallings (1996) questioned the reliability of this date. They also rejected the calibrated radiocarbon date of A.D. 1411-1632 (Table 5.26) obtained from a Newtown feature.

Early Late Woodland occupations at the Froman site involved long-term seasonal or year-round habitation by small groups of people who engaged in a limited range of activities, including manufacture of chipped stone tools and acquisition/processing of food resources such as starchy/oily seeds. Artifacts accumulated in the shallow midden deposit and were discarded in shallow trash pits. Site residents lived in small structures, as evidenced by an arc-shaped pattern of postmolds from a circular domicile. No internal posts or features were associated with the structure, but refuse and other pits may have been used by the occupants of this dwelling (Ross-Stallings and Stallings 1996; Stallings and Ross-Stallings 1993).

Also located in Carroll County, Site 15Cl44 is a multicomponent site with a terminal Late Woodland component. Postmolds, hearths, and a midden or diffused feature were documented at the open habitation. Diagnostic artifacts include a triangular point and limestone tempered pottery that is similar to terminal Woodland ceramics recovered from the Haag site in Indiana, the Grayson site (15Cr73) in Carter County (Lower Big Sandy Section), and the Woods site in West Virginia. Calibrated radiocarbon dates associated with the terminal Late Woodland deposits are A.D. 989-1261 and A.D. 1043-1221 (Table 5.26). Calibrated dates of A.D. 563-799 and A.D. 1327-1649 (Table 5.26) for the same stratum were considered unreliable (Doershuk et al. 1992).

Site 15On50 in Owen County is an open habitation with a stone mound measuring 6.1 m across and 0.3 m high. Though no artifacts were found at the mound, the association of a stone mound with a habitation area is suggestive of a late Middle Woodland to early Late Woodland temporal affiliation. No subsurface features or midden deposits were discovered during limited testing at the associated site (Schock 1989a).

Though not assigned to the Newtown phase, it is possible that the Chilton site (15Hy1) is a Newtown mortuary site. Located along Emily Run, a tributary of Drennon Creek, the Chilton site consisted of eight stone-covered crypts within an area of over 65,000 sq m. The mortuary features at Chilton may have been associated with a habitation site (Funkhouser and Webb 1937). The period of site use was not indicated, but two projectile points pictured in Funkhouser and Webb (1937) resemble late Middle Woodland-Late Woodland Lowe cluster types. Brooks (1985) suggested a Late Woodland temporal affiliation for the site.

Thirty of the 32 individuals interred at the Chilton site were adults, one was a child, and one was a fetus interred with an adult female. Of the adults, half were males and about one-fourth each were females and those for whom sex could not be determined. Pathologies observed in the Chilton burial population are vertebral osteophytosis associated with arthritis and a number of dental afflictions, including caries, abrasions, faulty occlusion, pyorrhea, impacted third molar, and retroverted incisor. Two adult males had projectile points lodged in their right os coxae; in one case, the trauma was judged sufficient enough to have been fatal (Funkhouser and Webb 1937).

The Chilton site provides information about Late Woodland crypt type, body placement, and grave goods. The site encompassed 23 pit features within eight stone-capped crypts or "units." The mortuary features were constructed by excavating clusters of parallel-oriented pits, placing one-three individuals in each pit, infilling the pits to the level of the hardpan, and covering the entire cluster of partially infilled pits with a rectangular pavement of limestone slabs one-three layers thick. Thirty-one of the 32 individuals interred at the Chilton site were in-flesh extended burials and one was flexed. Lithic items associated with human burials at Chilton are projectile points, galena, a sandstone elbow pipe, a greenstone celt, a celt fragment, a two-hole slate bar gorget, a bar gorget fragment, and a hammerstone. Other objects interred with the dead include cut wolf mandibles, strings of drilled elk tooth beads, a bone gorget, and two fragmentary concave copper disks that were identified as a perforated ear ornament (Funkhouser and Webb 1937).

The Ronald Watson Gravel site (15Be249) is the best-documented terminal Late Woodland site in the Northern Bluegrass Section. This small open habitation covered about 0.4 ha adjacent to the Ohio River on an alluvial terrace in western Boone County. Middle Woodland (cal A.D. 83-342 and cal A.D. 258-534) and Late Woodland (cal A.D. 655-864, cal A.D. 668-893, cal A.D. 692-961, and cal A.D. 785-1017) occupations (Table 5.26) were documented from midden deposits on the terrace near the river and from feature clusters concentrated along the midline of the terrace ridge to about 60 m from the terrace (Huebchen 2006; Trader 2003).

The significance of the Ronald Watson Gravel site stems from the materials recovered from midden contexts and 49 cultural features including postmolds, amorphous stains, rock concentrations, small to large shallow and deep basin-shaped pits, and bell-shaped pits. Projectile point types are Chesser Notched, Jacks Reef Pentagonal, and Hamilton Incurvate (Trader 2003). Faunal remains indicated year-round occupation with a focus on deer, supplemented with other mammals, birds, and fish. Floral remains, considered typical of a terminal Late Woodland occupation (Rossen 1994), reflected a heavy reliance on nut resources and use of native cultigens (goosefoot, maygrass, erect knotweed, and sunflower) and very low frequencies of corn and squash. Newtown series ceramics at the Ronald Watson Gravel site were mostly grit tempered and cordmarked with a few angular shoulders and flat-lipped rims. Some specimens, however, were tempered exclusively with shell and were interpreted as shell tempered Newtown ceramics (Trader 2003). As such, these are among the earliest dated shell tempered ceramics in the Ohio Valley (Seeman and Dancey 2000).

EASTERN BLUEGRASS SECTION

The 89 Woodland sites in the Eastern Bluegrass Section contain 106 Woodland components. Though no Woodland stone mounds, caves, isolated burials, or specialized activity sites are documented, a large percentage of the mound complexes in the Bluegrass Management Area are located in this section. As with other sections in the management area, in the Eastern Bluegrass large percentages of Woodland sites are earthen mounds and open habitations without mounds (Table 5.24). Early Woodland components outnumber Middle Woodland components in this section, and all chronometric determinations are Middle Woodland; very few Late Woodland components are recorded (tables 5.25 and 5.26). Important Woodland sites recorded in this section are located in Bath, Lewis, and Mason counties only (Table 5.29).

Table 5.29. Important Woodland Period Sites in the Eastern Bluegrass Section.

Site No.	Site Name	Site Type	Affiliation	References
15Bh15	Morgan Stone	mound	MW	Webb 1941b
15Bh37	Zilpo	open habitation	EW	Marquardt 1970; Rolingson and Rodeffer 1968
15Lw5	none	open habitation	MW-LW	Maslowski 1980; Turnbow 1981
15Lw301C	none	open habitation	MW, LW	Schock and Langford 1981
15Lw302A	none	open habitation	EW, MW, LW	Schock and Langford 1981
15Lw314C	none	open habitation	EW-MW, LW	Schock and Langford 1981
15Lw315A	none	open habitation	EW, MW, LW	Schock and Langford 1981
15Lw316A	none	open habitation	MW	Schock and Langford 1981
15Lw325E	none	open habitation	MW-LW	Schock and Langford 1981
15Lw353	none	open habitation	EW-MW	Schock and Langford 1981
15Ms27	Dover	mound	MW	Webb and Snow 1959
15Ms28	Pyles	open habitation with mounds	MW-LW	Collins 1980; Railey 1984
15Ms50	Gillespie	open habitation with mounds	MW-LW	Collins 1980; Railey 1984, 1985c
15Ms53	Mayslick	open habitation with mounds	MW-LW	Collins 1980; Railey 1984

The Zilpo site (15Bh37) is situated on a low terrace in Zilpo Bend of the Licking River. Covering an area of about 2.5 ha, Zilpo contained a low density of artifacts from plowzone and buried midden deposits and features (earth ovens and hearths). Diagnostic artifacts from Zilpo are Johnson Plain pottery and Cogswell and Cave Run (a.k.a. Saratoga) projectile points, which suggest an Early Woodland affiliation (Table 5.7) (Marquardt 1970; Rolingson and Rodeffer 1968). The Terminal Archaic-Early Woodland Cogswell Contracting Stemmed point type was defined based on specimens recovered from Zilpo (Rolingson and Rodeffer 1968:38). During the Early Woodland subperiod, Zilpo functioned as an intermittently occupied habitation. Site occupations were of short duration and involved a narrow range of activities, including chipped stone tool manufacture, hunting, hide processing, and food preparation (Rolingson and Rodeffer 1968).

Adena mortuary patterns in the Eastern Bluegrass are known primarily from two mounds, Morgan Stone (15Bh15) (Webb 1941b) and Dover (15Ms27) (Webb and Snow 1959). Located in Bath County, the Morgan Stone Mound was excavated by WPA crews in 1939. The 48.8 x 3.7 m earthen mound was situated on a prominent ridgetop near Flat Creek and Maux Branch, tributaries of the Licking River. Several projectile points illustrated in Webb (1941b) resemble Dickson cluster, Adena Stemmed, and Copena Triangular types. Ceramics recovered were predominately Adena Plain with some Montgomery Incised (Haag 1941; Webb 1941b). These diagnostics suggest a late Early to early Middle Woodland temporal placement for this site.

Fragmentary remains of a minimum of seven individuals were recovered from four mortuary features in Morgan Stone Mound. There is little demographic variability in the burial population, as all were aged between 20-26 years and six of the seven are female. Several pathologies and traumas were noted, including impacted molar, cribra orbitalia, periostitis, and osteomyletis. Several individuals exhibited occipital flattening (Snow 1941). Five of the seven individuals were extended in-flesh inhumations, one female of whom was partly cremated when the submound structure was destroyed; the remains of two individuals were fragmentary but may have been extended (Webb 1941b).

Webb (1941b) described mound construction, submound structure and features, crypt type, and grave goods at Morgan Stone Mound. Two strata of basket-loaded mound fill were piled over the scraped ground surface. The mound covered a circular, paired-post structure, upon which the now-famous scaled reconstruction of an Adena "house" was based. The outward-slanting structure lacked an apparent entryway but encompassed several interior features, including four large interior postmolds, small postmolds, thermal features, rock concentrations, and a pit. Mortuary features were an elaborate log platform on the submound surface within the structure, which was charred when the structure was burned, a bark-lined pit outside the structure footprint, and two log tombs within the mound fill (Webb 1941b).

The Morgan Stone Mound fill contained Adena Plain sherds, copper beads, a sandstone cupstone, granitic celts, an expanded-bar gorget fragment of unspecified material, worked galena, chert tools, and worked bone. Two of the four mortuary features contained grave goods. There were three or four conch columella beads in a triple-burial log tomb (Webb 1941b). The partly cremated female in the central log crypt was wrapped in textiles and cordage. The five weaving techniques identified reflect the variety of skill levels of the Woodland weavers: plain plaiting, twilled plaiting, plain twining, twilled twining (with five varieties), and chevron twining (Carey 1941). She was buried with *Marginella* beads, columella disk beads, a slate hoe, an expanded bar slate gorget in three pieces, and two complete pottery vessels (Webb 1941b). One vessel conforms to the Adena Plain type, while the other was classified as Montgomery Incised. Characteristics of Montgomery Incised are smoothed exterior surfaces with a series of nested diamonds deeply incised with a sharp tool on the vessel from base to rim. The typical vessel form is a large jar with a convex base and a slightly outflaring rim thickened by an applied clay strip (Haag 1941; O'Malley 1988). Montgomery Incised is a late Adena pottery type that dates to the early Middle Woodland subperiod.

Dover Mound (15Ms27) was located on a terrace of the Ohio River floodplain in Mason County in association with the Barrett site. The mound diameter ranged from 33.5-36.6 m and, though eroded, the height was about 6 m. Low places in the surrounding land surface may represent borrow pits, and abundant artifacts were discovered in the adjacent agricultural fields where shovel testing was conducted. This early-middle Adena mound yielded calibrated radiocarbon dates of 1258-393 B.C., 759 B.C.-A.D. 0, and 755 B.C.-A.D. 210 (Table 5.26). All of the dates have large standard deviations, which limit their utility, but the earliest date appears to predate construction of this mound (Webb and Snow 1959).

At least 60 individuals were interred in the Dover Mound. Of the 48 for whom sex and/or age could be determined, 40 are adults and eight are youths and children. Twenty-one of the 30 sexed adults are males, a large number of whom exhibited an unusual, broad, squared chin that, in some cases, appeared "bilateral." Eleven individuals from Dover Mound had evidence of pathologies, anomalies, or cultural modifications, including arthritis, bone fracture, dental afflictions, femoral bowing, and squatting facets. Though cranial deformation is a common Adena trait, it was extreme in the Dover Mound burial population and, in at least some cases, was intentional (Webb and Snow 1959).

Dover Mound was constructed in four major stages, and the fill of all except the lowermost stratum was largely devoid of artifacts. The lowermost zone included three circular fired areas, interpreted as loci of food preparation and consumption, and an unspecified number of possible postmolds in no apparent pattern. The second and third strata covered numerous mortuary features, completing the mound core. The outer mound mantle was deposited after a hiatus in mound use of one to several hundred years. The second, third, and upper zones of Dover Mound contained burials of distinct crypt form, mortuary treatment, and body placement. In total, of the 60 individuals buried in the mound, 37 were extended, 12 were cremated, one was partially flexed, and 10 were undetermined or not reported. The single and multiple interments were placed in 49 burial features: 20 bark-lined pits, 11 ochre-covered pits or surfaces, eight clay mounds, five log tombs, three puddled clay graves, one mat-lined pit, and one unspecified (Webb and Snow 1959).

About half (n=26-28) of the 55 Dover Mound burials contained grave goods. All but three contained the remains of adults; half of the adults were males and about one-quarter each were females and those for whom sex could not be determined. Grave goods, in decreasing order of ubiquity, included copper artifacts (e.g., bracelets, ring, and pendant), textile/leather fragments (e.g., mortuary mats), worked shell and animal bone (e.g., mussel and marine shell beads, and bone cylinders), mica crescents, chipped stone tools (e.g., mortuary blade), groundstone implements (e.g., expanded-bar gorget or atlatl weight), lumps of pigments, and wooden stave. No pottery artifacts were found in grave contexts, but untyped sherds were recovered from the lowermost stratum under the mound. Two of the projectile points illustrated in the site report resemble the Robbins type. Of particular note at Dover Mound was Burial 9, which contained an extended male aged 35-40 years overlain by a young female adult. The possible shaman was buried with mica cut-outs, modified mountain lion mandibles, copper items, points, and pigments (Webb and Snow 1959).

Turning to late Early-early Middle Woodland and Middle-Late Woodland nonmortuary sites, Schock and Langford (1980, 1981) documented several open habitations (sites 15Lw353, 15Lw316A, 15Lw301C, 15Lw314C, and 15Lw302A) in the Ohio River floodplain at the Carrs Power Plant in Lewis County. The frequency and diversity of features (e.g., house patterns, pits, hearths, and rock ovens) and artifacts (e.g., celts, points, bifaces, scrapers, lithic waste debris, and ceramics) excavated at these sites is suggestive of a large dispersed community of scattered households, or smaller noncontemporary hamlets or base camps. Other sites (15Lw325E and 15Lw315A) lacked structural remains but contained other Woodland features.

Site 15Lw353 is a small (30 x 40 m) multicomponent site located on a sand knoll upslope of the river terraces. A substantial Early-Middle Woodland domestic occupation was evidenced by a possible house floor with eight postmolds in a square or rectangular arrangement. No other features were associated with the postmolds. Of the Carrs Power Plant sites, Site 15Lw353 was the only one that yielded plant remains and a substantial sample of Woodland pottery. The former are exclusively walnut shells, some of which were burned. Ceramics represent at least 10-11 vessels that were tempered with grog, grit, or limestone and have cordmarked (one rim was thickened on the interior), smoothed-over cordmarked, or plain (some rims have scratched lips) exterior surfaces. Point types are Robbins and contracting stemmed forms. Other artifacts from Site 15Lw353 are difficult to separate by component: pigments, scrapers, bifaces, utilized flakes, cores, debitage, a nutting stone, and chert and greenstone celts (Schock and Langford 1980, 1981).

Site 15Lw316A is a large (100 x 220 m) mid-late Middle Woodland habitation situated on the fourth terrace. While few diagnostic Woodland artifacts (e.g., small triangular points) were found, the site contains two structures with associated calibrated radiocarbon dates of 348 B.C.-A.D. 240 and 349 B.C.-A.D. 1011, respectively (Table 5.26). The earlier structure was circular to elongate with a curved end. It measured about 6 m wide and may have been associated with two nearby features. The later structure was delineated by 17 postmolds, two of which were excavated, in a semi-circular pattern open to the north and spanning over 7 m. To the north was a cluster of seven postmolds (Schock and Langford 1980, 1981).

Measuring 80 x 330 m, Site 15Lw301C was located on the third floodplain terrace. A Hopewell-like cross-hatched rim and Copena and small triangular points indicate Middle Woodland and perhaps later components. Other items recovered from 15Lw301C are a mica sheet fragment, limestone tempered plain and cordmarked sherds, scrapers, bifaces, utilized flakes, cores, and debitage (Schock and Langford 1981). Analysis of data presented by the authors indicates a possible structure at the east end of 15Lw301C, the portion of the site most intensively occupied during the Middle Woodland subperiod. Four postmolds are suggestive of the corner of a square or rectangular structure of undetermined size. Another unexcavated feature is similar in diameter and alignment as the four postmolds. A large unexcavated feature was less than one m south of the postmold cluster. About 15-20 m southeast of the postmold cluster were three hearths, as well as a pit that yielded Hopewell-like cross-hatched rim sherds.

Site 15Lw314C measured 100 x 420 m and was located on the second floodplain terrace. Robbins and small triangular points and sand tempered pottery indicate Early-Middle Woodland and perhaps later components. The remains of three structures of uncertain age were found at Site 15Lw314C. Seven postmolds uncovered during initial fieldwork delineated a portion of a structure of unspecified size and shape. A parallel-stemmed point was found near the postmolds but not in direct association. A second structure found during Phase II investigations was delineated by an arc of nine postmolds opening to the south. An additional postmold was found south of the 3.75 m arc, which was classified as a windbreak or lean-to. The third structure was delineated by a semi-circle of seven unevenly spaced postmolds opening to the southeast. Measuring 2 m across, the structure was identified as another windbreak or lean-to. An undated hearth was found about 6 m to the east of this postmold pattern (Schock and Langford 1980, 1981).

Measuring 100 x 180 m in size, Site 15Lw302A was located near Site 15Lw316A on the fourth terrace. Diagnostic artifacts include contracting stemmed, Lowe cluster, and small triangular points, suggesting occupations potentially spanning the Woodland period. A cluster of features at Site 15Lw302A included five postmolds near three hearths and one rock scatter. Four of the postmolds formed an arc opening to the south and measuring 4.4 m across, and a fifth postmold was found to the south. Chipped stone items from 15Lw302A are scrapers, bifaces, utilized flakes, and debitage including a core. Groundstone items are a mano and a tubular sandstone bead (Schock and Langford 1981).

Site 15Lw325E was located on the fifth floodplain terrace and measured 40 x 200 m. Robbins and small triangular points, as well as a calibrated radiocarbon date of A.D. 85-604 (Table 5.26) from a feature with plain indeterminate temper ceramics, indicate late Middle Woodland and perhaps later components. Other artifacts recovered from Site 15Lw325E are bifaces and debitage (Schock and Langford 1981). Finally, one of the latest Woodland sites in the Carr Power Plant project area is 15Lw315A, which measured 150 x 350 m and was located on the fourth terrace. A calibrated radiocarbon date of A.D. 585-931 (Table 5.26) was obtained from a feature. Diagnostic artifacts are Robbins, expanding stemmed, and small triangular points. Other artifacts include bifaces and debitage. Several Woodland period hearths were among the many features found at the site, which also had a Late Archaic-Early Woodland component with an associated calibrated radiocarbon date of 1606-1013 B.C. (Table 5.26) (Schock and Langford 1981).

Elsewhere in Lewis County, Maslowski (1980) investigated Site 15Lw5, a buried Middle Woodland hamlet in the Ohio River floodplain. Ceramics tempered with limestone, limestone and quartzite, or siltstone were recovered from a large earth oven feature eroding from the river bank. With calibrated radiocarbon dates of A.D. 468-480 and A.D. 538-662 (Table 5.26) this feature is contemporaneous with Newtown sites (e.g., Pyles, Gillespie, and Mayslick) in the area, but how the materials recovered from this site compare to Newtown materials has yet to be determined (Maslowski 1980; Turnbow 1981).

Several Late Woodland open habitation sites with stone mounds in northeastern Kentucky have circular, donut-shaped domestic areas around interior open areas or “plazas.” These small (ca. 1.3 ha or less) sedentary settlements include Pyles (15Ms28), Gillespie (15Ms50), and Mayslick (15Ms53) in Mason County. Pyles and Gillespie provide evidence for a shift toward nucleated settlements from late Middle Woodland to Late Woodland times, a pattern suggested for other sections of the Bluegrass Management Area. The close proximity of the Pyles and Gillespie sites (1.5 km apart), coupled with the other Newtown settlements reported in this portion of Mason County, have led researchers to ask questions regarding the temporal relationships of these sites. These sites may reflect the shifting residential patterns of a single community, possibly due to exhaustion of local resources (Railey 1984).

In some regional syntheses the Late Woodland subperiod has become synonymous with circular settlement plans. However, there are as many noncircular habitation sites as circular-plaza habitation sites in northeastern Kentucky. Structural remains at the larger of the habitation sites were simple/temporary or lacking altogether; in the latter case, domestic loci are identified by artifact and feature clusters. Rockshelters were also the loci of Late Woodland habitations, albeit nonsedentary settlements.

One of the best documented donut-shaped habitation sites is Pyles (15Ms28). Situated on a ridgetop in the North Fork Licking River drainage, Pyles is a single component late Middle-early Late Woodland site that produced a Newtown phase assemblage. A calibrated radiocarbon date of A.D. 143-662 was obtained from this site (Table 5.26). Midden deposits covered a circular area about 150 m in diameter, with the interior 50 m area largely devoid of material remains but with high soil phosphate levels. There were no postmold patterns indicating structures at the site, but "domiciliary loci" were delineated based on dense artifact clusters where the incidence of sherds, burned rock, lithic hoes, nutting stones, daub, and phosphate were highly correlated. Stone mounds are located adjacent to the midden ring. Excavations along the outer periphery of the Pyles site midden did not reveal evidence of a stockade (Collins 1980; Railey 1984).

In addition to Newtown series pottery, especially cordmarked varieties, a small amount of Wright Check Stamped was recovered from this site (Henderson and Pollack 1985). Biface shaping was the primary lithic production activity during the Middle-Late Woodland occupation at Pyles. Most on-site knapping was done with locally available cherts, and exotics were imported in partly finished forms. Though the ceramic assemblage exhibited a similar distribution throughout the midden ring, spatial variation was noted in the distribution of flake debitage. Within the midden ring, nonlocal cherts from sources to the south (e.g., Haney, Paoli, and St. Louis) were recovered primarily from the south side of the site, while nonlocal cherts from northerly sources (e.g., Vanport) were found primarily on the north side. On the other hand, there were no loci of specialized chert-type usage evidenced in the nonflake debitage sample from Pyles (Collins 1980).

Pyles is one of few Woodland sites in the Eastern Bluegrass Section that yielded subsistence data. Deer was the most abundant animal species in the Late Woodland faunal assemblage from Pyles. Other species recovered from the midden were bear, groundhog, turkey, and box turtle (Railey 1984).

The Gillespie site (15Ms50) is located on a ridge crest along Mill Creek, a tributary of North Fork Licking River. This single component Woodland site yielded a Newtown phase assemblage (dominated by Newtown Cordmarked pottery) within a circular area measuring 30 m in diameter. The center portion of the site was relatively clean of artifacts. A stone mound reportedly is located adjacent to this site (Collins 1980; Railey 1984, 1985c). Like Gillespie, the Mayslick site (15Ms53) is situated on a ridge crest in the same drainage and yielded a single Late Woodland component with Newtown phase artifacts, including Newtown Cordmarked and small amounts of Newtown Plain pottery. Mayslick has a dark brown, circular midden and an associated mound (Collins 1980; Railey 1984).

There is little information available on terminal Late Woodland occupations in the Eastern Bluegrass Section. A possible terminal Late Woodland component was evidenced at Pyles by calibrated radiocarbon dates of A.D. 566-1456 and A.D. 669-1477 (Table 5.26) (Railey 1984).

UPPER KENTUCKY/LICKING (MANAGEMENT AREA 6)

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Rockshelters situated along the Cumberland Escarpment in eastern Kentucky were among the earliest sites investigated by archaeologists in Kentucky. Excavations at rockshelters in Lee (Funkhouser and Webb 1929), Menifee (Funkhouser and Webb 1930), Wolfe, and Powell (Webb and Funkhouser 1936) counties were conducted under the auspices of the University of Kentucky. Researchers excavated numerous sites along the North Fork of the Red River, such as Newt Kash Shelter, focusing on the recovery of normally perishable materials. Following the decade of University of Kentucky research in the Gorge between 1929 and 1939, however, little attention was paid to the archaeological resources in the Gorge until the 1960s.

Work resumed in the area during the 1960s in response to proposed reservoir projects such as Carr Fork, Cave Run, and Red River (Dorwin et al. 1970; Fryman 1967; Fryman et al. 1967a, 1967b; Marquardt 1970; Purrington 1966b, 1967; Rolingson and Rodeffer 1968). Surveys of these reservoirs documented a large of number Woodland sites. In the Red River Gorge area of Menifee, Powell, and Wolfe counties, the surveys continued into the 1970s in conjunction with the proposed Red River and North Fork Red River reservoir projects, neither of which was constructed. These studies resulted in the documentation and investigation of a large number of Woodland components - such as at Skidmore, Seldon Skidmore, Haystack Rockshelter, and Cloudsplitter Shelter - and generated important information on regional Woodland settlement/subsistence patterns (Cowan 1974, 1975, 1976, 1978, 1979a, 1979b, 1985; Cowan and Wilson 1977; Cowan et al. 198l).

Archaeological research during the 1970s and 1980s largely involved surveys completed in response to federal preservation laws. In particular, several surveys in the Daniel Boone National Forest produced important information on Woodland settlement patterns (Wyss and Wyss 1977). According to Cowan (1985:39), in the Red River Gorge "almost all of the work had been limited to reconnaissance; excavations had been limited to a total of about 33 m^2." However, documentation of site distributions proved to be important in developing site prediction and settlement pattern models. The work of Wyss and Wyss (1977), for example, resulted in the documentation of 117 sites and identification of spatial patterning in site locations. Sites with significant Woodland components include Cloudsplitter (15Mf36) (Cowan et al. 1981; Cowan 1985), Haystack Rockshelters (15Po47A-B), Rogers Rockshelters (15Po26-27) (Collins 1980; Cowan 1974, 1975, 1978, 1979a, 1979b, 1997), Site 15Cy24 (Bush 1988; Bush and Thomas 1986), and Hall Shelter (15Pe8) (Gatus 1981).

The pace of archaeological excavations in the Red River Gorge quickened in the 1980s and has remained steady to date, with projects pursued by both contract archaeologists and academic researchers. Open habitation sites investigated in this section include Short Fork (15Mg38) (Richmond et al. 2002), Rhondle Lee (15Po302) (Applegate 1998), and Little Spring Creek (15Cy166) (Boedy and Faulkner 2001).

Important rockshelters include Cherokee Arch (15Wo32) (Faulkner and Grench 2007; Grench et al. 2007), Rock Bridge (15Wo75) (Gremillion 1993a, 1996), Kay (15Br118) (Fiegel et al. 1992; McGraw et al. 1991), Cliff Palace Cave (15Ja41), Dark House (15Ja59) (Ison and Sharp 2004), Doty Creek #1 (15Lr60) (McGraw and Duffield 2002), Grouse (15Kt72) (Creasman et al. 1995), Enoch Fork (15Pe50) (Evans 1996), Carr Fork (15Kt15) (McGraw and Ericksen 1993), Cornett Woods (15Lr23) (Miday 1996), and Gays Creek (15Pe186) (Bradbury 2000). The O'Hare Site Complex (15Mf632) consists of an open habitation and adjacent rockshelter (Davis and Rossen 2000).

Extensive research on the origins of plant domestication and food production has been conducted at both rockshelter and open-air sites in this management area (Gremillion 1994, 2002; Ison 1991). Since the late 1980s, important Woodland subsistence data was acquired from several sites and from the reanalysis of museum collections, including Cold Oak Shelter (15Le50) (Gremillion 1993c, 1995a, 1998; Ison 1988; O'Steen et al. 1991), Newt Kash Hollow Shelter (15Mf1) (Gremillion 1995b, 1997b; O'Steen et al. 1991; Turnbow 1981), Hooton Hollow Shelter (15Mf10) (Gremillion 1995b), and Military Wall Rockshelter (15Po282) (Schlarb and Pollack 2002).

SITE DENSITY AND DISTRIBUTION PATTERNS

The 332 Woodland sites in the Upper Kentucky/Licking Management Area account for 11.4 percent of the Woodland sites in Kentucky. Site densities are low, with the densities of sites per sq km (0.024/sq km) and per acre surveyed (0.001/ac) being below the densities for the entire Commonwealth (Table 5.1).

In addition, there is a limited range of Woodland site types in the Upper Kentucky/Licking Management Area. Rockshelters (66.0 percent) and open habitations without mounds (31.6 percent) together account for 97.6 percent of the Woodland sites in this management area. Caves, isolated finds, open habitations with mounds, earth mounds, stone mounds, and specialized activity areas together account for 2.4 percent of the Woodland sites (Table 5.30). No Woodland period quarries, mound complexes, enclosures, cemeteries, isolated burials, or workshops are reported. Though a number of Woodland rockshelter sites in this management area contain rock art, no exclusively rock art sites are identified.

Woodland sites in the Gorge Section of the Upper Kentucky/Licking Management Area outnumber those in the Interior Mountains, which is probably due to both geological factors (with more rockshelters being located in the Gorge Section) and site survey biases. There are 193 sites (58 percent) in the Gorge Section and 139 sites (42 percent) in the Interior Mountains Section. Despite the larger number of sites, the Gorge Section has a limited number of Woodland site types, with only rockshelters, open habitations without mounds, caves, isolated finds, and other site types recorded (Table 5.30).

The 396 Woodland components at sites in this management area account for about 11 percent of the Woodland components in Kentucky. About 57 percent of the Upper Kentucky/Licking components are unassigned. Nearly equal percentages of Early

(19 percent) and Middle (17 percent) Woodland components are recorded. The percentage of Upper Kentucky/Licking site components dating to the Late Woodland (7 percent) is among the highest among all management areas (Table 5.2).

Table 5.30. Woodland Site Types by Section in the Upper Kentucky/Licking Management Area.

Site Type	Gorge	Interior Mountains	Total	Percent
Open Hab w/o Mounds	56	49	105	31.6
Open Hab w/ Mounds	0	1	1	0.3
Rockshelter	134	85	219	66.0
Cave	1	1	2	0.6
Earth Mound	0	1	1	0.3
Stone Mound	0	1	1	0.3
Specialized Activity	0	1	1	0.3
Isolated Find	2	0	2	0.6
Total	193	139	332	100.0
Percent	58.1	41.9	100.0	

About 59 percent of the Woodland components are recorded for sites in the Gorge Section, with 41 percent in the Interior Mountains Section. Early Woodland components comprise a larger proportion of the Woodland sites in the Gorge, while Middle Woodland components comprise the largest percentage of Interior Mountain Woodland period sites. There is a slightly larger proportion of Late Woodland components in the Gorge compared to the Interior Mountains (Table 5.31).

Table 5.31. Woodland Components by Section and Subperiod in the Upper Kentucky/Licking Management Area.

Subperiod	Gorge		Interior Mountains		Total	
Late Woodland	17	7.3%	9	5.5%	26	6.6%
Middle Woodland	34	14.6%	32	19.6%	66	16.7%
Early Woodland	50	21.5%	27	16.6%	77	19.4%
Unassigned	132	56.7%	95	58.3%	227	57.3%
Total	233	100.0%	163	100.0%	396	100.0%

CHRONOMETRIC DETERMINATIONS

Chronometric determinations for the Upper Kentucky/Licking Management Area are provided in Table 5.32. There are more dated sites in the Gorge Section than in the Interior Mountains Section. Overall, sites in this management area, especially Gorge rockshelters like Cold Oak (15Le50), produced one of the most extensive sets of absolute dates for the early Early Woodland subperiod in Kentucky. The chronometric determinations, however, span the entire Woodland period.

Table 5.32. Chronometric Dates for the Upper Kentucky/Licking Management Area.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
<u>**Gorge Section**</u>			
Little Sinking Cave (15Le9)			
Beta-10441	1780±140	83-81, 54 BC-A.D. 573	O'Steen et al. 1991
Cold Oak Shelter (15Le50) (see Chapter 4:Table 4.37)			
Beta-38435	2590±90	907-481, 468-415 BC	O'Steen et al. 1991
Beta-84751	2490±70	787-477, 473-414 BC	Gremillion 1998
Beta-55370	2470±90	791-402 BC	Gremillion 1998
Beta-22518	2470±60	767-411 BC	O'Steen et al. 1991
Beta-84753	2420±60	757-684, 669-397 BC	Gremillion 1998
Beta-84754	2230±60	401-163, 130-119 BC	Gremillion 1998
Beta-22519	2210±60	396-149, 140-112 BC	O'Steen et al. 1991
Beta-76309	2190±80	395-51 BC	Gremillion 1998
Beta-84752	2170±70	384-53 BC	Gremillion 1998
Beta-76307	2060±70	352-295, 229-220, 211 BC-AD 80	Gremillion 1998
Beta-76308	2060±60	345-322, 205 BC-AD 69	Gremillion 1998
Beta-76306	1910±50	20-12, 1 BC-AD 232	Gremillion 1998
Big Turtle (15Le55)			
Beta-10444	2260±120	753-685, 668-611, 597-39, 8 BC- AD 4	O'Steen et al. 1991
Pine Crest Shelter (15Le70) (see Chapter 4:Table 4.37)			
Beta-10444	3310±60	1739-1706, 1698-1487, 1484-1454 BC	Moore 2003; O'Steen et al. 1991
Beta-10443	2810±70	1192-1176, 1163-1143, 1132-814 BC	Moore 2003; O'Steen et al. 1991
Beta-22516	2390±70	766-369 BC	Moore 2003; O'Steen et al. 1991
Beta-22517	2140±80	383-17, 15 BC-AD 0	Moore 2003; O'Steen et al. 1991
Newt Kash Hollow Rockshelter (15Mf1) (see Chapter 4:Table 4.37)			
not reported	2650±300	1500-53 BC	Crane 1956
not reported	2600±300	1449-19, 13-1 BC	Crane 1956
Cloudsplitter Rockshelter (15Mf36) (see Chapter 4:Table 4.37)			
UCLA-2313A	2791±60	1114-1097, 1091-818 BC	Cowan et al. 1981
UCLA-2313F	2791±60	1114-1097, 1091-818 BC	Cowan et al. 1981
UCLA-2313C	2693±60	995-988, 980-785 BC	Cowan et al. 1981
UCLA-2340C	2513±80	799-477, 474-413 BC	Cowan et al. 1981
UCLA-2313D	2441±60	762-681, 672-403 BC	Cowan et al. 1981
Buck Creek Shelter (15Mf379)			
Beta-33100	3840±60	2469-2139 BC	Boedy and Sharp 1992
Beta-33101	2920±60	1308-970, 961-933 BC	Boedy and Sharp 1992
O'Hare Site Complex (15Mf632)			
Beta-143433	2500±70	792-479, 470-414 BC	Davis and Rossen 2000
Beta-143430	1790±60	AD 85-109, 117-387	Davis and Rossen 2000
Beta-143431	1540±70	AD 390-647	Davis and Rossen 2000
Beta-143429	1210±70	AD 670-906, 911-971	Davis and Rossen 2000
Beta-143432	230±100	AD 1476-1893, 1906-1953	Davis and Rossen 2000
Short Fork (15Mg38)			
Beta-164566	2370±100	775-347, 319-206 BC	Richmond et al. 2002
Beta-164565	1900±60	38-9, 4 BC-AD 242	Richmond et al. 2002
Rogers Rockshelter - Upper (15Po26)			
UGA-553	1485±55	AD 433-494, 505-653	Turnbow 1981
UGA-749	1345±60	AD 575-782, 789-811, 846-855	Turnbow 1981

Table 5.32. Continued.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
Rogers Rockshelter - Lower (15Po27)			
UGA-552	1470±65	AD 433-97, 502-661	Turnbow 1981
UGA-552	1415±60	AD 468-480, 534-716, 744-768	Turnbow 1981
UGA-750	1245±60	AD 659-895, 925-937	Turnbow 1981
Site 15Po160			
Beta-27770	1070 ± 70	AD 778-1051, 1082-1127, 1135-1152	Ison pers. comm. 1990
Site 15Po210			
Beta-51948	2430±70	764-679, 674-398 BC	Esarey and Evans 1992
Military Wall Rockshelter (15Po282) (see Chapter 4:Table 4.37)			
Beta-152834	5080±80	4041-4011, 4004-3696 BC	Schlarb and Pollack 2002
Beta-159713	3020±60	1419-1111, 1101-1083, 1064-1057 BC	Schlarb and Pollack 2002
Beta-152835	2270±60	483-466, 416-169 BC	Schlarb and Pollack 2002
Cherokee Arch Shelter (15Wo32)			
Beta-203284	2700±60	996-987, 980-790 BC	Grench et al. 2007:63
not available	not available	AD 80-250	Grench et al. 2007
Rock Bridge Rockshelter (15Wo75)			
Beta-33102	1380±50	AD 569-717, 743-768	Gremillion 1993a, 1996
Beta-55368	1310±60	AD 636-876	Gremillion 1993a, 1996
Beta-55369	1170±70	AD 687-992	Gremillion 1993a, 1996
<u>Interior Mountains Section</u>			
Kragon (15Br9) (see Chapter 7:Table 7.10)			
Beta-24807	2820±60	1189-1180, 1157-1145, 1130-830 BC	McIlhany 1991
Beta-24805	1430±50	AD 539-674	McIlhany 1991:41
Kay Shelter (15Br118)			
GX-16825	2970±130	1493-1475, 1461-894, 873-849 BC	Fiegel et al. 1992
Beta-40185	1430±50	AD 539-674	Fiegel et al. 1992
Site 15Cy24			
Beta-15422	2230±90	510-436, 425-42 BC	Bush and Thomas 1986
Alpha-2816	2100±180	150±180 BC (TL date)	Bush and Thomas 1986
Site 15Cy56			
Beta-15421	1180±70	AD 686-987	Bush and Thomas 1986
Beta-15422	1020±80	AD 784-786, 827-840, 864-1212	Bush and Thomas 1986
Cliff Palace Cave (15Ja41)			
UGa-3300	3000±75	1415-1020 BC	Ison and Sharp 2004
Dark House Shelter (15Ja59)			
Beta-126497	2760±60	1048-805 BC	Ison and Sharp 2004
Grouse Rockshelter (15Kt72)			
Beta-81936	2390±70	766-369 BC	Creasman et al. 1995
Doty Creek Shelter (15Lr60)			
Beta-148125	2370±80	766-353, 293-230, 218-213 BC	McGraw and Duffield 2002
Beta-148124	350±70	AD 1433-1790	McGraw and Duffield 2002
Enoch Fork Shelter (15Pe50) (see Chapter 3 and Chapter 4:Table 4.37)			
Beta-15423	2050±100	366 BC-AD 132	Bush 1988
Beta-27765	1980±70	172 BC-AD 143, 147-172, 193-210	Evans 1996
Beta-27764	1230±80	AD 658-906, 911-971	Evans 1996

GORGE SECTION

The Gorge Section has been the focus of much archaeological research, and rock-shelter sites with Woodland components are especially well known. The 193 Woodland sites recorded in this section contain 233 Woodland components. Site type diversity is low in the Gorge; many of the sites are rockshelters, followed by open habitations without mounds (Table 5.30). Early Woodland components outnumber Middle Woodland components, which significantly exceed Late Woodland components (Table 5.31).

The Gorge is one of few sections in Kentucky where substantial Woodland sites have been documented in every county (Table 5.33). (Morgan County sites in the Paintsville Reservoir vicinity are discussed in the Lower Big Sandy Section.) The distribution of known Woodland sites, however, is uneven with many sites clustered in the Red River drainage; this may be, in part, a function of the biased spatial foci of previous studies. Unfortunately, the chronological affiliations of a number of important sites are poorly understood, except to say they were occupied during the Woodland period. Webb, Funkhouser, and their colleagues investigated many of these sites before absolute dating and point and pottery typologies were developed.

Diagnostic Woodland artifacts from sites in the Gorge Section are mostly projectile points (Table 5.7). Early Woodland point types, such as Terminal Archaic Barbed, Early Woodland Stemmed, and Dickson cluster are ubiquitous within the Gorge Section. Copena is a Middle Woodland point type documented at Gorge sites. At later sites, Lowe cluster and small triangular types predominate. There have been few analyses of Woodland pottery in the Gorge Section, and most ceramics have yet to be assigned to specific types. Only one pottery series, Middle-Late Woodland Newtown, has been identified at Gorge Section sites.

The Cogswell phase is the earliest Woodland phase identified in the Gorge Section (see also Chapter 4). It is characterized by Cogswell, Wade, Buck Creek, Little Bear Creek, and/or McIntyre points; prevalence of Newman formation cherts, such as Haney and Paoli; small amounts of limestone tempered pottery; and hunting-gathering-gardening subsistence (Ison 1988; O'Steen et al. 1991). The Cogswell phase was defined by Ison (1988) based on assemblages from sites in the major drainages of this section, including Cold Oak and Cloudsplitter shelters, which are discussed below. Subsequently, Cogswell phase components have been identified at sites like Grayson in the Lower Big Sandy Section (Ledbetter and O'Steen 1992) and Zilpo in the Eastern Bluegrass Section (O'Steen et al. 1991. The Cogswell phase is considered a transitional Terminal Archaic-Early Woodland phase (ca. 1200-800 B.C.) (Ison 1988).

Though heavily impacted by looting, intact Woodland strata and features (e.g., storage pits, hearths, and postmolds) have been documented at the Cold Oak Shelter (15Le50) in the Sinking Caves Creek drainage of Lee County (Gremillion 1993c, 1995a, 1998; Ison 1988; O'Steen et al. 1991). The 18 calibrated radiocarbon dates from this site range from 1373-932 B.C. to 20 B.C.-A.D. 232 (Table 5.32; see also Chapter 4:Table 4.37). The most intense occupations occurred during the Early Woodland subperiod, but diagnostic projectile point (Cogswell, Wade, Adena, Jacks Reef Pentagonal, small

Table 5.33. Important Woodland Period Sites in the Gorge Section.

Site No.	Site Name	Site Type	Affiliation	References
15Es19	none	open habitation	EW	Ison and Boisvert 1981
15Le1	Red Eye Hollow	rockshelter	unassigned	Funkhouser and Webb 1929
15Le2	Little Ash Cave	rockshelter	unassigned	Funkhouser and Webb 1929
15Le3	Big Ash Cave	rockshelter	unassigned	Funkhouser and Webb 1929
15Le5	Buckner Hollow	rockshelter	unassigned	Funkhouser and Webb 1929
15Le9	Little Sinking	cave	MW	O'Steen et al. 1991
15Le31	Crystal Creek	rockshelter	unassigned	Turnbow 1981
15Le50	Cold Oak	rockshelter	EW	Gremillion 1993c, 1998; Ison 1988; O'Steen et al. 1991
15Le55	Big Turtle	rockshelter	EW-MW	O'Steen et al. 1991
15Le70	Pine Crest	rockshelter	EW, MW	O'Steen et al. 1991
15Mf1	Newt Kash Hollow	rockshelter	EW	Gremillion 1995b, 1997b; Jones 1936; O'Steen et al. 1991; Webb and Funkhouser 1936
15Mf10	Hooton Hollow	rockshelter	EW, MW, LW	Cowan 1978; Gremillion 1995b
15Mf36	Cloudsplitter	rockshelter	EW	Cowan et al. 1981
15Mf178	Stone Foot	rockshelter	EW	Coy et al. 1997
15Mf379	Buck Creek	rockshelter	EW	Boedy and Sharp 1992
15Mf632	O'Hare Site Complex	open habitation and rockshelter	EW, MW, LW	Davis and Rossen 2000
15Mg38	Short Fork	open habitation	EW, MW	Richmond et al. 2002
15Mo5	Big Mine Fork	rockshelter	MW, LW	Adovasio 1982
15Mo10	Burchett Flats	open habitation	EW	Adovasio 1982
15Mo13	Patoker	open habitation	EW	Adovasio 1982
15Mo28	Ray Hill	open habitation	EW, LW	Adovasio 1982
15Mo35	none	open habitation	MW, LW	Adovasio 1982
15Po1, 2	Steven DeHart	rockshelters	unassigned	Funkhouser and Webb 1930
15Po17	Seldon Skidmore	open habitation	EW	Cowan 1976
15Po26, 27	Rogers	rockshelters	LW	Cowan 1974, 1975, 1978, 1979a, 1979b
15Po31	Anderson	open habitation	MW	Cowan 1975, 1976
15Po47A, 47B	Haystack	rockshelters	LW	Cowan 1974, 1975, 1978, 1979a, 1979b
15Po160	none	rockshelter	LW	Ison pers. comm. 1990
15Po210	none	open habitation	EW	Esarey and Evans 1992
15Po282	Military Wall	rockshelter	EW	Schlarb and Pollack 2002
15Po302	Rhondle Lee	open habitation	EW, MW, LW	Applegate 1998
15Ro34	Deep Shelter	rockshelter	EW	Dorwin et al. 1970
15Wo1	Sampson Spencer	rockshelter	unassigned	Funkhouser and Webb 1930
15Wo2	Worth Creech	rockshelter	unassigned	Funkhouser and Webb 1930
15Wo6	George W. Spencer	rockshelter	unassigned	Funkhouser and Webb 1930
15Wo10, 11	Dillard Stamper	rockshelters	unassigned	Funkhouser and Webb 1930
15Wo14	Green Gentry	rockshelter	unassigned	Funkhouser and Webb 1930
15Wo32	Cherokee Arch	rockshelter	EW, MW	Faulkner and Grench 2007; Grench et al. 2007
15Wo75	Rock Bridge	rockshelter	LW	Applegate 1997; Gremillion 1993b, 1996

triangular) and pottery (Newtown series) types span the Woodland period. Chipped stone artifacts from Early Woodland contexts are gravers, bladelets, bifaces, a hoe, a hammer- stone, and debitage; groundstone items include a pin or plummet and a nutting stone. The site was used as a year-round base camp by a small group of people, perhaps an extended family. An increase in the number of features and ash deposits during the Early Woodland suggests a shift in occupational intensity at Cold Oak (Applegate 1997; Gremillion 1993c, 1995a, 1998; Ison 1988; O'Steen et al. 1991).

Cold Oak is best known for perishable artifacts (especially food remains) recovered from the dry Early Woodland deposits. Organic tools consist of a bone awl, an unidentified wooden tool fragment, a burned cane or wood basket fragment, S-twist cordage, and a leather fragment. Regarding subsistence remains, wild animal utilization focused on deer and bear, followed by box and mud turtles, turkey, ruffed grouse, hawk, squirrel, eastern cottontail, eastern woodrat, and mussels. The wild plant assemblage includes hickory and several other nut taxa, various grasses, and fleshy fruits. Cultivated plants representing incipient horticulture at Cold Oak are EAC species and cucurbits: sunflower, sumpweed, goosefoot, maygrass, knotweed, ragweed, amaranth, squash, and bottle gourd (Gremillion 1993c, 1995a, 1998; Ison 1988; O'Steen et al. 1991).

Excavations at Cloudsplitter (15Mf36) in the Red River drainage documented a complex occupational history with a substantial Early Woodland component marked by over 40 features in three clusters. The central cluster contained mostly thermal features like surface hearths plus several possible storage pits. The two clusters on either end of the shelter were characterized as extensive ash lenses with numerous features including postmolds from temporary structures (i.e., back-slanted screens or windbreaks) that provided shelter to perhaps nuclear family units. During the Early Woodland occupation, the site was used by a small group as a short-term extractive camp primarily during the fall. Calibrated radiocarbon dates for the Early Woodland component range from 1114-818 B.C. to 762-403 B.C. (Table 5.32) (Cowan 1985; Cowan et al. 1981).

As at Cold Oak, excavators recovered well-preserved plant materials from Early Woodland contexts at Cloudsplitter. Cultivated species in the macrobotanical sample, which increased in abundance compared to the Terminal Archaic subperiod, are sunflower, sumpweed, goosefoot, maygrass, erect knotweed, amaranth, squash, and gourd. Wild plant species are dominated by hickory and walnut, though other nut taxa and few grasses and fleshy fruits are represented. The Early Woodland faunal assemblage is dominated by deer/large mammals, turkey/large birds, turtles, and bear (Cowan 1985; Cowan et al. 1981; see also Chapter 4).

Other Cogswell phase or possible Cogswell phase sites have been documented in Rowan, Estill, Lee, Menifee, and Powell counties (see also Chapter 4). Deep Shelter (15Ro34) yielded Cogswell Contracting Stemmed and Cave Run Expanding Stemmed (a.k.a. Saratoga) projectile points from disturbed contexts, suggesting Terminal Archaic-Early Woodland occupations (Dorwin et al. 1970). Located on an erosional terrace of the Kentucky River, Site 15Es19 is an open habitation site with a surface midden stain that covers 3.1 ha. It yielded a high density of artifacts, including a Cogswell-like point and a limestone tempered sherd that suggest an Early Woodland occupation (Ison and Boisvert

1981). Calibrated radiocarbon dates for Pine Crest Shelter (15Le70) range from 1739-1454 B.C. to 383 B.C.-A.D. 0 (Table 5.32; Chapter 4:Table 4.37) (O'Steen et al. 1991). A calibrated radiocarbon date of 1308-933 B.C. was obtained from the Buck Creek Shelter (15Mf379) (Boedy and Sharp 1992) and a calibrated radiocarbon date of 764-398 B.C. was obtained from Site 15Po210 (Table 5.32) (Esarey and Evans 1992).

Other sites in the Gorge Section contain Early Woodland deposits and assemblages not classified as Cogswell. An extremely important site is Newt Kash Hollow (15Mf1) in the Beaver Creek drainage, which contained up to 1.2 m of cultural deposits, storage pits, postmolds, hominy holes, a burial, and vegetal beds (Webb and Funkhouser 1936). Diagnostic artifacts pictured in the site report suggest occupations spanning the Woodland period: grit tempered plain and cordmarked pottery, Delhi-Wade, Cresap, Robbins, Adena Stemmed, Motley, Steuben Expanded Stemmed, and Jack's Reef points. The most intensive occupations, however, occurred during the Terminal Archaic-Early Woodland subperiods. Calibrated radiocarbon dates associated with these materials range from 2134-1390 B.C. to 1449-1 B.C. (Table 5.32; Chapter 4:Table 4.37) (Gremillion 1995b; O'Steen et al. 1991; Smith and Cowan 1987; Turnbow 1981; see also Chapter 4). Besides subsistence, tool manufacturing, and habitation functions, Newt Kash was the site of mortuary activities. The poorly preserved remains of an infant were found under a thin layer of sediments between two boulders in the shelter (Webb and Funkhouser 1936).

Compared to other rockshelters of its size, Newt Kash yielded a smaller assemblage of inorganic artifacts. Chipped stone artifacts include scrapers, flint hoes and fragments, hammerstones, and celts. Celts, discoidals, gorget fragments, a whetstone, and a "lap-stone" with three depressions are among the groundstone items. Bone and shell tools are deer and turkey bone awls, worked antler, bone needles, shell spoons and pendants, and a deer molar tied with a bark cord. A rattlesnake rattle may have been used as an ornament, though it showed no evidence of modification. Excavators recovered a wooden cradleboard and digging sticks, as well as possible cane torch material (Webb and Funkhouser 1936). An incredible array of textiles and related items derived from Newt Kash Shelter, including coarse woven mats and carriers, fine foot gear and bags, and cordage of leather, paw paw, Indian hemp, milkweed, maygrass, rattlesnake master, and other plant species (Jones 1936; Webb and Funkhouser 1936). The temporal affiliations of the artifact assemblages are unclear, but given the occupational histories at other shelters in the vicinity and radiocarbon dates for the site, it is likely at least a portion were recovered from Woodland (especially Early Woodland) contexts.

Diverse wild plant resources likely utilized for subsistence by the Newt Kash Shelter occupants, such as various nuts, fleshy fruits, and tubers, indicate that a wide range of the available taxa were utilized. The faunal assemblage includes mammals of all sizes, terrapin, and mussels. Plant cultigens recovered from feature, midden, and/or paleofecal samples are sunflower, sumpweed, goosefoot, maygrass, giant ragweed, bottle gourd, fleshy squash, maize, and tobacco. Absolute dates for some of the cultigens place them in the late Terminal Archaic and early Early Woodland subperiods (Gremillion 1995; Jones 1936; Webb and Funkhouser 1936; see also Chapter 4). Jones (1936) also noted the likely nonsubsistence uses (e.g., medicine, ceremony, and tanning) of some plant taxa, such as compass plant, sumpweed, tobacco, and nut oils.

Little Ash Cave (15Le2) is a large shelter that contained up to 1.4 m of ashy deposits with fire or charcoal pits, burial features, and hominy holes (Funkhouser and Webb 1929). Grit tempered pottery and point types resembling Early Woodland Stemmed and Dickson clusters (including Adena Stemmed) suggest Early Woodland occupations. Funkhouser and Webb (1929) recovered from general excavation levels gorget and bannerstone fragments, a hoe, awls, a bone reamer, and worked mussel shells. Slippers, a woven bag, cordage, leather, and other textiles were found in pits and caches. Subsistence remains from Little Ash Cave are deer, elk, bear, water fowl, unidentified small birds, box turtle, fish, and mussel. The site also contained a dog burial and fragments of gourd rind. At least some of these artifacts may be associated with Woodland component(s) at Little Ash Cave. In addition to habitation activities, Little Ash Cave was used for mortuary purposes. Investigators discovered three-four individuals, including two in burial features, at Little Ash Cave. Only one individual, an older adult female, was interred with a small collection of undiagnostic grave goods (Funkhouser and Webb 1929).

Located along Crooked Creek at the confluence with Brushy Fork, Big Ash Cave (15Le3) contained 1.7 m of dry deposits with fire or charcoal pits and vegetal beds (Funkhouser and Webb 1929). In addition to a small assemblage of Woodland-like sherds, likely Early Woodland Stemmed cluster points were found. Funkhouser and Webb (1929) recovered a pestle, ax, whetstone, and gorget fragment among displaced human remains outside the dripline. Organic tools include awls, a net spacer, and a drilled bone. Faunal remains are mussel and turkey, the latter including five complete skeletons found on a boulder arranged in a row and covered with ash (Funkhouser and Webb 1929). At least some of the artifacts from Big Ash Cave may be associated with the Woodland component(s). The shelter was used for both habitation and mortuary functions.

William Haag excavated Hooton Hollow Shelter (15Mf10) but the field notes were borrowed and lost before a report was prepared. Chipped stone tools including points, pottery sherds, textiles, cordage, plant remains, and paleofeces were recovered from the site (Gremillion 1995). Gremillion (1995) reported calibrated Terminal Archaic radiocarbon dates of 1493-1212 B.C. and 1499-1212 B.C. (Table 5.32; Chapter 4:Table 4.37) obtained from paleofeces, but she noted that occupations spanned the Woodland and Fort Ancient periods with the most intensive site use during the Early Woodland. Sumpweed, goosefoot, and giant ragweed cultivars were recovered from Terminal Archaic paleofecal samples (Gremillion 1995).

Military Wall Rockshelter (15Po282) is a dry shelter with intact deposits dated to Archaic and Early Woodland periods. Like other shelters in the Gorge section, Military Wall Rockshelter contained interbedded ash deposits and it was used most intensively during the Late Archaic-Early Woodland periods. It also contained a large earthen oven. Calibrated radiocarbon dates of 1419-1057 B.C. and 483-169 B.C. were associated with the midden deposits and earth oven, respectively (Table 5.32; Chapter 4:Table 4.37). Early Woodland deposits yielded a wide range of wild and cultivated plants, indicating broad-spectrum subsistence. The site was used primarily as a locus for plant processing, including various nuts, fleshy fruits, and seeds. Cultivars are goosefoot, sunflower, marsh elder, and erect knotweed (Schlarb and Pollack 2002; see also Chapter 4).

Sampson Spencer Shelter (15Wo1) on Rock Bridge Creek in the Red River drainage contained damp deposits and habitation debris. The remains of an infant were found in an extended position between two rocks. Faunal specimens include deer, elk, bear, ground hog, turkey, and mussel (Funkhouser and Webb 1930). Terminal Archaic Barbed cluster points and grit tempered pottery pictured in the report suggest at least Early Woodland occupations.

Several Gorge Section sites with Early Woodland components also were occupied during subsequent Woodland subperiods. For instance, at Big Turtle Shelter (15Le55) an Early/Middle Woodland feature, which consisted of a stone-lined wall trench or base of a stone wall and an associated post, yielded a calibrated radiocarbon date of 753 B.C.-A.D. 4 (Table 5.32). An Adena-like projectile point and thick grit tempered sherds were assigned to the Early Woodland component. This shelter also had a Late Woodland component, as indicated by siltstone tempered cordmarked and sandstone tempered plain ceramics, Chesser Notched points, and a Madison/Levanna projectile point (O'Steen et al. 1991).

Substantial Woodland occupations were documented at Worth Creech Shelter (15Wo2), located on Mill Creek in the Red River drainage. These components were associated with stratified deposits of sand, clay, and vegetal beds that marked living floors (Funkhouser and Webb 1930). Projectile points pictured in the report resemble Terminal Archaic Barbed, Early Woodland Stemmed, and Lowe cluster types, and suggest occupations potentially spanning the Woodland period. Grit tempered pottery, including folded rims with vertical cordmarking or concentric fingernail impressions, probably date to the Woodland period. Funkhouser and Webb (1930) also recovered groundstone gorgets, bone awls and other modified bones, a shell spoon, cane matting, gourd fragments, and one mica specimen of unspecified form or function that may be associated with Woodland components at Worth Creech Shelter.

Located on Smoky Fork in the Kentucky River drainage, George W. Spencer Shelter (15Wo6) contained damp and dry deposits almost 1 m thick (Funkhouser and Webb 1930). Points resembling Terminal Archaic Barbed, Dickson, and Lowe cluster types suggest occupations potentially spanning the Woodland subperiods. Grit tempered pottery sherds recovered from the site also probably date to the Woodland period and include one sherd with a node or handle, one with incising, and some rims with squared lips. Funkhouser and Webb (1930) recovered a large sample of bone awls, as well as reamers and a shell spoon, from George W. Spencer Shelter. In addition to mussel shell, faunal remains included elk and deer, the former outnumbering the latter, an unusual pattern in Gorge shelters. The extended remains of a child, which were not associated with a formal grave feature or grave goods, were found near the back wall of this shelter (Funkhouser and Webb 1930).

Located near the confluence of Gladie Creek and North Fork Red River, Cherokee Arch Shelter (15Wo32) may be related to the Gladie Creek site complex. This shelter was occupied during the Early (cal 996-790 B.C.) and Middle (cal A.D. 80-250) Woodland subperiods (Table 5.32). An amorphous oxidized zone, an oval pit with faunal remains, an earth oven, and four hearths were spread throughout the shelter, and no postmolds suggestive of structures were found. Diagnostic artifacts from feature and nonfeature contexts include Motley, Robbins, Gary, Adena, and Lowe Flared Base points. Ceramics had plain or smoothed exterior surfaces and were tempered with grit (i.e., sandstone, limestone, and siltstone) and grog temper. Early and Middle Woodland occupations at Cherokee Arch Shelter were seasonal and short in duration. A limited range of activities, including chipped stone tool manufacture and food preparation, occurred at the shelter. Lithic production activities focused on late stage reduction, especially the manufacture of projectile points. Knappers used mostly locally available cherts (Faulkner and Grench 2007; Grench et al. 2007).

Middle Woodland deposits were documented at Little Sinking Cave (15Le9), based on a calibrated radiocarbon date of 83 B.C.-A.D. 573 (Table 5.32) (O'Steen et al. 1991). Also located in the Little Sinking Creek drainage, Buckner Hollow Rockshelter (15Le5) yielded coarsely tempered ceramics suggesting Woodland occupations. Leaf, grass, and moss sleeping features that contained textile fragments; twisted, plaited, and braided cordage fragments; and leather scraps, one of which was pierced with holes, were documented at this shelter. Several spear/arrow shafts, one of which held a side-notched chert point, also were found (Funkhouser and Webb 1929).

Red Eye Hollow Rockshelter (15Le1) is situated along an upstream tributary of Big Sinking Creek. Hominy holes, caches, plant-lined pits, and vegetal beds were found in the 0.8 m thick ashy deposits. There are no absolute dates for the shelter, but grit tempered cordmarked pottery was recovered and projectile points pictured in Funkhouser and Webb (1929) resemble Early-Middle Woodland forms: Terminal Archaic Barbed, Early Woodland Stemmed and/or Dickson cluster, and reworked Adena Stemmed. Groundstone artifacts from the shelter are a hammerstone, pestle, ax, whetstone, hoes, bannerstone fragment, and barite net sinker. Organic tools include bone awls, bone handle, worked deer antler, worked mussel shell, and wooden pestles. Unmodified rattlesnake master also was recovered. Animal species documented at Red Eye Hollow Rockshelter are deer, raccoon, ground hog, turkey, terrapin, and mussel. Nuts including hickory were found in lined storage pits and caches, and one textile bag was filled with 350 cc of shelled yellow oak acorns. The site also yielded fragments of gourd rind (Funkhouser and Webb 1929; Jones 1936). At least some of the artifacts may be associated with the Woodland component(s).

The remains of at least 14 individuals, some potentially interred during the Woodland period, were found in ash layers at various depths at Red Eye Hollow Shelter. Subadults slightly outnumbered adults, with 57 percent and 43 percent, respectively. Of the six adults, half were females and sex could not be determined for the other half. The subadults were mostly infants but also included children and an adolescent. No evidence of formal burial features was found, but if such features existed they would have been difficult to detect in the unconsolidated ash. Two individuals were found in small spaces between rocks, and rocks were placed over one of these individuals. Eleven (78 percent) individuals were found in proximity to the back wall, while the other three were within the main shelter area or at the dripline. Eight of the individuals were flexed in-flesh inhumations, while body placement could not be determined or was not reported for six individuals. Only three individuals were buried with grave goods, which included groundstone items, worked wood, and worked and unworked animal bone (Funkhouser and Webb 1929).

Steven DeHart Shelter No. 1 (15Po1) and No. 2 (15Po2) are a pair of adjacent, southwest-facing shelters along Middle Fork of Red River. Shelter No. 2 contained limited ash deposits and a hominy hole feature. The larger Shelter No. 1 contained over 90 cm of disturbed but dry stratified deposits of ash, clay, sand, and vegetal beds. One adult was interred as a bundle burial near the dripline; there was no clear burial feature and no grave goods. Near the back wall a child was interred without grave goods on a layer of pine bark (Funkhouser and Webb 1930).

A large assemblage of grit tempered pottery and points resembling Cresap and possibly Copena types suggest Early and/or Middle Woodland components at Steven DeHart Shelter No. 1. Funkhouser and Webb (1930) reported celts, whetstones, hoes, awls, turtle and mussel shell spoons, worked teeth and antler, and a cut bone handle from the site. Two moccasins of tanned deer or elk hide, which were manufactured by sewing precut portions with leather thongs or fiber cordage, also were recovered. Textiles and raw materials include bark, cordage fragments, and a folded/tied hank of four-ply linden bark cordage with feather quills; in addition, unworked rattlesnake master was found. Wild foods are deer, elk, bear, turkey, and nuts; maize cobs that unfortunately cannot be associated with specific stratigraphic contexts at this shelter (Funkhouser and Webb 1930). At least some of the artifacts may be associated with Woodland component(s) at Steven DeHart Shelter No. 1.

Located on Holly Creek in the Kentucky River drainage, Dillard Stamper Shelter No. 1 (15Wo10) is a large shelter with ashy deposits and hearth and burial features (Funkhouser and Webb 1930). Projectile points spanning a number of prehistoric periods were recovered from Dillard Stamper No. 1, with Early-Middle Woodland types resembling Terminal Archaic Barbed cluster, Dickson cluster, and possibly Copena. Domestic contexts at Dillard Stamper Shelter No. 1 produced nutting stones and hoes, antler and bone awls, bone reamers, and a geometrically engraved bone gorget (Funkhouser and Webb 1930), some of which may have derived from Woodland contexts.

Dillard Stamper Shelter No. 1 held the remains of six-seven individuals, some of whom may have been buried during the Woodland period. An infant was placed in an extended position near the back wall; no grave goods were associated with the infant, but one limestone rock was placed on top. One individual from an unspecified location was represented by disarticulated skeletal elements and probably was disturbed. Another four or five individuals were found in the center of the shelter. Two of these individuals were extended and vertically stacked one over the other. The partial secondary cremains of an adult male were found in a sand pocket within a pit feature. Adjacent to the pit was a cache of grave goods: polished antler tines, awls, beaver tooth, canine tarsus bones, and mussel shell. A small child was found near a hearth feature; the skull of the extended burial was covered with four box turtle carapaces. An isolated but articulated arm found near a turtle shell spoon may represent an additional individual (Funkhouser and Webb 1930).

A smaller shelter, Dillard Stamper Shelter No. 2 (15Wo11) contained about 46 cm of disturbed midden deposits without features (Funkhouser and Webb 1930). Early-Middle Woodland subperiod occupations are indicated by grit tempered pottery and possible Early Woodland Stemmed cluster and/or Snyders cluster point types. One poorly preserved extended burial was found without grave goods under the drip line of a rock ledge at Dillard Stamper Shelter No. 2 (Funkhouser and Webb 1930).

Green Gentry Shelter (15Wo14) is a southeast-facing shelter on Left Fork in the Kentucky River drainage that contained up to 1 m of mostly intact, stratified, midden deposits, ash lenses, and vegetal beds (Funkhouser and Webb 1930). Woodland diagnostics are projectile points that resemble Terminal Archaic Barbed cluster, Lowe cluster, and Levanna types. Other artifacts, at least some of which may be associated with Woodland components, reported by Funkhouser and Webb (1930) include pebble hoes, mussel shell spoons, single- and double-pointed awls, and drilled bone pins or fasteners. Green Gentry Shelter yielded deer, bear, turkey, and mussels. The fragmented and disarticulated remains of three individuals of unspecified sex/age, which likely represent secondary burials, were recovered from ash deposits at Green Gentry Shelter. There were no burial features or grave goods (Funkhouser and Webb 1930).

As outlined above, important Early and Middle Woodland Gorge Section sites are mostly rockshelters. One exception is the Short Fork site (15Mg38), an open habitation site located along Short Creek. It had intact deposits dated to the Early (cal 775-206 B.C.) and Middle (cal 38 B.C.-A.D. 242) Woodland subperiods (Table 5.32). Subsurface features indicate that chipped stone tool production and food acquisition/processing occurred at the site. Site occupations either were frequent and of short duration, or they were infrequent and of long duration. In other words, the Short Fork site may have been used by mobile groups as a transient camp, or it served as a seasonal base camp for a small group of more sedentary occupants. Diagnostic Early Woodland Stemmed cluster points and sandstone tempered Johnson Plain, *var. Unspecified*, as well as faunal and floral remains, were recovered from the Short Fork site (Richmond et al. 2002).

Another open habitation, the Rhondle Lee site (15Po302), is located on a terrace spur extending into the Red River floodplain. Boyle chert crops out immediately east of the site, which measures at least 85 x 165 m. Surface collections produced a large assemblage of lithic artifacts, including over 600 projectile points, many of which date to the Woodland period. Woodland point types are Buck Creek, Fulton Turkey Tail, Gary or Cogswell, Merom-Trimble, Saratoga, Late Archaic Stemmed cluster, Cresap, Kramer, Adena Stemmed, Little Bear Creek, Robbins, Motley, Snyder, Copena Triangular, Steuben, Bakers Creek, Chesser, Lowe, Jacks Reef, Raccoon, Madison, and Levanna. Woodland period occupants relied exclusively on immediately (Boyle) and locally (Paoli) available cherts for chipped stone tool production (Applegate 1998). Using mathematical formulas described by Thomas (1978), Applegate (1998) concluded that that half of the Late Archaic, two-fifths of the Early Woodland, and all of the Fort Ancient specimens were arrow points. Most of the Late Woodland specimens, however, were dart points.

There are few single component Middle Woodland sites in the Gorge Section. One such open habitation site is Anderson (15Po31), which contained cultural deposits up to 80 cm thick. Diagnostic artifacts, including a straight-stemmed (Robbins-like) point and sandstone and limestone tempered plain and cordmarked pottery, are suggestive of an early Middle Woodland temporal affiliation (Cowan 1975, 1976).

Haystack Rockshelters (15Po47A and 15Po47B) are a pair of stacked shelters overlooking an unnamed tributary of the North Fork of Red River. The smaller upper shelter (15Po47A) has damp sediments and is extensively disturbed. Limited excavation of the lower shelter (15Po47B) yielded a Newtown phase assemblage spanning the Middle and Late Woodland subperiods. Diagnostic artifacts include Newtown series pottery and Lowe Flared Base and small triangular points. Other chert items are bifaces, flake tools, and debitage including a core. Haystack Rockshelter Po47B produced black walnut and wild fruits, as well as goosefoot, maygrass, sumpweed, sunflower, squash, and gourd. This single component site was occupied during mid-late summer, through the fall, and possibly into the winter; it is possible the site was also used during the spring, though the evidence is weaker. Haystack Rockshelter Po47B likely was used by a small group of people, perhaps a nuclear or extended family, who engaged in collecting, tool manufacturing, and other activities (Collins 1980; Cowan 1974, 1975, 1978, 1979a, 1979b, 1997).

Several other rockshelter and open-air sites with Late Woodland components have been documented in the Gorge Section. Like Haystack Rockshelters, Rogers Shelters (15Po26 and 15Po27) are a pair of single component shelters in the Red River drainage that yielded Newtown phase assemblages. Most occupation debris, including lithics, pottery, and faunal-floral remains, obtained from the upper shelter (15Po26), while the lower shelter (15Po27) had mostly refuse. Rogers Rockshelters produced a large assemblage of EAC (e.g., sunflower, sumpweed, goosefoot, and maygrass) and cucurbit macrobotanical remains (Collins 1980; Cowan 1974, 1975, 1978, 1979a, 1979b). The assemblage of 1500 squash and gourd specimens represents "one of the largest and best-preserved populations of archaeological *Cucurbita* from the Midcontinent" (Cowan 1997:77). Cowan (1997) presented a detailed analysis of the smooth, lobed, and warty cucurbit varieties, comparing their morphology with specimens from Early Woodland sites in the Gorge Section. Both shelters were used on a seasonal basis over a span of about 250 years during the Late Woodland subperiod (Collins 1980; Cowan 1974, 1975, 1978, 1979a, 1979b), with five calibrated radiocarbon dates ranging from A.D. 433-653 to A.D. 659-937 (Table 5.32) (Turnbow 1981).

The single component Rock Bridge Rockshelter (15Wo75) is a damp shelter on Rock Bridge Fork in the North Fork of Red River drainage. The shelter is not easily accessible from below or above, perhaps explaining the relatively undisturbed nature of the site. Eighteen mostly amorphous and indistinct features were documented within the shallow deposits of the shelter. Calibrated radiocarbon dates ranging from A.D. 569-768 to A.D. 687-992 (Table 5.32) place occupations during the early-mid Late Woodland subperiod. The small number of features, absence of special activity areas except knapping loci, and the low diversity of artifacts suggest low intensity occupations involving hunting, plant collecting, and chert acquisition (Gremillion 1993a, 1996).

Newtown phase artifacts are Bakers Creek and Chesser points and Newtown Cordmarked and Newtown Plain sherds representing at least six vessels. Other tools recovered from the shelter include hammerstones, perforator, scrapers, spokeshave, knife, biface fragments, bone awls, and net or loom shuttle. The lithic production system is characterized by reliance on locally available Haney and Paoli cherts, importation of blanks and performs for on-site reduction, intentional thermal alteration of cherts, and emphasis on late stages of tool manufacture and maintenance. White-tailed deer, black bear, turkey, eastern box turtle, snapping turtle, cooter/slider turtle, mussel, hickory, walnut, hazelnut, acorn, chestnut, purslane, blackberry or dewberry, and an unspecified legume were identified in the archaeobotanical sample. Cultigens from Rock Bridge Shelter include goosefoot and cucurbit (Applegate 1996; Gremillion 1993a, 1996).

The O'Hare Site Complex (15Mf632) consists of an open-air habitation locality and a rockshelter. Cultural features at the former include several associated with Early and Late Woodland components. A calibrated radiocarbon date of 792-414 B.C. was obtained from an Early Woodland feature (Table 5.32). The Late Woodland component was more intense and had associated calibrated radiocarbon dates ranging from A.D. 390-647 to A.D. 670-971 (Table 5.32). A Middle Woodland component is indicated by a calibrated radiocarbon date of A.D. 85-387 (Table 5.32). Excavations produced lithics and botanical remains, the latter including hickory and other nuts, blackberry, raspberry, and huckleberry (Davis and Rossen 2000). Another site in the Gorge Section with a dated Late Woodland component is 15Po160, which yielded a calibrated radiocarbon date of A.D. 778-1152 (Table 5.32) (Cecil Ison, personal communication 1990).

INTERIOR MOUNTAINS SECTION

The 139 Woodland sites documented in the Interior Mountains Section contain 163 Woodland components. Archaeological research conducted since the mid-1980s has greatly expanded our knowledge of Woodland period lifeways in this section, though much more is known about Woodland occupations in rockshelters than at open habitation sites. A greater variety of Woodland site types have been recorded in the Interior Mountains Section than in the Gorge Section (Table 5.30), and Middle Woodland components outnumber Early Woodland components in this section (Table 5.31). Significant sites with intact deposits and features are summarized in Table 5.34; all counties in the Interior Mountains section are represented except Leslie and Rockcastle. Few single component Woodland sites have been reported.

Some of the earliest Woodland sites in the Interior Mountains Section have Cogswell phase assemblages. One well-documented example is Kay Shelter (15Br118), a south-facing rockshelter overlooking Kay Fork, a tributary of North Fork of Kentucky River. Excavation of six of the 84 m^2 of usable space in this damp shelter documented intact stratified deposits and features representing multiple components, with the transitional Archaic-Woodland occupation dated to cal 1493-849 B.C. and the Middle-Late Woodland component dated to cal A.D. 539-674 (Table 5.32). Wild plant and animal remains - including hickory, walnut, deer, birds, and mussel - indicate heavy reliance on resources from upper slope and ridgetop zones, supplemented by lower slope resources, during the Woodland occupations (Fiegel et al. 1992; McGraw et al. 1991).

A Cogswell phase burial was documented at Kay Shelter, providing information about Terminal Archaic-Early Woodland crypt types, body placement, and grave goods. The burial was encountered in the back-central portion of the shelter at a depth of 30 cm below datum. The simple pit contained the flexed remains of an 18-19 year old male who had been covered with small rocks. Grave goods consisted of Cogswell and Buck Creek points and other chipped stone tools, pitted stones, shell beads, mussel shell fragments (one with ochre staining), and unmodified deer and box turtle bones (Fiegel et al. 1992). Fiegel et al. (1992) argued that an unspecified copper object in the burial is among the earliest evidence of long-distance trade in eastern Kentucky.

Table 5.34. Important Woodland Period Sites in the Interior Mountains Section.

Site No.	Site Name	Site Type	Affiliation	References
15Br118	Kay Shelter	rockshelter	EW, MW, LW	McGraw et al. 1991; Fiegel et al. 1992
15Cy24	none	rockshelter	EW, MW, LW	Bush 1988; Bush and Thomas 1986
15Cy55	none	rockshelter	LW	Bush and Thomas 1986
15Cy56	none	rockshelter	LW	Bush and Thomas 1986
15Cy59	none	rockshelter	MW, LW	Bush and Thomas 1986
15Cy166	Little Spring Creek	open habitation	MW, LW	Boedy and Faulkner 2001
15Ja6	none	rockshelter	MW	Fryman et al. 1967a
15Ja41	Cliff Palace Cave	rockshelter	EW	Ison and Sharp 2004
15Ja59	Dark House	rockshelter	EW	Ison and Sharp 2004
15Ja355	Peter Cave Branch	rockshelter	LW	Coy et al. 1997
15Kt1	Craft	rockshelter	EW, LW	Purrington 1967
15Kt15	Carr Fork	rockshelter	MW, LW	McGraw & Ericksen 1993
15Kt72	Grouse	rockshelter	EW, MW	Creasman et al. 1995
15Lr6	none	rockshelter	MW	Fryman et al. 1967b
15Lr23	Cornett Woods	rockshelter	MW-LW	Miday 1996
15Lr60	Doty Creek	rockshelter	EW, LW	McGraw and Duffield 2002
15Ow100	Hawk View	rockshelter	unassigned	Boedy and Faulkner 2001
15Pe8	Hall Shelter	rockshelter	EW, LW	Gatus 1981
15Pe50	Enoch Fork	rockshelter	EW, MW	Bush 1988; Evans 1996
15Pe186	Gays Creek	rockshelter	LW	Bradbury 2000

Almost half of the lithics and seven of the eight nonmortuary features at Kay Shelter originated in the Middle-Late Woodland level. Diagnostic artifacts consisted of Chesser, Hamilton Incurvate, and Madison points, as well as a small number of limestone tempered sherds with unspecified surface treatment. Kay Shelter likely was a short-term seasonal (early spring and early fall) camp during the Middle-Late Woodland occupation (Fiegel et al. 1992; McGraw et al. 1991).

Two important early Early Woodland sites are among a number of rockshelters ringing the bluffline of Keener Point in Jackson County, where Cliff Palace Pond is located. Cliff Palace Cave (15Ja41) is a multicomponent site with a substantial Terminal Archaic-Early Woodland occupation. This component, which was associated with seven hearths, one postmold, and petroglyphs, yielded a calibrated radiocarbon date of 1415-1020 B.C. (Table 5.32). Dark House Shelter (15Ja59) contained intact midden deposits spanning the Woodland period. Charcoal from the base of the midden yielded a calibrated radiocarbon date of 1048-805 B.C. (Table 5.32). It was at this time that the most intensive use of the shelter began (Ison and Sharp 2004).

The Kragon site (15Br9) is located in the bottoms along North Fork of Kentucky River in Breathitt County. This multicomponent habitation site yielded a small number of Early Woodland period stemmed points and a calibrated radiocarbon determination of

1189-830 B.C. (Table 5.32). While a calibrated date of A.D. 539-674 from a large pit feature is suggestive of a Middle-Late Woodland component at this site, based on its association with Fort Ancient shell tempered ceramics and beans, McIlhany (1991:54) questioned the reliability of this date (see Chapter 7).

Located on a bench overlooking Doty Creek, Doty Creek #1 Rockshelter (15Lr60) is a multicomponent site with Early Woodland and Late Woodland components. Limited excavations documented the presence of midden and cultural features, including one feature that yielded a calibrated radiocarbon date of 766-213 B.C. (Table 5.32). A Wade projectile point recovered the midden may be associated with this component. A second feature contained limestone tempered cordmarked ceramics. Though this feature yielded a late Fort Ancient radiocarbon date (Table 5.32), the ceramics were classified as Late Woodland. Single Levanna and Madison specimens were the only other diagnostics recovered from this shelter. Wild plant species recovered from Woodland contexts are nuts (hickory, black walnut), bulrush, and fleshy fruits (raspberry or bramble). Cultigens include goosefoot and maygrass (McGraw and Duffield 2002).

Four rockshelters in the Interior Mountains Section contained substantial Early and Middle Woodland components. Situated near the head of Dykes Branch, a tributary of the North Fork of Kentucky River, Hall Shelter (15Pe8) was the focus of hunting, gathering, and tool maintenance activities throughout the Woodland period, especially between ca. 500 B.C. and A.D. 800. Adena-like, Madison, and contracting stemmed points were recovered. The diverse assemblage of Woodland pottery from this site includes sherds tentatively identified as Wright or Turner Check Stamped; Candy Creek Cordmarked, Hamilton Creek Cordmarked, Watson Cordmarked, Flint River Cordmarked, Radford Cordmarked, or Rough River Cordmarked; Watson or Adena Plain; Levissa Cordmarked; Half Moon Cordmarked; and Lee Plain. Participation in extraregional exchange networks during the Woodland period is evidenced by steatite fragments recovered from this site. This interaction probably first developed in the Late Archaic subperiod or around the Archaic-Woodland transition (Gatus 1981).

Grouse Shelter (15Kt72) in Knott County was occupied during the Early-Middle Woodland subperiods. Though disturbed, the shelter yielded lithics, pottery, and plant remains. Ceramics were tempered primarily with siltstone and had plain or check stamped exterior surfaces. One smoothed over cordmarked siltstone tempered sherd and one check stamped sherd tempered with a combination of siltstone and sandstone also were recovered from this site. Botanical remains consisted primarily of nutshell. Most of the faunal remains had been burned and could not be classified. The calibrated radiocarbon date of 766-369 B.C. (Table 5.32) obtained from the site is suggestive of an Early Woodland component, but the ceramics are more indicative of a Middle Woodland component (Creasman et al. 1995).

Located on a tributary of Big Johns Creek in the Goose Creek drainage, Site 15Cy24 is a dry, multicomponent rockshelter with Early-Middle Woodland, Middle-Late Woodland, and Late Woodland-Late Prehistoric strata. The former yielded a calibrated radiocarbon date of 510-42 B.C. and a thermoluminescence date of 150±180 B.C. (Table 5.32). Point types are stemmed and side-notched expanding stemmed forms. Most sherds are tempered with limestone, sandstone, or grit and have plain or cordmarked exterior surfaces, though one Middle-Late Woodland check stamped sherd was recovered (Bush 1988; Bush and Thomas 1986).

Enoch Fork Shelter (15Pe50) is located on an unnamed tributary of Enoch Fork in the Kentucky River drainage (see also chapters 3 and 4). Two strata produced Woodland artifacts and features, the older of the two representing the more intense episode of occupation. The Early-Middle Woodland stratum had associated calibrated radiocarbon dates of 366 B.C.-A.D. 132 and 172 B.C.-A.D. 210 (Table 5.32) and yielded Cogswell points and sandstone tempered sherds. Poor-quality, locally available cherts were acquired as part of an embedded procurement strategy (Evans 1996). Late Woodland contexts at Enoch Fork Shelter have an associated calibrated radiocarbon date of A.D. 658-971 (Table 5.32) and yielded grit, limestone, siltstone, or sandstone tempered sherds (Bush 1988; Evans 1996).

Several other sites in this section contain Middle or Late Woodland components. For example, the Little Spring Creek site (15Cy166) is an open habitation site situated on a saddle ridge. Though the site was primarily utilized during the Early and Middle Archaic subperiods (see Chapter 4), a Middle-Late Woodland occupation at this site is associated with a thermal feature, a Chesser Notched projectile point, and siltstone tempered cordmarked ceramics (Boedy and Faulkner 2001).

Site 15Cy56 was used throughout the Woodland period based on diagnostic artifacts including an Adena Stemmed, a Snyder-like, and three small triangular points. The most intensive occupation occurred during the Late Woodland subperiod, which is associated with calibrated radiocarbon dates of A.D. 686-987 and A.D. 784-1212 (Table 5.32). In addition to subsurface features, a small assemblage of limestone tempered plain, grit tempered plain, and grit tempered "roughened" ceramics was recovered from Late Woodland contexts at this rockshelter (Bush and Thomas 1986).

Carr Fork Rockshelter (15Kt15), located in the Carr Fork drainage in southern Knott County, may have been occupied during the Middle Woodland subperiod based on the presence of siltstone tempered cordmarked ceramics and mica. Seasonal occupations from late June through January are indicated by raspberries, which can be eaten fresh from late June to September, jimson weed, which also is available from June through September, and nuts, which are available in the fall (McGraw and Ericksen 1993).

Intact late Middle to early Late Woodland deposits and features representing intensive occupations were documented at Cornett Woods Rockshelter (15Lr23), which is located along an unnamed tributary of the North Fork of Kentucky River. In addition to a single Wright Check Stamped sherd, limestone, sandstone, and siltstone tempered plain and cordmarked sherds were recovered from this site. Other artifacts include one Madison point, bifaces, unifaces, and marginally modified flakes. Flotation of fill from two features produced considerable evidence of late spring-early summer subsistence. Wild plants are hickory, walnut, butternut, grape, and sumac. One feature classified as a maygrass storage pit contained almost 2700 achenes. Other cultigens are amaranth, cucurbit, and maize. Sticky catchfly and pokeweed likely represent medicinal or nonfood items. Most of the faunal remains had been burned, and slightly more than eighty percent were classified as mammal. The remainder consisted of birds and amphibians (Miday 1996).

Excavation of 17 m^2 at Gays Creek Shelter (15Pe186) produced a small assemblage of artifacts, including a single small triangular point indicating a Late Woodland-Fort Ancient component. No midden deposits or cultural features were documented at this site. Occupations were short-term and ephemeral, and the shelter was reused repeatedly for a limited range of activities, including core reduction, tool production, expedient tool use, tool maintenance and refurbishing, and hunting (Bradbury 2000).

One of four confirmed Woodland rock art sites in Kentucky is Peter Cave Branch (15Ja355), a rockshelter that yielded Late Woodland diagnostics. On the rear wall of the shelter is a panel of petroglyphs, including two human feet, one bear track, eight bird tracks, three mink or squirrel tracks, and numerous abrading marks (Coy et al. 1997).

Excavation of Hawk View Shelter (15Ow100) in Owsley County documented the presence of intact Woodland and Archaic components (see Chapter 4). During the Woodland period the shelter was used as a temporary camp for hunting and butchering animals. Lithic production activities involved late-stage reduction and rejuvenation of expedient flake tools using low-quality, locally available cherts (Boedy and Faulkner 2001).

BIG SANDY (MANAGEMENT AREA 7)

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

In this management area, the earliest archaeological studies focused on the earthworks clustered on the floodplain of the Ohio River south of Portsmouth, Ohio, which were mapped in the early to mid-1800s (Squier and Davis 1848). Gerard Fowke (1928) conducted excavations in this area in the 1920s. He noted discrepancies in Squier and Davis's map of the Old Fort Earthworks (15Gp1) and excavated a portion of this site, as well as the nearby Bentley site (15Gp15) and Stephenson Mound (15Lw139).

During the WPA era, excavations were carried out by the University of Kentucky at several Woodland sites in the Portsmouth area, including the Old Fort Earthworks, the Jim King Mound (15Gp7), Biggs (15Gp8), Bentley, and Mays Mound (15Gp16) (Milner and Smith 1986). The results of these investigations were not published, however, until Hardesty's (1964) article on the Biggs site, Henderson and Pollack's (1985) article on the Middle/Late Woodland component at Bentley, and Henderson et al.'s (1988) article on the Old Fort Earthworks. An influential project conducted by the University of Kentucky under the auspices of the WPA involved excavations of the C and O Mounds (15Jo2 and 15Jo9) in the Paint Creek drainage (Webb et al. 1942).

As with most areas of the state, few archaeological investigations were undertaken in this management area from the early 1940s to the mid 1960s. Since the mid 1960s, most archaeological studies were conducted prior to the development of proposed reservoirs or highway projects. The University of Kentucky conducted investigations in the Fishtrap Reservoir during the 1960s (Dunnell 1966a), and Dunnell (1972) prepared a monograph on the prehistory of the region. Work in the Paintsville Reservoir by the University of Kentucky and the University of Pittsburgh during the 1970s and 1980s produced important data on the Woodland occupations of this area, especially at sites like Dameron (15Jo23A) and Sparks (15Jo19) rockshelters (Vento et al. 1980). [Note: Although half of the Paintsville Reservoir lies within the Gorge Section of the Upper Kentucky/Licking Management Area, the entire reservoir area is covered here since it is part of the Big Sandy River drainage.]

Other cultural resource management projects contributed to the Woodland database, including excavations at Blanton (15Jo32) (Adovasio 1982), Brisbin Mound (15Bd311A) (Aument 1985; Dowell 1979a; Schock and Foster 1976), Viney Branch Mound (15Bd306) (Aument 1985), Stone Serpent Mound (15Bd316) (Brisbin 1976; Sanders 1988), Hansen (15Gp14) (Ahler 1987, 1988), Calloway (15Mt8) (Niquette 1985; Niquette and Boedy 1986), and Grayson (15Cr73) (Kerr and Niquette 1989; Ledbetter et al. 1991; Ledbetter and O'Steen 1992). Excavations at other open-air and rockshelter sites in the Little Sandy drainage near Grayson yielded Woodland materials: Site 15Cr61, Site 15Cr64 (Stallings et al. 1995), and Site 15Cr74 (Kerr and Niquette 1989). Another pair of important Woodland sites in Carter County are Carroll Shelter (15Cr57) and Site 15Cr58 (Ison and Ison 1985). Several rockshelters with Woodland period components, including Two Sandal (15Cr173) (Gremillion et al. 2000a) and Conley-Greene (15El4) (Railey

1991a), were investigated in the upstream portions of the Tygarts Creek drainage in Carter and Elliott counties.

A survey of the Yatesville Reservoir in Lawrence County documented a number of sites with Woodland components (Niquette and Donham 1985; Niquette et al. 1987). Among the most important are Dow Cook (15La4) (Niquette et al. 1987; Niquette et al. 1989; Niquette and Kerr 1989) and Graham (15La222) (Niquette et al. 1987, Niquette et al. 1989). Investigation of the Wiley Creek site (15Jo74) located to the south of Dow Cook produced considerable evidence about Middle-Late Woodland settlement and subsistence (Burdin and Pollack 2006).

Excavations conducted at Woodland sites like Prime Farmland (15Fd78) (Richmond et al. 2002) and Martin Justice (15Pi92) (Kerr et al. 1995; Kerr and Creasman 1998) are among the most significant investigations in the Upper Big Sandy Section since the Fishtrap project. In addition, the Pine Fork site (15Fd47) provided evidence of Late Woodland settlement and material culture (Edging et al. 1988; McGowan 1988).

SITE DENSITY AND DISTRIBUTION PATTERNS

The 177 Woodland sites in the Big Sandy Management Area account for 6 percent of the Woodland sites in Kentucky, the lowest percentage among the management areas. Further, the densities of sites per sq km and per acre surveyed are low for the management area, both falling below the densities for the entire Commonwealth (Table 5.1). Site types include open habitations without mounds (70.6 percent), rockshelters (16.9 percent), earth mounds (4.0 percent), and open habitations with mounds, isolated burials, stone mounds, nonmound earthworks, specialized activity areas, mound complexes, and workshops, which together account for 8.5 percent. No caves, quarries, rock art sites, cemeteries, or isolated finds are reported (Table 5.35).

Table 5.35. Woodland Site Types by Section in the Big Sandy Management Area.

Site Type	Lower Big Sandy	Upper Big Sandy	Total	Percent
Open Hab w/o Mounds	98	27	125	70.6
Open Hab w/ Mounds	3	1	4	2.3
Rockshelter	28	2	30	16.9
Stone Mound	2	0	2	1.1
Earth Mound	7	0	7	4.0
Mound Complex	1	0	1	0.6
Enclosure	2	0	2	1.1
Isolated Burial	2	1	3	1.7
Workshop	1	0	1	0.6
Specialized Activity Site	1	1	2	1.1
Total	145	32	177	100.0
Percent	81.9	18.1	100.0	

Woodland occupations in the Lower Big Sandy Section are better documented than those in the Upper Big Sandy Section, a pattern best explained by the small size of the latter section (only two counties), its extremely rugged terrain, and the smaller number of large-scale archaeological investigations. There are more than four times as many Woodland sites in the Lower Big Sandy Section (n=145, 82 percent) as in the Upper Big Sandy Section (n=32, 18 percent). In addition, a wider range of site types is recorded for the Lower Big Sandy Section. While all 11 site types documented for this management area have been recorded in the Lower Big Sandy Section, only six site types have been recorded in the Upper Big Sandy Section (Table 5.35). Because of geological factors, nearly all of the Woodland rockshelters recorded in this management area are located in the Lower Big Sandy Section. Mound sites (stone mounds, earth mounds, mound complexes, earthworks, and open habitation with mounds) are almost wholly restricted to the Lower Big Sandy Section.

The 236 Woodland components at sites in the Big Sandy Management Area account for 6 percent of the Woodland components in Kentucky (Table 5.2). About 45 percent of the Big Sandy components are unassigned. Nearly equal percentages of Early Woodland (21 percent) and Middle Woodland (19.5 percent) components are recorded. About 14.5 percent of the components are Late Woodland (Table 5.36), the third largest percentage of Late Woodland components among the management areas (Table 5.2).

Table 5.36. Woodland Site Components by Section and Subperiod in the Big Sandy Management Area.

Subperiod	Lower Big Sandy		Upper Big Sandy		Total	
Late Woodland	5	3.0%	29	42.6%	34	14.4%
Middle Woodland	37	22.0%	9	13.2%	46	19.5%
Early Woodland	35	20.8%	15	22.1%	50	21.2%
Unassigned	91	54.2%	15	22.1%	106	44.9%
Total	168	71.2%	68	28.8%	236	100.0%

Over 71 percent (n=168) of all Woodland components in this management area are recorded for sites in the Lower Big Sandy Section, with almost 29 percent (n=68) in the Upper Big Sandy Section. There are differences between the two sections in the distribution of Woodland components. The percentage of unassigned Woodland sites in the Lower Big Sandy is over twice that in the Upper Big Sandy, while the percentage of Late Woodland components in the Upper Big Sandy is over 14 times that in the Lower Big Sandy. In fact, the high percentage of Late Woodland components in the Upper Big Sandy Section is noteworthy for the entire Commonwealth. The Lower Big Sandy has a larger percentage of Middle Woodland components, while the percentages of Early Woodland components is comparable for the two sections (Table 5.36).

CHRONOMETRIC DETERMINATIONS

Chronometric determinations for the Big Sandy Management Area are provided in Table 5.37. As with the history of archaeological research in this area, the vast majority

Table 5.37. Chronometric Dates for the Big Sandy Management Area.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
<u>Lower Big Sandy Section</u>			
Viney Branch Mound (15Bd306)			
Beta-10316	2470±125	890-880, 844-354, 291-231, 216-215 BC	Schock and Foster 1976
UGa-869	2310±165	798-36, 32-20, 12-1 BC	Aument 1985
Beta-10314	2055±110	383 BC-AD 138, 197-207	Schock and Foster 1976
Site 15Bd313			
UGa-870	1285±150	AD 433-495, 503-1026	Schock and Foster 1976
Carroll Shelter (15Cr57)			
Beta-4317	1390±60	AD 546-724, 739-771	Ison and Ison 1985
Site 15Cr61 (see Chapter 4:Table 4.31)			
Beta-64040	2450±80	775-400 BC	Stallings et al. 1995
Beta-64039	2410±60	756-684, 669-394 BC	Stallings et al. 1995
Site 15Cr64			
Beta-47039	2370±50	750-686, 667-640, 594-365 BC	Stallings et al. 1995
Grayson (15Cr73) (see Chapter 4:Table 4.31)			
UGa-6122D	2872±392	2032-92, 68-61 BC	Ledbetter and O'Steen 1992
UGa-6098D	2781±67	1114-1097, 1094-810 BC	Ledbetter and O'Steen 1992
UGa-6097D	2702±260	1494-348, 318-207 BC	Ledbetter and O'Steen 1992
UGa-6130	2412±124	805-345, 322-205 BC	Ledbetter and O'Steen 1992
UGA-6124*	1221±91	AD 656-986	Ledbetter and O'Steen 1992
UGA-6078*	1220±48	AD 675-896, 924-938	Ledbetter and O'Steen 1992
UGA-6053D*	1136±108	AD 663-1049, 1085-1123, 1137-1151	Ledbetter and O'Steen 1992
UGA-6052*	1112±48	AD 782-789, 809-1018	Ledbetter and O'Steen 1992
UGA-6051D*	1040±120	AD 695-698, 708-747, 765-1223	Ledbetter and O'Steen 1992
Two Sandal Shelter (15Cr173)			
Beta-91918	2580±60	893-875, 846-512 BC	Gremillion et al. 2000a
Conley-Greene Rockshelter (15El4)			
Beta-28608	2760±60	1048-805 BC	Railey 1991a
Beta-28609	2380±60	765-684, 669-373 BC	Railey 1991a
Beta-28610	2370±60	756-684, 669-360, 274-260 BC	Railey 1991a
Beta-28611	2280±60	505-493, 490-460, 452-440, 418-176 BC	Railey 1991a
Hansen (15Gp14) (see Chapter 4:Table 4.31)			
Beta-14577	2750±70	1110-1103, 1076-1065, 1056-796 BC	Ahler 1987, 1988, 1992
Beta-14576	2710±60	997-795 BC	Ahler 1987, 1988, 1992
Beta-15085	2460±70	769-406 BC	Ahler 1987, 1988, 1992
Beta-15511	1770±90	AD 35, 53-436, 489-510, 517-529	Ahler 1987, 1988, 1992
Beta-15082	1630±90	AD 222-618	Ahler 1987, 1988, 1992
Beta-15510	1630±100	AD 177-189, 213-638	Ahler 1987, 1988, 1992
Beta-14573	1520±60	AD 423-642	Ahler 1987, 1988, 1992
Beta-15084	1510±70	AD 416-652	Ahler 1987, 1988, 1992
Beta-15509	1410±90	AD 424-781, 791-807	Ahler 1987, 1988, 1992
Beta-15512	1400±70	AD 442-452, 461-483, 533-776	Ahler 1987, 1988, 1992
Beta-14575	1360±70	AD 548-783, 788-817, 843-859	Ahler 1987, 1988, 1992
Bentley (15Gp15)			
Univ Missouri	3500±320	1550±320 BC (TL date)	Henderson and Pollack 1985
Univ Missouri	3280±300	1330±300 BC (TL date)	Henderson and Pollack 1985
Univ Missouri	3190±320	1240±320 BC (TL date)	Henderson and Pollack 1985
Univ Missouri	3180±200	1230±200 BC (TL date)	Henderson and Pollack 1985
Univ Missouri	2800±190	850±190 BC (TL date)	Henderson and Pollack 1985

Table 5.37. Continued.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
Univ Missouri	2480±160	530±160 BC (TL date)	Henderson and Pollack 1985
Univ Missouri	2250±160	300±160 BC (TL date)	Henderson and Pollack 1985
Univ Missouri	1965±160	15±190 BC (TL date)	Henderson and Pollack 1985
Univ Missouri	1790±170	AD 160±170 (TL date)	Henderson and Pollack 1985
Univ Missouri	1800±150	AD 190±150 (TL date)	Henderson and Pollack 1985
Beta-11850	1380±60	AD 560-730, 735-772	Henderson and Pollack 1985
Univ Missouri	1350±125	AD 600±125 (TL date)	Henderson and Pollack 1985
Univ Missouri	1225±170	AD 725±170 (TL date)	Henderson and Pollack 1985
Univ Missouri	1220±160	AD 730±160 (TL date)	Henderson and Pollack 1985
Sparks Rockshelter (15Jo19)			
SI-3167	2810±70	1192-1176, 1163-1143, 1132-814 BC	Adovasio 1982; Fitzgibbons et al. 1977
Win Rockshelter (15Jo40)			
DIC-1343	2440±210	1022-18, 14-0 BC	Adovasio 1982
DIC-1342	2290±50	482-467, 415-200 BC	Adovasio 1982
DIC-1340	1160±95	AD 668-1024	Adovasio 1982
McKenzie Farmstead (15Jo67)			
Beta-71510	2380±70	766-677, 675-359, 275-259 BC	McBride 1994
Beta-71513	2000±60	166 BC-AD 93, 97-125	McBride 1994
Beta-71512	1770±70	AD 85-109, 117-413	McBride 1994
Beta-71511	1750±70	AD 87-104, 121-428	McBride 1994
Wiley Creek (15Jo74)			
Beta-200565	1790±60	AD 85-109, 117-387	Burdin and Pollack 2006:118
Beta-200562	1460 ±70	AD 430-670	Burdin and Pollack 2006:118
Dow Cook (15La4)			
Pitt-233	1420±80	AD 433-496, 503-727, 737-771	Niquette and Kerr 1989
Pitt-234	1302±45	AD 647-783, 788-815, 843-858	Niquette and Kerr 1989
Blankenship Rockshelter II (15La31)			
UGa-1326	1985±80	185 BC-AD 215	Fenwick 1976
Blankenship Rockshelter III (15La45)			
UGa-1325	2285±245	915 BC-AD 237	Fenwick 1976
Graham (15La222)			
Beta-3095	2620±60	913-732, 691-661, 650-545 BC	Niquette et al. 1989
Beta-28861	2190±80	395-51 BC	Niquette et al. 1989
Beta-28862	2070±50	338-330, 203 BC-AD 30, 37-51	Niquette et al. 1989
Big Mine Fork (15Mo5)			
DIC-1345	2430±340	1388 BC-AD 244	Adovasio 1982
Burchett Flats (15Mo10)			
DIC-1348	2350±50	746-688, 664-646, 587-583, 553-354, 290-231 BC	Adovasio 1982
Ray Hill (15Mo28)			
DIC-3197	2600±230	1371-1344, 1317-193 BC	Adovasio 1982
Alonzo Rice (15Mo38)			
DIC-1344	2930±110	1413-895, 869-854 BC	Adovasio 1982
C. K. Stacy Rockshelter (15Mo40)			
DIC-1340	1940±80	162-131, 118 BC-AD 244	Adovasio 1982
DIC-1339	1660±50	AD 256-304, 313-472, 476-534	Adovasio 1982

Table 5.37. Continued.

Lab No.	Age (B.P.)	Calibrated Date (2-sigma)	References
Calloway (15Mt8)			
Beta-13737	2280±120	755-685, 668-608, 600-50 BC	Niquette and Boedy 1986
Alpha-2633	2260±120	310±120 BC (TL date)	Niquette and Boedy 1986
Alpha-2632	2080±210	130±210 BC (TL date)	Niquette and Boedy 1986
Beta-16315	1970±90	198 BC-AD 240	Niquette and Boedy 1986
Beta-16316	1880±70	39-8, 4 BC-AD 259, 284-323	Niquette and Boedy 1986
Alpha-2343	1040±100	AD 910±100 (TL date)	Niquette and Boedy 1986
Upper Big Sandy Section			
Prime Farmland (15Fd78)			
Beta-164563	2570±40	813-735, 690-662, 649-546 BC	Richmond et al. 2002
Beta-164562	2520±90	808-407 BC	Richmond et al. 2002
Sim's Creek (15Pi7)			
I-1781	1530±135	AD 183-185, 214-776	Dunnell 1966b, 1972
Martin Justice (15Pi92) (see Chapter 4:Table 4.31)			
Beta-79599	2590±110	907-961, 932-405 BC	Kerr et al. 1995
Beta-79597	2250±60	405-171 BC	Kerr et al. 1995
Beta-80889	1870±70	37-30, 22-11, 2 BC-AD 263, 277-331	Kerr et al. 1995

of chronometric determinations derive from sites in the Lower Big Sandy Section. This large set of dates span the Woodland period, with the fewest dates corresponding to the terminal Late Woodland subperiod. Absolute dates are available for only three Woodland sites in the Upper Big Sandy Section.

LOWER BIG SANDY SECTION

Considerable archaeological research has been conducted in the Lower Big Sandy Section, where 168 Woodland components have been recorded at 145 sites. The vast majority of Woodland sites in the section are rockshelters and open habitations without mounds. All Woodland subperiods are represented, though few sites have terminal Late Woodland components (tables 5.36 and 5.37). Sites with substantial Woodland occupations are documented in all counties within this section (Table 5.38). These sites represent a mixture of open-air habitations and rockshelters, domestic and mortuary/ritual sites, and trunk and tributary stream sites.

Sites with Cogswell phase assemblages are among the earliest Woodland sites in the Lower Big Sandy Section. One well-documented example is Grayson (15Cr73), an elliptical multicomponent site covering two terrace crests along the Little Sandy River. Terminal Archaic-Early Woodland diagnostics include Cogswell, Wade, Little Bear Creek, Buck Creek, and McIntyre projectile points. A series of calibrated radiocarbon dates for this component range from 1606-1304 B.C. to 805-205 B.C. (Table 5.37; Chapter 4:Table 4.41) (Ledbetter and O'Steen 1992; Ledbetter et al. 1991).

Almost two-thirds of the plant remains associated with the aceramic Early Woodland component at Grayson were nut shells, especially hickory, and over one-third was wood charcoal from mixed mesophytic tree species. Only 0.1 percent of the plant

Table 5.38. Important Woodland Period Sites in the Lower Big Sandy Section.

Site No.	Site Name	Site Type	Affiliation	References
15Bd306	Viney Branch	stone mound	EW	Aument 1985
15Bd311A	Brisbin	stone mound	MW	Aument 1985
15Bd313	none	mound	MW-LW	Schock and Foster 1976
15Bd316	Stone Serpent	stone effigy	MW	Brisbin 1976; Sanders 1988; Schock and Foster 1976
15Cr57	Carroll	rockshelter	MW, LW	Ison and Ison 1985
15Cr58	none	specialized activity	MW	Ison and Ison 1985
15Cr61	none	open habitation	EW	Stallings et al. 1995
15Cr64	none	open habitation	EW, MW, LW	Stallings et al. 1995
15Cr73	Grayson	open habitation	EW, LW	Ledbetter et al. 1991; Ledbetter and O'Steen 1992
15Cr74	none	open habitation	LW	Kerr and Niquette 1989
15Cr173	Two Sandal	rockshelter	EW	Gremillion et al. 2000
15El4	Conley-Greene	rockshelter	EW	Railey 1985e, 1991a
15Gp1	Old Fort	enclosure	MW	Henderson et al. 1988
15Gp8	Biggs	enclosure and mound	MW	Hardesty 1964
15Gp14	Hansen	open habitation	MW, LW	Ahler 1987, 1988
15Gp15	Bentley	open habitation	MW, LW	Henderson and Pollack 1985
15Gp16	Mays	mound	MW	Henderson et al. 1988; Milner and Smith 1986
15Gp265	Hicks	mound	MW	Henderson et al. 1988
15Jo2, 9	C and O	mound complex	EW-MW	Webb et al. 1942
15Jo19	Sparks	rockshelter	EW	Adovasio 1982; Vento et al. 1980
15Jo23A	Dameron	rockshelter	EW, MW, LW	Adovasio 1982; Vento et al. 1980
15Jo32	Blanton	open habitation	EW, MW, LW	Adovasio 1982
15Jo40	Win	rockshelter	EW, MW, LW	Adovasio 1982
15Jo42	Ruie Pickle	rockshelter	EW-MW	Adovasio 1982
15Jo67	McKenzie Farmstead	open habitation	EW, MW	McBride 1994
15Jo74	Wiley Creek	open habitation	MW-LW	Burdin and Pollack 2006
15La4	Dow Cook	open habitation	EW, MW, LW	Niquette et al. 1987, 1989; Niquette and Kerr 1989
15La31, 45	Blankenship II, III	rockshelters	EW, MW	Fenwick 1976
15La222	Graham	open habitation	EW, MW	Niquette et al. 1987, 1989
15Lw139*	Stephenson	mound	MW	Henderson et al. 1988
15Mo5**	Big Mine Fork	rockshelter	EW	Adovasio 1982
15Mo10**	Burchett Flats	open habitation	EW	Adovasio 1982
15Mo13**	Patoker	open habitation	EW	Adovasio 1982
15Mo28**	Ray Hill	open habitation	EW	Adovasio 1982
15Mo38**	Alonzo Rice	rockshelter	EW	Adovasio 1982
15Mo40**	C. K. Stacy	rockshelter	MW	Adovasio 1982
15Mt8	Calloway	open habitation	MW	Niquette and Boedy 1986

*This site is located in the Eastern Bluegrass Section but is associated with other sites of the Portsmouth Earthworks.
** These sites are located in the Gorge Section but are associated with other sites in the Paintsville Reservoir.

specimens were wild seeds, and no cultigens were recovered. Terminal Archaic-Early Woodland features (chert-filled cache pits, thermal features, and postmolds) were situated on the western ridge of the site. One circular structure measured 10 m in diameter and may have been open to the southeast, or the postmold features were eroded away. There were no internal postmolds and no other features inside the structure, though pit features outside the structure may be associated (Ledbetter and O'Steen 1992; Ledbetter et al. 1991; see also Chapter 4). Ledbetter and O'Steen (1992:20, 41) classified the Terminal Archaic-Early Woodland occupation at Grayson as a "residential site or settlement" and a "seasonal base camp," using Winter's (1969) nonsynonymous terms.

Another Early Woodland site is Dameron Rockshelter (15Jo23A), a south-facing shelter overlooking Paint Creek (see also chapters 4 and 7). Two Woodland strata and eight thermal features were concentrated in the western portion and along the back wall of the dry shelter. During the Woodland period, when occupations were most intense, Dameron Rockshelter functioned as a locale from which hunting, collecting, and food processing activities were scheduled. Cotaco Creek, Adena Stemmed, and Turkey Tail points indicate an Early Woodland component. The pottery assemblage may include some of the earliest sherds in the Paint Creek drainage (Johnson in Vento et al. 1980; Vento et al. 1980).

Chipped stone preforms, biface fragments, drills, unifaces, modified and utilized flakes, and debitage including cores were recovered from Woodland contexts at Dameron Rockshelter. Groundstone tools include pitted stones, manos, hammerstones, chopper, and a modified fossil fragment possibly from a smoking pipe. Bone shuttles or punches, needles, atlatl hooks, projectile points, snare trigger, beamer, bead, and turtle carapace container, as well as one perforated mussel shell fragment, were recovered. Faunal remains consisted of deer, fox squirrel, gray squirrel, ground hog, eastern chipmunk, raccoon, beaver, opossum, striped skunk, fisher, porcupine, rabbit/hare, timber wolf, turkey, grouse, box turtle, musk turtle, hellbender, bullfrog, gar, and five species of mussel. Plant remains were exclusively wild species: walnut, hickory, beech, acorn, cherry, grape, black haw, buckwheat, and goosefoot. Plant exploitation patterns suggest primary site use during late summer-fall and secondary site use during the spring and possibly summer (Applegarth in Vento et al. 1980; Dirkmaat 1980; Vento et al. 1980).

The nearby Sparks Rockshelter (15Jo19), which is on the opposite bank and upstream from the roughly contemporaneous Dameron Rockshelter, was used sporadically during the Woodland period. A calibrated date of 1192-814 B.C. (Table 5.37) was obtained from this north-facing shelter. Diagnostic artifacts include a sandstone tempered sherd and a steatite vessel fragment (Applegarth in Vento et al. 1980; Fitzgibbons et al. 1977; Niquette and Henderson 1984; O'Steen et al. 1991; Vento et al. 1980). If the sherd is associated with the calibrated radiocarbon date, it is among the earliest pottery in the Lower Big Sandy Section. An assemblage of over 900 macrobotanical specimens was recovered from Sparks Rockshelter. The primary edible plants are beech, hickory, acorn, dogwood, and *Aesculus sp.*, the latter absent at Dameron Rockshelter. Also unlike Dameron, walnut and cherry constitute a small percentage of the Sparks assemblage and black haw is absent. Sparks Rockshelter yielded ragweed and cucurbits from unspecified Woodland contexts (Applegarth in Vento et al. 1980).

Several other sites in the Paintsville Reservoir area yielded Early Woodland materials. The Alonzo Rice site (15Mo38) is an open habitation that produced a collared

Adena Plain sherd from a stratum with a calibrated radiocarbon date of 1413-854 B.C. (Table 5.37), a date Adovasio (1982) considered to be too early for this ceramic type. A calibrated radiocarbon date of 1371-193 B.C. (Table 5.37) was obtained for materials from the Ray Hill site (15Mo28). At the Win Rockshelter (15Jo40), charcoal samples, which were taken from deposits containing Early Woodland ceramics, yielded calibrated radiocarbon dates of 1022-0 B.C. and 482-200 B.C. (Table 5.37) (Adovasio 1982; Johnson 1982). The Big Mine Fork site (15Mo5) is an open habitation site with a calibrated radiocarbon date of 1388 B.C.-A.D. 244 (Table 5.37). Though no diagnostic artifacts were found at the Burchett Flats site (15Mo10), a calibrated radiocarbon date of 746-231 B.C. (Table 5.37) was obtained from a thermal feature at this open habitation site. Limited excavations at the Patoker site (15Mo13) documented midden and features, including a storage/refuse pit, two fire hearths, several postmolds, and a portion of an occupation/living floor. The site was identified as one of the few possible Early Woodland base camps (cf., Binford 1980) within the Paintsville Reservoir. Diagnostic artifacts include an Adena Stemmed point and sandstone tempered ceramics (Adovasio 1982).

Site 15Cr61 is a multicomponent open habitation with midden and features. The Early Woodland occupation, dated at cal 775-400 B.C. and cal 756-394 B.C. (Table 5.37), was less intense than earlier Archaic period occupations (see Chapter 4). Though a wide range of activities, including tool manufacture and food processing, are evidenced, occupations were infrequent and of short duration. Site occupants transported partially modified raw materials to the site, where late-stage and finished bifaces were produced. Multiple stages of biface reduction and biface curation are evidenced. Microwear analysis reveals that curated and expedient chipped stone tools were used for hide processing mostly, but also meat, bone, and wood working. Untyped sherds recovered from feature contexts are among the oldest ceramics in the Lower Big Sandy Section (Stallings et al. 1995).

Conley-Greene Rockshelter (15El4) is a complexly stratified shelter with damp sediments. Excavations revealed a thin midden composed primarily of wood ash, as well as seven features identified as earth ovens, basin-shaped pits, and possible postmolds. A calibrated radiocarbon date of 1048-805 B.C. places initial site occupation in the early Early Woodland subperiod, but three other calibrated dates overlap between 765-176 B.C. (Table 5.37). Associated diagnostic artifacts from dated late Early Woodland contexts include Adena points and Adena Plain and Fayette Thick-like sherds. Other artifact types are pitted stones, grooved abraders, celt, bone awls, bone pin, worked antler, and turtle carapace bowl. A high density of debitage made of locally available materials including silicified shale is representative of all stages of reduction, though early-stage debitage indicative of biface production and maintenance predominated. Vertebrate faunal remains, some of which were burned, are large mammals, small mammals, birds, reptiles, amphibians, and fish. Carbonized plant remains are predominantly wild species, especially nuts and fleshy fruit seeds, and gourd is the only cultigen. The shelter likely served as a home base (cf., Binford 1980) for a small group of people who engaged primarily in chipped stone tool manufacture and maintenance, as well as food acquisition and processing (Railey 1991a).

Two Sandal Shelter (15Cr173) is a dry rockshelter with deposits measuring up to 1 m thick. The Early Woodland occupation has an associated calibrated radiocarbon date of 893-512 B.C. (Table 5.37). Diagnostic artifacts are Adena points and limestone and sandstone tempered pottery. Textiles from the shelter include a nearly complete but worn sandal from subsurface contexts, a coarse fiber textile fragment, and plant material around an Adena point. The slipper was found to be similar in construction and fiber type to slippers from other eastern Kentucky sites and western Kentucky caves (Gremillion et al. 2000a).

One of three important Woodland stone constructions in Boyd County, Viney Branch Mound (15Bd306) is a 4.0 x 2.5 x 0.5 m stone mound located on a ridgetop in the Big Sandy drainage. Calibrated radiocarbon dates of 890-215 B.C. and 798-1 B.C. (Table 5.37) place the mound in the Early Woodland subperiod, though the order of the two dates does not correlate with the relative stratigraphic positions of the dated materials. A third calibrated radiocarbon date of 383 B.C.-A.D. 207 (Table 5.37) suggests an early Middle Woodland affiliation. The mound was constructed in one episode, which involved clearing surface vegetation, creating a hearth, depositing clay over the hearth, placing two secondary cremains (one in a pit feature) and one crematory facility on either side of the hearth, placing projectile points (Big Sandy base and unspecified corner-notched type) on each individual, and covering the burials with limestone and sandstone (Aument 1985, 1986; Schock and Foster 1976).

Early-Middle Woodland sites in the Lower Big Sandy Section include several burial mounds and open habitations, though associations between the two types are uncertain. C and O Mounds (15Jo2 and 15Jo9) are a pair of Adena burial mounds on Paint Creek in the Levisa Fork drainage. Due to the lack of absolute dates, their temporal affiliations are unclear. Dragoo (1963) assigned the mounds to Late Adena, circa 400-0 B.C. Purrington (1972), on the other hand, suggested that the mounds are not contemporaneous, with the smaller Jo2 being earlier than the larger Jo9. Johnson (1982) questioned the ceramic basis of Purrington's argument and concurred with Dragoo that both mounds are Late Adena mortuary facilities. Projectile points pictured in the original site report (Webb et al. 1942) suggest that the mounds were at least partly contemporaneous, as indicated by the common occurrence of specimens resembling Early Woodland Stemmed cluster and Lowe cluster forms. Mound Jo2 also yielded points resembling Dickson cluster and Copena Triangular.

Mound Jo2 was erected in one episode and covered at least six circular, paired-post superimposed structures and other features. One female adult and four subadults were interred in extended positions in three mortuary features under the mound. Grave goods included 17 copper bracelets and one projectile point. The mound fill yielded a large assemblage of Johnson Plain, Adena Plain, Montgomery Incised, and net or fabric impressed pottery sherds; copper bracelets, bead, and ring; groundstone gorgets, unengraved tablets, cones/hemispheres, celts, cupstone/pitted stone, tubular pipe, lead/galena plate, and steatite pendant, cylinders, and vessel fragments; mica fragments; bone awls and handle; and a shell spoon (Haag 1942; Webb et al. 1942).

The larger mound Jo9 was constructed in three stages over a series of central log tombs. Four circular submound structures, graves, and thermal features were found under the mound. Twenty-five numbered burials plus a un-numbered log tomb were recorded. The extended and cremated remains of at least 27 adults and subadults were recovered from the mortuary features and submound floor. Grave goods were recovered from 10 burial contexts and included points resembling Robbins, Early Woodland Stemmed cluster, and Lowe cluster forms; chipped stone knife; groundstone grooved tablet, unengraved tablets, and slate object; Adena Plain and Johnson Plain pottery; copper bracelets with textile fragments; bone awl, beads, and raccoon baculum; and worked shell. Archaeologists recovered mica fragments from a burned area under the primary flat-topped mound. The mound fill yielded Johnson Plain, Adena Plain, Montgomery Incised, and plain appliqué strip and check-stamped sherds; clay beads; and groundstone gorgets, hammerstones, celt, plummet, pitted stone, tubular pipe, and unengraved tablets. Sherds of tetrapodal Paintsville Simple Stamped pottery recovered from the mound (Webb et al. 1942) have since been reclassified as Connestee Simple Stamped (Fenton and Jefferies 1991).

Early-Middle Woodland open habitation sites in the Lower Big Sandy Section include Graham, McKenzie Farmstead, Calloway, and Blanton. Located in the Yatesville Reservoir area, Graham (15La222) is a stratified multi-component habitation site. Calibrated Woodland radiocarbon dates range from 913-545 B.C. to 338 B.C.-A.D. 51 (Table 5.37). The Early-Middle Woodland component, classified as “Adena” and associated with midden deposits and cultural features (e.g., storage pits and thermal features), was more substantial than the Late Woodland component. During the earlier occupation Graham was used frequently on a short-term basis, probably by multiple groups of people. Domestic activities included chipped stone tool manufacture, nut gathering and processing, and gardening. Researchers characterized the Middle Woodland occupation as a transient camp. Graham is the type site for Graham Roughened and Johnson Plain, *var. Yatesville*, dated ca. 100 B.C. Middle Woodland features yielded potential cultigens (sumpweed and squash) that, coupled with wild nuts, may have been eaten as a “trail mix” (Niquette et al. 1987; Niquette et al. 1989).

Intact deposits and features associated with prehistoric components at the McKenzie Farmstead site (15Jo67) represent substantial occupations, perhaps a hamlet or village. The Early-Late Woodland chipped stone assemblage and botanical remains, however, point to a limited range of activities being undertaken at this site. One of the four calibrated radiocarbon dates reflects Early Woodland (766-259 B.C.) use of this locality, while the other three dates indicate occupations during the Middle Woodland subperiod (166 B.C.-A.D. 125, A.D. 85-413, and A.D. 87-428) (Table 5.37). The latter dates are consistent with the ceramic assemblage, which is dominated by Johnson Plain sandstone tempered ceramics (McBride 1994).

The Calloway site (15Mt8) is located on a low terrace of Middle Fork Rockcastle Creek within the maturely dissected Cumberland Plateau of Martin County. Diagnostic artifacts, including Adena Stemmed-like points and Inez Plain and Johnson Plain sherds, as well as calibrated radiocarbon dates ranging from 755-50 B.C. to 39 B.C.-A.D. 323 (Table 5.37) place site occupations in the Early and Middle Woodland subperiods. A high frequency of tertiary flakes indicates that tool sharpening was an important activity. A low density of wild and cultivated plants was recovered from Early-Middle Woodland contexts: hickory, walnut, hazelnut, acorn, possibly chestnut, grape, persimmon, honey locust, caryophyllaceae grasses, possibly tick trefoil, goosefoot, maygrass, erect knotweed, and little barley. The nonoverlapping distribution and low diversity of hearth and pit features, the preservation of plant remains to the exclusion of faunal material, and the nature of the lithic assemblage suggest that the site functioned as a low intensity, short-term vegetable food extraction camp (Fritz 1986; Niquette and Boedy 1986).

Located in Johnson County, Blanton (15Jo32) is an open habitation that covering 1 ha. Large-scale excavations have not been conducted at this site, so little is known about intrasite patterning. However, the artifact assemblage includes exotic materials and objects (e.g., mica and imported pottery including Connestee) indicative of interregional exchange during the Middle Woodland occupation (Adovasio 1982). Apparent intermediaries, the site residents appear to have been directly involved in the transport of mica from the southern Appalachians to Ohio Hopewell centers (Railey 1990).

Another Early-Middle Woodland open-air domestic site is Site 15Cr64, which yielded a calibrated radiocarbon date of 750-365 B.C. (Table 5.37) (Stallings et al. 1995). Blankenship Rockshelters II (15La31) and III (15La45) in Lawrence County yielded calibrated Early-Middle Woodland radiocarbon dates of 185 B.C.-A.D. 215 and 915 B.C.-A.D. 237 (Table 5.37), respectively (Fenwick 1976). Two Paintsville Reservoir sites provide evidence of Middle Woodland domestic rockshelter occupations. Calibrated radiocarbon dates for C. K. Stacy Rockshelter (15Mo40) are 162 B.C.- A.D. 244 and A.D. 256-534 (Table 5.37). Diagnostic artifacts from the Ruie Pickle Rockshelter (15Jo42) include one cordmarked and linear-dentate-stamped sherd (Adovasio 1982; Johnson 1982).

Middle Woodland mortuary-ritual sites include Brisbin Mound (15Bd311A), situated on ridge in the Big Sandy floodplain near the confluence with Lockwood Creek. Diagnostic artifacts, such as bladelets and Adena and Bakers Creek points, suggest use during the Middle Woodland subperiod, and possibly before or after. The site consisted of two mortuary features, the contemporaneity of which is suggested by the presence of Paoli and/or Vanport bladelets in each. The largest feature was a pit dug into a natural mound-like knoll and lined and capped with limestone slabs. It contained an artifact cache of points, bladelets, pendant, whetstone, and copper awl fragment; two concentrations of cremated remains with a clay pipe, ceramics, turtle carapace fragments, chert flakes, and polished hematite; and possibly an extended burial. About 1 m south of the rock-lined pit was a cache of bladelets and other chipped stone items (Aument 1985; Dowell 1979b; Schock and Foster 1976).

Another presumed Middle Woodland stone construction in Boyd County is Stone Serpent Mound (15Bd316), a zoomorphic effigy located on the hillside and ridge top of the Ashland Oil property near Catlettsburg (Brisbin 1976; Sanders 1988). This snake effigy, which measures 191 m long, was constructed of portable (i.e., not quarried) sandstone and no earth. A stone ring was situated to the east of the snake. The function of the site is unclear, but it was not a mortuary site. Nearby, but not necessarily associated, sites are a stone quarry (15Bd19), an earth mound with lithic scatter (15Bd70), two rockshelters, one camp site, and two rock cairns, the latter lacking state site numbers (Sanders 1988).

At the northwestern edge of the Lower Big Sandy Section, the Middle Woodland Portsmouth Works is an extensive complex of earthworks at the confluence of the Scioto and Ohio rivers in northern Kentucky (Greenup-Lewis counties) and southern Ohio. Group A, located on an uneven third terrace of the Ohio River floodplain, is the westernmost portion of the Portsmouth Works. Group A elements are Old Fort Earthworks (15Gp8), Mays Mound (15Gp16), Hicks Mound (15Gp265), Stephenson Mound (15Lw139, Eastern Bluegrass Section), and unnamed mounds and enclosures. To the east of Group A are Groups B and C. Circles, walls, and mounds comprise Group B on the north side of the Ohio River in Portsmouth. To the East of Group A is Group C, which consists of Biggs Mound (15Gp8) and a surrounding embankment and ditch. West of Biggs Mound is Group D, a large circular enclosure with four gateways. Parallel earthen walls connect Groups A and B and Groups B and D. Many of the mounds in the Portsmouth Works, including Stephenson Mound and Hicks Mound, have not been professionally investigated (Henderson et al. 1988).

Biggs Mound and Old Fort Earthworks are the best-documented elements of the Portsmouth Works south of the Ohio River. The former, an early Middle Woodland ceremonial facility, consists of a mound enclosed by a circular ditched earthwork. According to Clay (1987), the earthen embankment with interior ditch predated construction of the small central burial mound. Hardesty's (1964) excavation of the mound revealed a central cremation placed on a clay platform and an associated fire basin. Material remains include hematite- and/or quartz tempered pottery, a tubular smoking pipe of unspecified material, four celts, and one fragment of mica (Hardesty 1964).

Old Fort Earthworks consists of two pairs of roughly parallel earthen walls extending from the northeast and southwest walls of a square enclosure. Midden deposits, features, and artifacts were documented primarily from underneath or to the exterior of the enclosure walls, suggesting the interior was maintained during site occupations. The site was used for ceremonial and/or economic activities during the early Middle Woodland subperiod, ca. A.D. 0-200. Adena traits include Adena Plain pottery, two limestone tempered smoothed pottery vessels, and two boatstones. Whether the Adena materials predate or were concurrent with enclosure construction is unclear (Henderson et al. 1988). Though few Hopewell diagnostics were found, the square enclosure resembles similar sites in southern Ohio and was "undoubtedly associated with Hopewell" (Henderson et al. 1988:79).

Located on a terrace of the Ohio River floodplain, Bentley (15Gp15) is associated with Group A of the Portsmouth Earthworks. A radiocarbon date of cal A.D. 560-772 was obtained from a feature excavated in 1984, and 13 thermoluminescence determinations for Woodland ceramics from features (10 on sherds recovered in 1938 and three on sherds recovered in 1984) yielded dates ranging from 1550±320 B.C. to A.D. 730±160 (Table 5.37). The wide range of thermoluminescence dates obtained from this site, coupled with the fact that sherds selected from a feature could range from 1230±200 B.C. to A.D. 725±170, raises doubts about the reliability of these dates (Henderson and Pollack 1985). Of the thermoluminescence dates obtained from this site, Henderson and Pollack (1985:153-155) only considered the dates of A.D. 600±160, A.D. 725±170, and A.D. 730±160 to be acceptable, with the dates of A.D. 160±170 and A.D. 190±150 being marginally acceptable, as both of the latter dates were obtained from features that yielded acceptable dates (Henderson and Pollack 1985).

Though Henderson and Pollack (1985) argued for the presence of a single component early Late Woodland settlement at this site, the recovery of Middle Woodland ceramics may indicate the presence of an earlier Woodland component associated with the nearby Old Fort Earthworks. The possible Middle Woodland component was functionally and spatially distinct from later occupations. The low density and limited spatial distribution of artifacts suggest that the Middle Woodland occupation was of comparatively low intensity Middle Woodland diagnostics derived primarily from the central portion of the site, include mica, Snyders points, and Hopewell-related pottery types (e.g., Connestee series, Hopewell series, and Chillicothe Rock Stamped)

(Henderson and Pollack 1985). It should be noted, however, that similar amounts and types of ceramics were recovered from Late Woodland contexts at the nearby Hansen site (see below).

The more intense but short-term (ca. 20 years) early Late Woodland component at Bentley was focused in the northern, western, and central parts of the site, where domestic activities (e.g., dwellings [concentrations of rock-lined postmolds], cooking, and trash disposal [concentration of large deep pits along terrace edge]) likely occurred around an open area. The Newtown phase assemblage included Newtown series pottery. As at other Newtown sites, the ceramic assemblages include a small amount of Wright Check Stamped pottery (Ahler 1987; McBride and Fenton 2007; Railey 1984). A second possible Late Woodland occupation, marked by the predominance of Peters Creek series pottery, was documented in the southern part of the site where few features were found (Henderson and Pollack 1985). Alternatively, these ceramics "may represent contemporary occupation by social groups with different ceramic tempering preferences or traditions" (Henderson and Pollack 1985:159).

Hansen (15Gp14) is located slightly upstream from Bentley on the Ohio River floodplain. Excavation along the eastern edge of this 6 ha site documented the presence of three stratigraphically distinct components. The site was initially occupied during the Late Archaic subperiod (see Chapter 4). This was followed by an ephemeral Early Woodland component with associated calibrated radiocarbon dates ranging from 1110-796 B.C. to 769-406 B.C. (Table 5.37). Calibrated radiocarbon dates for a more substantial late Middle Woodland-early Late Woodland component range from A.D. 35-529 to A.D. 548-859, with most postdating A.D. 400 (Table 5.37) (Ahler 1987, 1988, 1992).

Newtown phase artifacts include bladelets; Adena-like, Lowe cluster, Jacks Reef cluster, and large triangular points; and Newtown series, Wright Check Stamped, Connestee series, McGraw series, Turner Simple Stamped, Pickwick/Mann Complicated Stamped, Hopewell-like Dentate Stamped, and Southeastern series pottery. Other artifacts are celts, axes, gorgets, utilized flakes, bifacial tools, and unifacial tools. The large debitage assemblage represented all stages of lithic reduction, especially late stage. Local cherts (e.g., Haney, Paoli, St. Louis, Upper Mercer, Breathitt, Kanawha, and gravels) were more abundant than nonlocal types Vanport and Boyle. Wild and cultivated plants from Middle-Late Woodland contexts are hickory, walnut, acorn, sumpweed, goosefoot, maygrass, erect knotweed, and squash; relative species proportions suggest a greater reliance on gathering than horticulture. About 95 percent of the faunal remains from Hansen were classified as general mammal remains, but deer, elk, passenger pigeon, and drumfish were identified (Ahler 1987, 1988, 1992).

Throughout the Newtown occupation of Hansen, domestic activities were of short duration, focused during the late summer to early fall seasons, and consistent over time. Based on the spatial distribution of features and artifacts, Ahler (1987) argued for the presence of two temporally distinct Newtown occupations at this site. The earlier occupation (ca. A.D. 300-450) was comparatively more intense than the later one, and activity areas were tied to household clusters associated with at least three circular or oval single-post structures. Activities included chipped stone tool manufacture, food storage, food preparation, and refuse disposal (Ahler 1987, 1988). The later occupation, ca. A.D. 500-600, was "more specialized or more communally oriented, with the very large facilities [i.e., deep cylindrical pit features] indicating the presence of multiple households interacting on a communal or cooperative level" (Ahler 1987:54). Besides domestic activities, chipped stone tool manufacturing occurred communally in two parts of the site. The later occupation at Hansen was similar to that at nearby Bentley (Ahler 1987).

Located in the interior of the Lower Big Sandy Section, the Wiley Creek site (15Jo74) is situated on a high terrace overlooking Levisa Fork. Excavations revealed postmolds and a variety of pit features dated to the Middle and early Late Woodland subperiods. Calibrated radiocarbon dates of A.D. 85-387 and A.D. 430-670 were obtained from two of the features excavated at this site (Table 5.37). The recovery of an angular shoulder sherd marks the first discovery of Newtown ceramics in the Levisa Fork drainage. In general the ceramics recovered from this site are similar to Blaine Cordmarked (see below). The only other diagnostic recovered from intact deposits at this site was a possible Lowe Flared Base point. Additional lithic artifacts include an adze, drill, marginally modified flakes, pitted stones, grinding stones, abrader, and celts. Wild plants remain included nuts, wild sumac, grape, persimmon, and honey locust; only a small number of native cultigens (goosefoot) were recovered from this site (Burdin and Pollack 2006).

Lithic tool manufacture, plant processing, and food preparation were among the activities that occurred at the Wiley Creek site. One of three artifact/feature clusters is an oval-shaped area measuring about 10 m across. A linear pattern of three postmolds along the southwest edge may be the remains of a drying rack or windbreak. Another cluster is irregularly shaped, had one postmold, and yielded fewer artifacts. The third cluster consisted of a few postmolds and several large pits, some of which were similar to those documented at Hansen (Burdin and Pollack 2006).

Dow Cook (15La4) is a multicomponent site along the periphery of a terrace knoll/ridge in the former Blaine Creek drainage, now Yatesville Reservoir. Compared to the Early Woodland component, the Middle to early Late Woodland occupation at the site was more intense, being classified as a hamlet. Calibrated radiocarbon dates of A.D. 433-771 and A.D. 647-858 were obtained from features associated with the latter component (Table 5.37). Intact midden deposits and a small number of nonoverlapping cultural features (postmolds, thermal features, and storage pits) yielded diagnostic lithic tools and ceramics, as well as faunal and floral remains, including maygrass seeds. Dow Cook is the type site for Blaine Cordmarked, which is characterized by thin walled jars that are tempered with coarse sandstone or siltstone. In general, Blaine Cordmarked is similar to Newtown Cordmarked, but at Dow Cook none of the vessels had angular shoulders (Niquette et al. 1987, 1989; Niquette and Kerr 1989).

The Carroll Shelter (15Cr57) is situated at the head of a hollow in the Everman Creek drainage, a tributary of the Little Sandy River. Excavation of 14 m^2 of this mostly dry shelter revealed a midden layer, shallow hearths, and deep storage pits. The Middle Woodland component was concentrated along the back wall and was marked by a high density of artifacts including faunal remains, Paintsville or Connestee Simple Stamped pottery, mica sheets, and a cremated individual. The presence of these materials and the cremated burial may reflect Hopewellian mortuary practices. A second individual was found beneath a boulder. Other diagnostic artifacts include Adena Stemmed points and Adena Plain sherds (Ison and Ison 1985).

The western portion of Carroll Shelter contained a more intense early Late Woodland (cal A.D. 546-771 [Table 5.37]) occupation floor marked by compact, burned soil and hearths. Postmolds delineated the remains of the front wall of a structure that had been constructed near the dripline. Late Woodland artifacts included small triangular points and Peters Creek series pottery, bone drills, gravers, bifaces, flake tools, flesher, flaker, and turtle carapace cups. Lithic production involved all stages of chipped stone tool production, and knappers relied on locally available cherts, especially Haney and Paoli. Faunal and floral remains suggest at least summer and winter seasons of occupation. A diverse range of animal species were exploited: deer, eastern chipmunk, box turtle, raccoon, opossum, squirrel, groundhog, rabbit, bear, dog, mouse, pine vole, mole, water shrew, turkey, passenger pigeon, *Passerine sp.*, snakes, amphibians, bass, and mussel. Hickory nut shell comprised a high percentage of the plant materials, and no cultigens were recovered (Ison and Ison 1985).

Located about 300 m from Carroll Shelter, Site 15Cr58 consisted of an open-air cache of over 100 chipped stone blades, a slate pendant, and several mica pieces (Ison and Ison 1985). These materials may be related to the Middle Woodland Hopewellian component at the nearby Carroll Shelter (Ison and Ison 1985:130).

Other sites in the Lower Big Sandy Section were occupied during the late Middle-early Late Woodland subperiods. Middle to early Late Woodland occupations at Dameron Rockshelter (15Jo23A) are indicated by bladelets and Jacks Reef Pentagonal, Madison, and Hamilton points (Johnson in Vento et al. 1980; Vento et al. 1980). Materials recovered from a feature at Site 15Bd313 yielded a calibrated radiocarbon date of A.D. 433-1026 (Table 5.37) (Schock and Foster 1976).

The Everman phase is a terminal Late Woodland (ca. A.D. 700-900) phase defined by assemblages recovered from the Grayson site in Carter County (Ledbetter et al. 1991; Ledbetter and O'Steen 1992). Calibrated radiocarbon dates for the Everman phase component at Grayson range from A.D. 656-986 to A.D. 695-1223 (Table 5.37). Diagnostic artifacts include sandstone and siltstone tempered cordmarked and plain pottery, which resembles Peters Creek Cordmarked and exhibits similarities with Woods and Parkline ceramics from West Virginia, and Chesser, Lowe, Jacks Reef, Raccoon, Madison, and Levanna projectile points.

At Grayson Late Woodland knappers relied on local Newman chert, and chipped stone tools produced on-site may have been distributed within the local area. Debitage represents all stages of reduction, with an emphasis on late-stage reduction. Pottery sherds include Peters Creek Cordmarked and several untyped varieties. Wood charcoal and nut shell, especially walnut and acorn, comprised 92 percent and 8 percent by weight of the archaeobotanical remains, respectively, and the former included secondary growth taxa indicative of ground disturbance. Small numbers of wild (bedstraw, poke, green briar, grape, goosefoot) and domesticated (squash) plant remains were identified. Animal utilization during the Late Woodland differed little from earlier occupations. Midden-filled pits, thermal features, and postmolds delineating a structure were scattered on both ridges at the site, peripheral to earlier features. The site functioned as a mid-summer to late fall residential locus where tool manufacturing activities predominated (Kerr and Niquette 1989; Ledbetter et al. 1991; Ledbetter and O'Steen 1992).

Possible terminal Late Woodland occupations also have been documented at Win Rockshelter, which had a significant Early Woodland component (see above), Calloway, and Site 15Cr74. Materials from a firepit at Win Rockshelter (15Jo40) yielded a calibrated radiocarbon date of A.D. 668-1024 (Table 5.37) (Adovasio 1982). Unfortunately, no diagnostics were recovered from this pit. Pottery from Calloway (15Mt8) produced a thermoluminescence determination of A.D. 910±100 (Table 5.37) (Niquette and Boedy 1986). Site 15Cr74 is an elliptical site in the Little Sandy River drainage. Located on the second terrace at Barrett Creek, the site measures 250 x 500 m. A terminal Late Woodland component is represented by small triangular points and sandstone and siltstone tempered sherds that likely are Late Woodland in temporal affiliation (Kerr and Niquette 1989).

UPPER BIG SANDY SECTION

A high ratio of Woodland components (n=68) to Woodland sites (n=32) has been documented in the Upper Big Sandy Section, suggesting frequent reoccupation of certain locales over the Woodland period. On the other hand, site type diversity is rather low compared to the Lower Big Sandy Section (Table 5.35). In contrast with other sections in Kentucky, the proportion of Late Woodland components in the Upper Big Sandy is quite high at 42.6 percent (Table 5.36). All of the substantial Woodland sites - those with midden/features and diagnostic artifacts or absolute dates - are open habitations, including several in the Fishtrap Reservoir vicinity (Table 5.39). Though the number of substantial Woodland sites in the section is small, the sites do span the Woodland period, especially the late Early Woodland to early Late Woodland subperiods.

Table 5.39. Important Woodland Period Sites in the Upper Big Sandy Section.

Site No.	Site Name	Site Type	Affiliation	References
15Fd47	Pine Fork	open habitation	LW	Edging et al. 1988; McGowan 1988
15Fd78	Prime Farmland	open habitation	EW, MW, LW	Richmond et al. 2002
15Pi7	Sim's Creek	open habitation	MW, LW	Dunnell 1966a, 1972
15Pi11	Stone	open habitation	MW, LW	Dunnell 1966a, 1972
15Pi12	Blackburn	open habitation	MW, LW	Dunnell 1966a, 1972
15Pi16	Thacker	open habitation	EW	Dunnell 1966a, 1972
15Pi92	Martin Justice	open habitation	EW, MW, LW	Kerr et al. 1995; Kerr and Creasman 1998
15Pi303	none	open habitation	MW	Dowell 1979b; Schock et al. 1976

Some of the earliest Woodland sites in the Upper Big Sandy Section are associated with the Thacker phase. Determinants of the Thacker phase are Turkey Tail-like points, siderite and chert debitage, and quartz tempered cordmarked ceramics, the latter of which is the earliest pottery in the section and the latter two of which are found at all six Thacker phase sites recorded in the Fishtrap Reservoir area (Dunnell 1972). Other Thacker phase traits are pigment stones, stone bowls, atlatl weights, whetstones, and Dickson cluster-like projectile points. Hunting-gathering was the prevailing subsistence strategy, with plant use focusing on nut collection (Dunnell 1966a, 1972). Based on stratigraphic and artifactual evidence, Dunnell (1972) rejected as too early a calibrated radiocarbon date of 4325-3956 B.C. for the phase that was obtained from the Thacker site (15Pi16) (Chapter 4:Table 4.41). Lafferty (1978) suggested a range of ca. 900-500 B.C. or early Early Woodland for this phase.

The Thacker site (15Pi6) covered an area 35 m in diameter. Clusters of associated features including earth ovens indicate a series of overlapping, short-term seasonal encampments spanning the earlier Slone (see Chapter 4) and later Thacker phase occupations. Thacker site diagnostics include stemmed points and quartz tempered pottery, the latter exhibiting affinities to types in the south (Dunnell 1966a, 1972).

Early through Late Woodland occupations were documented at the Prime Farmland site (15Fd78). The most intense occupations occurred during the late Early Woodland, cal 808-407 B.C. and cal 813-546 B.C. (Table 5.37), when the site functioned as a short-term camp. Intact midden deposits and features are associated with this component. Diagnostic early Late Woodland Lowe cluster points were found in association with Johnson Plain and Blaine Cordmarked sherds. These ceramics are similar to those recovered from the Dow Cook site (15La4) in the Lower Big Sandy Section (Richmond et al. 2002).

The Martin Justice site (15Pi92), located on a terrace of Fishtrap Lake at the headwaters of Island Creek in the Levisa Fork drainage, is one of the most significant Woodland sites discovered in the Upper Big Sandy Section since Dunnell's (1966a, 1966b, 1972) Fishtrap survey. This largely unstratified, multicomponent site yielded Early through Late Woodland diagnostics, but the most intense occupation occurred during the late Early Wooodland/early Middle Woodland subperiod. Adena Plain *var. Inez* and Johnson Plain ceramics were recovered from contexts dated at cal 405-171 B.C. (Table 5.37). Stemmed dart points were divided into three subgroups and assigned to the Early Woodland (cal 970-405 B.C. and cal 405-171 B.C.) and Middle Woodland (cal 37 B.C.-A.D. 331) subperiods based on radiocarbon dates (Table 5.37). A variety of lithic reduction activities, especially late-stage biface production and rejuvenation, occurred at the Martin Justice site during the Woodland occupations (Kerr et al. 1995; Kerr and Creasman 1998).

Regarding Middle Woodland subsistence evidence, Kerr and Creasman (1998) recovered nutting stones, hickory and walnut remains, and at least one feature used for nut processing and discard. Other wild plants are goosefoot and spurge, while possible cultivars are maygrass and cucurbit. Plant remains indicate secondary growth forest with open areas. The small faunal assemblage was most unidentifiable but included mussel, small mammal, and bird remains. Over much of the Woodland period, the Martin Justice site was used frequently as a residential base camp for short periods of time. Domestic activities focused on daily acquisition and processing but not long-term storage of food resources. Two spatially and temporally distinct occupations occurred during the Middle Woodland subperiod, and the remains of at least one Middle Woodland single- and double-post rectangular structure were documented. During the terminal Late Woodland, however, occupational intensity decreased and the site functioned as a logistical field camp (Kerr et al. 1995; Kerr and Creasman 1998).

Dunnell (1972) delineated the Sim's Creek phase based on Middle-Late Woodland assemblages at 15 sites along Levisa Fork in the Fishtrap Reservoir area. The four phase determinants are sandstone tempered cordmarked pottery lacking angular shoulders, side-notched points, groundstone adzes, and igneous hammerstones, with the pottery and points being found at all Sim's Creek sites. Other diagnostic traits, which may be used to subdivide the phase, are points that resemble Dickson cluster, Chesser Notched, and Lowe Flared Base forms; mica; limestone tempered pottery; and pigment stones, effigies, and personal ornaments. Faunal and floral assemblages include hickory, walnut, acorn, pecan, deer, box turtle, and fish. Sim's Creek phase assemblages date to the Middle-Late Woodland, ca. A.D. 440 (Dunnell 1972; Gremillion 1993a).

The type site, Sim's Creek (15Pi7), is located at the confluence of Sim's Creek and Levisa Fork. The Middle-Late Woodland component encompassed earth oven, pit, and postmold features with an associated calibrated radiocarbon date of A.D. 183-776 (Table 5.37). Diagnostics include side-notched points and sandstone tempered cordmarked or plain sherds. A single sunflower achene, a charred plaited basket made of oak splints, and oak splint fragments were recovered from undated feature contexts. Highly fragmented and burned human skeletal remains mixed with calcined animal bones in a thermal feature may represent evidence of dietary cannibalism. The Sim's Creek phase occupation, the most intense at this multicomponent site, was associated with three semi-circular post patterns representing temporary windbreaks or lean-tos. Associated with the terminal Late Woodland Woodside phase occupation were two postmold patterns delineating more substantial rectangular structures (Dunnell 1966b, 1972).

At the nearby Blackburn site (15Pi12), Dunnell (1966b) documented small-post structures similar to those at the Sim's Creek site. The semi-circular postmold patterns delineated temporary windbreaks or lean-tos, which were associated with other features. A Fishtrap Reservoir site known primarily for Archaic period occupations (see Chapter 4), Slone (15Pi11) had a Middle-Late Woodland component associated with earth oven and storage pit features. Chipped-stone tools, manos, metates, and nutting stones were recovered from the low intensity open-air habitation (Dunnell 1966a, 1972).

Site 15Pi303 is located downstream of Fishtrap Reservoir in the Raccoon Creek drainage near the confluence with Johns Creek. This substantial Middle-Late Woodland habitation site yielded Copena, Bakers Creek, and small triangular points, bladelets, and a sandstone/grit tempered sherd (Dowell 1979b; Schock et al. 1976).

Finally, the Pine Fork site (15Fd47) covers a mountain slope or ridge spur near several springs at the head of Pine Fork Creek, a tributary of Left Fork of Beaver Creek. Artifacts were recovered from three-five thin cultural strata within an area of 125 m^2. The multicomponent site has Archaic (see Chapter 4) and Late Woodland components. Diagnostic Late Woodland artifacts are Madison and Levanna points and siltstone tempered Armstrong or Lick Creek series pottery. Biface production and maintenance, especially late stage reduction, were the primary lithic-related manufacturing activities at the site, and most chert artifacts were made of nonlocal materials. Other domestic activities involved processing of plant and animal resources. Feature types include rock concentrations and rock-filled pits, and no evidence of domestic structures was found. Pine Fork was used repeatedly as a short-term logistical base camp for populations residing at lower elevations (Edging et al. 1988; McGowan 1988).

FUTURE RESEARCH GOALS AND OBJECTIVES

This section outlines research objectives that may be used to direct future Woodland period investigations in Kentucky. While it is hoped that these objectives will help shape future Woodland period research, this section is not intended to restrict future archaeological investigations in Kentucky. Other researchers will undoubtedly propose additional research objectives, and as more data are collected, it is expected that more complex and in-depth Woodland period problems will be investigated by archaeologists working in Kentucky. The research objectives listed below are organized topically: classification and culture history, material culture and technology, subsistence, settlement patterns, exchange and interaction, social and political organization, bioarchaeology, mortuary practices, and ideology.

1. CLASSIFICATION AND CULTURE HISTORY

Archaeologists in Kentucky have made significant advances in Woodland chronology building since the publication of the first edition of the state plan. Chronometric dating has become common practice in academic and contract projects, and this has led to improvements in our understanding of culture history. Extensive radiocarbon sequences have been published in some sections of the Commonwealth, such as the Upper Green River, Gorge, and Lower Big Sandy sections. Archaeologists are increasingly employing thermoluminescence dating at Woodland sites. Culture historical sequences are available in all management areas, though in more detail for some sections.

Issues of systematics, on the other hand, have received less attention. Confusion about the proper use of Adena and Hopewell, for example, continues. The appropriate archaeological units for constructs like Crab Orchard remain elusive. Only one new Woodland phase has been delineated since 1990. Suggestions for the continued advancement of Woodland systematics, chronology, and culture history in Kentucky are outlined below.

* Define local Woodland phases and refine existing phases. Identify temporal and spatial variation in ceramic types that were manufactured for long periods of time and have broad geographic distributions.
* Define time ranges specific for Woodland diagnostic artifacts (e.g., projectile point types, ceramic types, and bladelets) based on specimens recovered from chronometrically dated contexts at Kentucky sites.
* Develop a consistent approach to the use of Adena, Hopewell, and Crab Orchard archaeological units. Determine if formal or chronological subdivisions of these units are feasible and identify their spatial relationship.
* Assess the viability of Dragoo's (1963) Early-Middle Adena vs. Late Adena as a relevant chronological or formal framework for Kentucky.

* Reconsider the validity and utility of Baumer as a culture-historical unit in western Kentucky.

* Reexamine the taxonomic definition (e.g., phase, focus, horizon, and complex) of Newtown. Identify interregional artifact assemblage variation can be used to subdivide Newtown temporally and spatially. Define the temporal, spatial, and formal relationships between Newtown and terminal Late Woodland (e.g., Intrusive Mound) archaeological units.

* Identify boundary markers that clearly delineate the Early, Middle, and Late Woodland subperiods in Kentucky. Reconsider the validity and utility of 1000 B.C., 200 B.C., and A.D. 500 as the divisions between the subperiods.

* Develop additional chronological schemes that may be used to address regional research questions in each management area.

* Determine if ceramic chronometry (Braun 1983) and dendrochronology are feasible dating methods for Woodland period assemblages.

* Expand the use of thermoluminescence dating and use organic artifacts other than charcoal and burned plant remains to radiocarbon date assemblages when botanicals are not available.

2. MATERIAL CULTURE AND TECHNOLOGY

Material culture typology and patterns of tool manufacture and utilization have been important topics of interest to archaeologists for many years. Typological research aids in chronology building and cultural studies. Technological research allows for the study of patterns of behavioral modes and adaptive strategies directly relating to technological systems. Such studies also have provided data essential for understanding broader issues, such as subsistence and settlement strategies, trade and exchange, and social organization. Typological and technological studies in Kentucky have advanced furthest within the realms of lithic and pottery analyses, although important studies have involved other materials like textiles and bone/shell tools.

Important contributions have been made by archaeologists studying cave mineral mining, and several studies of chert and barite/galena availability have been published. However, these studies are temporally and spatially limited. In general, Woodland resource extraction strategies in Kentucky have received less attention by archaeologists than other areas of Woodland lifeways. One problematic issue regarding such studies will be establishing temporal controls. Possible approaches are dating associated artifact assemblages and comparison of mineral sources with chronologically diagnostic manufactured goods using trace element analysis, petrographic analysis, and similar techniques.

The wide range of typological approaches (e.g., pottery nomenclature), explanatory models (e.g., debitage analysis and lithic production systems), and analytical techniques (e.g., experimental archaeology, microscopic use wear, sourcing, and residue analysis) developed in American archaeology should be utilized to address Woodland material culture and technology research questions in Kentucky. The following research objectives are arranged by material class.

Lithic Analysis

* Analyze untyped projectile point assemblages from important Woodland sites in order to assign specimens to recognized types.
* Document temporal and spatial variation of Woodland projectile point types.
* Reconstruct Woodland lithic production systems in each management area, and across time and space.
* Determine temporal and spatial patterns in Newtown chert preferences and chert selection for tool manufacture.
* Document inter- and intrasite variation in Turkey Tail blade form and raw material utilization, and identify diachronic changes in Turkey Tail caching behavior (Schenian 1987).
* Determine the extent to which the shift from grooved axes to ungrooved celts at the beginning of the Woodland period was associated with changes in Woodland subsistence patterns.
* Determine the functions of unhafted bifaces, scrapers, expedient tools, and groundstone tools recovered from Woodland sites.
* Identify the locations of chert sources in each management area and compile macroscopic and elemental data for each source.
* Document Woodland chert quarrying practices, including tools and methods, and identify temporal and spatial variability in chert quarrying techniques.
* Identify barite/galena acquisition techniques (e.g., tools and methods) in the Central Bluegrass and Ohio River II sections. Conduct formal analyses of barite/galena objects (Clay 1985b, 1988).

Fired Clay Industries

* Identify Woodland clay quarrying practices, including tools and methods, and document temporal and spatial variability in Woodland clay quarrying techniques.
* Examine unanalyzed pottery assemblages in museum collections, assign them to recognized types, and define new types.
* Document temporal and spatial variation in Woodland pottery types. Update the formal descriptions of established pottery types to accommodate this variation and identify pottery types that are regional variants of these types.
* Identify and describe the earliest pottery types in each management area. Determine direction(s) of diffusion of pottery technology and/or areas of independent invention.

* Determine the validity of the Baumer ceramic series relative to Crab Orchard, and determine the spatial and chronological ranges of both ceramic series.
* Determine the spatial and chronological range of Zorn Punctate.
* Determine the spatial and chronological range of Fayette Thick.
* Determine the spatial and chronological relationship of Adena Plain and Inez Plain.
* Determine the functions of Woodland pottery vessels and document variation in vessel functions across time, space, and site types.
* Identify Woodland ceramic functional attributes that can be used in chronometric studies (Braun 1983) and that can be used to define intrasite activity areas.
* Determine the range of items, other than ceramic vessels, manufactured from fired and unfired clay (e.g., engraved tablets, ear spools, and smoking pipes).

Bone, Antler, and Shell Industries

* Document the types and functions of bone, antler, and shell tools associated with Woodland habitation sites.
* Identify the genera/species used by Woodland groups to manufacture bone, antler, and shell objects, and determine the relative use of freshwater mussel shell and marine shell in mortuary contexts.

Textile Industry

* Identify plant genera/species used to manufacture Woodland textiles and determine if there are temporal and spatial differences in the plant species used in textile manufacture.
* Expand textile analyses to consider issues of fiber selection, fiber preparation, production decisions, status, and ethnicity (Gremillion et al. 2000a).
* Identify the temporal and spatial ranges of different techniques used by Woodland weavers.
* Determine the functions of Woodland textiles (Gremillion et al. 2000a).
* Determine the socio-cultural context of textile use, modes of textile production, and gender differentiation in textile manufacture and use (Gremillion et al. 2000a).
* Assess the reliability of cordage twist as an independent index of chronology and ethnic identity (cf., Maslowski 1984b).

Wood, Cane, and Grass Industries

* Identify plant genera/species for Woodland wood, cane, and grass objects.

* Examine the developmental, technological, functional, and stylistic relationships among carrying devices made of wood/cane (i.e., baskets) vs. those made of woven plant material (i.e., textile bags) vs. those made of cucurbit shells (i.e., squash and gourd bowls).

Mineral Industry

* Determine why cave mineral mining became an intensive Early Woodland extractive activity and the extent to which caves outside the Mammoth-Flint system of the Upper Green River Section were mined for minerals during the Woodland period.
* Document spatial and/or temporal variation in Woodland cave mineral mining.

3. SUBSISTENCE

While Woodland food collection strategies were not substantially changed from previous times, significant changes in food production have been documented. Of particular interest to researchers studying Woodland subsistence patterns are issues surrounding the mechanisms of native plant domestication, the adoption of maize and other Mesoamerican domesticates, the integration of cultigens into existing subsistence economies, and the relative dietary contribution of domesticated plants through time. The timing of the appearance of various Woodland cultigens has been well documented. Questions regarding the adoption, ecology, consequences, and selective factors surrounding plant husbandry have been addressed.

As research continues in new and existing directions, "the rockshelters of eastern Kentucky are likely to continue to play a prominent role both in documentation of agricultural origins and in development of paleoethnobotanical techniques and methods" (Gremillion 1997b:40). Western Kentucky caves can be added to this list, and, increasingly, open habitation sites. The latter are important because they show similarities in dietary patterns compared to rockshelter and cave sites, indicating that the evidence is not simply the result of preservation biases among site types.

Besides subsistence, however, archaeologists have expanded paleoethnobotanical research into the areas of medicinal and ritual plant use. Further, in eastern Kentucky, archaeologists and archaeobotanists have studied the relationship between ecological modifications (human forest management using fire) and the adoption of weedy cultigens during the Woodland period. Specific research objectives related to Woodland subsistence are outlined below.

* Document Woodland subsistence patterns for each cultural/temporal unit, including the technologies used to procure and process various subsistence resources, the contribution of cultigens to the diet, regional and temporal variability in the exploitation of cultigens, and the nature (e.g., generalized or specialized) of food collection strategies.

* Document Late Woodland subsistence strategies in the Big Bottoms area of the Mississippi River Section (Kreisa 1987).
* Document Late Woodland faunal exploitation in all management areas (Hockensmith et al. 1998; Pollack and Henderson 2000).
* Document Woodland period subsistence strategies in the Ohio River I, Ohio River II, Western Coalfield, and Eastern Bluegrass sections.
* Determine the initial appearance of maize in Kentucky and its importance to Woodland diets.
* Determine where in Kentucky indigenous cultigens, especially sunflower, goosefoot, and cucurbits, were domesticated.
* Determine the contribution of maygrass, which does not show signs of morphological change resulting from human interactions, to Woodland diets. (At Newt Kash, maygrass is not present in paleofecal samples but was used to weave textiles found at the site [Gremillion 1995b; Jones 1936]. Nor were maygrass seeds found in Hooton Hollow paleofeces [Gremillion 1995b]).
* Determine the extent to which plant greens and tubers were utilized by Woodland groups (Cowan 1985).
* Determine the extent to which changes in subsistence strategies affected Woodland food storage practices, settlement patterns, technology, socio-political organization, and ideology (Gremillion 1993c; Mickelson 2002).
* Determine if the Woodland period shift from closed to open forest canopy in the Mammoth Cave area was due to human slash-and-burn subsistence activities, regional climatic change, and/or natural forest fire. Determine if the shift resulted in reduced mast resources, and what relationship this might have had to plant husbandry (Watson 1997).
* Determine if nut mast production changed over time (Cowan 1985), and assess the extent to which the adoption of cultigens was a way to minimize subsistence risks (Gardner 1997).
* Determine if sumpweed and goosefoot were imported to the Upper Kentucky/Licking Management Area from elsewhere, perhaps western Kentucky (Cowan 1985).
* Determine the extent to which seasonal variations in wild plants affected the relative contributions of wild and cultivated species to Woodland diets.
* Determine if stalking (as opposed to communal drives) was the principal deer-hunting strategy employed during the Woodland period (Waselkov 1978).
* Assess the adoption of bow and arrow technology, including timing and effects on hunting efficiency and other aspects of culture.
* Document nonsubsistence uses of plants (e.g., medicine, ceremony, dye, and textiles) at Woodland sites, including species with expected or demonstrated mortuary or ritual uses.

* Determine if bark recovered from Woodland paleofeces reflects incidental ingestion during textile manufacture or if it represents a famine food (Cowan 1978; Gremillion 1995b).
* Document the range of human impacts to the landscape, including earthwork construction, field clearing, mast maintenance, and firewood acquisition (Anderson and Mainfort 2002b).
* Assess Watson and Carsten's model of environmental stability in the Mammoth Cave area since the end of the Middle Archaic period by coring Beaver Pond or the Hawkins Farm site in Mammoth Cave National Park (Prentice 1993:152).
* Determine if changes in ceramic vessel functional attributes are correlated with shifts in food storage and processing patterns.
* Determine the extent to which studies of pottery residue analysis, pollen, phytoliths, and starchy grains can contribute to our understanding of Woodland subsistence.
* Expand research on food remains from paleofecal specimens, especially those dating to the Terminal Archaic-Early Woodland period when critical subsistence changes occurred.

4. SETTLEMENT PATTERNS

Archaeologists have learned a great deal about Woodland intersite settlement patterns in Kentucky, though less is known about intersite settlement systems. Some interesting information about intrasite patterning has been assembled, but the temporal and spatial coverage of these studies is quite limited. Though progress has been made in documenting Woodland house types, the least is known about Woodland settlement at the microsettlement level, perhaps due in part to the nature of archaeological investigations and to the degree of settlement impermanence (e.g., short-term use and limited durability of shelters) during much of the Woodland period. Specific research objectives related to Woodland settlement patterns are outlined below.

* Identify variation in Woodland house types across time and space in each management area.
* Identify contemporaneous Woodland sites and develop Woodland site prediction models for each section.
* Conduct systematic excavations at Woodland rockshelters, including portions beyond shelter driplines, outside the Upper Kentucky/Licking Management Area.
* Assess the role that single-purpose (e.g., Crystal Onyx Cave) and multi-purpose (e.g., Mammoth Cave and Salts Cave) cave sites played in Woodland settlement systems (Carstens and Watson 1996; Crothers et al. 2002).

* Determine the relationship (e.g., conflict or cooperation, subsistence, social organization, and settlement) between Woodland rockshelter and cave sites and open habitation sites (Applegate 1997; Carstens and Watson 1996; Crothers et al. 2002; Gremillion 1993a, 1996; Gremillion et al. 2000b; Lane et al. 1995; Mickelson 2002; Prentice 1993).

* Determine why only some Newtown habitation sites have associated mortuary facilities (e.g., burial mounds) (Kreinbrink 1992).

* Determine the extent to which large terminal Late Woodland sites in the Jackson Purchase and Green River management areas reflect increased sedentism and socio-political complexity and a greater reliance on cultivated plants (Kreisa 1988).

* Determine the extent to which solar radiation affected rockshelter utilization in the Upper Kentucky/Licking Management Area (Gremillion 1996; Gremillion et al. 2000b).

* Determine if the sporadic, short-term Woodland use of shell midden sites in the Green River Management Area (Hensley 1991; Jefferies 1990) reflects population decline, population dispersal, or a reorientation of subsistence-settlement strategies away from the river.

* Assess the relationship between large base camps, burial mounds, and small camps within the Crab Orchard settlement system of the Ohio River II Section. Determine if the Slack Farm and Smith sites were used by different Crab Orchard groups (deNeeve 2004).

* Identify Yankeetown phase settlement patterns.

* Identify habitation sites associated with Adena mortuary sites in central Kentucky and assess Clay's (1991) and Railey's (1991b) models of Adena settlement patterns.

* Determine if there is a relationship between late Early Woodland-early Middle Woodland circular embankments and Late Woodland donut-shaped habitation sites in the Bluegrass and Big Sandy management areas.

* Assess the case for population aggregation and settlement nucleation in the Bluegrass Management Area during late Middle and early Late Woodland times. If this pattern is confirmed, explore the processes that were responsible for these demographic and settlement shifts.

* Document diachronic variation in the intensity of Woodland rockshelter occupations in the Upper Kentucky-Licking and Big Sandy management areas (Ison and Ison 1985).

* Determine if inter-drainage settlement pattern differences in the Upper Kentucky/Licking Management are related to quantitative economic costs and returns distinctive to each drainage (Gremillion 1996; Gremillion et al. 2000b).

* Determine the range and distribution of earth, stone, and earth-stone mound complexes in the Big Sandy Management Area (Kerr and Creasman 1998:112).

5. EXCHANGE AND INTERACTION

Patterns of interregional exchange and interaction comprise a major topic of research in Woodland studies, especially during the Middle Woodland subperiod. Woodland exchange systems in eastern North America are often viewed from a perspective that focuses upon geographical, environmental, and ecological factors (e.g., Goad 1979; Seeman 1979; Struever and Houart 1972). The role that social relationships played in controlling and maintaining Woodland exchange systems, and developments and changes within these systems, have yet to be fully explored. Listed below are research goals related to Woodland exchange and interaction.

* Document the nature and extent of interregional exchange and interaction between Early, Middle, and Late Woodland groups in Kentucky and those in other parts of the Eastern Woodlands.
* Determine the mechanisms through which Early, Middle, and Late Woodland groups obtained nonlocal raw materials and finished goods.
* Identify regional and local patterns of Hopewellian exchange networks in Kentucky.
* Examine diachronic variation in Woodland exchange patterns, especially the proliferation and eventual decline of exchange during Middle Woodland times.
* Identify the source of barite/galena objects (including specimens from southern Ohio Woodland sites) and examine their spatial distributions to trace the movement of these goods (Clay 1985b, 1988).
* Determine types of materials and goods that were exported from Kentucky to other parts of the Eastern Woodlands during the Woodland period.
* Determine the role of trade and exchange in the development of village farming communities during terminal Late Woodland times.
* Determine the extent to which interregional exchange relationships affected the procurement of lithic raw materials and the production of chipped stone and groundstone tools.

6. SOCIAL AND POLITICAL ORGANIZATION

The basic outlines of prehistoric social structure can be reconstructed from various lines of data, including settlement pattern studies (particularly intrasite patterning), mortuary patterns, exchange systems, subsistence data, and physical anthropological studies. For the Woodland period, social structure traditionally has been addressed through comparisons of burial mound patterns (e.g., Braun 1979; Tainter 1977), including method of mound construction (accretionary vs. single episode); interment mode; the age and spatial distribution of individuals interred within the mounds; the amount, diversity, distribution, and nature of grave goods; the physical context of mounds relative to habitation sites, earthworks, and other mounds; and the remains of attendant mortuary ritual. Researchers also addressed questions relating to the sizes of groups who occupied sites, gender roles related to subsistence and other aspects of culture, and levels of socio-political complexity in Woodland societies. Research objectives related to Woodland social organization are listed below.

* Determine the size and composition of Woodland residential social unit(s).
* Document the differential distribution of nonlocal raw materials and other artifacts among burials in Woodland mortuary areas, and determine if they reflect achieved vs. acquired status or age- and sex-related variation in access to resources.
* Identify and examine patterns of labor organization in the Woodland period, and assess the identified developments with respect to social transformations.
* Determine if some rockshelters were special-purpose sites used by women (Claassen 1998; Funkhouser and Webb 1929; Knudsen 1985) and if other sites, such as some caves, were special-purpose sites used by men (Crothers et al. 2002).
* Identify factors responsible for the rise of social inequality during the Woodland period.
* Determine the nature and extent of status differentiation with Adena society (Anderson and Mainfort 2002a).
* Determine if earthwork construction in Kentucky is correlated with other socio-cultural changes that occurred during the Early and Middle Woodland subdivisions.
* Explore the relationships between changes in social organization and changes (or continuity) in economic systems, ideology, and other aspects of Woodland culture.
* Determine the level of socio-political complexity throughout the Woodland period in all management areas.
* Determine if earthwork construction in Kentucky is correlated with other socio-cultural changes that occurred during the Early and Middle Woodland subdivisions.

7. BIOARCHAEOLOGY

Bioarchaeological research is important because it informs about demography; health, disease patterns, traumatic injuries, and medical treatments; subsistence and nutritional stress; and gender roles, social status, differential access to resources, armed conflict, and other aspects of social organization. Woodland period bioarchaeological investigations in Kentucky have expanded beyond the classic studies of craniometry and racial types in Adena skeletal series. Human remains from other site types and other time periods have been analyzed, and paleofecal studies are expanding. Research objectives related to Woodland bioarchaeology are listed below.

* Identify the physical characteristics of various Woodland period burial populations; determine their demographic composition, including age-sex distributions and mortality rates; and identify paleopathologies and traumatic injuries.
* Use DNA analysis (e.g., Mills 2003) or craniometric analysis of biological relatedness (Herrmann 2006) to distinguish among burial populations interred in large Woodland mounds and cemeteries.
* Use stable isotope and trace element analyses to assess Woodland subsistence and population movements.
* Analyze curated skeletal series that have not yet been studied and reanalyze previously reported skeletal series, such as those from Adena mounds, with respect to sex determinations and age estimations (Milner and Jefferies 1987).
* Document copper staining, pigment staining, and other cultural modifications in Woodland burial skeletal analyses.
* Identify post-mortem modifications of human bones (e.g., drilled skull fragments and trophy skulls) placed as grave goods at Woodland sites.
* Determine the extent to which linear enamel hypoplasias, dental caries, long bone length and circumference, Wilson bands, Harris lines, trace elements (strontium:calcium and nitrogen-15), cribra orbitalia anemia, arthritis, sexual dimorphism, bone fractures, and degenerative pathologies are related to repetitive activities and reflect changes in women's work load as well as women and children's access to resources (Claassen 1998).
* Identify incidences of cannibalism in Woodland burial populations and distinguish among different types of cannibalism (e.g., ritual, dietary or gustatory, and survival).
* Analyze paleofecal materials to address questions relating to health, gender differences in site use and activities, and gustatory cannibalism (human myoglobin and other indicators).

8. MORTUARY PRACTICES

Woodland mortuary practices continue to capture the interest of archaeologists in Kentucky. We now have a better understanding of mortuary practices throughout the Woodland period, though the late Early-early Middle Woodland subperiod is still best understood. Research on Woodland mortuary-ritual has expanded beyond the early focus on Adena into cave and rockshelter burials, nonmound and nonmortuary ritual sites, ritual feasting and graveside activities, and ceremonial plant use. Despite these developments, there remain many interesting and compelling research issues that should be investigated using new analytical methods, multiple scales of investigation, and contemporary theoretical paradigms, as outlined below.

* Identify inter-regional variation in Early, Middle, and Late Woodland mortuary practices, and investigate how changes in social organization are reflected in mortuary patterns.
* Identify changes in preferred locations for mortuary areas/cemeteries during the Woodland period.
* Identify the factors that resulted in the appearance of cemeteries/mounds removed from habitation sites.
* Identify the association of nonmound mortuary sites with burial mound building in Kentucky.
* Determine if Adena mounds primarily contain high status populations and if differences in mortuary treatment (e.g., in-flesh burial vs. cremation) are correlated with status.
* Determine the functions of submound Adena structures.
* Document and assess activities related to graveside ritual, such as charnel house form and function, behavioral implications of pottery from mound and off-mound contexts, and the presence or absence of associated "mortuary camps".
* Determine the temporal and functional relationship among Peter Village, Grimes Village, and other large Early Woodland ditched enclosures (Clay 1985b).
* Use geophysical techniques at mound sites to delineate associated features, such as postmold patterns and off-mound activity areas.
* Identify contextual patterns in the spatial distributions of pottery and other artifacts associated with Adena mound stages (O'Malley 1988).
* Determine the sequence of construction of Woodland earthwork complexes (e.g., Camargo, Old Fort, and O'Byam's Fort).
* Determine the amount of time that elapsed between the use of submound structures and mound construction, and between deposition of different layers at stratified mounds.
* Identify spatial variation in Woodland mortuary and ritual activities among sites, drainages, sections, and management areas (Greber 1991, 2005; Rafferty 2005; Sieg 2005).
* Determine the socio-cultural and ideational factors that led to the development of integrative Woodland mortuary facilities (e.g., Adena mounds) (Wall et al. 1995).
* Determine if the mortuary caves on Prewitt's Knob in the Upper Green River Section were used contemporaneously or sequentially. Identify other caves in this section and in other management areas that were used for mortuary purposes during the Woodland period (Crothers et al. 2002).

* Identify temporal, socio-cultural, and ideational variation in mortuary practices in the Mammoth Cave area (e.g., individual vs. communal burial, formal crypt construction vs. absence of formal graves, and rockshelter vs. cave interment) (Horton 2003).
* Identify the types of foods consumed during ritual-related feasting activities, as well as associated features and preparation/storage practices.
* Determine the temporal and spatial range of stone box grave construction during the Woodland period.
* Determine the significance of the association of Archaic diagnostics with Woodland mortuary-ritual sites (e.g., recovery of a Big Sandy point from a burial at Viney Branch site in the Lower Big Sandy Section).

9. IDEOLOGY

Prehistoric belief systems often are reconstructed by relating changes in cosmography and ritual behavior to economic and social developments (e.g., Drennan 1976; Rappaport 1971). Analysis of icons expressed in ceramic decoration or ritual items are often key indicators of past ideologies. The symbolic richness of Adena-Hopewell ritual complexes offers an exciting, but largely untapped, data source for examining Woodland period belief systems. Increasing attention has been given to Woodland period artistic expression, especially rock art (e.g., Coy et al. 1997; Davis 1996; DiBlasi 1996). Archaeologists working in the region have come to recognize the role that beliefs played in shaping the archaeological record of the Woodland period (e.g., Cowan 1985). Potential avenues for expanding research on Woodland ideology are outlined below.

* Identify and interpret stylistic patterns of decorative motifs on pottery, engraved tablets, and other portable items (e.g., Carter 2007).
* Assess the symbolic implications of decorative motifs, burial patterns, site structure, and other cultural elements.
* Identify socioeconomic factors related to ideational trends.
* Identify enduring and discontinuous ideational elements within the Woodland period, and assess the possible relationships of these to earlier Archaic, and later Mississippian and Fort Ancient ideational elements.
* Examine the potential time depth of historically-recorded native ideological themes with respect to Woodland period icons and symbols.
* Examine Woodland earthworks and other sites for evidence of archaeoastronomy.
* Identify temporal and spatial variation in Woodland rock and cave art motifs, and determine their function.

MAJOR ACCOMPLISHMENTS

Since 1990 there have been a great many advances in Woodland period research in Kentucky. Though most research has focused on newly discovered sites, archaeologists continue to analyze and reanalyze existing collections and site records. Spatially, the most substantial advances have been made in areas where little previously was known about the Woodland archaeological record: Upper Cumberland Management Area, Interior Mountains Section of the Upper Kentucky/Licking Management Area, and Upper Big Sandy Section of the Big Sandy Management Area. Temporally, more is now known about two previously poorly documented subperiods, the early Early Woodland and the terminal Late Woodland. Topically, major accomplishments in Kentucky Woodland archaeology relate to technology, subsistence and settlement strategies, exchange activities, social organization, mortuary and ritual practices, and beliefs and artistic expression.

There have been several advances in the study of Woodland technology and material culture. Archaeologists employing existing methodological approaches, such as experimental archaeology and microscopic use wear, have provided new information about lithic tool functions and manufacturing techniques. Typological issues continue to dominate Woodland pottery research, and important developments include delineation of new pottery types, such as Inez, Main, Mills, and Pine Mountain, and documentation of temporal and spatial variability in existing pottery types, including Crab Orchard, Falls Plain, and Fayette Thick. Much has been learned about Woodland textile industries, especially technological aspects.

More is now known about Woodland hunting and gathering strategies, especially in the Mississippi River, Lower Tennessee-Cumberland, Lake Cumberland, Southeastern Mountains, Central Bluegrass, and Interior Mountains sections, where little data previously was available. The fundamental Woodland foraging pattern across time and space involved reliance on deer and other large mammals, turkey, turtles, and nuts. These primary food sources were supplemented by a variety of wild plants and animals, the combinations of which varied temporally and spatially. A related development in Woodland research deals with medicinal and ritual uses of plants.

Woodland subsistence research in Kentucky, however, continues to the dominated by studies of plant husbandry and food production. Research conducted since 1990 has confirmed initial hypotheses about the timing of plant domestication and the rate of adoption of plant cultigens. An extensive series of absolute dates consistently indicates that cucurbits were among the initial cultigens, followed by indigenous weedy species, all of which were managed/domesticated in the Terminal Archaic to early Early Woodland periods. Quantitative studies have documented that plant cultigens were adopted as a package and gradually incorporated into the Woodland diet, never exceeding wild resources in dietary importance. Another important development is the identification of some cucurbit subspecies/varieties as indigenous North American domesticates as opposed to tropical imports. Archaeobotanists have learned a great deal about morphological and genetic changes, or the lack thereof, in cucurbits and weedy plant cultigens, as well as the ecology of cultivated plant species. Several hypotheses have been proposed regarding the ecological context of Woodland plant husbandry and the reasons why the new subsistence strategy was selected. Research has examined the impacts of plant husbandry on other aspects of Woodland lifeways, like settlement, overall subsistence, environmental modifications, and, to a lesser degree, beliefs, artistic expression, and gender roles. Importantly, more is now known about plant husbandry in parts of Kentucky other than western caves and eastern rockshelters.

There have been a number of developments in Woodland settlement studies in Kentucky. With structural remains now documented at more than two dozen sites in Kentucky, our understanding of Woodland microsettlement has advanced significantly. Woodland houses were circular, oval, square, or rectangular in shape, were constructed with individually-set unpaired posts, and varied in size in relation to social residence patterns and season of occupation. Archaeologists have documented considerable variation in Woodland intrasite patterning. Though rockshelters continue to receive a great deal of attention, important advances have been made in the study of Woodland open habitations and cave sites. Regarding the former, information is available about feature types, activity areas, and overall site layout. In terms of cave sites, research has focused on dating periods of intensive cave use and understanding the mineral extraction and mortuary uses of caves. Regarding intersite patterning, Woodland settlement patterns across time and space are now extensively documented in Kentucky, in some areas to such an extent that site location predictive models have been proposed.

One of the more significant advances in the study of Woodland exchange concerns the occurrence of imported pottery wares at Kentucky sites, especially those dating to the Middle-Late Woodland subperiod. Previously viewed as incidental or curiosities, the increasing frequency with which imported pottery types like Connestee are reported from Woodland sites indicates the pervasive nature of Woodland trade of such commodities and the directions of exchange activities.

Woodland period social organization has received increasing attention by archaeologists in Kentucky. Researchers have studied gender roles, social status, and ranking in Woodland societies. Some studies have focused on reconstructing levels of socio-political complexity during the Woodland period.

Mortuary and ritual activities have long dominated Woodland period research in Kentucky, but researchers also have focused on documenting variability in mortuary practices and incorporating this variability into explanatory frameworks. Much more is now known about nonmound mortuary sites like caves, rockshelters, and open-air burial grounds. In addition to mortuary sites, archaeologists have documented Woodland ritual localities not associated with burials or mounds. Analyses of Adena mortuary-ritual practices continues, though now with a focus on understanding regional and temporal diversity; research issues include staged ritual programming, ritual feasting activities, and mound functions other than burial. Based on additional research since 1990, there now can be little question that in Kentucky Adena is late Early to early Middle Woodland in age. Archaeologists have also studied post-Adena mortuary-ritual activities, including the occurrence of Hopewell traits at Kentucky Woodland sites. Whereas past assessments concluded that "virtually nothing is known about Kentucky Late Woodland burial practices or ceremonialism" (Pollack and Henderson 2000:617-8), information about some Late Woodland mortuary-ritual sites is now available.

Regarding cognitive archaeology, the most significant advances in Kentucky Woodland research deal with artistic expression. Much of this work has focused on documentation of rock and cave art sites and description of individual motifs and composite panels. Archaeologists also have proposed functional interpretations of Woodland art.

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