

THE ARCHAEOLOGY OF KENTUCKY: AN UPDATE

VOLUME ONE

State Historic Preservation Comprehensive
Plan Report No. 3

Edited

By

David Pollack

With Contributions

By

**Darlene Applegate
Alexandra Bybee
A. Gwynn Henderson
Richard W. Jefferies
Kim A. McBride
W. Stephen McBride**

**Greg Maggard
Philip Mink
David Pollack
Kary Stackelbeck
M. Jay Stottman**

2008

Kentucky Heritage Council

Copyright 2008
Kentucky Heritage Council
All Rights Reserved

TABLE OF CONTENTS

VOLUME ONE

PREFACE	iii
ACKNOWLEDGEMENTS.....	v
CHAPTER AUTHORS' ACKNOWLEDGEMENTS.....	vi
CHAPTER 1: INTRODUCTION	
By David Pollack	1

PART ONE: PREHISTORIC CONTEXTS

CHAPTER 2: OVERVIEW OF PREHISTORIC ARCHAEOLOGICAL RESEARCH IN KENTUCKY	
By Kary Stackelbeck and Philip B. Mink	27
CHAPTER 3: PALEOINDIAN PERIOD	
By Greg Maggard and Kary Stackelbeck.....	109
CHAPTER 4: ARCHAIC PERIOD	
By Richard W. Jefferies	193
CHAPTER 5: WOODLAND PERIOD	
By Darlene Applegate.....	339

VOLUME TWO

CHAPTER 6: MISSISSIPPI PERIOD	
By David Pollack	605
CHAPTER 7: FORT ANCIENT PERIOD	
By A. Gwynn Henderson.....	739

PART TWO: HISTORIC CONTEXT

CHAPTER 8: HISTORIC PERIOD	
By W. Steven McBride and Kim A. McBride	903

CHAPTER 4: THE ARCHAIC PERIOD

By
Richard W. Jefferies
University of Kentucky
Lexington, Kentucky

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 (15McL11-12), 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 (8,000-6,000 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 (15Jf10) (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 [12F146]; 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

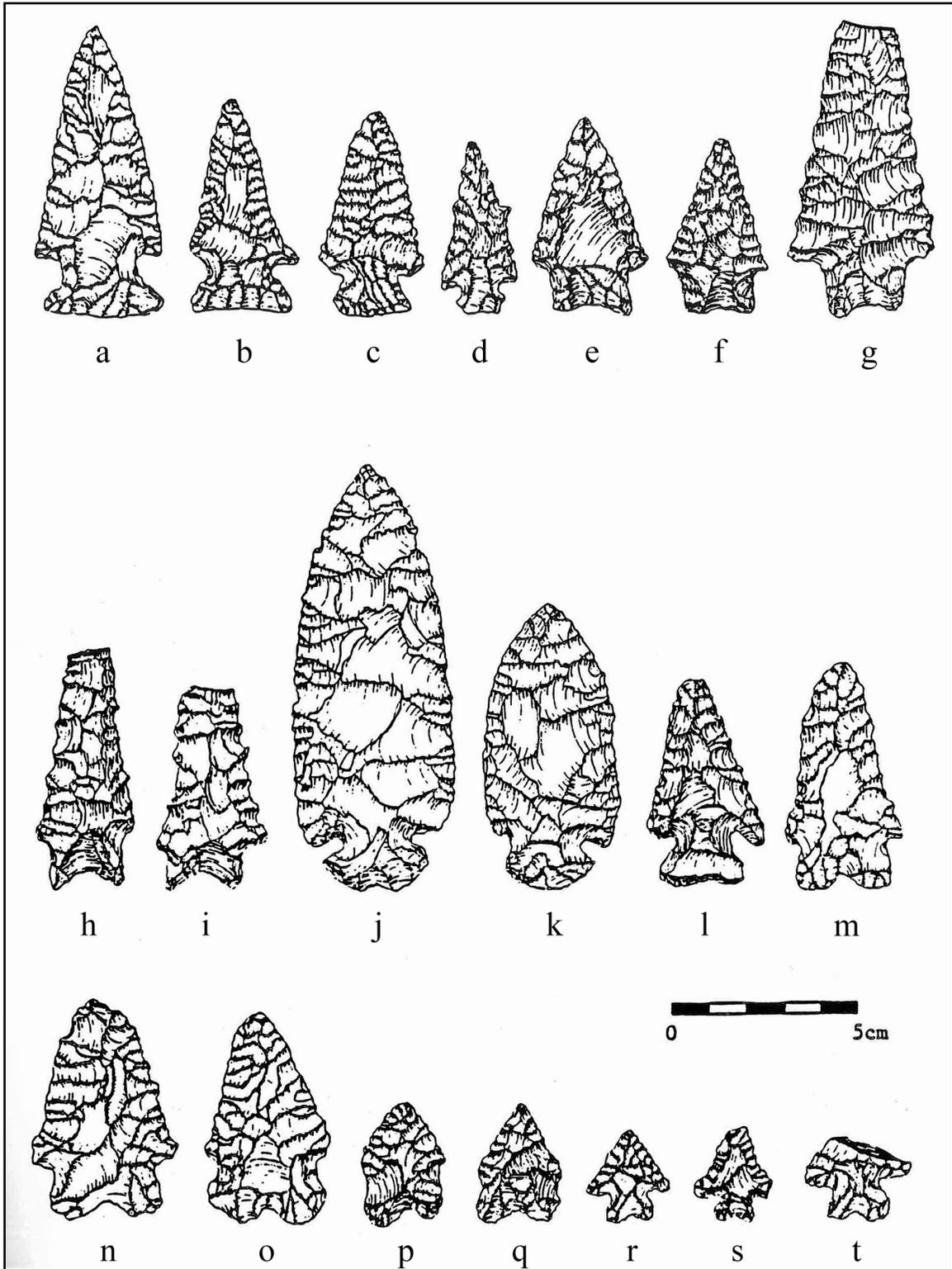


Figure 4.1. Early Archaic projectile points: a-d, Kirk Corner Notched; e,f, Kirk Stemmed; g-i, Kirk Serrated; j,k, Dovetail; l, Thebes Diagonal Notched; m-o, MacCorkle; p,q, LeCroy; r-t, Kanawha.

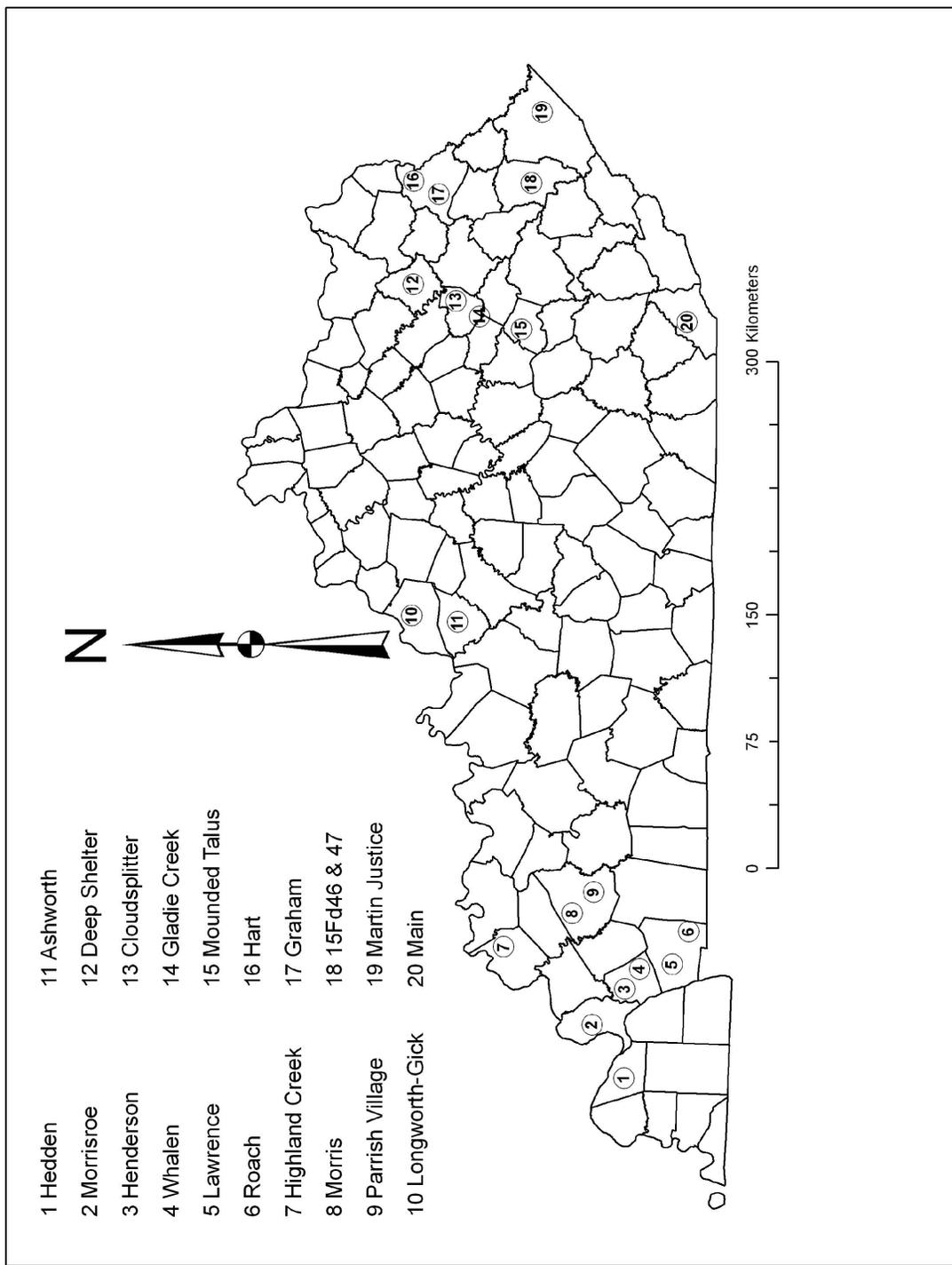


Figure 4.2. Major Early and Middle Archaic sites.

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).

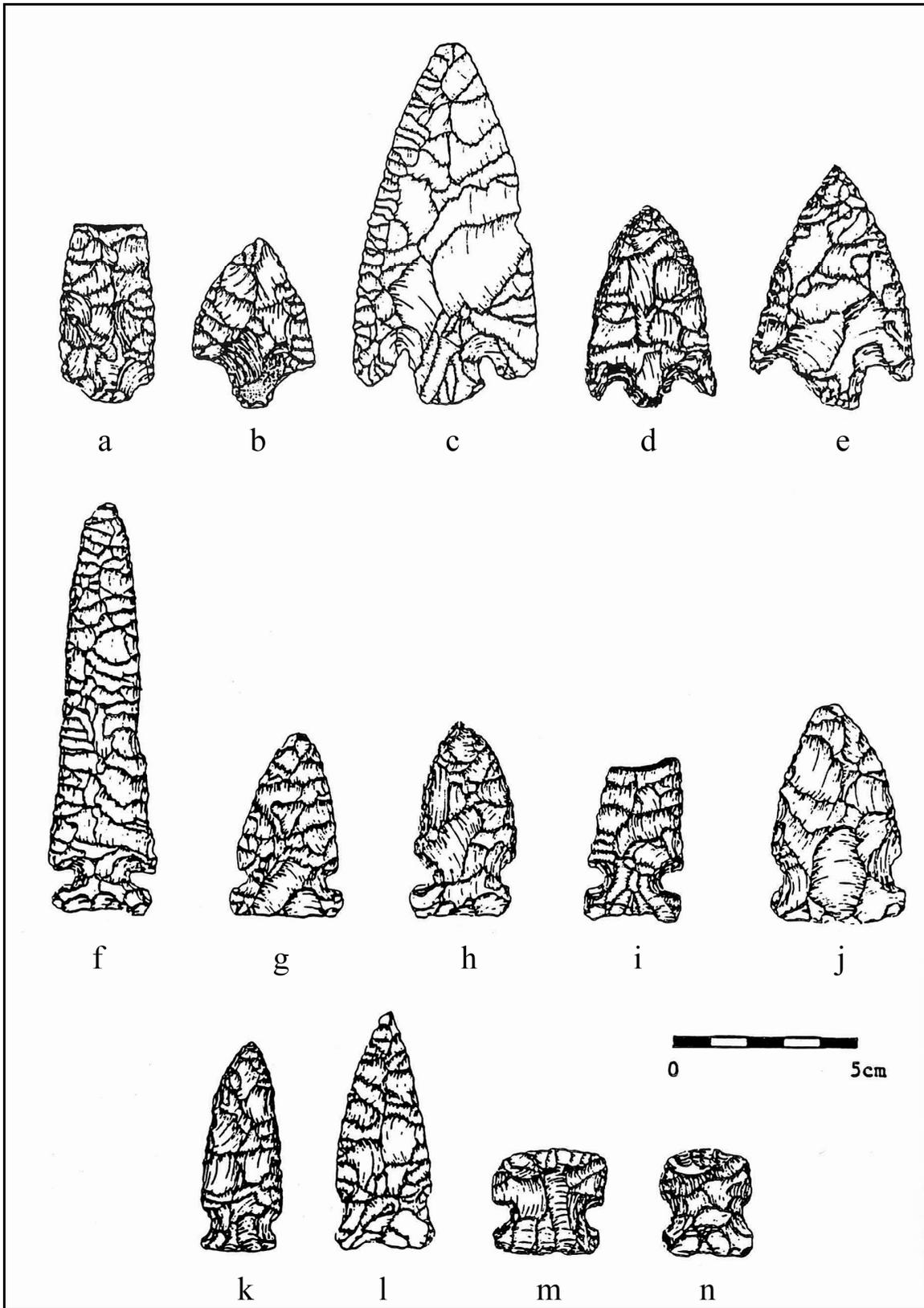


Figure 4.3. Middle Archaic hafted bifaces: a,b, Morrow Mountain II; c-e, Eva; f-j, Big Sandy/Godar; k,l, Matanzas; m,n, side notched endscrapers.

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.

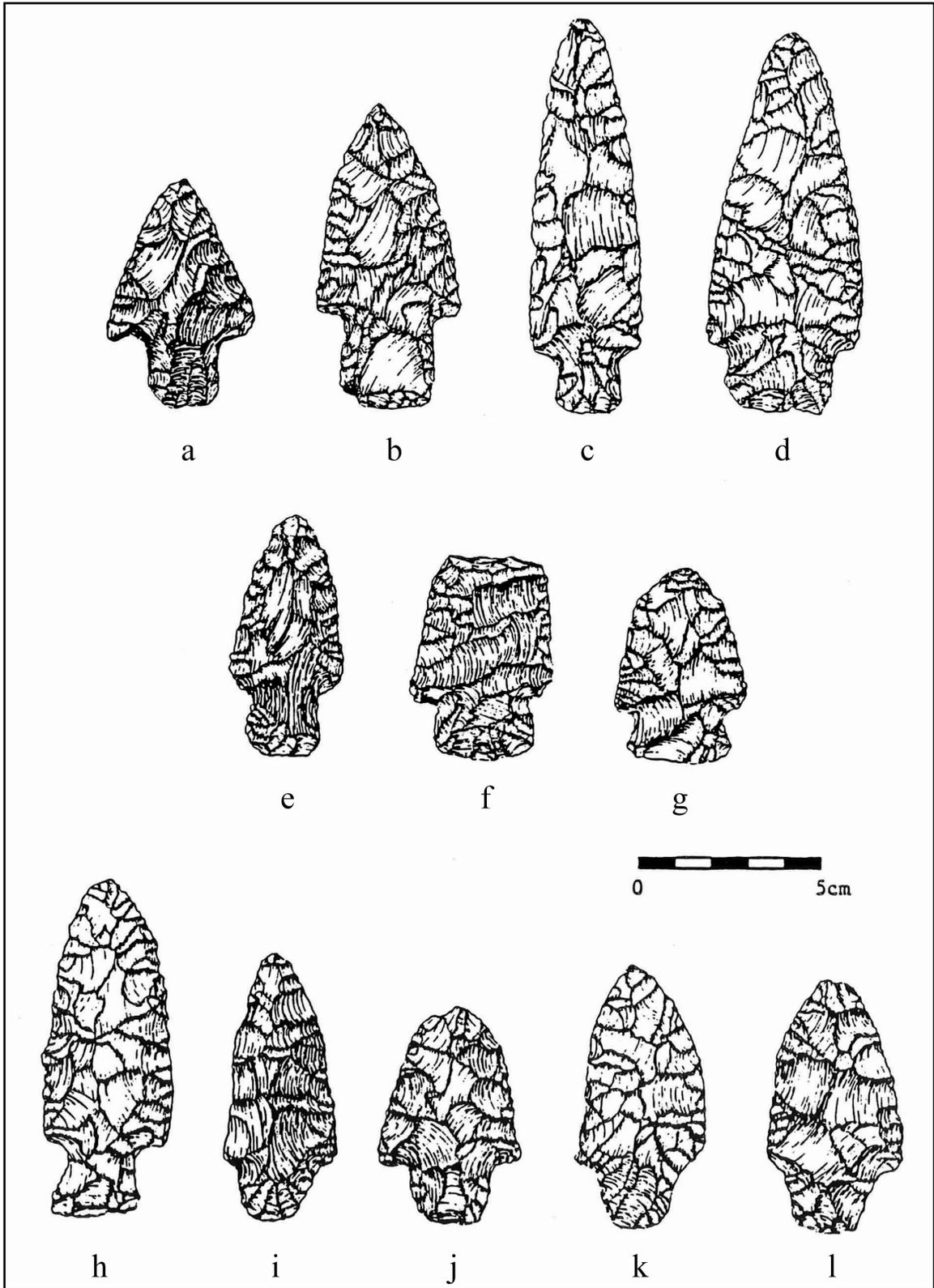


Figure 4.4. Late Archaic projectile points and hafted endscrapers: a-d, straight stemmed; e-h, expanding stemmed; i-l, contracting stemmed.

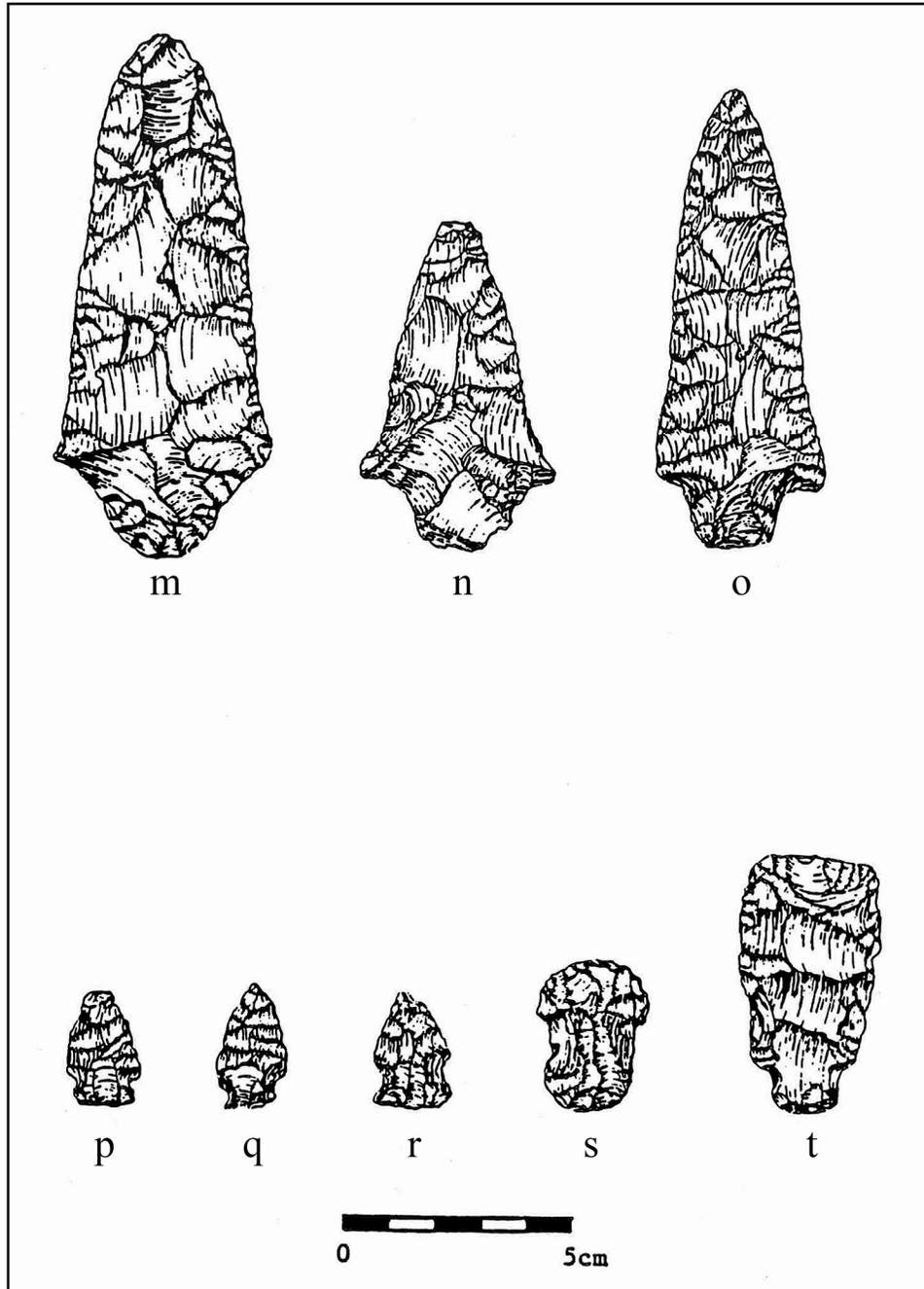


Figure 4.5. Late Archaic projectile points and hafted endscrapers: m-o Ledbetter; Merom-Trimble; s,t, hafted endscrapers.

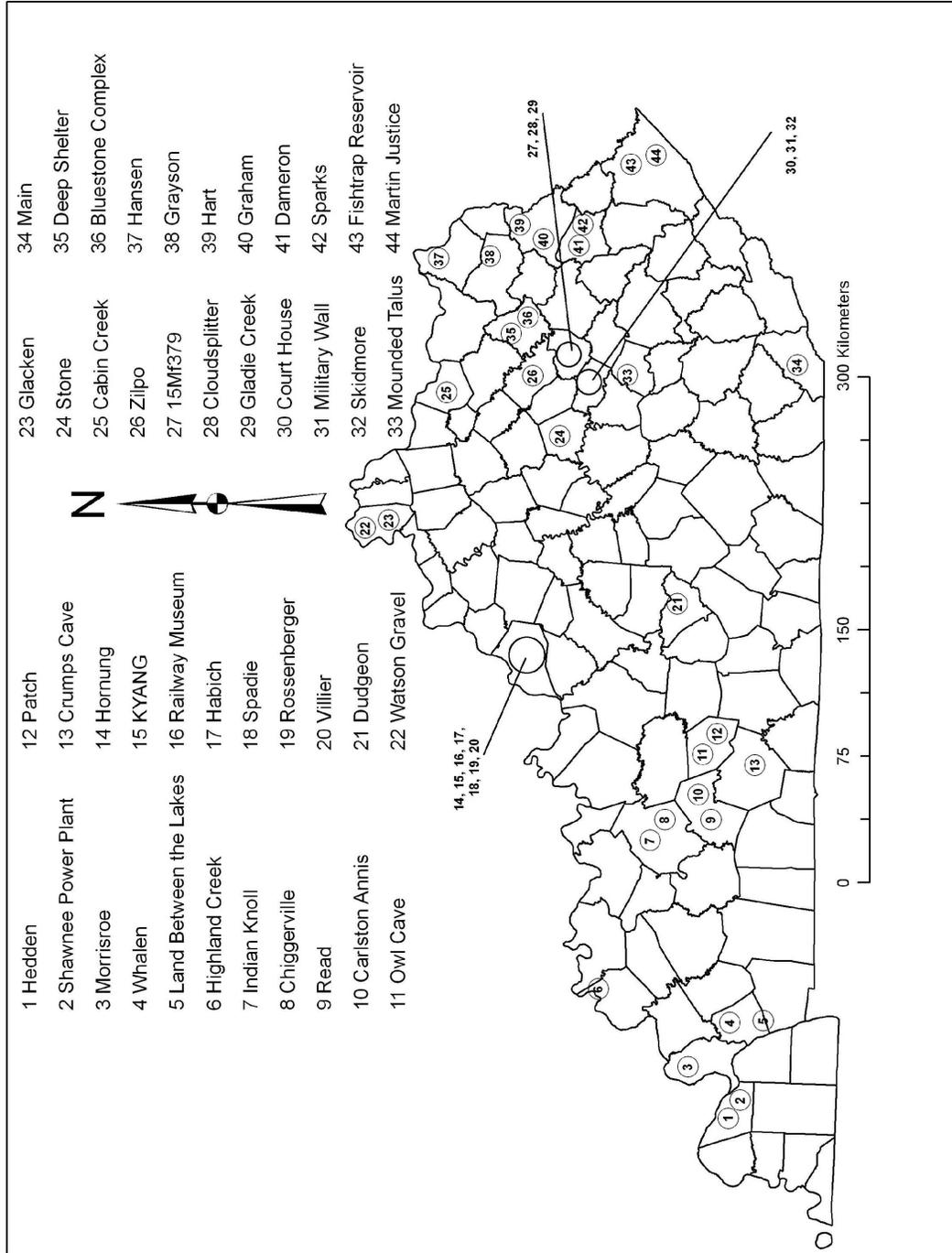


Figure 4.6. Major Late Archaic sites.

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%
					Upper			
Component	Salt River		Upper Cumberland		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	Purchase	Salt River	Upper Cumb-erland	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	Purchase	Salt River	Upper Cumberland	Upper Kentucky	Total	Percent
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	Purchase	Salt River	Upper Cumberland	Upper Kentucky	Total	Percent
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.

Component	Mississippi River		Ohio River I		Lower Tennessee/ Cumberland		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.

Site Type	Mississippi River		Ohio River I		Lower Tennessee- Cumberland		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	100.0	113	100.0	124	100.0	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 bluffs 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 I 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
15Lv14	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
15Lv110	Trail	Open habitation	Middle Archaic, Late Archaic	Nance 1982
15Lv156	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
Mississippi River			
None			
Ohio River I			
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
Lower Tennessee/ Cumberland			
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 15MH134			
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 $5,375 \pm 125$ 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 curatorial 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 PATTERNS

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.

Component	Ohio River II		Western Coalfield		Pennyroyal	
	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

Component	Upper Green River		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
15Bc16c	none	Open Habitation	Early Archaic, Late Archaic?	Allen and Cowan 1976; Cowan 1975a
15Bc17	none	Open Habitation	Early Archaic, Late Archaic?	Allen and Cowan 1976; Cowan 1975a
15Bc18	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
15He160	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 m²) 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
Ohio River II			
Rim Rock Trail (15Bc341)			
Beta-13306	2830 \pm 50	800 BC	Schlarb et al. 2008
Beta-13307	2780 \pm 80	830 BC	Schlarb et al. 2008
Highland Creek (15Un127)			
Beta 134229	4580 \pm 80	2630 BC	Maggard and Pollack 2006:Table 4.2
Beta 134231	4470 \pm 80	2520 BC	Maggard and Pollack 2006:Table 4.2
Beta 134232	4440 \pm 70	2490 BC	Maggard and Pollack 2006:Table 4.2
Beta 134230	4380 \pm 70	2430 BC	Maggard and Pollack 2006:Table 4.2
Beta 134234	4310 \pm 70	2360 BC	Maggard and Pollack 2006:Table 4.2
Beta 134233	4130 \pm 70	2180 BC	Maggard and Pollack 2006:Table 4.2
Western Coalfield			
Carlston Annis (15Bt5)* (see Chapter 5:Table 5.12)			
UCLA-2117B	3330 \pm 80	1380 BC	Marquardt and Watson 2005c:Table 6.1
Beta 175337	4030 \pm 40	2080 BC	Marquardt and Watson 2005a:64
Beta 175338	4080 \pm 40	2130 BC	Marquardt and Watson 2005a:64
UCLA-1845B	4040 \pm 180	2090 BC	Marquardt and Watson 1974:7
UCLA-1845A	4250 \pm 80	2300 BC	Watson et al. 1974:235;
C-738	4289 \pm 300	2339 BC	Marquardt and Watson 1974:1
C-739	4333 \pm 450	2383 BC	Libby 1952:673; Marquardt and Watson 1974:7
UGa-3390	4350 \pm 85	2400 BC	Libby 1952:673; Marquardt and Watson 1974:7
UCLA-2117I	4500 \pm 60	2550 BC	Marquardt and Watson 2005c:Table 6.1
UGa-3395	4655 \pm 540	2705 BC	Marquardt and Watson 2005c:Table 6.1
UGa-3391	4670 \pm 85	2720 BC	Marquardt and Watson 2005c:Table 6.1
WIS-1301	4760 \pm 90	2810 BC	Marquardt and Watson 2005c:Table 6.1
C-251	4900 \pm 250	2950 BC	Arnold and Libby 1951:114; Marquardt and Watson 1974:7
UGa-3393	5030 \pm 85	3080 BC	Marquardt and Watson 2005c:Table 6.1
C-116	5149 \pm 300	3199 BC	Arnold and Libby 1951:114; Marquardt and Watson 1974:7
WIS-1302	5350 \pm 80	3400 BC	Marquardt and Watson 2005c:Table 6.1
UAZ-(1)	5730 \pm 640	3780 BC	Watson 1985
C-180	7374 \pm 500	5424 BC	Arnold and Libby 1951:114; Marquardt and Watson 1974:7
Deweese (15Bt6)			
Beta 104496	4570 \pm 80	2620 BC	Crothers 1999:196
Beta 104499	4320 \pm 50	2370 BC	Crothers 1999:196
Beta 104497	4650 \pm 50	2700 BC	Crothers 1999:196
Beta 104498	4760 \pm 70	2810 BC	Crothers 1999:196
Hayes (15Bt11)			
Beta 106447	4520 \pm 60	2570 BC	Crothers 1999:196
Beta 102649	4650 \pm 60	2700 BC	Crothers 1999:196
Beta 102650	4850 \pm 60	2900 BC	Crothers 1999:196
Beta 102648	5080 \pm 90	3130 BC	Crothers 1999:196
Read (15Bt10) (see Chapter 5:Table 5.12)			
ISGS 2246	3400 \pm 100	1450 BC	Haskins 1992
ISGS 2249	3350 \pm 70	1400 BC	Haskins 1992
Dr. Wan's Floodplain (15Bt45)			
Beta 59052	4200 \pm 100	2250 BC	Hensley 1994:139

Table 4.15. Continued.

Lab. No.	Uncalibrated		References
	Age (B.P.)	Date	
York-Render (15Bt92)			
Beta 59053	4680 \pm 100	2730 BC	Hensley 1994:192
Beta 47623	5140 \pm 100	3190 BC	Hensley 1994:192
Beta 47624	5370 \pm 100	3420 BC	Hensley 1994:192
Beta 59054	4710 \pm 110	2760 BC	Hensley 1994:192
Beta 59056	4530 \pm 80	2580 BC	Hensley 1994:192
Beta 59057	4830 \pm 90	2880 BC	Hensley 1994:192
Beta 59055	4700 \pm 100	2750 BC	Hensley 1994:192
Barrett (15McL4)			
Beta 131956	5620 \pm 40	3670 BC	Herrmann 2002:63-64
Beta 131957	4520 \pm 40	2570 BC	Herrmann 2002:63-64
Ward (McL11)			
12-262	7714 \pm 50	5764 BC	Mensforth 1996
AA 31192	5600 \pm 100	3650 BC	Herrmann 2002:63-64
AA 30520	5120 \pm 90	3170 BC	Herrmann 2002:63-64
AA 30521	4800 \pm 65	2850 BC	Herrmann 2002:63-64
12-175	4134 \pm 60	2184 BC	Mensforth 1996
Kirkland (15McL12)			
ISGS 2297	3830 \pm 80	1880 BC	Haskins 1992
ISGS 2299	7320 \pm 80	5370 BC	Haskins 1992
Beta 82081	5680 \pm 80	3730 BC	Claassen 1996:238
ISGS 2304	3990 \pm 160	2040 BC	Haskins 1992
ISGS 2306	4240 \pm 150	2290 BC	Haskins 1992
ISGS 2298	6600 \pm 80	4650 BC	Haskins 1992
Indian Knoll (15Oh2)*			
C-741	3963 \pm 350	2013 BC	Libby 1952:673; Marquardt and Watson 1974:7
C-740	4282 \pm 225	2332 BC	Arnold and Libby 1951:114; Marquardt and Watson 1974:7
C-254	5302 \pm 300	3352 BC	Morey et al. 2002
TO 8792	4670 \pm 70	2720 BC	Herrmann 2002:63-64
AA 31194	4570 \pm 75	2620 BC	Morey et al. 2002
TO 8791	4460 \pm 90	2510 BC	Morey et al. 2002
TO 8794	4300 \pm 70	2350 BC	Morey et al. 2002
TO 8793	4230 \pm 80	2280 BC	Herrmann 2002:63-64
NSEC	3800 \pm 80	1850 BC	Herrmann 2002:63-64
AA 31193	3500 \pm 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 \pm 80	1490 BC	Marquardt 1977:4
UAZ-(2)	4060 \pm 220	2110 BC	Watson 1985
Peter Cave (15Oh94)*			
UGa-3454	3415 \pm 105	1465 BC	Turnbow 1981:61
Pennyroyal			
15Ch302*			
UGa-290	4450 \pm 90	2500 BC	Noakes and Brandau 1974:136; Schock et al. 1977:18
15Wa601*			
UGa-1714	5465 \pm 75	3515 BC	Schock 1979
UGa-1713	6310 \pm 105	4360 BC	Schock 1979

Table 4.15. Continued.

Lab. No.	Uncalibrated		References
	Age (B.P.)	Date	
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
15McL2/1	Ford	Shell Mound	Late Archaic	Hockensmith et al. 1985; Webb and Funkhouser 1932
15McL4	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
15Oh10	Smallhouse	Shell Mound	Late Archaic	Hockensmith et al. 1985; Moore 1916
15Oh12	Jackson Bluff	Shell Mound	Late Archaic	Rolingson 1967

Table 4.16. Continued.

Site No.	Site Name	Site Type	Affiliation	References
15Oh13	Bowles	Shell Mound	Late Archaic	Rolingson 1967
15Oh19	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
15Ch183	Reeves Cave	Open Habitation/ Cave	Archaic	Sanders and Maynard 1979
15Ch197	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
15Ed175	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±80 and 800±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.

Component	Salt River	
	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
15Jf14	Spadie	Open Habitation	Middle-Late Archaic	Boisvert 1979
15Jf18	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 Granger 1988
15Jf200	McNeeley Lake	Rockshelter	Middle-Late Archaic	
15Jf201	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 Bader and Granger 1989; Granger 1988
15Jf267	KYANG	Open Habitation	Middle-Late Archaic	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 Longworth-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 m² (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 (15Jf18), Spadie (15Jf14), and Villier (15Jf10) 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 m²) 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 $1,530 \pm 100$ and $2,530 \pm 80$ 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 $2,830 \pm 80$ and $2,770 \pm 70$ 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		Southeastern Mountains		Total	Percent
	Total	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
	Oil Well			
15McY412	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
			Early-Late	
15McY325	Singer	Rockshelter	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.	Uncalibrated		References
	Age (B.P.)	Date	
Lake Cumberland			
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
Southeastern Mountains			
Cumberland Ford I (15BI59)			
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 (15BI35) (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 (15LI188)			
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
15BI59	Cumberland Ford I	Open Habitation	Late Archaic	Autry 1984
15BI135	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 15BI59, 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 (15BI35) 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 15HI21, 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 (15HI58) 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 [15L1188]) 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 (15L1189) and Groovey Shelter (15L1190) 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.

Component	Central Bluegrass		Northern Bluegrass		Eastern Bluegrass		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
15Ck126	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 1,010±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 15Ck126			
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
<u>Glacken (15Be272)</u>			
Beta-5408	4090±60	2140 BC	Boisvert 1986:Table VI-2
Beta-5409	2970±120	1020 BC	Boisvert 1986:Table VI-2
Beta-5690	3460±80	1510 BC	Boisvert 1986:Table VI-2
Beta-5689	3770±80	1820 BC	Boisvert 1986:Table VI-2
<u>Panther Rock (15C158)</u>			
Beta-214401	4920±50	2970 BC	Engle and Schlarb 2006
<u>Hayes (15C167)</u>			
Beta-192389	3370±70	1420 BC	Hall 2005:78
Beta-192391	2460±50	510 BC	Hall 2005:78
<u>Eastern Bluegrass</u>			
Zilpo Cemetery (15Bh103)			
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
15C158	Panther Rock	Open Habitation	Late Archaic	Engle and Schlarb 2006
15C167	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 \pm 60 B.C. to 1,020 \pm 120 B.C (Table 4.31). A Merom-Trimble projectile point was associated with a date of 1,510 \pm 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 \pm 70 B.C. A second radiocarbon date of 510 \pm 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
15Ms31	Cabin Creek	Open Habitation	Late Archaic	Driskell 1976
	Zilpo			
15Bhl03	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.

Component	Gorge		Interior Mountains		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
	Mounded			
15Le77	Talus	Rockshelter	Middle-Late Archaic	Mickelson 2002
15Pol7	Skidmore	Open Habitation	Late Archaic	Cowan 1985
				Schlarb and Pollack 2002
15Po282	Military Wall	Rockshelter	Late Archaic	
15Po322	Courthouse	Rockshelter	Late Archaic	Gremillion 1999
				Shields 1998; Pollack and Schlarb 2004
15Po331	Raised Spirits	Rockshelter	Late Archaic	
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-23131	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 \pm 550	5290 BC	Dorwin et al. 1970:130; Tucek 1977:255
RL-68	8520 \pm 470	6570 BC	Dorwin et al. 1970:130; Tucek 1977:255
Bluestone Site Complex (15Ro35 and 15Ro36)			
UG-2182	4130 \pm 160	2180 BC	Brooks et al. 1979:71-72, 154-155, 224
UG-2183	4425 \pm 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 \pm 60	1070 BC	Schlarb and Pollack 2002:Table 12
Beta-152834	5080 \pm 80	3130 BC	Schlarb and Pollack 2002:Table 12
Court House Rockshelter (15Po322)			
Beta-119167	3080 \pm 80	1520-1100 BC	Gremillion 1999:Table 1
Raised Spirits (15Po331)			
Beta-152836	4430 \pm 70	2480 BC	Pollack and Schlarb 2004
Beta-152837	4190 \pm 70	2240 BC	Pollack and Schlarb 2004
Beta-159714	2880 \pm 70	930 BC	Pollack and Schlarb 2004
Interior Mountains			
Combs (15Kt6)*			
I-2552	3500 \pm 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 \pm 100	2250 BC	Evans 1996:Table 3-1
Beta 27767	8740 \pm 130	6790 BC	Evans 1996:Table 3-1
Beta 15424	10,960 \pm 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 \pm 470 B.C. and 5,290 \pm 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 1,600±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±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, graters, 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 $1,778 \pm 80$ 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 $2,180 \pm 160$ B.C. (15Ro35) and $2,475 \pm 720$ 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 $2,475 \pm 720$ 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 annuus*), 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 (*Ambrosia 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- Late Archaic	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
15Pe10	none	Open Habitation	Early-Late Archaic	Gatus and Sanders 1978
15Pe13	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 (15Pe10 and 15Pe23) included Kirk Serrated and LeCroy bifurcate base projectile points. Middle Archaic diagnostics recovered from three sites (15Pe10, 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 15E154, 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.	Uncalibrated		References
	Age (B.P.)	Date	
Lower Big Sandy			
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 (15Jo19)*			
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
Upper Big Sandy			
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

1,070±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		Upper Big Sandy		Total	Percent
	Total	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, 15Fd4, 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 1,890±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.

REFERENCES CITED

- Adovasio, James M. (compiler)
1982 *The Prehistory of the Paintsville Reservoir, Johnson and Morgan Counties, Kentucky*. Ethnology Monographs No. 6. Department of Anthropology, University of Pittsburgh, Pittsburgh.
- 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.
1984 *Archaic Settlement Strategies in the Modoc Locality, Southwest Illinois*. Unpublished Ph. D. dissertation, Department of Anthropology, University of Wisconsin, Milwaukee.
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
- Ahler, Steven R., and A. Gwynn Henderson
1988 Description of Recovered Materials. In *Excavations at the Hansen Site (15Gp14) in Northeastern Kentucky*, by Steven R. Ahler, pp. 171-430. Archaeological Report No. 173. Program for Cultural Resource Assessment, University of Kentucky, Lexington.
- Allen, Roger C.
1971 Archaic of the Mississippian Plateau of Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.
- Allen, Roger C., and C. Wesley Cowan
1976 *Test Excavations at American Smelting and Refining Corporation, Kentucky Refining Plant, Breckinridge County, Kentucky*. Ohio Valley Archaeological Research Associates, Lexington.
- Anslinger, Michael
1986 *The Riverton Culture: Lithic Systems and Settlement Parameters*. Unpublished Master's thesis, Department of Anthropology, Washington State University, Pullman.
2001 The Archaic Period in the Falls of the Ohio Region of Kentucky. Electronic document. <http://www.crai-ky.com/projects/reports/falls.pdf>. Accessed 5 July 2006.
- Anslinger, Michael, Albert M. Pecora, Charles M. Niquette, and Jonathon P. Kerr
1994 *Salvage Excavations at the Railway Museum Site (15Jf630), Jefferson County, Kentucky*. Contract Publication 94-15. Cultural Resource Analysts, Lexington.
- Arnold, James R., and William F. Libby
1951 Radiocarbon Dates. *Science* 2927:113-114.

- Autry, William O., Jr.
 1984 The Cumberland Ford I Site. National Register of Historic Places nomination form. On file, Kentucky Heritage Council, Frankfort.
- Autry, William O., Larry R. Kimball, and Glyn D. DuVall
 1988 *Archaeological and Geomorphological Investigations of the Harlan, Baxter, Loyall, and Rio Vista Flood Damage Reduction Measures, Harlan County, Kentucky*. DuVall and Associates, Nashville, Tennessee.
- 1989 *Archaeological and Geomorphological Investigations in Selected Bends along the Lower Cumberland River, Livingston, Crittenden, and Lyon Counties, Kentucky*. Duvall and Associates, Nashville, Tennessee.
- Bader, Anne T.
 1992 *An Analysis of Bone and Antler Tool Use Patterns from the Kentucky Air National Guard Site*. Unpublished Master's thesis, Department of Anthropology, University of Kentucky, Lexington.
- 1996 *A Phase III Archaeological Data Recovery at the Rockmaker Site, 15Bc138, Breckinridge County, Kentucky*. MAAR Associates, Newark, Delaware.
- 2004 The Meyer Site: An Inadvertent Discovery in Spencer County, Indiana. *Currents of Change* 2:17-29.
- 2005 Why Dig Yet Another Late Archaic Site in the Falls of the Ohio River Region? Insights into Corporate Identity through an Examination of Mortuary Behavior at the KYANG Site, Jefferson County, Kentucky, and the Meyer Site, Spencer County, Indiana. Paper presented at the Twenty Second Annual Kentucky Heritage Council Archaeological Conference. Lexington, Kentucky.
- 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.
- Ball, Donald B., and Arthur E. Bogan
 1978 *Summary Report of Archaeological Survey: Taylorsville Lake, Salt River Basin, Spencer, Nelson and Anderson Counties, Kentucky*. Louisville District Corps of Engineers, Louisville.
- Belovich, Stephanie J.
 2005 Fractures in the Carlston Annis Shell Mound Skeletal Population. In *Archaeology of the Middle Green River Region, Kentucky*, edited by William H. Marquardt and Patty Jo Watson, pp. 505-514. Monograph No. 5. Institute of Archaeology and Paleoenvironmental Studies, University of Florida, Gainesville.
- Binford, Lewis R.
 1979 Organization and Formation Processes: Looking at Curated Technologies. *Journal of Anthropological Research* 35:255-273.

- 1980 Willow Smoke and Dogs' Tail: Hunter-Gatherer Settlement Systems and Archaeological Site Formations. *American Antiquity* 45:4-20.
- Blakely, Robert
- 1971 Comparison of the Mortality Profiles of Archaic, Middle Woodland, and Middle Mississippian Skeletal Populations. *American Journal of Physical Anthropology* 34:43-53.
- Blakeman, Crawford H.
- 1971 Manifestations of the Archaic Stage in the Eastern Kentucky Mountains. Ms. on file, Office of State Archaeology, Lexington, Kentucky.
- Boedy, Randall D.
- 2001 *Phase II Testing of 15McY403 and 15 McY409: McCreary County Board of Education Exchange, McCreary County, Kentucky*. United States Forest Service, Daniel Boone National Forest, Winchester, Kentucky.
- 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*. United States Forest Service, Daniel Boone National Forest, Winchester, Kentucky.
- Boedy, Randall D., and Charles Niquette
- 1987 *A Phase III Archeological Examination of the Danville Tank Site (15BO16), Boyle County, Kentucky*. Cultural Resource Analysts, Lexington.
- 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 Range Districts, Daniel Boone National Forest*. United States Department of Agriculture, United State Forest Service, Winchester, Kentucky.
- Bonzani, Renne M.
- 2001 Botanical Analysis for the Ward Site (15McL11), Green River Valley, Western Kentucky. Report on file, Department of Anthropology, University of Kentucky, Lexington
- Boisvert, Richard A.
- 1979 Excavations at the Spadie Site (15JF14). In *Excavations at Four Archaic Sites in the Lower Ohio Valley, Jefferson County, Kentucky*, edited by Michael B. Collins, pp. 804-882. Occasional Papers in Anthropology No. 1. Department of Anthropology, University of Kentucky, Lexington.
- 1982a 1982 Archaeological Investigations at Big Bone Lick State Park: Preliminary Report. Report on file, Office of State Archaeology, University of Kentucky, Lexington.
- 1982b Excavations at Big Bone Lick, Kentucky. Paper presented at the Ohio Valley Archaeological Conference, Powdermill Nature Reserve, Carnegie Museum of Natural History, Ligionier, Pennsylvania.
- 1982c Late Archaic Occupations at Big Bone Lick, Kentucky: Evidence for a Focal Subsistence? Paper presented at the 39th Annual Meeting of the Southeastern Archaeological Conference, Memphis.

- 1986 *Late Archaic Settlement Models in the Middle Ohio Valley: A Perspective from Big Bone Lick, Kentucky*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Kentucky, 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*. Report No. 27. Department of Anthropology, University of Kentucky, Lexington.
- Boster, John B., and Mark R. Norton
 1996 Recent Paleoindian Research in Tennessee. In *The Paleoindian and Early Archaic Southeast*, edited by David G. Anderson and Kenneth E. Sassaman, pp. 288-297. University of Alabama Press, Tuscaloosa.
- Bradbury, Andrew
 1996 *A National Register Evaluation of Twelve Sites in Adair, Cumberland, and Metcalf Counties, Kentucky*. Cultural Resource Analysts, Lexington.
- 2007 *Data Recovery Excavations at the Cranks Creek Site (15H1 58), Harlan County, Kentucky*. Cultural Resource Analysts, Lexington.
- Bradbury, Andrew P., and Grant L. Day
 1998 *Phase III Archaeological Investigations at 15 Cu27 and 15Cu31, Cumberland County, Kentucky*. Cultural Resource Analysts, Lexington.
- Breitburg, Emanuel
 1982 Analysis of Area A Fauna. In *The Carrier Mills Archaeological Project: Human Adaptation in the Saline Valley, Illinois*, edited by Richard W. Jefferies and Brian M. Butler, pp. 863-934. Research Paper No. 33. Center for Archaeological Investigations, Southern Illinois University at Carbondale, Carbondale.
- 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.
- Brown, James A.
 1985 Long-Term Trends to Sedentism and the Emergence of Complexity in the American Midwest. In *Prehistoric Hunter-Gatherers: The Emergence of Cultural Complexity*, edited by T. Douglas Price and James A. Brown, pp. 201-231. Academic Press, Orlando.
- Brown, James A. and Robert K. Vierra
 1983 What Happened in the Middle Archaic? Introduction to the Ecological Approach to Koster Site Archaeology. In *Archaic Hunters and Gatherers in the American Midwest*, edited by J. L. Phillips and J. A. Brown, pp. 165-195. Academic Press, New York.
- Broyles, Bettye J.
 1971 *Second Preliminary Report: The St. Albans Site, Kanawha County, West Virginia, 1964-1968*. Report of Archaeological Investigations No. 3. West Virginia Geological and Economic Survey, Morgantown.

- Buchner, C. Andrew
 2003 Cultural Background. In *Final Report: Data Recovery Excavations at the Clifford LaPlant Site (23Nm561) on Barnes Ridge, New Madrid County, Missouri*, by Buchner, C. Andrew, Eric S. Albertson, Emmanuel Breitbart, Gina S. Powell, and Neal H. Lopinot, pp. 31-90. Panamerican Consultants, Memphis.
- Buckley, James, D. and Eric H. Willis
 1969 Isotopes' Radiocarbon Measurements VII. *Radiocarbon* 11(1):77-78.
- Buikstra, Jane E.
 1981 Mortuary Practices, Paleodemography and Paleoanthropology: A Case Study from the Koster Site (Illinois). In *The Archaeology of Death*, edited by Robert Chapman, Ian Kinnes, and Klavs Randsborg, pp. 123-132. Cambridge University Press, Cambridge.
- Buikstra, Jane E., and Douglas K. Charles
 1999 Centering on the Ancestors: Cemeteries, Mounds, and Sacred Landscapes of the Ancient North American Midcontinent. In *Archaeologies of Landscapes: Contemporary Perspectives*, edited by Wendy Ashmore and A. Bernard Knapp, pp. 201-228. Blackwell, Malden, Massachusetts.
- Burdin, Sheldon R.
 2004 *Interaction, Exchange, and Social Organization Among Hunter-Gatherers in the Midcontinent – Evidence from the Lower Ohio River Valley: Bannerstone Use from 6500 to 3000 B.P.* Unpublished Master's thesis, Department of Anthropology, University of Kentucky, Lexington.
- 1988 New Evidence of Paleo-Indian 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. 47-66. 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. 47-66. Kentucky Heritage Council, Frankfort.
- Butler, Brian M.
 2008 Land Between the Rivers: The Archaic Period of Southern-Most Illinois. In *Archaic Societies: Diversity and Complexity across the Midcontinent*, edited by T. E. Emerson, D. L. McElrath, and A. C. Fortier. State University of New York Press, Albany.
- Butler, Brian M., JoAnne M. Penney, and Cathy A. Robison
 1981 *Archaeological Survey and Evaluation for the Shawnee 200 MW A.F.B.C. Plant, McCracken County, Kentucky*. Research Paper No. 21. Center for Archaeological Investigations, Southern Illinois University, Carbondale, Illinois.
- Caldwell, Joseph R.
 1958 *Trend and Tradition in the Prehistory of the Eastern United States*. Memoir 88. American Anthropological Association.

- Carstens, Kenneth C.
 1980 *Archaeological Investigations in the Central Kentucky Karst*. Unpublished Ph.D. dissertation, Department of Anthropology, Washington University, St. Louis.
- Carmean, Kelli
 1994 *Phase II Investigations of the 909 Land Exchange Tracts on the London Ranger District*. United States Department of Agriculture, United State Forest Service. Winchester, Kentucky.
- Carstens, Kenneth C., and Patty Jo Watson (editors)
 1996 *Of Caves and Shell Mounds*. University of Alabama Press, Tuscaloosa.
- Cassidy, Claire M.
 1972 *Comparison of Nutrition and Health in Pre-Agricultural and Agricultural Amerindian Skeletal Populations*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Wisconsin, Madison.
- 1980 Nutrition and Health in Agriculturalists and Hunter-Gatherers: A Case Study of Two Prehistoric Populations. In *Nutritional Anthropology: Contemporary Approaches to Diet and Culture*, edited by Norge W. Jerome, Randy F. Kandel, and Gretel H. Pelto, pp. 117-145. Redgrave Publishing, New York.
- 1984 Skeletal Evidence for Prehistoric Subsistence Adaptation in the Central Ohio River Valley. In *Paleopathology at the Origins of Agriculture*, edited by Mark N. Cohen and George J. Armelagos, pp. 307-345. Academic Press, New York.
- Chapman, Carl H.
 1975 *The Archaeology of Missouri. I*. University of Missouri Press, Columbia.
- Chapman, Jefferson
 1975 *The Rose Island Site and the Bifurcate Point Tradition*. Report of Investigation No. 14. Department of Anthropology, University of Tennessee, Knoxville.
- 1976 The Archaic Period in the Lower Little Tennessee River Valley. The Radiocarbon Dates. *Tennessee Anthropologist* 1:1-12.
- 1977 *Archaic Period Research in the Lower Tennessee River Valley*. Report of Investigation No. 18. Department of Anthropology, University of Tennessee, Knoxville.
- 1985 *Tellico Archaeology*. University of Tennessee Press, Knoxville.
- Charles, Douglas O., and Jane E. Buikstra
 1983 Archaic Mortuary Sites in the Central Mississippi Drainage: Distribution, Structure, and Behavioral Implications. In *Archaic Hunters and Gatherers in the American Midwest*, edited by James L. Phillips and James A. Brown, pp. 117-145. Academic Press, Orlando.
- Chomko, Stephen A., and Gary W. Crawford
 1978 Plant Husbandry in Prehistoric Eastern North America: New Evidence for Its Development. *American Antiquity* 43:405-408.

Claassen, Cheryl P.

1996 A Consideration of the Social Organization of the Shell Mound Archaic. In *Archaeology of the Mid-Holocene Southeast*, edited by Kenneth E. Sassaman and David G. Anderson, pp. 235-258. University Press of Florida, Gainesville.

2005 An Analytical Study of Shellfish from the DeWeese Mound, Kentucky. In *Archaeology of the Middle Green River Region, Kentucky*, edited by William H. Marquardt and Patty Jo Watson, pp. 279-293. Monograph Number 5. Institute of Archaeology and Paleoenvironmental Studies, Florida Museum of Natural History, University of Florida, Gainesville.

Cochran, Donald R., Paige Waldron, Ron Richards, Beth McCord, and Debbie Rotman

1998 *McCullough's Run: A Bifurcate Tradition Cemetery in Central Indiana*. Report of Investigations 44. Archaeological Resources Management Service, Ball State University, Muncie, Indiana.

Coe, Joffre L.

1964 *The Formative Cultures of the Carolina Piedmont*. Transactions of the American Philosophical Society, New Series. 54(5). Philadelphia.

Coe, Michael D. and F. William Fischer

1959 Barkley Reservoir-Tennessee Portion, Archaeological Excavations 1959. Ms. on file, National Park Service, Regional Office, Richmond, Virginia.

Collins, Michael B.

1979 The Longworth-Gick Site (15Jf243). In *Excavations at Four Archaic Sites in the Lower Ohio Valley, Jefferson County, Kentucky*, edited by Michael B. Collins, pp.471-589. Occasional Papers in Anthropology No. 1. Department of Anthropology, University of Kentucky, Lexington.

1980 Recent Archaic Sites Research in the Falls of the Ohio Area, Kentucky. Paper presented at the 52nd Annual Meeting of the Midwest Archaeological Conference, Chicago.

Collins, Michael B. (editor)

1979 *Excavations at Four Archaic Sites in the Lower Ohio Valley. Jefferson County. Kentucky*. Occasional Papers in Anthropology No. 1. Department of Anthropology, University of Kentucky, Lexington.

Collins, Michael B., and Boyce N. Driskell

1979 Summary and Conclusions. In *Excavations at Four Archaic Sites in the Lower Ohio Valley. Jefferson County Kentucky*, edited by Michael B. Collins, pp. 1023-1042. Occasional Papers in Anthropology No. 1. Department of Anthropology, University of Kentucky, Lexington.

Conaty, Gerald T.

1985 *Middle and Late Archaic Mobility Strategies in Western Kentucky*. Unpublished Ph.D. dissertation, Department of Archaeology, Simon Fraser University, Burnaby, British Columbia.

- Conaty, Gerald T., and Jack D. Nance
 1983 Radiocarbon Dates from the Morrisroe Site, Livingston County, Kentucky. *Tennessee Anthropologist Association Newsletter* 8:1-4.
- Cook, Thomas G.
 1976 *Koster: An Artifact Analysis of Two Archaic Phases in West Central Illinois*. Koster Research Reports No. 3. Northwestern University Archaeological Program Prehistoric Records, Evanston.
- Cowan, C. Wesley
 1975a *An Archaeological Survey and Assessment of the Proposed American Smelting and Refining Corporation Project, Breckinridge County, Kentucky*. Ohio Valley Archaeological Research Associates, Lexington, Kentucky.
 1975b An Archaeological Survey and Assessment of the Proposed Red River Reservoir in Powell, Wolfe, and Menifee Counties, Kentucky. University of Kentucky Museum of Anthropology, Lexington. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.
 1976 Test Excavations in the Proposed Red River Lake, Kentucky: 1974 Season. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.
 1979a Excavations at the Haystack Rockshelters, Powell County, Kentucky. *Midcontinental Journal of Archaeology* 4(1):3-33.
 1979b *Prehistoric Plant Utilization at the Rogers Rockshelter, Powell County, Kentucky*. Unpublished Master's Thesis, Department of Anthropology, University of Kentucky, Lexington.
 1985 Understanding the Evolution of Plant Husbandry in Eastern North America: Lessons from Botany, Ethnography and Archaeology. In *Prehistoric Food Production in North America*, edited by Richard I. Ford, pp. 205-243. Anthropological Papers No. 75. Museum of Anthropology, University of Michigan, Ann Arbor.
- Cowan, C. Wesley, H. Edwin Jackson, Katherine Moore, Andrew Nickelhoff, and Tristine L. Smart
 1981 The Cloudsplitter Rockshelter, Menifee County, Kentucky: A Preliminary Report. *Southeastern Archaeological Conference Bulletin* 24:60-76.
- Crane, H. R. and James B. Griffin
 1958 University of Michigan Radiocarbon Dates V. *Science* 128(3332):1123.
 1962 University of Michigan Radiocarbon Dates VII. *Radiocarbon* 4:189.
 1970 University of Michigan Radiocarbon Dates XI. *Radiocarbon* 8:268-269.
 1972 University of Michigan Radiocarbon Dates XIV. *Radiocarbon* 14:161-162.
- Crawford, Gary W.
 1982 Late Archaic Plant Remains from West-Central Kentucky: A Summary. *Midcontinental Journal of Archaeology* 7(2):205-224.

2005 Plant Remains from Carlston Annis (1972, 1974), Bowles, and Peter Cave. In *Archaeology of the Middle Green River Region, Kentucky*, edited by William H. Marquardt and Patty Jo Watson, pp. 181-212. Monograph 5, Institute of Archaeology and Paleoenvironmental Studies, University of Florida, Gainesville.

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.

1994 *Upper Cumberland Archaic and Woodland Period Archaeology at the Main Site (15B1135), Bell County, Kentucky*. Cultural Resource Analysts, Lexington.

Crothers, George M.

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

Crothers, George M., and Reinhard Bernbeck

2004 The Foraging Mode of Production: The Case of the Green River Kentucky, Archaic Shell Middens. In *Hunters and Gatherers in Theory and Archaeology*, edited by George M. Crothers, pp. 401-422. Occasional Paper No. 31. Center for Archaeological Investigations, Southern Illinois University at Carbondale, Carbondale.

Crothers, George M., Charles H. Faulkner, Jan F. Simek, Patty Jo Watson, and P. Willey

2002 Woodland Cave Archaeology in Eastern North America. In *The Woodland Southeast*, edited by David G. Anderson and Robert C. Mainfort, pp. 502-524. University of Alabama Press, Tuscaloosa.

Davis, Daniel B.

1998 *Diachronic Change in Lithic Acquisition in Eastern Kentucky*. Unpublished Master's thesis, Department of Anthropology, University of Kentucky, 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.

Delcourt, Paul A., and Hazel R. Delcourt

1981 Vegetation Maps for Eastern North America: 40,000 YR B.P. to the Present. In *Geobotany II*, edited by R. C. Romans, pp. 123-165. Plenum Publishing, New York.

1985 Quaternary Palynology and Vegetational History of the Southeastern United States. In *Pollen Records of Late Quaternary North American Sediments*, edited by V. M. Bryant, Jr. and R. G. Holloway, pp. 1-28. American Association of Stratigraphic Polynologists Foundation.

- Delcourt, Paul A., Hazel R. Delcourt, Cecil R. Ison, William E. Sharp, and Kristen J. Gremillion
 1998 Prehistoric Human Use of Fire, the Eastern Agricultural Complex, and Appalachian Oak-Chestnut Forests: Paleoecology of Cliff Palace Pond, Kentucky. *American Antiquity* 63:263-278.
- Des Jean, Tom
 1993 *Oil Well Branch Road: A Transitional Archaic-Woodland Period Site at Big South Fork National River and Recreation Area – Report of Excavations, 1993*. Big South Fork National River and Recreation Area, National Park Service, Oneida, Tennessee.
- DiBlasi, Philip J.
 1981 *A New Assessment of the Archaeological Significance of the Ashworth Site (15BU236): A Study in the Dynamics of Archaeological Investigation in Cultural Resource Management*. Unpublished Master's thesis, Interdisciplinary Studies, University of Louisville, Louisville, Kentucky.
- 1987 Rogers Cave, Glyph Passage. National Register of Historic Places nomination form. On file, Kentucky Heritage Council, Frankfort.
- 1996 Prehistoric Expressions from the Central Kentucky Karst. In *Of Caves and Shell Mounds*, edited by Kenneth C. Carstens and Patty Jo Watson, pp. 40-47. University of Alabama Press, Tuscaloosa, Alabama.
- Dobbs, Clark A., and Don W. Dragoo
 1976 *Prehistoric Cultural Resources of Section Two. Southwestern Jefferson County Local Flood Protection Project: Test Excavations*. Environmental Consultants, Dallas.
- Dorwin, John T., Edward Henson, Larry Meadows, and Donald T. Warholic
 1970 Archaeological Investigations of the Deep Shelter, Cave Run Reservoir Area, Rowan County, Kentucky. Ms. on file, Museum of Anthropology, University of Kentucky, Lexington
- Dowd, John T.
 1989 *The Anderson Site: Middle Archaic Adaptation in Tennessee's Central Basin*. Miscellaneous Papers No. 13, Tennessee Anthropological Association. Knoxville.
- Dragoo, Don W.
 1976 Some Aspects of Eastern North American Prehistory: A Review 1975. *American Antiquity* 41(1):3-27
- Driskell, Boyce N.
 1976 *Excavations at the Cabin Creek Cabin Site. Mason County. Kentucky, Phase II*. Ohio Valley Archaeological Research Associates, Lexington, Kentucky.
- 1979 The Rosenberger Site. In *Excavations at Four Archaic Sites in the Lower Ohio Valley. Jefferson County. Kentucky*, edited by Michael B. Collins, pp. 697-803. Occasional Papers in Anthropology No. 1. Department of Anthropology, University of Kentucky, Lexington.

- Driskell, Boyce N., Cindy E. Jobe, Christopher A. Turnbow, and Mary Dunn
 1984 *The Archaeology of Taylorsville Lake: Archaeological Data Recovery and Synthesis*.
 Archaeological Report No. 85. Department of Anthropology, University of Kentucky,
 Lexington.
- Duffield, Lathel F.
 1966 The Robert Dudgeon Site: A Stratified Archaic Site in the Green River Reservoir, South
 Central Kentucky. Ms. on file, Museum of Anthropology, University of Kentucky,
 Lexington.
- Dunnell, Robert C.
 1966 1965 Excavations in the Fishtrap Reservoir, Pike County, Kentucky. Ms. on file, Museum of
 Anthropology, University of Kentucky, Lexington.
- 1972 *The Prehistory of Fishtrap, Kentucky*. Publications in Anthropology No. 75. Yale University,
 New Haven.
- Edging, Richard, Kevin McGowin, and Richard W. Jefferies
 1988 *Archaeological Testing of the Pine Fork Site (15Fd47), Floyd County, Kentucky*.
 Archaeological Report No. 180. Program for Cultural Resource Assessment, University of
 Kentucky, Lexington.
- Emerson, Thomas, Dale McElrath, and Andrew Fortier (editors)
 2008 *Archaic Societies: Diversity and Complexity across the Midcontinent*. State University of
 New York Press, Albany.
- Engle, Josh D., and Eric J. Schlarb
 2006 The Panther Rock Site (15Cl58): A Late Middle Archaic Occupation Located near the
 Confluence of the Ohio and Kentucky Rivers. Paper presented at the Twenty-third Annual
 Kentucky Heritage Council Archaeological Conference, Western Kentucky University,
 Bowling Green.
- Evans, John B.
 1996 *Raw Material Procurement and Lithic Technology at Enoch Fork Shelter (15Pe50),
 Kentucky*. Unpublished Master's thesis, Department of Anthropology, University of
 Kentucky, Lexington.
- Fenwick, Jason M.
 1976 *An Archaeological Survey of the Proposed Bluestone Sewage Treatment Plant Site and Two
 Trunk Sewer Lines in Rowan County*. Ohio Valley Archaeological Research Associates,
 Lexington.
- 1979 *A Reconnaissance and Evaluation of Archaeological Sites in Fleming County, Kentucky*.
 Archaeological Survey Report No. 14. Kentucky Heritage Commission, Frankfort.
- Fenwick, Jason M. and Marcia K. Weinland
 1978 *A Reconnaissance and Evaluation of Archaeological Sites in Boone County, Kentucky*.
 Archaeological Survey Report No. 8. Kentucky Heritage Commission, Frankfort.

- Filson, John
1784 *The Discovery. Settlement and Present State of Kentucky*. James Adams, Wilmington, Delaware.
- Fitzgibbons, Philip. T., James M. Adovasio, and Jack Donahue
1977 Excavations at Sparks Rockshelter (15Jo19), Johnson County, Kentucky. *Pennsylvania Archaeologist* 47(5).
- Ford James A., and Gordon R. Willey
1941 An Interpretation of the Prehistory of the Eastern United States. *American Anthropologist* 43:325-363.
- Fowler, Melvin L.
1959 *Summary Report of Modoc Rock Shelter: 1952, 1953, 1955, 1956*. Reports of Investigations No. 8. Illinois State Museum, Springfield, Illinois.
- Franklin, Jay D.
2001 Excavating and Analyzing Prehistoric Lithic Quarries: An Example from 3rd Unnamed Cave, Tennessee. *Midcontinental Journal of Archaeology* 26:199-217.
- French, Michael W.
1998 *Early Archaic Settlement Mobility, Lithic Resource Use, and Technological Organization in the Lower Ohio River Valley: A Perspective from the Longworth-Gick Site (15Jf243)*. Unpublished Master's thesis, Department of Anthropology, 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 and Environmental, Louisville.
- Fryman, Frank B., Jr.
1967 An Archaeological Survey of the Red River Reservoir in Wolfe, Powell, and Menifee Counties, Kentucky. Ms. on file, Museum of Anthropology, University of Kentucky, Lexington.
- Funkhouser, William D., and William S. Webb
1928 *Ancient Life in Kentucky*. Geologic Reports, Series 6, Volume 34. Kentucky Geological Survey, Lexington.
- 1929 *The So-called "Ash Caves" in Kentucky*. Reports in Archaeology and Anthropology 1(2):37-112. University of Kentucky, Lexington.
- 1930 *Rock Shelters of Wolfe and Powell Counties, Kentucky*. Reports in Archaeology and Anthropology 1(4):239-306. University of Kentucky, Lexington.
- Gardner, William M.
1978 Comparison of Ridge and Valley, Blue Ridge, Piedmont and Coastal Plain Archaic Period Site Distribution: An Idealized Transect (Preliminary Model). Ms. on file, National Park Service, Atlanta, Georgia.

- Garst, Susan H.
2002 *An Archaeological Shoreline Reconnaissance at Grayson Lake in Carter and Elliot Counties, Kentucky*. Cultural Resource Analysts, Lexington.
- Gatus, Thomas W.
1981 *The Hall Shelter: A Multicomponent Site in Southeastern Kentucky*. Unpublished Master's thesis, Department of Anthropology, University of Kentucky, Lexington.
- 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.
- Gatus, Thomas W., and Thomas N. Sanders
1978 *A Reconnaissance and Evaluation of Archaeological Sites in Perry County, Kentucky*. Archaeological Survey Report No. 9. Kentucky Heritage Commission, Frankfort.
- Gibson, Jon L.
1996 Poverty Point and Greater Southeastern Prehistory: The Culture That Did Not Fit. In *Archaeology of the Mid-Holocene Southeast*, edited by Kenneth E. Sassaman and David G. Anderson, pp. 288-305. University Press of Florida, Gainesville.
2000 *The Ancient Mounds of Poverty Point: Place of Rings*. University Press of Florida, Gainesville.
2004 The Power of the Beneficent Obligation in First Mound-Building. In *Signs of Power: The Rise of Cultural Complexity in the Southeast*, edited by Jon L. Gibson and Philip J. Carr, pp. 254-269. University of Alabama Press, Tuscaloosa.
- Glencross, Bonnie
2002 *An Approach to the Paleoepidemiology of Bone Fractures: Methods and Techniques Applied to Long Bones from the Indian Knoll Skeletal Sample, Kentucky*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Toronto, Toronto, Canada.
- Goad, Sharon I.
1980 Patterns of Late Archaic Exchange. *Tennessee Anthropologist* 5:1-16.
- Goldman-Finn, Nurit S., and Boyce N. Driskell (editors.)
1994 Preliminary Archaeological Papers on Dust Cave, Northwest Alabama. *Journal of Alabama Archaeology* 40.
- Goodell, Kent R.
1971 Archaic Manifestations in the Bluegrass Region of Kentucky. Ms. on file, Office of State Archaeology, Lexington, Kentucky.
- 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. 153-204. Kentucky Heritage Council, Frankfort.

- Granger, Joseph E., and Steven T. Mocas
 1974 *A Preliminary Report on the Arrowhead Farm Site 15Jf237*. Archaeological Report No. 9. University of Louisville Archaeological Survey, Louisville.
- 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. Volume I: The Excavations*. Report of Investigations 90-2(1). Archaeology Resources Consultant Services, Louisville, Kentucky.
- Gremillion, Kristen J.
 1993 Plant Husbandry at the Archaic/Woodland Transition: Evidence from Cold Oak Shelter, Kentucky. *Midcontinental Journal of Archaeology* 18(2):161-189.
 1995 Botanical Contents of Paleofeces from Two Eastern Kentucky Rockshelters. In *Current Archaeological Research in Kentucky, Volume Three*, edited by John F. Doershuk, Christopher A. Bergman, and David Pollack, pp. 52-69. Kentucky Heritage Council, Frankfort.
 1996a The Paleoethnobotanical Record for the Mid-Holocene Southeast. In *Archaeology of the Mid-Holocene Southeast*, edited by Kenneth E. Sassaman and David G. Anderson, pp. 99-114. University Press of Florida. Gainesville.
 1996b Early Agricultural Diet in Eastern North America: Evidence from Two Kentucky Rockshelters. *American Antiquity* 61(3):520-536.
 1998 3,000 Years of Human Activity at the Cold Oak Shelter. In *Current Archaeological Research in Kentucky, Volume 5*, edited by Charles D. Hockensmith, Kenneth C. Carstens, Charles Stout, and Sara J. Rivers, pp. 1-14. Kentucky Heritage Council, Frankfort.
 1999 National Register Evaluation of the Courthouse Rock Shelter (15Po322), Powell County, Kentucky. Report submitted to the United States Forest Service, Department of Agriculture, Winchester, Kentucky.
- Gremillion, Kristen J., and Katherine R. Mickelson
 1996 National Register Evaluation of the Mounded Talus Shelter (15Le77), Lee County, Kentucky. Report submitted to the USDA Forest Service, Daniel Boone National Forest, Winchester, Kentucky.
- Griffin, James B.
 1946 Cultural Change and Continuity in the Eastern United States. In *Northeastern North America*, edited by Frederick Johnson, pp. 37-95. Papers of R.S. Peabody Foundation for Archaeology, Vol. 33. Andover, Massachusetts.
 1952 Culture Periods in Eastern United States Archaeology. In *Archaeology of Eastern United States*, edited by James B. Griffin, pp. 352-364. University of Chicago Press, Chicago.
 1967 Eastern North American Archaeology: A Summary. *Science* 156:175-191.

- Haag, William G.
 1942 Early Horizons in the Southeast. *American Antiquity* 7:209-222.
- 1948 *An Osteometric Analysis of Some Aboriginal Dogs. Reports in Anthropology* 7(3).
 Department of Anthropology, University of Kentucky, Lexington.
- Hall, Christopher T.
 2005 *Phase III Archaeological Investigations at the Hayes Site (15Cl67), Carroll County, Kentucky*.
 Cultural Resource Analysts, Lexington.
- Hanson, Lee H.
 1964 An Archaeological Survey of Cave Run Reservoir. Ms. on file, University of Kentucky,
 Museum of Anthropology, Lexington.
- Haskins, Valerie A.
 1992 Recent dates from the Green River Shell Mound Region. Paper presented at the ninth
 annual Kentucky Heritage Council Archaeological Conference, Murray, Kentucky.
- Henderson, A. Gwynn
 1985 *Cultural Resource Assessment of a 180-Acre Tract on the Ohio River Floodplain Near
 Siloam, Greenup County, Kentucky*. Archaeological Report No. 130. Program for Cultural
 Resource Assessment, University of Kentucky, Lexington.
- Hensley, Christine K.
 1994 *The Archaic Settlement System of the Middle Green River Valley, Kentucky*. Unpublished
 Ph.D. dissertation, Department of Anthropology, Washington University, St. Louis.
- Herrmann, Nicholas P.
 2002 *Biological Affinities of Archaic Period Populations from West-Central Kentucky and
 Tennessee*. Unpublished Ph.D. dissertation, Department of Anthropology, University of
 Tennessee, Knoxville.
- 2007 New Radiocarbon Dates from Three Archaic Shell Middens in Western Kentucky: Indian
 Knoll (15OH2), Ward (15McL11), and Barrett (15McL4). In *Current Archaeological
 Research in Kentucky Volume Eight*, edited by Sarah E. Miller, David Pollack, Kenneth
 Carstens, and Christopher R. Moore, pp. 77-90. Kentucky Heritage Council, Frankfort.
- Hitchcock, Robert K.
 1982 Patterns of Sedentism among the Basarwa of Eastern Botswana. In *Politics and History in
 Band Societies*, edited by Eleanor Leacock and Richard Lee, pp. 223-267. Cambridge
 University Press, Cambridge.
- Hockensmith, Charles D., Thomas N. Sanders, and David Pollack
 1985 The Green River Shell Middens of Kentucky. National Register of Historic Places thematic
 nomination form. On file, Kentucky Heritage Council, Frankfort.
- Holland, C. G.
 1970 *An Archaeological Survey of Southwest Virginia*. Smithsonian Contributions to Knowledge;
 Number 12. Smithsonian Institution Press, Washington, D.C.

- Horton, Elizabeth T.
- 2003 *Investigation of Perishable Materials Associated with Fawn Hoof, a Desiccated Burial in short Cave, Kentucky*. Unpublished Master's thesis, Department of Anthropology, Washington University, St. Louis.
- 2007 Investigation of Perishable Materials Associated with Fawn Hoof, A Desiccated Burial in Short Cave, Kentucky. In *Current Archaeological Research in Kentucky Volume Eight*, edited by Sarah E. Miller, David Pollack, Kenneth Carstens, and Christopher R. Moore, pp. 91-108. 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. 205-220. Kentucky Heritage Council, Frankfort.
- 1991 Prehistoric Upland Farming Along the Cumberland Plateau. In *Studies in Kentucky Archaeology*, edited by Charles D. Hockensmith, pp. 1-10. Kentucky Heritage Council, Frankfort.
- Ison, Cecil R. and David Pollack
- 1982 *Archaeological Survey and Testing Operations within the Proposed I-64 Corridor, Summers County, West Virginia*. Archaeological Report No. 81. Department of Anthropology, University of Kentucky, Lexington.
- Ison, Cecil R., Christopher A. Turnbow, and Jimmy A. Railey
- 1982 *Archaeological Investigations at Sites 15Ck126 and 15Ck127 within the J. K. Smith Power Station, Clark County, Kentucky*. Archaeological Report No. 59. Department of Anthropology, University of Kentucky, Lexington.
- Janzen, Donald E.
- 1968 The Lone Hill Site: An Archaic Site in Jefferson County, Kentucky. Paper presented at the Annual Meeting of the Eastern States Archaeological Federation, Ann Arbor, Michigan.
- 1971 Excavation at the Falls of the Ohio River. *Filson Club Historical Quarterly* 45:373-380.
- 1977 An Examination of Late Archaic Development in the Falls of the Ohio River Area. In *For the Director: Research Essays in Honor of James B. Griffin*, edited by Charles E. Cleland, pp. 123-143. Anthropological Paper No. 61. University of Michigan, Museum of Anthropology, Ann Arbor.
- 1989 *Archaeological Testing at Six Sites on the Proposed AA Highway Corridor between Vanceburg and Grayson, Lewis and Carter Counties, Kentucky*. Janzen, Inc., Danville, Kentucky.
- Jefferies, Richard W.
- 1982 The Black Earth Site. In *The Carrier Mills Archaeological Project: Human Adaptation in the Saline Valley, Illinois*, edited by Richard W. Jefferies and Brian M. Butler, pp. 75-451. Research Paper No. 33. Center for Archaeological Investigations, Southern Illinois University, Carbondale.

- 1983 Middle Archaic-Late Archaic Transition in Southern Illinois: An Example from the Carrier Mills Archaeological District. *American Archaeology* 3:199-206.
- 1990 Archaic Period. In *The Archaeology of Kentucky: Past Accomplishments and Future Directions*, edited by David Pollack, pp. 143-246. Kentucky Heritage Council, Frankfort.
- 1996 The Emergence of Long-Distance Exchange Networks in the Southeastern United States. In *Archaeology of the Mid-Holocene Southeast*, edited by Kenneth E. Sassaman and David G. Anderson, pp. 222-234. University Press of Florida, Gainesville.
- 1997 Middle Archaic Bone Pins: Evidence of Mid-Holocene Regional-Scale Social Groups in the Southern Midwest. *American Antiquity* 62:464-487.
- 2004 Regional Scale Interaction Networks and the Emergence of Cultural Complexity along the Northern Margins of the Southeast. In *Signs of Power: The Rise of Cultural Complexity in the Southeast*, edited by Jon L. Gibson and Philip J. Carr, pp. 71-95. University of Alabama Press.
- 2008 Archaic Cultures of Western Kentucky. In *Archaic Societies: Diversity and Complexity across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier. State University of New York Press, Albany.
- Jefferies, Richard W., and B. Mark Lynch
- 1983 Dimensions of Middle Archaic Cultural Adaptation at the Black Earth Site, Saline County, Illinois. In *Archaic Hunters and Gatherers in the American Midwest*, edited by James L. Phillips and James A. Brown, pp. 299-322. Academic Press, New York.
- 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: 3-23.
- Jefferies, Richard W., Victor D. Thompson, George R. Milner, Renee M. Bonzani, and Tanya M. Peres
- 2007 Cypress Creek Villages Revisited: Archaic Settlement and Subsistence in the Cypress Creek Watershed. In *Current Archaeological Research in Kentucky, Volume Eight*, edited by Sarah E. Miller, David Pollack, Kenneth Carstens, and Christopher R. Moore, pp. 37-76. Kentucky Heritage Council, Frankfort.
- Johnston, Francis E.
- 1961 Sequence of Epiphyseal Union in a Prehistoric Kentucky Population at Indian Knoll. *Human Biology* 33(1):66-81.
- Johnston, Francis E., and Charles E. Snow
- 1961 The Reassessment of the Age and Sex of the Indian Knoll Skeletal Population: Demographic and Methodological Aspects. *American Journal of Physical Anthropology* 19:237-244.
- Justice, Noel
- 1987 *Stone Age Spear and Arrow Points of the Mid-Continental United States*. Indiana University Press, Indianapolis.

- Keel, Bennie C.
 1974 Excavations at the Nowlin II Site (40CF35). In *Sixth Report of the Normandy Archaeological Project*, edited by Major C. R. McCollough and Charles H. Faulkner. Report of Investigation No. 21. Department of Anthropology, University of Tennessee, Knoxville.
- Kennedy, Mary C., Christine Hensley-Martin, and Patty Jo Watson
 1983 Cave Research Foundation Archaeological Project – 1983. In *Cave Research foundation 1983 Annual Report*, pp. 22-23. Cave Research Foundation, Washington, D.C.
- Kerr, Jonathan P.
 1994 *Phase Two Archaeological Investigations at the Sinking Creek Site (15Pu294), Pulaski County, Kentucky*. Cultural Resource Analysts, Lexington.
- Kerr, Jonathon 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.
- 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.
- Kerr, Jonathan, 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.
- Kerr, Jonathan, 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.
- King, James E. and William H. Allen
 1977 A Holocene Vegetation Record from the Mississippi River Valley, Southeastern Missouri. *Quaternary Research* 8:307-323.
- Knudsen, Gary D.
 1988 Ubiquitous Lithic Scatters: You Can't Tell a Site by Its Disturbance. In *Paleoindian and Archaic Research in Kentucky*, edited by Charles D. Hockensmith, David Pollack, and Thomas N. Sanders, pp. 221-232. Kentucky Heritage Council, Frankfort.
- Knudsen, Gary D., and Cecil R. Ison
 1984 *Cultural Resource Inventory of 1343 Acres, Greenwood and Campbell Exchanges, Daniel Boone National Forest, Kentucky*. United States Forest Service, Daniel Boone National Forest, Winchester, Kentucky.
- Knudsen, Gary D., Cecil R. Ison, and Kimberly A. Owens
 1985 *Cultural Resource Phase II Testing: Campbell Land Exchange or Archaeological Misadventures in McCreary County*. United States Forest Service, Daniel Boone National Forest, Winchester, Kentucky.

- 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.
- Kreinbrink, Jeannine
 2008 *Site 15JF674 Phase II Evaluation, Jefferson County, Kentucky: Management Summary and Mitigation Plan*. Natural and Ethical Environmental Solutions, Cincinnati.
- Lafferty, Robert H. III, and James E. Price
 1996 Southeast Missouri. In *Prehistory of the Central Mississippi Valley*, edited by Charles. H. McNutt, pp. 1-45. University of Alabama Press, Tuscaloosa.
- Lane, Leon
 1991 Analysis of the Human Skeletal Materials from the Long Site (15Ru17): A Multicomponent Site in Russell County, Kentucky. Paper presented at the Eighth Annual Kentucky Heritage Council Archaeological Conference.
- 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*. Southeastern Archaeological Services, Athens, Georgia.
- Lewis, R. Barry (editor)
 1996 *Kentucky Archaeology*. University Press of Kentucky, Lexington.
- Lewis, Thomas M. N., and Madeline K. Lewis
 1961 *Eva: An Archaic Site*. University of Tennessee Press. Knoxville.
- Lewis, Thomas M. N., and Madeline K. Kneberg
 1959 The Archaic Culture in the Middle South. *American Antiquity* 25(2):161-183.
- Libby, Willard F.
 1952 *Radiocarbon Dating*. University of Chicago Press, Chicago.
- Lopinot, Neal H.
 1982 Plant Macroremains and Paleoethnobotanical Implication. In *The Carrier Mills Archaeological Project: Human Adaptation in the Saline Valley, Illinois, Volume II*, edited by Richard W. Jefferies and Brian M. Butler, pp. 671-860. Research Paper No. 33. Center for Archaeological Investigations, Southern Illinois University, Carbondale.
- Lynch, B. Mark
 1982 Mortuary Behavior in the Carrier Mills Archaeological District. In *The Carrier Mills Archaeological Project: Human Adaptation in the Saline Valley, Illinois*, edited by Richard W. Jefferies and Brian M. Butler, pp. 1115-1231. Research Paper No. 33. Center for Archaeological Investigations, Southern Illinois University, Carbondale.

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, University of Kentucky, Lexington.

Marquardt, William H.

1970 Archaeological Investigations in the Cave Run Reservoir, Kentucky: 1969 Season. Ms. On file, Department of Anthropology, University of Kentucky, Lexington.

1971 The Archaic of the Western Coalfields Area of Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

1972a Recent Investigations in a Western Kentucky Shell Mound. Paper presented at the 37th Annual Meeting of the Society for American Archaeology, Bal Harbour, Florida.

1972b Research Report on Excavations at the Carlston Annis Mound. *Southeastern Archaeological Conference Newsletter* 16(2):45.

1985 Complexity and Scale in the Study of Fisher-Gatherer-Hunters: An Example from the Eastern United States. In *Archaic Hunter-Gatherers: The Emergence of Cultural Complexity*, edited by T. Douglas Price and James A. Brown, pp. 59-98. Academic Press, New York.

2005 Lithic Artifacts in the Middle Green River Area. In *Archaeology of the Middle Green River Region, Kentucky*, edited by William H. Marquardt and Patty Jo Watson, pp. 351-429. Monograph 5, Institute of Archaeology and Paleoenvironmental Studies, University of Florida, Gainesville.

Marquardt, William H., and Patty Jo Watson

1974 The Green River, Kentucky, Shellmound Archaeological Project. Paper presented at the 73rd Annual Meeting of the American Anthropological Association, Mexico City.

1976 Excavation and Recovery of Biological Remains from Two Archaic Shell Middens in Western Kentucky. Paper presented at the 33rd Annual Meeting of the Southeastern Archaeological Conference, Tuscaloosa, Alabama.

1979 Shell Midden Formation and Deformation: A Case Study. Paper presented at the 36th Annual Meeting of the Southeastern Archaeological Conference, Atlanta.

1983a Excavation and Recovery of Biological Remains from Two Archaic Shell Middens in Western Kentucky. *Southeastern Archaeological Conference Bulletin* 20:112-129.

1983b The Shellmound Archaic of Western Kentucky. In *Archaic Hunters and Gatherers in the American Midwest*, edited by J. L. Phillips and J. A. Brown, pp. 323-339. Academic Press, New York.

2005b The Green River Shell Mound Archaic: Conclusions. In *Archaeology of the Middle Green River Region, Kentucky*, edited by William H. Marquardt and Patty Jo Watson, pp. 629-647. Monograph Number 5. Institute of Archaeology and Paleoenvironmental Studies, Florida Museum of Natural History, University of Florida, Gainesville.

- 2005c SMAP Investigations at the Carlston Annis Site, 15Bt5. In *Archaeology of the Middle Green River Region, Kentucky*, edited by William H. Marquardt and Patty Jo Watson, pp. 87-120. Monograph Number 5. Institute of Archaeology and Paleoenvironmental Studies, Florida Museum of Natural History, University of Florida, Gainesville.
- Marquardt, William H., and Patty Jo Watson (editors)
- 2005a *Archaeology of the Middle Green River Region, Kentucky*. Monograph Number 5. Institute of Archaeology and Paleoenvironmental Studies, Florida Museum of Natural History, University of Florida, Gainesville.
- Maslowksi, Robert S., Charles M. Niquette, and Derek M. Wingfield
- 1996 *The Kentucky, Ohio, and West Virginia Radiocarbon Database*. Electronic document, <http://www.crai-ky.com/education/reports/c14-database.html>, accessed May, 2008. Cultural Resource Analysts, Lexington.
- Maxwell, Moreau S.
- 1952 *The Archaeology of the Lower Ohio Valley*. In *Archeology of the Eastern United States*, edited by James B. Griffin, pp. 176-189. University of Chicago Press.
- Mayes, Leigh Ann
- 1997 *The Bluegrass Site (12W162): Bioarchaeological Analysis of a Middle-Late Archaic Mortuary Site in Southwestern Indiana*. Unpublished Master's thesis, Department of Anthropology and Sociology, University of Southern Mississippi, Hattiesburg, Mississippi.
- Maynard, David T. and Thomas W. Gatus
- 1979 *A Reconnaissance and Evaluation of Archaeological Sites in Greenup County, Kentucky*. Ms. on file, Kentucky Heritage Council, Frankfort.
- McBride, John David
- 2000 *The Baker Site and the Late Archaic Period in the Green River Region of West Central Kentucky*. Unpublished Master's thesis, Department of Anthropology, University of Kentucky, Lexington.
- McMillan, R. Bruce and Walter E. Klippel
- 1981 Post-glacial Environmental Change and Hunting-Gathering Societies of the Southern Prairie Peninsula. *Journal of Archaeological Science* 8:215-245.
- McNutt, Charles H.
- 2004 *Phase II Investigations of 21 Sites, Fort Campbell Military Reservation, Montgomery and Stewart Counties, Tennessee, and Christian County, Kentucky*. Panamerican Consultants, Memphis.
- Meindl, Richard S., Robert P. Mensforth, and Heather P. York
- 2001 Mortality, Fertility, and Growth in the Kentucky Late Archaic: The Paleodemography of the Ward Site. In *Archaic Transitions in Ohio and Kentucky Prehistory*, edited by Olaf H. Prufer, Sara E. Pedde, and Richard S. Meindl, pp. 87-109. Kent State University Press, Kent, Ohio.
- Mensforth, Robert P.
- 1985 Relative Tibia Long Bone Growth in the Libben and Bt-5 Prehistoric Skeletal Populations. *American Journal of Physical Anthropology* 68:247-262.

- 1996 Observations on the Antiquity, Geographic Distribution, and Theoretical Significance of Violent Injuries, Scalping and other Trophy-Taking Behaviors among Archaic Hunter-Gatherers of the Eastern United States. *American Journal of Physical Anthropology Supplement* 22:166 (abstract).
- 2005 Paleodemography of the Skeletal Population from the Carlston Annis Site, 15Bt5. In *Archaeology of the Middle Green River Region, Kentucky*, edited by William H. Marquardt and Patty Jo Watson, pp. 453-487. Monograph 5. Institute of Archaeology and Paleoenvironmental Studies, University of Florida, Gainesville.
- Meyers, Maureen
- 2000 *United States Penitentiary, McCreary County, Kentucky: Archaeological Evaluation of Site 15McY1151*. Louis Berger Group, Washington, D.C.
- 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 Consultants, Columbus, Ohio.
- Mickelson, Katherine R.
- 2002 *Toward an Understanding of Middle Archaic Plant Exploitation: Geochemical, Macrobotanical and Taphonomic Analyses of Deposits at Mounded Talus Rockshelter, Eastern Kentucky*. Unpublished Ph.D. dissertation, Department of Anthropology, Ohio State University, Columbus.
- Miller, Carl F.
- 1950 Early Cultural Horizons in the Southeastern United States. *American Antiquity* 15:273-288.
- Miller, Rex K.
- 1941 *McCain Site, Dubois County, Indiana*. Indiana Historical Society, Prehistoric Research Series 2(1).
- Milner, George R.
- 2004 *The Moundbuilders: Ancient People of Eastern North America*. Thames & Hudson.
- Milner, George R., and Virginia G. Smith
- 1986 *New Deal Archaeology in Kentucky: Excavations, Collections, and Research*. Occasional Papers in Anthropology No. 5. Program for Cultural Resource Assessment, University of Kentucky, Lexington.
- Milner, George R., and Richard W. Jefferies
- 1998 The Read Shell Mound: An Archaic Shell Midden in Kentucky. *Southeastern Archaeology* 17:119-132.
- Mocas, Stephen T.
- 1976 *Excavation at Arrowhead Farm (15Jf237)*. Louisville Archaeological Survey, University of Louisville, Louisville.
- 1977 *Excavations at the Lawrence Site, 15Tr13, Trigg County, Kentucky*. Louisville Archaeological Survey, University of Louisville, Louisville.

- 1985 An Instance of Middle Archaic Mortuary Activity in Western Kentucky. *Tennessee Anthropologist* 10:76-91.
- Monroe, Elizabeth J.
2003 *Faunal Resource Selection and Use, and the Development of Agriculture in the Eastern Woodlands of North America*. Unpublished Ph.D. dissertation, Department of Anthropology, Washington University, St. Louis.
- Moore, Clarence B.
1916 *Additional Investigations on Green River, Kentucky*. Journal of the Academy of Natural Sciences of Philadelphia. Second Series, Vol. 16:31-487.
- Morey, Darcey F., and George M. Crothers
1998 Clearing Up Clouded Waters: Paleoenvironmental Analysis of Freshwater Mussel Assemblages from Green River Shell Middens, Western Kentucky. *Journal of Archaeological Science* 25:907-926.
- Morey, Darcy F., George Crothers, Julie Stein, James Fenton, and Nicholas Herrmann
2002 The Fluvial and Geomorphic Context of Indian Knoll, an Archaic Shell Midden in West Central Kentucky. *Geoarchaeology* 17:521-553.
- Morgan, Richard G.
1952 Outline of Cultures in the Ohio Region. In *Archeology of Eastern United States*, edited by James B. Griffin, pp. 83-98. University of Chicago Press, Chicago.
- Morse, Dan F.
1982 Regional Overview of Northeast Arkansas. In *Arkansas Archaeology in Review*, edited by Neal L. Trubowitz and Marvin D. Jeter, pp. 20-36. Research Series No. 15. Arkansas Archaeological Survey, Fayetteville.
- Muller, Jon
1986 *Archaeology of the Lower Ohio River Valley*. Academic Press, New York.
- Myers, Ruth G., John W. Picklesimer, and Sue Ellen Kozarek
1992 *Phase II Archaeological Testing of Sites 15Ja248, 15Ja236, and 15Ja239 in the Berea Ranger District, Daniel Boone National Forest, Jackson County, Kentucky*. Gray and Pape, Cincinnati.
- Nagy, Bethel Lynn Brown
2000 *The Life Left in Bones: Evidence of Habitual Activity Patterns in Two Prehistoric Kentucky Populations*. Unpublished Ph.D. dissertation, Department of Anthropology, Arizona State University, Tempe.
- Nance, Jack D.
1975 An Archaeological Survey of the Land Between the Lakes National Recreation Area. *Tennessee Archaeologist* 31:61-77.
- 1977 Aspects of Late Archaic Culture in the Lower Tennessee/Cumberland River Valleys. *Tennessee Archaeologist* 33:1-15.

- 1981 The Morrisroe Site, Livingston County, Kentucky. Ms. on file, Department of Archaeology, Simon Fraser University, Burnaby, British Columbia and at the Office of State Archaeology, Lexington, Kentucky.
- 1982 Lower Cumberland Project: Introduction. Paper presented at the 39th Annual Meeting of the Southeastern Archaeological Conference, Memphis.
- 1985 The Archaic Sequence in the Lower Tennessee-Cumberland-Ohio Region. Ms. on file, Department of Archaeology, Simon Fraser University, Burnaby, British Columbia.
- 1986a The Morrisroe Site: Projectile Point Types and Radiocarbon Dates from the Lower Tennessee River Valley. *Midcontinental Journal of Archaeology* 11:11-50.
- 1986b Archaeological Investigations at the Whalen Site, Lyon County, Kentucky: A Progress Report. Ms. on file, Department of Archaeology, Simon Fraser University, Burnaby, British Columbia.
- 1987 The Archaic Sequence in the Lower Tennessee-Cumberland-Ohio Region. *Southeastern Archaeology* 6:129-140.
- 1988 The Archaic Prehistory of the Lower Tennessee-Cumberland Valleys. In *Paleoindian and Archaic Research in Kentucky*, edited by Charles D. Hockensmith, David Pollack, and Thomas N. Sanders, pp. 127-152. Kentucky Heritage Council, Frankfort.
- 2001 *Archaeological Investigations at the Whalen Site (15Lv48), Lyon County, Kentucky*. Department of Anthropology, Simon Fraser University, Burnaby, British Columbia, Canada.
- Nance, Jack D. and Gerald T. Conaty
- 1982 The Morrisroe Site, Livingston County, Kentucky. Paper presented at the 39th Annual Meeting of the Southeastern Archaeological Conference, Memphis.
- Nelson, N. C.
- 1917 *Contributions to the Archaeology of Mammoth Cave and Vicinity, Kentucky*. Anthropological Papers of the American Museum of Natural History 22:1-73.
- Niquette, Charles M. (editor)
- 1989 *Phase III Investigations at the Graham Site, a Stratified Archaic/Woodland Site in the Proposed Yatesville Reservoir in Lawrence County, Kentucky*. Cultural Resource Analysts, Lexington.
- Niquette, Charles M., and A. Gwynn Henderson
- 1984 *Background to the Historic and Prehistoric Resources of Eastern Kentucky*. Cultural Resource Series No. 1. Bureau of Land Management, Eastern States Office, Alexandria, Virginia.
- Noakes, John E. and Betty Lee Brandau
- 1974 University of Georgia Radiocarbon Dates III. *Radiocarbon* 16(1): 135-136.

- 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.
- O'Malley, Nancy, Julie Riesenweber, and A. Gwynn Henderson
 1983 *Cultural Resource Reconnaissance of the Lower Cumberland River, Livingston, Crittenden, and Kentucky*. Archaeological Report No. 75. Program for Cultural Resource Assessment, University of Kentucky, Lexington.
- O'Shaughnessy, Julie A., and Jo Ann Wilson
 1990 *Coy Site Surface Collection: Preliminary Report and Analysis*. Occasional Paper No. 3. William S. Webb Archaeological Society, 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. United States Forest Service, Department of Agriculture, Winchester, Kentucky.
- O'Steen, Lisa D., Kristen J. Gremillion, and R. Jerald Ledbetter
 1991 *Archaeological Testing of Five Sites in the Big Sinking Creek Oil Field, Lee County, Kentucky*. United States Forest Service, Department of Agriculture, Winchester, Kentucky.
- Patch, Diana C.
 2005 The Freshwater Molluscan Fauna: Identification and Interpretation for Archaeological Research. In *Archaeology of the Middle Green River Region, Kentucky*, edited by William H. Marquardt and Patty Jo Watson, pp. 257-278. Monograph Number 5. Institute of Archaeology and Paleoenvironmental Studies, Florida Museum of Natural History, University of Florida, Gainesville.
- Pedde, Sarah. E., and Olaf. H. Prufer
 2001 The Kentucky Green River Archaic as Seen from the Ward Site. In *Archaic Transitions in Ohio & Kentucky Prehistory*, edited by Olaf. H. Prufer, Sara. E. Pedde, and Richard S. Meindl, pp. 59-86. Kent State University Press, Kent, Ohio.
- Perzigian, Anthony J.
 1976 The Dentition of the Indian Knoll Skeletal Population: Odontometrics and Cusp Number. *American Journal of Physical Anthropology* 44:113-122.
- Pollack, David
 1990 Introduction. In *The Archaeology of Kentucky: Past Accomplishments and Future Directions*, edited by David Pollack, pp. 1-24. Kentucky Heritage Council, Frankfort.
- Pollack, David, and Eric J. Schlarb
 2004 Raised Spirits Rockshelter (15Po331) National Register Nomination. On file, Kentucky Heritage Council, Frankfort.
- Prentice, Guy
 1990 *Mammoth Cave Archaeological Inventory Project Interim Report – 1989 Investigations*. National Park Service, Southeast Archaeological Center, Tallahassee.

- 1995 *Big South Fork National River and Recreation Area Archaeological Resource Survey – 1994 Field Season*. Southeast Archaeological Center, National Park Service, Tallahassee, Florida.
- 1996 Site Distribution Modeling for Mammoth Cave National Park. In *Of Caves and Shell Mounds*, edited by Kenneth C. Carstens and Patty Jo Watson, pp. 12-32. University of Alabama Press, Tuscaloosa, Alabama.
- Prewett, David L., and David J. Wolf
 1979 The Biological Distance of Two Archaic Skeletal Groups: An Analysis of the Discrete Cranial Traits of 15Jf 18 and 15Oh2 Peoples. Paper presented at the 36th Annual Meeting of the Southeastern Archaeological Conference, Atlanta, Georgia.
- Purrington, Burton L.
 1967 *Prehistoric Horizons and Traditions in the Eastern Mountains of Kentucky*. Unpublished Master's thesis, Department of Anthropology, University of Kentucky, Lexington.
- Purrington, Burton L., and David G. Smith
 1966 An Archaeological Survey of the Eagle Creek Reservoir in Grant and Owen Counties, Kentucky. Report on file, Office of State Archaeology, University of Kentucky, Lexington.
- Purtill, Matthew
 2008 The Ohio Archaic: A Review. In *Archaic Societies: Diversity and Complexity across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier. State University of New York Press, Albany.
- Rafinesque, Constantine
 1824 *Ancient History, or Annals of Kentucky History: Introduction to the Antiquities of the State of Kentucky*. Frankfort.
- Ray, Jack H.
 1998 *A Diachronic Study of Chert Procurement and Utilization in the Upper Rolling Fork River Valley, Marion County, Kentucky*. Center for Archaeological Research, Southwest Missouri State University, Springfield.
- Richmond, Michael D.
 2001 *A National Register Evaluation of Site 15Br200 in Breathitt County, Kentucky*. Cultural Resource Analysts, Lexington.
- Ritchie, William A.
 1932 *The Lamoka Lake Site. Researchers and Transactions 7*. New York State Archaeological Association, Albany.
- Robinson, Kenneth W., and Steven D. Smith
 1979 The Villier Site (15JF110 Complex). In *Excavations at Four Archaic Sites in the Lower Ohio Valley. Jefferson County, Kentucky*, edited by Michael B. Collins, pp. 590-696. Occasional Papers in Anthropology No. 1. Department of Anthropology, University of Kentucky, Lexington.

Rolingson, Martha A.

1967 *Temporal Perspective on the Archaic Cultures of the Middle Green River Region, Kentucky*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Michigan. University Microfilms, Ann Arbor.

1968 Preliminary Excavations in the Eagle Creek Reservoir, Grant and Owen Counties, Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

Rolingson, Martha A., and Michael J. Rodeffer

1968a Archaeological Excavations in Cave Run Reservoir, Kentucky: Progress Report. Ms. on file, Museum of Anthropology, University of Kentucky, Lexington.

1968b The Zilpo Site, Ba-37 Preliminary Excavations in the Cave Run Reservoir, Kentucky. Ms. on file, Museum of Anthropology, University of Kentucky, Lexington.

Rolingson, Martha A., and Douglas W. Schwartz

1966 *Late Paleo-Indian and Early Archaic Manifestations in Western Kentucky*. Studies in Anthropology No. 3. University of Kentucky Press, Lexington.

Rossen, Jack

1985 *Resource Assessment of a Proposed 204-Acre Surface Mine in Floyd County, Kentucky*. Archaeological Report No. 141. Department of Anthropology, University of Kentucky, Lexington.

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

Rothschild, Nan A.

1979 Mortuary Behavior and Social Organization at Indian Knoll and Dickson Mounds. *American Antiquity* 44:658-675.

Ruff, Christopher B.

1980 Age Differences in Craniofacial Dimensions Among Adults from Indian Knoll, Kentucky. *American Journal of Physical Anthropology* 53:101-108.

Russo, Michael

2004 Measuring Shell Rings for Social Inequality. In *Signs of Power: The Rise of Cultural Complexity in the Southeast*, edited by Jon L. Gibson and Philip J. Carr, pp. 26-70. University of Alabama Press, Tuscaloosa.

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.

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.

Sassaman, Kenneth E.

- 1996 Technological Innovations in Economic and Social Contexts. In *Archaeology of the Mid-Holocene Southeast*, edited by David G. Anderson and Kenneth E. Sassaman, pp. 57-74. University Press of Florida, Gainesville.

Saunders, Joe

- 2004 Are We Fixing to Make the Same Mistake Again? In *Signs of Power: The Rise of Cultural Complexity in the Southeast*, edited by Jon L. Gibson and Philip J. Carr, pp. 146-161. University of Alabama Press, Tuscaloosa.

Scarry, C. Margaret

- 2003 Patterns of Wild Plant Utilization in the Prehistoric Eastern Woodlands. In *People and Plants in Ancient Eastern North America*, edited by Paul E. Minnis, pp. 50-104. Smithsonian Books, Washington.

Schenian, Pamela A.

- 1985 A Preliminary Analysis of the Cultural Features Identified during the 1966 and 1967 Carnegie Museum Excavations at Savage Cave. In *Western Kentucky Speleological Survey Annual Report 1984*, edited by John E. Mylroie, pp. 11-30. Murray State University Printing Services, Murray, Kentucky.

- 1987 The Crick Cache (Site 15Cw96). In *Current Archaeological Research in Kentucky: Volume One*, edited by David Pollack, pp. 1-12. Kentucky Heritage Council, Frankfort.

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, Murray, Kentucky.

Schlarb, Eric J.

- 2004 *An Archaeological Assessment of the 29.1 Ha Henson Tract, Natural Bridge State Resort Park, Powell County, Kentucky*. Report No. 93. Kentucky Archaeological Survey, Lexington.

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.

Schlarb, Eric J., A. Gwynn Henderson, and David Pollack

- 2008 *Testing at the Rim Rock Trail Site (15Bc341) and Analysis of Diagnostics from the Rough River site (15Gy12), Breckinridge and Grayson Counties, Kentucky*. Report No. 31. Kentucky Archaeological Survey, Lexington.

Schock, Jack M.

- 1979 Ten Carbon-14 Dates from Prehistoric Indian Sites in Southern Kentucky. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.

- 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., William Howell, Mary L. Bowman, Richard Alvey, Dana Beasley, and Joel Stoner.
1977 *A Report on the Excavations of Two Archaic Sites (CH-302 and CH-307) in Christian County, Kentucky*. Bulletins 6 and 7. Kentucky Archaeological Association.

Schuldenrein, Joseph

1996 Geoarchaeology and the Mid-Holocene Landscape History of the Greater Southeast. In *Archaeology of the Mid-Holocene Southeast*, edited by Kenneth E. Sassaman and David G. Anderson, pp. 3-27. University Press of Florida. Gainesville.

Schwartz, Douglas W.

1967 *Conceptions of Kentucky Prehistory: A Case Study in the History of Archaeology*. Studies in Anthropology No. 6. University of Kentucky Press, Lexington.

Sears, William

1948 What is the Archaic? *American Antiquity* 14:122-124.

Sherwood, Sarah C., and Paul Goldberg

2001 A Geoarchaeological Framework for the Study of Karstic Cave Sites in the Eastern Woodlands. *Midcontinental Journal of Archaeology* 26:145-167.

Sherwood, Sarah C., and Jan F. Simek (editors)

2001 Cave Archaeology in the Eastern Woodlands. *Midcontinental Journal of Archaeology* 26 (2).

Shields, Carl

1998 *A Preliminary Assessment of the Thomas Fuller Tract at Natural Bridge State Resort Park*. Report No. 15. Kentucky Archaeological Survey, Lexington.

Simek, Jan F., and Alan Cressler

2001 Issues in the Study of Southeastern Prehistoric Cave Art. *Midcontinental Journal of Archaeology* 26:233-250.

Skarland, Ivar

1939 The Skeletal Material. In *The Chiggerville Site, Site 1, Ohio County, Kentucky* by William S. Webb and William G. Haag. University of Kentucky Reports in Anthropology 4(1):28-49. Lexington.

Smith, Bruce D., and C. Wesley Cowan

1987 Domesticated Chenopodium in Prehistoric Eastern North America: New Accelerator Dates from Eastern Kentucky. *American Antiquity* 52:355-357.

2003 Domesticated Crop Plants and the Evolution of Food Production Economies in Eastern North America. In *People and Plants in Ancient Eastern North America*, edited by Paul E. Minnis, pp. 105-125. Smithsonian Books, Washington, D.C.

Smith, Edward E.

1994 The Swan's Landing Site (12Hr304): An Early Archaic Site (Kirk Horizon) in Harrison County, Indiana. *Midcontinental Journal of Archaeology* 20:192-238.

- Smith, Edward E., and Stephen T. Mocas
 1995 *Archaeological Investigations at the Paddy's West Substation, Floyd County, Indiana*. Reports of Investigations 95-4. Glenn A. Black Laboratory of Archaeology. Indiana University, Bloomington.
- Snow, Charles E.
 1948 Indian Knoll Skeletons of Site Oh 2, Ohio County, Kentucky. *Reports in Anthropology* 4(3), Part 11:367-555. University of Kentucky, Lexington.
- Sorensen, Jerry H., Michael B. Collins, Thomas W. Gatus, Susan Grant, Richard Levy, Chuck R. Norville, Nancy O'Malley, Julie Riesenweber, and Malinda Stafford
 1980 *Final Report: Taylorsville Lake, Kentucky Archaeological Resources Survey and Evaluation. Season II*. Archaeological Report No. 24. Department of Anthropology, University of Kentucky, Lexington.
- Squier, Ephraim, and Edwin H. Davis
 1848 *Ancient Monuments of the Mississippi Valley: Comprising the Results of Extensive Original Surveys and Explorations*. Contributions to Knowledge 1. Smithsonian Institution, Washington, D.C.
- Stafford, C. Russell
 1994 Structural Changes in Archaic Landscape Use in the Dissected Uplands of Southwestern Indiana. *American Antiquity* 59:219-237.
 2005 Modeling Soil-Geomorphic Associations and Archaic Stratigraphic Sequences in the Lower Ohio Valley. *Journal of Archaeological Sciences* 31:1053-1067.
- Stafford, C. Russell, and Mark Cantin
 2008 Archaic Period Chronology in the Hill Country of Southern Indiana. In *Archaic Societies: Diversity and Complexity across the Midcontinent*, edited by T. E. Emerson, D. L. McElrath, and A. C. Fortier. State University of New York Press, Albany.
- Stafford, C. Russell., Ronald L. Richards, and C. Michael Anslinger
 2000 The Bluegrass Fauna and Changes in Middle Holocene Hunter-Gatherer Foraging in the Southern Midwest. *American Antiquity* 65:317-336.
- Stallings, Richard, and Nancy Ross-Stallings
 1996 *Phase II Archaeological Investigations of Site 15Hd478 Located near Elizabethtown, Hardin County, Kentucky*. Cultural Horizons, Harrodsburg, Kentucky.
- Stallings, Richard, Nancy Ross-Stallings, Sarah Adams, Annette Ericksen, Flora Church, and Richard Bonnett
 1995 *Phase III Mitigations at Sites 15Cr61 and 15Cr64, Located Near Grayson, Carter County, Kentucky*. Cultural Horizons, Harrodsburg, Kentucky.
- Stoltman, James
 1978 Temporal Models in Prehistory: An Example from Eastern North America. *Current Anthropology* 19:703-746.

- Styles, Bonnie W., Steven R. Ahler, and Melvin L. Fowler
 1983 Modoc Rock Shelter Revisited. In *Archaic Hunters and Gatherers in the American Midwest*, edited by James L. Phillips and James A. Brown, pp. 261-297. Academic Press, New York.
- Styles, Bonnie W., and Walter Klippel
 1996 Mid-Holocene Faunal Exploitation in the Southeastern United States. In *Archaeology of the Mid-Holocene Southeast*, edited by David G. Anderson and Kenneth E. Sassaman, pp. 115-133. University Press of Florida, Gainesville.
- Sulham, Clifford B.
 1993 Initial Report on the Excavations at the Long Site, 15Ru17, with a Preliminary Report on the Archival Materials. Paper presented at Tenth Annual Kentucky Heritage Council Archaeological Conference, Lexington. Ms. on file, William S. Webb Museum of Anthropology, University of Kentucky, Lexington.
- Sullivan, Norman C.
 1977 *The Physical Anthropology of Chiggerville: Demography and Pathology*. Unpublished Master's thesis, Department of Anthropology, Western Michigan University, Kalamazoo.
- Sundick, R. I.
 1971 Skeletal Growth and Dental Eruption in the Indian Knoll Skeletons. Paper presented at the 40th Annual Meeting of the American Association of Physical Anthropologists, Boston.
 1972 *Human Skeletal Growth and Dental Development as Observed in the Indian Knoll Population*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Toronto, Toronto.
- Sussenbach, Tom
 1986 *Cultural Resource Assessment of a 450 Acre Tract at the Cincinnati International Airport, Boone County, Kentucky*. Archaeological Report No. 5. Program for Cultural Resource Assessment, University of Kentucky, Lexington.
 1993 *Results of Archaeological Monitoring of a Sewer Line Installation at Site 15Md333 in Meade County, Kentucky*. Archaeological Report No. 298. Program for Cultural Resource Assessment, University of Kentucky, Lexington.
 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.
- Tankersley, Kenneth B.
 1996 Prehistoric Mining in the Mammoth Cave System. In *Of Caves and Shell Mounds*, edited by Kenneth C. Carstens and Patty Jo Watson, pp. 33-39. University of Alabama Press, Tuscaloosa, Alabama.
- Tankersley, Kenneth B., Patrick J. Munson, and Cheryl Ann Munson
 1986 Prehistoric Selenite Mining in the Mammoth Cave System, Kentucky. Paper presented at the 51st Annual Meeting of the Society for American Archaeology, New Orleans.

- Thiel, Barbara
 1972 The Distribution of Grave Goods with Infants and Children at Indian Knoll. Ms. on file, Office of State Archaeology, University of Kentucky, Lexington.
- Thomas, Prentice M., Jr., L. Janice Campbell, and James R. Morehead
 2004 The Burkett Site (23MI20): Implications for Cultural Complexity and Origins. In *Signs of Power: The Rise of Cultural Complexity in the Southeast*, edited by Jon L. Gibson and Philip J. Carr, pp. 114-128. University of Alabama Press, Tuscaloosa.
- Thompson, Victor D.
 2001 *Diversity in Hunter-Gatherer Landscapes in the North American Midcontinent*. Unpublished Master's thesis, Department of Anthropology, University of Kentucky, Lexington.
- 2006 *Questioning Complexity: The Prehistoric Hunter Gatherers of Sapelo Island, Georgia* [electronic resource]. Unpublished Ph.D. dissertation, Department of Anthropology, University of Kentucky, Lexington. Internet Access: <http://lib.uky.edu/ETD/ukyanth2006d00392/>
- Tomak, Curtis H.
 1979 Jerger: An Early Archaic Mortuary Site in Southwestern Indiana. *Proceedings of the Indiana Academy of Science* 88:62-69.
- Trader, Patrick
 1992 Ronald Watson Gravel Site (15Be249), Boone County, Kentucky. Ms. on file, William S. Webb Museum of Anthropology, University of Kentucky, Lexington.
- Tucek, Charles S.
 1977 Radiocarbon, Ltd. Natural Radiocarbon Measurements II. *Radiocarbon* 19(2):255-256.
- Turnbow, Christopher A.
 1981 *Cultural Radiocarbon Determinations of Kentucky*. Occasional Papers in Anthropology No. 3. 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.
- Turnbow, Christopher A., Cynthia E. Jobe, and Nancy O'Malley
 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.
- Vento, Frank, James M. Adovasio, and Jack Donahue
 1979 Excavations at Dameron Rockshelter (15Jo23a), Johnson County. Report on file, U.S. Army Corps of Engineers, Huntington District Office, Huntington, West Virginia.

1980 *Excavations at Dameron Rockshelter (15Jo23a), Johnson County, Kentucky*. Ethnology Monograph No. 4. Department of Anthropology, University of Pittsburgh, Pittsburgh.

Vickery, Kent D.

1980 Preliminary Definitions of Archaic "Study Unit" in Southwestern Ohio. Unpublished manuscript prepared for the State Archaeological Preservation Plan Meeting held on April 25, 1980, Columbus, Ohio.

Wagner, Mark J., and Brian M. Butler

2000 *Archaeological Investigations at Dixon Springs State Park: The Hills Branch Rock Shelter, Pope County, Illinois*. Technical Report 00-2, Center for Archaeological Investigations, Southern Illinois University, Carbondale.

Ward, Steven C.

2005 The Dental Biology of the Carlston Annis Shell Mound Population. In *Archaeology of the Middle Green River Region, Kentucky*, edited by William H. Marquardt and Patty Jo Watson, pp. 489-503. Monograph Number 5. Institute of Archaeology and Paleoenvironmental Studies, Florida Museum of Natural History, University of Florida, Gainesville.

Watson, Patty Jo

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

1974 Prehistoric Horticulturalists. In *Archaeology of the Mammoth Cave Area*, edited by Patty Jo Watson, pp. 233-238. Academic Press, New York.

1976 In Pursuit of Prehistoric Subsistence: A Comparative Account of Some Contemporary Flotation Techniques. *Midcontinental Journal of Archaeology* 1:77-100.

1985 The Impact of Early Horticulture in the Upland Drainages of the Midwest and Midsouth. In *Prehistoric Food Production in North America*, edited by Richard I. Ford, pp. 99-147. Anthropological Papers No. 75. University of Michigan, Museum of Anthropology, Ann Arbor.

1996 Of Caves and Shell Mounds in West-Central Kentucky. In *Of Caves and Shell Mounds*, edited by Kenneth C. Carstens and Patty Jo Watson, pp. 159-164. University of Alabama Press, Tuscaloosa.

Watson, Patty Jo (editor)

1974 *Archaeology of Mammoth Cave*. Academic Press, New York.

Watson, Patty Jo, and Richard A. Yarnell

1969 Archaeological and Paleoethnobotanical Investigations in Salts Cave, Mammoth Cave National Park, Kentucky. *American Antiquity* 31:842-849.

Webb, William S.

1946 *Indian Knoll. Site Oh 2, Ohio County, Kentucky*. Reports in Anthropology and Archaeology 4(3), Part 1:113-365. University of Kentucky, Lexington.

- 1950a *The Carlston Annis Mound, Site 5, Butler County, Kentucky*. Reports in Anthropology 7(4). University of Kentucky, Lexington.
- 1950b *The Read Shell Midden, Site 10, Butler County, Kentucky*. Reports in Anthropology 7(5). University of Kentucky, Lexington.
- 1951 *The Parrish Village Site, Site 45, Hopkins County, Kentucky*. Reports in Anthropology 7(6):406-461. University of Kentucky, Lexington.
- 1974 *Indian Knoll*. Reprinted. University of Tennessee Press, Knoxville. Originally published in 1946 by the University of Kentucky.
- Webb, William S., and David L. DeJarnette
 1942 *An Archaeological Survey of Pickwick Basin in the Adjacent Portions of the States of Alabama, Mississippi, and Tennessee*. Bureau of American Ethnology, Bulletin 129. Smithsonian Institution, Washington, D.C.
- Webb, William S., and William D. Funkhouser
 1932 *Archaeological Survey of Kentucky*. Reports in Anthropology and Archaeology 2. University of Kentucky, Lexington.
- 1936 *Rock Shelters in Menifee County, Kentucky*. Reports in Anthropology and Archaeology 3(4): 105-167. University of Kentucky, Lexington.
- Webb, William S. and William G. Haag
 1939 *The Chiggerville Site, Site 1, Ohio County, Kentucky*. Reports in Anthropology and Archaeology 4(1):1-62. University of Kentucky, Lexington.
- 1940 *Cypress Creek Villages, Sites 11 and 12, McLean County, Kentucky*. Reports in Anthropology and Archaeology 4(2):67-110. University of Kentucky, Lexington.
- 1947 *Archaic Sites in McLean County, Kentucky*. Reports in Anthropology 7(1). University of Kentucky, Lexington.
- Weinland, Marcia K.
 1976 The Hutcherson Site. National Register of Historic Places nomination form. On file, Kentucky Heritage Council, Frankfort.
- Weinland, Marcia K., and Jason M. Fenwick
 1978 *A Reconnaissance and Evaluation of Archaeological Sites in Daviess County, Kentucky*. Archaeological Survey Report No. 6. Kentucky Heritage Commission, Frankfort.
- 1979 *A Reconnaissance and Evaluation of Archaeological Sites in Jessamine County, Kentucky*. Archaeological Survey Report No. 2. Kentucky Heritage Commission, Frankfort.
- Wilkins, Gary R.
 1977 *Cultural Ecology of Prehistoric Mountaintop Sites in the Kanawha Basin, West Virginia*. Unpublished Master's thesis, University of Arkansas, Fayetteville, Arkansas.

- 1985 *Late Quaternary Vegetational History at Jackson Pond, Laurel County, Kentucky*. Unpublished Master's thesis, University of Tennessee, Knoxville.
- Wilkins, Gary R., Paul A. Delcourt, Hazel R. Delcourt, Frederick W. Harrison, and Manson R. Turner.
 1991 Paleoecology of Central Kentucky since the Last Glacial Maximum. *Quaternary Research* 36:224-239.
- Wiley, Gordon R.
 1966 *An Introduction to American Archaeology: Volume One, North and Middle America*. Prentice-Hall, Englewood Cliffs, New Jersey.
- Wiley, Gordon R. and Philip Phillips
 1958 *Method and Theory in American Archaeology*. University of Chicago Press, Chicago.
- Winters, Howard D.
 1967 *An Archaeological Survey of the Wabash Valley in Illinois*. Reports of Investigations No. 10. Illinois State Museum, Springfield.
- 1968 Value Systems and Trade Cycles of the Late Archaic in the Midwest. In *New Perspectives in Archaeology*, edited by Sally R. Binford and Lewis R. Binford, pp.175-221. Aldine Publishers, Chicago.
- 1969 *Riverton Culture: A Second Millennium Occupation in the Central Wabash Valley*. Reports of Investigations No. 13. Illinois State Museum, Springfield.
- 1974 Introduction to the New Edition. In *Indian Knoll* by William S. Webb, pp. iii-xxvii. Reprinted. University of Tennessee Press, Knoxville. Originally published in 1946 by the University of Kentucky.
- Wright, Katherine I.
 1994 Groundstone Tools and Hunter-Gatherer Subsistence in southwest Asia: Implications for the Transition to Farming. *American Antiquity* 59:238-263.
- Wyckoff, Larry M.
 1977 *The Physical Anthropology of Chiggerville: Relationships and Growth*. Unpublished Master's thesis, Department of Anthropology, Western Michigan University, Kalamazoo.
- 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.