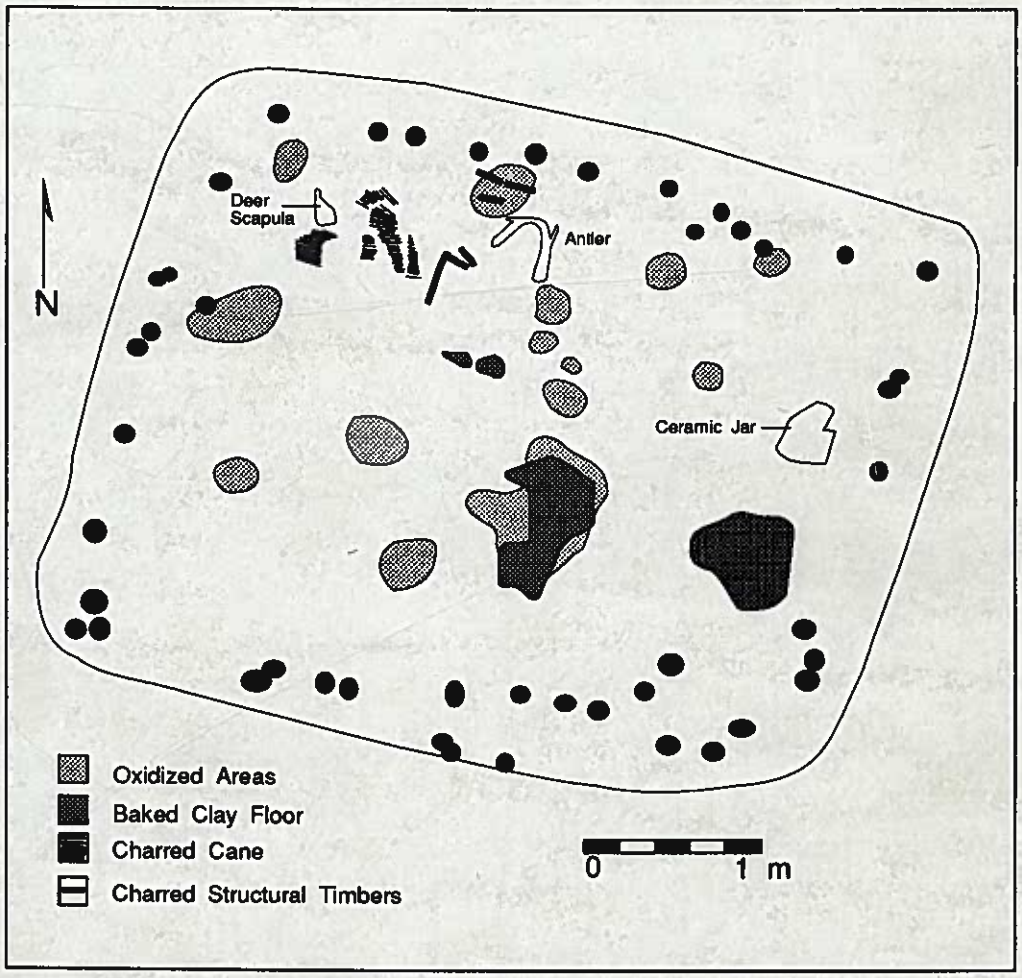
CURRENT ARCHAEOLOGICAL RESEARCH IN KENTUCKY: VOLUME TWO



Edited By
David Pollack
and
A. Gwynn Henderson

Kentucky Heritage Council

CURRENT ARCHAEOLOGICAL RESEARCH IN KENTUCKY: VOLUME TWO

edited
by
David Pollack
and
A. Gwynn Henderson

- 1992 -

KENTUCKY HERITAGE COUNCIL

This publication has been funded in part with state funds and federal funds from the National Park Service, Department of the Interior. However, the contents do not necessarily reflect the views or policies of the Department of the Interior.

PREFACE

Since its creation in 1966, the Kentucky Heritage Council has taken the lead in preserving and protecting Kentucky's cultural resources. To accomplish it legislative charge, the Heritage Council maintains three program areas: Site Development, Site Identification, and Site Protection and Archaeology. Site Development administers the state and federal Main Street programs, providing technical assistance in downtown revitalization to communities throughout the state. It also runs the Certified Local Government, Investment Tax Credit, and Restoration Grants-in-Aid programs.

The Site Identification staff maintains the inventory of historic buildings and is responsible for working with a Review Board, composed of professional historians, historic architects, archaeologists, and others interested in historic preservation, to nominate sites to the National Register of Historic Places. This program also is actively working to promote rural preservation and to protect Civil War sites.

The Site Protection and Archaeology Program Area staff works with a variety of federal and state agencies, local governments, and individuals to ensure their compliance with Section 106 of the National Historic Preservation Act of 1966 and to ensure that potential impacts to significant cultural resources are adequately addressed prior to the implementation of federally funded or licensed projects. They also are responsible for administering the Heritage Council's archaeological programs, which include the agency's state and federal archaeological grants; this conference and the publication of selected papers; the dissemination of educational materials, such as the Kentucky Before Boone poster/booklet and the recently published Kentuckians Before Boone; and the Kentucky Archaeological Registry, which is designed to provide information on site management and protection to the owners of Kentucky's most important archaeological sites. The Site Protection and Archaeology Program Area staff also undertakes field and research projects, such as the investigation of the Slack Farm Site in Union County.

The Eight Annual Kentucky Heritage Council Archaeological Conference was held in Bowling Green, Kentucky on March 2-3, 1991. The conference was cosponsored by Western Kentucky University and was well-attended by archaeologists from throughout the Ohio Valley. Dr. Jack Schock and his students were excellent hosts and we look forward to holding future conferences in Bowling Green.

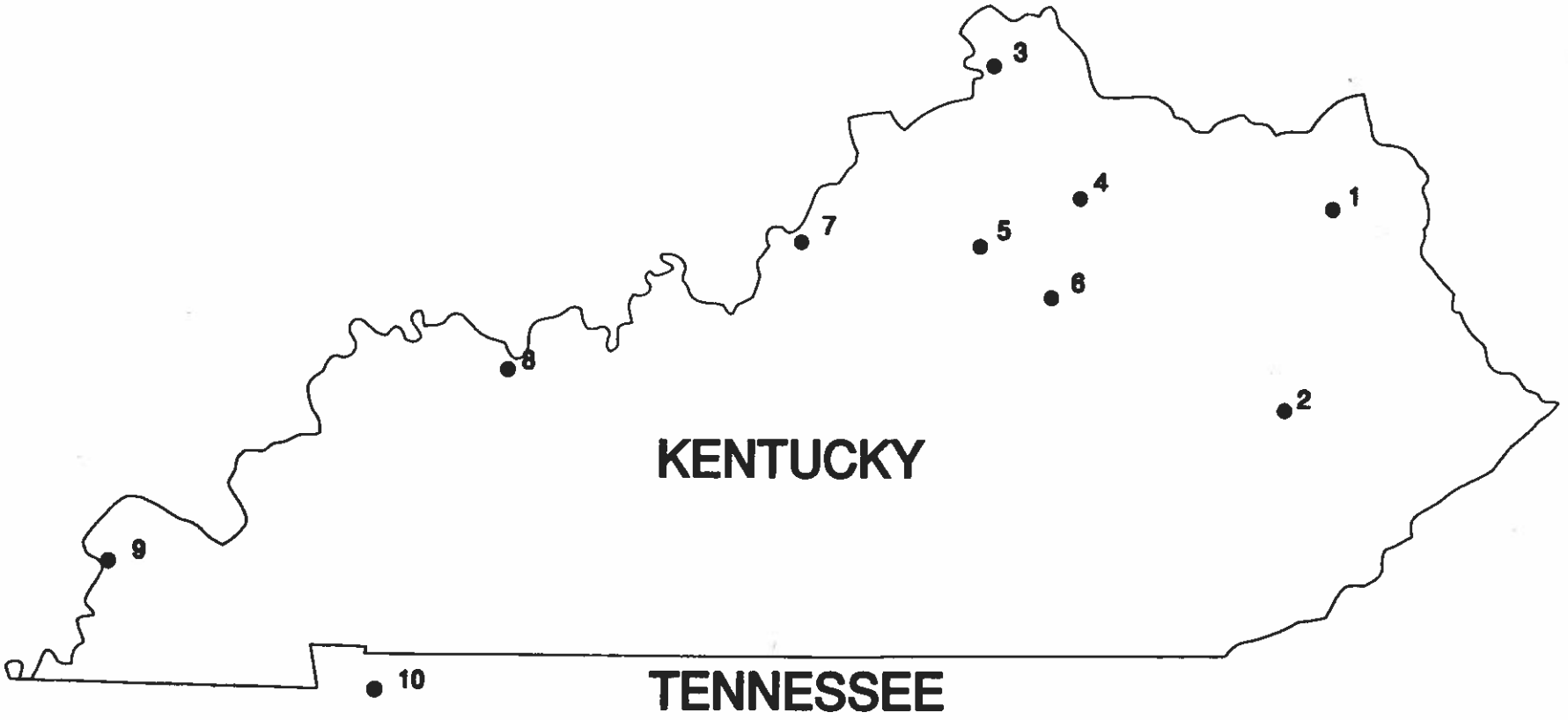
More than 20 papers were presented at the conference. Of these, 10 are included in this volume, along with two contributed papers. As in years past, these papers provide a cross-section of ongoing archaeological research in Kentucky. The papers are arranged chronologically from the Late Archaic to the Historic Period. Some of the papers are the products of ongoing research, such as those by Carstens, Claassen, Kreinbrink, Pollack and Hockensmith, Wesler, Mocas, and Sharp and Pollack. The latter three papers were supported in part by grants from the Kentucky Heritage Council, while the paper by Hockensmith and Pollack represents some of the ongoing research interests of the Heritage Council staff. Most of the other papers were produced as part of Section 106 or Coal related compliance projects. These include the papers by Ledbetter and O'Steen, Fiegel, McGraw, and Hixon, Henderson, and Rossen.

One of the highlights of the conference was a Late Prehistoric ceramic workshop. Participants brought Mississippian and Fort Ancient collections from throughout Kentucky. This workshop provided everyone with a hands-on opportunity to compare and contrast ceramic collections from several different areas. It also generated a great deal of spirited discussion both during and after the workshop.

Several Kentucky Heritage Council staff members contributed to the success of the conference and the preparation of this volume. Rose Murphy assisted with the conference organization and, along with Tracy Polsgrove, handled registration and book sales. Thomas N. Sanders, Charles D. Hockensmith, and Christine Hensley also helped make the conference an enjoyable experience for everyone. Finally, Lee Bledsoe prepared the illustrations for publication.

David L. Morgan, Director
Kentucky Heritage Council and
State Historic Preservation Officer

The editors would like to take this opportunity to thank David L. Morgan for his continued support of Kentucky archaeology and in particular, the statewide archaeological conference and the publication of this volume.



Sites discussed in this volume: 1. Grayson, 2. Kay Shelter, 3. Rogers Site Complex, 4. Florence Site Complex, 5. Carpenter Farm and Capitol View, 6. Lextran, 7. Clark Maritime, Zorn Avenue, and Hunting Creek, 8. Foster, 9. Wickliffe, and 10. Stone.

TABLE OF CONTENTS

SHELL MOUNDS AS BURIAL MOUNDS: A REVISION OF THE SHELL MOUND ARCHAIC

By
Cheryl Claassen
Appalachian State University
Boone, North Carolina

ABSTRACT

In earlier papers the author has proposed numerous alternative explanations for the origin of shell mounds, while favoring the hypothesis that shell mounds were principally burial mounds. Shell mounding ceased by 1500 B.C. because burial ceremonialism changed, reflecting a change in shell symbolism. In this paper some positive, negative, and problematic aspects of this hypothesis are explored.

INTRODUCTION

The origin and demise of the Shell Mound Archaic has been debated by archaeologists for many years. Why shellfishing intensified to the point that mounds of shells accumulated and why most of the shell mounds were abandoned with the advent of the Early Woodland period are questions that have been debated by researchers for at least four decades. In previous papers and articles I (Claassen 1988, 1991a) have presented several hypotheses that have attempted to account for the origin and demise of the Shell Mound Archaic. Of the hypotheses examined, the one favored over several others viewed shell mounds as mortuary facilities, with their demise reflecting changes in shell symbolism and the treatment of the dead. Based on a review of the literature on the Green River shell mounds, Christine Hensley (1991) suggested that some of these sites do not represent mortuary facilities. This has led the author to reevaluate her earlier position.

The accumulation of freshwater molluscs by Archaic people appears to have begun about 6,000 B.C. on the Tennessee, Harpeth, and Duck rivers in Tennessee. The phenomenon spread southward along the Tennessee River into the Pickwick area, onto the Tombigbee, and further upstream on the Tennessee into the Wheeler Basin area by 2,000 B.C. (Morse 1967:149). It also spread northward into central Kentucky along the Kentucky River, on the Tennessee River in Marshall County and near its confluence with the Ohio, on the Green River, and on the Ohio River in the vicinity of the Falls region. Shell mounds occur sporadically upriver on the Ohio until its confluence with the Little Miami River. Known as the Shell Mound Archaic, the most intensive activity at these mounds appears to have occurred between 3,500 and 1,000 B.C.

As used in this paper, Shell Mound Archaic sites must exhibit two particular characteristics: the mounding of shells and the use of the mounded shell for human burial. Some authors have considered the Archaic period freshwater shell middens on the Savannah River (Georgia), the St. Johns River (Florida), the Georgia coast, the Panhandle middens on the Ohio River in West Virginia, and the Riverton Culture on the Wabash River in southern Illinois and Indiana to be expressions of the Shell Mound Archaic phenomenon, but they are not considered

in this paper. The shell mounds on the Savannah and St. Johns rivers do evidence both characteristics, but the Wabash River sites lack these characteristics.

Information on Shell Mound Archaic lifestyles can be derived from the thousands of stone and bone artifacts and floral and faunal remains recovered from these sites. Subsistence data collected include hickory nuts, deer, fish, and turtle remains, and large quantities of molluscs, many still paired in the ground. No unequivocal evidence of house structures has been found in these mounds, and features are rare. Green River sites have been interpreted as base camps, settlements, transient camps, or hunting camps (Winters 1974) occupied either year-round (Lewis and Lewis 1961) or seasonally (Bowen 1977; Claassen 1985; Funkhouser and Webb 1932:425; Marquardt and Watson 1983; Rolingson 1967). A distinctive characteristic of this culture is the use of the shell for the burial of people and dogs in round graves, usually flexed and lacking associated artifacts. More women than men were sprinkled with red ochre and a significant portion of the grave goods, when they occur, are found with children.

By 2950 B.C., the practice of placing large quantities of shell in mounds had ended in the Falls of the Ohio region, and this area experienced a sharp drop in population density at this time (Janzen 1977:139). A similar decline did not occur in the Green River area for at least another 1500 years. At that time, for as-yet-unknown reasons, the practice of accumulating large quantities of shell ceased, and many shell mounds were capped with shell-free soil transported to them (Stein 1982). Shell-free but artifact-rich midden containing burials cap several Green River shell mounds including Indian Knoll, Carlston Annis, and DeWeese; Tennessee River shell mounds such as Eva, Big Sandy, and McKelvey; and the Ervin Site on the Duck River. Radiocarbon dates indicate that the end of shell mounding at Carlston Annis occurred around 1,000 B.C. (Marquardt and Watson 1983). At the Walker Site shell mound on the Tennessee River, shell mounding ceased ca. 1,000 B.C. (Dye 1980:96); at Penitentiary Branch and Robinson on the Cumberland River it ceased around 1300 B.C. and 700 B.C, respectively (Cridlebaugh 1986); and at Bowles on the Green River it ceased at about 1500 B.C. (Marquardt and Watson 1983:326).

Three hypotheses for the cessation of shellfishing and the Shell Mound Archaic that have appeared in literature are: 1) human emigration (Winters 1974), 2) over exploitation of the mussel population by humans (Neuman 1979; Winters 1974), and 3) environmental change (Lewis and Kneberg 1959:166; Lewis and Lewis 1961). If the Archaic people who built these mounds simply moved elsewhere, it is reasonable to assume that they would have selected localities where they would have had access to large concentrations of molluscs and that shell mounding and burials in shell would have continued in the new locations. This does not appear to have been the case, since few Early Woodland shell mounds have been documented to date.

It has been argued elsewhere (Claassen 1986, 1991b) that over exploitation of all shellfish in the vicinity of each shell mound would have been impossible. If it did happen, however, the problem could have been remedied by moving the community (or mortuary facility) to another location. Furthermore, over exploitation would not have resulted in the permanent or long-term absence of shellfish in any given locality, since the dispersal of the glocidea of spawning shellfish by fish continuously replenishes shellfish beds.

Those who argue for environmental change have identified a relationship between intensive shellfishing and the Hypsithermal (Ahler 1984:546; Anderson and Schuldenrein 1985:709; Lewis and Lewis 1961:20; Milanich and Fairbanks 1980:146; Neusius 1982:75; Styles 1985; Winters 1969:2-5). However, although environmental changes may explain the demise of

the Shell Mound Archaic, it cannot be used to explain why people chose to collect large quantities of shell in the first place. The climatic changes of the Hypsithermal impacted the entire United States, while the intensification of shellfishing occurred only on some rivers in the eastern United States (Pomme de Terre, Ohio, Illinois, Tennessee, Duck, Cumberland, Harpeth, Green, Savannah, and St. Johns). The phenomenon of mounding freshwater shells was even more localized occurring on the St. Johns and the Duck, where gastropods were mounded, and the Tennessee, Cumberland, Ohio, Tombigbee, and Green, where bivalves and gastropods were mounded. Furthermore, rapid and deep water does not preclude the presence of shellfish, as some have claimed (Lewis and Lewis 1961), or their fish hosts. It is precisely because Archaic shell mounds do not show up on other rivers that neither environmental change, population pressure, optimal foraging strategies, nor over exploitation can be used to account for the beginning or the end of the Shell Mound Archaic. (Why shell mounds do not occur along the lower Cumberland has been specifically addressed by the Lower Cumberland River project [Nance 1987].)

AN ALTERNATIVE HYPOTHESIS

Several alternative hypotheses concerning the origin and demise of the Shell Mound Archaic have been previously considered (Claassen (1988, 1991a, 1991b), and the interested reader should refer to these papers and articles for a more detailed review of these hypotheses. The replacement of shellfish by agricultural products does not, in and of itself, explain the decline in the accumulation of shell, since subsequent eastern United States populations collected shellfish and also grew and harvested crops. The hypothesis that appears to best explain the collection of large quantities of shell by Archaic peoples focuses on the possible symbolism of shells. Based on this hypothesis, large quantities of shell were collected by Archaic people to 1) cover the dead and/or 2) to erect burial mounds of shells, which in and of themselves had symbolic importance and ritual significance. If these sites are burial mounds, they would constitute the earliest public monuments in the eastern United States.

The earliest documented association of shell with human burials in the eastern United States, is freshwater shell beads found in a burial at the Ervin Site in Tennessee dated to 4200 B.C. (Hofman 1986). Throughout the Archaic and into Middle Woodland times, marine shell ornaments are among the most widely dispersed of all nonlocal goods, are always the most numerous ornaments, and are repeatedly found in the greatest numbers in graves (Ottesen 1979). Several shell fragments, one of which had red ochre on it, were found in association with a Terminal Archaic burial from the Kay Shelter, and shell beads were recovered from the fill of the burial pit (Fiegel et al. this volume; McGraw 1991). This rockshelter is located in the eastern Kentucky mountains above a small stream. The association of shell with a burial in an upland setting provides further evidence of the symbolic relationship between shell and death during the Late Archaic. Marine shell objects are one of the few exotics traded throughout the Ohio River Valley in Late Woodland times (Ottesen 1979). Mississippian ceremonial use of shells is well known. They were used as dippers for Black Drink and as raw material for gorgets.

Despite the common usage of shell throughout prehistory there is little or no information on Native American shell symbolism or the association of shell and death preserved in the ethnographic literature of the eastern United States. In Mesoamerica, however, there is some information on this subject. Among the Aztec and the Maya, shell played a complex symbolic role and these symbolic associations probably had been held for many generations prior to the florescence of these cultures. Thompson (1950) had the following comments to make regarding

Mayan shell symbolism (these examples are presented because there may have been a pan-American symbolism for shells):

> Shells, particularly conch shells, symbolized the earth, the underworld, and the realm of the dead. A representation of a shell added to the sun glyph converted it to a symbol for night (Thompson 1950:49).
>
> On monuments, an inverted, conventionalized univalve shell represented south, associated with the death god and the underworld (Thompson 1950:49, 85, 271).
>
> ...Conventionalized Oliva shells, and bivalves, sometimes in combination with the representation of a hand, symbolized completion and possibly zero (Thompson 1950:138).
>
> The idea of completion may have been equivalent to death (Thompson 1950:186).

At Tikal, Moholy-Nagy (1963:73) found that structure and monument caches, apparently ceremonial in origin, most often contained only paired bivalves. Moholy-Nagy (1963:71-72) also noted that among the Maya, shells were symbolic of the moon goddess and procreation. The Aztecs said of the caracol or gastropod that it was a reminder of water, sea, rain, fertility; all of which are forms life and death (Templo Mayor Museum, Mexico City).

SHELL MOUNDS AS BURIAL MOUNDS

What positive and negative evidence can be brought to bear on the hypothesis that Archaic shell mounds are burial mounds (Table 1)?

Table 1. Review of Evidence Concerning the "Archaic Shell Mounds as Burial Mounds" Hypothesis.

Positive Evidence	Negative Evidence	Problematic Evidence
The number of bodies Burial density Association of shell and burials Few features in midden Variety of site types Association of nonshell sites with shell mounds	Density of artifacts/fauna Primary lithic refuse Burials outside of shell Variation in shell middens	Lack of radiocarbon dates Extent/proportion of paired valves Lack of Early Woodland site reuse

POSITIVE EVIDENCE

The burial characteristics of some of these sites are presented in tables 2 and 3. Although the number of bodies buried in each site varies greatly from site to site, the overall impression from Table 2 is that shell mounds served as burial grounds. Many of the site reports indicate that burials are clustered in the mounds. Several of the late period nonshell sites have separate nonshell cemeteries.

Early and Middle period sites have a high percentage of flexed burials (the low percentage of flexed burials at Ervin is due to the fact that burial position could not be determined for over 100 burials). Grave goods were found with 27 to 55 percent of the burials from Early and Middle period sites. All sites have more adult burials than any other age group.

Many shell mounds have restricted burial areas, while others have burials scattered throughout the mound. Atkinson (1974:116) reports that the Middle Archaic builders of the Vaughn Mound first erected low, mixed earth and shell mounds over the flexed corpses of their dead. The use of elevated areas to bury the dead was to become even more common during the Early Woodland period with the construction of earthen burial mounds.

Shell is associated with the dead in various ways. At the Mulberry Creek shell mound in Alabama, the initial layer of the site is a shell lens. Above this layer were documented several Morrow Mountain burials. Several layers of shell were then deposited over these burials (Walthall 1980:65). Burials at many other sites intrude into the subsoil and then were covered with dirt containing shells, artifacts, and biological materials.

Shell was the most abundant material associated with the burials at Indian Knoll and included cups, triangular pendants, anculosa beads, disc beads, columella beads, and gorgets. In fact, the majority of grave goods at all shell mound sites are made of shell. Besides shell artifacts, 31 burials at Chiggerville were associated with paired mussel valves (Hensley 1991:92; Webb and Haag 1939:60).

Many shell mounds contain a paucity of features other than burial pits (Table 2). Rolingson (1967) noted that many of these sites contained relatively few hearths and a complete lack of conclusive architectural remains. Bowen (1977), in his comparison of Ledbetter Landing and Cherry, noted that the latter (a nonshell bearing site) had over 100 postmolds, while the former (a shell mound) had no postmolds and few features. From Indian Knoll "after excavating nearly the whole mound," Webb (1974:125) reported finding only two fired clay areas, two charred nut areas, two caches of gastropods, six sandstone fireplaces, three knife caches, and five caches of plant processing artifacts. This is an extremely low number of features for a site that he interpreted as a year-round base camp.

Shell mounds are only one type of site documented in the Shell Mound Archaic region. Other types of settlements include rockshelter sites; hilltop sites, such as Ward and Kirkland that produced little shell; nonmound sites on shoals with little shell, such as Butterfield (Rolingson 1967:19); rock mounds; and campsites, such as the Reynerson Site (Webb and Haag 1947). In the Green River area, Christine Hensley (personal communication 1990) has located several nonshell sites in direct association with shell mounds. Working along the Tombigbee River in Alabama, Atkinson (1974) also has recorded a nonshell habitation site in close proximity to a shell mound. Thus, shell mounds, while the most well-known Archaic site type, actually represent one of several site types within Middle and Late Archaic settlement systems.

Table 2. Shell Mound Archaic Cemeteries.

Shell Mounds	No. of Bodies	No. of Features	Excavated Area	No. of Bodies/ Excavated Area	Ref.
Early Period (7000-4000 B.C.)					
Anderson	73	48			1
Ervin	9				2
Eva/Eva	17		294 m^2	0.06/m^2	3
Vaughn	9		4 m^2	2.25/m^2	4
Middle Period (4000-2000 B.C.)					
Indian Knoll	1178	20	9450 m^2	0.12/m^2	5
Carlston Annis	400	129		1.20/m^2	6
Eva/Three Mile	102		294 m^2	0.35/m^2	3
?Read	247	98	7560 m^2	0.03/m^2	7,16
?Chiggerville	114	53	1800 m^2	0.06/m^2	8
Late Period (2000-0 B.C.)					
?Barrett	412	32	6530 m^2	0.06/m^2	9
?Butterfield	153	35	34 m^2	4.50/m^2	9,15
Ledbetter Landing	129	9			10
Penitentiary Branch	17	39	378 m^2	0.05/m^2	11
Robinson	62				12
Nonshell Cemeteries					
Late Period (2000-0 B.C.)					
Cherry	73	44			10,13
Eva/Big Sandy	59	1	294 m^2	0.20/m^2	3
Kirkland	70	8	2788 m^2	0.03/m^2	14
Parrish Village	133	53			15
Ward	433	611	569 m^2	0.76/m^2	14

?= dates of site unknown

References

1 Dowd 1989, 2 Hofman 1986, 3 Lewis and Lewis 1961, 4 Atkinson 1974, 5 Webb 1974, 6 Webb 1950a; Patty Jo Watson, personal communication, 7 Webb 1950b, 8 Webb and Haag 1939, 9 Webb and Haag 1947, 10 Bowen 1977, 11 Cridlebaugh 1986, 12 Morse 1967, 13 Magennis 1977, 14 Webb and Haag 1940, 15 Hensley 1991, 16 Herrmann 1991.

Table 3. Burial Statistics

Shell Mounds	Percent Flexed	Demography (Percent)			Grave Goods (Percent)			
		Adult	Child	Infant	Goods	Male	Female	Subadult
Early Period (7000-4000 B.C.)								
Anderson	most	56	18	25	38	21	29	36
Ervin	57	78		11	44			
Eva/Eva	94	77	6	18	29	40	40	
Vaughn	100	56						
Middle Period (4000-2000 B.C.)								
Indian Knoll	88	66	14	30	31			
Carlston Annis	84	56	27	16	55	8	12	32
Eva/Three Mile	84	66	15	20	27	21	36	25
?Read	91	61	35	4	30	13	6	40
?Chiggerville	81	59	11	27	31	29	14	51
Late Period (2000-0 B.C.)								
?Barrett	66	58	10	25	26	52	43	
?Butterfield	46	69	14	10	10	56	19	19
Ledbetter Landing	most				24			
Penitentiary	100	76		23				
Branch					21			
Robinson								
Nonshell Cemeteries								
Late Period (2000-0 B.C.)								
Cherry	95				40	33	27	59
Eva/Big Sandy	67	87	3	10	38	43	30	
Kirkland	51			37	6	25	50	
Parrish Village	80	86	4	.1	45	18	12	2
Ward	55			21	13	18	33	49

?=dates of site unknown
References can be found on Table 2.

NEGATIVE EVIDENCE

The great quantity of artifacts, including floral and faunal remains, recovered from shell mound sites suggests that these sites primarily functioned as habitation loci and not as burial mounds. For instance, 19,600 artifacts and ecofacts (excluding bivalves and gastropods) were recovered from Carlston Annis, as were 3,301 artifacts (excluding shell disc beads and ecofacts) from Read (Webb 1950b:380), and 18,089 bones and 870 stone artifacts from Eva (Lewis and Lewis 1961). Furthermore, lithic debitage suggestive of tool manufacturing and maintenance activities has been recovered from these middens.

Much of this material could have been secondarily deposited, gathered from adjacent villages and transported to the mounding area. In fact, Atkinson (1974) reported that burials in the Vaughn Site on the Tombigbee River in Mississippi had been mounded over with a compact gray-colored soil containing a "good deal of occupational material" probably obtained from the adjacent habitation area. Stein (1980) reports that the shell-free zone at Carlston Annis consisted of soil transported to the site. The artifacts it now contains also may have been transported with the soil, derived from the same adjacent habitation site that would have provided the fill dirt for the Archaic burials.

The primary lithic debris, the small clay floors, the firepits, and the caches of large stones found in the shell mounds indicate only that small groups of people were preparing clay floors, building fires, and occasionally flintknapping on the mound. They do not indicate that domestic activities were repetitively performed at these localities. Other than the quantity of artifacts and the normative assumption that shell debris equals food debris, there is no evidence that Indian Knoll and Eva, for instance, were villages. Paired valves occur at these sites that should have been disturbed by village activities; there is no evidence of structures, and there are very few pits or other features.

Not all Archaic period burials in the Shell Mound Archaic region were placed in mounds or under shell when in mounds. The only Green River site where the vast majority of bodies were buried in shell is Carlston Annis (and possibly Bowles and DeWeese), according to Hensley (1991:92). Burials at Read were divided between the clay ridge and the shell lens. With respect to burial placement, Rolingson (1967) observed that burials were concentrated within small areas of the Green River middens, not scattered throughout as stated by Webb and Haag (1947). Furthermore, there are several sites that contain burials but no shell, such as numerous rockshelters and those sites listed in tables 2 and 3. It is probable, however, that the nonshell floodplain burial sites will prove to be late Late or Terminal Archaic in age (such is the case with Cherry, Eva/Big Sandy, and Parrish Village) and probably are intermediate between the Archaic shell mounds and the earthen mounds of the Early Woodland period.

Shell mounds do not constitute a uniform site type. Winters (1969) first pointed this out when he assigned different functions to various shell mounds in the Green River region, and Hensley (1991) has resurrected this idea, emphasizing differences in shell density, burial placement, and numbers of features. Large differences in shell density have been noted between sites such as Indian Knoll and Carlston Annis, but work at the latter site indicates that such comparisons may be meaningless. Stein (1980) reports that 21 samples of midden from Square E at Carlston Annis had an average of 47 percent, shell while the 18 samples from Square D averaged only 8 percent shell. Differences in shell density within the same mound make comparisons with other mounds that much more difficult to interpret.

Site size also varies tremendously. The largest site from Alabama covered 2.4 ha. The next largest was located in the same region and covered 1.2 ha. Six sites ranged in size from .8 to 1.2 ha, while 23 measured less than .4 ha (Morse 1967:230). Shell accumulation at these sites ranged from .7 to 6 m thick.

Hensley (1991) believes that only six of the Green River shell middens are aggregation sites (Carlston Annis, Indian Knoll, Barrett [which Rolingson 1967 says is not a mound], Butterfield, Chiggerville, and Read) and that Jimtown Hill, Baker, and Jackson Bluff are limited-use sites. Relevant data are absent from most of the 38 other shell-bearing sites in the Green River watershed, however.

PROBLEMATIC EVIDENCE

Problematic aspects of the Shell Mound data are largely those needing attention in the coming years. Any discussion of these sites and hypotheses concerning the origin and demise of the Shell Mound Archaic is seriously hampered by a lack of radiocarbon dates. Carlston Annis is the only site of the nearly 300 shell-bearing sites recorded to date with a suite of radiocarbon dates.

In earlier papers about this problem, much was made of the paired bivalves at sites like Carlston Annis, DeWeese, and Robinson because it was assumed that few pairs would have been preserved at habitation sites due to everyday village activities (Claassen 1991a, 1991b). But neither proportion nor distribution of paired values is known for any site. A greater percentage of paired valves were recovered from the side of the mound facing the river at Carlston Annis than in other portions of the site (Stein 1980).

The Green River shell mounds were rarely reoccupied by later cultures. The shell-free zone that caps many of these mounds contains the same cultural materials as the shell-bearing zones, except the former lack shells. Individuals continued to be buried in these shell-free zones. Thus, Late Archaic shell-bearing zones and Terminal Archaic nonshell-bearing zones appear to be the end product of similar activities, the only difference being the decline in the exploitation of molluscs during the Terminal Archaic. Subsequent cultures, in particular pottery-bearing cultures, rarely reoccupied or utilized these mounds, further suggesting that the mounds were ceremonial in nature.

The more southerly shell-bearing sites, however, were reused. Woodland period materials were recovered from the Vaughn Site on the Tombigbee River (Atkinson 1974). In addition, many of the shell-bearing sites in the Pickwick Basin, Wheeler Basin, and Guntersville Reservoir in Alabama have "Woodland occupations of considerable magnitude with some having sizeable Mississippian components" (Winters 1969:4). Individuals continued to be interred in these later deposits, which suggests continued use of these mounds as mortuary facilities.

It is possible that the shell and artifacts found in these sites are in primary contexts in these shell mounds, that the height of the accumulated debris was symbolic for burial, and that subsequent cultural differences are summarized in the vertical separation of habitation locus and burial locus. In short, shell had no symbolic importance and is absent from later burial mounds because later people separated burial and habitation areas more clearly. Regardless of whether or not the shell deposited in the shell mounds had symbolic value, however, the essential facts that must be considered by any explanation of the cessation of shell mounding include the following:

1) Shell mounding is temporally restricted; it is an Archaic phenomenon.

2) Shell mounding is geographically restricted; it is found on fewer than a dozen water courses.

3) The vast majority of bodies are deposited in mounds, whether in dirt or in shell.

4) Several lines of evidence suggest that these locations were used for less than half of any calendar year.

5) Sites within the Green River and western Tennessee River areas exhibit a great deal of internal variation.

6) Radiocarbon dates have only been obtained from a handful of sites.

7) There are cemetery areas at many sites, often on the mound proper.

CONCLUSIONS AND DISCUSSION

The problem posed at the beginning of this paper was "Why did shell mounding cease in the Midsouth about 2000 years ago?" While freshwater shells are common in Midsouth Woodland and Mississippian sites, occurring in trash pits or in lenses, mounding of shell remains a distinctively Archaic practice. Winters speaks of an abrupt appearance of the phenomenon (Winters 1969:4) and an "abrupt collapse of these flourishing societies" (Winters 1974:xii). He surmises that the Indian Knoll, Riverton, and other similar cultural expressions "either met extinction or underwent changes of such amplitude that the derivative cultures are no longer recognizable in terms of their earlier patterns." The most striking pattern identified from the excavated Shell Mound Archaic sites is the mounding of shells and the large quantities of faunal and artifactual debris associated with the burials placed within or below these mounds. Also there is cultural continuity in the use of these localities, as many shell mounds are capped with a shell-free zone. The placement of burials in mounds during the Early Woodland period also represents continuity in placement of the dead in special areas. The main differences between subsequent Early Woodland cultures and the Shell Mound Archaic is the lack of shell in the Early Woodland mounds and the clear separation of habitation areas from burial areas, a separation that is expressed both vertically and horizontally in site organization.

The enigma of the Shell Mound Archaic is specified in its name: shell mound. The answer lies in shell symbolism and in the use of shell as a burial medium from 6,000 to 1000 B.C. Perhaps shell mounding and mixed earth and shell mounding stopped between 1,500 B.C and A.D. 0 because horticulture changed religious practices. Prentice (1986:115) asserts that "the adoption of cucurbit gardening by eastern Archaic peoples was accompanied by the adoption of new mythological concepts, of new perceptions of proper human-plant relationships and probably new ideas regarding the life and death relationship." Among other changes, an increased reliance on cultivated plants may have lessened the symbolic value of shell.

Following Prentice's (1986) logic, shamans may have been among the first individuals to adopt the new subsistence practices and spiritual beliefs. In so doing they may have stimulated social change while at the same type altering the symbolism of shell. Shell symbolism was

retained in artifacts made of marine shell, but unmodified freshwater shells lost their association with death. Certainly with the advent of agriculture, soils assumed a new level of importance, and probably were linked with fertility. Burials came to be placed in earthen mounds. Many shell mounds were capped with soil transported to them, where burials continued to be deposited in ever greater numbers in the extended position rather than the flexed position. Putting extended burials in earthen mounds is reflective of a change in burial ritual. Given that this change also reflects ideological differences, it was probably slow to occur, and shell mounding was probably abandoned at different times within the Shell Mound Archaic region. It is problematic for this hypothesis that the distribution of the subsequent earthen mounds does not correspond to the distribution of shell mounds (David Pollack, personal communication 1991).

Hofman (1986) suggests that shell mounds were seasonal aggregation localities, where valued members of hunter/gatherer/fisher groups buried their dead. If he is correct, the artifactual materials recovered from these mounds may represent redeposited materials from nearby habitation sites. Redeposition of adjacent village debris along with newly gathered shells may have been the method used to construct these mounds. Berle Clay (1983) has made a similar argument for the Adena mounds.

In this paper and that by Hensley (1991), doubts have been raised about the explanatory power of the shell mounds as mortuary facilities, and it has been suggested that their demise reflects changes in shell symbolism and the treatment of the dead. Regardless of the ultimate fate of this hypotheses, it has served to make evident the internal variation in shell-bearing sites in Kentucky and western Tennessee and to focus attention on the symbolic association of death and shell and the placement of the dead in mounded contexts. Several research questions have been identified as well, such as the need to quantify valve pairing and the extent of the differences between burial, artifact, and shell density at these sites. It also has been necessary to question the cultural affiliation or similarity of other Archaic period shell mounds on the Wabash. The shell mound, when viewed as a mortuary facility, accounts for the demise of the Shell Mound Archaic and provides an antecedent for Early Woodland mound building. The test implications for the shell mound as burial mound hypothesis are many, although its ultimate disproof may be impossible.

THE GRAYSON SITE: LATE ARCHAIC AND LATE WOODLAND OCCUPATIONS IN THE LITTLE SANDY DRAINAGE

By
R. Jerald Ledbetter
and
Lisa D. O'Steen
Southeastern Archeological Services, Inc.
Athens, Georgia

ABSTRACT

The Grayson Site (15Cr73) is located on a broad terrace adjacent to the Little Sandy River in Carter County, Kentucky. One area of midden was sampled and 299 features were recorded (125 were excavated). Analysis of features and archaeobotanical and artifactual materials, along with 16 radiocarbon dates, were used to characterize occupation of the terrace during the Late Archaic (Maple Creek phase - 1650-1250 B.C.), Terminal Archaic (Cogswell phase - 1250-750 B.C.), and late Late Woodland (Everman phase - A.D. 700-1000) periods. Patterns of postmolds and pits are interpreted as representing the remains of at least four Late or Terminal Archaic structures as well as other activity loci. This suggests that during the Late Archaic the site was used as a seasonal base camp. During the Late Woodland Everman phase, people appear to have lived in dispersed habitation sites.

INTRODUCTION

The Grayson Site (15Cr73) is located in Carter County, Kentucky, on a broad terrace adjacent to the Little Sandy River. Elliptically shaped (350 m long by 180 m wide), the site covers approximately 6 ha and encompasses two parallel terrace ridge crests (Kerr and Niquette 1989:44-45). Investigation of this site consisted of hand excavating a 12 x 12 m block and machine stripping a 2.3 ha tract to subsoil. The block was placed in a midden area located on the broad western ridge crest. The machine stripped area included both terrace ridge crests. Features were widely distributed across the broad western ridge crest, while the eastern ridge crest contained fewer features and a much narrower range of feature types. A second midden area located in the northeastern corner of the site (Figure 1) was not excavated because it was determined to contain few artifacts and to have minimal research potential.

Surface collections and excavation of a sample of the western midden area and exposed features produced evidence of prehistoric occupation dating from the latter part of the Middle Archaic/initial Late Archaic through Late Woodland periods, or from approximately 3500 B.C. to A.D. 1000 (Table 1). The most intensive use of the site was during the latter part of the Late Archaic (1650 to 1250 B.C.), Terminal Archaic (1250 to 750 B.C.), and late Late Woodland (A.D. 700 to 1000) periods. (As used in this paper, Terminal Archaic represents the aceramic

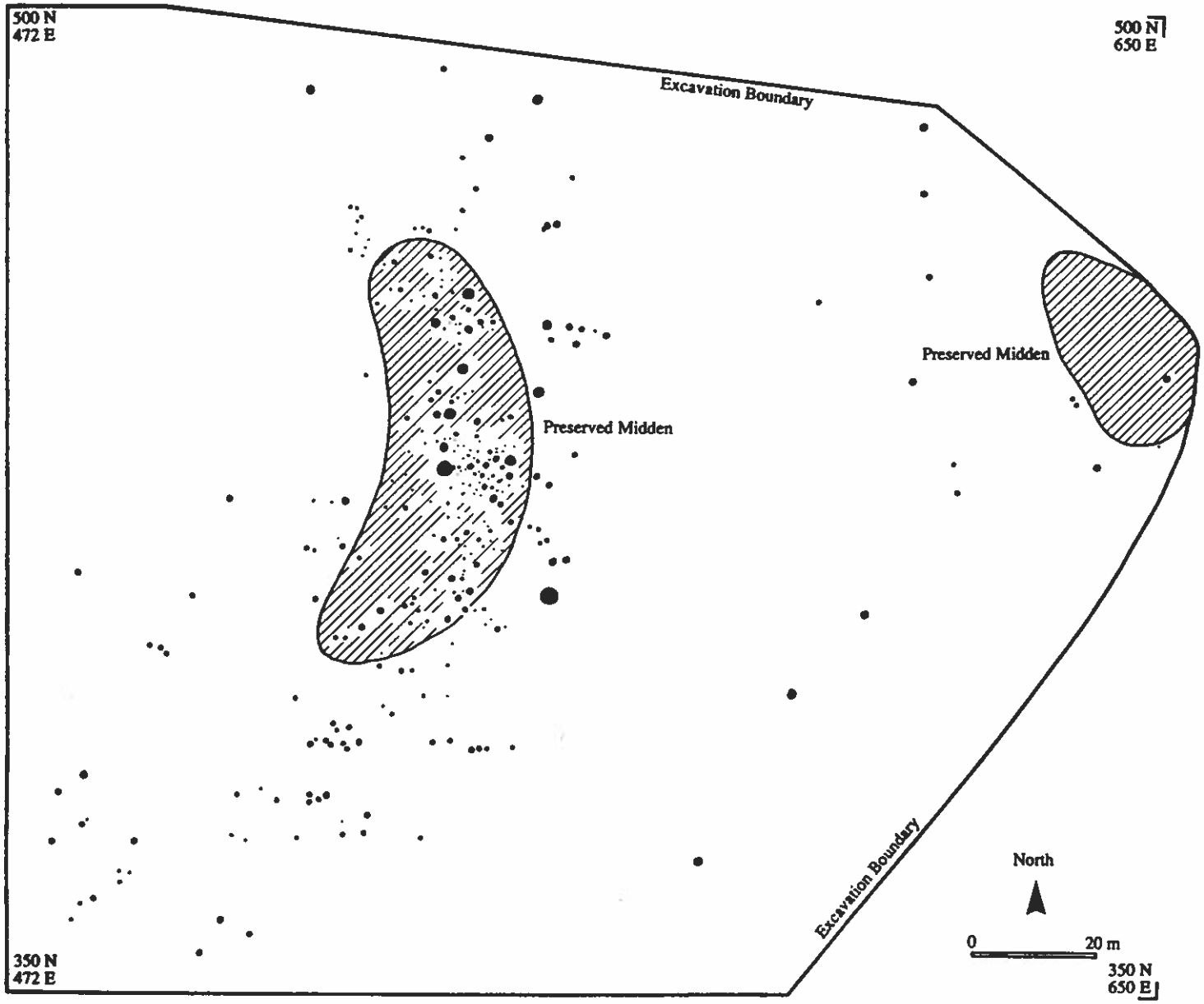


Figure 1. Distribution of features and midden areas within machine stripped area.

transitional period bridging the end of the Late Archaic period and beginning of the Woodland period.) There is no conclusive evidence that the site was occupied during the intervening Early and Middle Woodland periods. The Grayson Site investigations produced no evidence of Paleoindian, Early Archaic, or early Middle Archaic occupations. Available survey data suggest that these earlier occupations are found most frequently along the Ohio River (Jefferies 1990). No evidence of a Late Prehistoric occupation was recovered from the Grayson Site, but one historic feature, which contained a small number of late eighteenth or early nineteenth century artifacts, was investigated.

Table 1. Diagnostic Projectile Points Recovered from Grayson.

Middle/Late Archaic (3500-1650 B.C.)		
Matanzas Side Notched	N=3	3.5%
Brewerton Corner Notched	N=5	5.8%
Brewerton Eared Triangular	N=1	1.2%
Bottleneck Stemmed	N=3	3.5%
McWhinney Heavy Stemmed	N=1	1.2%
Untyped Stemmed	N=3	3.5%
Total	N=16	18.7%
Late Archaic (1650-1250 B.C.)		
Merom-Trimble	N=33	38.4%
Terminal Archaic (1250-750 B.C.)		
Cogswell Contracting Stemmed	N=4	4.7%
Cogswell Knife	N=1	1.2%
Little Bear Creek-like	N=1	1.2%
Wade	N=1	1.2%
Buck Creek Barbed	N=2	2.3%
McIntyre-like	N=1	1.2%
Total	N=10	11.8%
Late Woodland (A.D. 500-1000)		
Chesser Notched	N=3	3.5%
Lowe Flared Base	N=3	3.5%
Jack's Reef Corner Notched	N=12	14.0%
Raccoon Notched	N=1	1.2%
Jack's Reef Pentagonal	N=1	1.2%
Madison/Levanna	N=7	8.1%
Total	N=27	31.5%
Total Diagnostic Projectile Points	N=86	100.0%

The investigations at the Grayson Site have provided important information about material culture assemblages and site structure and function in the Little Sandy River drainage during the Archaic and Woodland periods. In fact, the three primary components (Late Archaic, Terminal Archaic, and late Late Woodland) identified at Grayson produced sufficient information to assign each to a phase (i.e., Maple Creek, Cogswell, and Everman). These phase assignments were based

on radiocarbon dates and a comparison of the artifacts associated with each component to other regional sites. Information collected from Grayson provides a clearer picture of the cultural developments that took place in the Little Sandy River drainage.

The Late Archaic component is characterized by small notched and expanded stem Merom-Trimble projectile points. Attributes of this component at Grayson are generally consistent with those of the Maple Creek phase (Vickery 1980) of the middle Ohio Valley. The Maple Creek phase shares a number of characteristics with the Riverton Culture of the Wabash River Valley in Illinois (Winters 1969).

Terminal Archaic projectile points found at Grayson include Cogswell Contracting Stemmed, Buck Creek Barbed, Wade, Little Bear Creek, and McIntyre-like points (Table 1). In addition to diagnostic artifacts, radiocarbon dates (Table 2) from features were used to define the Terminal Archaic component. Based on the diagnostic artifacts and the radiocarbon dates, the Terminal Archaic component at the Grayson Site was assigned to the Cogswell phase.

The late Late Woodland occupation at Grayson was identified by materials recovered from features and the surface. Grayson produced Jack's Reef Corner Notched and Pentagonal, Raccoon Notched, and Madison/Levanna projectile points (Table 1) in association with grit tempered cordmarked ceramics. Sufficient information on material remains and settlement patterning were recovered from Grayson to propose a new but provisional late Late Woodland phase. Named the Everman phase after Everman Creek (also spelled Everyman), which joins the Little Sandy River north of the site, the geographic range of this phase is currently restricted to the Little Sandy River drainage.

In this paper, brief descriptions are presented of the Grayson Site features and the site's function, which differed during the Archaic and Late Woodland periods. The types of features and artifacts associated with the Maple Creek, Cogswell, and Everman phases as expressed at this site are briefly described (see Ledbetter and O'Steen 1991 for more detailed information on these phases). Undoubtedly, future research will result in some refinement of these phases as characterized in this paper.

FEATURE TYPES

Of the 299 features identified at Grayson, 125 were partially (bisected and profiled) or completely excavated. As a result a variety of prehistoric features were documented at Grayson (Figure 1), including large pits with central hearths (n=2), midden-filled pits (n=39), charcoal-filled pits (n=91), charcoal-lined pits (n=15), fire-cracked rock-lined pits (n=55), cache pits (n=4), and postmolds (n=90). With the exception of the large pits with central hearths, lithic artifact density was lower and the range of artifact types was more restricted in thermal features. Thermal features (large pits with central hearths, charcoal-filled pits, charcoal-lined pits, and fire-cracked rock-lined pits) often contained a high density of fire-cracked rock. Nonthermal pits (midden-filled and cache) contained a lower density of fire-cracked rock but contained a greater variety and higher density of lithics than thermal features. This suggests that the nonthermal midden pits were utilized for storage or for refuse disposal, rather than food processing. The postmolds represent structural remains, and the cache pits were used for storage or intentional discard of lithic raw materials and tools.

Table 2. Grayson Site Radiocarbon Data.

Feature Number	UGA Log Number	Context or Diagnostics	Collection Method	Uncalibrated Date	Acceptability of Date*
LATE (MAPLE CREEK PHASE) AND TERMINAL (COGSWELL PHASE) ARCHAIC FEATURES					
25	6073D	Cogswell Phase Feature Cluster	Hand-picked from General Fill	2665 B.C ± 80	Questionable
25	6123	Cogswell Phase Feature Cluster	Flotation from General Fill	1086 B.C ± 58	Consistent
12	6055D	Maple Creek Phase Merom-Trimble Point	Hand-picked from Charcoal Zone	1611 B.C. ± 86	Consistent
98	6131D	Maple Creek Phase Merom-Trimble Point	Hand-picked from General Fill	1460 B.C. ± 142	Consistent
98	6097D	Maple Creek Phase Merom-Trimble Point	Flotation from Charcoal Zone	752 B.C. ± 260	Not Consistent
132	6077	Cogswell Phase Feature Cluster	Charcoal Chunk from Charcoal Zone	1218 B.C. ± 59	Consistent
5	6072D	Cogswell Phase Feature Cluster	Charcoal Chunk from Charcoal Zone	1112 B.C. ± 160	Consistent
131	6076D	Cogswell Phase Feature Cluster	Hand-picked from General Fill	1102 B.C. ± 52	Consistent
131	6130	Cogswell Phase Feature Cluster	Flotation from Charcoal Zone	462 B.C. ± 124	Not Consistent
130	6122D	Merom-Trimble Projectile Points	Flotation from General Fill	922 B.C. ± 392	Not Consistent
281	6098D	Cogswell Phase Buck Creek Barbed Point	Charcoal Chunk from Charcoal Zone	831 B.C. ± 67	Consistent
LATE WOODLAND EVERMAN PHASE FEATURES					
76	6124	Jack's Reef Point Ceramics	Hand-picked from Charcoal Zone	A.D. 1221 ± 91	Consistent
280	6078	Late Woodland Feature Cluster	Charcoal Chunk from Charcoal Zone	A.D. 1220 ± 48	Consistent
77	6052	Jack's Reef Point Ceramics	Charcoal Chunk from Charcoal Zone	A.D. 1112 ± 48	Consistent
79	6051D	Raccoon Notched Point Ceramics	Hand-picked from Charcoal Zone	A.D. 1040 ± 120	Consistent
79	6053D	Raccoon Notched Point Ceramics	Charcoal Chunk from Charcoal Zone	A.D. 1136 ± 108	Consistent

* In terms of consistency with temporally diagnostic artifacts.

Among the thermal features, large pits with central hearths contained the highest density of lithic artifacts. Charcoal-filled and charcoal-lined pits, and some of the smaller fire-cracked rock-lined pits, appear to represent in situ burning, while some of the larger fire-cracked rock-lined pits may have functioned as cooking or roasting facilities within which preheated-rock was placed. Some of the charcoal-lined pits may have been used to heat rocks, since they contained the second highest density of fire-cracked rock. A lower density of lithic artifacts might be expected in pits that were used for cooking or other food processing activities instead of for storage or refuse disposal.

Although more than 100 prehistoric features were excavated at the Grayson Site, few contained diagnostic artifacts. Despite this fact, most of the features associated with the western midden area could be assigned to the Late Archaic or Terminal Archaic components. Diagnostic Late Archaic features include large pits with central hearths, lithic caches, midden-filled pits, and fire-cracked rock-lined pits. These features tend to cluster along the western terrace ridge in the vicinity of the Late Archaic structures (Figure 2) and the high artifact density of large pits with central hearths can be attributed to refuse disposal by the occupants of these structures.

In contrast to Late Archaic and Terminal Archaic features, most, but not all, of the Late Woodland features were found outside the western midden area. While few diagnostics were recovered from these features, the available evidence suggests that most date to the Woodland occupation. Diagnostic Late Woodland features (midden-filled pits, charcoal-filled pits, charcoal-lined pits, and fire-cracked rock-lined pits) are generally situated along the edges of the western terrace, leaving the crest of the knoll relatively open and devoid of features. However, there is the possibility that a number of nondiagnostic features within this open area are associated with the Late Woodland occupation. A few Late Woodland features also were located on an adjacent ridge to the east. The absence of Archaic features in this area, suggests that the eastern ridge may not have been a stable landform until the Woodland period and thus was not used by Late or Terminal Archaic peoples.

SITE FUNCTION

The Grayson Site was originally characterized as a secondary reduction site (Hughes et al. 1989), based upon low proportions of initial and primary reduction remains compared to late stage reduction materials. On a site-wide basis, late stage reduction debris (tertiary and bifacial thinning flakes) accounts for 74.8 percent of the lithic debris recovered from the site during the investigations reported on in this paper, which supports the initial characterization of the site. However, the high quality chert deposits located in close proximity to the site may have attracted people to this locality. Because of this lithic resource, the Grayson Site should be considered as more than just a secondary reduction site. It should be considered as an important manufacturing and distribution location within a larger settlement system.

A number of researchers have developed comparative means of assigning site function by contrasting base camps with short-term specialized activity or extractive sites. Generally, the more intensively occupied sites are recognized by a wide range of tools, debris categories, feature types, and large site area, while extractive sites are recognized by a smaller site size and a narrower range of artifacts and feature types (House and Wogaman 1978:9-11; Lurie 1989:46-56; Niquette and Kerr 1989:86-96; Ottesen 1985:166-186; Raab et al. 1979:168-169; Winters 1969).

The site function model most often applied to Late Archaic and Terminal Archaic sites in the region is Winters' (1969) model of Late Archaic Riverton Culture settlement patterns in the

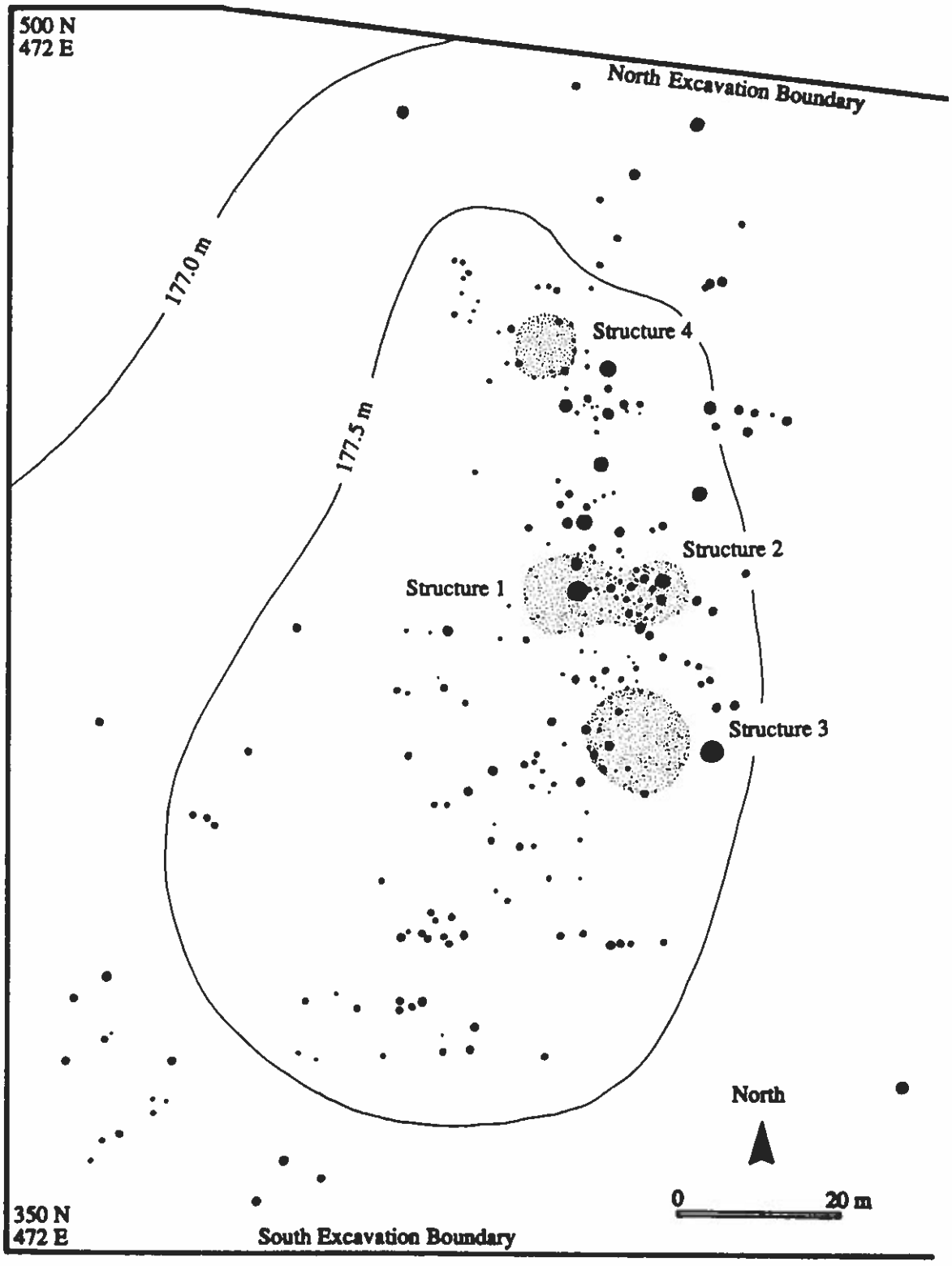


Figure 2. Prehistoric structures identified at the Grayson Site.

Wabash Valley of Illinois and Indiana. Winters' model emphasized seasonal mobility with group fission and fusion. It incorporated six different site types: settlement, transient camp, base camp, hunting camp, gathering camp, and bivouacs (Winters 1969:137). (The hunting camp, gathering camp, and bivouac site types were conjectural and not defined through excavations.) Winters' model postulated a seasonal cycle with at least three identifiable units. The maximal unit (settlement) congregated during the winter and subsisted by hunting deer and eating stored foods. Summer was another season when bands combined into larger residential units (base camp) where hunting was carried out on a more selective basis than at settlements. During the intervening seasons, transient camps were occupied by smaller groups.

Winters characterized settlements as sites with multiple houses, numerous storage pits and burials, and artifact assemblages reflecting specialized hunting practices. He postulated that settlements would contain few projectile points, many domestic and hide working tools, and few general utility tools. Base camps on the other hand would exhibit structures (clay platforms) but few storage pits or burials. Base camps would contain an abundance of projectile points and ceremonial and woodworking implements but few hide preparation and domestic tools. Transient camps also would contain structural remains, few storage pits or burials, and an artifact assemblage dominated by projectile points and hide working tools but containing few domestic implements (Winters 1969:137). Following Winters' model, the low proportion of projectile points, high proportion of hide-working tools, and the presence of Late Archaic and Terminal Archaic structures (Figure 2) and storage pits at Grayson would characterize it as a intensively occupied winter residential site or settlement.

While Winters' model can be used to classify the Late and Terminal Archaic components, Green and Munson's (1978) site typology as adapted by Ottesen (1985) appears to better characterize the late Late Woodland component at Grayson. Site types include large villages, small villages, hamlets, farmsteads, seasonal camps, temporary camps, and extractive sites. Distinguishing characteristics for these site types are size, artifact density, and feature types (Ottesen 1985:170-171). According to Ottesen's criteria, Grayson Site late Late Woodland component could fit into several site categories ranging from a small village to a temporary camp.

The Grayson Site's Late Archaic (including the Terminal Archaic) and Late Woodland occupations can be compared with regards to the range of activities identified from artifacts and features assigned to the two components. The task/residue comparison used in Table 3 is adapted from Chapman (1981:147-149) and Cook (1976:11-39). This approach is especially useful for comparing collections containing multipurpose tools, but it is hampered at Grayson by a paucity of faunal remains due to poor bone preservation, which restricts subsistence information to floral remains, and by the absence of any primary evidence of burials. Keeping in mind these limitations and that the two periods were not sampled equally, the data presented in Table 3 suggest that the Late Archaic occupation was more intensive than the late Late Woodland occupation.

Although based on a comparison of site function, the Late Archaic component appears to have been more extensive and intensive than the late Late Woodland component. However, evidence acquired through an examination of feature contents indicates that similar tool production strategies were followed at Grayson during both periods of site occupation. This suggestion is supported by the fact that, with the exception of the large pits with central hearths and lithic cache features that are only found in Late Archaic contexts, other feature types were associated with both the Late Archaic and Late Woodland components. Thus, though site function changed from the Late Archaic to the late Woodland periods, similar types of activities were conducted at this site and people appear to have been drawn to this locality by the high quality cherts located nearby.

Table 3. Comparison of Late Archaic and Late Woodland Component Activities or Tasks (adapted from Chapman [1981:147-149] and Cook [1976:11-39]).

ACTIVITY/ TASK	PREDICTED RESIDUE	LATE ARCHAIC RESIDUE	LATE WOODLAND RESIDUE
Providing Shelter	Structures Fire-Cracked Rock (FCR)	Structures FCR	Structures? FCR
Food processing and food storage	Manos, Metates Food Remains Ceramic Vessels Soapstone Bowls Pitted Cobbles Storage Pits FCR	Manos Metates Food Remains Soapstone Pitted Cobbles Storage Pits FCR	Food Remains Ceramics Pitted Cobbles FCR
Fabrication of and processing organic materials (bone or wood)	Hafted Bifaces Blades, End Scrapers Drills, Spokeshaves Gravers, Burins Utilized Flakes Wedges, Axes Celts, Adzes, FCR	Hafted Bifaces Blades End Scrapers Drills Spokeshaves Utilized Flakes Wedges, Axes	Hafted Bifaces Blades Drills Utilized Flakes Celts Adzes FCR
Butchering and Hide Preparation	Hafted Bifaces Utilized Flakes Blades, Bifacial Knives Choppers Smudge Pits	Hafted Bifaces Utilized Flakes Blades Bifacial Knives Smudge Pits?	Hafted Bifaces Utilized Flakes Blades Bifacial Knives Smudge Pits?
Lithic Maintenance	Hafted Biface Proximal Fragments Abraders, Hammerstones Bifacial Thinning Flakes Flake Tool Fragments	Hafted Biface Proximal Fragments Hammerstones Bifacial Thinning Flakes Flake Tool Fragments	Hafted Biface Proximal Fragments Bifacial Thinning Flakes Flake Tool Fragments
Lithic Manufacture	Cores, Debitage Unfinished Bifaces Hammerstones, Abraders Anvils/Pitted Cobbles Groundstone Preforms	Cores Debitage Unfinished Bifaces Hammerstones Anvils	Cores Debitage Unfinished Bifaces Anvils
Hunting	Hafted Bifaces, Atlatl Weights, Bola Weights	Hafted Bifaces	Hafted Bifaces Bola Weights
Fishing	Utilized Flakes	Utilized Flakes	Utilized Flakes
Lithic Procurement	Axes, Picks Minimally Modified Cores	Axes	Axes
Personal Status Maintenance and Social Activity	Burials, Pipes, Ochre, Hematite Ornaments, Burial Goods Public Construction	Pipes? Ornaments	?

PHASES OF OCCUPATION AT THE GRAYSON SITE

MAPLE CREEK PHASE (1650-1250 B.C)

The Maple Creek phase was defined by Vickery (1980) as a regional manifestation of Winters' (1969) Riverton Culture. Maple Creek (33Ct52), the type site for this phase, is located approximately 125 km northwest of Grayson in Clermont County, Ohio, on a relic levee at the confluence of Maple Creek and the Ohio River. This site covers approximately 2.3 ha and consists of a concentrated core area of midden and features on the crest and riverward slope of the levee. Excavations identified earth ovens, roasting pits, refuse pits, a hearth, a cache, and two burials. The Maple Creek Site was interpreted as a summer and fall base camp with some indications of spring occupations (Vickery 1976:251, 288).

Vickery (1980:32-33) suggested that the Maple Creek phase settlement pattern included large base camps in riverine settings and smaller camps in the uplands. He identified the artifactual traits of the Maple Creek phase as including Merom Expanding Stem and Trimble Side Notched projectile points (knives), and a chipped flint microtool industry with micro-perforators, drills, and gravers not made on true blades. McWhinney Heavy Stemmed points and hafted scrapers also were common on the site, as were a variety of Middle Archaic through Terminal Archaic projectile points. Also characteristic of this phase were manos, a paucity of groundstone tools (with celts more common than grooved axes), and an absence or scarcity of atlatl parts and bell pestles. Limestone hoes, stone tablets, a sandstone tabular pipe, a tubular bone bead, grooved stone sinkers, bone fishhooks, bone beamers, a soapstone bowl sherd, and ceramics also were attributed to the Maple Creek component at the Maple Creek Site (Vickery 1980:28).

The geographic range of the Maple Creek phase was not clearly defined by Vickery. Limited distributional data indicated that Maple Creek phase sites were located in south-central Ohio along the Ohio River and that they were absent from the interior (Vickery 1980:30-31). The authors view the south-central Ohio area as including the mouth of the Little Sandy River and areas of northeastern Kentucky adjacent to the Ohio River. Survey data from northeastern Kentucky indicate that contrary to Vickery's data Merom-Trimble points have been recovered from sites located within the interior as well as along the Ohio River (Boisvert 1986; Cowan 1976; Cowan et al. 1981; Ison et al. 1982; Kerr and Niquette 1989; O'Steen et al. 1991). Merom-Trimble projectile points also have been reported from the upper Ohio Valley (Shott 1990:339).

Vickery obtained a date of 1310±330 B.C. from the Maple Creek phase zone at Maple Creek and a date of 2115±150 B.C. from an underlying zone at this site. Using these dates, Vickery (1976:143) estimated the date range for the Maple Creek phase as 1750-1000 B.C. Besides the Maple Creek phase, Merom-Trimble points are diagnostic of the Riverton Culture, which Winters (1969:105) assigned a date of range of 1590 to 1160 B.C. Seven of the nine radiocarbon dates obtained by Winters from Riverton Culture sites fall between 1500 and 1320 B.C., with an average date of 1414 B.C.

Few dates for Merom-Trimble points are available from northern or eastern Kentucky. Boisvert (1986:139) obtained a date of 1510±80 B.C. from the Glacken Site (15Be272) in Boone County, Kentucky. The Merom-Trimble zone at Pine Crest Shelter (15Le70) in Lee County, Kentucky, produced a date of 1360±60 B.C. (O'Steen et al. 1991) and a date of 1600±60 B.C., obtained from the Skidmore Shelter (15Po17) in Powell County (Cowan 1976), has been tentatively associated with Merom-Trimble points (Cecil Ison, personal communication 1991).

Dates from Grayson of 1611±86 B.C. (Feature 12) and 1460±142 B.C. (Feature 98) (Table 2) are consistent with the early dates for Merom-Trimble projectile points found elsewhere in eastern Kentucky.

At present, Merom-Trimble points from the region have been recovered from contexts that predate 1300 B.C. This suggests that the Maple Creek phase does not extend to 1000 B.C. as proposed by Vickery. Also, based on a series of radiocarbon dates from McWhinney Stemmed (Central Ohio Valley Archaic phase) deposits at Mexico Bottoms (12Sw99), which produced dates ranging from 1660-1270 B.C. (GAI 1984: Table 3-3; Boisvert 1986:166), it appears that the beginning date for the Maple Creek phase should be revised from 1750 to 1650 B.C.

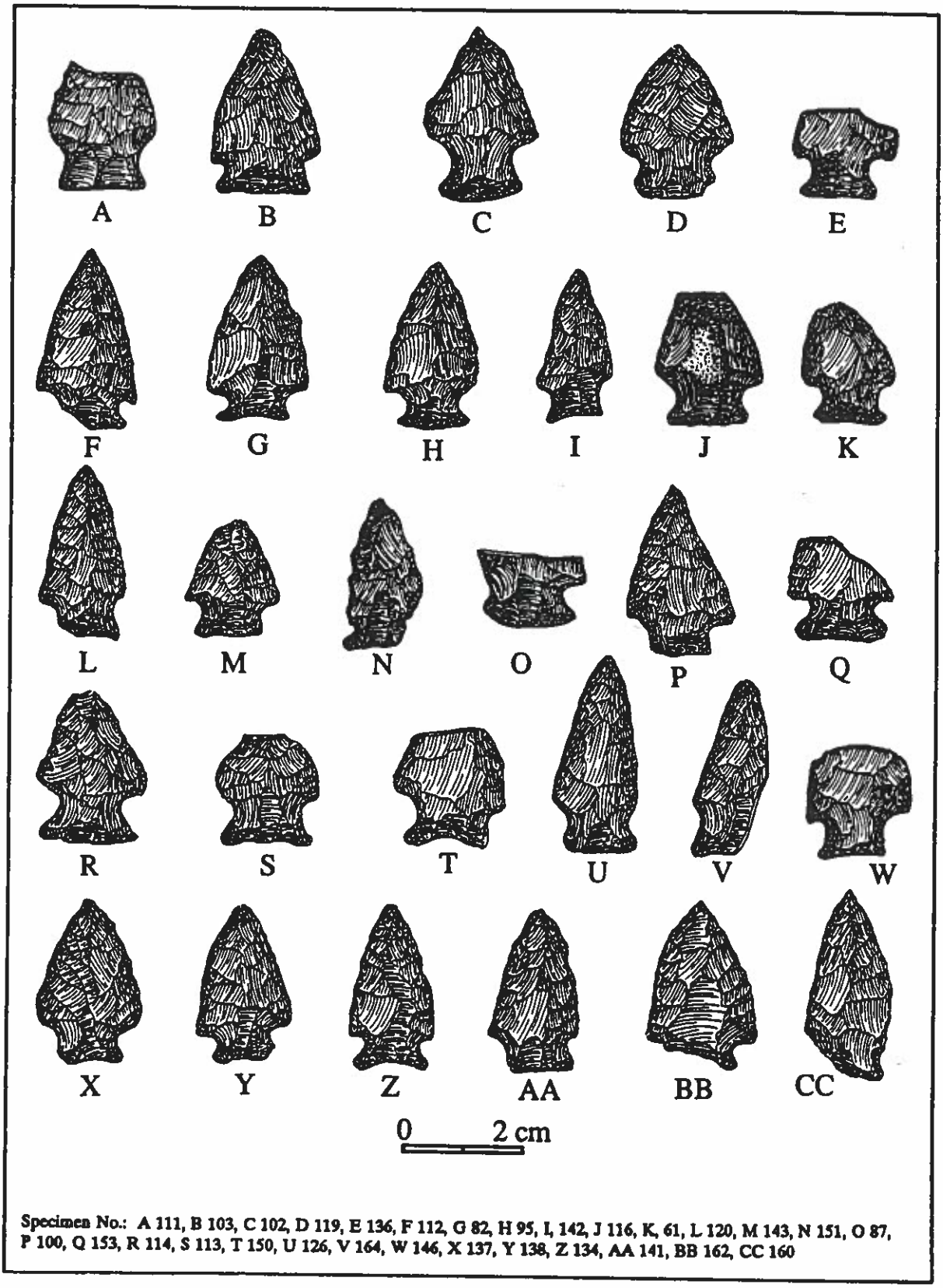
Although Vickery concluded that McWhinney Heavy Stemmed projectile points were diagnostic of both the Central Ohio Valley Archaic phase and the Maple Creek phase (Vickery 1980), Boisvert (1986:199) concluded that McWhinney points predate and are eventually replaced by Merom-Trimble points. While more than 30 Merom-Trimble points were recovered from Grayson, only one McWhinney Heavy Stemmed point was recovered (Table 1). The paucity of McWhinney Heavy Stemmed points at Grayson supports Boisvert's suggestion that McWhinney points predate Merom-Trimble points. Thus, in northeastern Kentucky, McWhinney Heavy Stemmed projectile points do not appear to be diagnostic of the Maple Creek phase.

Most of the cultural remains investigated within the 12 x 12 m excavation block were associated with the Maple Creek phase. Merom-Trimble projectile points (Figure 3) accounted for 90.9 percent of the diagnostic projectile points recovered from the excavation block. Additionally, 10 excavated features produced Merom-Trimble projectile points, although in two instances the Merom-Trimble points were recovered from later features.

Several features were assigned to the Maple Creek phase component. These include large, midden-filled pits, which probably served as storage facilities, large pits with central hearths, and chert-filled cache pits. Many of these features were located in the vicinity of the Maple Creek structures excavated at Grayson.

Structure 1 was identified within the excavation block (Figure 4), while Structure 2 was associated with a cluster of features immediately east of the excavation block. Structure 1 is characterized by unevenly spaced posts surrounding a relatively open area that contains a large interior hearth and a large interior midden-filled pit. Several medium to large pits are located near Structure 1. A similar pattern was not as discernable for Structure 2. The overlapping of features in the vicinity of Structure 2 suggests that repeated use of this area may have obscured some of feature patterning associated with this structure. Structures 1 and 2 are interpreted as having been rectangular with rounded corners. Structure dimensions were not precisely determined, but estimates range from a minimum of 6 x 7 m to a maximum of 10 x 11 m. The smaller dimensions are the more acceptable estimate if the two structures are of comparable size. While the overlapping of post patterns makes it difficult to determine the exact size of these structures, it does furnish evidence to suggest that the two structures were not occupied at the same time.

Lithic refuse disposal patterns can be discussed with respect to Structure 1, since the entire structure was hand excavated. Chipped stone (Figure 5), ground stone, and fire-cracked rock were concentrated around the structure walls and within specialized features. Lithic cache pits, identified by extremely high concentrations of chert, were located adjacent to this structure. The interior hearth also contained high densities of chipped stone artifacts, including tools such as perforators, notched flakes, and wedges. The association of these tools with the interior hearth provides some evidence of the range of domestic activities performed within the structures.



Specimen No.: A 111, B 103, C 102, D 119, E 136, F 112, G 82, H 95, I, 142, J 116, K, 61, L 120, M 143, N 151, O 87, P 100, Q 153, R 114, S 113, T 150, U 126, V 164, W 146, X 137, Y 138, Z 134, AA 141, BB 162, CC 160

Figure 3. Merom-Trimble projectile points.

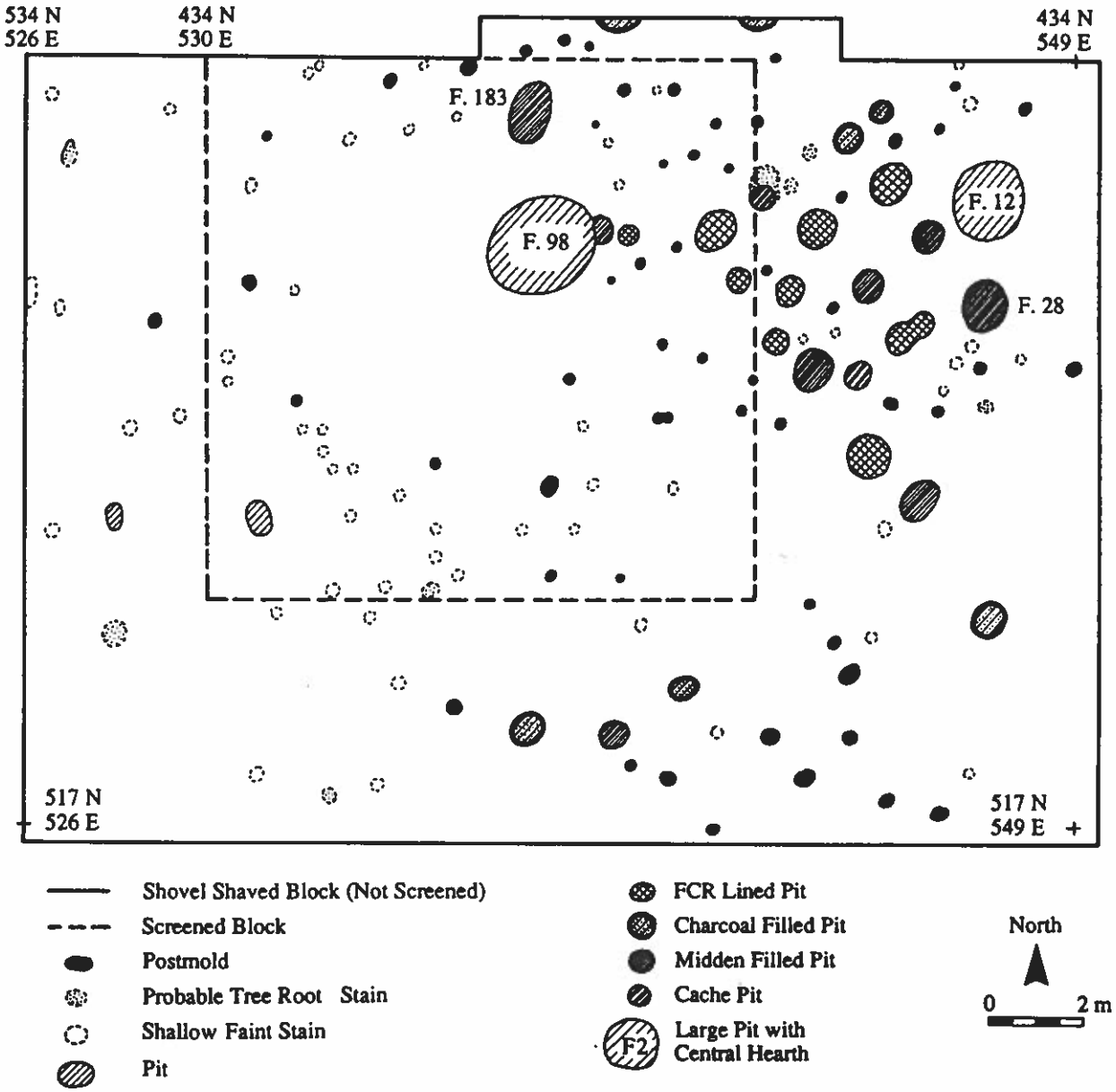


Figure 4. Distribution of features and postmolds associated with Structure 1.

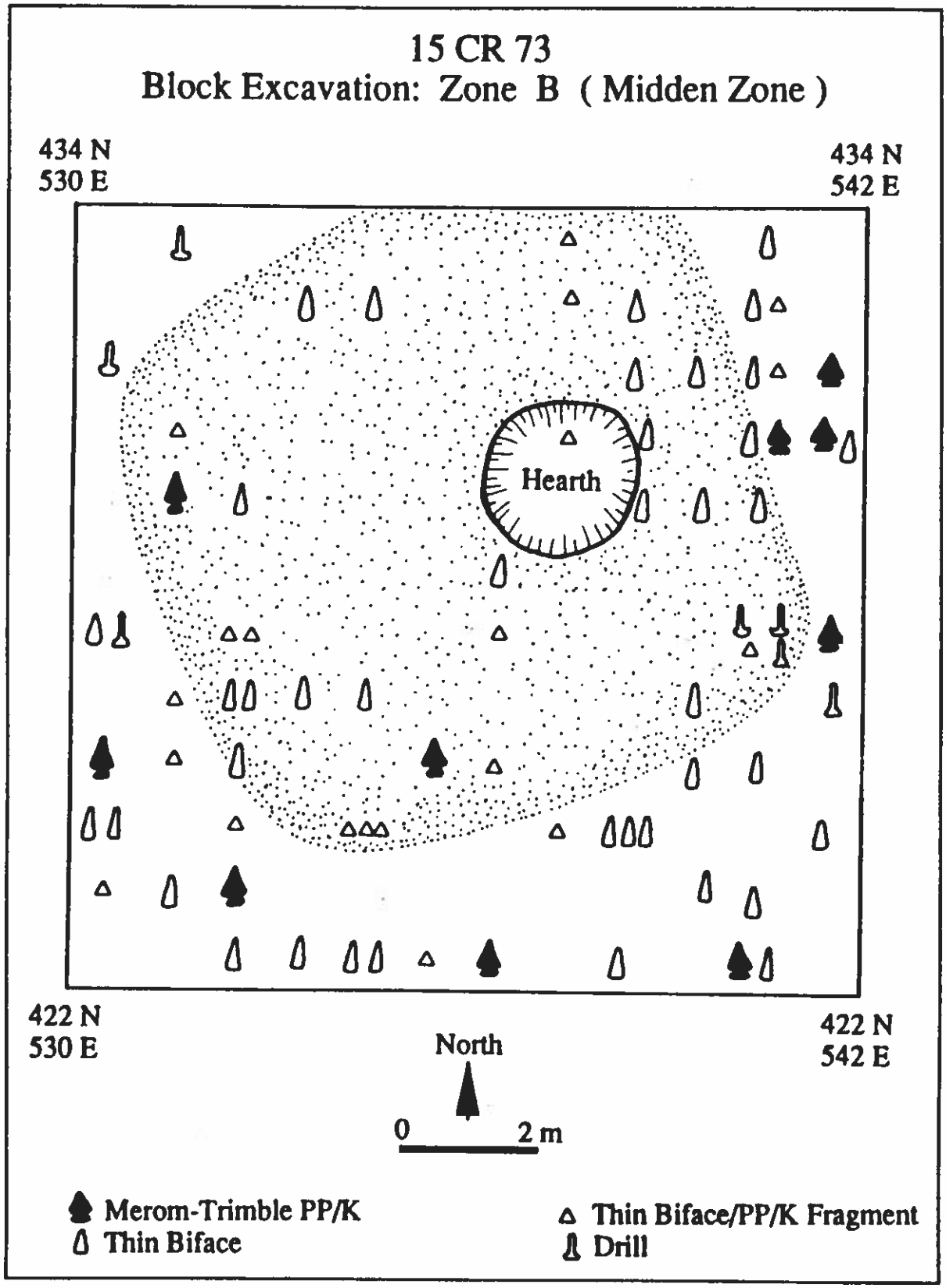


Figure 5. Merom-Trimble points and other chipped stone tools in relation to Structure 1.

All of the Merom-Trimble points were found in the western half of the site (Figure 6), with most being found near the two Maple Creek phase structures. The widespread distribution of Merom-Trimble projectile points suggests that some of the features located away from structures 1 and 2 also may be associated with this component. Specialized activity areas located away from the structures would be expected, and it is somewhat surprising that only one diagnostic Maple Creek phase feature was identified away from the structures. The available evidence suggests that the habitation area may have been relatively small, perhaps consisting of no more than a single structure at any given time. While specialized activities may have been conducted beyond the immediate vicinity of the structures, these activities are only visible as scattered Merom-Trimble projectile points and possibly small to medium-sized thermal features.

Because faunal remains were poorly preserved at Grayson, Maple Creek phase subsistence and environmental data is limited to carbonized wood charcoal and nutshell, which constitutes 46.8 and 53.2 percent, respectively, of the plant remains by weight. Hickory is the most abundant nut type, being found in 80 percent of the Maple Creek phase features and accounting for 88.6 percent of the total nut weight. Walnut and acorn are of lesser importance in terms of weight, accounting for 11.4 and less than 0.1 percent, respectively. Walnut was found in 60 percent of the features and acorn was found in 50 percent of the features. The midden produced only 16 fragments of nutshell, nine fragments of hickory nut, six fragments of walnut, and one fragment of acorn. This may be attributable in large part to poor preservation. Overall, the diversity and high frequency of mesic species identified from the wood charcoal reflects the utilization and exploitation of the surrounding mixed mesophytic forests during the Maple Creek phase.

Analyses of Late Archaic faunal remains from rockshelter sites in eastern Kentucky as well as from the Maple Creek Site (O'Steen et al. 1991) can provide some idea of the kinds of animals the Grayson Site's Maple Creek phase inhabitants might have exploited. These data indicate that mammals comprised between 72 and 96 percent of estimated edible meat, bone weight, and/or bone counts. Most were large mammals, primarily deer, but small mammals were consistently represented (5 to 7 percent of total remains and estimated meat). Turtles constituted a significant percentage (5 to 19 percent) of estimated edible meat/bone weight at the rockshelter sites, but they represented less than 2 percent of the estimated protein at the Maple Creek Site. Birds, including duck, turkey, and grouse, constituted a consistent but low percentage of the remains from both rockshelter and open habitation sites (less than 1.0 to 3.4 percent). Freshwater mussels and crayfish also constituted a consistently low percentage of the faunal remains (less than 1.0 to 2.0 percent), as did fish, which were recovered from the Maple Creek Site and from the Cold Oak Shelter.

Archaeological data from Grayson, like the data from the Glacken Site (Boisvert 1986), do not support the conclusion that large Maple Creek phase sites located on the Ohio River were base camps and that smaller, usually less dense sites located in the upland tributaries were subsidiary camps (Boisvert 1986). The perceived differences between the base camps and short-term camp sites, as defined by Winters' (1969) fission-fusion model, may reflect the frequency of reoccupation rather than duration or intensity of the occupations (Boisvert 1986:101). Also, it has yet to be demonstrated that sites such as Maple Creek represent aggregation sites as proposed by Winters' model and not simply a series of reoccupations over an extended period of time. Comparative data from intensively occupied Ohio River sites (Maple Creek), intensively occupied tributary sites (Grayson and Glacken), and rockshelter sites (Cloudsplitter [15Mf36] [Cowan et al. 1981] and Pine Crest) [O'Steen et al. 1991] indicate that the Maple Creek phase includes a diverse set of sites located in a variety of environmental zones. The Maple Creek Site

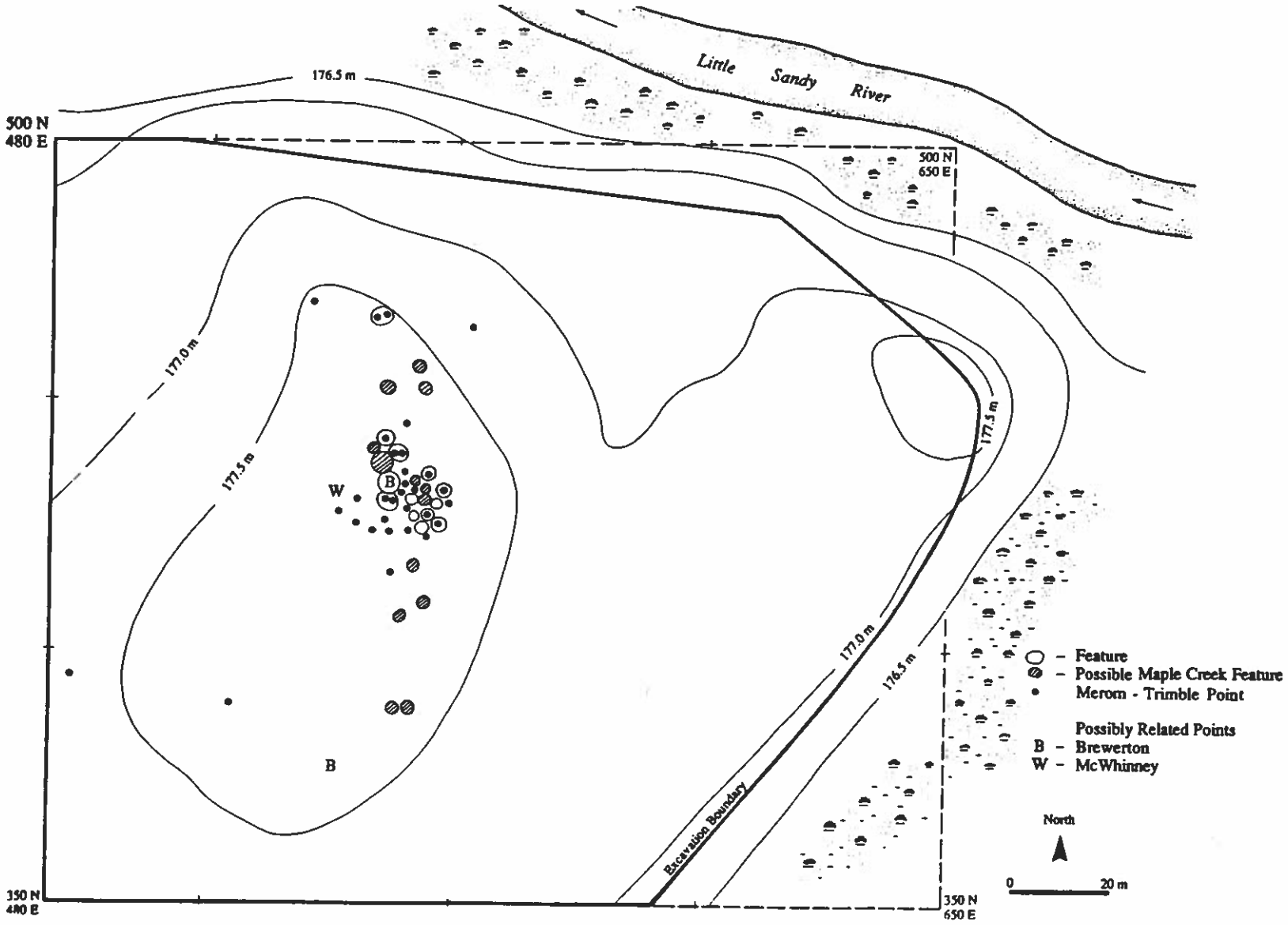


Figure 6. Distribution of Maple Creek phase projectile points and features.

was interpreted as a summer and fall base camp with some indications of spring occupations (Vickery 1980:251, 288). Grayson may be considered a base camp, perhaps on a smaller scale than the Maple Creek Site, that was occupied primarily during the fall and winter. (Fall occupation is supported by floral remains while winter occupation is inferred from the remains of structures with large interior hearths.) There is little available information on the intensity and season of occupation of rockshelter sites, but fall and winter occupation is generally proposed.

COGSWELL PHASE (1250-750 B.C.)

Although the Cogswell phase component at Grayson is not represented by a large number of diagnostic artifacts (Table 1 and Figure 7), radiocarbon dates obtained from several features suggest that it dates between 1250 and 750 B.C. Prior to this study, relatively few radiocarbon dates existed for the Cogswell phase. Dates of 980±70 B.C. and 880±60 B.C. had been obtained from Cogswell phase deposits at the Cold Oak Shelter (Ison 1988:212; O'Steen et al. 1991), a date of 860±70 B.C. had been obtained from the Cogswell phase deposits at the Pine Crest Shelter in Lee County, Kentucky (O'Steen et al. 1991), and a date of 970±60 B.C. had been obtained from the Cogswell component at Site 15Mf379 in Menifee County, Kentucky (Cecil R. Ison, personal communication 1990). Wade projectile points, which are very similar to Cogswell points, also had been dated to 1010 and 990 B.C. at Site 15Ck126 in Clark County, Kentucky (Ison et al. 1982:79) and in the Normandy Reservoir, the Wade phase was defined by radiocarbon dates of 1075±75 B.C., 1010±135 B.C., and 970±215 B.C. (Keel 1978).

Uncalibrated radiocarbon dates from Cogswell phase features at Grayson include 1218±59 B.C. (Feature 132), 1112±160 B.C. (Feature 5), 1102±52 B.C. (Feature 131), 1086±58 B.C. (Feature 25), and 831±67 B.C. (Feature 281) (Table 2). Feature 25 also produced a radiocarbon date of 2665±80 B.C. Both of the dates from Feature 25 were obtained from the same charcoal sample. Although diagnostic artifacts were not recovered from Feature 25, an examination of the botanical remains from this feature indicates strong similarities to other Cogswell phase features. For this reason, the date of 1086 B.C. is considered acceptable.

Figure 8 shows the distribution of Cogswell phase features, Terminal Archaic projectile points, and other features that could potentially be associated with this component (i.e., probable Late Archaic/Terminal Archaic features). Examination of the distribution of these remains indicates that the Cogswell phase occupation was concentrated along a relatively narrow, 70 m long band near the eastern edge of the western terrace. Cogswell phase features are generally located in the area of the Maple Creek phase midden, with some located to the south and southeast of the midden outside the area of highest artifact density. Terminal Archaic points were not as widely scattered as Merom-Trimble points, suggesting a more limited area of site use during the Cogswell phase.

Feature types assignable to this phase include charcoal-filled pits, charcoal-lined pits, fire-cracked rock-lined pits, and chert-filled cache pits. Overall, the diversity of feature types is low for this component, but this may be related to the paucity of diagnostic Terminal Archaic artifacts in features and the limited number of features that were radiocarbon dated. Feature 281, which measured 1.84 m in length, 1.50 m in width, and 45 cm in depth, contained a lower zone with evidence of at least two episodes of burning and an upper zone that may have resulted from the final usage of the pit for storage or refuse disposal. This feature, which may have been used initially as an earth oven, is similar to specialized multi-zonal or charcoal-zoned pits associated

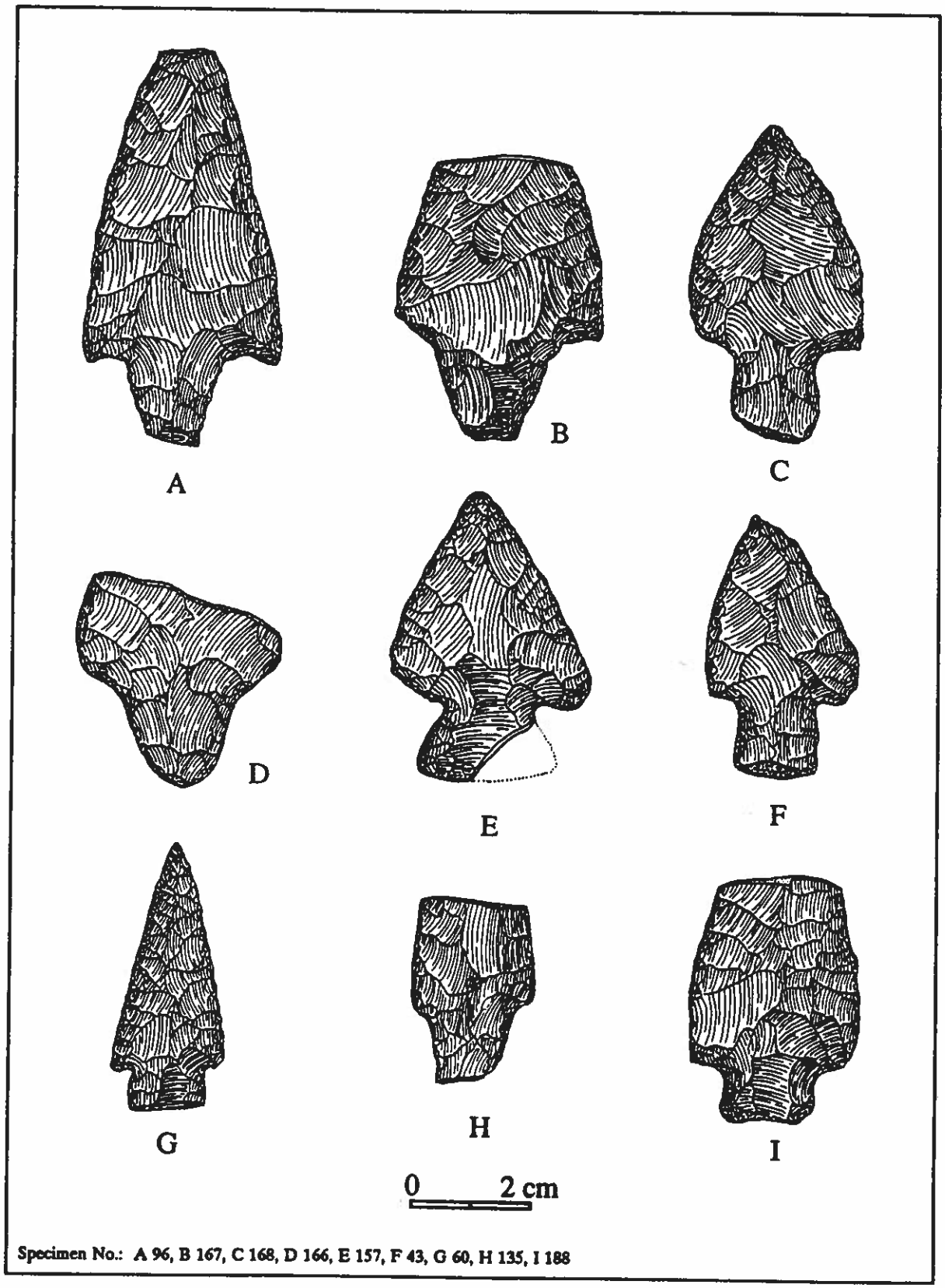


Figure 7. Terminal Archaic projectile points: a-d, Cogswell Contracting Stem; e, Wade; f-g, Buck Creek Barbed; h, Little Bear Creek-like; i, McIntyre.

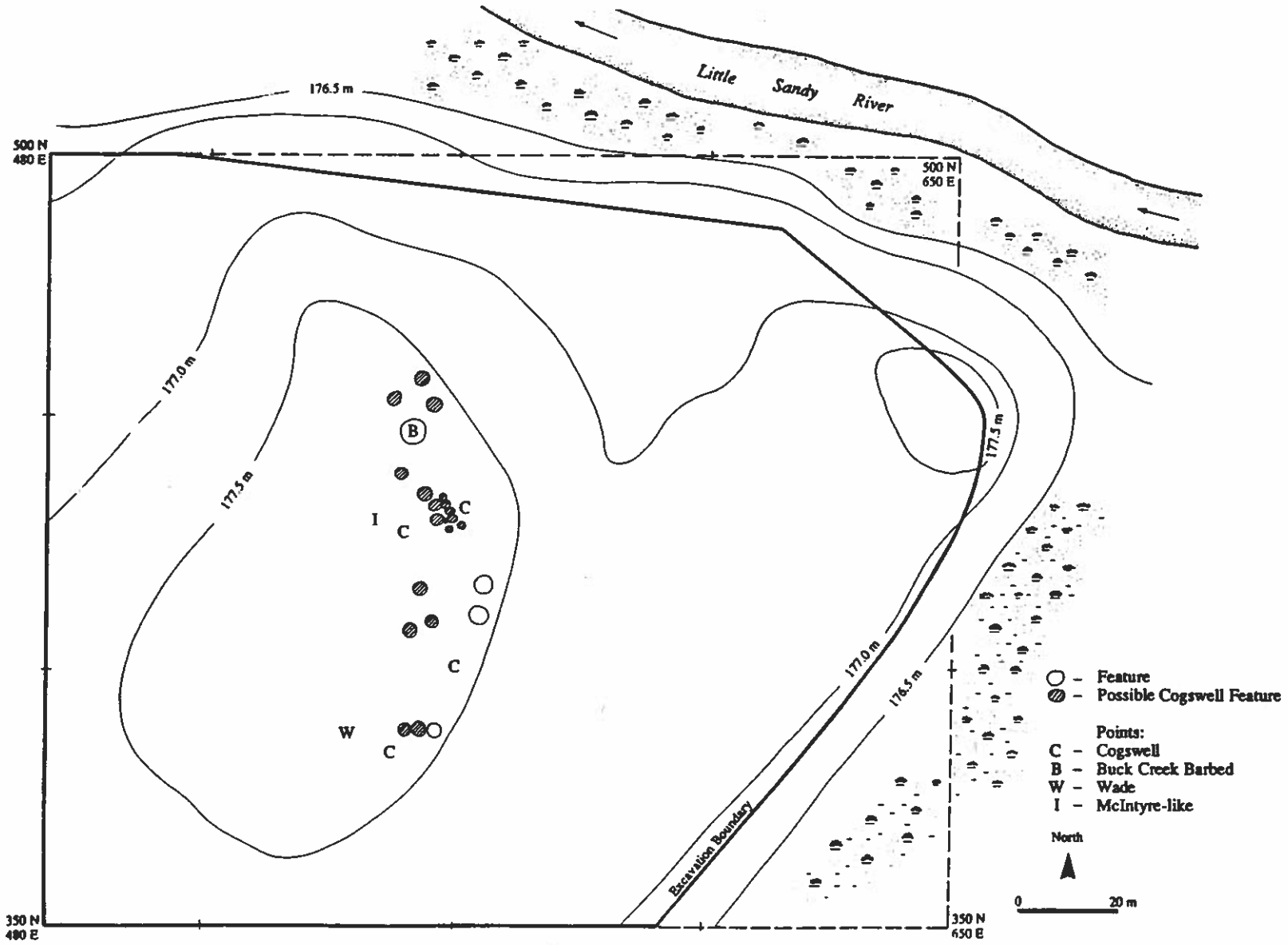


Figure 8. Distribution of Cogswell phase projectile points and features.

with the Prairie Lake phase (895-595 B.C.) in the American Bottom, Illinois (McElrath and Fortier 1983).

Feature 131 was a very large, rock-lined pit that contained an estimated 450 kg of fire-cracked rock. Feature 132, located a few meters north of Feature 131, was a large, flat-bottomed pit that contained a large quantity of charred black walnut shells, along with some charred hickory and acorn shells. A layer of fire-cracked rock did not completely fill the pit, leaving an irregular open space between the rocks and the side walls of the feature. The nutshells formed a layer that was concentrated on top of and around the fire-cracked rock concentration, which suggests this pit was utilized for nut roasting.

Structure 3, located southeast of the block excavation, appears to be associated with the Cogswell phase occupation (Figure 9). This structure consisted of pits and postmolds that encircle an approximately 10 m diameter area that was devoid of features (Figure 9). Features 131 and 132, located at the eastern edge of this feature cluster, appear to date the structure between 1102 B.C. and 1218 B.C.

Following initial machine stripping, the structure area was rescraped by a backhoe in an attempt to find all the postmolds associated with Structure 3. A continuous line of postmolds defined the southern and western edges of the structure but only a few postmolds were documented on the structure's northern edge and none were noted along the eastern edge. The absence of posts along the eastern edge of Structure 3 may be real, or the absence may be related to erosion. The eastern edge of the structure lies along the terrace slope, which may have experienced more erosion than the flat area at the terrace crest. However, it may be possible that postmolds were never present along the eastern side of the structure. Feature 131 exhibits an intense fire-reddened oxidation ring, which suggests of intense heat within this feature. Such a feature probably would not have been placed immediately adjacent to a structure wall. If this was the case, then Structure 3 may have been an open structure with a more substantial wall extending southwest to northeast.

The clustering of features around a large empty interior area is similar to the pattern recognized at the Dravo Gravel Site (33Ha377) in Ohio, where Vickery (1980) identified a circular as well as a semicircular arrangement of features that included refuse pits and earth ovens. Vickery concluded that the patterns represented the loci of single family group domestic activity areas, which also may have included a living quarters (Vickery 1980:109). It should be noted that Vickery did not identify postmolds with these patterns. The pattern of pits surrounding a partial alignment of well defined postmolds at Structure 3 at Grayson is also similar to Structure 4 at the Late Archaic Bailey Site in Giles County, Tennessee (Bentz 1988:8).

Cogswell phase subsistence and environmental data from Grayson is limited to carbonized plant remains and consists of nutshell, seeds, and wood charcoal recovered from Cogswell phase features. Nutshell constituted 63.7 percent of the total plant weight, which is substantially higher than the 53.2 percent recorded for the Maple Creek phase. Seeds, which were found in only three features, accounted for less than 0.1 percent of the total weight. Wood charcoal constituted 36.3 percent of the Cogswell phase plant remains. The diversity of mesic species identified in the wood charcoal sample reflects the utilization and exploitation of the surrounding mixed mesophytic forests during the Cogswell phase in much the same manner as during the Maple Creek phase (Ledbetter and O'Steen 1991:137).

Research at the contemporary Cold Oak Rockshelter (Gremillion and Ison 1989; Ison 1988; O'Steen et al. 1991) provides additional information regarding Cogswell phase subsistence

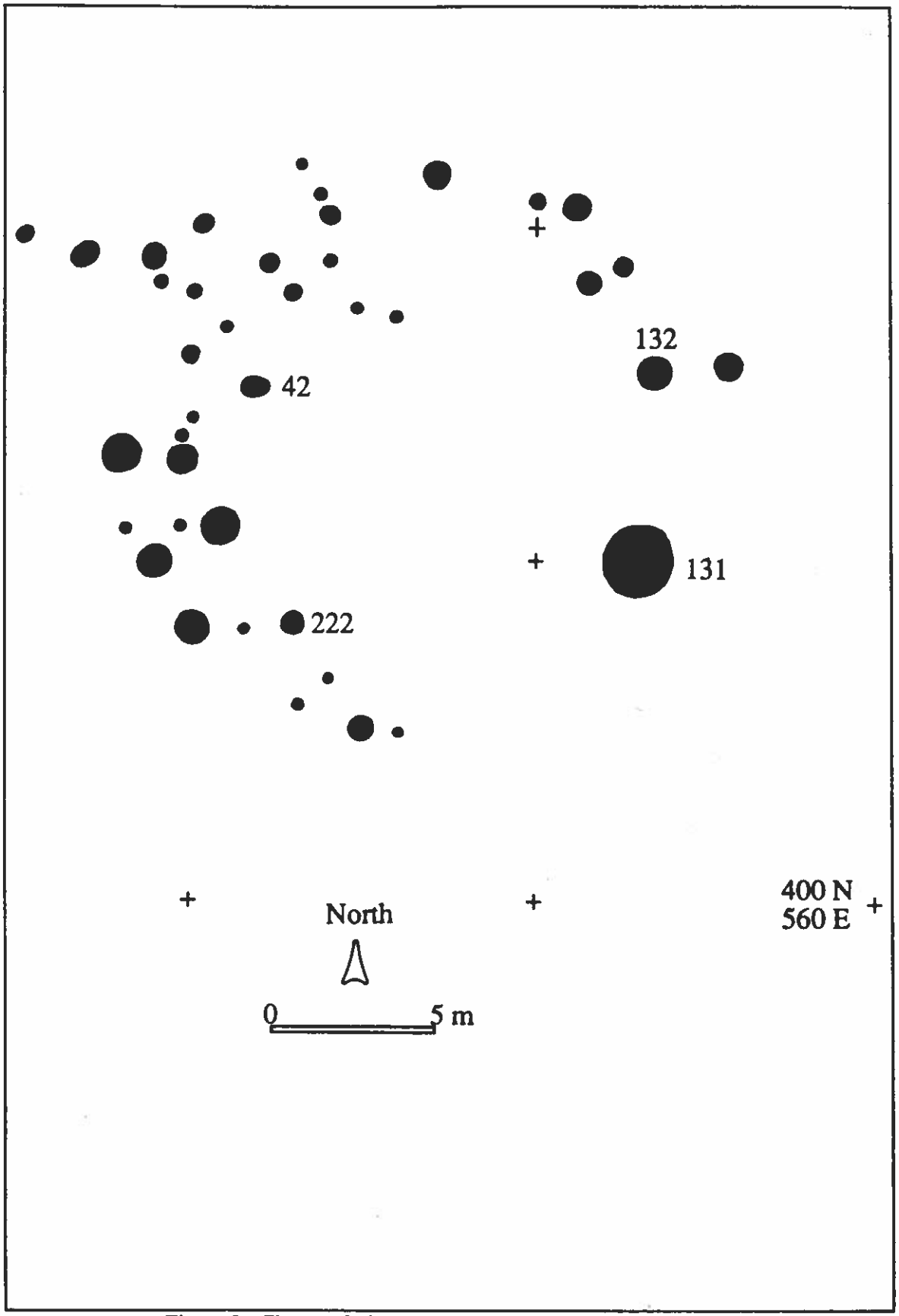


Figure 9. Cluster of pits and postmolds defined as Structure 3.

patterns. It's archaeobotanical assemblage was dominated by nutshell: primarily acorn and hickory, with some beechnut, hazelnut, chestnut, and walnut. Cultivated sumpweed and wild sunflower, and squash also were found in these deposits. Recovered starchy grains included knotweed, goosefoot, maygrass, and ragweed lacking traits of the cultigen forms. Although the Grayson botanical assemblage is not as well-preserved as the collection from Cold Oak and contains no evidence of domesticated species both collections are dominated by nutshell. At Cloudsplitter, Cowan et al. (1981:75) suggested that major changes in diet occurred during this period of time, which were reflected in the utilization and incipient cultivation of plant remains in the vicinity of the shelter, a characteristic also noted at Cold Oak (Gremillion and Ison 1989).

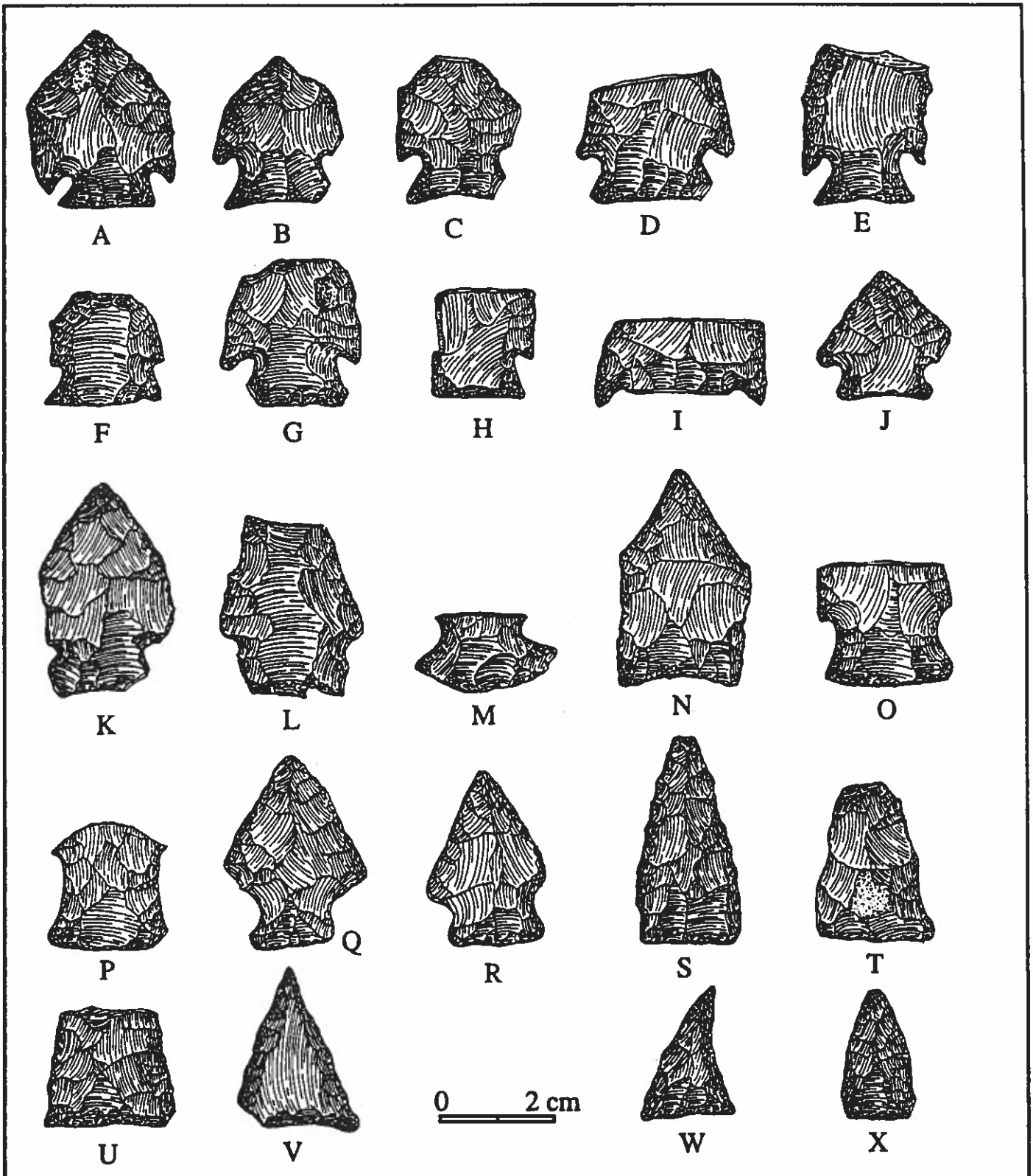
Cogswell phase settlement patterns are difficult to characterize as few Terminal Archaic open habitation sites have been investigated in northeastern Kentucky. In fact, the Grayson Site appears to be the only Cogswell phase open habitation site in this region where site structure has been identified and described. However, several rockshelters have been investigated and the intensity of rockshelter occupation appears to have increased during the Terminal Archaic. This increase in rockshelter utilization appears to coincide with subsistence changes linked to increased use of domesticated plants.

EVERMAN PHASE (A.D. 700-1000)

The Late Woodland period has received limited attention in the region until quite recently. Investigations of sites such as Grayson, Hanson (15Gp14) in Greenup County, Kentucky (Ahler 1988), Dow Cook (15La4) in Lawrence County, Kentucky (Niquette and Kerr 1989), Childers (46Ms121) and Woods (46Ms14) in Mason County, West Virginia (Shott 1990), and Parkline (46Pu99) in Putnam County, West Virginia (Niquette and Hughes 1990) have produced new data on Late Woodland cultural developments and settlement systems in northeastern Kentucky and western West Virginia. Of particular interest to the Grayson Site are the late Late Woodland occupations of the Woods (Woods phase) and Parkline sites (Parkline phase). These sites, and in particular Parkline, produced radiocarbon dates comparable to Grayson. Radiocarbon dates from Parkline range from A.D. 750±50 to 930±80 (Niquette and Hughes 1990) and at Woods they range from A.D. 570±60 to 1040±60, with the majority of dates falling between A.D. 770 and 860 (Shott 1990:107). Radiocarbon dates from Grayson range from A.D. 729±91 to 910±120, with four of the five dates falling between A.D. 729 and 838 (Table 2).

The Everman phase was defined at the Grayson Site by the association of Jack's Reef Corner Notched and Pentagonal, Raccoon Notched, and Madison/Levanna projectile points (Figure 10) with grit tempered cordmarked ceramics. These projectile points types often are associated with the Intrusive Mound Culture (Seeman 1980). Jack's Reef Corner Notched and Jack's Reef Pentagonal points (Table 1) from Grayson conform to the type descriptions of Ritchie (1961), which in the Northeast appear around A.D. 500. At Grayson Jack's Reef points were recovered from features that date from A.D. 729 to 838, and a Raccoon Notched point was recovered from Feature 79, which produced radiocarbon dates of A.D. 814±108 and 910±120. The ceramic collection from dated late Late Woodland features is small (only 66 sherds), but these specimens provide the best evidence at present for characterizing late Late Woodland ceramics in the Little Sandy drainage.

The seven Madison/Levanna specimens are small to medium-sized triangular points of variable shape. Late Woodland Levanna points were initially described by Ritchie (1961:31-32),



Specimen No.: A 176, B 175, C 123, D 127, E 131, F 156, G 86, H 128, I 154, J 129, K 174, L 173, M 144, N 130, O 133, P 172, Q 132, R 117, S 40, T 41, U 177, V 178, W 42, X 107

Figure 10. Late Woodland projectile points: a-l, Jack's Reef Corner Notched; m, Raccoon Notched; n, Jack's Reef Pentagonal; o-p, Lowe Flared Base; q-r, Chesser Notched; s-x, Madison/Levanna.

who noted that they first appeared in association with Jack's Reef Corner Notched and Pentagonal points and gradually replaced the notched forms over time. Most of the Madison/Levanna projectile points from the Grayson Site appear to be associated with the Jack's Reef Corner Notched points. While all of the small triangular points were surface finds, they were clearly concentrated in areas that also produced Jack's Reef points, primarily the northern edge of the western terrace. Fragments of thin triangular bifaces, probably of this point type, also were found in features that contained Jack's Reef Corner Notched points. At the Parkline Site, both Jack's Reef and Raccoon Notched points were found in association with Levanna points (Niquette and Hughes 1990).

In the middle Ohio Valley, Jack's Reef projectile points are generally made from high quality and often nonlocal lithic sources, a trait that characterizes the Intrusive Mound Culture (Niquette and Hughes 1990:192). With the exception of two Madison/Levanna points that were made from an unidentified quartzite and St. Genevieve chert, respectively, all of the late Late Woodland projectile points from Grayson were made from local Newman chert. However, at the Parkline Site, Levanna points were made from locally available chert of lower quality than that used to make Jack's Reef points.

At Grayson, the ratio of Jack's Reef to small triangular points was substantially higher than at Woods or Parkline. This does not appear to represent a temporal difference, since the radiocarbon dates from all three sites are extremely close. Comparison of lithic remains indicates that there are differences in the tool and debris ratios recorded for these sites, which suggests that the higher ratio of Jack's Reef to small triangular points at Grayson may be related more to the types of activities carried out at these sites than to temporal differences.

The ceramics from Grayson exhibit variation in temper type but not in surface treatment (Table 4). Crushed sandstone was the primary tempering agent, accounting for 75.8 percent of the collection. Other sherds were primarily tempered with crushed chert (12.1 percent), siltstone (7.6 percent), or granitic rock (4.5 percent). Small amounts of sandstone and chert were found as secondary tempering agents in the latter two temper categories. Recognized surface treatments were cordmarked, plain, and residual (weathered). Not including sherds with eroded exterior surfaces, 93.9 percent of the sherds recovered from Grayson are cordmarked. The remainder are plain. Cordage twist could be identified for 22 sherds: 90.9 percent were two ply S-twist cordage and 9.1 percent were two ply Z-twist cordage. Body sherds averaged 6.5 to 8.4 mm in thickness. Only two rim sherds were recovered. One was undecorated and the other was paddle-edge impressed.

The Grayson Site pottery was compared to published regional descriptions of Peters ceramics from Ohio and Kentucky, as well as Newtown phase ceramics from Kentucky and ceramics of the Woods and Parkline phases of West Virginia. The ceramics generally fit the broadly defined characteristics of Peters Cordmarked (Prufer and McKenzie 1966), a type name that has been assigned to Late Woodland sand or limestone tempered ceramics from the Carroll Shelter (15Cr57) in the Little Sandy drainage (Ison and Ison 1985) and chert tempered ceramics from the Bentley Site (15Gp15) in Greenup County (Henderson and Pollack 1985:151). The Carroll Rockshelter, located only 2.5 km from the Grayson Site on Everman Creek, produced sandstone or limestone tempered cordmarked ceramics with S-twist cordage identified as Peters Cordmarked. A burned occupation floor within the shelter produced sandstone tempered ceramics, small triangular projectile points, and a radiocarbon date of A.D. 560±60 (Ison and Ison 1985:137).

Table 4. Late Woodland Ceramics.

Provenience								
Surface Treatment/Temper	**F. 43**	**F. 46**	**F. 58**	**F. 76**	**F. 77**	**F. 79**	**Surface**	**Total**
Cordmarked								
Sandstone tempered	2	11	1	2	12	5	1	34
Siltstone tempered	1	0	0	1	1	0	1	4
Chert tempered	0	2	2	0	0	1	0	5
Granitic tempered	0	0	0	0	1	2	0	3
Total	3	13	3	3	14	8	2	46
Plain								
Sandstone tempered	0	1	0	0	0	0	2	3
Residual(Weathered)								
Sandstone tempered	0	2	3	2	4	2	0	13
Siltstone tempered	0	0	0	1	0	0	0	1
Chert tempered	0	2	0	0	0	1	0	3
Granitic tempered	0	0	0	0	0	0	0	0
Total	0	4	3	3	4	3	0	17
Total sherds	3	18	6	6	18	11	4	66

Ceramics from Grayson appear to be thicker than Newtown Cordmarked ceramics from the early Late Woodland Bentley and Hanson sites located in Greenup County (Henderson 1988; Henderson and Pollack 1985:140-165). Also a majority of the sherds from these two sites were tempered with limestone, but no limestone tempered ceramics were found at Grayson. These differences coupled with the much later radiocarbon dates from Grayson, indicate that the Grayson ceramics are not similar to the Newtown phase ceramics of the Bentley and Hanson sites. In addition to an early Late Woodland Newtown component, Hanson also may contain a late Late Woodland occupation, based on the recovery of Jack's Reef projectile points and some of the minor temper/surface treatment groups such as chert, sandstone, or siltstone tempered cordmarked ceramics (Ahler 1988:335-359).

The Woods and Parkline sites contained late Late Woodland ceramics similar to Buck Garden Corded, a ceramic type tentatively dated to A.D. 700-900 and possibly related to the Intrusive Mound Culture. Similarities with the Buck Garden Corded at Woods include notched or slashed rims and dowel-edge body decoration and at Parkline cordwrapped, paddle-edge impressed decoration, collared rims, and wiped interiors. Of the two rims recovered from Grayson one was paddle-edge impressed, which suggests that the late Late Woodland ceramics from this site may be similar to the ceramics recovered from Woods and Parkline.

Everman phase projectile points, ceramics, and features at Grayson are widely scattered throughout the site (Figure 11) and were found in areas not utilized during the Archaic period. Feature types associated with the Everman phase occupation include midden-filled pits and a variety of thermal features. Several large thermal features were excavated along the eastern terrace (Figure 11), and it is suspected that many similar features in this area that could not be

assigned to a component may have been associated with the Everman phase occupation. Some of the thermal features contained dense concentrations of artifacts and relatively high concentrations of wood charcoal. Of these, several that contained a direct association of projectile points and ceramics were dated. Postmolds documented near some of the late Late Woodland features suggest the presence of structures. Unfortunately, clear evidence of structural remains associated with this component was not recovered.

As with the earlier phases, environmental and subsistence data for the Everman phase occupation at Grayson are primarily restricted to carbonized floral material. Small amounts of bone were recovered from several features, but these fragments could not be identified beyond the level of mammal, thus providing no species information. Wood charcoal, nutshell, seeds, and squash rind were recovered from features. Wood charcoal dominated most samples, constituting 91.7 percent of the total weight compared to 8.3 percent for nutshell. Both seeds and squash comprised less than 0.1 percent of the total. In terms of ubiquity, wood charcoal was recovered from 100 percent, nutshell from 75 percent, seeds from 75 percent, and squash from 25 percent of the Everman phase features.

Eight wood taxa were identified from Everman phase features. Hickory, oak, and maple are the most abundant. When all three taxa are combined, they comprise 86.5 percent of the wood fragments. Honey locust and black locust are second in abundance, with honey locust having the greater ubiquity index of the two. Maple, mulberry, and walnut are mesic bottomland species, but also can be pioneer species occurring on open sites. Honey locust and black locust are species that grow in areas of disturbance and are probably indicators of open habitat in the site vicinity. Oaks and hickories would have been available in the terrace forests as well as on drier slopes and ridgetops. Second-growth tree taxa are found at Grayson and all comparative Late Woodland sites. In general, the wood charcoal assemblages from these sites reflect some degree of habitat modification during the Woodland period. Interpretation of second-growth taxa is difficult, however, because there is little agreement on which species actually reflect disturbed habitat (Crites and Kerr 1990).

The Everman phase assemblage at Grayson produced a wood charcoal:nutshell ratio typical of regional Late Woodland assemblages, except that walnut instead of hickory is the dominant nutshell type. However, in other Midwestern regions (e.g., the American Bottom in Illinois), walnut or acorn comprises a greater percentage of the nutshell in Late Woodland assemblages (Wymer 1989:149).

Five seed taxa were recovered from Late Woodland features: goosefoot, bedstraw, pokeweed, greenbriar, and grape. (When probable Everman phase features are considered, wild bean, honey locust, and grass are added to the plant inventory.) The majority of the seeds are from ruderal taxa, with grape being the exception. At Grayson, evidence of cultigens, represented by squash rind, was recovered from two Everman phase features as well as from one probable Late Woodland feature and three features that could not be assigned to a component. Grass, honey locust, goosefoot, and grape may represent food plants. Conversely, all the seeds (except honey locust) could represent weedy or ruderal taxa that are commonly associated with disturbed habitats and cultivated areas. The presence of squash may indicate that some degree of gardening took place at the site, which would have opened up more habitat for weedy herbaceous species or pioneer trees. All of the fruits and seeds recovered from the Late Woodland features would have been available from mid-summer to late fall.

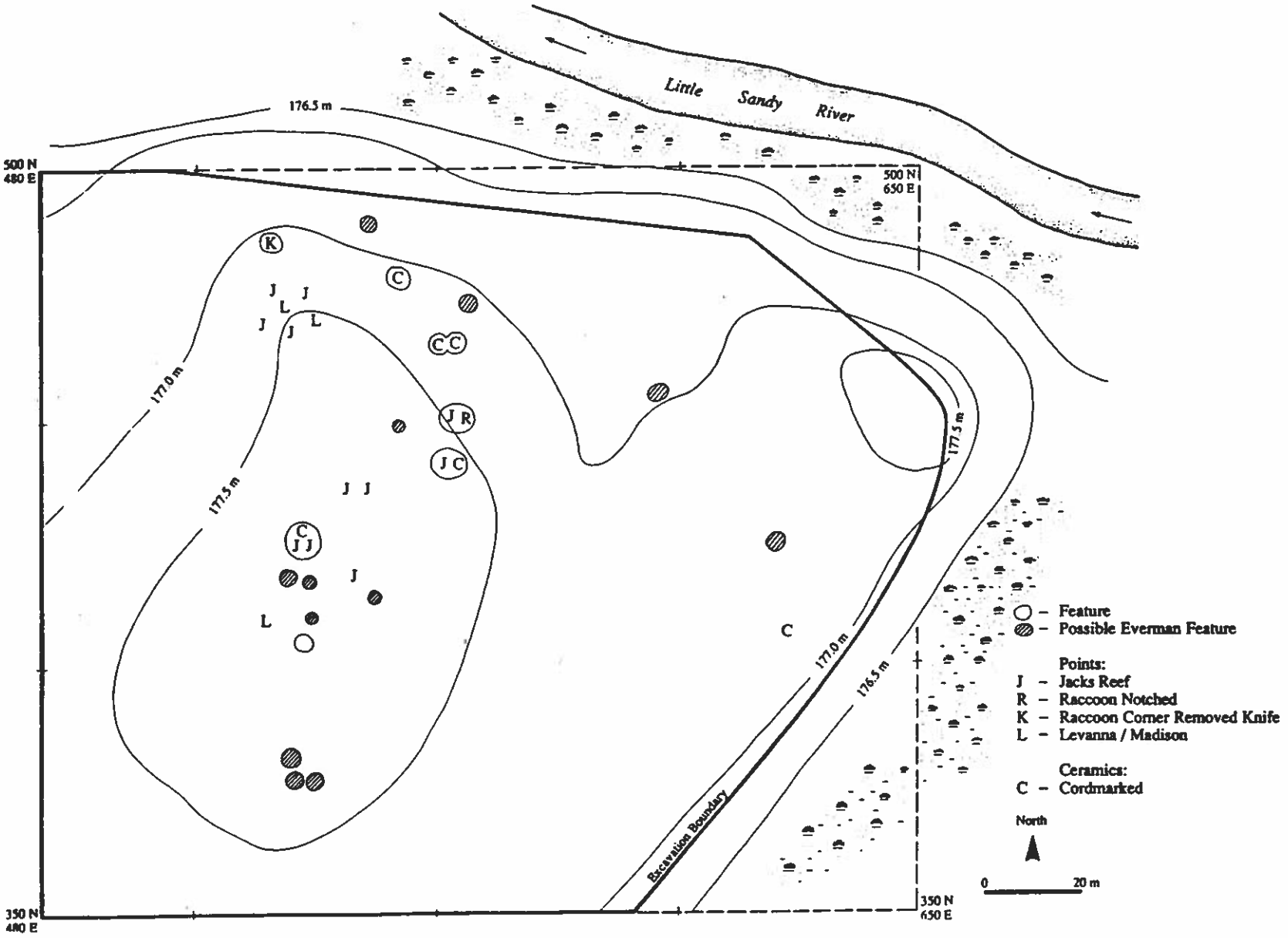


Figure 11. Distribution of Everman phase projectile points, ceramics, and features.

Other Late Woodland components in the region have yielded an abundance of starchy and oily seeds, and it appears that these cultigens played a significant role in the Late Woodland subsistence system of the Ohio valley. However, evidence for cultivation of these plants is absent at Grayson. Wymer (1989:150) also notes that the use of starchy seeds of the Eastern Agricultural Complex declined after A.D. 800 because of a concomitant increase in the cultivation of maize. Maize was not recovered from Grayson, but it has been recovered from late Late Woodland contexts at the Parkline and Woods sites. Wymer (1989:150) notes that maize did not constitute a significant portion of the prehistoric diet until after A.D. 1000. The lack of cultigens, other than squash, commonly found on other late Late Woodland habitation sites suggests that occupation at Grayson may have been seasonal and not focused on gardening activities.

With respect to faunal remains, comparative data are available from several regional sites. Early Late Woodland faunal data are available from Zachariah Shelter (15Le44), Big Turtle Shelter (15Le55) (O'Steen et al. 1991), and Hanson (Ahler 1988), while late Late Woodland data are available from the Carroll Shelter (Ison and Ison 1985) and the Parkline Site (Niquette and Hughes 1990). Comparison of the faunal remains from these sites, bearing in mind biases inherent in small samples and differential methods of analysis and quantification, suggests that faunal exploitation patterns had changed very little from Late Archaic/Terminal Archaic times. Mammals, primarily deer, consistently comprised the highest percentage of estimated edible meat, bone weight, and/or bone fragments (e.g., 50 to 80 percent of edible meat at Zachariah and Big Turtle). At Big Turtle and Zachariah Shelters, box and other turtles comprised between 19 and 38 percent of the estimated edible meat, while at the Hanson Site, Carroll Shelter, and Parkline Site the percentages of identified turtle fragments were negligible. At the Carroll Shelter, small mammals may have been utilized secondarily to deer instead of turtles. Among the compared sites, the greatest diversity of mammal remains was identified at the Carroll Shelter. Birds, including passenger pigeon, turkey, and grouse, provided a low to medium percentage of estimated meat, bone counts, and/or bone weight at all of the compared sites (1.0 to 11.0 percent). Freshwater molluscs also supplied a consistent, but low percentage of edible meat (between less than 1 percent and 2 percent, respectively) of the total from the rockshelter sites (molluscs were not recovered from the open habitation sites) (O'Steen et al. 1991).

Late Woodland settlement patterns may be viewed in terms of a gradual radiation of settlements. Throughout the Midwest, large sites located near large rivers and main tributaries during the Middle Woodland were gradually replaced by smaller settlements located along streams of all sizes during the late Late Woodland. In the middle Ohio Valley, many of the villages established in the late Middle or early Late Woodland were abandoned by A.D. 750 or earlier. By A.D. 1000, the growing commitment to maize horticulture that began during the late Late Woodland period led to an accelerated rise in population levels that again led to the establishment of consolidated villages and the end of the Late Woodland period.

For northeastern Kentucky, the latter part of the Late Woodland period (after ca. A.D. 750), is viewed as a time during which native people lived in small, dispersed habitation sites. It has been suggested that a dispersed settlement system was advantageous because of the introduction of the bow and arrow. That innovation could have allowed people to subsist more efficiently upon hunting and gathering rather than farming (Niquette and Hughes 1990:16). The dispersal of these people into smaller settlements involved the continued use of rockshelters. Dispersed settlements, consisting of a series of houses or domestic loci scattered along the length of river levees, is seen as the dominant site type for the late Late Woodland period (Niquette and Hughes 1990:15). The Woods Site, located on the Ohio River, is an example of this site type (Niquette and Hughes 1990:184) as is the Grayson Site. Other site types probably include small

camps, hamlets, and rockshelters (Niquette and Hughes 1990:16). The Carroll Shelter (Ison and Ison 1985), with its late Late Woodland midden deposit and living floor, is one of the few excavated late Late Woodland rockshelter sites in the area.

There is evidence in the region that local groups interacted with people living in the upper Ohio River Valley. The concept of migrating groups of people into the region is recognized in the Intrusive Mound Culture (Morgan 1952:93; Seeman 1980) and the recently defined Parkline phase (Niquette and Hughes 1990). However, some researchers do not view the Intrusive Mound Culture as a product of migration or expansion, considering it instead as a product of the local acceptance of a widespread cultural horizon (Graybill 1986).

Niquette and Hughes (1990) concluded that late Late Woodland Intrusive Mound-related Parkline phase people participated in a settlement system that involved highly mobile small groups who lived along the banks of medium to large rivers. Winter occupations were probably located in rockshelters and in general habitation sites were small camps (Niquette and Hughes 1990:193). Niquette and Hughes noted some evidence of Intrusive Mound-related occupation at larger, more dispersed sites such as Woods, which suggested to them that there was direct interaction between groups, since a similar, linear dispersed settlement pattern has been documented for other late Late Woodland occupations in the region (Niquette and Hughes 1990:193).

The late Late Woodland is characterized by local and regional variability in ceramic styles, subsistence strategies, and settlement systems. In northeastern Kentucky, the Everman phase may be viewed as a time during which people lived in dispersed habitation sites that contained a few houses or domestic loci scattered along the length of river terraces. This appears to contrast with the concept of the Intrusive Mound Culture, also a regional late Late Woodland manifestation, which is represented by highly mobile people inhabiting small sites along major waterways. The late Late Woodland occupation at Grayson fits more closely the dispersed pattern that is considered an attribute of local populations, and the Everman phase is believed to be a manifestation of a local late Late Woodland culture.

SUMMARY

Extensive archaeological excavations at the Grayson Site have produced primary data on Late Archaic, Terminal Archaic, and Late Woodland occupations in the Little Sandy drainage. The terrace ridges upon which the Grayson Site was located were first utilized during the late Middle Archaic, but occupation of the locale intensified significantly during the period from approximately 1650 to 750 B.C. During the Late Archaic Maple Creek phase (1650-1250 B.C.), structures were constructed, midden deposits accumulated, and the site appears to have been the location of seasonal base camps. The site continued to be used as a seasonal base camp during the Cogswell phase (1250-750 B.C.). After 750 B.C., the site was infrequently visited until about A.D. 700. During the late Late Woodland Everman phase (A.D. 700-1000), dispersed habitation loci, which contained a few houses or domestic loci, were scattered along the length of the river terrace.

In many respects, the Late Archaic and Terminal Archaic feature distributions identified at Grayson are comparable to those identified at sites in the American Bottom of Illinois. At sites such as Dyroff-Levin (Emerson 1980), Go-Kart (Fortier 1983), Missouri Pacific No. 2 (McElrath and Fortier 1983), and Labras Lake (Phillips 1986), Late Archaic occupations were characterized

by discrete clusters of pits. Within these clusters, pit features tended to be arranged around an area that was devoid of features. McElrath and Fortier (1983:86) suggested that these clusters of features represented family or subband level cooking and processing loci.

The distribution of late Late Woodland features at Grayson is also similar to that observed by Niquette and Kerr (1989:45) at the Dow Cook Site in Lawrence County, Kentucky. At both sites, few Late Woodland features were identified on the interior crest of a terrace knoll; most were found on the periphery of the knoll. Unlike Dow Cook, however, the presence of a few relatively shallow pits along the eastern ridge crest of the Grayson Site indicates that destruction by plowing was not the primary reason for the lack of late Late Woodland features in this area. Rather, this void can be attributed to an absence of diagnostic artifacts in features documented in this area.

Excavation of the Grayson Site provided an opportunity to examine intrasite spatial patterns at a prehistoric site located along an interior tributary stream. Examination of site structure suggests that sites like Grayson may not differ substantially from the large, intensively occupied Late Archaic sites located along the Ohio River. The Grayson Site did not witness the intensive repeated reoccupations of these larger riverine sites, and as a result, feature patterning could be examined and related to specific components. Examination of feature patterning provided a means of examining the shift from relatively small Late Archaic domestic areas exhibiting dense concentrations of features and debris to a pattern of broadly dispersed features and apparently less intensive occupation during the late Late Woodland period. The late Late Woodland Everman phase, while related to the Intrusive Mound Culture, is considered to represent a local manifestation.

ARCHAEOLOGICAL INVESTIGATION OF THE KAY SHELTER IN BREATHITT COUNTY, KENTUCKY

By

Kurt H. Fiegel
Betty J. McGraw
and
James L. Hixon
Frankfort, Kentucky

ABSTRACT

Archaeological investigations undertaken at the Kay Shelter (15Br118) in Breathitt County, Kentucky, documented that this site contained stratigraphically discrete deposits to a depth of approximately 85 cm. These deposits reflect occupation of the rockshelter from the Early Archaic through the Late Prehistoric periods. During the course of this study, a Terminal Archaic Cogswell phase (1250 to 750 B.C.) burial was investigated. The artifacts associated with this individual reflect his social status and provide evidence of extraregional exchange and the symbolic and ritual importance of mollusc shell to Terminal Archaic societies.

INTRODUCTION

The Kay Shelter (15Br118) is located in southern Breathitt County in the upper headwaters of Kay Fork, a small tributary of Strong Branch. The site, which was initially documented in 1990 (Sheldon and Hughes 1990), is located on the south slope of the valley formed by Kay Fork at an elevation of 333 m above mean sea level. The North Fork of the Kentucky River is situated 3 km downstream or 2.75 km east of the shelter. The vegetation present on the surrounding slopes is a mixed secondary forest of holly, beech, oak, poplar, and shagbark hickory.

The Kay Shelter is a sandstone rock overhang with a southern exposure or aspect (Figure 1). The shelter measures 21 m long and has a maximum depth of 9 m and a ceiling height of 6 m. A large amount of roof fall or breakdown is evident along the dripline and the back wall, and a smaller amount of breakdown is located in the western portion of the shelter. The usable floor space protected by the overhang is estimated to be 84 m^2 (this is based on actual size of the shelter floor minus the area covered by angular breakdown).

Disturbance by relic collectors was, for the most part, limited to the rear and center of the shelter and took the form of shallow pits. There was also evidence of vandals having probed along the edges of the breakdown within the shelter. In addition to the vandalism, piles of cultural materials discarded by the vandals were observed outside the shelter's dripline.

Of the five units excavated at this site, four were placed within the rockshelter and one was located outside the dripline. Except for Unit 1, which measured 2 m on a side, all of the units measured 1 m on a side. Unit 1 was expanded (80 cm north-south x 40 cm east-west) in order to document a flexed human burial that extended into the east wall of this unit. (See McGraw et al. 1991 for further information on the site's stratigraphy and a description of the features encountered in each unit.)

Approximately 4000 artifacts were recovered from the Kay Shelter. Based on the distribution of diagnostic projectile points, the Kay Shelter appears to have been periodically occupied from the Early Archaic through the Late Prehistoric period. This paper presents a brief summary of the cultural materials recovered from Unit 1 (Table 1), with a focus on the Terminal Archaic Cogswell phase burial encountered in this unit.

UNIT 1

The earliest occupation of the Kay Shelter occurred during the Early Archaic period. Except for a Big Sandy projectile point fragment found in Level 3, all materials diagnostic of the Early Archaic period were recovered from Level 4 (Table 2). The Early Archaic is represented by four LeCroy projectile points, which have been dated to 6470±110 B.C. at the Longworth-Gick Site (15Jf243) in Jefferson County, Kentucky (Collins 1979), and a Kanawha Stemmed projectile point, which has been dated to 6210±100 B.C. at the St. Albans Site in West Virginia (Broyles 1971:68-69).

The shelter does not appear to have been utilized during the Middle Archaic, but there is evidence of use during the Late Archaic as well as the Terminal Archaic. The Late Archaic is represented by two Matanzas Side Notched projectile points, which date to 3700-3000 B.C. (Justice 1987:119), while the Terminal Archaic is represented by two Cogswell Contracting Stemmed (Justice 1987:188) points and a Buck Creek Barbed (Justice 1987:183) projectile point.

The Late Woodland and Late Prehistoric periods are represented by six Chesser Notched projectile points, five Hamilton Incurvate projectile points, three Madison Triangular projectile points, and 19 limestone tempered sherds (Tables 1 and 2). A sample of wood charcoal taken from Feature 5, yielded an uncalibrated date of A.D. 520±50 (Beta-40185) (McGraw et al. 1991). This date is consistent with the limestone tempered pottery and Chesser Notched projectile points (Ahler 1988). However, it is somewhat early for the Hamilton Incurvate and Madison Triangular points, which date from A.D. 800-1750.

The floral and faunal assemblages recovered from Unit 1 are indicative of short-term or seasonal occupations between early spring and early fall. This is suggested by the presence of newborn deer teeth, mussel shells, and nutshells. Mussels are primarily available between spring and fall, since they burrow into the stream bottom during the winter and are inaccessible (Bryan 1991). The floral and faunal remains also indicate that the surrounding forest environment was very similar to that present today. The site's inhabitants apparently focused on the exploitation of resources located on the upper side slopes and ridgetops, as indicated by the prevalence of hickory, oak, and pine. The lower side slopes were exploited to a lesser degree, as suggested by the small quantity of black walnut remains.

Table 1. Artifacts Recovered from Unit 1 and Burial Extension.

Unit 1

Level	Lithic	Faunal	Shell	Ceramic	Other	Total
1	65	13	15	0	1[1]	94
2	412	484	228	13[2]	2[3]	1139
3	152	399	111	0	0	662
4	310	183	0	0	0	493
Total	939	1079	354	13	3	2388

Burial Extension

Level	Lithic	Faunal	Shell	Ceramic	Other	Total
1	42	6	0	1	0	49
2	43	72	3	0	0	118
Total	85	78	3	1	0	167

Features

Feature No./Level	Lithic	Faunal	Shell	Ceramic	Other	Total
1/2	0	0	0	0	1[1]	1
2/2	11	14	8	0	0	33
3/2	0	0	0	0	0	0
4/2	4	6	29	1	0	40
5/2	19	19	6[4]	2	0	46
6/2	6	7	20	0	0	33
7/2	27	25	9	1	0	62
8/3	23	125	13	0	0	161
Burial No./Level						
1/2	39	99	40[5]	1	6[6]	185
Total	129	295	125	5	7	561

[1] glass, [2] all ceramics are limestone tempered, [3] denotes two hand size bi-pitted stones,
[4] includes one shell bead fragment, [5] includes 17 shell bead fragments, and
[6] includes five pitted cobble size stones and one copper fragment.

Table 2. Unit 1 Projectile Points.

Level/Point Type	Frequency	Unit
Level 1		
Hamilton Incurvate	3	Unit 1
Hamilton Incurvate	1	Unit 1 Extension
Chesser Notched	5	Unit 1
Level 2		
Madison Triangular	1	Unit 1 Extension
Madison Triangular	1	Unit 1 Extension (Feature 7)
Chesser Notched	1	Unit 1
Hamilton Incurvate	1	Unit 1 Extension
Buck Creek Barbed	1	Unit 1 Extension (Burial 1)
Cogswell Contracting Stemmed	2	Unit 1 Extension (Burial 1)
Unclassified Side Notched	1	Unit 1 Extension
Level 3		
Matanzas Side Notched	2	Unit 1
Big Sandy	1	Unit 1
Level 4		
Kanawha Stemmed	1	Unit 1
Lecroy	4	Unit 1
Unclassified Bifurcate	1	Unit 1
Total	26	

BURIAL 1

Burial 1 was encountered in the south half of Unit 1 at a depth of 30 cm below datum. The burial pit associated with this individual originated in Level 2. Measuring 99.5 cm southeast to northwest and 66 cm north to south, it had been capped with rock cobbles and gravel. Below the cobbles, the fill of the pit was dark brown, which stood in sharp contrast to the yellowish brown loam into which the pit had been dug. The sides of the pit sloped inward and the bottom was flat (Figure 2).

Five cobble-size pitted stones were recovered from the burial pit fill (Figure 3). These artifacts have from one to four shallow hemispherical depressions that appear to have been produced by grinding rather than hammering or pecking. The diameter of the depressions ranges from 3 to 4 cm, and the depth of the pits ranges from .5 to 1.5 cm. Two of the larger stones have pits on opposing faces.

The burial, which was oriented southeast-northwest, had been placed in a flexed position on its right side with the head to the southeast. The arms were pulled towards the body so that the hands lay directly under the cranium. One Buck Creek Barbed (Justice 1987:183) and two Cogswell Contracting Stemmed (Justice 1987:1889) (Figure 4) projectile points were recovered directly beneath the right cuboid and talus, and midway along the right tibia. An amorphously

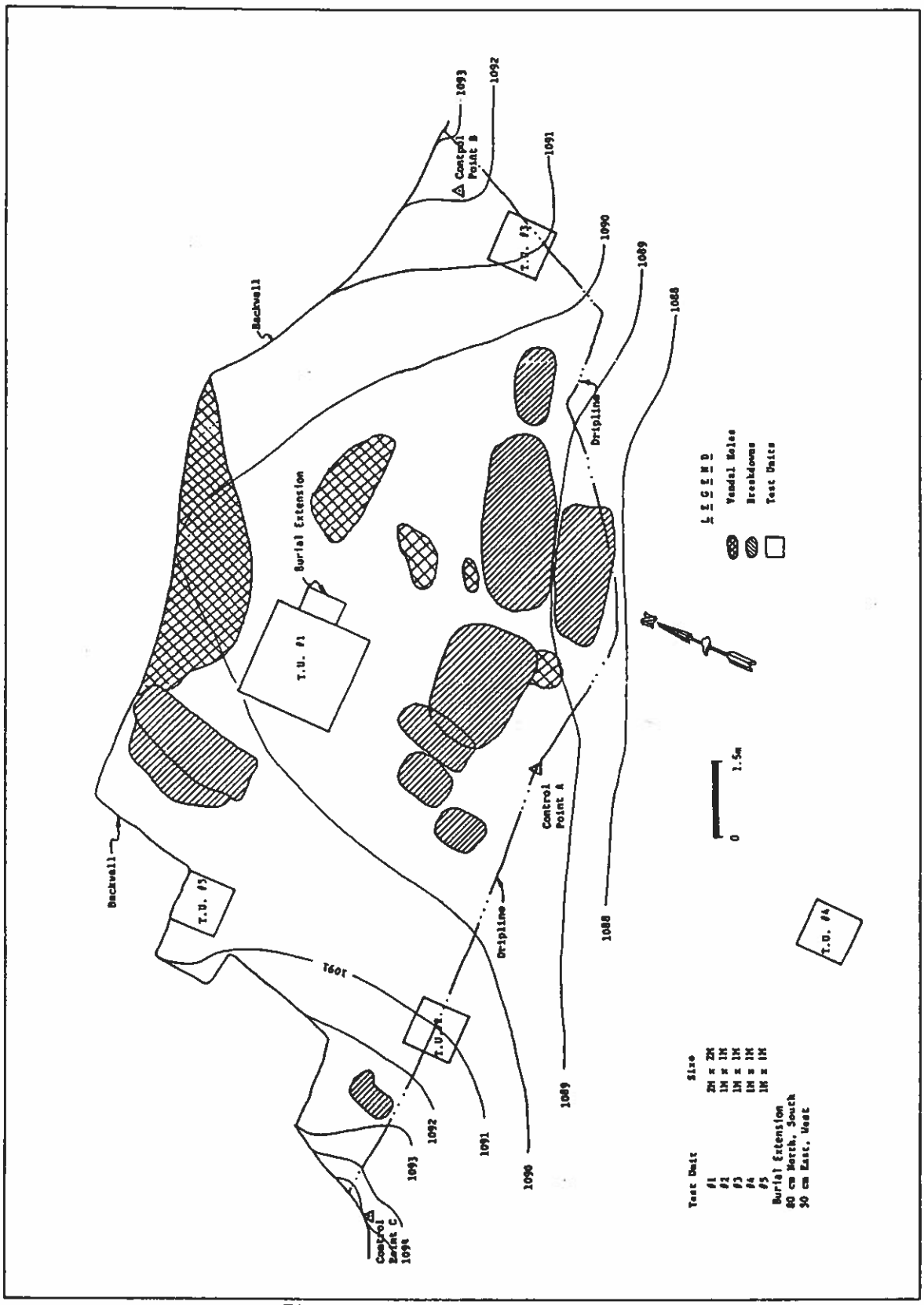


Figure 1. Planview of Kay Shelter.

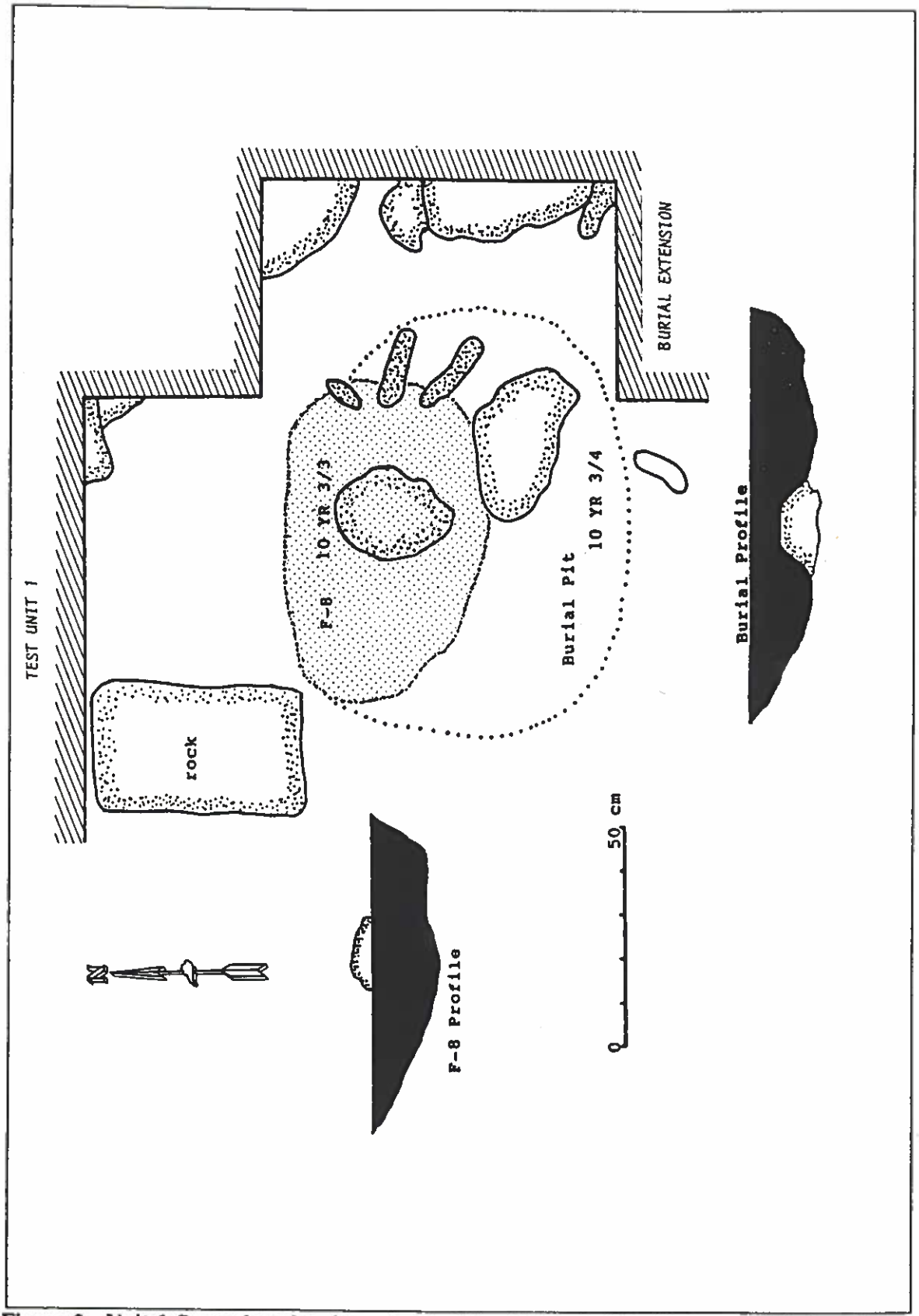


Figure 2. Unit 1 floor plan showing relationship of burial pit to Feature 8. (Note: Feature 8 is below Burial.)

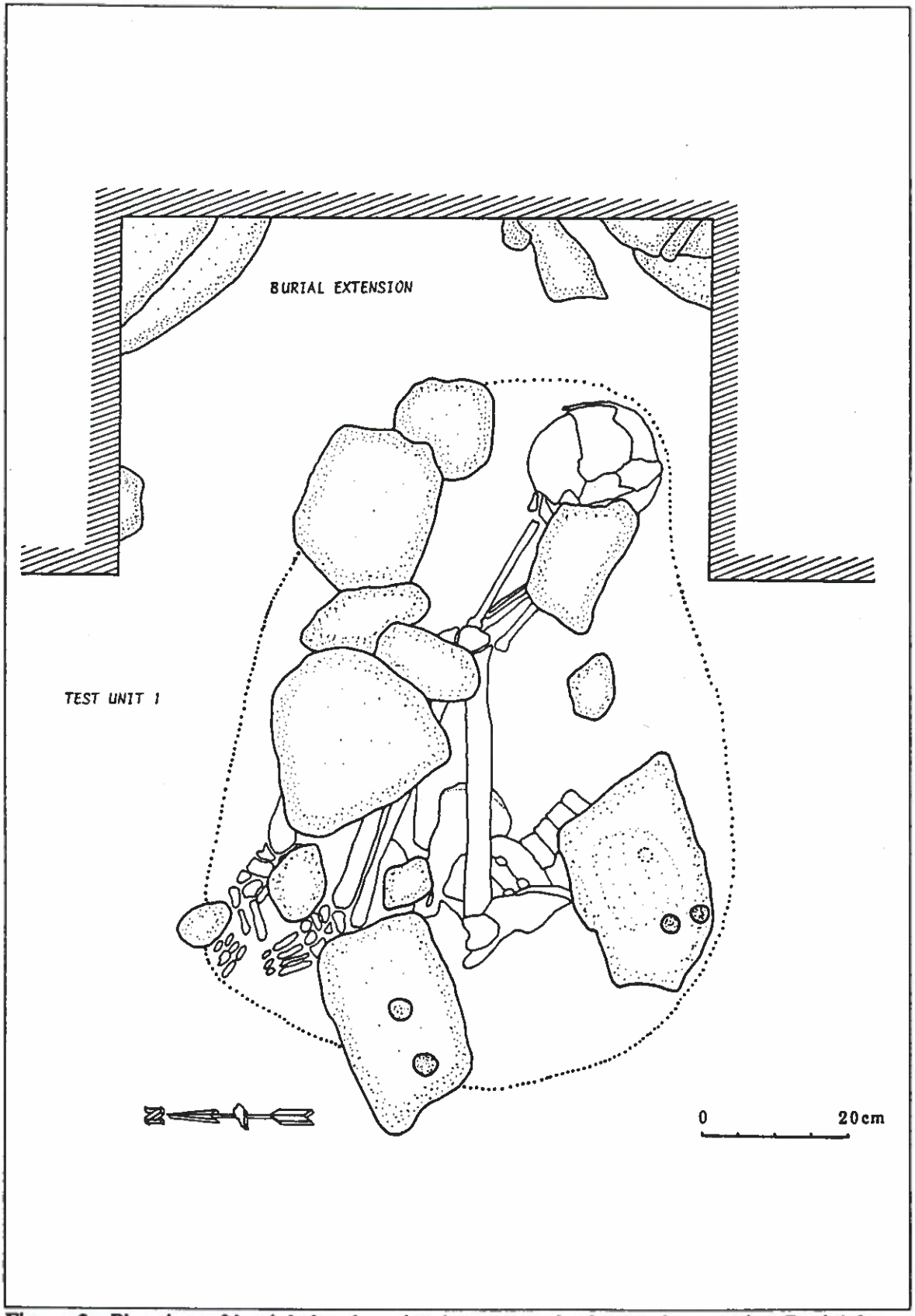


Figure 3. Planview of burial showing pitted stones and other rocks covering Burial 1.

shaped piece of copper was recovered in association with the left innominate (Figure 5), and one worked piece of chert was recovered near the ribs.

Shell artifacts also were recovered in direct association with the burial. Four shell fragments were found near the right knee, five between the innominate and talus, and six under the right ankle. During removal of the skeleton, it was observed that one shell fragment had been covered with red ocher. This specimen was found beneath the cranium, intermixed with the phalanges. White tailed deer and box turtle remains also were recovered from beneath the cranium in association with the left and right hands. A total of 17 shell beads were recovered from the pit fill, consisting of 12 disc, four barrel, and one unclassified bead fragment (Figure 6).

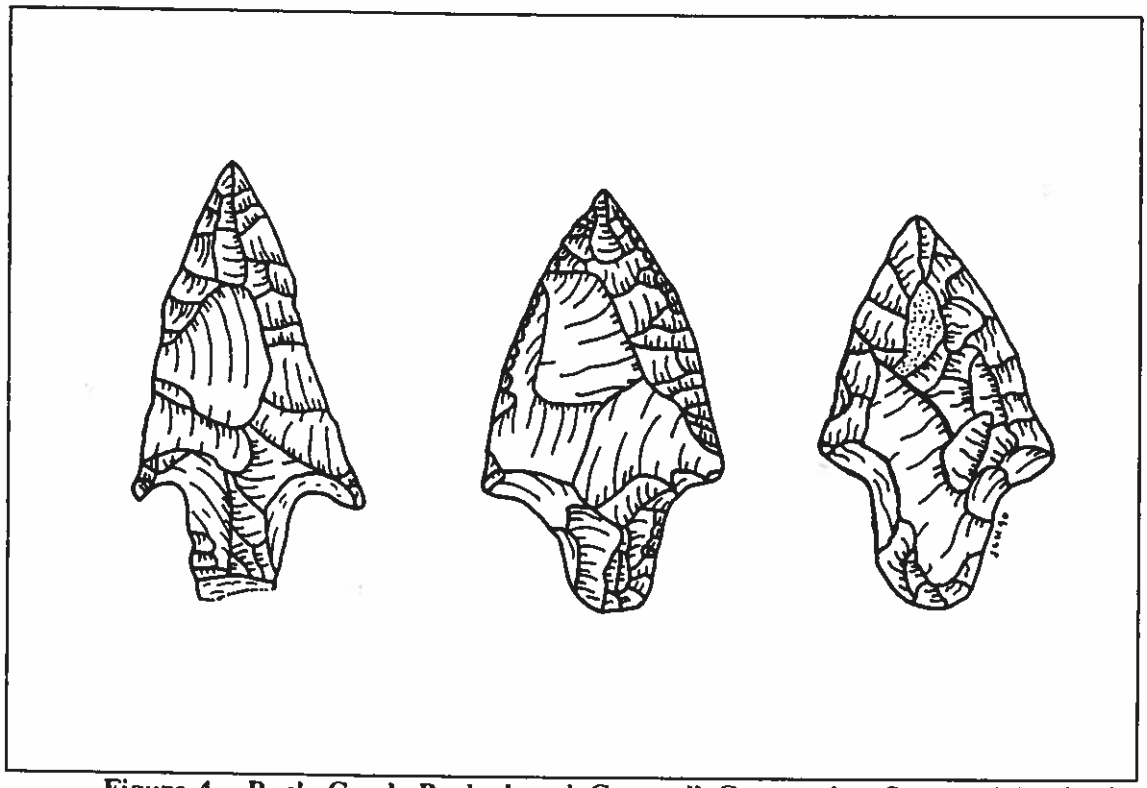


Figure 4. Buck Creek Barbed and Cogswell Contracting Stemmed Projectile Points associated with Burial 1.

Based on the analysis of cranial and postcranial bones, this burial was determined to be a male between the ages of 18 and 19 at the time of death. Estimated stature was between 162.08 and 169.68 cm. There was no evidence of artificial cranial deformation, dental carious lesions, or abnormal pathologies (Lane 1991). The occlusal wear pattern was similar to that of preagricultural populations recovered from other southeastern United States archaeological sites (Lane 1991:84). The season of death appears to have been between early spring and early fall as indicated by the direct association of mollusc shell (Bryan 1991) and box turtle shell with the skeleton.

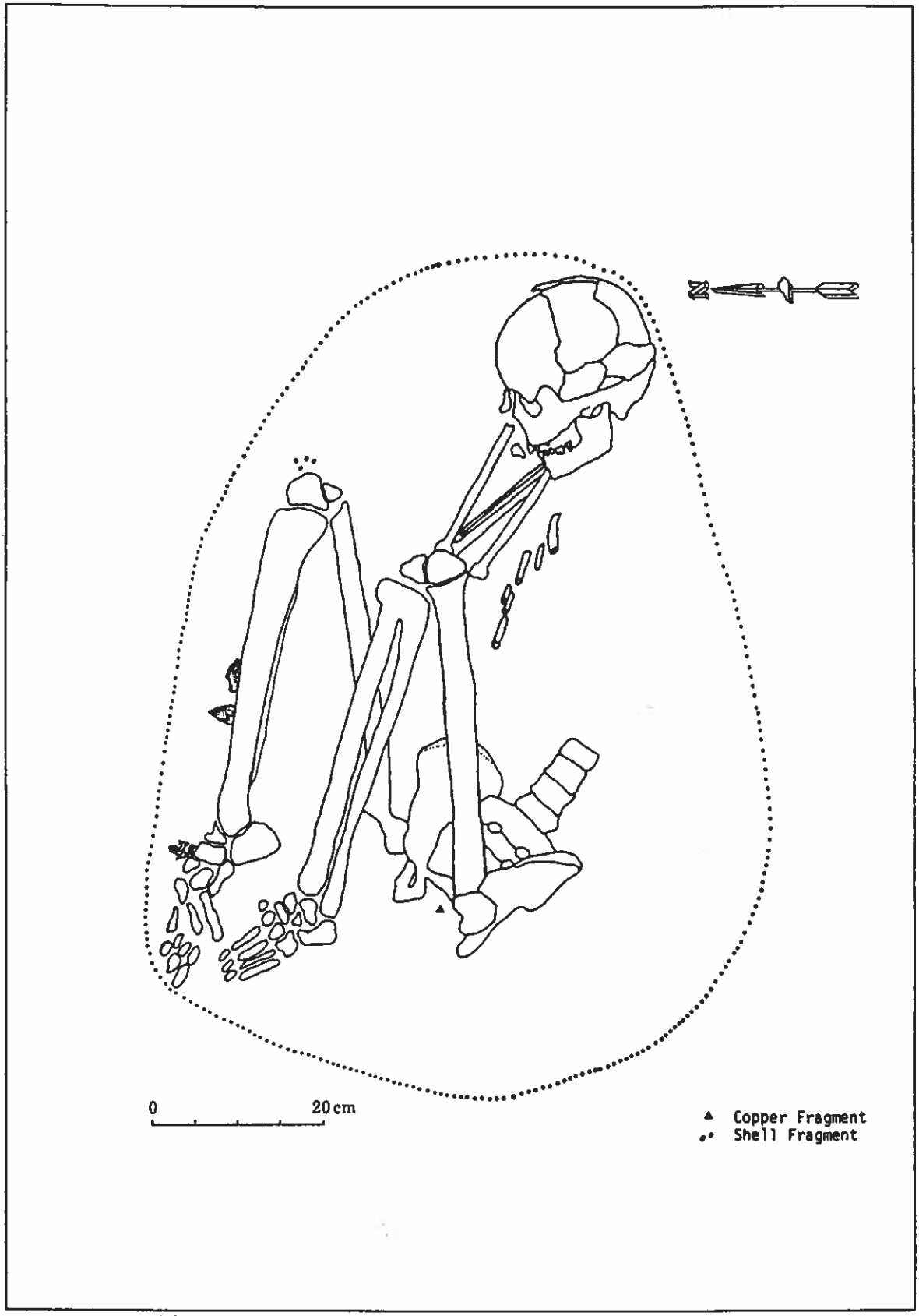


Figure 5. Location of grave goods associated with Burial 1.

An uncalibrated radiocarbon date of 1020±130 B.C. (GX-16825) was derived from a portion of the left femur of this individual. Based on this date and the association of Cogswell Contracting Stemmed projectile points with this individual, the burial was assigned to the Terminal Archaic Cogswell phase.

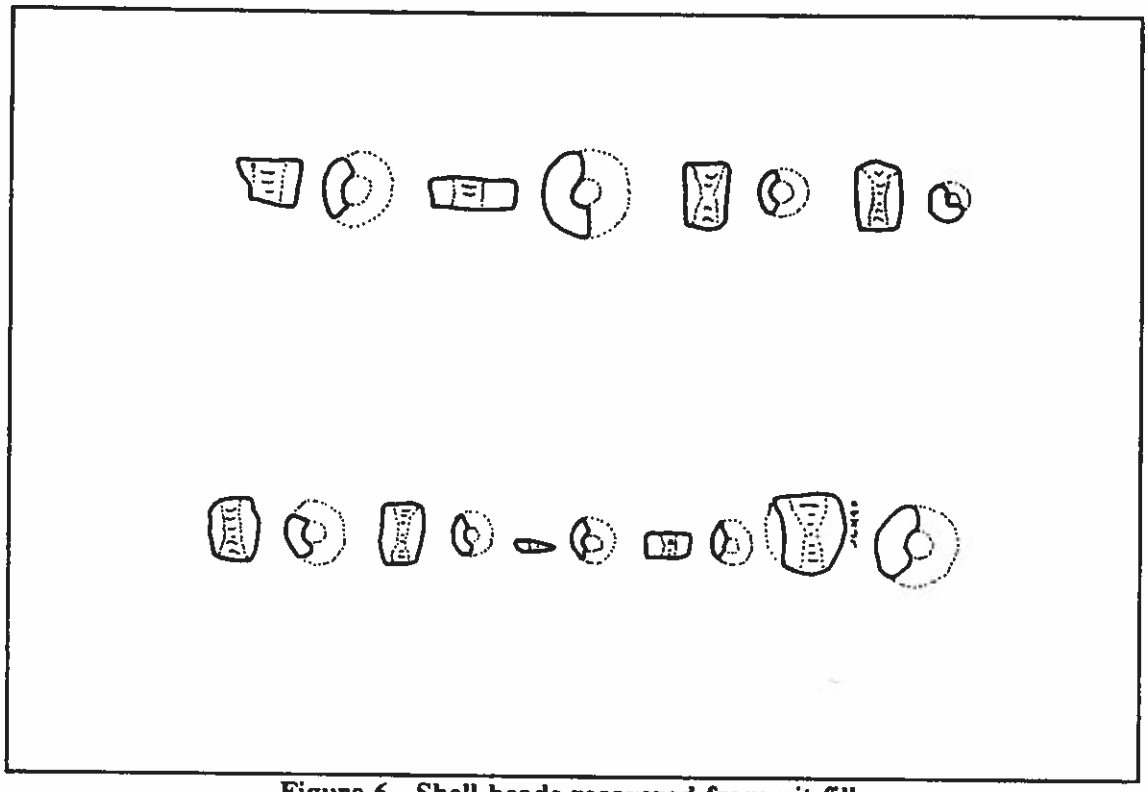


Figure 6. Shell beads recovered from pit fill.

COGSWELL PHASE

Rolingson and Rodeffer (1968:38) first defined the Cogswell Contracting Stemmed projectile point at the Zilpo Site (15Ba37) in Bath County. A Late Archaic/Early Woodland chronological placement has been suggested for this projectile point (Justice 1987:189-190), and Ison (1988) has argued for the presence of a Cogswell phase in the Cumberland Plateau region that dates to the Terminal Archaic period (1000-800 B.C.). At the Cold Oak Shelter (15Le50) in Lee County, uncalibrated radiocarbon dates of 880±60 and 980±70 have been obtained from Cogswell phase deposits (Ison 1988:205-219; O'Steen et al. 1991), and a uncalibrated date of 860±70 B.C. was obtained from the Cogswell stratum at the Pine Crest Shelter (15Le70) also in Lee County (O'Steen et al 1991).

Based on their research at the Grayson Site (15Cr73) in Carter County, Ledbetter and O'Steen (this volume; 1991) suggested that the temporal parameters of this phase be revised to include the period from 1250 to 750 B.C. As at the Kay Shelter, a Buck Creek Barbed projectile point was recovered from the Terminal Archaic component at the Grayson Site. It was associated

with a feature (Feature 281) that produced an uncalibrated radiocarbon date of 831±67 B.C. (Ledbetter and O'Steen 1991:157; Ledbetter and O'Steen this volume). Other Cogswell phase features at Grayson produced uncalibrated dates of 1218±59 B.C. (Feature 131) and 1102±160 B.C. (Feature 5) (Ledbetter and O'Steen this volume). Two Cogswell Contracting Stemmed point were recovered from the second stratum at the Enoch Fork Shelter (15Pe50), which dates to 100 B.C. (Bush and Thomas 1986:27; Bush 1988). However, this date appears to be much too recent for the Cogswell phase.

By examining the spatial distribution of Cogswell Contracting Stemmed points in eastern Kentucky, Ison (1988:215) determined that Terminal Archaic settlements tend to be associated with the major river drainages of this region. Cogswell phase subsistence strategies appear to included the gathering of wild plants, with a preference for nut, incipient domestication of starchy-oily seeds of the eastern agricultural complex, and the hunting of animals (Ison 1988:215). In contrast to dry rockshelters such as Cold Oak, large quantities of plant remains were not recovered from flotation samples at the Kay Shelter nor were they observed during excavation of any of the units. The paucity of floral remains from the Kay Shelter may be due to the damp nature of the shelter or to other factors that affected the preservation of plant remains. The ubiquity of pitted stones at the Kay Shelter, however, suggests that the processing of nuts was an important activity during some periods of the site's occupation.

DISCUSSION

The Kay Shelter appears to have been periodically occupied from the Early Archaic to the Late Prehistoric period, based on the recovery of diagnostic artifacts from well-defined stratigraphic contexts. The floral and faunal assemblages recovered from the shelter suggest that during all periods it was utilized for short-term or seasonal camps between early spring and early fall. During at least one Terminal Archaic occupation, a young adult male died and was buried within the Kay Shelter.

This individual was buried with two Cogswell Contracting Stemmed projectile points and one Buck Creek Barbed point that, along with a radiocarbon date of 1020±130 B.C., suggest assignment of this burial to the Cogswell phase (1250-750 B.C.). In addition to the projectile points, mussel shells, one of which was covered with red ochre, and a small piece of copper were found in direct association with this individual, and shell beads also were recovered from the fill of the burial pit. The association of mussel shell with this individual may reflect the symbolic importance of shell during the Late and Terminal Archaic periods (see Claassen this volume), while the copper is indicative of long-distance exchange. The copper was probably obtained from North Carolina or the Lake Superior region.

The recovery of five pitted stones from the fill of the burial pit represents something of an anomaly. If the collection and processing of nuts in hunter-gather societies was primarily a female activity, why were such tools used to cover a young male? Such stones may have been used for more than just the processing of nuts and thus may relate in some way to this individual's status or the specific social role he performed within his group. Alternatively, these stones simply may have been incorporated into the soil that was used to fill the burial pit. In this case the association of the pitted cobbles with Burial 1 would be fortuitous and would not be related to this individual's social status. The large number of pitted stones recovered from other

contexts at the Kay Shelter suggests that these stones, in fact, are spuriously associated with Burial 1 and were not intentionally placed in the burial pit.

Besides documenting that the Kay Shelter was periodically used by aboriginal people for at least 10,000 years, the investigation of this site has produced information on Terminal Archaic mortuary patterns. While large numbers of Archaic burials have been excavated in western Kentucky, few have been studied in eastern Kentucky. The association of Burial 1 with an assortment of grave goods reflects this individual's social standing and provides the first evidence of long-distance exchange during the Terminal Archaic period in eastern Kentucky.

FALLS PLAIN: A MIDDLE WOODLAND CERAMIC TYPE FROM THE FALLS OF THE OHIO RIVER REGION

By
Stephen T. Mocas
Louisville, Kentucky

ABSTRACT

Falls Plain pottery, which is similar to Adena Plain, represents the predominant ceramic type manufactured in the Falls of the Ohio River Region throughout most of the Middle Woodland period. It appears to have developed out of a local grit tempered cordmarked tradition that included types such as Zorn Punctate. By the Late Woodland period, Falls Plain is replaced by limestone tempered cordmarked ceramics in this region.

INTRODUCTION

Several sites in the Falls of the Ohio River Region have produced small samples of limestone tempered plain pottery. These include Arrowhead Farm (15Jf237), Villier (15Jf110), Spadie (15Jf14), Rosenberger (15Jf18), Hornung (15Jf60), Site 15Jf161, and McNeeley Lake (15Jf200) in Kentucky and Prather (12Cl4), Old Clarksville (12Cl1), Site 12Hr3, and Site 12Hr12 in Indiana. Unfortunately, little is known about these materials, since most were recovered from surface or plowzone contexts. Because it is difficult to say anything definitive about the small ceramic samples found at these sites, this paper focuses on the larger limestone tempered plain ceramic samples recovered primarily from features at four sites: Site 12Cl92 and Site 12Cl103 in the Clark Maritime Centre Archaeological District (CMCAD) of Indiana, and the Zorn Avenue Village Site (15Jf250) and the Hunting Creek Site (15Jf268) in Jefferson County, Kentucky.

The goals of this study are 1) to demonstrate that the limestone tempered plain ceramics from the Zorn Avenue Village Site and the Hunting Creek Site can be assigned to the Falls Plain ceramic type; 2) to determine the cultural and temporal placement of Falls Plain within the regional ceramic sequence; and 3) to examine the relationship between Falls Plain and other regional ceramic types, such as Adena Plain. This paper is organized in the following manner. An overview is presented of Falls Plain ceramics from the CMCAD, Zorn Avenue Village Site and Hunting Creek Site. This is followed by a discussion of the temporal affiliation of this ceramic type and a comparison of Falls Plain ceramics with other Woodland ceramics in the Falls Region, such as Early Woodland/early Middle Woodland Zorn Punctate and late Middle Woodland/early Late Woodland ceramics. It concludes with a comparison of Falls Plain ceramics with ceramic groups from elsewhere in the Ohio Valley.

FALLS PLAIN

In this section, the limestone tempered plain ceramics recovered from two sites (15Cl92 and 15Cl103) in the Clark Maritime Centre Archaeological District, from the Zorn Avenue Village Site (15Jf250), and the Hunting Creek Site (15Jf268) are described. The CMCAD discussion represents a reevaluation of Falls Plain, while the Zorn Avenue Village discussion provides a detailed description of the methods used to analyze the limestone tempered plain ceramics from this site as well as the Hunting Creek Site.

CLARK MARITIME CENTRE ARCHAEOLOGICAL DISTRICT

The CMCAD is located on the floodplain of the Ohio River in Clark County, Indiana, approximately 5 km upriver from the Zorn Avenue Village Site and 3 km downriver from the Hunting Creek Site. Two sites (12Cl92 and 12Cl103) (Figure 1) in this district (Figure 1), which were partially excavated prior to the construction of the Clark Maritime Centre, produced large collections of limestone tempered plain ceramics.

The CMCAD project ceramic analysis focused on the materials found in features, because more than one component was documented at Site 12Cl92 and at Site 12Cl103 and the lack of distinct vertical separation of these components caused some mixture of cultural materials (Myers and Ottesen 1989:394). Data on the cultural materials and their proveniences as used in this paper are derived from the CMCAD Phase III mitigation report (Sieber and Ottesen 1989), from personal communications with Ellen Sieber, and from an examination of the Clark Maritime collections and fieldnotes.

Ceramics

In her analysis of the CMCAD ceramic collection, Robin Myers (1989:220-275) classified the limestone tempered plain ceramics (n=2990) as Falls Plain. The sample she used to define this type was obtained primarily from sites 12Cl92 and 12Cl103, with smaller collections coming from sites 12Cl93, 12Cl106, and 12Cl109. Other sherds recovered from these sites were classified as Falls Interior Red Painted, Falls Incised, and Grog Tempered Plain.

Interior Red Painted ceramics (n=26) (Myers 1989:233) were found at both Site 12Cl92 and Site 12Cl103. These sherds appear to be similar to a vessel found at the Prather Site (12Cl4), which is located 6.5 km north of the CMCAD. At Prather, a limestone tempered plain vessel found on the floor level of Mound 1 had "a heavy coating of dark red paint...probably intentionally applied and was not part of the contents since the paint does not have a horizontal distribution on the side walls" (Griffin 1949:351; Plate XXXII, Figure 2). Except for the application of a ferric slip, these sherds are identical to Falls Plain. Also, one of the sherds assigned by Myers to this type is actually a basal/lateral sherd from a slightly flattened base. The markings on its exterior surface are probably striations from placement of the vessel on the ground. Though the exterior has been reddened by oxidation of the clay, it shows no evidence of the application of a ferric slip.

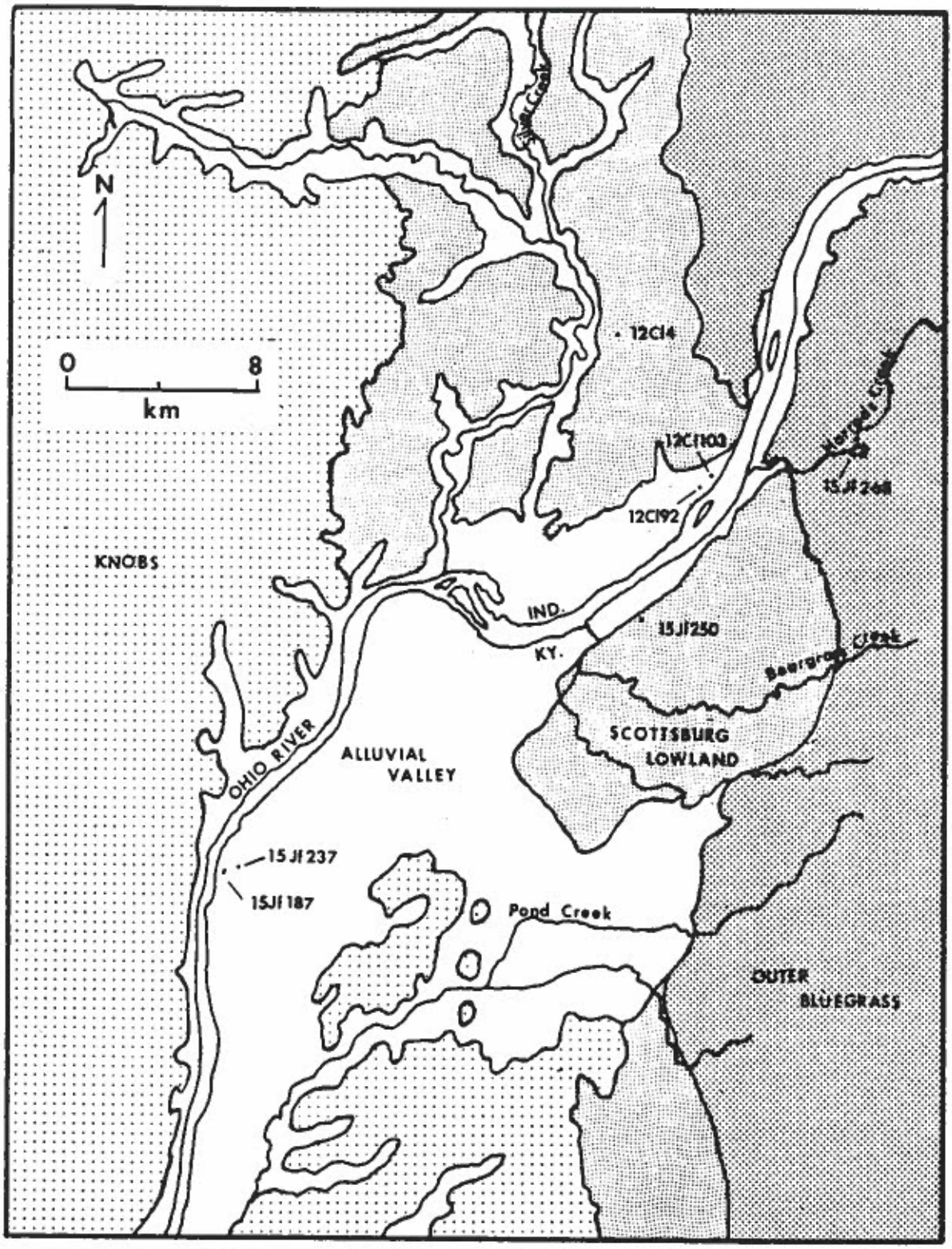


Figure 1. Principal sites in the Falls of the Ohio River Region that have produced limestone tempered plain pottery.

The Falls Incised category (Myers 1989:233, Figure 7.11) included only two limestone tempered plain sherds. Both were reported to have single lines on their exterior surfaces, but upon further examination it has been determined that these lines are of recent origin.

Myers (1989:249-250) assigned 31 sherds (27 body and 4 rim sherds) that had burnt clay particles (which she refers to as "grog") or a combination of burnt clay and limestone to the Grog Tempered Plain group. The thinned necks and rim orientations of the grog tempered sherds are similar to those of Falls Plain specimens. Furthermore, these materials were recovered from the same contexts as the limestone tempered Falls Plain sherds. A grog and grit tempered rim originally assigned to this group by Myers (1989:Figure 7.25C) bears greater resemblance to Early Woodland grit tempered ceramics from Site 12Cl109 and in this paper is not considered part of this ceramic group.

Due to the overall similarities of these three groups to Falls Plain, except for the grog and grit tempered sherd that appears to date to the Early Woodland period, in this paper they have been placed within the larger Falls Plain group. Incorporation of these three ceramic types within Falls Plain broadens the type to include sherds with a ferric slip and minor amounts of grog temper.

Myers (1989:226-233) subdivided the 120 Falls Plain rim sherds (MNV=46) into four groups on based on their rim profile: cambered, everted, inverted, and vertical. She reported that Falls Plain vessels had orifice diameters that ranged from 12-30 cm, a variety of lip shapes, globular or conoidal bodies, and rounded or conoidal bases, though no bases were identified in the ceramic collections she examined.

The Falls Plain rims illustrated by Myers (1989:Figures 7.1, 7.4, 7.7, and 7.9) display considerable consistency. Although Myers suggests that the orientations of the rims range from nearly vertical (Myers 1989:Figure 7.4L) to strongly everted (Myers 1989:Figure 7.4M), in this study they are all classified as everted rims. Comparison of Falls Plain rims with specimens from the Zorn Avenue Village Site (see below) and large rim fragments from the Wright Mound (15Mm6) (Webb 1940) and Robbins Mound (15Be3) (Webb and Elliott 1942) suggests that if larger and more complete vertical and inverted rims were available for study, they would all have been subsumed within the everted rim group. The cambered rims also have an everted orientation.

Three sherds in the CMCAD collection (e.g., Myers 1989:Figure 7.11C) , which were originally classified as shoulders, appear to be basal/lateral fragments of slightly flattened bases. These resemble the limestone tempered plain basal sherds from the Zorn Avenue Village Site (see below). These sherds probably represent the basal form of many Falls Plain vessels.

ZORN AVENUE VILLAGE SITE

The Zorn Avenue Village Site is located in Louisville, Kentucky, about 1.4 km south of the Ohio River on a blufftop that rises 30 m above the floodplain (Figure 1). The ceramics (see Mocas 1988 for a description of the Zorn Punctate ceramics recovered from this site) that were analyzed during the course of this study were collected between 1954-1956 during earthmoving activities related to the construction of a housing subdivision. James Matthews, an amateur archaeologist, collected artifacts from the surface and mapped and excavated 11 pit features. All the pits were located east of Riverwood Road and south of Greenridge Road (Figure 2). Nine

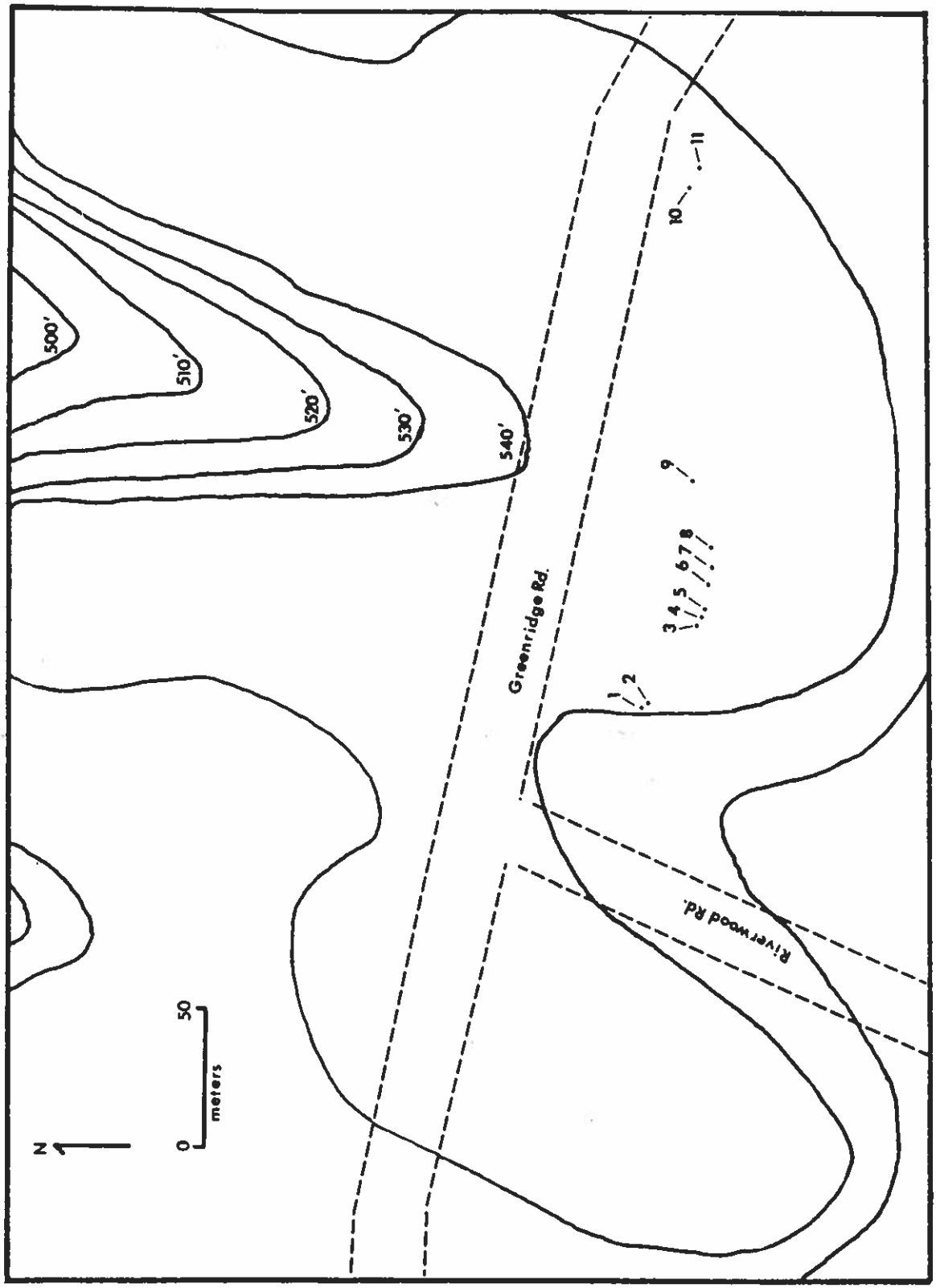


Figure 2. Approximate locations of features at the Zorn Avenue Village Site that contained limestone tempered plain pottery.

features that formed an arc produced limestone tempered plain ceramics. Two additional features (10 and 11), located approximately one hundred meters east of these pits, produced similar ceramics.

The ceramics from Features 7 and 8 and a large basal sherd from Feature 11, along with a small amount of other cultural material from the features, were kept separate (James Matthews, personal communication 1989). The ceramics from two other pits were segregated, but the pit numbers are not known (they will be referred to in this paper as Feature A and Feature B). The pottery from the remaining features was mixed with the sherds collected from the surface in the vicinity of the pits. As a result provenience information was available for only 106 sherds (nine rims, three bases, and 94 body sherds), but was not available for 463 sherds (42 rims, one base, and 420 body sherds). The University of Louisville Department of Archaeology also made available for study some unprovenienced ceramics (a rim, a neck, and 25 body sherds) collected from the Zorn Avenue Site by Jerry Hoehler.

Features 10 and 11 were excavated after 20-30 cm of earth had been scraped from the surface (Matthews 1956). They averaged 39 cm in depth and 77 cm in diameter. These were typical of the other pits on the site that produced limestone tempered plain pottery. Most of the ceramic sample came from features, and only a small percentage was found on the surface near the pits (James Matthews, personal communication 1989).

Ceramics

Methodology

The ceramic sample (52 rims, 5 bases, and 656 body sherds) from the Zorn Avenue Village Site consisted of all limestone tempered plain sherds in the Matthews and Hoehler collections. Only sherds (n=713) larger than 4 cm^2 that had both their interior and exterior surfaces were analyzed. This resulted in 302 sherds not being analyzed because they were too small or an exterior surface had been eroded.

All sherds were examined macroscopically to determine surface treatment and temper. Limestone tempered sherds were differentiated from grit or grog tempered sherds on the basis of irregular holes in the paste left after the limestone particles or occasional fossils in the paste had been leached away. The size and amount of temper were estimated for all rims and large vessel fragments. Temper size on leached limestone sherds was described as small when the holes left by the eroded temper measured less than 1 mm, medium when their measurements ranged from 1-3 mm, and large when they measured more than 3 mm. A small amount of temper indicated that holes left by the leached limestone covered less than 10 percent of the exterior surface, and a moderate amount of temper indicated these holes covered approximately 10-40 percent of the exterior surface.

Orifice and vessel diameter were measured by comparing the exterior circumference at the lip of the rim sherd or at the maximum width of the body to a series of concentric circles of known diameters. Since the thickness of the lip of some rims fluctuates several millimeters, the lip measurements are intended to reflect the mean thickness. The rim thickness was measured 1 cm below the lip. Body sherd thickness was measured along the thinnest edge of the sherd, and basal sherds were measured at the interior edge. All thickness measurements were rounded to the nearest 0.5 mm.

The form of the rim was determined by drawing a straight line from the exterior edge of the lip to the point of minimum diameter of the neck. If the exterior of the rim followed the line, the form was considered straight (see Figure 3e-k); if the exterior did not touch the line, it was classified as concave (see Figure 4a-k); and if the exterior crossed the plane of the line, it was classified as convex or recurved (see Figure 3a-d) (Myers' [1989:227] cambered rim group). The height of the rim was measured from a line parallel to the rim passing through the point of minimum diameter of the neck to the exterior edge of the lip. Globular body shape was characterized by continuous convex curvature, and a subglobular shape was characterized by a predominately convex curvature and small segments without curvature. Groups of sherds from features were considered parts of the same vessel if they showed gradations in color and thickness that suggested they were from contiguous portions of a single vessel. Munsell Soil Color Charts were used to determine sherd colors.

Description

Paste and Temper

All of the sherds have a fine-textured, well-compacted paste. Though there is considerable variation in temper size and quantity, which includes combinations of small and large particles of limestone within the same sherd, generally individual vessels are consistent in these attributes. The holes left by the leached limestone vary in size from less than 1 to 7 mm.

There is slight variation among the vessels with regard to paste inclusions. Small quantities of ferric minerals, sand, and crushed igneous rock particles are occasionally present, but these are not present in sufficient quantity to suggest that they represent temper particles.

Color

Individual vessels tend to be relatively consistent with respect to color, though mottled patches caused by differential oxidation and reduction are present on some specimens. There are distinct variations in color among the vessels, which may be the result of the use of different clays and/or differential exposure to oxygen when the vessels were fired. Some of the clays have numerous manganese particles, which are common in upland soils (James Conkin, personal communication 1988). These produce a predominantly reddish tinge to the clay when fired, the intensity of which varies with the amount of oxidation.

The most common exterior colors are very pale brown (10YR7/3), grayish brown (10YR5/2), and reddish yellow (7.5YR7/6). Hues vary from 5YR to 10YR. Vessel exteriors fired in a reduced atmosphere (dark gray [5YR4/1] to very dark gray [7.5YR3/0]) are common, and sherds with little ferric content that have been strongly heated (very pale brown [10YR8/3] to strong brown [7.5YR8/4]) occur infrequently. Exposure to smoke produces darker, dusky surfaces.

Several attributes indicate that some vessels may have been inverted when fired. Some rims show mottling due to differential exposure to oxygen; the exterior surface and exterior portion of the core of some vessel walls are more completely oxidized than the interiors; and interiors are frequently reduced while corresponding exterior sections are oxidized.

Surface Treatment

All the sherds have smooth surfaces and lack decoration. The compactness of the paste, the evenness of the interior and exterior surfaces, and the occasional marks from a hard-edged rubbing tool indicate that at least some vessels were smoothed and compacted prior to the final smoothing of the moistened surface with the hand or a soft, yielding tool (Shepard 1956:187-191).

Thickness

The 656 body sherds from the site range in thickness from 4-11 mm (only 3 sherds are 10 mm or thicker) with a mean thickness of 7.0 mm. Lip (n=52) thickness ranges from 4.5-12.0 mm (one specimen [Figure 4a] is 2.5 mm thicker than any other rim) with a mean of 6.9 mm. Bases (n=5) range in thickness from 7-13 mm with a mean of 9.1 mm. Though vessel wall thickness varies, the sides of individual vessels are quite consistent with respect to thickness and rarely differ more than several millimeters.

Rims

The lips of most rims are flat with rounded edges, though acute or squared lips are present in the collection. For 96 percent of the specimens, the interior edge of the lip is the rim's highest point. Two rims have flat, horizontal lips and another has a notched lip. Examination of the larger rim sherds indicates that individual vessels can exhibit an great deal of variation in rim and lip form. For instance, though the Feature B Vessel 2 rim (Figure 3e) has a flattened lip and an acute interior edge, the exterior edge varies from slightly rounded to slightly extruded. Also, the thickness of this vessel's lip varies by as much as 2 to 3 mm depending on where the measurement is taken. This suggests that potters often were not concerned with shaping lips consistently. It also indicates that rims from different parts of a vessel may have been assigned to different categories.

All rims from the site with identifiable orientations are everted, except one specimen (Figure 4a), which is vertical. Forty-three percent of the rims have concave forms, 43 percent have straight forms, and 14 percent have convex forms.

The rim groups defined below are designed to emphasize continuity within the Zorn Avenue Village and Hunting Creek ceramic collections and to facilitate comparison of these materials with those from the CMCAD. Also, emphasis in the definition of these groupings has been placed upon morphological traits not observed in earlier ceramics from the Falls Region (Mocas 1988), such as convex and concave rim forms, strongly everted orientation, angular interior juncture of the rim and upper body, thinned necks, and thickened upper rims. The rims were first grouped according to form, then subdivided according to the amount of eversion, and finally subdivided again on the basis of thinning or thickening of the upper rim.

Group 1 rims (n=6) (Figure 3a-d) have convex forms, and the observable junctures of the rim and upper body are angular.

Group 2 rims (n=9) (Figure 3e-k) have straight forms and thin toward the point of maximum constriction of the neck.

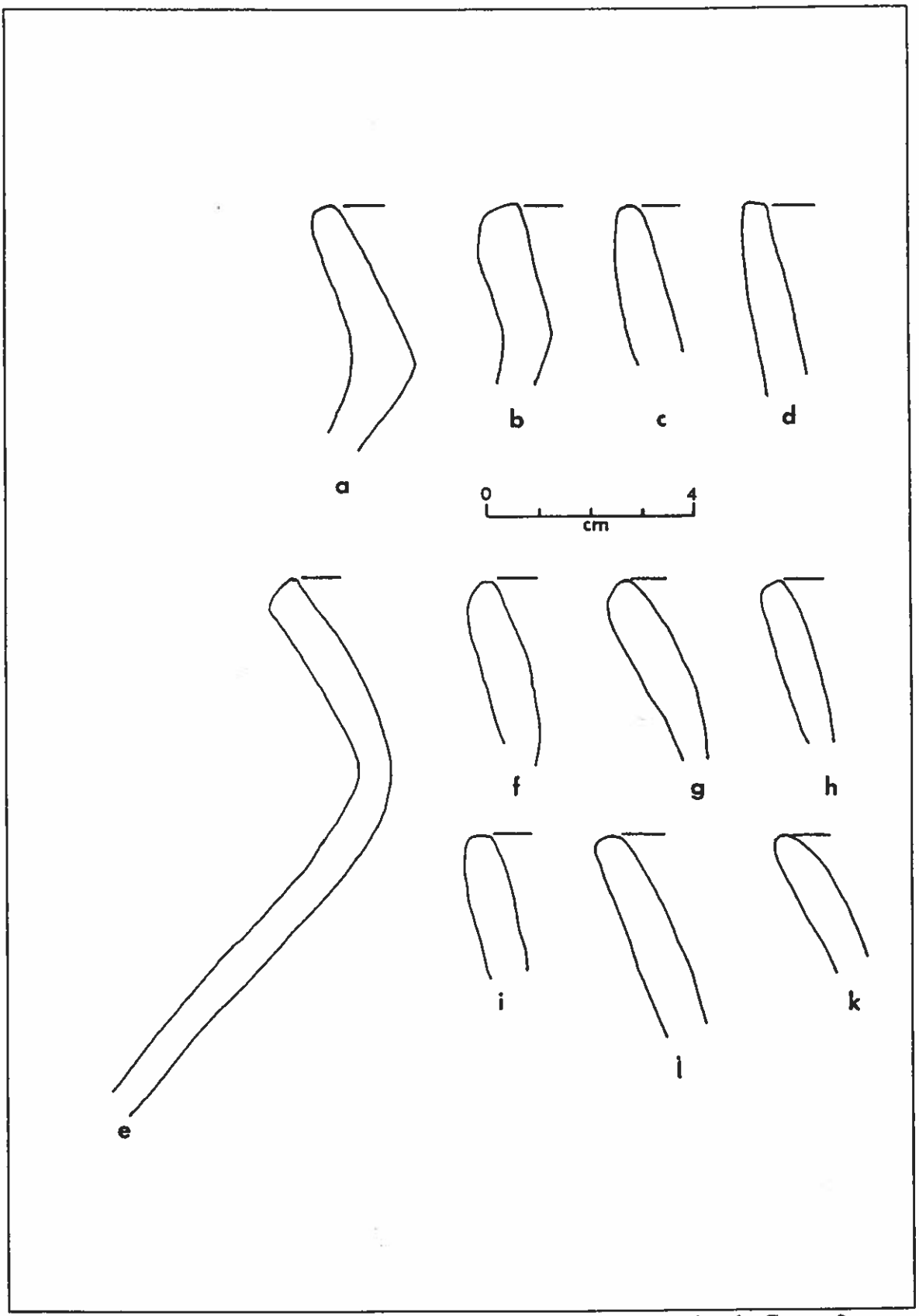


Figure 3. Zorn Avenue Village Site rim profiles: a-d, Group 1; e-k, Group 2.

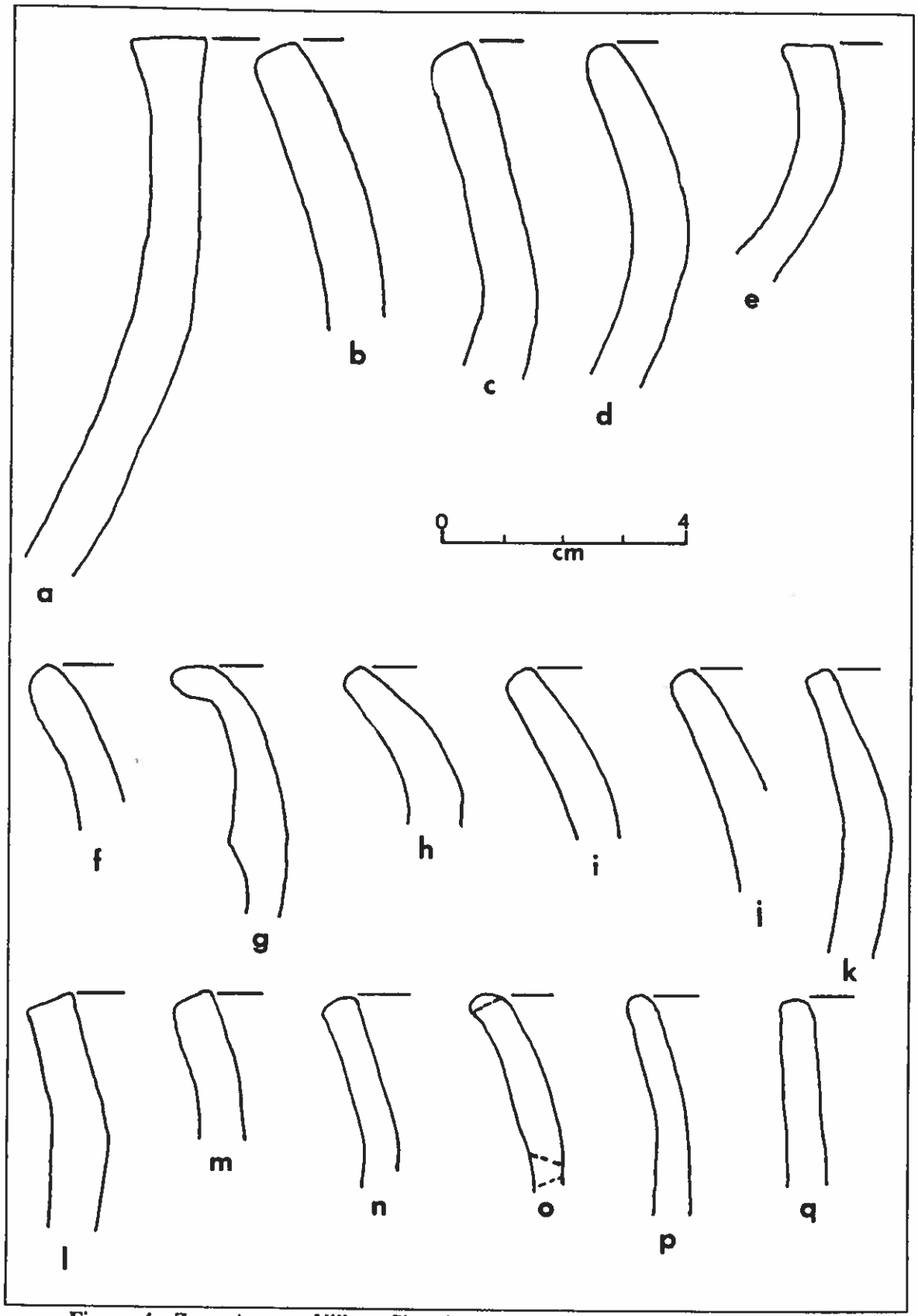


Figure 4. Zorn Avenue Village Site rim profiles: a-k, Group 3; l-q, Group 4.

Group 3 rims (n=15) (Figure 4a-k) have concave forms and are strongly everted. Some (Figure 4a-c,e) are relatively thick (8 mm) and have flat lips, while others (Figure 4d, f-k) taper toward a rounded or slightly rounded lip.

Group 4 rims (n=15) (Figure 4l-q) have less concave forms and less everted orientations than Group 3, and the upper rim is untapered and has a squared lip.

Group 5 rims (n=7) (Figure 5a-e) are characterized by slightly thickened upper rims produced by thinning the neck and pulling the clay upward while forming the everted rim. These rims were not formed by adding clay to the lip or folding the rim.

Vessel Form

The alignment and layering of the temper particles and clay in some basal sherds indicate that the construction of these vessels began with the formation of a circular disk of clay. The sides of this disk were molded upward to produce a rounded basal-lateral juncture and a partially flattened base (Figure 6). Vessel sides were formed by the addition of successive coils. Numerous examples of breakage along coil lines are present in the collection. The most common coil width is 2.5 cm.

Lower body fragments indicate a globular or subglobular form, and most upper body fragments are characterized by pronounced constriction at the neck, which is frequently the thinnest portion of the vessel. Rim orientations vary from strongly everted to nearly vertical, and rims range in height from 16 to 48 mm. The curvature of four body fragments indicates their diameters are in excess of 30 cm, while rim orifice diameters (n=35) range from 16-30 cm with a mean of 26.3 cm.

Though no whole vessels were recovered, the form of some vessels can be extrapolated from rim and body fragments. One vessel (Figure 3e) has a globular body in excess of 30 cm in diameter and a tall, straight, strongly everted rim with an orifice diameter of 24 cm. Another vessel (Figure 5d) is moderately constricted at the neck and relatively wide at the orifice (30 cm), and its tall, straight rim is slightly everted. Feature 8 Vessel 2 (Figure 4d) is a thick, globular vessel with a partially flattened base and a tall, strongly everted rim with a concave form and an orifice diameter of 24 cm. Feature 7 contained a thick, globular vessel with a short, slightly everted rim with a concave form (Figure 4e) and an orifice diameter of 22 cm. Another rim sherd (Figure 4a) is from a thick vessel that had a slight constriction at the neck, a tall, slightly everted rim with a concave form, and an orifice diameter of 30 cm.

HUNTING CREEK SITE

The Hunting Creek Site (15Jf268) is located 4.5 km east of the Ohio River on a blufftop that rises 34 m above Harrods Creek and 11.5 km northeast of the Zorn Avenue Village Site (Figure 1). Approximately 15-20 features were exposed by shallow scraping of the site before construction of several houses was begun (Joseph Granger, personal communication 1986). From 1973-1975, students from the University of Louisville conducted a general surface collection and excavated five of the exposed features. Two test pits (Test Pit A, a 2.5 x 2.0 m unit with a 1 x 1 m extension and Test Pit B, a 1.5 x 3 m unit) were placed near the bluff edge. A sixth feature, documented at the base of Test Pit A, also was excavated. It was a circular pit that extended into

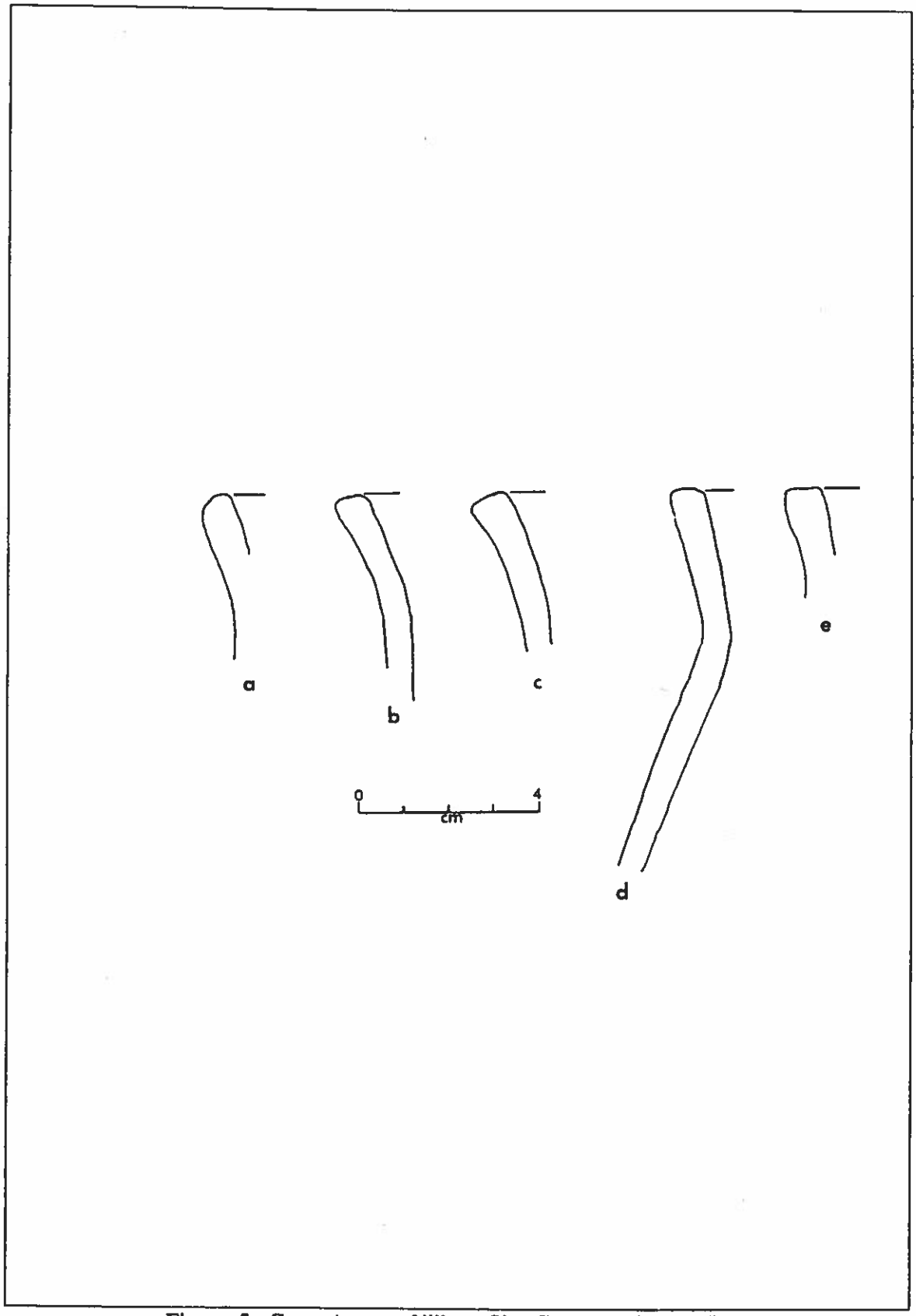


Figure 5. Zorn Avenue Village Site Group 4 rim profiles.

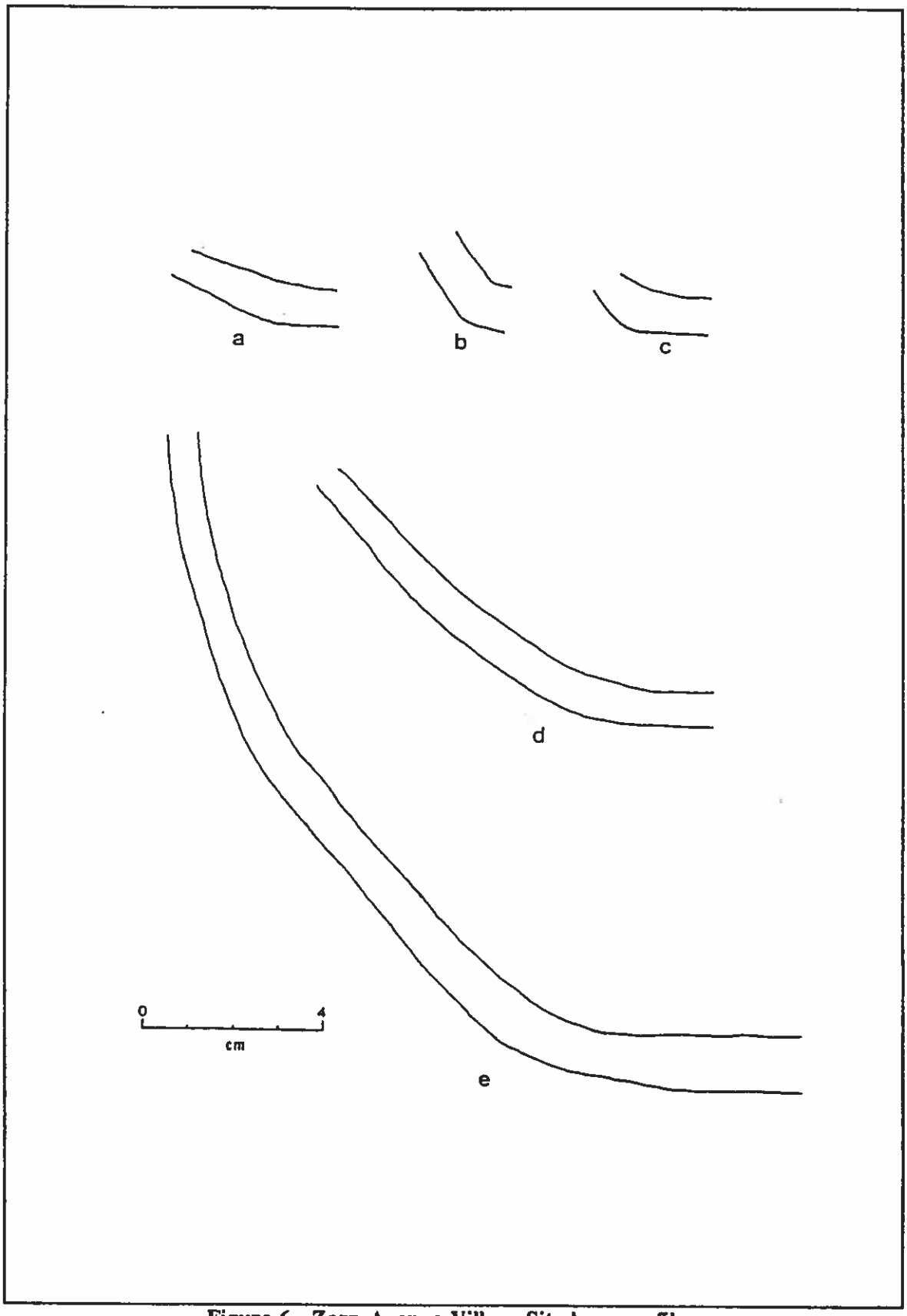


Figure 6. Zorn Avenue Village Site base profiles.

the subsoil. Although a site report was never written, several student papers were prepared, and Philip DiBlasi and Joseph Granger provided the author with additional information on the archaeological investigation of this site.

Ceramics

The ceramic sample from the Hunting Creek Site consisted of all the limestone tempered plain ceramics (14 rims and 107 body sherds) in the University of Louisville Department of Archaeology collections. These materials resemble the ceramics from the Zorn Avenue Village Site with respect to temper, color, surface treatment, and thickness. Of the 14 rims in the University of Louisville collections, 11 could be assigned to a particular rim group. Only one specimen (Figure 7a) was assigned to Group 1. It has the convex form and angular interior juncture that characterize rims assigned to this group. Three rim sherds (Figure 7b-d) are similar to thick Group 3 rims, and one rim (Figure 7h) resembles the tapered rims assigned to this group. Thinner, slightly everted rims (Figure 7e,f,i-k) and a neck sherd (Figure 7g) are comparable to Group 4 rims, though their small size prevents an accurate orientation.

DISCUSSION

Comparison of the limestone tempered plain ceramics recovered from CMCAD, the Zorn Avenue Village Site, and the Hunting Creek Site indicates that these collections are extremely similar. The rim forms and the angular interior junctures of the rim and body of some Group 1 (Figures 3a,b and 9a) and Group 2 (Figure 3e-k) specimens from Zorn Avenue Village and Hunting Creek resemble the cambered rims from Site 12Cl103 (Myers 1989:Figure 7.1A,C,D). The convex (cambered) forms of other Group 1 rims (Figure 3c,d) at the Zorn Avenue Village Site are similar to the illustrated cambered rims from Site 12Cl92 (Myers 1989:Figure 7.1E-G) and Site 12Cl106 (Myers 1989:Figure 7.1B). The strongly everted orientation of Group 3 rims from the Zorn Avenue Village and Hunting Creek sites are shared by the majority of everted rims from CMCAD and examples of both tapered (Myers 1989:Figure 7.4F,N) and untapered (Myers 1989:Figure 7.4B,C) upper rims are present in this group. Group 5 rims from the Zorn Avenue Village Site do not have close correlates among the rims from CMCAD. However, the technique of compressing the clay upward at the neck of the vessel to form a tall, moderately everted rim is present on some Group 5 rims from the Zorn Avenue Village Site and on cambered rims from sites 112Cl92 (Myers 1989: Figure 7.1E-G) and 12Cl106 (Myers 1989:Figure 7.1B).

In addition to having comparable rim forms and orientations, the limestone tempered plain ceramics from Zorn Avenue Village and Hunting Creek are similar to Falls Plain ceramics from CMCAD in thickness, temper size and quantity, color, surface treatment, vessel form, and basal form (Myers 1989:226-233). Based on this comparison, the limestone tempered plain ceramics from Zorn Avenue Village and Hunting Creek are classified as Falls Plain.

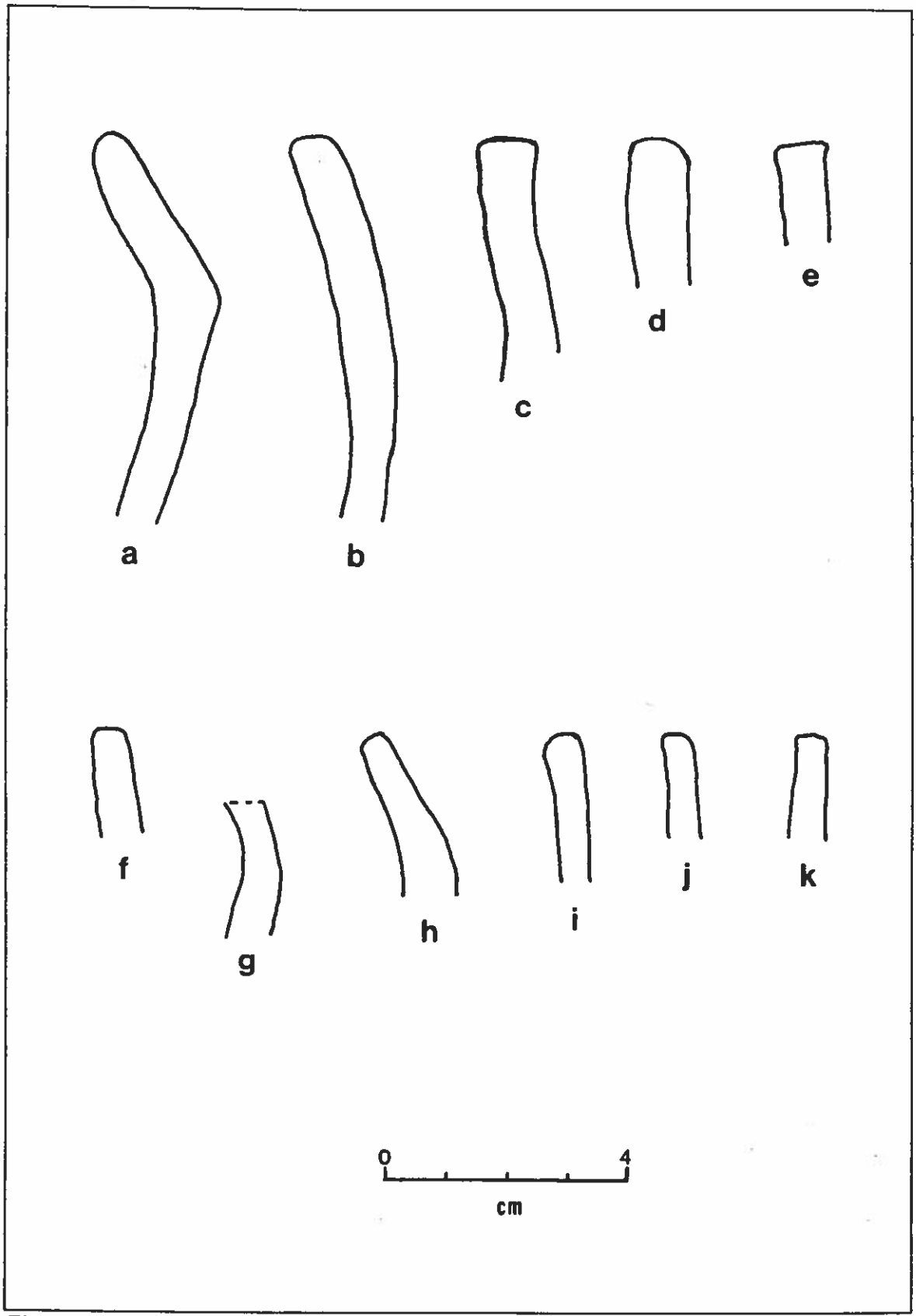


Figure 7. Hunting Creek Site rim profiles: a, Group 1; b-d,h, Group 3; e-g,i-k, Group 4.

TEMPORAL PLACEMENT

In this section, the radiocarbon determinations associated with Falls Plain pottery at Site 15Cl103 and the Hunting Creek Site, as well as the radiocarbon dates from the Falls Plain zone at Site 15Cl92 are assessed. No radiocarbon dates have been obtained from the Zorn Avenue Village Site. One factor that needs to be taken into consideration when evaluating the radiocarbon dates from sites 15Cl92 and 15Cl103 is that the DiCarb Laboratory, where these dates were processed, was provided a weak sample of National Bureau of Standards-distributed oxalic acid. This resulted in an inaccurate basis for calculating the radiocarbon ages for the samples from the CMCAD. Once the problem was recognized, the laboratory applied a correction factor to the calculations, but the radiocarbon samples had been destroyed and the tests could not be rerun [Mark Seeman, personal communication 1991). The associations between diagnostic projectile points and Falls Plain pottery from all four sites also are examined.

Radiocarbon dates were obtained from eight features at Site 12Cl103 that contained Falls Plain ceramics. These dates range from A.D. 30 to A.D. 780. The forms of Features 35, 55, and 88 suggest that they represent filled-in natural depressions or cultural features that intruded earlier features. Others appear to have been disturbed by subsequent human and animal activities (Feature 122).

The irregular shape of Feature 55, which yielded a date of A.D. 30±55 (DIC-2535), and its internal stratigraphy (Sieber 1989:Figure 8.2) suggest that it may represent either a pit that intruded into a portion of an earlier cultural feature or a natural depression that contained cultural debris. Feature 88, which produced a date of A.D. 110±55 (DIC-2617) (Myers and Ottesen 1989:401), also had an irregular shape (Sieber 1989:Figure 8.3), and as with Feature 55, it appears to have been a natural depression or an aboriginal pit that intruded into an earlier cultural feature. Also, the contents of this feature had been disturbed by a rodent burrow (Sieber 1989:Figure 8.3). Feature 35, which has an associated date of A.D. 630±70 (DIC-2577) (Sieber 1989:283), was a shallow concentration of sherds and fire-cracked rock with an irregular surface and an undulating bottom (Sieber 1989:283; Figure 8.1). Sieber (1989:283) described the feature as a midden remnant or depression filled with refuse.

Along with Falls Plain ceramics, Saratoga Cluster projectile points (Justice 1987), which originally were classified as Bakers Creek points (Noel Justice, personal communication 1989), were recovered from Features 35, 55, and 88 (Sieber 1989:283,287,289). Because these features may contain cultural materials from more than one component, it is not known whether the ceramics and projectile points are coeval or if the dates obtained from these features are reliable. Noel Justice (personal communication 1989) has suggested that Saratoga projectile cluster were no longer being made after about 100 B.C. If this projectile point cluster continued to be manufactured and used for an extended period of time in the Falls Region, the dates for Features 55 and 88 (A.D. 30 and A.D. 110, respectively) may be acceptable, but the same cannot be said for the date from Feature 35. Saratoga Cluster projectile points were not found at the Zorn Avenue or Hunting Creek sites.

A radiocarbon sample from Feature 122 at Site 12Cl103, described by the laboratory (DiCarb communication to Resource Analysts, Inc. 1982) as "very small," yielded a date of A.D. 700±190 (DIC-2578). A second charcoal sample from this feature yielded a date of A.D. 780±75 (no laboratory number is available for this date) (Myers and Ottesen 1989:401-402). Myers and Ottesen (1989:402) suspected that the dated carbon from Feature 122 was contaminated by the

leaching of carbon from Feature 63, a pit that intruded into the former. A projectile point fragment identified as a possible Lowe variant (Noel Justice, personal communication 1989) was associated with the Falls Plain pottery from feature 63 or 122. Fourteen Lowe Cluster variants (Justice 1987:208-214) also were recovered from the Zorn Avenue Village Site. The Lowe variant projectile point from Site 15Cl103 cannot be attributed confidently to either pit, because it was found in the area where Feature 63 intruded into Feature 122, but both pits contained Falls Plain pottery. Because the contents of features 63 and 122 were mixed, Myers and Ottesen (1989:402) did not accept the dates (A.D. 700 and A.D. 780) from Feature 122. However, the association of the Lowe Cluster projectile point with Falls Plain ceramics may be valid. Justice (1987:208) states that Lowe Cluster points are diagnostic of the terminal Middle Woodland to early Late Woodland periods (ca. A.D. 100-500). Also, a small amount of Falls Plain ceramics and a Lowe variant were recovered from the early Late Woodland SARA Site (15Jf187) (see below).

Radiocarbon dates were obtained from two cultural features at Site 12Cl103 that do not appear to have intruded earlier deposits or to have been impacted by later cultural activities or rodents. Feature 200, which yielded a date of A.D. 400±60 (DIC-2618) (Sieber 1989:294,295), was a circular pit with relatively straight sides and a slightly rounded bottom. It appears to be undisturbed, though it was surrounded by a shallow midden scatter (Feature 224). Feature 204, which appears to be an undisturbed circular refuse pit that had sloping sides and an irregular base, produced a date of A.D. 380±50 (DIC-2615) (Sieber 1989:298).

In addition to Falls Plain ceramics Feature 204 at Site 12Cl103 produced a Snyders Corner Notched projectile point (Sieber and Ottesen 1989:154; Figure 6.3.21A), and a Snyders Cluster (Justice 1987:201-204) projectile point were recovered from three features (34, 38, and 200) (Sieber 1989:282,283,285,296), which are undisturbed Woodland pits. Falls Plain and Snyders Cluster projectile points also were recovered from five features that appear to have been disturbed to some degree or which may not be cultural features. Three of these features (17, 35, and 142) (Sieber 1989:282,283,293) may be midden remnants or natural depressions, another (Feature 182) may not be a cultural feature (Sieber 1989:293-294), and the fifth (Feature 88) (Sieber 1989:289) appears to have been disturbed by later cultural activities or rodents.

Most of the projectile points in the Zorn Avenue Village Site collection are expanded stem and corner notched projectile points (n=42) that resemble Snyders Cluster variants (Figure 8) (all the projectile points from the Zorn Avenue Site were classified as surface finds, and it is not known if any were recovered from features). Snyders Cluster projectile points also were found in association with Falls Plain ceramics in Feature 4 (Figure 9c) at the Hunting Creek Site. A Snyders Cluster projectile point fragment was recovered from the lower levels of Test Pit A at Hunting Creek (Figure 9e), and fragments of four other Snyders variants and a Snyders preform (Figure 9a,b,d,f,g,) were found on the surface of this site. Several unfinished projectile points (Figure 9h,j) recovered from the surface and from Feature 3 at the Hunting Creek Site could be Snyders variants, but their unfinished condition prevents assignment of a type name. A date of 350±350 B.C. (UGa-1259) was obtained from a very small charcoal sample from Feature 3, but the determination is nearly 400 years earlier than the earliest date from the CMCAD. The small size of the sample and resultant large standard deviation greatly limit the utility of this date.

The radiocarbon dates from Site 12Cl92 were not associated with ceramics. Feature 198 yielded a date of A.D. 230±85 (DIC-2576), but the only diagnostic artifact recovered from this pit was a Turkeytail projectile point. Because this point type is diagnostic of the Late Archaic/Early Woodland transitional period (Justice 1987:178), Myers and Ottesen (1989:419-420) considered it too early for the radiocarbon date and they treated it as intrusive. A date of A.D.

220±60 (DIC-2612) (Sieber 1989:299) was derived from a sample obtained from a narrow, cylindrical hole that originated at the base of Feature 234, which was a shallow, basin-shaped feature (Myers and Ottesen 1989:419). There were no diagnostic artifacts associated with the sample. Since both dates are almost identical and both were obtained from an unstratified zone that produced over 700 Falls Plain sherds (Myers and Ottesen 1989:409), it is possible that they represent reliable dates for this zone.

Based upon the preceding examination of radiocarbon dates and projectile point types associated with these dates and with Falls Plain ceramics, there remains considerable uncertainty about the chronological span of Falls Plain ceramics. The only features that produced this pottery that are considered to be undisturbed aboriginal features are Features 200 and 204 at Site 12Cl103. The radiocarbon determinations from these features suggest that Falls Plain pottery was in use ca. A.D. 400.

Snyders Corner Notched and other Snyders Cluster projectile points appear to be contemporary with Falls Plain ceramics from CMCAD, Zorn Avenue, and Hunting Creek. According to Justice (1987:201-204), these projectile points begin to occur around 200 B.C., are diagnostic of the early Middle Woodland period, and are replaced by Lowe Cluster projectile points before the end of the Middle Woodland period, probably around A.D. 200 in southwestern Indiana and Illinois. The date of A.D. 110 from Feature 88 at Site 12Cl103 is within the accepted range for the Snyders projectile point type, but the possibility of the mixture of materials from earlier components within this feature necessitates caution in accepting this date. The dates for Features 200 and 204 at Site 12Cl103 (A.D. 400 and A.D. 380, respectively) appear to be 200 years too late for Snyders Cluster projectile points, but the depositional contexts appear reliable and the type may have lasted longer in the Falls Region than to the east where they are best known. The cooccurrence of Falls Plain pottery and Snyders Cluster projectile points in features at Site 15Cl103 and the Hunting Creek Site, along with the large number of Snyders Cluster points from the Zorn Avenue Site and the radiocarbon dates from Site 12Cl92, suggests that these ceramics probably can be assigned a Middle Woodland cultural affiliation.

Saratoga points were found in questionable associations with Falls Plain at Site 12Cl103, but none were found at the Zorn Avenue Village Site. The absence of Saratoga points at the latter site suggests either they were incorrectly considered contemporaneous with Site 12Cl103 ceramics (Myers and Ottesen 1989:409), or the occupation of the Zorn Avenue Village Site by groups who made limestone tempered plain pottery began later than at Site 12Cl103.

COMPARISON WITH ZORN PUNCTATE

The Zorn Avenue Village Site is the type site for Zorn Punctate, which dates to the early portion of the Middle Woodland period (Mocas 1988). Zorn Punctate ceramics were not found in any of the pits that contained Falls Plain pottery at this site, which suggests that these ceramic types are not coeval (Mocas 1988). Absolute and relative dating of Zorn Punctate ceramics (Mocas 1988:141) also indicates that they precede Falls Plain ceramics.

To examine the relationship of Falls Plain to Zorn Punctate at the Zorn Avenue Village Site, these two ceramic types were compared. Group 3 Falls Plain rims are similar to Zorn Punctate rims (Mocas 1988:Figure 6a-w). Both exhibit thick, square lips (Figure 4b), tapered upper rims (Figure 4d,f-k), and tall, slightly everted rims (Figure 4j,k). One Group 3 Falls Plain

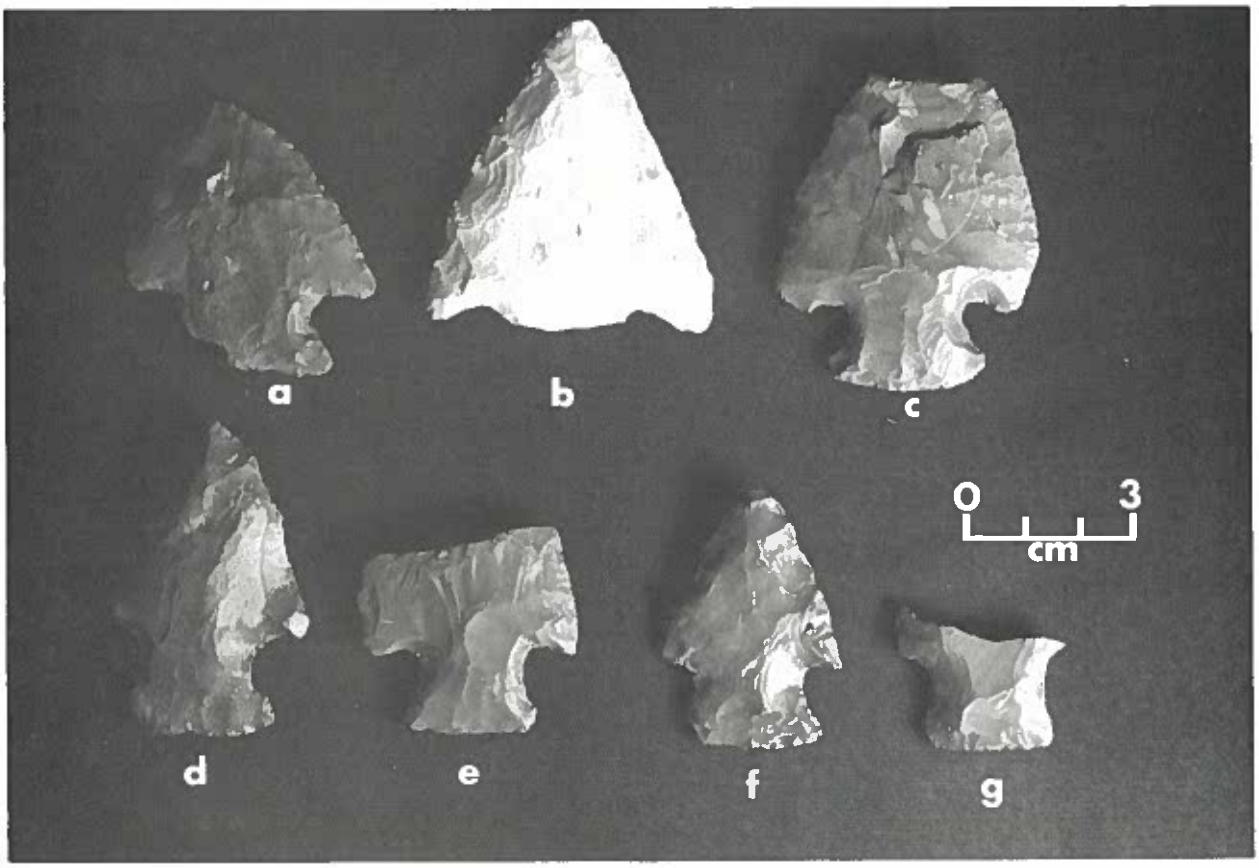


Figure 8. Zorn Avenue Village Site projectile points: a-e,g, Snyders variants; f, Snyders or Bakers Creek.

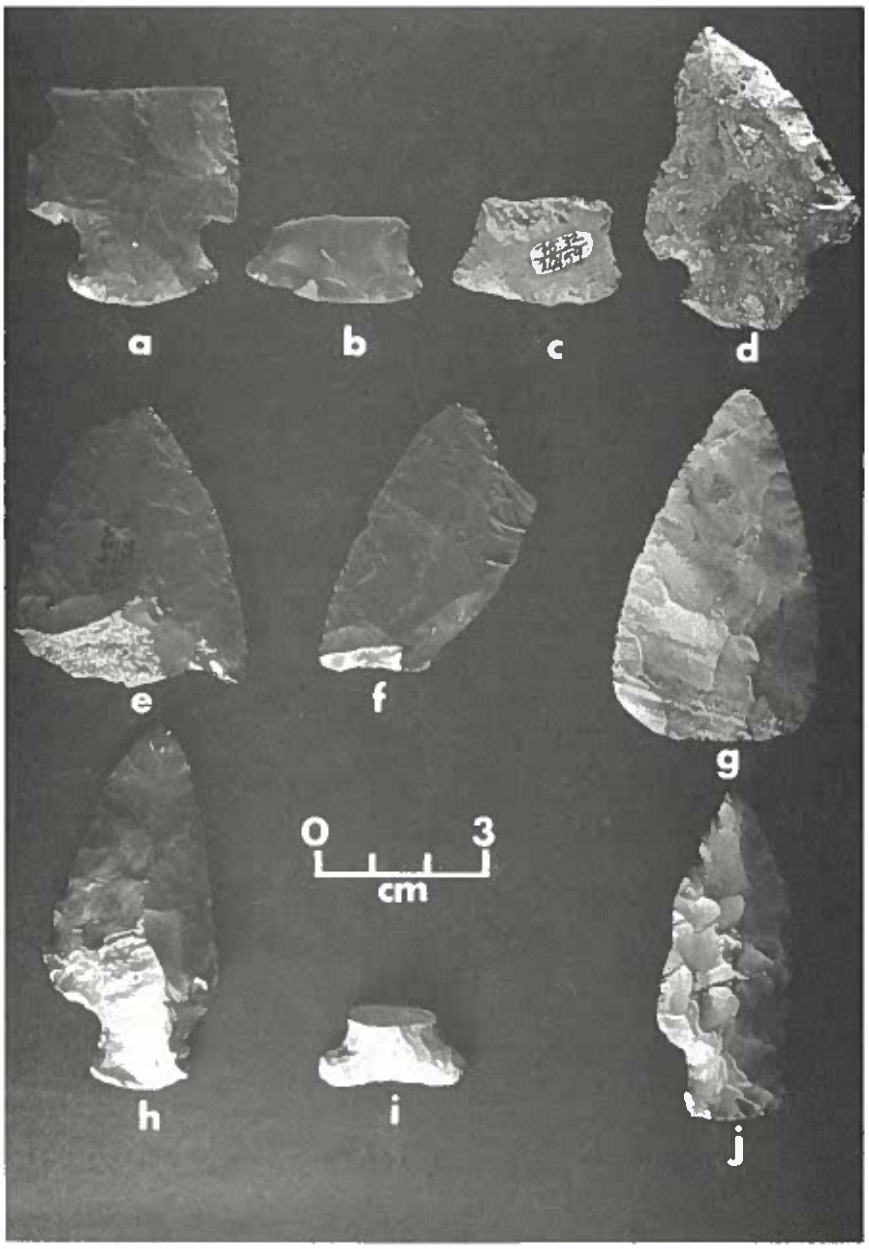


Figure 9. Hunting Creek Site projectile points: a-f, Snyders variants; g, Snyders preform; h,i, unidentified.

rim has a flattened and extruded lip (Figure 4a), a characteristic not found on other Group 3 rims from this site. However, this specimen is similar to a Zorn Punctate rim (Mocas 1988:Figure 6x), which also differs from other Zorn Punctate rims from this site.

Group 4 Falls Plain rims that are thin and slightly everted also are similar to cordmarked and punctated Zorn Punctate rims (Mocas 1988:Figure 6a'-c'). This rim form appears to extend into the early Late Woodland period, since it has been identified at the SARA Site (see below).

In general, the slightly everted rims of Falls Plain ceramics may represent minor alterations in the slightly inverted to vertical rim forms of Zorn Punctate ceramics (Mocas 1988:Figure 6; 130-132). Falls Plain vessels display rim shapes not exhibited by early grit tempered ceramics. Characteristics such as recurved rims, strongly everted rims that are both short and tall, and sharp interior angles at the juncture of the rim and upper body first appear on Falls Plain ceramics.

While Group 3 and 4 Falls Plain rims reflect continuity from Zorn Punctate ceramics, the angular juncture of the rim and upper body of Group 1 Falls Plain rims, the thin necks and strongly everted orientations of Group 2 rims, and the thinned necks and thickened upper rims of Group 5 do not have antecedent Zorn Punctate rim forms (Mocas 1988). Also, the bodies of Falls Plain vessels from the Zorn Avenue Village Site are more globular than Zorn Punctate vessels, and the bases (Figure 6) show a corresponding partial rounding of the basal-lateral juncture and less flattening of the bottom (see Mocas 1988:Figure 5).

Falls Plain vessels are more globular than local grit tempered vessels due to the increased curvature of the lower body and pronounced constriction at the neck of the vessels. It is possible that the globular and subglobular vessel forms of Falls Plain ceramics developed from local grit tempered subglobular vessels (Mocas 1988:127-130; Figure 8). The bases of Falls Plain vessels show a corresponding change to compensate for the increased curvature of the lower body.

The completely plain exterior surface of Falls Plain pottery appears to have developed from the smoothed and decorated Zorn Punctate ceramics, possibly as a result of influence from nonlocal sources. The rim and upper body are smoothed on a large percentage (45 percent) of the Zorn Punctate vessels, and 39 percent of the decorated body sherds have smoothed surfaces. The morphological characteristics and the surface treatment of Falls Plain ceramics indicate that this pottery probably developed from Zorn Punctate pottery.

COMPARISON WITH LATE MIDDLE WOODLAND/ EARLY LATE WOODLAND CERAMICS

Limestone tempered plain pottery may have been produced until the late Middle Woodland or early Late Woodland periods in the Falls Region. Feature 1 at the SARA Site contained a large rim and body fragments of a limestone tempered plain vessel whose morphological attributes are within the range of variation exhibited by Falls Plain vessels. The blade of a heat-fractured projectile point, which resembles a Lowe Flared Base variant, also was recovered from this feature. Feature 1 appears to be contemporary with features that contained limestone tempered and siltstone tempered cordmarked ceramics and Lowe Cluster projectile points at this site. This suggests that Falls Plain vessels continued to be made for some period

of time after cordmarking again became the predominant surface treatment for ceramics in the Falls Region.

REGIONAL COMPARISON

Adena Plain ceramics from the Bluegrass region of Kentucky bear the closest resemblance to Falls Plain pottery. Ceramics from the Wright Mound and the submound portion of the Robbins Mound exhibit rim and vessel form characteristics that are similar to those of Falls Plain pottery. These include recurved and thin everted rims, globular and subglobular vessels, and slightly flattened bases.

Some of cambered rims, especially those from sites 12Cl92 and 12Cl106 (Myers 1989:Figure 7.1B,E-G), are similar to Adena Plain folded rims from Peter Village (15Fa166) (Tune 1985:Figure 2f), the Wright Mound, and the Robbins Mound. The upper portions of several vessels from the Robbins Mound (Webb and Elloitt 1942) have straight, vertical sides with little or no constriction, thinned necks, and strongly flared rims like those from the Falls Region.

The absolute dates of Adena Plain ceramics in Kentucky indicate that some of these materials may be contemporaneous with Falls Plain ceramics, while other Adena ceramics may predate Falls Plain. A radiocarbon date of 150±140 B.C. (M-2242) has been obtained from the Robbins Mound, and dates of A.D. 210±140 (M-2238) and A.D. 50±150 (O'Malley 1988:48) have been obtained from the Wright Mound. The dates of A.D. 50 and A.D. 210 from the Wright Mound argue for some degree of contemporaneity between these materials. However, the radiocarbon date of 150 B.C. from Robbins and the association of Adena Plain pottery with Robbins projectile points at this site, suggests some Adena Plain ceramics predate Falls Plain, which is primarily associated with Snyders variants.

Like earlier Zorn Punctate ceramics (Mocas 1988), Falls Plain pottery bears little resemblance to Crab Orchard ceramics. Unlike the earlier punctate ceramics that exhibit affinities to pre-Havana and Havana ceramics of Illinois, Falls Plain ceramics have no close correlates in western Kentucky or Illinois.

SUMMARY

The combination of limestone temper and smoothed surface treatment on ceramics from the Falls of the Ohio River Region appears to be significant on a local level. The lack of other pottery types in association with Falls Plain and the frequent cooccurrence of Snyders Cluster projectile points with these ceramics indicate Falls Plain pottery may be a useful cultural and temporal marker. Enough distinctive morphological traits have been identified to distinguish this pottery from antecedent and subsequent local ceramic samples and to link it with possibly coeval ceramic types such as Adena Plain.

Based on a reevaluation of the CMCAD ceramic data and analyses of the limestone tempered plain ceramics from the Zorn Avenue Village and Hunting Creek sites, the following overview of Falls Plain can be offered. Falls Plain ceramics exhibit a plain exterior surface, lack decoration, and have a fine-textured, well-compacted paste that is tempered with limestone

particles. Holes left by leached limestone are usually less than 4 mm in size. Occasionally, other particles (sand, manganese, igneous rock, or clay) are present in the paste in small quantities. Body sherds range in thickness from 4-11 mm, and the average thickness of vessel walls varies by as much as 2.5 mm from the top to the bottom of a vessel. Both floodplain and upland clay sources were utilized and when fired, they produced vessels ranging in color from very pale brown (10YR7/3) to dark brown (7.5YR4/4) to reddish yellow (7.5YR7/6). Occasionally, the interior was painted with a red pigment prior to firing.

Vessels are globular, subglobular, or conoidal in shape, occasionally reaching a maximum diameter in excess of 34 cm. Most vessels display pronounced constriction at the neck, which is frequently the thinnest portion of the vessel, and some have an angular interior juncture of the rim and upper body. Rims vary from strongly everted to nearly direct. Rim forms are straight, concave, or convex, and the upper portion of some rims is thickened. Rim heights range from 16 mm to greater than 60 mm. Both lips and rims may show minor fluctuations in shape and thickness, but they are generally consistent in these attributes. Bases have partially rounded basal-lateral junctures and are slightly flattened.

Comparative dates of the ceramics and associated lithic artifacts indicate Falls Plain pottery was manufactured during the Middle Woodland period. As such Falls Plain occupies a temporal and stylistic position between the local grit tempered cordmarked and/or punctated pottery, typified by Zorn Punctate ceramics, and the Late Woodland limestone or siltstone tempered cordmarked pottery. Based on these comparisons and radiocarbon dates Falls Plain ceramics appear to date between ca. A.D. 0 to 400. The temporal parameters of the projectile points (Snyders Cluster) found in direct association with Falls Plain ceramics and those of similar regional ceramics, such as Adena Plain, suggest Falls Plain may have achieved its greatest popularity during the early portion of this temporal unit. On the other hand the radiocarbon dates from reliable contexts in the CMCAD suggest that Falls Plain continued to dominate local ceramic assemblages well into the fifth century.

The results of this study add to the growing body of data on Woodland ceramics in the Falls of the Ohio Region. Undoubtedly future investigations of Woodland sites in this region will refine some of the ceramic trends discussed in this paper and provide new information on the prehistory of the Falls Region and the Ohio Valley in general.

ACKNOWLEDGEMENTS

This research was funded in part by a grant from the Commonwealth of Kentucky through the Kentucky Heritage Council under the provisions of KRS 171.381. The author expresses his gratitude to those who contributed their time and expertise to facilitate this study. James Matthews is commended for his cooperation in making his private collection available and for his conscientious data collection and cataloguing. Noel Justice of the Glenn A. Black Laboratory of Archaeology; Ellen Sieber of the Indiana University Department of Anthropology; Philip DiBlasi of the University of Louisville, Department of Archaeology; A. Gwynn Henderson, Terry Tune, Richard Jefferies, Nancy O'Malley, and Bill Sharp of the University of Kentucky's Program of Cultural Resource Assessment; R. Berle Clay of the University of Kentucky, Office of State Archaeology; and David Pollack of the Kentucky Heritage Council contributed significantly to the project both by making facilities and collections available to the author and by providing insights about the collections. Mark Seeman of Kent State University, Department of Anthropology

provided valuable information and insight about the CMCAD materials, and Glenn Bonner provided considerable assistance in attempting to delimit the eastern extent of the Hunting Creek Site.

THE ROGERS SITE COMPLEX IN BOONE COUNTY, KENTUCKY

by
Jeannine Kreinbrink
Behringer-Crawford Museum
Covington, Kentucky

ABSTRACT

The Rogers Site Complex consists of a mound (15Be33) and two village middens (15Be34 and 15Be35). These three sites were investigated between 1951 and 1961 by Ellis Crawford and volunteers. Newtown phase materials dominate the material culture assemblage from all three sites, and the intrasite patterning of materials and features is similar to that of other Newtown habitation sites in Ohio, southeastern Indiana, and Kentucky. Nonlocal materials traditionally assigned by archaeologists to the Middle Woodland period and thought by many researchers to predate Newtown, also have been recovered from several Newtown phase sites in Kentucky, including the Rogers Site Complex. The recovery of "Middle Woodland" materials in direct association with Newtown materials in features and mound fill indicates some level of participation in long-distance exchange networks by some of the site's Newtown phase occupants.

INTRODUCTION

The Rogers Site Complex consists of two village middens and a mound situated in close proximity to each other on a glacial terrace 15.24 m above the floodplain of the Ohio River in Boone County, Kentucky (Figure 1). These sites was investigated between 1951 and 1961 by Ellis Crawford, the first curator of the William Behringer Museum (now Behringer-Crawford Museum), and by volunteers from the Northern Kentucky Archaeological Society. Crawford named the village sites the Upper Village (15Be34) and the Lower Village (15Be35) to distinguish between the two (Crawford n.d.). A low burial mound (15Be33), constructed of earth and stone, was associated with the lower village (Figure 1).

The two village sites are large oval sheet middens spatially separated by 50 to 70 m of sterile soil. The Upper Village was reported to be a "four leaf clover"-shaped midden by Crawford (n.d.) (Figure 1). (On a visit to the site in early 1988 by the author, only a generally oval-shaped midden was observed, although portions of the site were in pasture at the time.)

Since Crawford's investigations, residential development has taken place in both village areas; a street has been built along the western edge of each site, and houses have been constructed on portions of both sites. The northern section of the Upper Village is farmed, while the southern portion of this site is in pasture and scrub vegetation. The Lower Village is primarily in pasture and lawn, with a small orchard also present in the southern portion of this site. No trace of the mound exists today, since it was completely excavated in 1952-53.

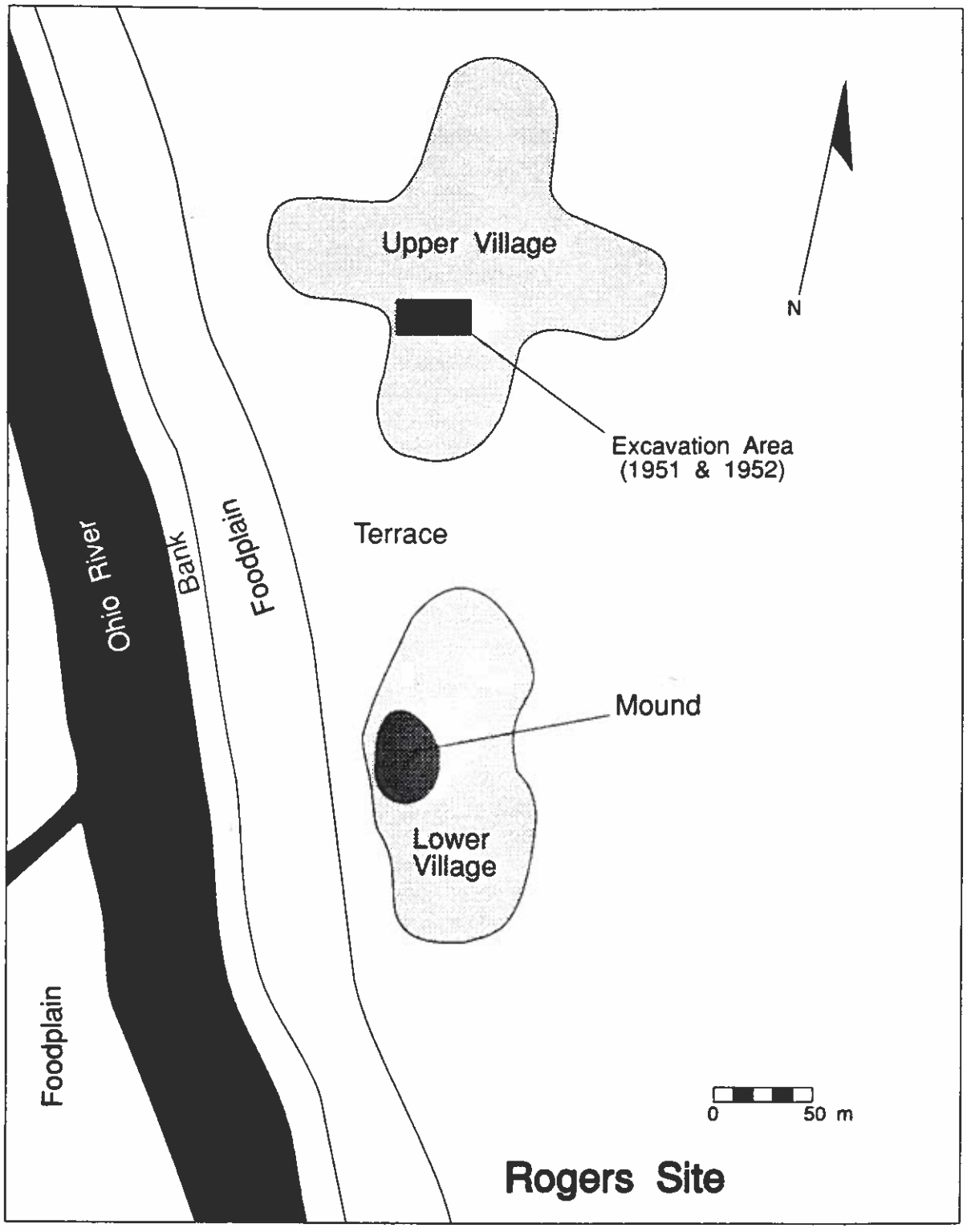


Figure 1. Map of Rogers Site Complex originally drawn by C. Odgen (1953).

The soils found at the Rogers Site Complex formed from glacial outwash of the Wisconsin glacial period. Loamy fine sands of the Lakin Association (0 to 2 percent slope) underlie the entire Lower Village, the Mound, and the southern half of the Upper Village. A small rise of Lakin Association soil (2 to 12 percent slope) lies between the two villages. The northern half of the Upper Village lies on Chavies Association fine sandy loam (0 to 2 percent slope) (Weisenberger et al. 1973).

Preliminary analysis of the results of Crawford's excavations and the materials he recovered will be described in this paper, in the order they were excavated. Following these descriptions, the Newtown components of the Upper and Lower villages will be compared to each other and to other Newtown sites in the middle Ohio Valley.

UPPER VILLAGE (15Be34)

EXCAVATION RESULTS

Soon after Crawford became the Curator of the William Behringer Museum (now the Behringer-Crawford Museum) in 1950, he obtained permission to excavate at the Rogers Site Complex (Figure 1). In December of 1951, Crawford and the Northern Kentucky Archaeological Society began excavations at the Upper Village. At that time he laid out a rectangular excavation block that consisted of 40 5 by 5 foot (2.31 m^2) units and measured 20 x 50 feet (6.10 x 15.24 m) (Figure 2).

Between 1951 and 1952, at least 1250 $feet^2$ (116.25m^2) were excavated at the Upper Village (Figure 2). Crawford and his crew removed and discarded approximately 6 inches (15.24 cm) of plowzone and excavated the midden in two 4 inch (10.16 cm) levels to subsoil. The first level below the plowzone contained many lithics, ceramics, and faunal remains. The second level contained fewer artifacts than the upper level (Crawford n.d.).

Features that extended into the subsoil were discovered at the base of the second level. Crawford's notes and a hand-drawn field map provide information on the features encountered during excavation (Figure 1). A large pit (Feature 1) and a trough-like trench of unknown origin radiating from this pit were encountered in Unit A10 (Note: the trough is not illustrated in Figure 2). Feature 1 had a diameter of 4.2 feet (1.28 m), a depth of 2.4 feet (.73 m), and was bowl-shaped in cross-section. The contents of the pit included animal bone, ceramics, fire-cracked rock, and a few mussel shells (Crawford 1959, n.d.). The trough was round in cross-section, had a diameter of 8 inches (20.3 cm), and contained sherds and animal bones in a black soil matrix (Crawford n.d.). The trough's length was not recorded and a function can not be assigned to this feature.

Crawford's notes on the excavation at the Upper Village also mention two other large pits (Figure 2). Feature 2 was encountered in Unit B6 and had a diameter of 3.2 feet (.97 m) and a depth of 3.5 feet (1.07 m) (Crawford n.d.). Artifacts recovered included a stemmed projectile point, deer and elk bone, and large pottery sherds (Crawford n.d.).

Feature 3 (Units C10 and D10) extended beyond the excavation block (Figure 2). This feature had a diameter of 3 feet (.91 m) and a depth of 3.4 feet (1.01 m). Artifacts recovered from the

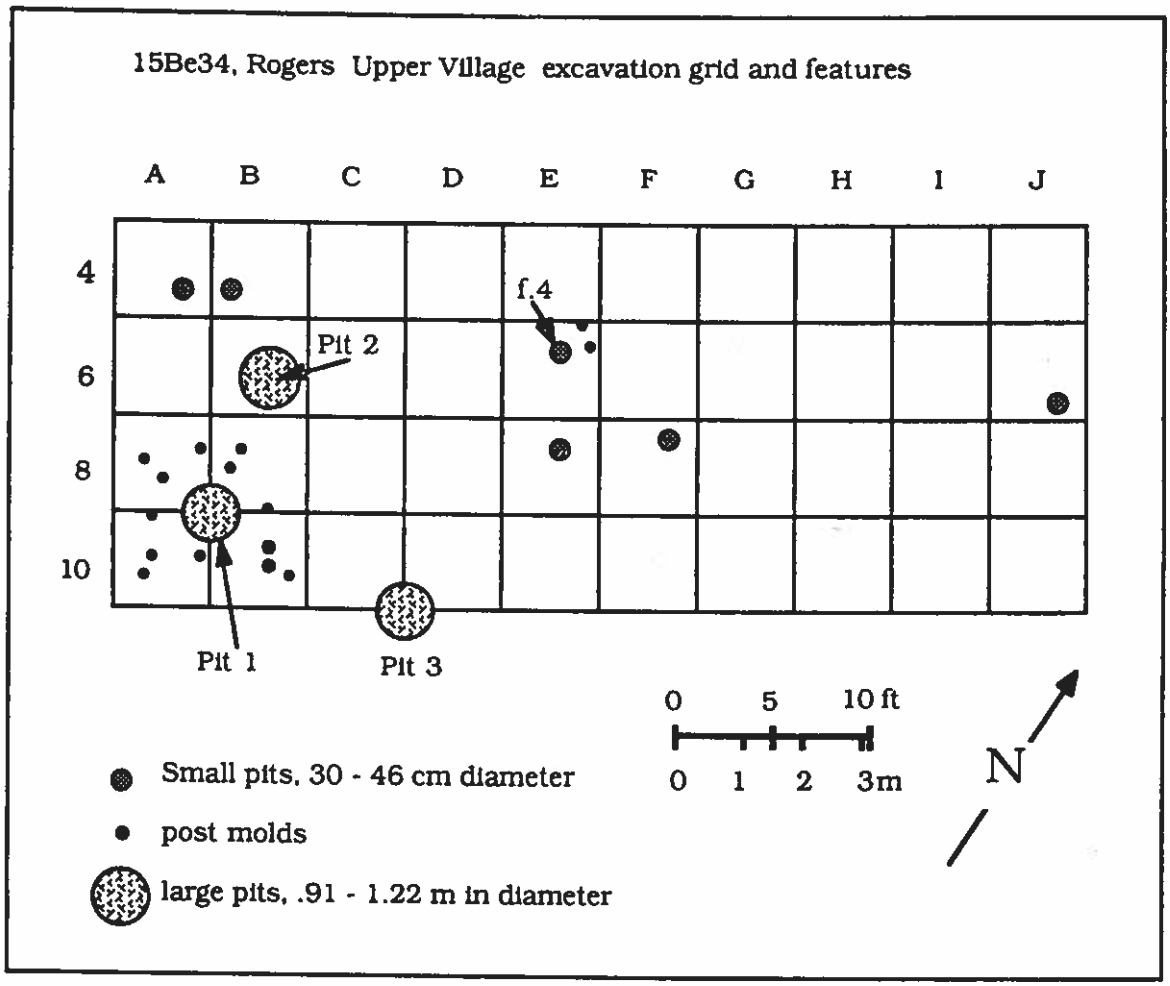


Figure 2. Schematic of Crawford's 1951 field map showing relative feature placement at the Upper Village.

fill of this pit included elk, deer, and turkey bones, pottery sherds, and mussel shell. Burned rock was reported at the base of the pit (Crawford n.d.).

Six smaller features documented by Crawford were not described in the extant field notes but they were drawn on his field map (Figure 2). Crawford interpreted these smaller features, as well as the three large features described above, as storage or cooking pits in his notes and professional papers (Crawford n.d, 1959).

Fifteen postmolds also were documented by Crawford (Figure 2). Two were located near Feature 4, a small pit in Unit E6, while the remaining 13 were recorded in the four units surrounding Feature 1 (Figure 2). Each postmold in Unit A10 was described as having a diameter of 3 inches (7.62 cm). Although Crawford (1959) did not ascribe any pattern to these postmolds, the 13 found in the vicinity of Feature 1 appear to form a semicircular around this feature (Figure 2). The arrangement of these posts around Feature 1 suggests the presence of a structure in this area. Feature 4, the two postmolds in Unit E6, and the two small features in Units E8 and F8, respectively, constitute a second cluster. Feature 2 (Unit B6) and the two small features in Units A4 and B4, respectively, may constitute a third cluster or may be part of the Feature 1 cluster. Feature 3 also may be part of the Feature 1 cluster. The small pit in Unit J6 may be an isolated feature. Alternatively, Feature 3 and the small pit in Unit J6 may belong to clusters of features located just outside the excavation block.

MATERIALS RECOVERED

A total of 669 artifacts from the Upper Village are curated at the Behringer-Crawford Museum (Table 1). Analysis is ongoing, but preliminary results suggest that of the 669 artifacts, 196 are ceramics, 369 are lithic tools or chert debitage, and 98 are ground, pecked, or chipped nonchert artifacts. To date, only six bone tools have been identified as having come from the Upper Village.

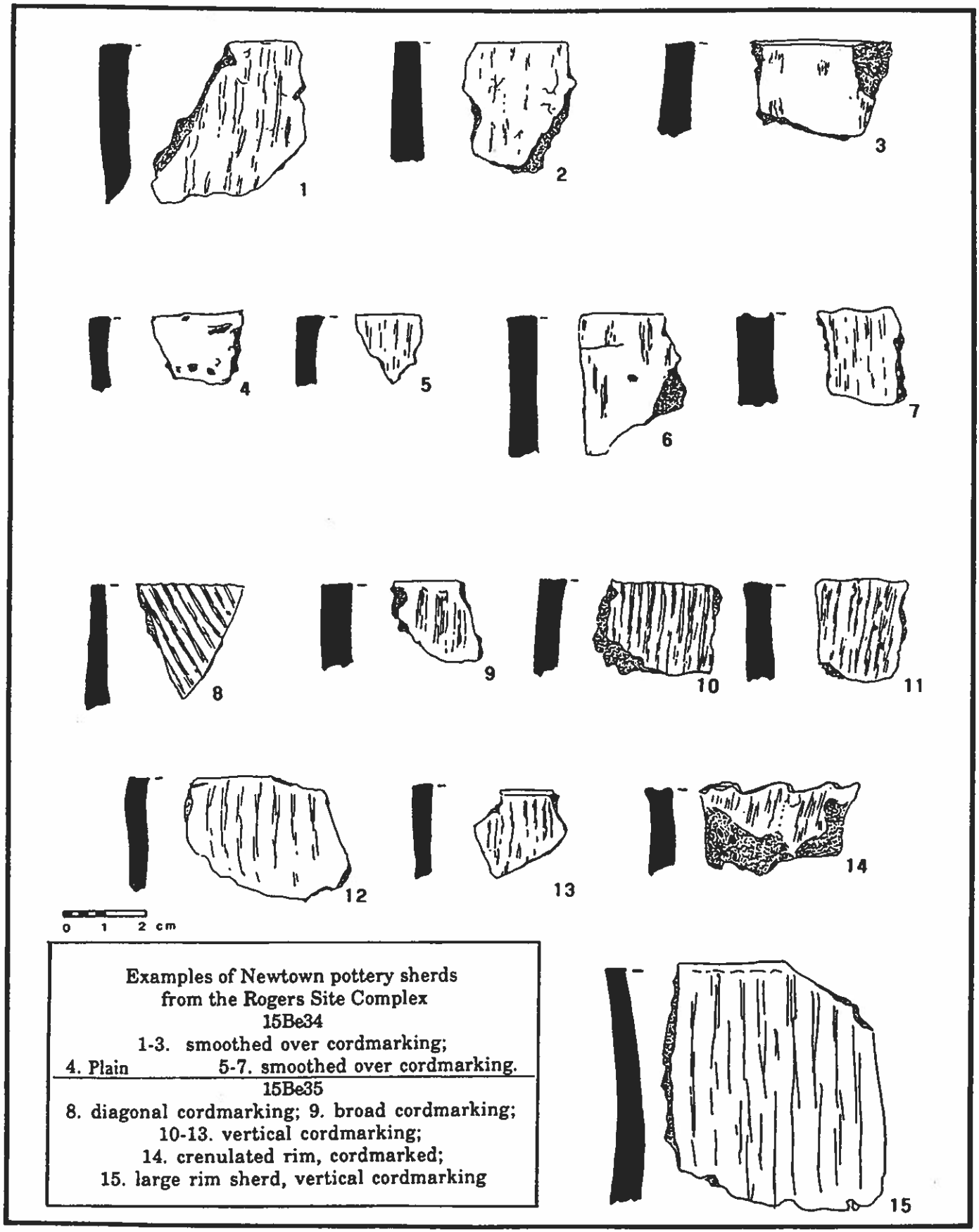
Ceramics

Of the 229 sherds recovered from the Upper Village, 228 are cordmarked and 1 is plain. Table 1 lists the frequencies of each ceramic type found at the Upper Village.

Newtown Cordmarked

Cordmarked sherds are tempered with limestone (n=6) or grit or crushed granitic rock (n-222). Several specimens exhibit smoothed-over cordmarked exterior surfaces (Figure 3:1-3, 5-7). The six limestone tempered sherds have an average thickness of 7.3 mm. All are body sherds and none are angular shoulders.

The grit tempered sherds include 38 rim sherds, 177 body sherds and seven angular shoulders (Note: a large section of an angular shouldered vessel with a direct rim has been counted twice). The grit tempered body sherds have an average thickness of 6.0 mm, while rim sherds average 5.0 mm in thickness and have a primarily direct (straight) orientation. Lips are either flat or slightly rounded (Figure 3).



Examples of Newtown pottery sherds
from the Rogers Site Complex
15Be34
1-3. smoothed over cordmarking;
4. Plain 5-7. smoothed over cordmarking.
15Be35
8. diagonal cordmarking; 9. broad cordmarking;
10-13. vertical cordmarking;
14. crenulated rim, cordmarked;
15. large rim sherd, vertical cordmarking

Figure 3. Ceramics from the Rogers Site Complex.

Table 1. Rogers Site Complex Artifact Assemblages.

Artifact Type	Mound (15Be33) No.	Upper Village (15Be34) No.	Lower Village (15Be35) No.
Ceramics			
Newtown Cordmarked			
Grit tempered	501	222	1046
Limestone tempered	6	6	6
Newtown Plain			
Grit tempered	6	1	158
Limestone tempered	1	0	34
Shell tempered cordmarked	0	0	13
Sand tempered cordmarked	0	0	1
Other	6	0	0
Chipped Stone			
Projectile Points			
Matanzas Side Notched	0	0	1
Merom Expanding Stemmed/			
Trimble Side Notched	0	2	0
Brewerton Eared Triangle	0	1	0
Adena Stemmed	0	2	2
Bakers Creek	0	0	1
Chesser Notched or			
Lowe Flared Base	3	52	44
Jacks Reef Pentagonal	0	0	1
Madison points	0	1	0
Triangular points	0	0	6
Other points	5	9	3
Unnotched bifaces	7	190	45
Biface fragments	8	61	44
Bladelets	10	0	14
Chert tools and utilized flakes	11	35	50
Cores	2	16	32
Debitage[1]	4	10	916
Ground, Pecked, or Chipped Nonchert Tools			
Celts	8	54	23
Expanded center stones	0	10	0
Gorgets, pendants, slate	6	6	3
Hammerstones	0	10	1
Nutting or lap stones	0	7	1
Stone discoidals	0	5	2
Conical stones	1	0	4
Faunal Remains			
Bone tools	24	0	2
Antler tines and tips	2	0	2
Animal teeth and other bone[2]	>71	6	>200
Other			
Pipes	4	0	0
Mica fragments	11[3]	0	0
Cannel coal	2	6	0

[1]flakes and shatter
[2]under analysis
[3]grouped into two associations: one large piece and 10 fragments

One rim sherd has a flat lip, a slightly incurvate rim, and a thickness of 11.0 mm. This sherd may be part of a shallow bowl with a height of 4.5 cm, an estimated orifice diameter of 10 cm, and a conoidal base. The seven cordmarked angular shoulders recovered from the Upper Village constitute 3.6 percent of the total ceramic collection from the this site.

Newtown Plain

Only one Newtown plain sherd was recovered from the Upper Village. It is a grit tempered rim sherd (Figure 3:4). This specimen has a direct orientation and an average thickness of 3.4 mm.

Chipped Stone

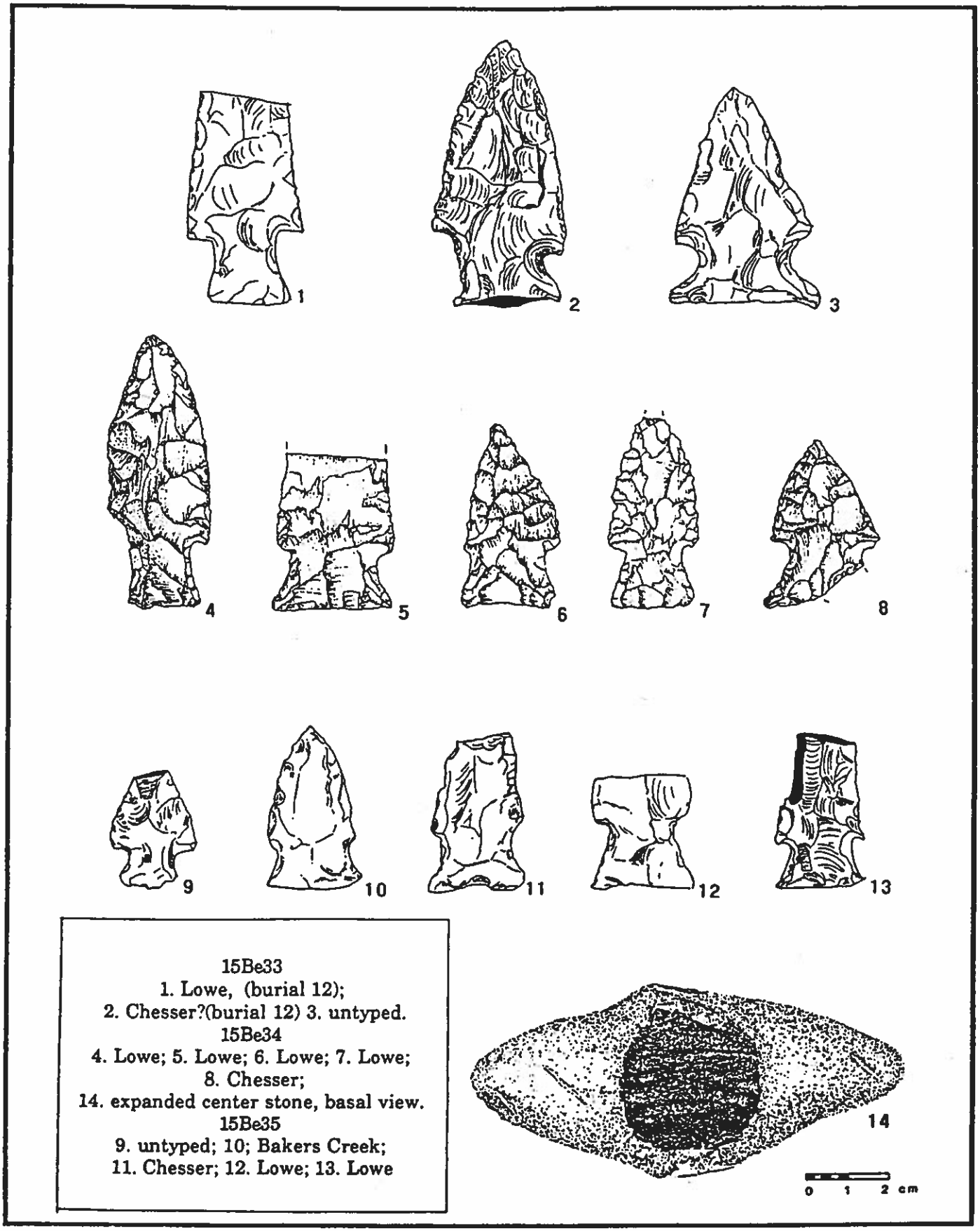
The chert, chipped stone collection, which consists primarily of utilized and shaped artifacts (Table 1), includes six flakes, four fragments of shatter, and 16 cores. Thirteen utilized flakes and 22 shaped tools, such as scrapers, knives, and drills, also are present in the collection. The remaining artifacts include projectile points and point fragments and bifaces/preforms in various stages of manufacture (Table 1). The majority of the projectile points are similar to Chesser Notched or Lowe Flared Base points (Figure 4:4-8). These types are diagnostic of the late Middle Woodland/early Late Woodland period (Justice 1987). Other projectile point types identified in the collection include two Adena Stemmed and several varieties of Late Archaic points including two small Merom/Trimble Side Notched and a Brewerton Eared Triangle (Justice 1987). One Madison Triangular point also was recovered from the Upper Village.

A large number of unnotched bifaces (n=190) are present in the Upper Village collection. These include complete specimens as well as several bases. An additional 61 biface fragments consisting of medial fragments and biface tips also were recovered from the site (Table 1). Bifaces found at this site represent several stages of biface manufacture from crude, thick bifaces to thin, well-made preforms. Edge-wear analysis is in progress to determine if these bifaces represent discarded preforms or if they were used for other purposes, such as cutting or scraping.

Ground, Pecked, or Chipped Nonchert Stone Tools

This category includes utilitarian objects, such as ungrooved celts pitted stones, and hammerstones, decorative/ceremonial specimens such as gorgets, and expanded-center stones (Figure 4:14) of unknown use (Table 1). A total of 56 ungrooved celts were recovered from the Upper Village. Three appear to be finished groundstone celts, exhibiting evidence of grinding on all surfaces and some degree of polish. Another 22 specimens show evidence of grinding on some surfaces, after preliminary shaping by percussion flaking. The remaining 31 celts exhibit shaping by percussion flaking only and show no evidence of grinding. Of the 53 ungrooved celts, 45 were manufactured from metamorphosed graywacke, four from diorite, one granite, one mudstone, and two other metamorphosed sandstone. The large number of ungrooved celts in various stages of manufacture indicate that celts may have been manufactured at this site, for use at other localities.

Decorative/ceremonial artifacts from the Upper Village include shaped pieces of limestone, slate, and sandstone. One cannel coal artifact is carved to represent a bear claw, with one end partially drilled from either side. Eight fragments of rectangular gorgets (five made from slate and three from sandstone) also were recovered. Three of the five flattened stone discs are manufactured from limestone, while the remaining two are from slate. One additional slate



15Be33
1. Lowe, (burial 12);
2. Chesser?(burial 12) 3. untyped.
15Be34
4. Lowe; 5. Lowe; 6. Lowe; 7. Lowe;
8. Chesser;
14. expanded center stone, basal view.
15Be35
9. untyped; 10; Bakers Creek;
11. Chesser; 12. Lowe; 13. Lowe

Figure 4. Lithic artifacts from the Rogers Site Complex.

artifact, shaped like a large stemmed "projectile point," was collected from the Upper Village in the 1980s and remains in a private collection (Richard Crawford, personal communication 1988).

Ten expanded-center stones were recovered from the Upper Village. Expanded-center stones have been variously described as picks or atlatl weights, but their exact use has never been determined. Several of the expanded-center stones, including the one illustrated in Figure 5, exhibit wear around their centers, which suggests that they may have been hafted. These artifacts also have been found at Newtown sites, such as the Turpin Site in southwestern Ohio (Oehler 1973).

SUMMARY

Crawford's excavations at the Upper Village revealed the presence of an extensive midden with many intact features. Three large circular pits, six smaller pits, and 15 postmolds were encountered within the excavation block (Figure 2). These features appear to cluster in two or three locations (Figure 2).

Artifacts collected from the site include ceramics, projectile points, and other artifacts characteristic of the late Middle Woodland/early Late Woodland Newtown phase (e.g., Ahler 1987, 1988; Henderson and Pollack 1985; Railey 1984; Seeman 1980). Crawford's notes indicate that many of these materials were recovered from the excavated features. Two Adena Stemmed point bases, a Madison Triangular point, and several Late Archaic point types also were recovered from the Upper Village, but none were associated with any of the features.

No carbon samples were collected from the Upper Village during the 1951-52 excavations. As radiocarbon dating was in its infancy in the early 1950s, Crawford may have been unaware of the process and/or proper recovery techniques.

ROGERS MOUND (15Be33)

EXCAVATION RESULTS

The mound measured 70 feet (21.34 m) in diameter and 4 feet (1.22) in height. Crawford states in his notes that the mound was covered with limestone slabs and that limestone concretions had been found on its surface (Crawford n.d.). The majority of the mound was apparently comprised of sandy soil found in the site vicinity. Kellar's (1960) description of the mound also indicated that the Rogers Mound was not a "true" stone mound, in that it was not constructed entirely of stone.

Crawford obtained permission to excavate at the Rogers Mound (15Be33) during the winters of 1952 and 1953. Excavation methods were similar to those employed at the Upper Village excavation. The mound was excavated in 6 inch (15.0 cm) arbitrary levels within 5 x 5 foot (2.31 m^2) units (Crawford n.d.). Crawford's field notes reported the excavation of 196 units (4900 $feet^2$ or 452.84 m^2). A 70 foot diameter mound covers a 4900 $feet^2$ area, which corresponds

to the measurements in Crawford's field notes. However, on a map drawn some time after the excavations (date unknown), the mound's dimensions were given as 48 by 66 feet (14.63 x 20.12 m) (Figure 5). This suggests that the area excavated by Crawford was somewhat larger than the mound.

Crawford kept notes on the burials as they were excavated (Crawford n.d.) and one of the members of the Northern Kentucky Archaeological Society, Cal Ogden, also kept some notes on several of the rock tomb burials (Ogden 1953). Except for some minor discrepancies, their notes compare favorably.

BURIALS

Crawford's excavations located 43 human burials within the mound, including 13 individuals interred within nine limestone-lined graves and two that were cremated (Figure 5, Table 2) (Crawford n.d.; Ogden 1953). Burial types and number of individuals are shown in Table 2. Figure 5 illustrates the distribution of graves within the Rogers Mound (Crawford n.d.).

Many of the skeletons were in a poor state of preservation due to the acidity of the soil. As a result, sex could only be determined for 15 individuals. Of these, 11 were male (including two juveniles), and four were female. Of the remaining noncremated burials, one was a small child of about 18-24 months, one was possibly a juvenile, and 24 were adults.

Nine of the Rogers Mound burials (Burials 31-32 and 36-43) were placed in two, roughly parallel rows near the east side of the mound (Figure 5). Of these, six (Burials 31-32, 38, and 41-43) were partially or wholly surrounded by large limestone slabs. The stone-lined grave of a child (Burial 29) and three fragmentary interments (Burials 30, 33, and 40) also were encountered in the eastern half of the mound. Next to Burial 31 (Unit I6) the excavators recovered the skeleton of a small dog (Burial 31a) (Figure 5). It had been placed along the left side of an adult male.

A row of 7 burials (Burials 5-6 and 18-22), five of which were found in two stone-lined graves, were encountered along the southern edge of the mound. Another two individuals (Burials 23 and 24) were interred in a stone-lined grave located near the center of the mound. All of the individuals interred in stone-lined graves were buried in an extended position and most were oriented north-south. Additional individual interments (extended or flexed) were scattered throughout the mound and were oriented in a variety of directions (Figure 5).

Two cremations (Burials 4 and 17) were encountered during excavation. The remains of Burial 4 (Unit C8) were found within a circular pit, 3 feet (.91 m) in diameter, and the remains of Burial 17 (Unit E10) were recovered from the basal portion of a pit with a diameter of ca. 1.5 feet (.46 m). Crawford (n.d.) described Burial 17 as "the remnant of a cremation."

One extended interment (Burial 1) was found on the western side of the mound, at a slightly higher level within the mound fill than the other burials. Burial 1 was interred with its head toward the northeast, just to the west of the cremation designated Burial 4 (Figure 5).

Table 2. Types of Human Burials found in Rogers Mound.[1]

	Extended	Flexed	Unknown	Total
Stone-lined	12	1		13
Unlined	12	1		13
Bundle			7	7
Cremation			2	2
Fragmentary			8	8
Total	24	2	17	43

[1]This table does not include the stone-lined grave in Unit B5, for which no remains were described.

A stone-lined grave also was found on the western edge of the mound, but it contained no evidence of human remains. A platform pipe was recovered from the mound fill just outside this stone enclosure, and several artifacts were recovered from within this stone-lined grave (Table 3).

MATERIALS RECOVERED

Artifacts were found in association with 18 of the burials (Crawford n.d.). The types of artifacts found with these individuals are listed in Table 3.

Ceramics

Crawford recovered one almost complete pottery vessel in association with Burial 18 (Unit F4) (Figure 5). This burial, which was an adult male, had been covered with limestone slabs. The vessel was encountered on top of the limestone slabs, but it had been crushed by another slab of limestone. Crawford's reconstruction of this vessel is on display at the Behringer-Crawford Museum. This vessel is a medium sized bowl with a conoidal base, rounded shoulder, and direct rim. The exterior of the pot was vertically cordmarked up to the edge of the lip, which was flat. The vessel measures 15 cm in height and ranges in thickness from 4.0 to 5.0 mm. The orifice of the vessel ranges from 17 cm at its shoulder to 13 cm at the top of the vessel.

A complicated stamped sherd recovered from the Rogers Mound fill is mentioned in correspondence between Crawford and James B. Griffin at the University of Michigan Museum. Griffin related the sherd to various southeastern Hopewellian cultures (Griffin 1959). Unfortunately, this sherd is not curated at the Behringer-Crawford Museum. It may have been given to the University of Michigan for comparative purposes, and an attempt is being made to locate this and other sherds that Crawford may have sent to Griffin for analysis in the late 1950s.

A total of 529 sherds were recovered from the mound fill. Of these, nine are spalls, which were not analyzed. Of the remaining 520 sherds, seven are tempered with limestone and 513 are tempered with grit (Table 1).

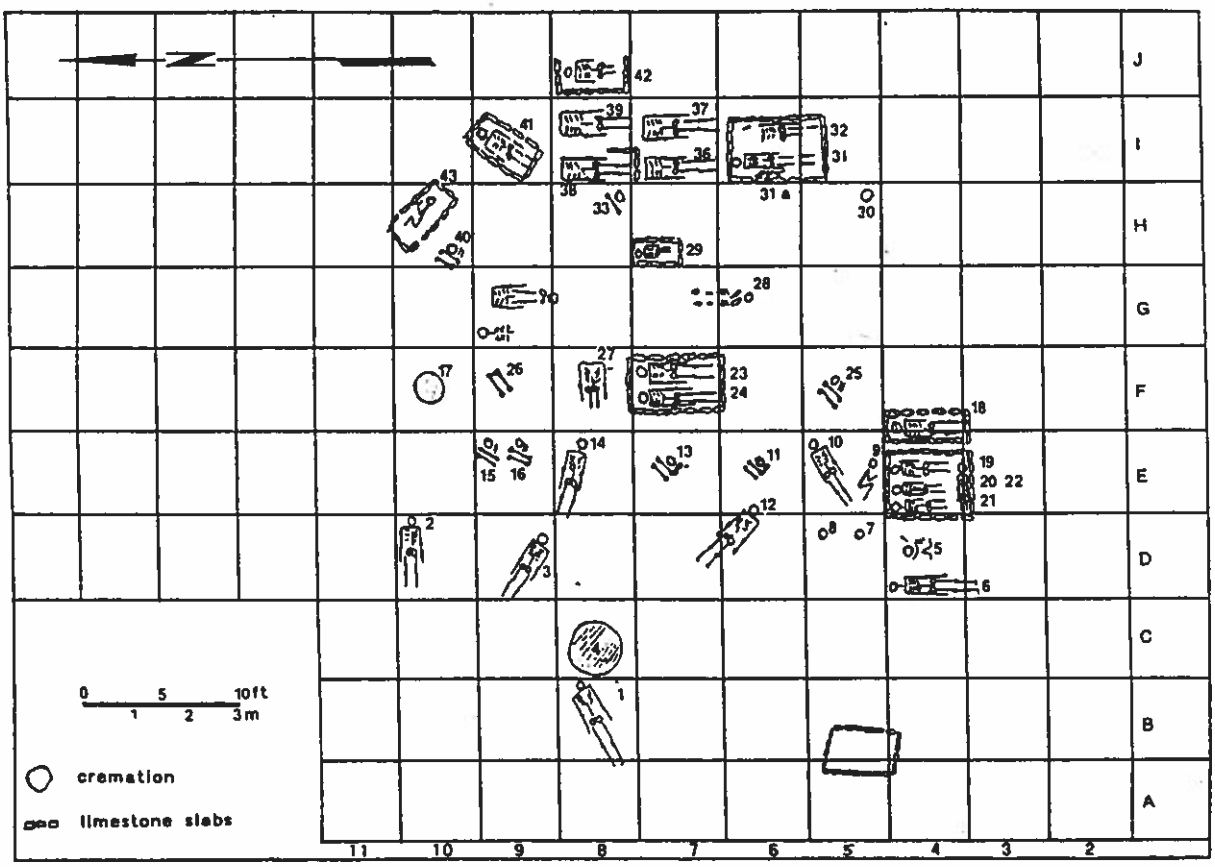


Figure 5. Schematic of field map (date unknown) showing burial placement at the Rogers Mound (15Be33).

Table 3. Burials with Associated Artifacts.

Burial No. /Type	Projectile Points	Bladelets	Rectangular Gorgets	Other Lithic Tools	Bone Needles /Awls	Cut Animal Jaws	Drilled Elk Teeth	Turtle Shells	Other Bone	Ceramic Bowl	Mica	Pipes
5/b*		1							1(t)*			
6/ext.			2		3	2	12				1	
10/ext.			1									
12/ext.	7		2	17	5	2			2 (p) 2 (t)			
13/b		1			2/1							
14/ext.									1 (t)			
18/ext.						2				1		
19/ext			1									
20/ext.									1 (a)			1
21/ext.								1				
26/f*									1 (b)			
27/ext.					0/4							
29/ext.	1							2				
30/f						1						
31/ext.							6				1	
38/ext.								5				
43/flex					1			4				
44/ext.						5			1 (a)			1

* b=bundle, f=fragmentary. t=animal teeth, p=hairpins, a=worked antler tine or tip

[1]The totals presented in this table are not always the same as those presented in Table 1. Table 3 was constructed from Crawford's (n.d.) and Ogden's (1953) burial descriptions, while Table 1 is a tabulation of the materials curated at the Behringer-Crawford Museum. The discrepancies between these two tables are due to the fact that the property owner kept some of the artifacts associated with these burials.

Newtown Cordmarked

Most of the sherds (n=507) recovered from the mound fill are Newtown Cordmarked. Of these, six are tempered with limestone and 501 are tempered with grit. All of the limestone cordmarked specimens are body sherds, which have an average thickness of 6.6 mm.

Grit tempered sherds (486 body sherds, 13 rims, and two angular shoulders) exhibit cordmarked or smoothed-over cordmarked exterior surfaces. The body sherds have an average thickness of 6.9 mm. Rims are somewhat thinner than body sherds having an average thickness of 5.8 mm. Most rims have direct orientations and flattened lips, but one rim has an angled lip and another a slightly rounded lip.

The two cordmarked angular shoulders have an average thickness of 6.4 mm. Angular shoulders constitute only .4 percent of the grit tempered sherds recovered from the mound.

Newtown Plain

Only eight Newtown Plain body sherds are present in the Mound ceramic collection. Of these one is tempered with limestone and seven are tempered with grit. The limestone tempered body sherd has a thickness of 6.8 mm, while the grit tempered sherds have an average thickness of 8.1 mm. The thickness of the grit tempered specimens suggests that they may represent fragments from near the base of a vessel. It is also possible that they represent a different ceramic type.

Other Ceramics

Six grit tempered sherds recovered from the mound were not been assigned a type name. Of these, three are rims and three are body sherds. The rims have cordmarked exterior surfaces and direct orientations. They are distinguishable from Newtown rims by their thickness and rim shape. These specimens have an average thickness that is 4.0 mm greater than that recorded for Newtown Cordmarked rims, 9.8 and 5.8 mm, respectively. In comparison to Newtown rims, these specimens have thickened, rounded lips, with one lip having broad deep notches.

The three body sherds exhibit two types of exterior decoration. One sherd has a burnished exterior surface and is 8.2 mm thick. The exterior surfaces of the other two sherds were impressed with a stick or reed in a random pattern that resembles cordmarking.

Chipped Stone

A small number of lithic chert artifacts were recovered from the Rogers Mound burials. Crawford's notes describe bladelets of Harrison County (Wyandotte) chert found with Burials 5 (n=1) and 13 (n=3), which are bundle burials. The Museum collection also contains a similar bladelet from Burial 9, a flexed female inhumation. Five other bladelets, four of Harrison County and one of Laurel chert, were recovered from the mound fill.

Seven projectile points were found in association with Burial 12 (Table 3). Of these, only two large Lowe or Chesser-like points (Figure 4:1-2) from this burial are in the Behringer-Crawford Museum's collection. Another Lowe Flared Base or Chesser Notched and Five unidentifiable projectile points also was recovered from the mound (Figure 4:3). Artifacts in the Behringer-Crawford Museum's collection from the Rogers Mound, that are not described in

Crawford's notes include two cores of Harrison County chert and two chert flakes from Burial 9, which as mentioned above, also produced a bladelet.

Ground, Pecked, or Chipped Nonchert Stone Tools

Nonchert stone artifacts associated with burials from the Rogers Mound include two sandstone elbow pipes (an additional pipe was recovered from the fill of the mound), six slate gorget fragments, and two sheets of mica (Table 3). A broken, stone platform pipe with a beaver effigy holding the pipe bowl was found just outside the stone-lined grave in Unit B5.

Faunal Remains

Bone tools represent the largest single artifact group found in association with the Rogers Mound burials (Table 3). Although bone preservation was described as poor for the human skeletal material, the faunal materials are well-preserved. Artifact types represented include awls, needles, pins, cut animal jaws and teeth, and a bird bone bead. Several burials also were interred with one or more turtle shells. No whole turtle shells are present in the Behringer-Crawford Museum's collection from the Rogers Mound, and the function of these shells is unknown.

SUMMARY

A variety of interments were identified within the Rogers Mound, including extended inhumations, bundle burials, and cremations. Grave goods were primarily associated with extended inhumations and included gorgets, worked animal bone, pipes, and mica. Several individuals, such as Burials 6 and 12, were interred with a large number of grave goods.

The clustering of burials within the mound is suggestive of kin-related burial areas. Assuming that not all of the individuals within each cluster nor within the mound in general died at the same time, then the mound must have grown accretionally. But unlike earlier Adena mounds, which grew in height as additional people died (Milner and Jefferies 1987), this mound, as with other Late Woodland mounds, grew horizontally (see Kellar 1960).

Newtown Cordmarked and Newtown Plain ceramics were recovered from Mound fill and one Newtown Cordmarked vessel was found in direct association with a burial. The recovery of these materials from fill of the mound indicates that this mortuary facility does not predate the Newtown occupation of the Lower Village, but is in fact contemporary with it.

Other artifacts found in the mound that are characteristic of Newtown sites include rectangular bone and slate gorgets and Chesser Notched and Lowe Flared Base projectile points (Ahler 1987, 1988; Henderson and Pollack 1985; Railey 1984; Seeman 1980). Three sandstone elbow pipes, one similar to that found at the Haag Site in nearby Dearborn County, Indiana, also were recovered from the Rogers Mound (Reidhead 1981). However, the association of bladelets with three burials and the recovery of a platform pipe from mound fill is suggestive of some degree of interaction with Middle Woodland cultures or the presence of a small Middle Woodland component.

THE LOWER VILLAGE (15Be35)

EXCAVATION RESULTS

Ellis Crawford and his crew excavated at the Lower Village during the summer of 1961. The excavation area was first mechanically stripped to remove the plowzone. The midden, which contained a large amount of fire-cracked rock, ceramics, lithic debris, and some animal bone, was then hand-excavated in 5 by 5 foot units (2.31 m^2) and in 4 inch (10.16 cm) levels to subsoil. Since no map or notes exist for the Lower Village excavations, the following descriptions are based on the provenience information written on the artifacts and on the recollections of participants. Correspondence between Crawford and David M. Griffin, research assistant at the Museum of Anthropology, University of Michigan, also was helpful in determining the provenience of the excavated features (Griffin 1965).

Labelled artifacts indicate that the excavated area measured at least 90 x 60 feet (5400 $feet^2$ or 501.7 m^2) was excavated. However, this area may be too large. The site map (Figure 2) from the earlier excavations at the Upper Village indicates that Crawford did not always initiate his grid at A0 but rather chose an arbitrary point within the grid. If, however, Crawford extended the grid he used for the mound excavation in 1953 to encompass the Lower Village excavations, only a 45 by 60 foot or 2700 $feet^2$ (250.8 m^2) may have been excavated. The latter figure appears to be a more realistic dimension based on the memories of participants and on a few photographs attributed to the 1961 excavations.

Crawford documented six large, deep pits during his excavations, based on artifacts with assigned provenience. A review of correspondence between Crawford and David Griffin (1965) suggests that Crawford actually may have excavated seven large pits. However, there is little available information on the seventh pit.

Feature 1 was a bell-shaped pit that was located near the eastern edge of the mound. It measured 3.4 feet (1.04 m) to 6 feet (1.83 m) in diameter and was 6 feet (1.83 m) deep. Materials collected from this pit included a small charcoal sample, a Chesser Notched projectile point, the bit end of a celt, ceramics, chert debitage, and a small, conical-shaped granitic (glacial erratic?).

Less information is available for Features 2 and 3. No artifacts were labelled from Feature 2, but its existence is presumed based on the presence of artifacts from Features 3-6. Feature 3 yielded some burnt clay and a smoothed conical stone similar to the one recovered from Feature 1, but no locational information was recorded on the artifact itself. The horizontal and vertical dimensions for these features are unknown.

Feature 4 (Unit H5) measured 4 feet (1.22 m) in diameter and 5 (1.52 m) to 6 feet (1.83 m) in depth (Griffin 1965). Artifacts collected from this pit include a mud daubers nest, a deer antler flaker, a beaver canine, a side notched projectile point/knife (probably a Chesser Notched variant), and two rectangular chert biface bases. A radiocarbon date obtained from a charcoal sample from Feature 4 yielded an uncalibrated date of A.D. 510$\pm$130 (M-1351) (Griffin 1965). In a letter from David Griffin (1965) to Crawford, the pit was described as "...lined on the bottom with fired stones and a hard black substance. Found in direct association with pottery." Also in this letter, David Griffin describes this pottery as the thickest of the samples his father, James B. Griffin, had examined from the three features.

Feature 5 was bell-shaped and measured 3 feet (.91 m) in diameter (Griffin 1965). Four artifacts were collected from this pit: a projectile point tip and three chert flakes. Thick and crumbly ceramics are mentioned in Griffin's letter to Crawford as having been recovered from this feature. However, there are no ceramics in the Museum's collection that can be associated with this pit. A radiocarbon date obtained on a charcoal sample from Feature 5 yielded an uncalibrated date of 430±130 B.C. (M-1353) (Griffin 1965).

Feature 6 was encountered in Unit I5. A small charcoal sample was collected from this pit, but no other information about its dimensions or contents is available.

No postmolds or other features other than the large pits have been mentioned by the informants interviewed to date. A third radiocarbon date was obtained from charcoal recovered from the base of one of the refuse pits, at a depth of 12 to 18 inches (30.48 to 54.86 cm) (Griffin 1965). Unfortunately, neither a provenience or feature number was assigned to this feature in Griffin's letter to Crawford. Thin and well-made pottery sherds are mentioned in association with the charcoal sample, and an uncalibrated date of A.D. 1450±100 years (M-1352) was obtained on the charcoal.

Because Crawford's field notes and field map from the excavation of the Lower Village are missing, little is known about the distribution of features at this site. However, some information on intra-site patterning is available from the provenience information on the artifacts recovered from some of the features. For instance, it can be determined that Features 4 and 6 were encountered in adjacent units. Since each grid square was 5 feet (1.52 m) wide, these features could not have been more than 10 feet (3.05 m) apart. This suggests a clustering of large features similar to that observed at the Upper Village (Figure 2). Hopefully, if Crawford's field records are located, they will provide more information on the distribution of features at this site.

MATERIALS RECOVERED

A large collection of artifacts was recovered from the Lower Village excavations (n=2682) (Table 1). There had been sufficient changes in artifact recovery methods by the 1961 season that the collection from the Lower Village includes a larger quantity of smaller artifacts, including lithic debitage (n=916) and pottery sherds (n=1257).

Of the 1254 ceramics recovered from the Lower Village, the majority (n=1241) were classified as Newtown Cordmarked or Newtown Plain. Thirteen sherds are shell tempered, and one is sand tempered.

Ceramics

Newtown Cordmarked

The 1046 grit tempered Newtown Cordmarked sherds (Figure 3:8-15) recovered the Lower Village have an average thickness of 5.5 mm. Most are body sherds, but 15 are rim sherds. One rim is slightly inslanted, with the remaining specimens being direct, or straight. All have flat or slightly rounded lips.

Three of the rims have decorated lips. A stick, or similar object, appears to have been used on one specimen to create a crenelated, or "pie crust" decoration (Figure 3:14), while a finger tip may have been used to make a similar decoration on the other two specimens. The latter two rims also had been impressed with a fingernail perpendicular to and along one side of the finger tip impression.

Only two angular shoulders were recovered from the Lower Village. These two sherds constitute a very small percentage (less than 0.01 percent) of all the ceramics found at the site.

Six limestone tempered, Newtown Cordmarked sherds were recovered from the Lower Village. No limestone rims or angular shoulders are present in the collection. The average thickness of the limestone cordmarked body sherds is 6.8 mm.

Newtown Plain

A total of 158 grit tempered Newtown Plain sherds are present in the Lower Village collection. These sherds have an average thickness of 6.6 mm. Thirty-four limestone tempered Newtown Plain sherds also were recovered. The limestone tempered body sherds have an average thickness of 7.5 mm. No grit or limestone tempered plain rims or angular shoulders are present in the Lower Village ceramic collection.

Shell Tempered Ceramics

Twelve shell tempered sherds were recovered from the Lower Village. Of these nine are rims, two are body sherds, and one is a thick strap handle fragment. Expect for a cordmarked body sherd, a portion of which had been smoothed, all of the shell tempered sherds have plain exterior surfaces. The average thickness of the shell tempered sherds is 6.0 mm (measurement taken below rim).

The nine rims have thickened, round lips that where formed by folding the clay lip to the exterior of the vessel. Most of the rims have a direct profile, but one specimen has an everted profile. Decoration in the form of incising is present on two rims and one body sherd. The rims have diagonal incised lines on the exterior of a thickened lip and vertical incising on the exterior wall below the rim, while the cordmarked and plain body sherd has diagonal incised lines on the part of the sherd that had been smoothed.

Sand Tempered Ceramics

One sand tempered body sherd was recovered from the Lower Village. It was cordmarked and had a thickness of 6.6 mm. This sherd was not assigned to a specific type. However, sand tempered sherds similar to Connesstee materials from eastern Tennessee have been recovered from Newtown sites in Greenup County, Kentucky, such as Bentley and Hansen (Henderson 1988; Henderson and Pollack 1985).

Chipped Stone

The chipped stone collection recovered from the Lower Village consists primarily of chert tools and debitage (Table 1). Tools included bladelets, projectile points, knives, and drills. Of the 14 prismatic bladelets found at the site, 10 were made from Harrison County chert, one was manufactured from Ohio Flint Ridge chert, and three fragments are of an unidentified chert

variety. Four exhausted blade core fragments and four large nodular cores of Harrison County chert also are present in the Lower Village collection. Several chert flakes recovered from the site had negative blade-flake scars on their dorsal surfaces, or represented failed attempts at bladelet production. Bladelets also have been found in association with Newtown materials at the Hansen Site (Ahler 1987, 1988).

Fifty-eight projectile points were recovered from this site, including one Matanzas Side Notched, two Adena Stemmed, one Jacks Reef Pentagonal, three unidentifiable (Figure 4:9), one Bakers Creek (Figure 4:10), six triangular points, and 44 Chesser Notched or Lowe Flared Base (Figure 4:11-13) projectile points (Justice 1987). Other types of chert tools identified in the collection included a hafted scraper manufactured from a Chesser Notched point, drills, and utilized flakes.

Ground, Pecked, or Chipped Nonchert Stone Tools

Twenty-five ungrooved celts or celt fragments were recovered from the Lower Village. Of these, 20 were manufactured from metamorphosed graywacke, two from diorite, one from chlorite, one from granite, and one from sandstone. Several slate pendants and one slate specimen carved to resemble a large stemmed projectile point also were found, as were two stone discs and four conical stones (Table 1).

Faunal Remains

The bone artifact assemblage recovered from the Lower Village included two antler tips and two bone pressure flakers or chisels. A large number of faunal remains are present in the Lower Village collection, but most are unlabelled. These remains are in the process of being analyzed and more information should be available in the near future.

SUMMARY

Excavation of the Lower Village revealed the presence of at least seven large pit features. Although Crawford's field records have yet to be found, provenience information on artifacts suggests that these features tended to cluster within the excavation block.

The artifact assemblage from the Lower Village is similar to those found at other late Middle/early Late Woodland Newtown site in the middle Ohio Valley (e.g., Ahler 1987; Henderson and Pollack 1985; Railey 1984; Seeman 1980). These include Newtown Cordmarked and Newtown Plain ceramics and Chesser Notched or Lowe Flared Base projectile points.

Of the three radiocarbon dates obtained from the site, only the date of A.D. 510±130 appears to be an acceptable date for the Newtown occupation of this site. The date of 430±130 B.C. may be associated with the two Adena Stemmed points, however, no Adena pottery has been identified in the ceramic collection from this site and the presence of small quantities of Adena Stemmed points have been documented at other Newtown sites (Ahler 1988; David Pollack, personal communication 1991; Railey 1984) in Kentucky. The Lower Village collection also includes artifacts such as bladelets and sand tempered ceramics that traditionally are considered to date to the Middle Woodland period. Similar types of artifacts have been found at other early

Newtown habitation sites in Kentucky, such as Hansen and Bentley (Ahler 1987; Henderson and Pollack 1985).

The presence of shell tempered sherds and Madison Triangular projectile points at the Lower Village suggest the presence of a minor Fort Ancient component at this site. In addition, one of the features at the Lower Village yielded a radiocarbon date of A.D. 1450±100. Thin, well-made sherds were reported to be associated with this carbon sample, but the temper of sherds was not documented (Griffin 1965).

INTERSITE COMPARISON

The predominant occupation at each site occurred during the late Middle Woodland/early Late Woodland period, and the majority of artifacts recovered are representative of the Newtown phase. Virtually all of the ceramics found at these sites have been classified as Newtown Cordmarked or Newtown Plain. Also, large numbers of Chesser Notched and Lowe Flared Base projectile points were recovered from both village sites and these types of points were recovered in direct association with one of the burials in the mound.

At both village sites, features were found beneath, or adjacent to, extensive middens that contained large quantities of fire-cracked rock, pottery, lithic debris, and animal bone. The features at the two village sites were similar in size and content. At least six deep features were documented at the Lower Village and three were documented at the Upper Village. Based on the presence of extensive middens, as well as the large pits found at both village sites and the smaller features and numerous postmolds at the Upper Village, some of which appear to be part of a domestic structure, both sites appear to represent habitation loci. However, only the Lower Village had an associated burial mound. It is not presently known whether the residents of the Upper Village also interred their dead in the Lower Village mound or in some other mortuary facility.

Both villages may contain minor Early Woodland components, and the Lower Village also may contain a small Fort Ancient component. Adena Stemmed points found at both village sites and a radiocarbon date of 430±130 B.C. from the Lower Village could indicate the presence of an Early Woodland component at these sites. However, no Adena pottery has been identified in the ceramic collections from either village, and Adena Stemmed points also have been recovered from other Newtown sites (Ahler 1988; David Pollack, personal communication 1991; Railey 1984) in Kentucky. The presence of shell tempered sherds, Madison Triangular projectile points, and a radiocarbon date of A.D. 1450±100 from the Lower Village suggest the presence of a minor small Fort Ancient component at this site.

Angular shoulders account for 3.6 percent of the sherds from the Upper Village but less than .01 percent of the sherds from the Lower Village and the Mound. Beyond variation in the number of angular shoulders other differences in the Newtown artifact assemblages of the three sites deserve mention (Table 1). Prismatic bladelets, blade-core fragments and associated debitage, and a sand tempered sherd were found at the Lower Village and bladelets, a platform pipe, and a complicated stamped sherd were recovered from the Mound. In contrast, no bladelets were recovered from the Upper Village (Table 1). On the other hand, the unique, expanded-center stones associated with some Newtown sites were only found at the Upper Village. Although no

radiocarbon dates are available from the Upper Village, these difference suggest that the Newtown occupation of the Upper Village may postdate the Lower Village Newtown component.

REGIONAL COMPARISON

Many similarities exist between the Rogers Site Complex and Newtown sites found in Ohio, southeastern Indiana, and Kentucky with respect to material culture, settlement patterns, and mortuary patterns (Ahler 1987, 1988; Henderson and Pollack 1985; Kellar 1960; Railey 1984; Riggs 1986; Seeman 1980). Radiocarbon dates obtained from sites such as Hansen and Pyles indicate that the Newtown phase dates as early as in the fourth century, a time more commonly associated with the late Middle Woodland period (Henderson and Pollack 1985). As stated by Ahler (1987), the Newtown phase (A.D. 300-800) may span the "traditional boundary between the Middle and Late Woodland periods." The radiocarbon date of A.D. 510 from the Lower Village suggests that occupation of the Rogers Site Complex also may have spanned this boundary.

The Rogers Site Complex ceramic and lithic collections are similar to those from recovered from other Newtown sites. However, while the percentage of angular shoulders from the Upper Village (3.6 percent) is similar to that of other Newtown sites such as Bentley (3.6 percent), Hansen (5.5 percent) and Pyles (4.2 percent) (Henderson 1988; Henderson and Pollack 1985; Railey 1984), angular shoulders account for a much lower percentage of the ceramic assemblage from the Lower Village (less than .01 percent) and Mound (less than .01 percent). As with several other Newtown sites, small quantities of artifacts traditionally associated with the Middle Woodland period were recovered from the Rogers Site Complex. Bladelets, a nonlocal sand tempered sherd, and/or stamped ceramics, have been found at Hansen, Bentley, Pyles, and Haag (Ahler 1987; Henderson and Pollack 1985; Railey 1984; Reidhead 1981). The recovery of "Middle Woodland" materials from the Rogers Site Complex lends further support to Henderson and Pollack's suggestion (1985:163) that Newtown phase people were participating in some type of long-distance exchange network. Perhaps some of the occupant(s) of the Rogers Site Complex were interacting with cultural centers in Ohio sometime toward the end of the Hopewell/Middle Woodland time period.

The topographic setting of the Rogers Site Complex also is similar to other Newtown phase sites. Although a more extensive floodplain is located on the Indiana side of the river, the upper terrace on which the Rogers Site Complex is located is broad and level and measures almost 400 m across in the vicinity of the site (Figure 1). In Seeman's (1980) review of southern Ohio Late Woodland sites, he found that Newtown sites tended to be located on upper terraces or terrace edges, usually in association with floodplains. Many of the larger Newtown sites were situated on high terraces overlooking major river or stream drainages (Seeman 1980). Several southwestern Ohio Newtown sites, such as the Turpin and Sand Ridge sites in Hamilton County, are located on terraces overlooking the Little Miami River (Oehler 1973; Riggs 1986; Seeman 1980). The Water Plant Site, in central Ohio near Columbus, also is situated on a bluff overlooking a major stream valley (Dancey 1988). In southeastern Indiana, the Haag Site is located on the edge of a terrace adjacent to the floodplain of the Great Miami (Reidhead 1981) and in Kentucky, sites such as Bentley (Henderson and Pollack 1985), also are situated on terraces or floodplains. The Pyles Site in Mason County is situated on a bluff overlooking the North Fork of the Licking River (Railey 1984).

Many Newtown phase sites contain features and extensive sheet middens. Most of these sites consist primarily of 1.2 to 2 ha oval to circular sheet middens that cover numerous features (Seeman 1980). Excavated features include shallow, basin-shaped earth ovens, as well as deep bell-shaped storage pits. Numerous postmolds have been found at Newtown sites, although at some, such as Haag, the postmolds did not form any discernable patterns (Reidhead 1981). Excavations at the Turpin Site uncovered at least one rectangular house pattern with rounded corners as well as about 25 postmolds that did not form any identifiable patterns (Riggs 1986; Seeman 1980). The Lichliter Site near Dayton, Ohio, also produced several rectangular house patterns (Allman 1957). The Newtown component of the Hansen Site contained circular house patterns and associated features (Ahler 1987). Concentrations of posts at the Bentley site also have been interpreted as the remains of structures (Henderson and Pollack 1985). As at these sites, the concentration of postmolds at the Upper Village have been interpreted as the remains of a Late Woodland Newtown structure.

No discernable village plans have been found at any of the Newtown phase sites except the Pyles (Railey 1984) and Gillespie (Railey 1985) sites. Both of these sites are circular donut-shaped middens. The absence of an identifiable village plan in many cases, such as Rogers, Hansen, Bentley, Haag, and Water Plant, may be more a result of only a small portion of the site being excavated rather than the absence of a pattern.

Some evidence of intra-community patterning has been identified at several Newtown sites. At the Bentley Site, several deep features were documented in a line along the terrace edge somewhat removed from the two structures identified at this site (Henderson and Pollack 1985). This suggests a separation of storage and habitation areas at the Bentley Site. Clusters of features at the Hansen Site were interpreted by Ahler (1988) as possible activity areas. The Water Plant site contained a variety of deep features and postmolds which appear to represent separate household or activity areas (Dancey 1988). The deep features at Rogers also appear to be clustered, and one feature at the Upper Village is associated with a number of postmolds. At all of these sites there is a lack of feature overlap. This pattern may simply represent relatively short occupation spans, or may indicate a purposeful placement of features across a site. More research is needed on intra-site patterning at Ohio Valley Late Woodland habitation sites before this question can be answered.

A separation of habitation and mortuary facilities appears to be a characteristic of some Late Woodland Newtown phase sites. The Burkham Mound in Dearborn County, Indiana and the Chilton Mound in central Kentucky are good examples of Newtown mortuary facilities not clearly associated with habitation sites (Funkhouser and Webb 1937; Kellar 1960). Likewise Newtown habitation sites such as Hansen (Ahler 1987, 1988) and Bentley (Henderson and Pollack 1985) have not yet been directly associated with burial mounds, although they are located near the Old Fort Earthworks (Henderson et al. 1988) and other mounds. Other sites like, the Turpin Site in Ohio and the Pyles and Gillespie sites in northeastern Kentucky are associated with mortuary mounds similar to that of the Rogers Site Complex (Oehler 1973; Reidhead 1981; Railey 1984, 1985). This variation deserves further research.

The diversity of burial types found within the Rogers Mound compares favorably with other Newtown burial mounds, except for the extensive use of stone-lined graves (Kellar 1960; Oehler 1973; C. Wesley Cowan, personal communication 1990). Only Rogers, Burkham, and Chilton have produced stone-line burials. At Burkham Mound #1, the central burial area had been lined with limestone slabs to form walls. This area had been filled with soil and then covered with the stone slabs that made up the mound. At the Chilton Site, the burials within the stone

covered-burial pits were often paired or multiple burials (Funkhouser and Webb 1937; Kellar 1960). The nine stone-lined graves and the parallel placement of burials at Rogers is similar to the mortuary patterns observed at these sites.

SUMMARY

Ellis Crawford's investigations of the Rogers Site Complex, which were carried out over 10 years, resulted in the collection of a great deal of information. While analysis of these materials is ongoing, preliminary findings indicate that both villages, as well as the mound, can be assigned to the Newtown phase. Assignment of this site complex to the Newtown phase is supported by the recovered ceramic and lithic assemblages which are dominated by Newtown Cordmarked, Newtown Plain, and Chesser Notched or Lowe Flared Base projectile points. The topographic setting of the site complex, the types of features documented at both villages, and the attributes of the mound support assignment of the major component at the Rogers Site Complex to the Newtown phase (A.D. 300-800).

ACKNOWLEDGEMENTS

The author wishes to thank several persons and institutions who have contributed to this research. Funds provided by the Kentucky Heritage Council and the Boone County Fiscal Court have supported some of the research conducted on the material curated at the Behringer-Crawford Museum. This museum and especially Gregory Harper have been very supportive over the years. Informants, such as Robert Moody and Theodore Otte, have provided information on the 1961 excavations. Anthony Kreinbrink, Lee J. Otte, and Dr. Kent Vickery have provided much assistance in editing this report. Mark Seeman, David Pollack, Dr. Kent Vickery, Michael Shott and others have provided much technical advice and assistance in locating references and sources over the past several years. Thanks also go to Frank McEvinchey for illustrating some of the Rogers Site Complex artifacts for this paper.

THE YANKEETOWN OCCUPATION AT THE FOSTER SITE IN DAVIESS COUNTY, KENTUCKY

By
Tom Sussenbach
Program for Cultural Resource Assessment
University of Kentucky
Lexington, Kentucky

ABSTRACT

Test excavations at the Foster Site in Daviess County, Kentucky, documented the presence of a Yankeetown component at this site. Diachronic changes in Yankeetown ceramics were identified through a comparison of the radiocarbon dates and the ceramic assemblage from the Foster Site Yankeetown component to data from other Yankeetown sites. Differences in the ceramic sequence of the Yankeetown-Angel region and the Jackson Purchase region of western Kentucky also are discussed.

INTRODUCTION

The Foster Site (Figure 1) is located on the Ohio River terrace along the lower course of the Green River in southwestern Daviess County. The site boundaries encompass 1.2 ha and include the area originally defined as two site designations (15Da68 and 15Da69) recorded in 1977 during a reconnaissance level survey (Collins et al. 1977). In October and November, 1990, additional investigations were conducted at these sites (Sussenbach 1991).

Grog tempered ceramics were found over the entire site area, but shell tempered sherds were recovered from a more restricted area. Excavation units were placed in those areas of the site where shovel probing had suggested the presence of subsurface features. Approximately 54 m^2 of plowzone were removed during the excavations, and two features were encountered. A bell-shaped pit containing undisturbed Yankeetown deposits was found in Unit 1. Radiocarbon dates from the pit, along with a comparison of the ceramics from the feature with other Yankeetown ceramic assemblages, suggest that the Foster Site Yankeetown occupation dates to ca. A.D. 1100-1150. The remains of a wall trench structure were identified in Units 5 and 6, located approximately 50 m from the pit. In all likelihood, this structure dates to a later Angel phase site occupation representing a hamlet or farmstead (Sussenbach 1991). No features were encountered in the four other 2 by 2 m units excavated at the site.

A variety of age estimates for the Yankeetown phase have been proposed (Clay 1991; Green and Munson 1978; Kreisa 1991; Muller 1986; Railey 1990; Redmond 1990). These age ranges, spanning A.D. 700-1100, correspond to Late Woodland, Emergent Mississippian, and Mississippian contexts elsewhere in the Midsouth region. Regardless of the temporal placement of the Yankeetown phase, it represents an important data source for understanding Mississippian developments in the region.

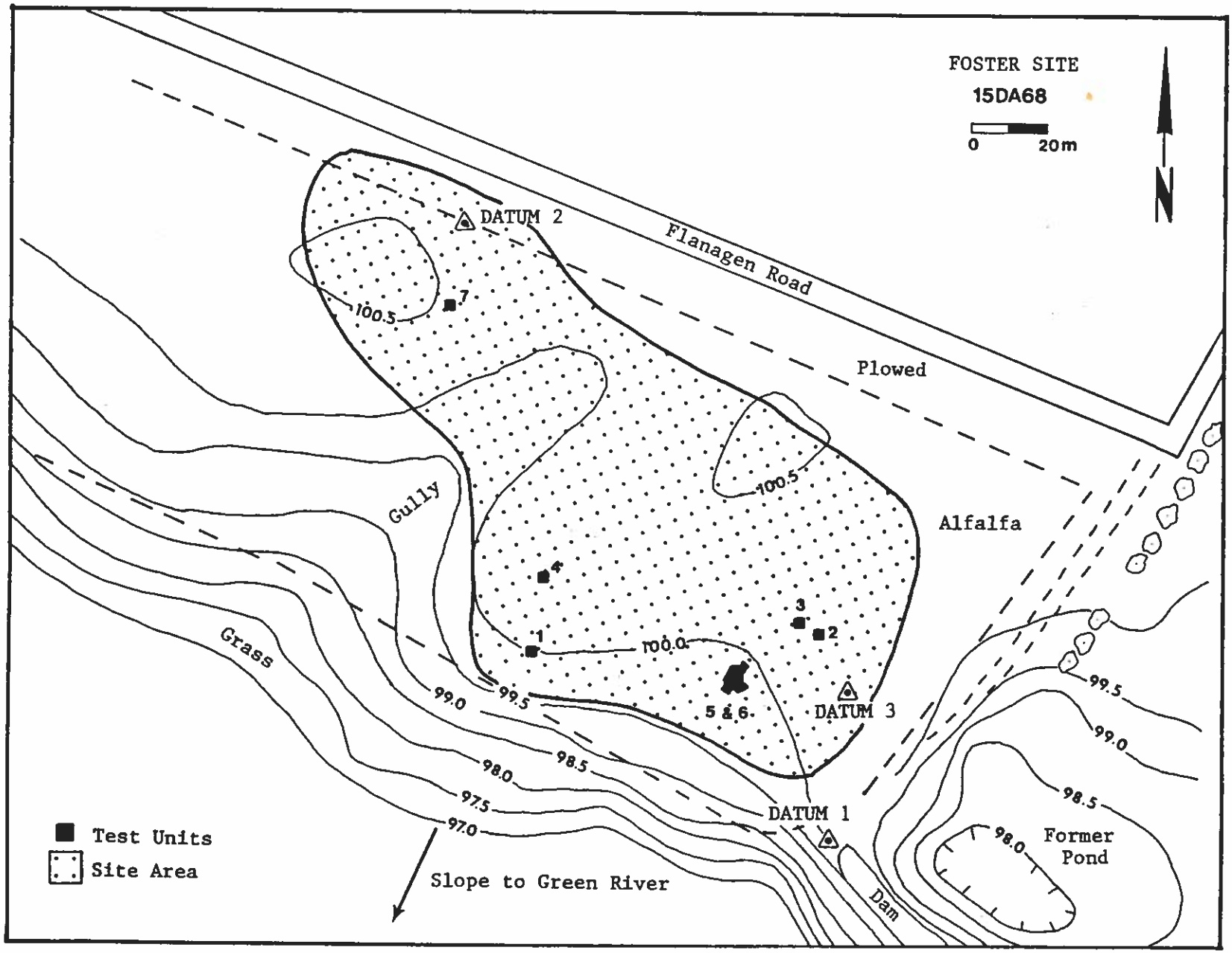


Figure 1. Map of the Foster Site showing locations of test units.

Since the Foster Site dates to the latter portion of the Yankeetown phase, the materials recovered from this site can be used to characterize late Yankeetown material culture and subsistence patterns. Towards this end, the first part of this paper provides an overview of the Yankeetown materials from the site. The ceramics from the Foster Site are compared to other Yankeetown components in an attempt to identify diachronic trends in Yankeetown ceramics. These trends are then compared to the ceramic sequence developed for the Jackson Purchase region of western Kentucky.

BELL-SHAPED PIT

This pit was detected at the base of the plowzone in Unit 1. It had an initial diameter of between 80 and 85 cm, but expanded to 145 cm in diameter at its base (140 cm below the surface). Seven soil strata were delineated representing distinct disposal episodes that occurred over a relatively short time interval. The estimated volume of the pit is just under 1000 l. The artifact assemblage included grog tempered sherds, perforated and unperforated ceramic disks, a chunky stone, triangular projectile points, and hoe flakes. Decorated Yankeetown ceramics were present, but no shell tempered sherds were found in the pit. Botanical remains were well-preserved, but faunal remains were fragmentary and burned.

Radiocarbon dates were obtained on two samples of charred hickory nuts collected from this feature. At one standard deviation, these samples yielded calibrated radiocarbon dates of A.D. 996(1023)1151 (980±50 B.P. - Beta-42594) and A.D. 1157(1212)1258 (840±50 B.P. - Beta-42593) (Stuiver and Reimer 1986). When the two dates are averaged, they yield a calibrated date of A.D. 1036(1125)1168.

MATERIAL REMAINS

Ceramics

The wide range of decorations, the combination of different decorations on single sherds, and the overall variability in surface treatments on a single vessel makes it impossible to assign Yankeetown ceramics to described type names (Blasingham 1953). I have followed Redmond's (1990) approach in using descriptive labels rather than type names. A complete discussion appears elsewhere (Sussenbach 1991).

Analysis of the ceramics (Table 1) concentrated on all rims and decorated body sherds as well as undecorated body sherds greater than 4 cm^2. Temper and surface treatment were the main criteria used to divide the ceramics into analytical classes. Undecorated body sherds less than 4 cm^2 were weighed but were not analyzed further.

All of the ceramics recovered from the bell-shaped pit are tempered with grog, or a mixture of grog and grit. The quantity and size of the temper varies among the sherds, as do characteristics of the paste and thickness of the specimens.

Table 1. Ceramics Recovered from Unit 1 and Units 5 and 6 at the Foster Site.

Temper and Surface Treatment	Unit 1		Units 5 and 6		Total	
	No.	Percent	No.	Percent	No.	Percent
Grog tempered						
Rim sherds (>4 cm^2)						
Decorated	16	2.9	1	1.8	17	3.0
Plain	15	2.7	-	-	15	2.6
Rim sherds (<4 cm^2)						
Decorated	13	2.3	1	1.8	14	2.4
Plain	50	9.0	1	1.8	51	8.9
Body sherds (>4 cm^2)						
Decorated	28	5.0	-	-	28	4.9
Plain	165	29.7	5	8.9	170	29.7
Smoothed-over cordmarked	89	16.0	-	-	89	15.6
Cordmarked	102	18.3	3	5.4	105	18.3
Zoned cordmarked and plain	9	1.6	1	1.8	10	1.7
Exfoliated	2	0.3	-	-	2	0.3
Body sherds (<4 cm^2)						
Decorated	67	12.0	5	8.9	72	12.6
Total	556	100.0	16	28.6	572	93.5
Shell tempered						
Rim sherds (>4 cm^2)						
Plain	-	-	2	3.6	2	3.6
Rim sherds (<4 cm^2)						
Plain	-	-	5	8.9	5	8.9
Body sherds (>4 cm^2)						
Plain	-	-	32	57.1	32	57.1
Fabric impressed	-	-	1	1.8	1	1.8
Total	-	-	40	71.4	40	6.5
Total analyzed sherds	556	100.0	56	100.0	612	100.0

Table 2. Decorated Grog Tempered Ceramics by Sherd Type and Size.

Category	Rims				Bodies				Total	
	>4 cm		<4 cm		>4 cm		<4 cm			
	No.	%	No.	%	No.	%	No.	%	No.	%
Line filled incisions	2	11.8	1	7.1	12	42.9	10	13.9	25	19.1
Patterned incisions	1	5.9	6	42.9	5	17.9	9	12.5	21	16.0
Indeterminate incisions	0	0.0	0	0.0	2	7.1	15	20.8	17	13.0
Line-tick	0	0.0	0	0.0	4	14.3	9	12.5	13	9.9
Wavy fillet	1	5.9	1	7.1	1	3.6	12	16.7	15	11.5
Plain fillet	0	0.0	1	7.1	0	0.0	2	2.8	3	2.3
Exterior bar stamps	5	29.4	1	7.1	1	3.6	4	5.6	11	8.4
Exterior/interior bar stamps	0	0.0	0	0.0	0	0.0	3	4.2	3	2.3
Fingernail impressions	1	5.9	2	14.3	0	0.0	4	5.6	7	5.3
Interior punctations	0	0.0	1	7.1	0	0.0	0	0.0	1	0.7
Notched plain fillet	0	0.0	0	0.0	1	3.6	0	0.0	1	0.7
Fingernail impressed plain fillet	2	11.8	0	0.0	0	0.0	1	1.4	3	2.3
Bar stamped plain fillet	4	23.5	1	7.1	1	3.6	0	0.0	6	4.6
Exterior punctations/incising	0	0.0	0	0.0	0	0.0	2	2.8	2	1.5
Line filled incising/exterior bar stamps	0	0.0	0	0.0	1	3.6	1	1.4	2	1.5
Line filled incising/bar stamped plain fillet	1	5.9	0	0.0	0	0.0	0	0.0	1	0.7
Total	17	100.1	14	99.8	28	100.2	72	100.2	131	99.8

A variety of Yankeetown decorated sherds are present in the collection. Decoration is primarily located on the neck areas of jars and the upper portions of bowls and consists of incising, fillets, stamping, and/or other techniques (Figures 2 and 3; Table 2). However, only a small percentage of the sherds are decorated. Plain, cordmarked, or smoothed-over cordmarked sherds dominate the assemblage. Identified vessel forms include jars, bowls, and pans.

Jars (Figure 4a-j)

Jar rim (n=28) profiles are either incurvate (n=18) or everted (n=10). Two rims are folded, and no appendages are present in this collection. Upper rim decoration consists of exterior notches (n=3), exterior ticks (n=2), interior notches (n=2), and applied fillets (n=1). Lips are flat (n=18), rounded (n=6), or extruded (n=4). Lip decoration is limited and consists of perpendicular notches (n=2) and vertical nodes (n=1). Vessel orifice diameter estimates could be determined for 13 specimens. They ranged from 22 to 42 cm with a median of 25 cm. Rim thickness, measured at 1 cm below the lip, ranges from 3.4 to 8.2 mm with a median of 6.5 mm.

Sixteen specimens (57 percent) exhibit decoration below the rim, consisting of various incised patterns (n=6), applied fillets (n=1), and stamping/fingernail impressions (n=3). Combinations of stamps on plain fillets (n=5) and incisions with bar stamped plain fillets (n=1) also occur. The exterior surfaces of the decorated specimens are plain except for a single incised example where the upper portion is plain and the lower portion is cordmarked. The remaining 12 rims have plain, undecorated exterior surfaces.

Bowls (Figure 4k-o)

Ten rims are assigned to this vessel type. Of these, eight have outslanting profiles, while flared and constricted examples are represented by single specimens. Rim folds and appendages are lacking in this vessel class. Upper rim decoration consists solely of exterior notches on four specimens. Lips are flat (n=6), rounded (n=2), extruded (n=1), or pointed (n=1). Lip decoration includes diagonal notching (n=1) and vertical nodes (n=1). Vessel orifice diameter, which could be estimated for only six specimens, ranges from 20 to 32 cm with a median of 30 cm. Rim thickness ranges from 4.5 to 7.8 mm with a median of 6.7 mm.

Six rims have plain exterior and interior surfaces, while four specimens are decorated below the rim. Decoration consists of exterior bar stamps (n=2), fingernail impressions (n=1), and bar stamped plain fillet (n=1) on plain exterior surfaces.

Pans (Figure 4p)

Nine rims, perhaps from the same vessel, are classified as pans. Exterior surface treatment consists of a roughly smoothed surface exhibiting numerous "pock marks." The rims are unmodified and outslanting in profile. The lips are rounded and undecorated. The estimated orifice diameter is 42 cm for all the rims. These sherds range in thickness from 8 to 9.3 mm with a median of 8.5 mm.

Indeterminate

Indeterminate rims (n=50) exhibit highly variable attributes, no doubt reflecting the presence of both jars and bowls in this group. Rim profiles are everted (n=12), outslanting (n=6), straight (n=2), incurvate (n=1), or rolled (n=1). Twenty-eight sherds could not be oriented. Upper rim decoration consists of exterior notches (n=4), interior notches (n=4), and fillets (n=2). Lip are primarily flat (n=22) or rounded (n=20), but pointed (n=1), thickened (n=1), and extruded (n=1) lips also occur. Only two specimens exhibit decoration, which occurs in the form of lip notching. Orifice diameter estimates (n=5) range from 12 to 30 cm with a median of 24 cm. Rim thickness ranges from 4.1 to 9.1 mm with a median of 4.8 mm.

Eleven specimens exhibit decoration below the rim on a plain exterior surface. This includes incised patterns (n=4), bar stamped or fingernail impressions (n=3), bar stamped plain fillets (n=1), plain fillets (n=1), wavy fillets (n=1), and interior punctations (n=1). The remaining 39 rims exhibit plain exterior surfaces.

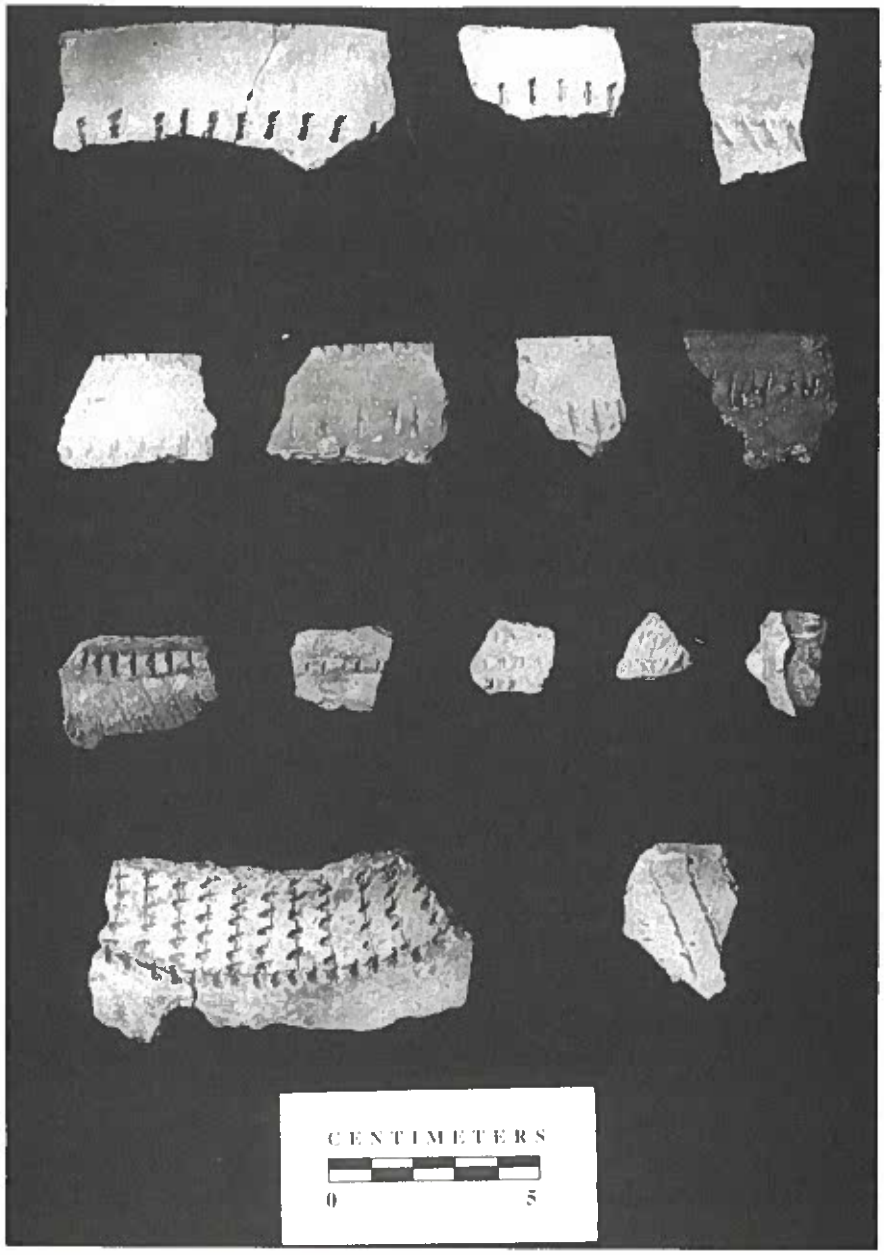


Figure 2. Bar stamped and bar stamped on pseudo-fillet sherds (top row); fingernail impressed and fingernail impressed on pseudo-fillet sherds (second row); notched fillet and wavy fillet sherds (third row); line and tick sherds (bottom row).

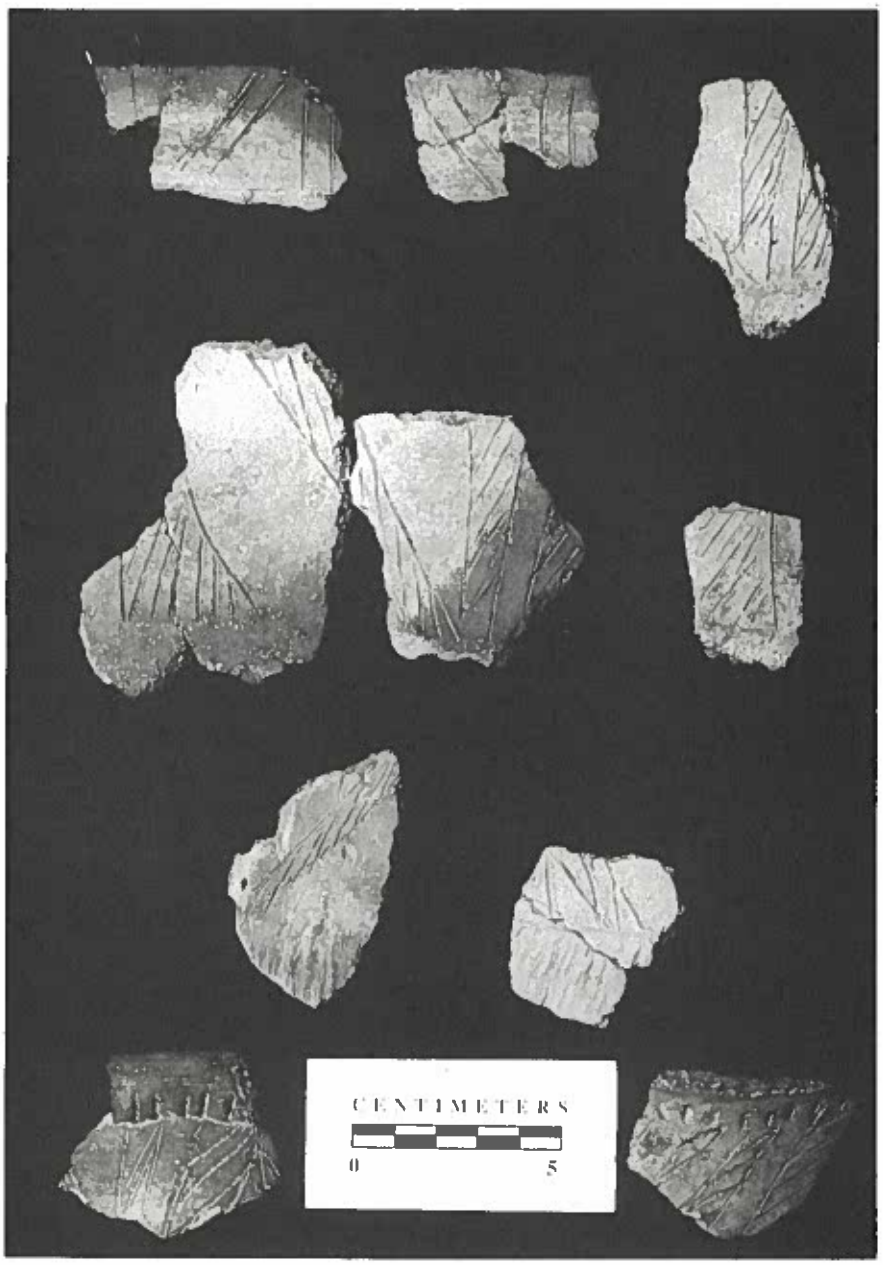


Figure 3. Incised sherds (top three rows); incised and bar stamped sherds (bottom row).

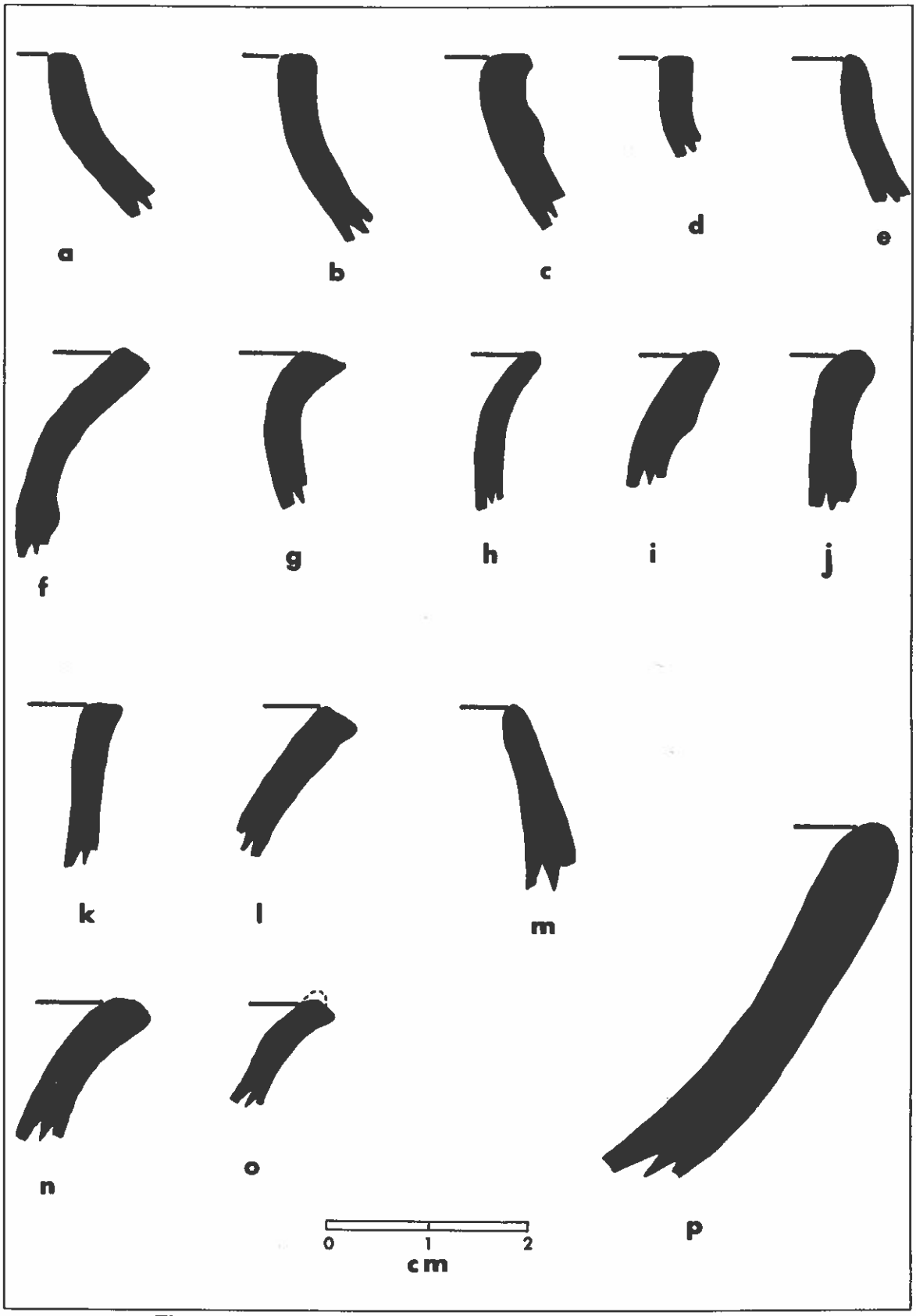


Figure 4. Rim profiles of Foster Site Yankeetown ceramics.

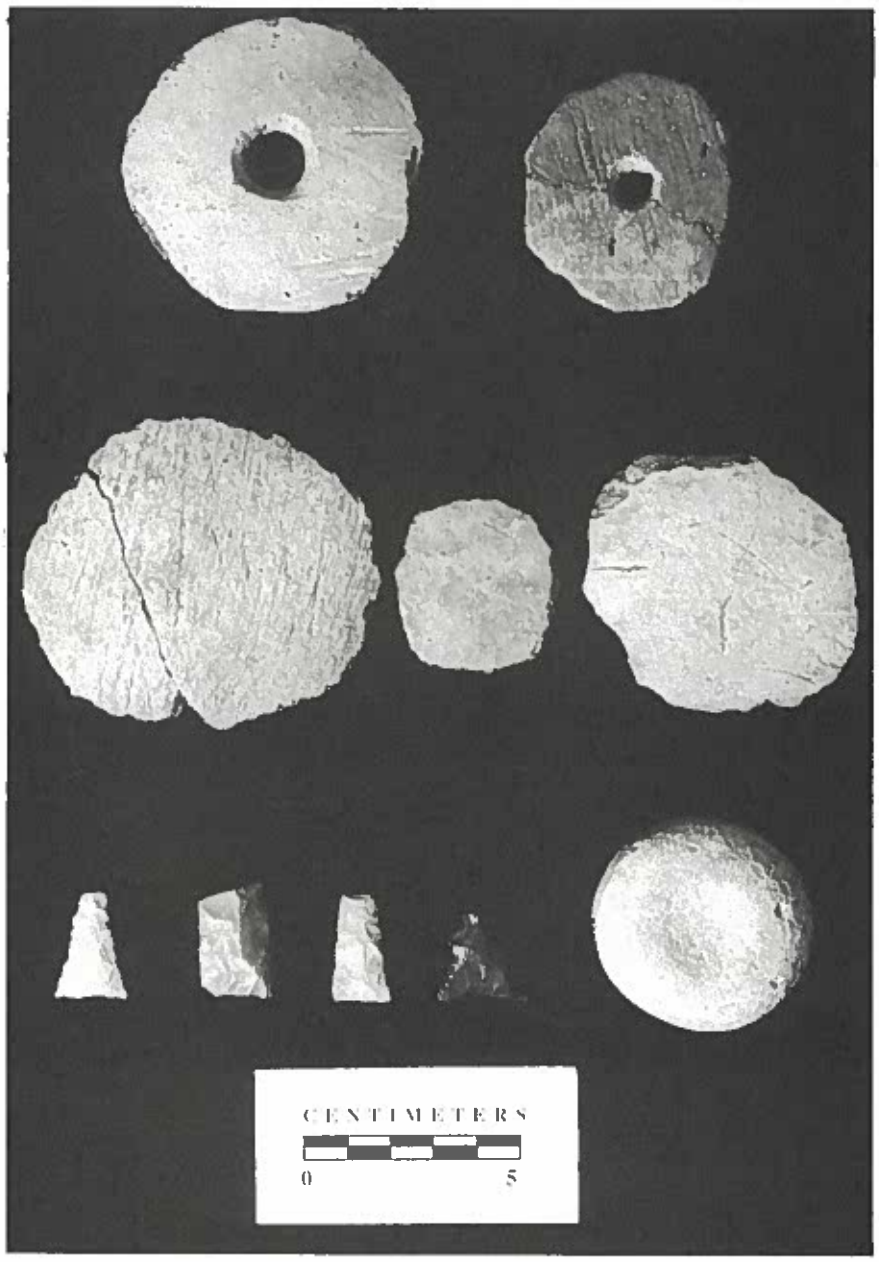


Figure 5. Perforated ceramic disks (top row); unperforated ceramic disks (middle row); triangular projectile points and stone discoidal (bottom row).

Decorated Body Sherds

A total of 100 decorated body sherds were recovered from the Foster Site. The line-tick motif (n=13), which is absent on rims, is well represented on these specimens. Also common among the body sherds is the wavy fillet (n=13) decorative motif. Other decorated varieties occur in relatively small frequencies on body sherds (Table 2). Differences in the relative frequencies of decorative elements on rims and body sherds suggests variability in the positioning of the motifs on vessel surfaces. The absence of certain decorative elements on rims implies that these elements were located some distance below the rim, and in some instances, it is clear from sherd curvature that the decorations occur on the shoulder areas of jars.

Undecorated Body Sherds

Undecorated sherds constitute 93 percent of body sherds greater than 4 cm^2. Sherds with cordmarked exterior surfaces account for 106 of the 378 sherds assigned to this group. Another 89 sherds have smoothed-over cordmarked exterior surfaces, and 170 have plain exterior surfaces. Ten specimens, all apparently from shoulder areas of jars, exhibit plain surfaces above cordmarked exterior surfaces. Three specimens have exfoliated surfaces. The large number of cordmarked (and smoothed-over cordmarked) body sherds contrasts markedly with the absence of cordmarked rim sherds in the collection. Most of the cordmarked sherds represent the lower portions of vessels that have plain upper portions. The plain body sherds may be from vessels with completely plain surfaces, but they also may be from plain zones on decorated vessels and from plain zones above areas of cordmarking.

Ceramic Disks

Eighteen ceramic disks or disk fragments were recovered from the bell-shape pit (Figure 5). All were made from grog tempered plain, cordmarked, or decorated sherds. They include perforated, partially perforated, and unperforated specimens. Where possible, the diameters of the disks and the interior holes were measured. Seven disks and disk fragments have centrally drilled holes. These disks range from 5 to 9 cm in diameter and the interior holes vary from 0.7 to 1.6 cm in diameter. Four disks exhibit preliminary drill marks that do not extend through the sherd. These sherds have shallow depressions on both surfaces, suggesting that the holes were made by drilling from both sides. The diameters of these partially drilled disks range from 6 to 8 cm. Six disks display no evidence of subsequent drilling. These undrilled specimens have diameters ranging from 3 to 7 cm.

Ceramic disks have been previously reported in Yankeetown assemblages in the Ohio River Valley (Redmond 1990; Winters 1963). Perforated examples have not been previously identified. Perforated ceramic disks have been reported from Mississippian sites in the Ohio and Mississippi river valleys at the Angel (Kellar 1967), Kincaid (Cole et al. 1951), Matthews (Walker and Adams 1946), and Lawhorn (Moselage 1962) sites. In these cases, they are described as either spindle whorls or gaming pieces. While the exact function of the disks is unknown, the presence of both undrilled and drilled specimens suggests the potential for different functions. While the undrilled specimens may represent blanks intended for later drilling, the smaller size of some of these specimens suggests alternative functions based upon size.

Lithics

Four nearly complete triangular projectile points were collected from the bell-shaped pit (Figure 5). All lack their distal tips, and one appears to have been reworked into a drill. The metric attributes of these specimens exhibit a great deal of variation. Lengths range from 29 to 43 mm, base widths range from 13 to 22 mm, weights range from 1.7 to 3.3 g, and thickness varies from 3.6 to 6.2 mm. Bases are concave or straight and occur with straight or incurvate blade margins. Serration occurs on both straight and incurvate margins. Each point is manufactured from a different chert type.

Dover chert at the Foster Site is present only in the Yankeetown bell-shaped pit. Several specimens are hoe flakes, indicating use of Dover chert sources for chert hoes during the Yankeetown occupation of the site. Other lithic artifacts include hammerstones, sandstone abraders, a worked cannel coal piece, a pitted mano, and a chunky stone.

Charcoal and Bone Remains

Maize remains and hickory nuts were relatively ubiquitous in the fill of the bell-shaped pit. Other identified nut types include pecan, walnut, and acorn. Chenopodium, maygrass, little barley, and wild bean seeds also were present. The chenopodium specimens include examples with rounded margins and thick seed coats that are typical of uncultivated varieties, and examples with truncate margins and thin seed coats that are characteristic of domesticated varieties. Sumac, grape, persimmon, blueberry, and either blackberry or raspberry also were identified (Scarry 1991).

Faunal remains from the pit include a wide range of species. Deer, raccoon, beaver, gray squirrel, and possibly opossum were present, as well as bird, fish, snake, and turtle remains (Tune 1991).

TEMPORAL CHANGES IN YANKEETOWN MATERIAL ASSEMBLAGES

The Yankeetown phase has generally been treated as a cultural unit lacking spatial or temporal differences in material culture and adaptive patterns (see Redmond 1990). No doubt part of the difficulty in distinguishing changes during the Yankeetown phase relates to the variability exhibited by decorated Yankeetown ceramics and their relatively low percentage of occurrence in site assemblages. A general lack of excavation data and the few radiocarbon dates that exist in the area also contribute to this difficulty. However, given the cultural changes that occurred in other regions of the Midsouth during the period encompassed by the Yankeetown phase, it is unlikely that Yankeetown material culture and adaptive patterns remained the same for more than three centuries.

In an attempt to identify temporal trends in Yankeetown ceramics materials from the Foster Site in Kentucky, Site 12Po50 in Indiana, and the Duffy (11Ga9) Site in Illinois were compared. The Foster Site materials also were compared to ceramics from the Stull Site (15Un95) in Kentucky. This comparison was based in part on sherd counts, but emphasis was primarily placed on a comparison of vessel assemblages using particular attributes. Since the available information on Duffy and Site 12Po50 is drawn from Redmond's (1990) examination of rim

sherds greater than 4 cm^2, only similar sherds from the bell-shaped pit at the Foster Site were used in this comparison (Table 3).

The Duffy and Foster site ceramic assemblages are very similar. Percentages of different vessel types, surface treatments, and the occurrence of rim folds are nearly identical for both sites. On the other hand, the assemblage from Site 12Po50 exhibits a higher percentage of jars, a higher percentage of decorated sherds, and more rim folds.

Since Duffy and Site 12Po50 are located in close proximity to one another, the differences identified between these two sites are probably not related to spatial variability but rather to temporal variability. When these patterns are considered along with the late radiocarbon dates from the Foster Site, it can be suggested that Foster and Duffy represent late Yankeetown occupations, while Site 12Po50 site was probably occupied at an older date.

Additional diachronic changes in Yankeetown ceramics can be inferred from a comparison with the Stull Site ceramics (Ottesen 1981). Although grog tempered sherds dominate the ceramics from the six features excavated at this site, some shell tempered sherds were present in each feature. The occurrence of shell tempered sherds in all of the features suggests that these sherds are not the result of mixing of debris from a more recent Mississippian occupation, but rather reflect a transition from the use of grog to the use of shell to temper ceramic vessels during the late Yankeetown occupation of this site. This suggestion is supported by the occurrence of shell tempered Yankeetown decorated sherds that include specimens with notched fillets, incising, and combinations of incising and bar stamping. Also at Stull, cordmarked sherds account for less than 10.0 percent of the grog tempered body sherds. This contrasts markedly with the Foster Site where body sherds with cordmarked or poorly smoothed cordmarked exterior surfaces account for over 50 percent of the sherds (Table 1).

Only a few radiocarbon dates from Yankeetown phase components have been reported. Three dates derive from the Yankeetown Site, two are from the Foster Site, and one is from the Stull Site (Table 4). (All of the dates discussed in this paper have been calibrated using the CALIB Version 2.0 computer program [Stuiver and Reimer 1986] and the 20 year atmospheric program [ATM20.14C]). These dates imply a long time span for the Yankeetown phase which suggests little utility in using the presence of Yankeetown ceramics in other regions as strong chronological markers. Secondly, the dates provide evidence of a continuation of the Yankeetown phase past the frequently cited ending date of A.D. 1000 or 1050 (Clay 1991; Kreisa 1991; Muller 1986; Redmond 1990). The dates from the Foster and Stull site suggest that terminal Yankeetown phase occupations date to A.D. 1050-1150, if not later. Based on the preceding ceramic comparison, the Duffy site occupation also probably dates to this time span, while the component at 12Po50 and at least one of the components at the Yankeetown site are considerably older.

The chronological trends in Yankeetown ceramics discussed in this paper are similar to those previously identified elsewhere in the Midsouth (Sussenbach and Lewis 1987). Basically, there is an increase in the number of bowls and pans through time. This is associated with a decrease in sherds with cordmarked exterior surfaces and a decrease in the presence of folded rims.

Table 3. Comparison of three Yankeetown Site Ceramic Assemblages.

Ceramic Assemblage Characteristics	12Po50	Foster 15Da68	Duffy 11Ga9
Rim sample size	46	31	90
Vessel type			
Jars (percent)	89	48	42
Bowls and Pans (percent)	11	52	58
Surface treatment			
Plain (percent)	24	52	61
Cordmarked (percent)	11	0	0
Decorated (percent)	65	48	39
Rim folds (percent)	17	7	6

Table 4. Radiocarbon Dates from Yankeetown Components.

Site Name	Laboratory Number	BP Age	Calibrated A.D. Age
Yankeetown[2]	Beta-17320	1220±110	670(793)976
Yankeetown[2]	Beta-17321	1160±120	689(886)1000
Yankeetown[1]	M-2007	1050±130	782(990)1153
Foster[4]	Beta-42594	980±50	996(1023)1151
Stull[3]	GX-7903	860±130	1020(1191)1280
Foster[4]	Beta-42593	840±50	1157(1212)1258

References: [1]Dorwin and Kellar (1967), [2]Redmond (1990), [3]Ottesen (1981), [4]Sussenbach (1991)

In the Jackson Purchase region of western Kentucky, the transition from the use of grog to shell temper has been documented at the Marshall Site (Sussenbach and Lewis 1987). Attributes present on the grog tempered ceramics (red slipping, rim folds, cordmarking) continue to occur on ceramics after the introduction of shell temper. This transition is difficult to date, because it may have spanned several generations of potters and lasted a century or more. However, by A.D. 1050-1100, Jackson Purchase ceramic assemblages consist largely of shell tempered ceramics assignable to the types Mississippi Plain and Bell Plain (Edging 1990; Lewis 1983, 1986; Sussenbach et al. 1986; Sussenbach and Lewis 1987; Wesler 1985).

The evidence from the Yankeetown and Angel phase occupations of the Ohio Valley suggests a later date for the establishment of a shell tempered ceramic tradition, and as yet there is little evidence for a transition from grog to the use of shell to temper ceramic vessels in this region (Redmond 1990). The data from the Stull Site discussed above, however, suggest that the change from grog to shell temper in this region was rapid and that few of the attributes initially present in grog tempered assemblages survived for very long after the widespread adoption of shell temper. The characteristic decorations of the Yankeetown phase, along with the presence of cordmarking, disappear almost completely by the beginning of the Angel phase. If the Yankeetown occupations at the Foster and Stull sites date to A.D. 1050-1150, this suggests an

approximately 100 year difference for the establishment of predominantly shell tempered ceramic assemblages between this area and the Jackson Purchase region.

SUMMARY AND DISCUSSION

The Foster Site appears to contain a late (ca. A.D. 1000-1150) Yankeetown phase component. The size of the Foster Site Yankeetown component and the presence of a large storage pit suggest that this community was probably occupied on a year-round basis. Such a perspective differs from the seasonal model of residential movement advocated by Redmond (1990). Maize and starchy seeds were cultivated using a hoe-based agricultural system.

The trends in Yankeetown ceramic assemblages (i.e., an increase in the number of bowls and pans, a decreased in cordmarked exterior surfaces, and a decrease in the presence of folded rims) discussed in this paper are probably not the only changes that occurred during this phase. The differences in ceramic assemblages identified in this paper point to the possibility that a ceramic chronology can be established for the Yankeetown phase that will permit finer temporal resolution than currently available. With large samples from well dated contexts it should be possible to identify temporal differences in decorative techniques as well as diachronic trends in vessel shape, especially jars. Other aspects of material culture also may have changed during the 400 years encompassed by the Yankeetown phase. The presence or absence of maize, hoes, chunky stones, ceramic disks, and other artifact types may well aid in distinguishing temporal differences. Once such trends are established, changes in settlement patterns and other socio-cultural adaptations also may be identified.

The placement of the Foster Site Yankeetown component at A.D. 1100-1150, along with the identification of chronological trends in Yankeetown ceramics through time, have implications for the Midsouth's prehistoric record. A number of fundamental similarities occur within the region, but there are striking differences in the nature and pace of local trajectories, especially with regards to ceramic assemblages. Strong continuities reflecting in situ developments can be identified in the American Bottom and the Cairo Lowland, while rapid shifts suggesting external factors are evident in northeast Arkansas and the Lower Green-Ohio River areas. If true, these differences may ultimately alter our perspective of Mississippian societies and the developments that led to Mississippian over a broad area.

ACKNOWLEDGMENTS

Major portions of this paper were taken from Sussenbach (1991). The Kentucky Cabinet for Economic Development funded the archaeological investigations at the Foster Site through a contract with the University of Kentucky's Program for Cultural Resource Assessment. The Foster family of Owensboro, Kentucky, are extended a debt of gratitude for their assistance during the fieldwork conducted at the Foster Site. The excavation crew consisted of Julie Morgan, Chris Begley, Will Daley, Randy Fouts, Leif Meadows, and Sande Thomas. Sande also drafted the figures. I would also like to thank Cheryl Munson, David Pollack, Bill Sharp, and Gwynn Henderson for discussions on the topics addressed in this paper. Lastly, I appreciate the editorial assistance of Christine Hensley, which improved the readability of this paper.

CHRONOLOGICAL AND SPATIAL PERSPECTIVES ON CERAMIC VESSEL FORM AT WICKLIFFE MOUNDS (15BA4)

By
Kit W. Wesler
Wickliffe Mounds Research Center
Wickliffe, Kentucky

ABSTRACT

Ceramic research at Wickliffe Mounds in the 1980s has concentrated on analysis of decorative types as a key to understanding the chronological and developmental sequence of the Wickliffe community. Attempts also have been made to examine intracommunity spatial patterning at this site and to identify patterns that may contribute to the study of small-scale chiefdoms. This paper supplements those studies by examining ceramic vessel form assemblages from both a chronological and spatial perspective.

INTRODUCTION

The Wickliffe Mounds Site (15Ba4) is a small Mississippian village and mound center located on the bluffs of the Mississippi River approximately 6 km below its confluence with the Ohio River. Excavations at Wickliffe in the 1930s resulted in a large collection of artifacts, now curated by the Wickliffe Mounds Research Center (WMRC). Since 1983, WMRC research activities have concentrated on recataloguing and analyzing the extant collection, and conducting test excavations designed to evaluate the contexts of the 1930s investigations.

Analyses has emphasized the development of a site-specific chronology. Based on diachronic trends in Mississippian ceramics, a three period chronology (Early, Middle, and Late Wickliffe) has been developed for the site. Initial estimates of site size during each period suggest that village size increased through time (Wesler 1990a). Recent research at Wickliffe has addressed questions relating to assemblage patterning during each period, differences between the three periods, and the extent to which these patterns reflect the social organization of a small-scale chiefdom (Wesler 1990c).

This paper examines ceramic vessel forms and relates them to the Wickliffe sequence. The distribution of vessel forms is examined from both a spatial as well as chronological perspective.

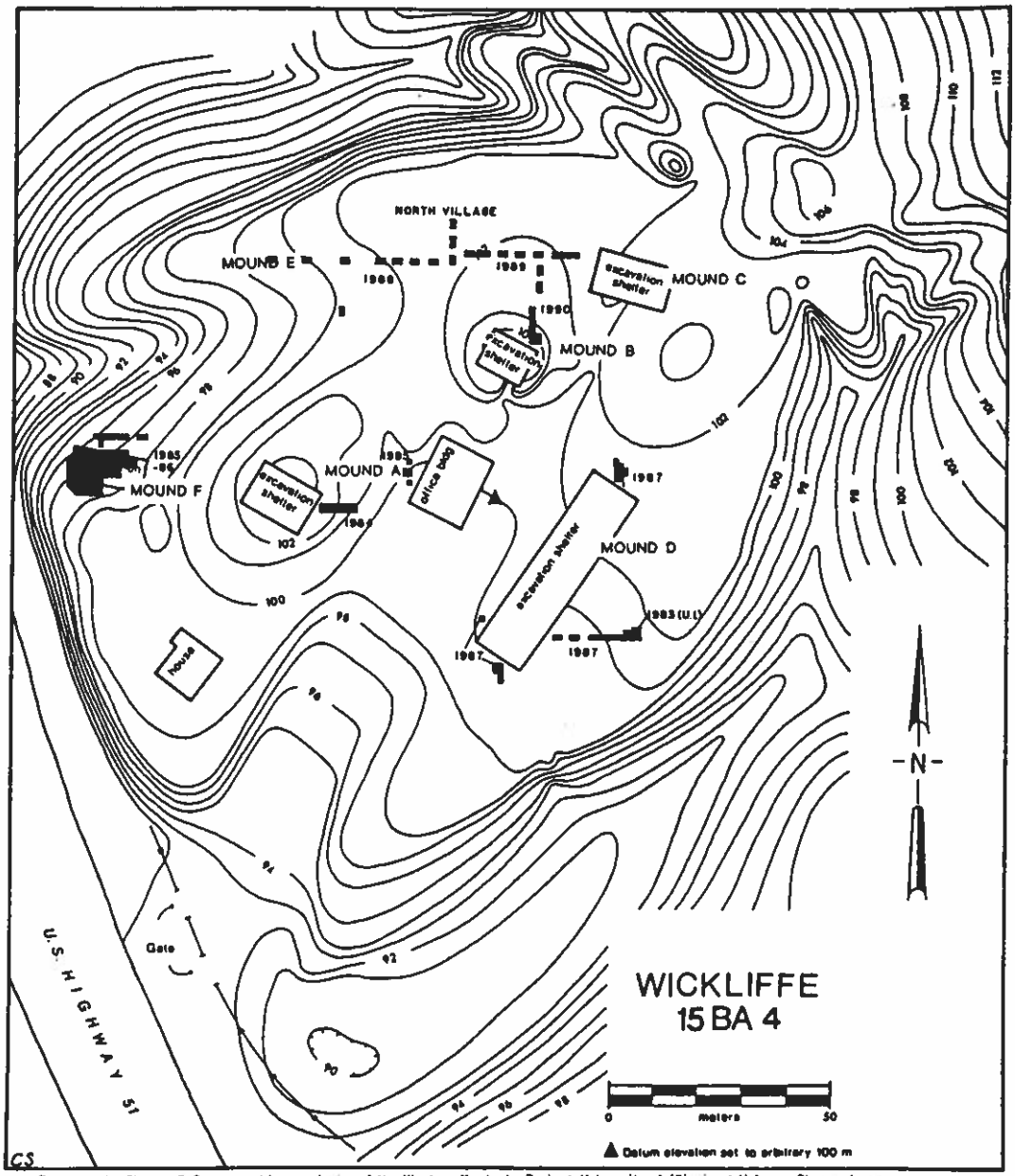
WICKLIFFE PROJECT

Previous studies of the Wickliffe Site have delineated chronological and spatial patterning in material culture and community organization. The 1984 excavations in Mound A, the larger platform mound (Wesler 1985), allowed definition of three Wickliffe Site ceramic periods, based on stratigraphic relationships and on varying percentages of two ceramic traits: incising (including punctation) and red-filming. Subsequent excavations identified undisturbed deposits in several areas of the site (Figure 1): Mound F on the western bluff (Wesler and Neusius 1987); the north and south ends of Mound D on the east side of the plaza and the East Midden along the eastern bluff line (Wesler 1989); and the North Village, the northwest to the north-central portions of the site (Wesler 1991b). Limited excavations located next to the WMRC office in 1985 (Wesler and Neusius 1987) failed to identify undisturbed prehistoric deposits but provided information to support the interpretation of a plaza in the center of the village. These projects established the consistency of both the characteristic ceramic assemblages and their stratigraphic relationships.

Table 1 presents the major ceramic categories associated with the three Wickliffe periods. The differences among the periods are most evident when the percentages of incised and red-filmed sherds are compared. In Early Wickliffe deposits, incised sherds comprise fewer than 1 percent of the assemblage, but red-filmed sherds account for more than 2 percent; typically, the frequency of red-filmed sherds is approximately three times that of incised sherds in Early Wickliffe assemblages. During the Middle Wickliffe period, incising increases in frequency, and red-filming remains approximately equal to its Early Wickliffe level. In larger Middle Wickliffe samples, red-filming slightly outnumbers incising, but in smaller assemblages, the two groups tend to occur in nearly equal numbers. During the Late Wickliffe period, incising continues to increase, but there is a sharp decrease in red-filming, which constitutes less than 0.6 percent of Late Wickliffe assemblages.

A number of decorative types included within the "incised" category (generally following Phillips et al. [1951] and Phillips [1970]) have been used to refine the sequence. A Ramey Incised sherd from an Early Wickliffe context indicates contact with the American Bottom before A.D. 1200. While O'Byam Incised var. Adams (Lewis 1986) is only found in Middle Wickliffe contexts, it is a marker for the period. Its characteristic flared-rimmed or flanged bowl (cf. Kincaid bowl type 34 [Orr 1951]) resembles a transitional form between a bowl and a plate. The Late Wickliffe period is marked by the introduction of O'Byam Incised var. O'Byam on true plates and Owens Incised, Leland Incised, and Winterville Incised. At Wickliffe sherds of the latter two types tend to be assigned to unspecifiable varieties, but several specimens exhibit affinities to the types as defined in the Lower Mississippi Valley (Wesler 1991b). Significantly, later regional types such as O'Byam Incised var. Stewart, which occurs on deep-rimmed plates (R. Berle Clay, personal communication 1991), and Parkin Punctate are absent from well documented Late Wickliffe contexts.

Few other temporal patterns are evident in the ceramic assemblages of the three periods. Matthews Incised, vars. Beckwith and Manly, Mound Place Incised, and Barton Incised are found throughout the Wickliffe sequence. Although negative painted sherds, classified as Nashville Negative, are associated with all three periods, only one negative painted sherd has been recovered from an Early Wickliffe context. There is some question as to whether this specimen actually is an example of deliberate negative painting. When it is dropped from consideration, negative painting does not appear before the Middle Wickliffe period. The percentage of Kimmswick Fabric Impressed is variable, but in general it tends to decline in importance from Early to Late Wickliffe (Figure 2).



Base map by Charles B. Stout, used by permission of the Western Kentucky Project, University of Illinois at Urbana-Champaign.

Figure 1. Map of the Wickliffe Site.

Along with relative dating of the ceramics and other diagnostics found at Wickliffe, a number of radiocarbon dates (Wesler 1991a) have been used to establish the temporal parameters for the three periods. Early Wickliffe is assigned to A.D. 1100-1200, Middle Wickliffe to A.D. 1200-1250, and Late Wickliffe to A.D. 1250-1350. A.D. 1100 is an arbitrary boundary for the beginning of the Wickliffe occupation that may be revised with additional research. All of the boundary dates have been arbitrarily rounded to half-century increments.

In addition to identifying temporally sensitive contexts, the 1980s excavations have investigated a spatially diverse set of deposits (Figure 1). The data generated by these studies have been used to propose a model of village expansion (Wesler 1990a, 1991b). Early Wickliffe deposits have been identified beneath Mound A and the north end of Mound D, and may underlie Mound B. In the North Village, Early deposits are scattered and thin. Middle Wickliffe deposits are represented by the initial stages of Mound A, domestic features in the subsoil at the south end of Mound D, and middens in the central area of the North Village. Late Wickliffe deposits include the final stage of Mound A, the bulk of Mound D, and the upper zone of the central North Village. At the site margins (Mound F, the East Midden, and the western and northern reaches of the North Village), Late Wickliffe deposits rest directly on the subsoil.

From these data, it appears that the village was founded on a central-plaza plan. Early period domestic areas clustered tightly around the plaza, and scattered activities took place to the north. Trenches in the two platform mounds, Mound A in 1984 (Wesler 1985) and Mound B in 1990, revealed the presence of only a few wall trenches below each mound. This situation contrasts with the intersecting wall trench and feature patterns found elsewhere in the village, which indicate a complex palimpsest of over-building and reconstruction. It is likely that mounds A and B were special-purpose areas beginning early in the occupation.

The Middle Wickliffe village presented a different picture of site use. The first stages of Mound A were constructed during this period. Field observation suggests that Mound B also was begun during the Middle Wickliffe period, though this interpretation has yet to be verified. During the Middle Wickliffe period, the domestic area expanded north of Mound B, along the high ground of the ridge, and to the south of Mound D.

During the Late Wickliffe period, the site reached its maximum area, and the final mantles were added to the platform mounds. At the western edge, a thin midden indicates domestic occupation, which was capped by Mound F. Both date entirely to the Late Wickliffe period. The East Midden accumulated during this period, and the village crowded against the lower-lying edges of the ridge at the northwest and north. Burials, red cedar, and concentrations of lithics, ceramic effigies, bone artifacts, and gaming pieces suggest that Mound D was a Late Wickliffe elite burial facility (Wesler 1990b). Burials placed in Mound C intruded Late Wickliffe deposits, or resulted in the mixing of Late Wickliffe with earlier Mississippian materials (Wesler 1991b).

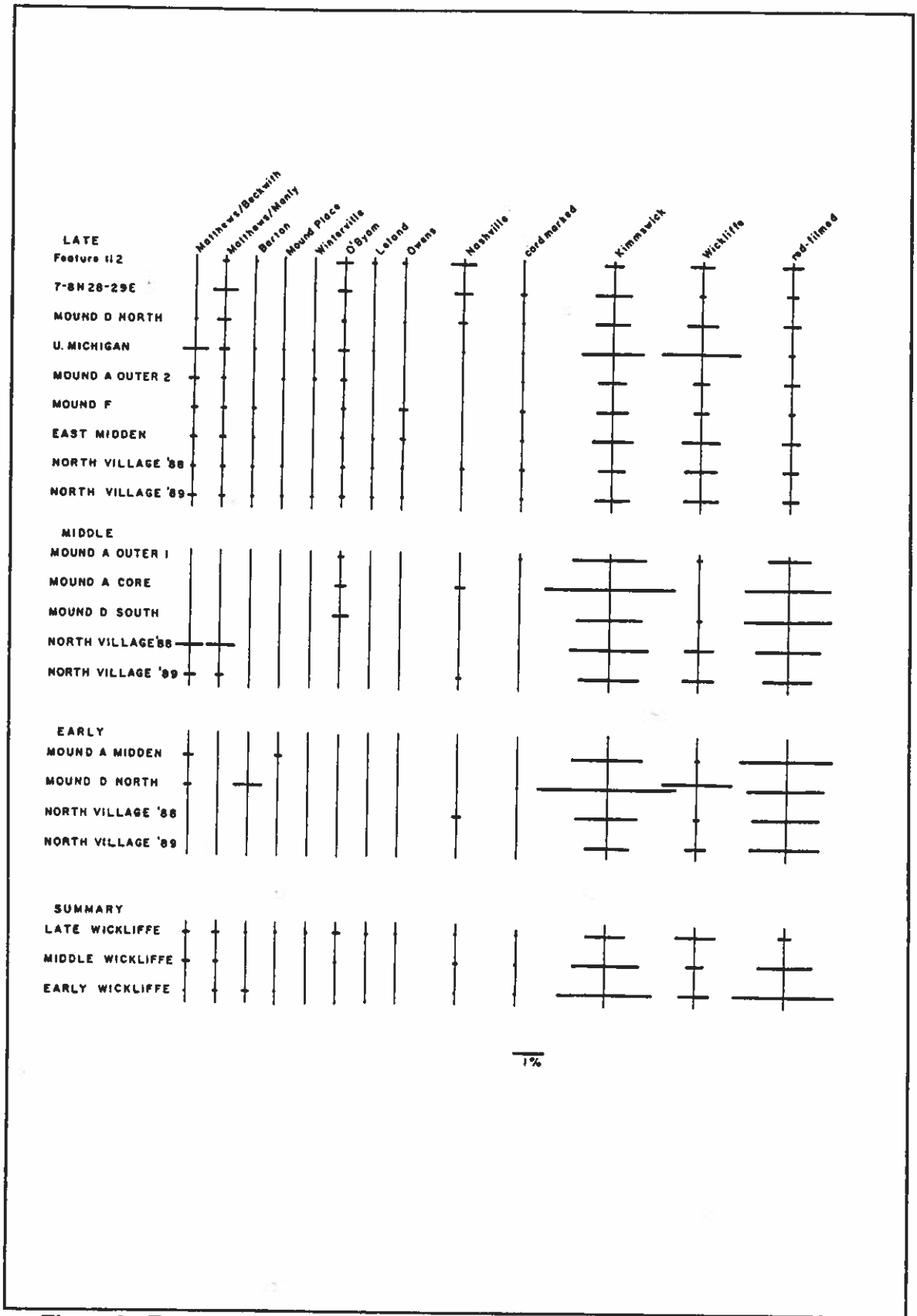


Figure 2. Temporal trends in ceramic types from Early to Late Wickliffe periods.

Table 1. Percentage Ranges for the Wickliffe Mounds Ceramic Sequence.

Ceramic Types	Early Wickliffe[a]	Middle Wickliffe[b]	Late Wickliffe[c]
Mississippi Plain	80.0-91.0	82.7-88.5	78.8-92.8
Incised	0.5- 0.9	1.3- 2.6	1.1-3.6
Bell Plain	2.9-13.4	2.2-10.9	3.8-15.5
Nashville Negative Painted	0.0- 0.3	0.0- 0.4	0.0- 0.5
Red filmed	2.3- 3.5	1.6- 3.0	0.1- 0.6
Kimmswick Fabric Impressed	1.5- 4.1	2.0- 4.3	0.8- 2.1
Wickliffe Thick	0.2- 1.6	0.0- 1.0	0.0- 2.6
Cordmarked	0.0- 0.1	0.0- 0.0	0.0- 0.4
Other	0.0- 0.6	0.0- 0.3	0.0- 0.4
Sample size ranges	307- 821 (4 samples)	230-1289 (4 samples)	423-1,529 (11 samples)

[a] Early Wickliffe samples are from the Mound A midden (Wesler 1985); Mound D North midden and subsoil features (Wesler 1989a); and North Village, 1988 and 1989 samples (Wesler 1991b).

[b] Middle Wickliffe samples are from the Mound A core (Wesler 1985); Mound D South features (Wesler 1989a); and North Village, 1988 and 1989 samples (Wesler 1991b).

[c] Late Wickliffe samples are from the Mound A outer mound (Wesler 1985, 1989a); Mound F subsoil features, midden and mound (Wesler and Neusius 1987); three Mound D samples, Feature 112, and the East Midden (Wesler 1989a); and the North Village, 1988 and 1989 samples (Wesler 1991b).

ASSEMBLAGE PATTERNS

As the village expansion model comes into focus and as more samples are collected from Wickliffe, other diachronic changes beyond those ceramic changes already noted can be identified at this site. By far the largest collection has been recovered from Late Wickliffe contexts. When sherd counts are used as a measure, the Late Wickliffe collection is five times as large as the Early and Middle collections combined. Nonetheless, with four samples from Early Wickliffe as well as Middle Wickliffe contexts, and most of them coming from midden and feature contexts, it is now possible to examine chronological and spatial dimensions of assemblage patterning at Wickliffe.

The general character of the artifact assemblage changed little from Early to Late Wickliffe (Table 2). Stone, bone, and ceramic artifacts are well represented in samples from all three periods, with one exception: bone fishhooks do not occur in Late Wickliffe deposits. This

appears to be a real difference. The lack of a Late period artifact in Early and/or Middle Wickliffe deposits could be explained easily as sampling error. However, the same argument does not as readily explain the absence of an Early or Middle period artifact in the much larger Late Wickliffe collection. The absence of fishhooks in the Late period may reflect a change in fishing technology, for instance an increased reliance on mass-harvesting techniques. Whether such a postulated exploitative shift correlates with other subsistence shifts or external pressures on the Wickliffe community remains for further study.

As an alternative to Table 2, an assemblage patterning approach based on South's (1977) artifact group pattern study has proven useful at Wickliffe Mounds (Wesler 1990c, 1991b). As a proportion of the total assemblage, sherds increase and stone debitage decreases. The significance of this pattern can be explored by examining changes in vessel form assemblages through time.

VESSEL FORMS

The increase in the relative percentage of ceramics with respect to other artifact classes throughout the Wickliffe sequence may reflect a change in the ways ceramic vessels were used. A change in usage also may be associated with a change in vessel forms. Generally, rim sherds offer the best indication of vessel form. Table 3 provides a breakdown of the rims recovered from different areas of the site by period and vessel form. This table includes only those rims that confidently could be assigned to a specific vessel form. Thus, the totals do not represent minimum vessel counts.

Vessel form could be identified for 69 Early Wickliffe rims (Table 3 and Figures 3-4). Of these, jars account for almost two-thirds of the rims, followed by pans and bowls. The presence of a funnel rim in the Mound A midden sample demonstrates that this form was in use during the Early Wickliffe period. Of the two hooded bottle rims assigned to this component, one may be intrusive from a Middle Wickliffe level (Wesler 1991b). Another sherd from the Mound A midden appears to have been part of a straight-necked bottle.

All forms associated with the Early Wickliffe period, except for the straight-necked bottle, also were recovered from Middle Wickliffe deposits (n=69 rims). However, by the Middle Wickliffe period a new vessel form, the flared-rimmed bowl (Table 3 and Figure 5), had been added to the ceramic inventory. As noted previously, O'Byam var. Adams occurs on this type of bowl. This form is rare in Late Wickliffe collections and occurs only in the North Village area, where the potential for mixing of materials from different components is greatest. This area was excavated in arbitrary levels, which may have resulted in the mixing of materials from different periods. Also, it is possible that prehistoric mortuary activities resulted in the mixing of deposits from different periods of site use (Wesler 1991b). Like the flared-rimmed bowls found in Late Wickliffe deposits, the recovery of two plate rims from the Middle Wickliffe deposits in the North Village area also may be the result of mixing due to excavation techniques or prehistoric activities. In general, however, it appears that the flared-rimmed bowl, whether decorated or plain, is a good marker for the Middle Wickliffe period.

Table 2. Wickliffe Period Artifact Inventories.[a]

	Early	Middle	Late
Ceramic			
sherds	2330	2208	27,780
discs/discoidals	5	7	35
trowels	0	1	3
pipe	1	0	0
Stone			
points	2	3	48
drills	2	0	10
bifaces	1	7	62
flake tools	1	5	44
grinding stones	2	1	12
hammerstones	0	0	7
abraders	1	1	10
debitage	2882	2350	20,442
Bone			
awl/pin	1	3	12
bone/antler point	0	1	8
other tool	0	1	1
fishhook	2	4	0
Other Material			
ornament (beads, plugs)	5	9	13

[a]Artifact counts represent period-assigned samples through 1989.

Table 3. Wickliffe Vessel Forms Identified from Rim Sherds.

Assemblage	Jar	Bowl	Flared Bowl	Plate	Bottle	Hooded Bottle	Pan	Funnel	Total Rims	Total
Late Wickliffe										
Feature 112	26	7		10	1	2	4		50	1,892
Mound F	7	4		1			3	3	18	3,594
East Midden	42	21		4	1	1	10	9	88	3,836
North Village										
1988	43	30		19	3	4	6	6	111	8,916
1989	68	32	3	15	4	7	19	5	153	10,686
Total	186	94	3	49	9	14	42	23	420	28,924
Middle Wickliffe										
Mound A Core	9	2	3						14	279
Mound D South	4		3						7	233
North Village										
1988	4	1					2	1	8	230
1989	21	5	2	2		1	6	3	40	1289
Total	38	8	8	2		1	8	4	69	2031
Early Wickliffe										
Mound A										
Midden	12	1					6		20	654
Mound D North	17	7					5		29	571
North Village										
1988	8	1						1	10	307
1989	5	2			1	2	1		10	455
Total	42	11			1	2	12	1	69	1987
TOTAL	266	113	11	51	10	17	62	28	558	32,942

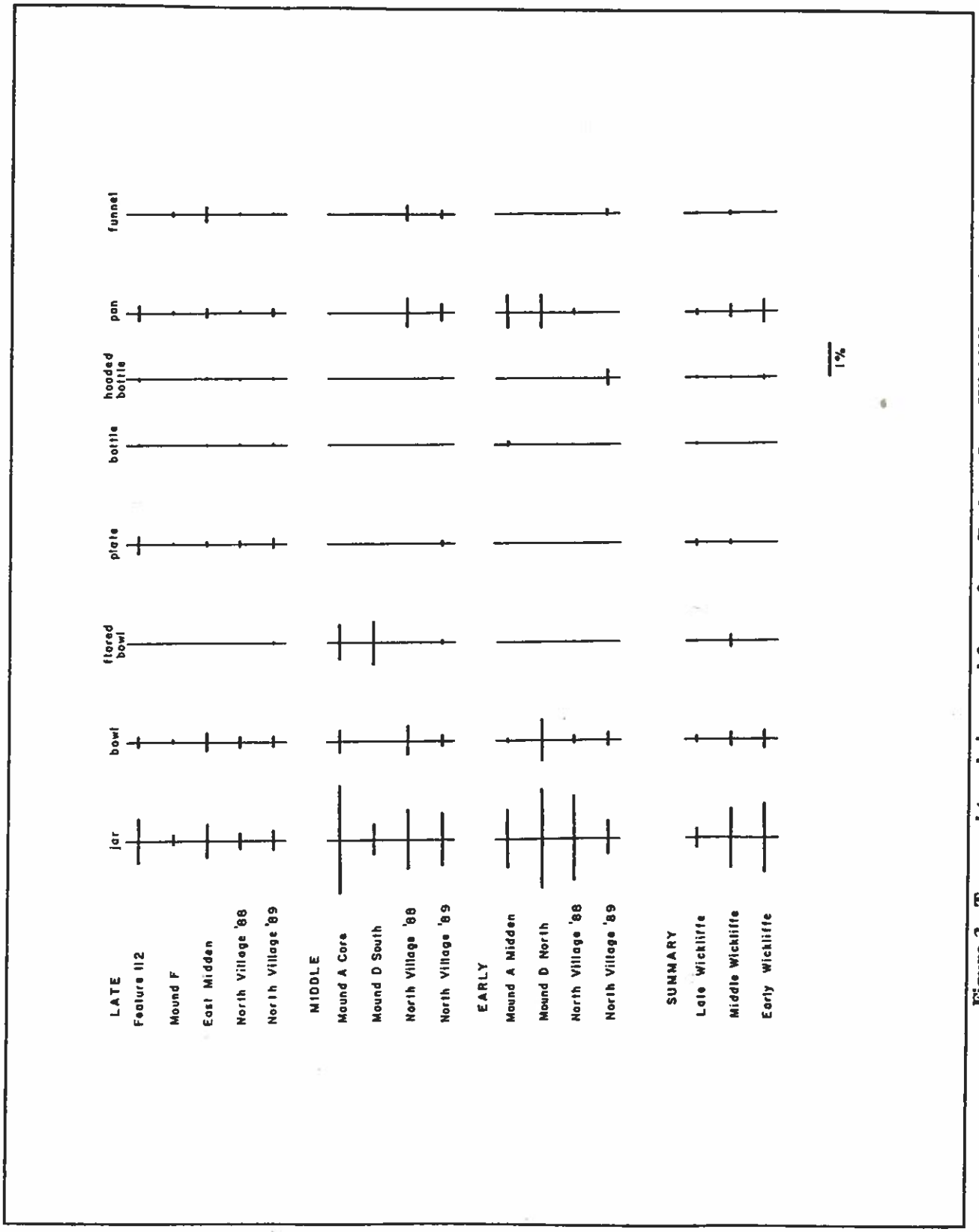


Figure 3. Temporal trends in vessel forms from Early to Late Wickliffe periods.

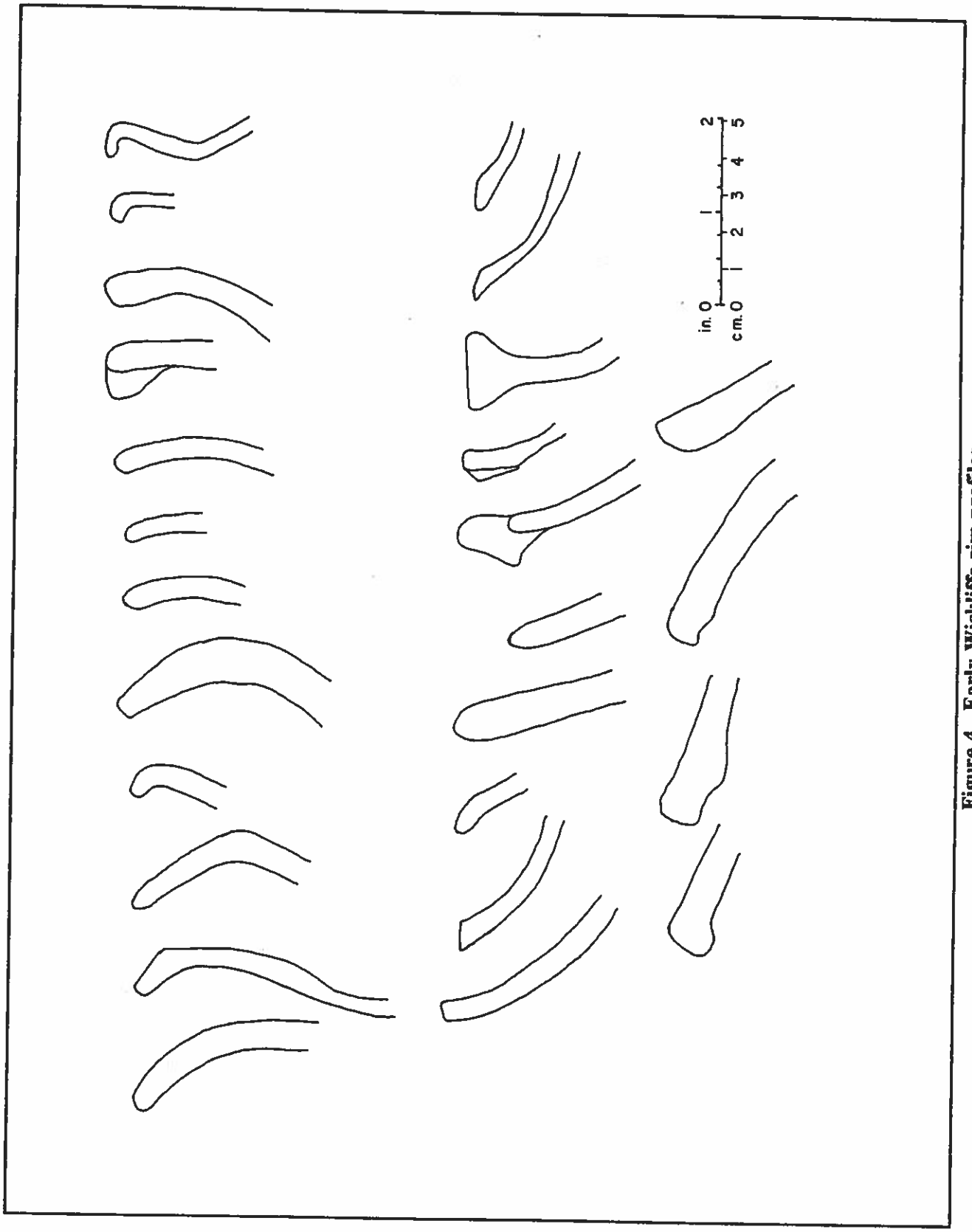


Figure 4. Early Wickliffe rim profiles.

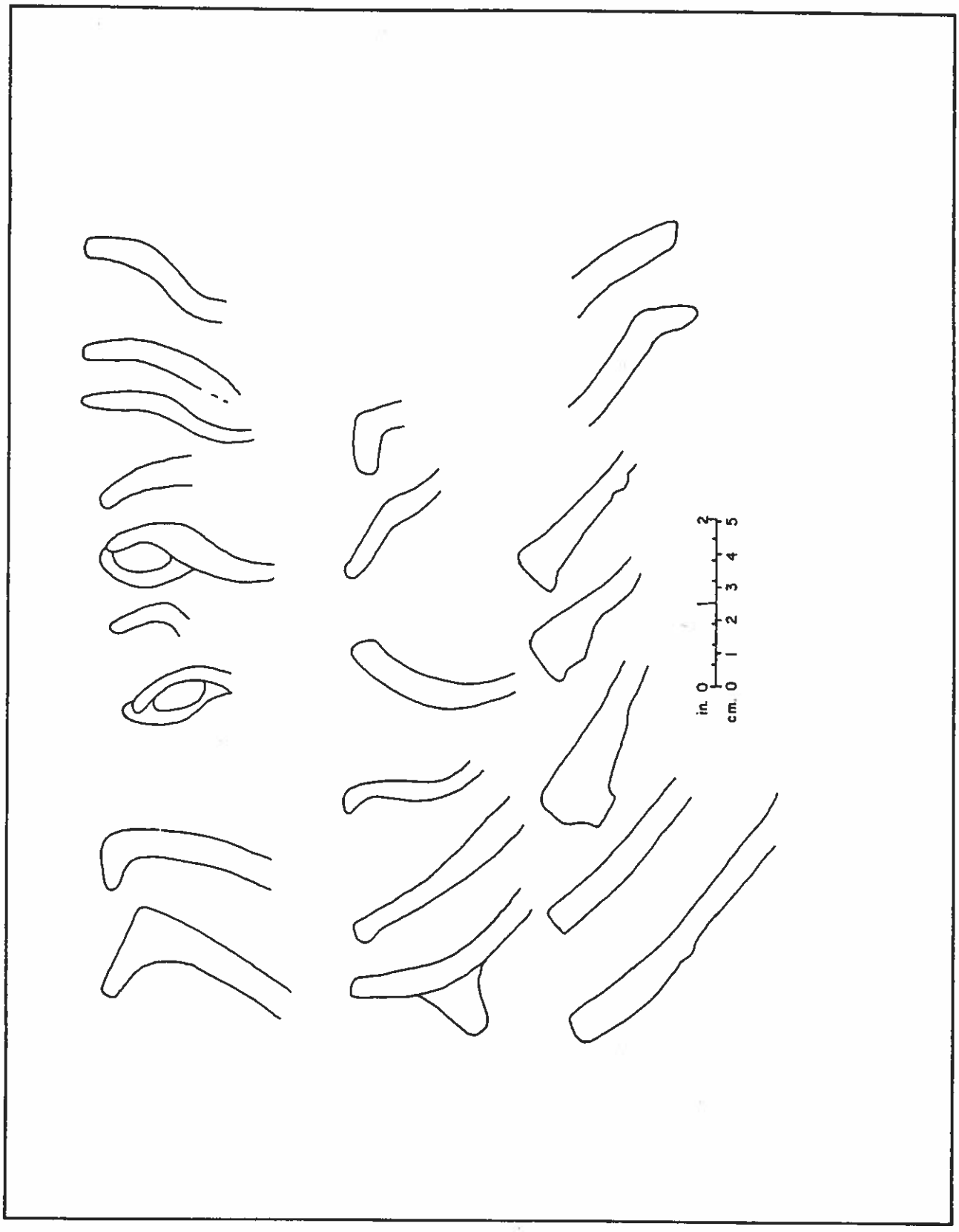


Figure 5. Middle Wickliffe rim profiles.

Table 4. Handle Ratios (thickness/width).

	No.	Mean Ratio		No.	Mean Ratio		No.	Mean Ratio
Late Wickliffe			**Middle Wickliffe**			**Early Wickliffe**		
Feature 112	5	0.43	Mound A core	1	0.65	Mound A midden	1	0.83
Mound F	2	0.40	Mound D South	0	----	Mound D north	2	0.83
North Village			North Village			North Village		
1988	22	0.50	1988	0	----	1988	2	0.81
1989	16	0.57	1989	6	0.51	1989	2	0.53
Total	54	0.50	Total	7	0.53	Total	7	0.73

Table 5. Ratio of Serving Vessels to Jars.

	Ratio		Ratio		Ratio
Late Wickliffe		**Middle Wickliffe**		**Early Wickliffe**	
Feature 112	0.65	Mound A core	0.56	Mound A midden	0.08
Mound F	0.71	Mound D South	0.75	Mound D north	0.41
North Village		North Village		North Village	
1988	0.60	1988	0.50	1988	0.13
1989	1.12	1989	0.43	1989	0.40
Total	0.73	Total	0.50	Total	0.26

Table 6. Summary of Wickliffe Sequence.

Early Wickliffe, A.D. ?1100-1200	**Middle Wickliffe**, A.D. 1200-1250	**Late Wickliffe**, A.D. 1250-1350
Matthews Incised var. Beckwith var. Manly Barton Incised Mound Place Incised Ramey Incised (probable import) Red-filming:incising = 3:1 Loop handles Jars predominate	Matthews Incised var. Beckwith var. Manly Barton Incised Mound Place Incised O'Byam Incised, var. Adams Red-filming:incising approx. = 1:1 Intermediate loop-strap handles Flared-rimmed bowls	Matthews Incised var. Beckwith var.Manly Barton Incised Mound Place Incised O'Byam Incised, var. O'Byam Owens Punctate Winterville Incised Leland Incised Red-filming:incising = 1:3 Intermediate loop-strap handles (straps rare) Plate rim width = 30-67 mm
General Trends: 1. Decrease in jars and pans relative to other vessel forms; 2. Decrease in Kimmswick Fabric Impressed; 3. Increase in ratio of bowls and plates to jars; and 4. Increase in sherds relative to chipped stone debitage within entire assemblage.		

There are 420 rims in the Late Wickliffe assemblage (Table 3 and Figures 6-8). True plates mark this period. Plate rims range in width from 30 to 67 mm and include both plain and incised specimens, the latter representing O'Byam Incised var. O'Byam. Most plates have a fine, Bell Plain paste, but Mississippi Plain plates occur. The Late Wickliffe assemblage also includes straight-necked, short-necked, and hooded bottles, bowls, and of course, jars, pans, and funnels.

In addition to vessel form, handle shape also appears to be a temporally sensitive attribute. Early Wickliffe handles are loops, with an average thickness-to-width ratio of .73 (Table 4). Middle and Late Wickliffe handles tend to be intermediate in shape between loops and straps, with average ratios of .53 and .50, respectively. True straps are very rare at Wickliffe.

Vessel form and handle shape attributes are the most recognizable markers of the Wickliffe sequence, but there are other, less conspicuous trends. Jars and pans diminish in frequency through time when viewed as a percentage of all rims and of the total ceramic assemblage associated with each period. In the Early Wickliffe sample, jars constitute 61.0 percent of the rims and 2.1 percent of all sherds; in Middle Wickliffe, 55.0 and 1.9 percent, respectively; and in Late Wickliffe, 44.0 and 0.6 percent, respectively.

If jars can be characterized generally as cooking vessels, and plates and bowls as serving vessels (cf. Hally 1984:59-63; Pauketat 1987), the ratio of serving to cooking vessels increases through time (from .26 in Early Wickliffe to .50 in Middle Wickliffe to .78 in Late Wickliffe collections [Table 5]). This trend seems to be a function of a relative decrease in jars rather than an increase in serving vessels, because throughout the sequence bowl and plate rims constitute from 0.5 to 0.9 percent of the sherds from early, middle, or late Wickliffe contexts (Table 3).

As with jars, the relative proportion of pans to other vessel forms also decreases from Early to Late Wickliffe (as does Kimmswick Fabric Impressed [The pan counts in Table 3 include plain as well as fabric-impressed sherds]). The author's observations of similar shallow vessels in West Africa suggest that pans were probably general-purpose cooking vessels used to boil liquids and as griddles, rather than special-purpose vessels implied by the term "saltpan." Thus, the decline in pans, which parallels that of jars, reinforces the documented increase in the ratio of serving to cooking vessels.

The decline in cooking vessels appears to contrast with a general increase in ceramics, when viewed as a percentage of the total artifact assemblage. The changes in Wickliffe society reflected by these tends have yet to be identified, however. It is possible that the observed increase in ceramics as a percentage of the site assemblage represents a relative decline in the use of chipped stone artifacts, so that the change in vessel form inventories reflects a reallocation of vessel function rather than an addition of more serving vessels. Or, it may be that the average household required a more varied set of vessels as time went on, so that the average number of ceramic vessels per household increased.

Alternatively, it is possible that food preparation techniques changed so that more foods were served as individual portions. James Deetz (1977) presented a similar argument in his analysis of eighteenth century ceramics in New England. He charted a shift from stews and communal eating to chops and personal servings that resulted in the more widespread use of plates and place settings. Deetz suggested that these changes were correlated with developments in architecture styles, gravestones, and refuse disposal, and with the Great Awakening, a religious movement that emphasized the place of the individual in religious society. Analogous events cannot be seen in the Mississippian record at Wickliffe, but Deetz's structural approach offers a potentially rewarding avenue for future research.

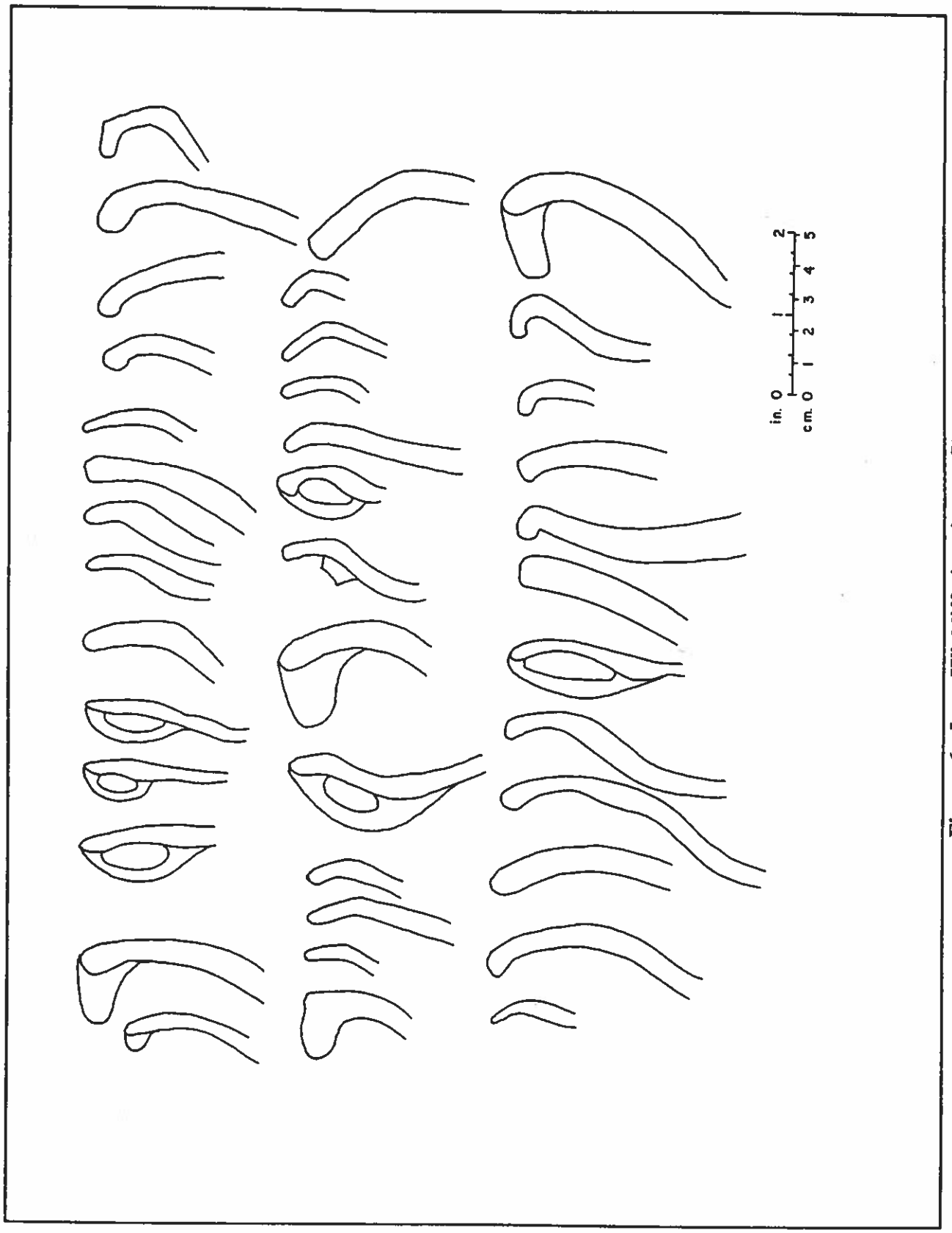


Figure 6. Late Wickliffe jar rim profiles.

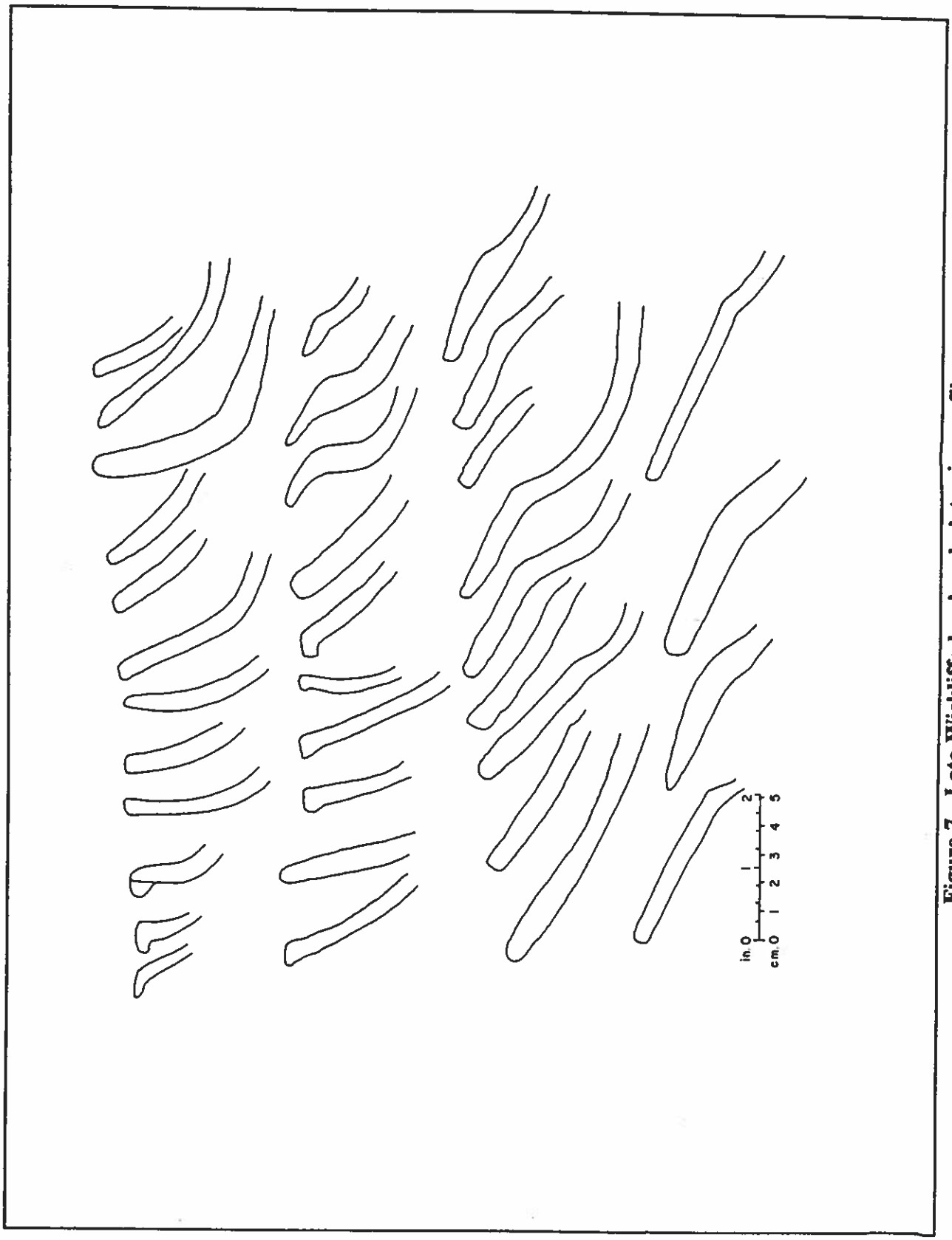


Figure 7. Late Wickliffe bowl and plate rim profiles.

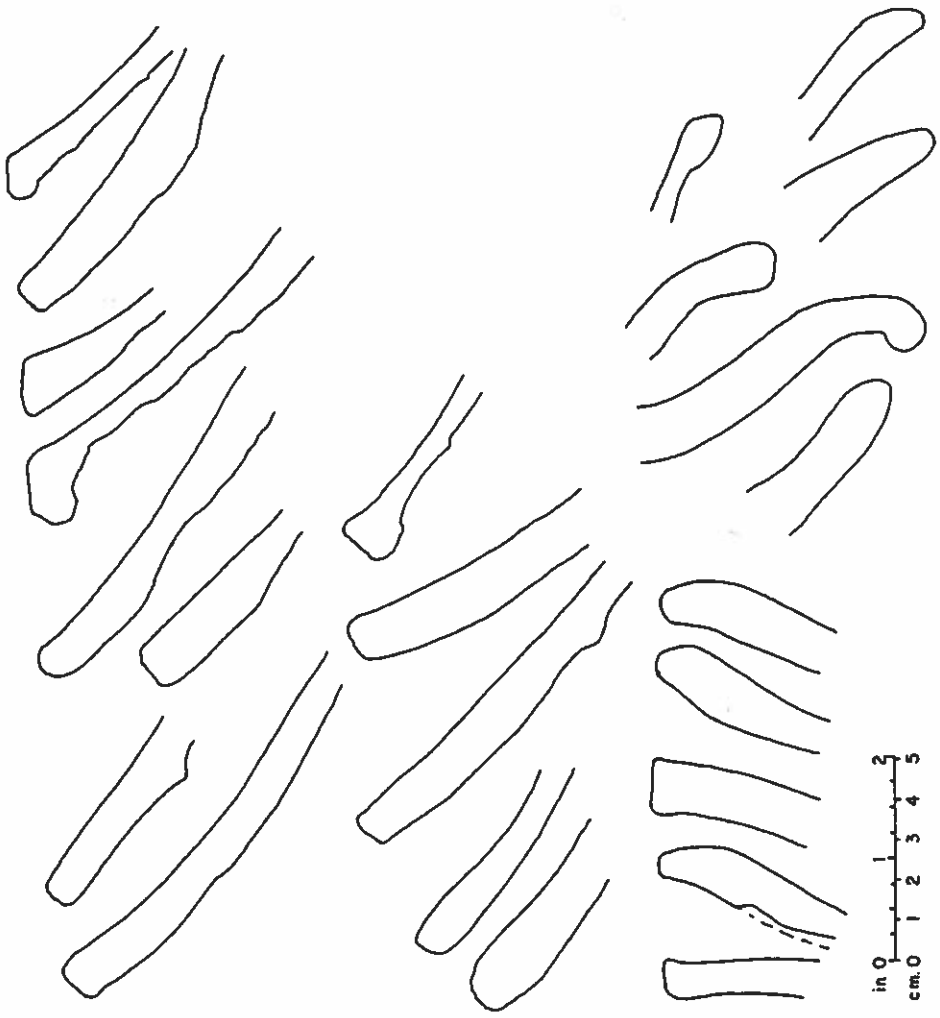


Figure 8. Late Wickliffe pan and funnel rim profiles.

SPATIAL PATTERNING

Spatial patterning at Wickliffe has been studied from a number of perspectives, but to date, few patterns have been identified. Based on an examination of the distribution of artifact forms such as ceramic effigies, stone and antler projectile points, and bone tools, ornaments, and gaming pieces, Mound D was identified as a possible elite burial mound. However, these studies failed to identify concentrations or patterns that could be used to distinguish residential or activity areas within the village (Wesler 1990a, 1990b). Artifact group patterning also indicated homogeneity within periods (Wesler 1990c, 1991b). Early Wickliffe samples generally have shown the greatest variation, as might be expected given the small size of these collections. Homogeneity is most evident in the larger Late Wickliffe period samples.

From a spatial perspective, few patterns have been identified in the distribution of ceramic vessel forms. The frequencies of the various forms are quite consistent among the samples from each period (Table 3 and Figure 3). The most striking difference occurs in the North Village 1988 Late Wickliffe collection, which has a very high ratio of serving vessels to jars (Table 5). To date, this phenomenon cannot be explained nor does this pattern appear to be correlated with any other data set. With respect to vessel form, the Wickliffe site collections all appear to be quite similar.

CONCLUSIONS

The Wickliffe sequence, initially based solely on shifting percentages of major ceramic classes, demonstrates several coincident temporal trends (Table 6). The proportion of ceramics in the general assemblage increases, complementary to a decrease in chipped stone debitage. The proportions of jars and pans in the ceramic assemblage diminish, while the ratio of serving to cooking/storage vessels increases. Handles change from loops to intermediate loop-straps after the Early Wickliffe period, although little difference can be demonstrated between Middle and Late Wickliffe handle assemblages. There is an increase in incising and a complementary decrease in red-filming through the sequence, with the Middle Wickliffe period containing both in nearly equal proportions. Kimmswick Fabric Impressed sherds decrease in proportion to the total assemblage. O'Byam Incised var. Adams and its flared bowl form are markers of the Middle Wickliffe period, while plates, O'Byam Incised var. O'Byam, Owens Punctate, Winterville Incised, and Leland Incised are Late Wickliffe introductions.

It is worth noting that the O'Byam Incised sequence matches closely the Wells Incised sequence that Kelly (1986) described for the American Bottom, with the deep-rimmed plates that characterize late Wells/Crable or O'Byam Incised var. Stewart missing from Wickliffe. The Wickliffe sequence underscores the O'Byam-Wells continuum of motif and vessel form that Kelly (1986) pointed out several years ago.

Although the Wickliffe sequence has not been applied to other sites, its markers have potential significance for a regional chronology (Wesler 1991b). The Wickliffe periods are internally consistent archaeological units, based on formal markers and recurrent artifact complexes. They are not units that fit well within arbitrary century or two century calendrical constructions. Middle Wickliffe, in particular, is a relatively brief unit that cannot be identified without close attention to context. If the flared bowl and other Middle Wickliffe markers signify

a regional horizon, they will offer an extremely useful dating tool, but their utility will be demonstrated only if other sites can be studied with an attempt to isolate the complex.

Spatially, the various samples indicate great homogeneity across the site, particularly in the Late Wickliffe period. Ceramic types, artifact groups, special artifact distributions, and vessel form assemblages are very consistent. They indicate that very little status or activity differentiation existed within the village. The single activity cluster is a small Early Wickliffe period feature beneath the north end of Mound D, in which polished flakes were unusually concentrated (Wesler 1989).

To date, examination of the Wickliffe collections has yet to identify artifacts that can be interpreted as status markers. This is perhaps the expected situation in a small-scale chiefdom like the Wickliffe village. Wickliffe society would not have been nearly so complex as that at Cahokia, Moundville, Angel, or Kincaid. The chiefly sector of the population would have consisted of only a few individuals, perhaps a single extended family. These persons would not have had the resource base of the great lords of the Southeast that would have allowed them to accumulate exotic or special items to mark their rank.

Morton Fried suggested that the heads of simple chiefdoms were not permitted personal accumulation and that their status was "marked by sumptuary specialization and ceremonial function... [by] fuss, feathers and other trappings of office. These people sit on stools, have big houses, and are consulted by neighbors," but do not eat much better or own much more than others in the village (Fried 1960:719). Charles Hudson's summary of Southeastern chiefs is in close agreement with Fried's formulation: chiefly status was marked by "symbols of attainment," and even the Great Sun of the Natchez was distinguished mainly by his special house and feather headdress (Hudson 1976:203, 209).

The archaeological data from Wickliffe support Fried's and Hudson's suggestions. The elite sector at this village may have been quite small, and its badges of rank were probably perishable or locally made, like the fine fabric analyzed by Kuttruff (1990). The "fuss, feathers and trappings of office" are scarce in the archaeology of small towns like Wickliffe Mounds, and archaeologists will have to be alert and creative to identify a chiefdom society in a site of this scale.

ACKNOWLEDGEMENTS

Some of the perspectives incorporated into this paper resulted from a long conversation with R. Berle Clay and Sherri O. Hilgeman, hosted by the Glenn A. Black Laboratory of Archaeology, Indiana University, Bloomington, Indiana.

IS THE STONE SITE PROTOHISTORIC?

By
Kenneth C. Carstens
Anthropology Program and Archeology Service Center
Murray State University
Murray, Kentucky

ABSTRACT

In 1990, artifacts from several archeological sites located in western Kentucky and western Tennessee were returned to the Archeology Laboratory at Murray State University (MSU). The artifacts had been taken from MSU by the late William P. McHugh when he left in 1977. Undoubtedly he had intended to finish reports about these sites, which he had worked on while employed by MSU. Among the artifacts returned was a shell tempered vessel thought to have been recovered from the Stone Site (40Sw23). The vessel is unique in that iron bails(?), which may have served as handles, perforate the walls of the vessel. In addition to the ceramic vessel, the Stone Site has yielded radiocarbon dates from the fourteenth and fifteenth centuries. This paper examines whether this vessel may have been collected from the Stone Site and whether this site contains evidence of cultural contact between Native Americans and Euroamericans.

INTRODUCTION

In April 1990, Murray State University (MSU) received a collection of artifacts from the estate of the late William P. McHugh, a former assistant professor at MSU. These materials included collections from 15Tr36, an Archaic hunting camp; 15Ml301, the Hardin Mound Site, the only known shell mound in the Jackson Purchase; and 40Sw23, a Mississippian site known as the Stone Site (McHugh, however, also referred to the site as the Bear Creek Site [Benchely 1990]).

McHugh had conducted research at the Stone Site in 1974 and 1976 while an assistant professor at MSU and had taken the materials and notes with him when he left, intending to complete a report on the site (Carstens 1979). McHugh died before he could finish the report.

The Stone Site materials returned to MSU consisted primarily of ceramics, but the collection also included a few lithics, faunal remains, and floral remains such as charred plant specimens collected for radiocarbon assays. McHugh's field notes, his daily journals and those of his students, and a collection of photographs documenting his excavations at the site also were returned with the artifacts.

A very unique ceramic vessel presumed to be from the Stone Site was among the returned materials (Carstens 1991). This vessel looks like a classic example of Matthews Incised var. Matthews/Manly (Phillips 1970:128), but it has a unique iron rivet or bail as an intregal part of the ceramic wall (Figures 1 and 2 and Table 1). This vessel, unfortunately, was the only artifact in McHugh's collection from the Stone Site that lacked a catalog number. In this paper, the Stone Site collection is evaluated in order to determine whether this vessel should be considered part of the Stone Site collection. More importantly, site data are reviewed to determine if the Stone Site is protohistoric.

Table 1. Characteristics of Clay Vessel with Iron Bail.

Surface Treatment	Exterior and interior surfaces are smoothed. Interior of neck is smoothed but the interior of the body has been roughly scraped.
Temper	Shell. Rounded and angular shell particles range in size from .5 to 4.0 mm.
Lip/Rim	Plain, rounded, slightly outflaring. Mean thickness 5.15 mm, with a range of 4.5-6.0 mm
Neck	Constriction varies between 16-18.4 mm below lip.
Decoration	Shoulder has punctations arranged in a curvilinear pattern. Punctations measure 2.5-3.0 mm in diameter. Neck has two plain punctations opposite each other. Punctation without iron has an outside diameter of 6.9 mm and an inside diameter of 3.6 mm. Punctation with iron bail has an outside diameter of 6.1 mm and an inside diameter 3.0 mm (approximate).
Body	Has a mean thickness of 5.33 mm, with a range of 4.3-8.0 mm.
Vessel	Height = 8.9 cm (incomplete), width = 10.43-8.7 cm, diameter = 5 cm, and weight = 80.1 grams (incomplete).

LOCATION AND HISTORY OF SITE EXPLORATION

The Stone Site is located approximately 4.8 km southeast of Tharpe in Stewart County, Tennessee. The site formerly was located on the west side of the Cumberland River. Today, however, due to the river's lock and dam system, the Stone Site is underwater most of the year. When water levels are low, materials from the site erode into the river.

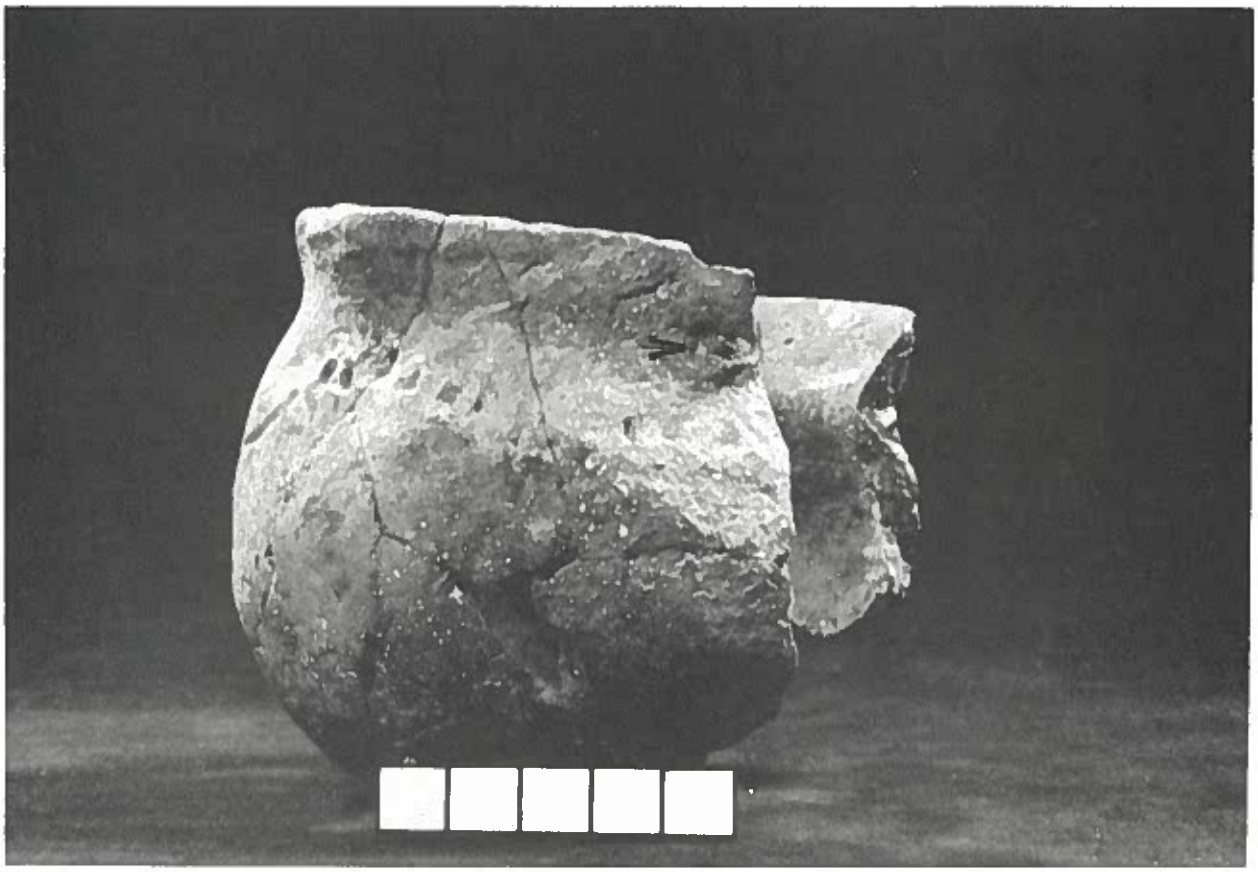


Figure 1. Clay vessel with iron bail (Mississippian Plain, var. Manly: note punctations on shoulder of vessel left of the iron bail fragment). Scale is in centimeters.

Figure 2. Oblique view of clay vessel with iron bail (note punctation on rim of far side, which formerly contained a matching bail). Scale is in centimeters.

The Stone Site was first reported in 1958 (Schwartz et al. 1958) during a National Park Service interagency archaeological and paleontological survey and testing project of the proposed Barkley Reservoir. Schwartz et al. (1958:17) described the Stone Site as follows:

> This large site lies on the banks of the Cumberland River, and will be covered by the normal pool. It consists of village debris paralleling the river for a thousand feet or more. On the rear of the site a shed stands on what is said to have been a mound. Cultivation has so reduced it that no positive conclusion can be reached by observation. To the south of the village area lies another, almost as large, containing numerous stone-slab graves. While there has been considerable "pot-hunting", large sections of the site remain undisturbed. Material is predominately Mississippian, with one or more possible earlier components.

In their recommendations, Schwartz et al. (1958:28, Tabular Summary of Sites, Barkley Reservoir) suggested that 50 man-days might be spent further testing the site. The authors categorized the Stone Site as an important site to investigate further (their designation of the site was "Priority A," meaning that they strongly recommended further excavation).

In 1959, the excavations recommended by Schwartz et al. were conducted by Coe and Fischer (1959:44-71). They excavated two trenches. The larger trench, Trench 1, measured 3 x 30 m and was oriented northwest to southeast, while the smaller trench, Square 1, measured about 2 x 6 m. It was positioned on the eastern edge of the site and was about 30 m south of Trench 1 (Coe and Fischer 1959:Figure 16).

According to Coe and Fischer (1959:46):

> The stratigraphy revealed was consistent for both straticuts. Under a deep plow zone, 20 cm (sic) thick and rich in cultural materials, a deeper, undisturbed stratum of village midden was found, dark to light brown in color and full of mussel shells and other debris. At no place did this artifact bearing stratum extend to more than 50 cm (sic) below the surface, except where aboriginal pits had been dug deeper. Underlying this was yellow, sandy loam, probably deposited by ancient floods of the river, totally sterile except for occasional flecks; this changed gradually to yellow sandy clay below, as determined by sinking a post hole digger to a depth of 2.4 m below the surface in the center of Trench 1.

Structural remains were limited to a few postmolds in Square 1 and a possible house floor with associated trash pits in Trench 1. A single stone box grave with an infant burial was encountered in Square 1. On the basis of their research at the site, Coe and Fischer (1959:49) concluded that, "there was no evidence for any other occupation than that of the Mississippi period, and even within this the village seems to have had only a very short life."

Coe and Fischer's (1959:Table 14, pp. 50-51) examination of the 9,365 sherds recovered from Stone revealed that 87 percent (n=8,133) of the sherds were Neeley's Ferry Plain (now referred to as Mississippi Plain [Phillips 1970:130-133]). Another eight percent (n=796) of the ceramic collection were identified as Bell Plain. The remainder of the ceramic assemblage (n=468; 5 percent) consisted of the following six types listed in descending order of frequency: an untyped fabric impressed ware (n=230; 2 percent), Stewart Engraved (n=45; .005 percent), an

indeterminant incised ware (n=41; .004 percent), Dallas Incised (n=19; .002 percent), Thompson Incised (n=18; .002 percent), and a negative painted ware (n=13; .001 percent). Eighty-eight sherds were assigned to eight other categories, including three sherds of an unnamed punctated ware and two sherds of a red filmed ware.

Vessel form also was described by Coe and Fischer (1959:52-55; Figure 20 and Table 16). Of the 947 vessels for which form could be determined from rim sherds, 56 percent (n=535) were jars. Bowls constituted 28 percent (n=269) of the vessel forms. The remaining ceramic forms, listed in descending order of frequency, included saltpans (n=95; 10 percent), Stewart Engraved plate rims (n=28; 3 percent), blank face bottle rims (n=10; 1 percent), and long neck bottle rims (n=8; 1 percent).

One of the most unique ceramic artifacts reported from the Stone Site by Coe and Fischer (1959:55, 62, and Figure 25, page 61) was an untyped saltpan from Trench 1. The fabric impression on that saltpan was considered by Coe and Fischer (1959:71) to have been lace fabric of nonaboriginal manufacture:

> ...the design and workmanship most closely resemble(s) Spanish lace of the 16th and 17th centuries decorated with ruedas (wheels). The fabric, whatever its origin, had been at some time patched with a typically Mississippian, coarse, open-twined textile.

The authors go on to note that (Coe and Fischer 1959:71):

> Now, there are no actual trade objects from white settlement at the Stone Site. This would be enough to indicate a pre-1650 date for the occupation. However, the find of a saltpan impressed with what is surely a frayed piece of European lace (perhaps an altar cloth) proves conclusively that the Stone Site must have existed until at least as late as the De Soto expedition and probably even later.

Additional limited excavations at the Stone Site were carried out from 1973 through 1976 by several investigators and institutions. In 1973, John Broster of the Division of Archaeology, State of Tennessee, excavated two 2 x 2 m units at the site as part of a field training exercise for students at the University of Tennessee at Martin (Broster 1973). His report fails to indicate the location of these units, so their relationship to previous excavations cannot be determined.

Broster's description of the stratigraphy in his two units is similar to that described by Coe and Fischer, except Broster notes that the plowzone (depth, ca. 20 cm) contained the majority of the cultural deposits. Three features encountered in these units extended below the plowzone into what Broster defined as Stratum 2 (subsoil). All three features were identified generally as Mississippian pits.

Broster's (1973:Table 1a) description of the ceramics he collected compares favorably to that of Coe and Fisher (1959). Of the 2,345 ceramics recovered by Broster, 91 percent (n=2,123) were typed as Mississippi Plain. Nine percent (n=213) were Bell Plain, and only .007 percent (n=9) were either fabric impressed or incised.

Brian Butler, then of the Tennessee Department of Conservation's Office of State Archaeology, conducted excavations at the Stone Site in August and early September of 1975

(Butler 1991). These were a continuation of work Broster began in 1973. According to Butler, he:

> excavated three 2 x 2 m pits, numbered Test Pits 3, 4, and 5 [these pits were tied into Broster's pits 1 and 2]. We excavated portions of 5 features and a number of postholes. There are some nice ceramic and lithic materials, but nothing spectacular or unusual [Butler 1991:1].

In 1974, and again in 1976, William McHugh (McHugh 1974a, 1974b; Howard 1976) conducted surface collections and excavations at the Stone Site under an agreement between the Tennessee Valley Authority (Permit #75Ky109) and Murray State University. McHugh (1974a:2) justified further exploration at the site for the following reasons:

1. It is being continually eroded and destroyed along its eastern margin, along the bank of the Cumberland River-Lake Barkley reservoir;

2. The site is rather large and its dimensions have not been accurately determined; the site runs at least one-half mile along the river and may extend several hundred feet back from the river.

3. The limited amount of archeological investigation devoted to the site during the site survey and testing phases prior to the reservoir flooding indicated that the Stone Site should be further investigated.

In 1974, McHugh and students from MSU laid out an east-west oriented trench that measured 12.19 x 7.62 m. The trench (Figure 3) was tied into Coe and Fisher's 1959 excavations and was subdivided into eight, 1.52 m^2) excavation units. The surface area of the trench was surface collected by each unit.

Excavations followed the intensive surface collection. According to McHugh's (1974a) notes,

> During the removal of the lowest level of the midden concentration of S1000/E1015, ...a ceramic effigy of a human head [was found], having apparently broken off a ceramic vessel. The interior of the effigy head is hollow and contains some small objects which rattle when the head is shaken.

Further excavation revealed the presence of Feature 1, a stone box burial. According to McHugh (1974a), "the burial turned out to be compound, with one individual superimposed directly above a second individual, and these were...located above a fairly deep sub-burial pit." McHugh returned to the site in 1976 to finish several of the excavation units left unexcavated in 1974.

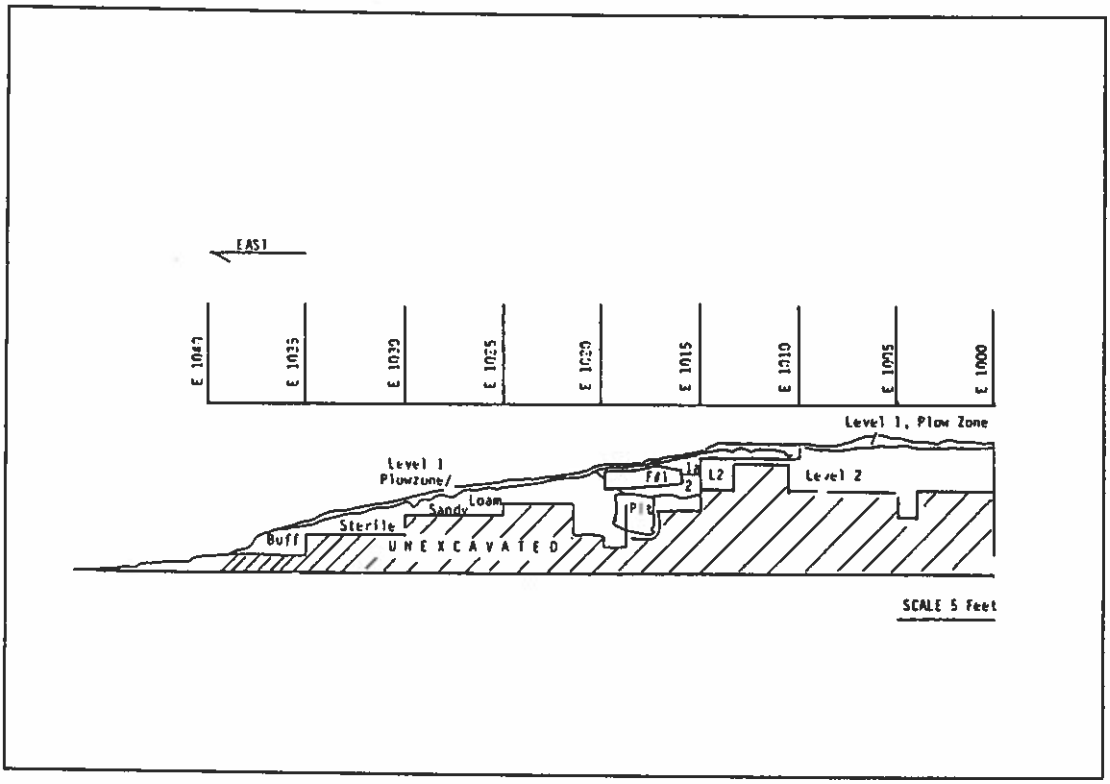


Figure 3. McHugh's 1974 Stone Site excavation wall profile (note Feature 1 is an intrusive stone box grave with underlying trash pit). (UGA-2181 came from the top of the pit and UGA-2182 came from the bottom of the pit.)

Two radiocarbon samples from McHugh's Feature 1 were submitted to Geochron Laboratory (UGA 2181 and 2182). The calibrated (Figure 4) ranges for these two dates overlap between A.D. 1558 and A.D. 1632 (Stuiver and Becker 1987). The calibrated average of the two dates (A.D. 1430), however, may be a better approximation of the site's actual occupation, especially when characteristics of the sites ceramic assemblage as described by Coe and Fischer (1959) and Broster (1973) are taken into consideration. In terms of regional chronology, the Stone Site appears to share the greatest cultural and temporal affinity to the Tinsley Hill phase as defined originally by Clay (1979) and subsequently reexamined by Pollack and Railey (1987:92-95) during their analysis of the Chambers Site.

CONSIDERATION OF THE EVIDENCE AND CONCLUSIONS

It is clear from the description of the Stone Site ceramics (Broster 1973; Coe and Fischer 1959) that an early Tinsley Hill phase occupation is present. There simply is no other information that would support placing the Stone Site's occupation any later than A.D. 1500.

A recent study by Drooker (1990) has demonstrated that the "Spanish lace-impressed" saltpan identified by Coe and Fischer (1959:71) was totally of aboriginal design and manufacture. Moreover, Drooker (1990:7) concluded that

> "Lace" textiles very similar to that impressed on pottery at the Stone site have been excavated at Spiro, Oklahoma, and Etowah, Georgia, sites dating to 1200-1350 and 950-1450, respectively. Stone site textiles thus could fit comfortably within the time niche between A.D. 1200 and 1450.

Furthermore, the author was unable to document that the unique ceramic vessel, which arrived with the Stone Site materials, was recovered by McHugh from this site. In spite of making 23 phone calls to McHugh's family, friends, associates and colleagues, and carefully examining all of his field entries, records, and journals (McHugh 1974a, 1974b) as well as those of his field school students (Howard 1976), the author simply can not relate this object to the Stone Site. During the course of this study, however, the author was able to determine that the iron within the bail of this unique ceramic vessel is of nonmeteoritic origin. (Meteoritic iron was used by aboriginals during the Middle Woodland period and contains large quantities of nickel [Carr and Sears 1985:79-92], but the "40Sw23" specimen contains no nickel, as demonstrated by Figure 5). Thus, this artifact appears to date to the protohistoric or even the early eighteenth century (see Brain 1979:234, vessel P-11 for a similar but early eighteenth century ceramic vessel with a brass bail).

The answer, then, to the question raised by the title of this paper, "Is the Stone Site protohistoric?", is no. Rather, the site appears to represent an early Tinsley Hill phase occupation in the Lower Cumberland River Valley. And, unfortunately, the origin of the unique ceramic vessel with the iron bail remains unknown.

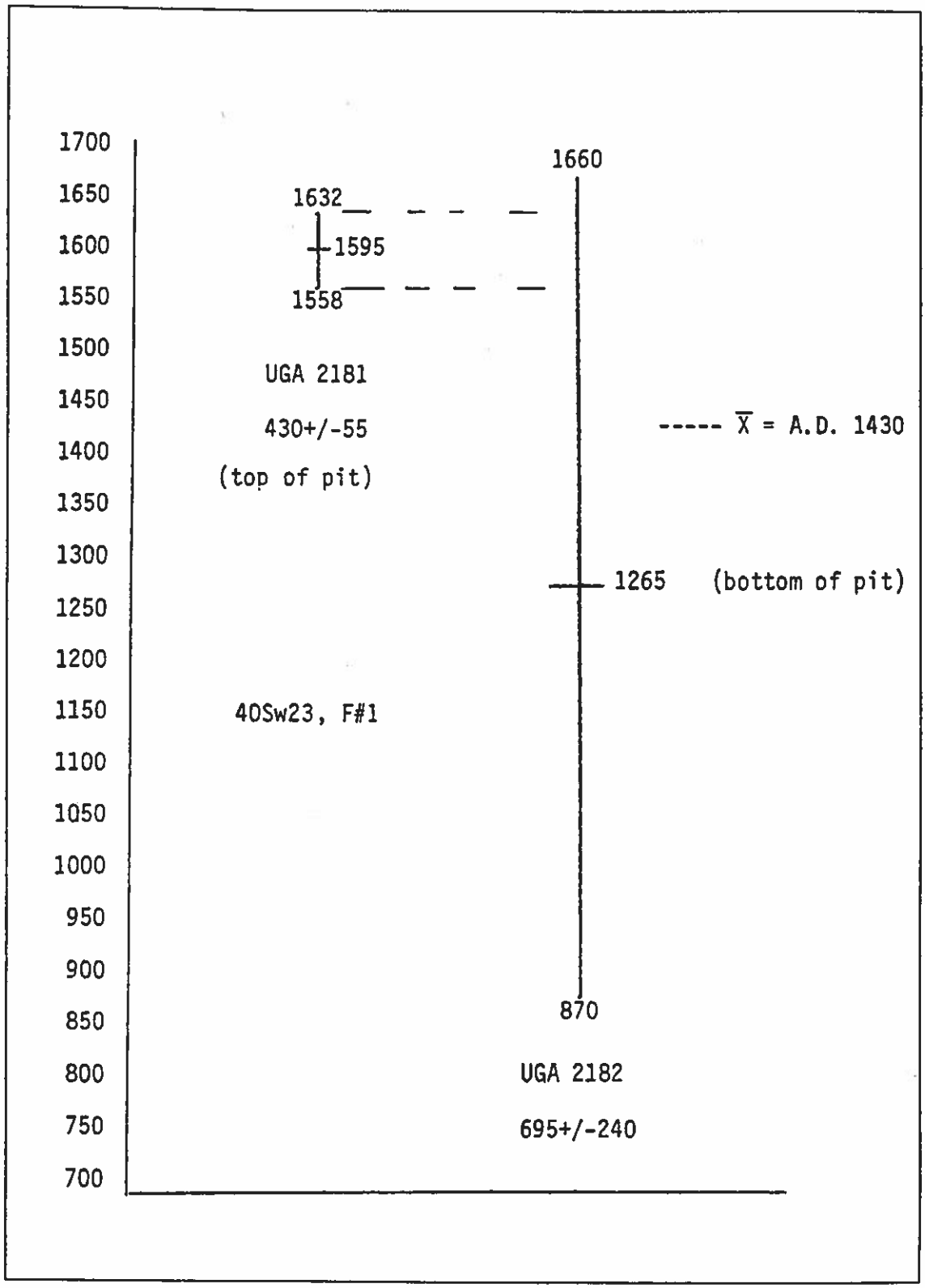


Figure 4. Calibrated radiocarbon dates from the Stone Site.

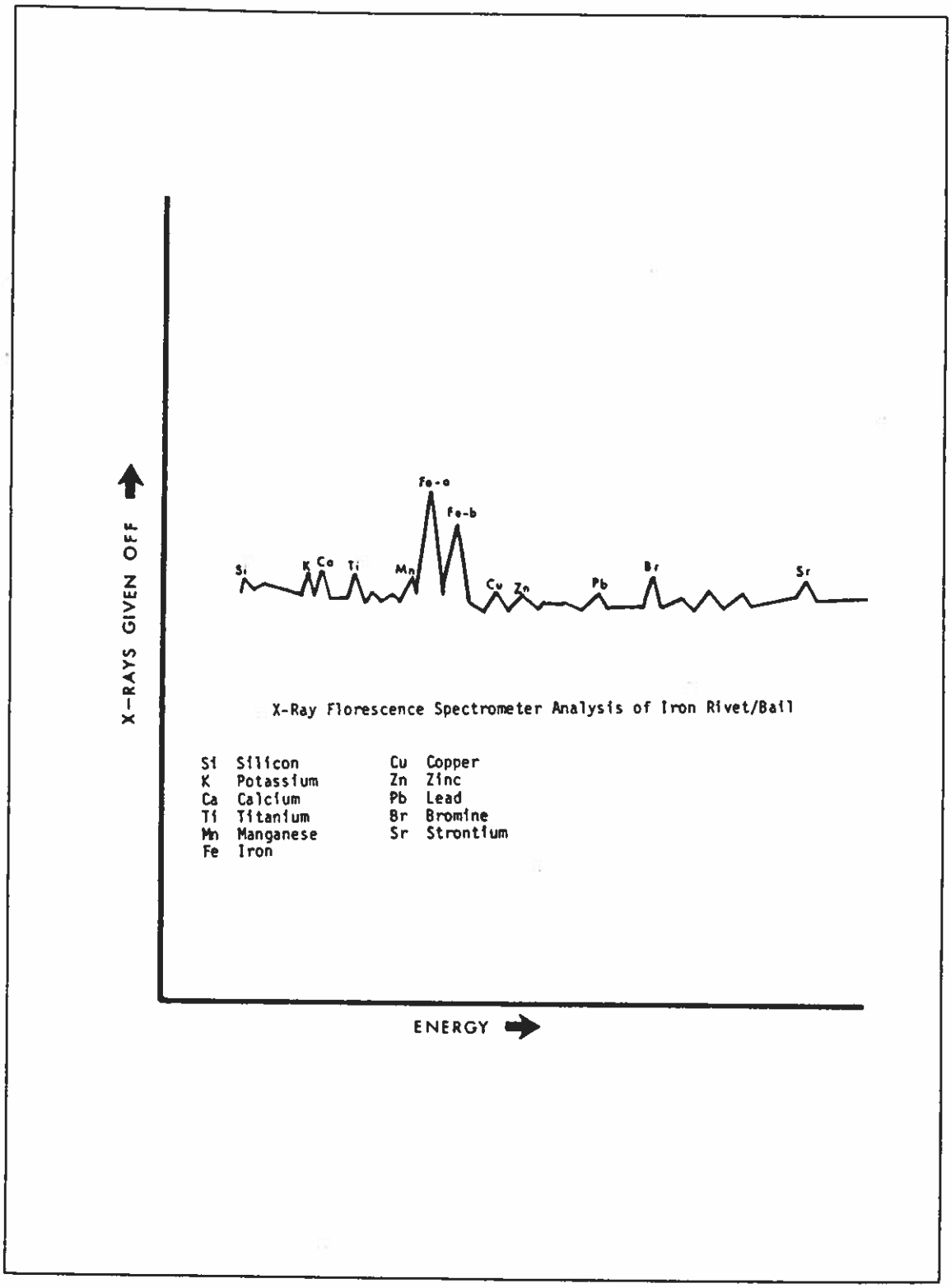


Figure 5. X-Ray florescence spectrometer analysis of the iron bail from the clay vessel.

ACKNOWLEDGEMENTS

Many individuals provided much valuable information about the Stone Site and Mississippian ceramic typology while I tried to determine the context of the "mystery" ceramic vessel and if it may have been part of the Stone Site assemblage. Chief among those persons were, in alphabetical order: Elizabeth Benchley, David Brose, John Broster, Brian Butler, R. Berle Clay, Pat Coates, C. Vance Haynes, Danna Kilby, R. Barry Lewis, William Maddox, the family of William McHugh, David Pollack, Elisabeth Porter, Pam Schenian, Kit Wesler, and Stephen Williams.

CARPENTER FARM: A MIDDLE FORT ANCIENT COMMUNITY IN FRANKLIN COUNTY, KENTUCKY

By
David Pollack
and
Charles D. Hockensmith
Kentucky Heritage Council
Frankfort, Kentucky[1]

ABSTRACT

The Fort Ancient component at the Carpenter Farm Site consists of a 30 m wide linear band of midden. Limited investigation of this midden resulted in the excavation of two shallow pit features and a portion of a basin-shaped structure that date to the mid-fourteenth century. Based on radiocarbon dates and differences in material culture it is suggested that the Carpenter Farm Site was occupied about 50-100 years before the nearby Capitol View community was established.

INTRODUCTION

In November of 1990, the Kentucky Heritage Council conducted a limited investigation of the Carpenter Farm Site (15Fr36A) in Frankfort, Kentucky (Figure 1). Prior to this study, the Carpenter Farm Site was known to contain intact subsurface deposits, but there was little information on the nature and age of the Fort Ancient occupation of this locality. With the University of Kentucky's extensive investigation of the nearby Capitol View Site (15Fr101) (Henderson this volume, 1992), also during the fall of 1990, questions were raised concerning the relationship of these two communities. Did the Carpenter Farm Fort Ancient community predate or postdate the Capitol View community or were the two sites contemporary. Thus, the primary goal of this study was to determine the temporal and cultural relationship of this Fort Ancient community to the early Madisonville horizon Capitol View Site.

The close proximity of the Carpenter Farm and Capitol View sites is similar to that of other Fort Ancient sites in Kentucky, including the Florence Site Complex (15Hr21 and 15Hr22) in Harrison County (Sharp and Pollack this volume), Buckner (15Bb12) in Bourbon County (Turnbow 1988b), and Arrasmith (15Be36) in Boone County (Sharp 1990a). Unlike the latter sites, which contain the remains of two circular Fort Ancient villages, the communities at Carpenter Farm and Capitol View appear to have been organized as large arcs or semi-circles.

[1] With contributions by Jack Rossen, Teresa W. Tune, and Julie A. O'Shaughnessy

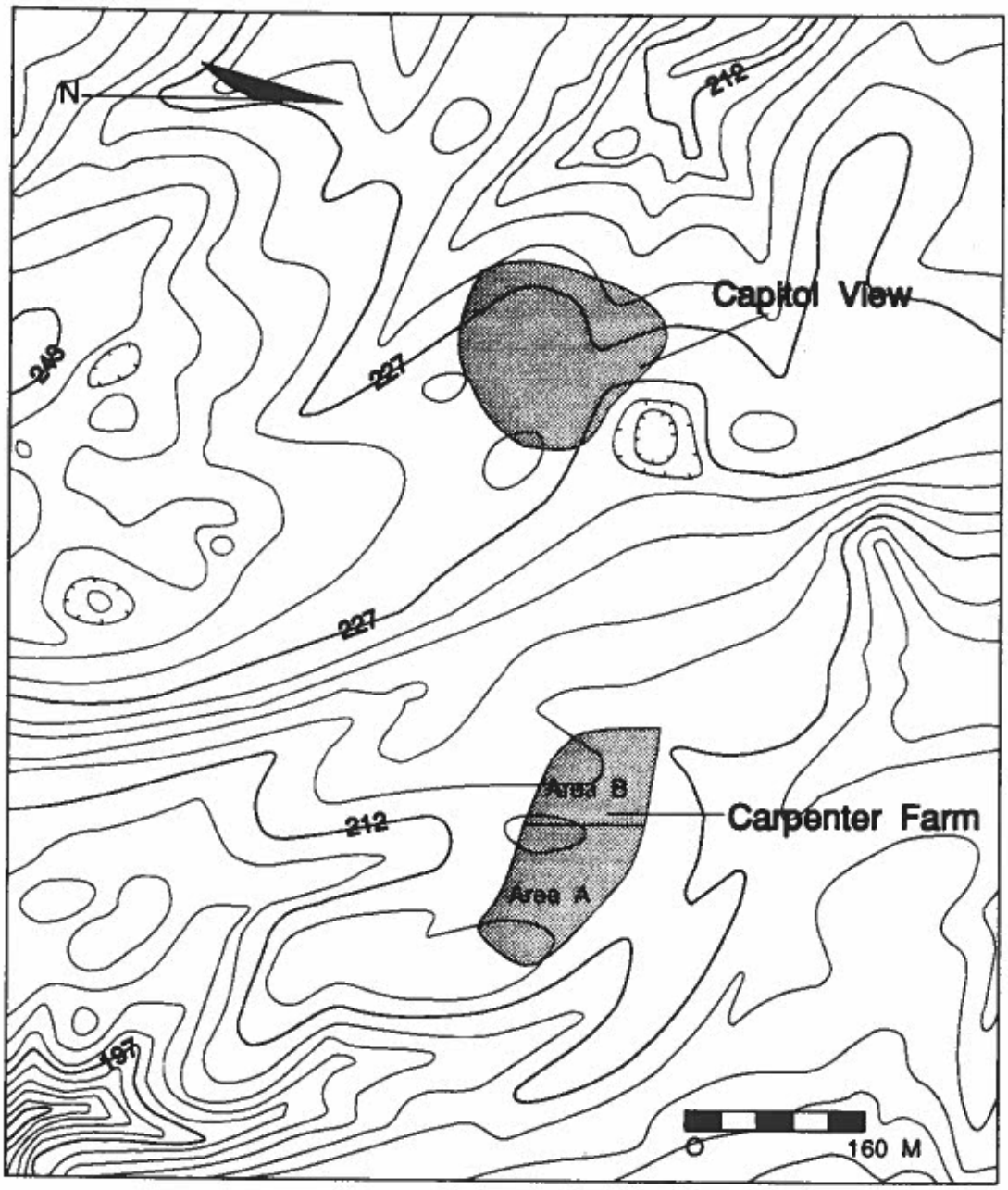


Figure 1. Topographic map showing the relationship of the Carpenter Farm and Capitol View sites.

If these two sites do represent portions of a larger community, then their contemporaneity would indicate the presence of a more segmented community pattern than had been previously documented for the Fort Ancient period.

SITE DESCRIPTION AND PREVIOUS RESEARCH

The Carpenter Farm Site is located on a slightly rolling ridgetop at an elevation of 215 m above mean sea level. Cultural remains are distributed over an area approximately 275 m east-west and 120 m north-south, with a darker midden area extending across the center of the site (Figure 2). Fort Ancient materials are confined to the darker midden stain, which measures at least 30 x 100 m (Figure 3). The width of the midden stain is similar to that documented for the Florence Site Complex in Harrison County (Sharp and Pollack this volume). The midden stain at Carpenter Farm originally extended somewhat further to the north, but in the late 1970s it was impacted by construction of a highway. Likewise, the midden stain extends an unknown distance to the south. The site is located about 450 m from Vaughn Branch and approximately 1.3 km from the Kentucky River.

The Carpenter Farm Site was recorded in the mid-1970s during an archaeological survey of Franklin County (Sanders and Weinland 1976:79-80). They divided the site into two areas, noting that Fort Ancient cultural remains were only found in Area A and that Archaic remains were more common in Area B (Figure 2). Two years later, the northern edge of the site was subjected to limited test excavations in connection with the construction of a state highway. These investigations indicated that this portion of the site did not contain intact subplowzone remains (Westover 1978). No additional studies were conducted at this site until 1989, when it was reexamined during an archaeological survey of the 75 ha Carpenter Farm. The site was surface collected, mapped, and several screened shovel probes were excavated (Sharp 1989:16-23). Sharp's investigation confirmed that the site contained intact subplowzone Fort Ancient deposits.

METHODOLOGY

During the Heritage Council's limited investigation of the Carpenter Farm Site, a total of 23 m^2 were hand excavated. All of the excavation units were situated within the dark midden stain (Figure 2). Units 1 and 3 (4 m^2) were placed in areas where soil probes indicated the presence of subplowzone features, while Unit 2 (15 m^2) was excavated in an area where soil probes suggested the presence of a basin-shaped structure. Unit 2 was originally intended to be a 1 x 4 m north-south trench that bisected the structure. Upon the removal of the plowzone from this trench it became evident that this structure was not oriented north-south. Therefore, in order to intersect the southeast and northeast walls of the structure, the trench was expanded 2 m to the south and 1 m to north. Subsequently, a 1 x 4 m trench was excavated perpendicular to the original trench in order to locate the structure's southwest wall and a 2 x 2 m unit was excavated to expose the southwest corner of the structure.

Within each unit a 1 x 1 m sample of the plowzone, which ranged in thickness from 25-30 cm, was screened through 6.35 mm mesh. Feature fill also was screened through 6.35 mm mesh and flotation and charcoal samples were taken from each feature.

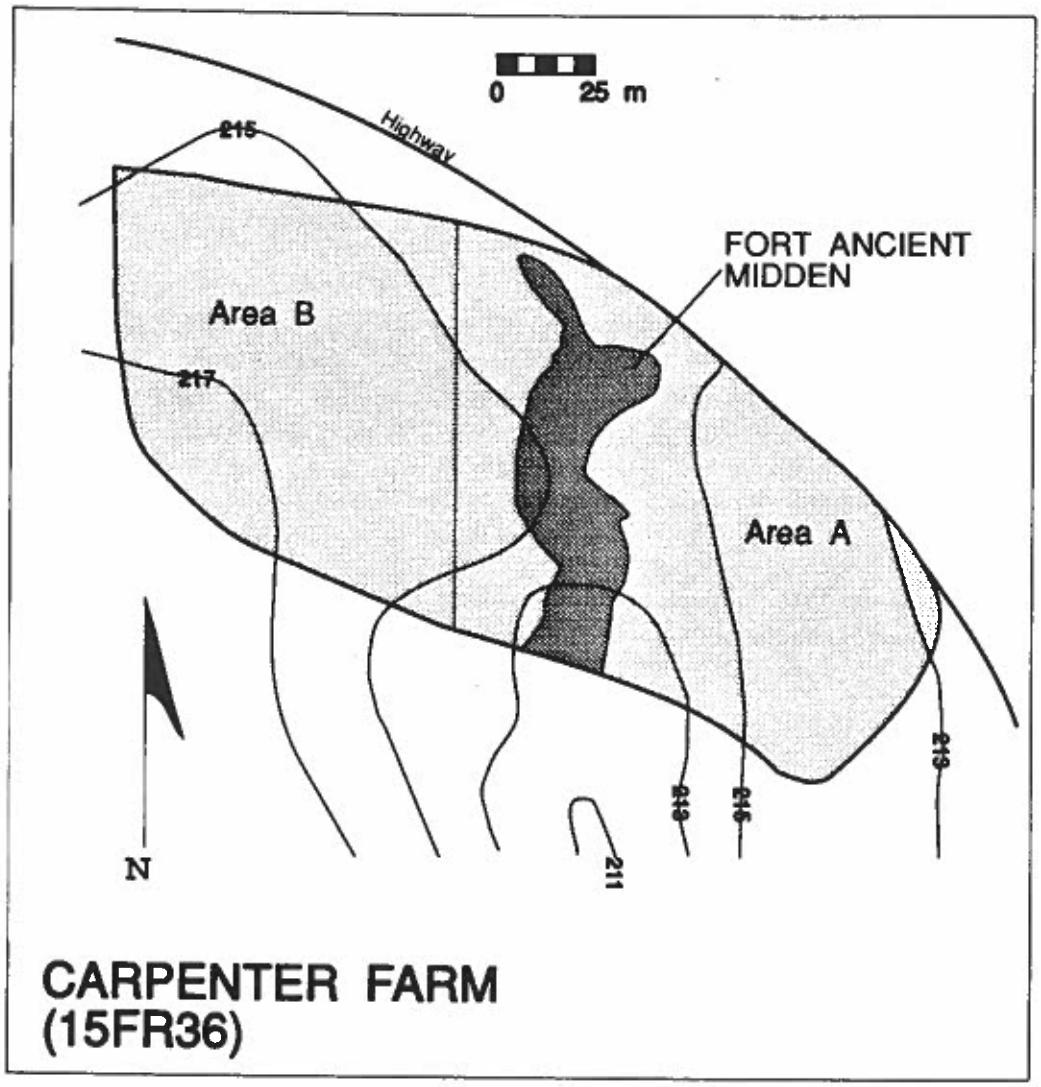


Figure 2. Planview of Carpenter Farm Site (Taken from Sharp 1989:15).

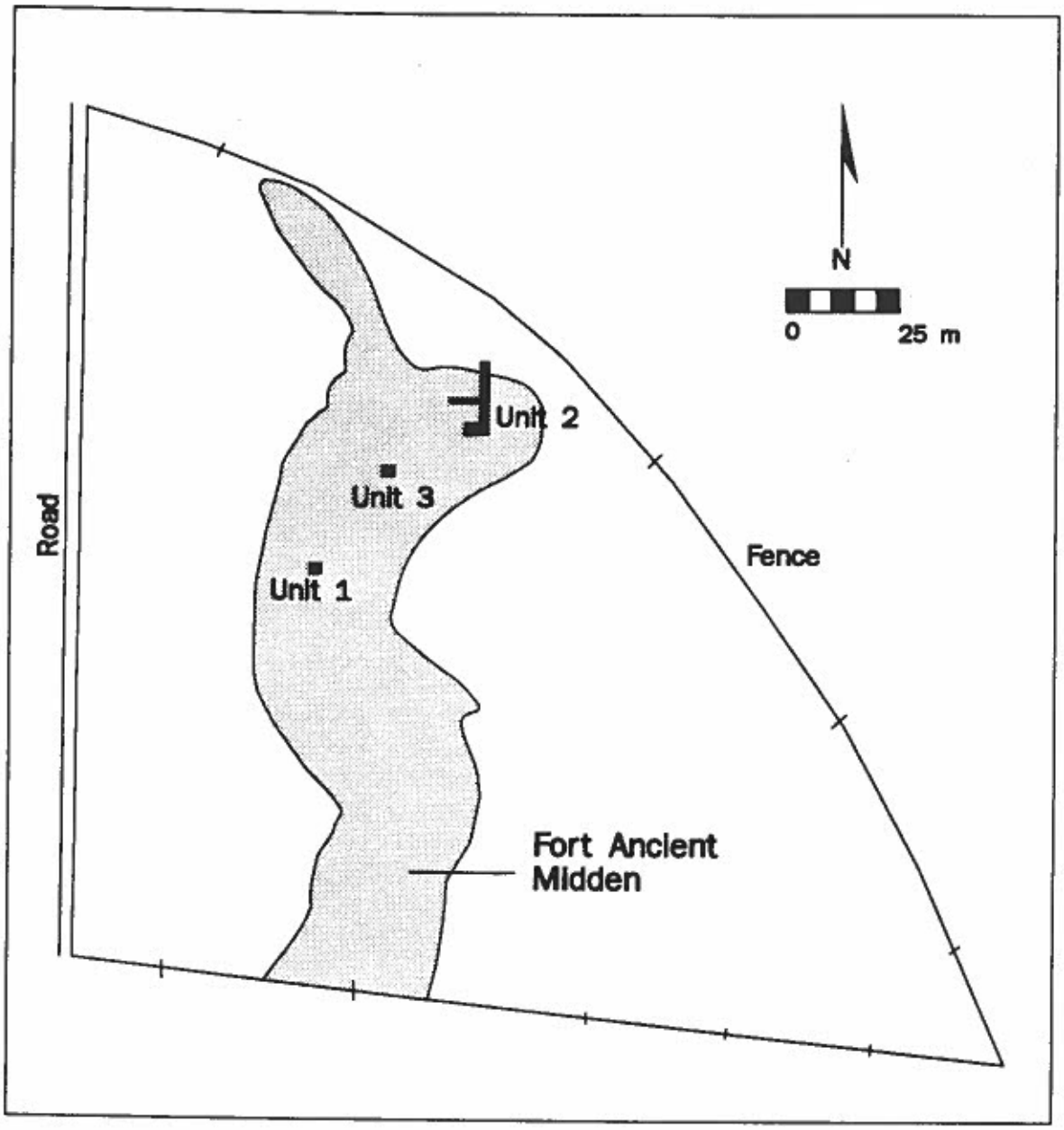


Figure 3. Fort Ancient midden and location of units (taken from Sharp 1989:15).

RESULTS OF INVESTIGATIONS

FEATURES

Two refuse pits and one structure were documented during the course of the Heritage Council's investigation of the Carpenter Farm Site. These features are described below.

Pits

The pit features represent the basal portions of large trash pits. Feature 1, which was located in the center of Unit 1 at the base of the plowzone, measured 1.05 m north-south and 60 cm east-west and was 20 cm thick (Figure 4). Feature 3 consisted of two overlapping pits documented at the base of plowzone in Unit 3 (Figure 4). This feature extended into the north and east walls of this unit. The excavated portion of Feature 3 measured 2.15 m northeast-southwest and 1.40 m northwest-southeast and had a thickness of 15 cm. The soil matrix of both features was a dark brown silt loam. Ceramics, chipped stone debitage, and faunal and floral remains, were recovered from both pits.

Structure

A large portion of a structure (Feature 2) was documented in Unit 2. It had been constructed within a basin that extended to a depth of about 60 to 70 cm below the surface (Figure 5). The floor of the structure was very compact. Only one definite postmold was identified along the edge of the structure, but two burned posts were documented near the northeast wall of the structure and several burned timbers were documented on the floor. Identifiable posts and timbers include black walnut, hickory, white ash, and slippery elm. In addition to the burned timbers, two large cordmarked body sherds were found on the structure's floor: one along the northwest wall and the other towards the center of the structure. Based on the sample of the structure that was investigated, it appears not to have had a subfloor central hearth.

During excavation of the Feature 2, a question was raised as to whether it represented one structure that had been partially rebuilt or if represented two distinct building episodes. This was prompted by the fact that in the southwest corner of the house basin had a stepped-like appearance (Figure 5). When first encountered it was thought that this represented rebuilding of the structure with the second structure being offset from the first. If a second structure had been constructed slightly offset from the first, then the profile of the initial structure should have been truncated by the second structure. However, upon examination of the exposed profiles this does not appear to have been the case. Examination of the north-south house basin profile indicated that Zone 4 situated just above the house floor, extended from the bottom to the top of the basin, including the step (Figure 5). The step may represent rebuilding of the southwestern corner resulting in an interior bench, an interior bench formed when the house was construction, or an entrance to the structure. The estimated interior floor space of the structure is about 4 x 4 m. This estimate is based on the sample of the structure floor that was excavated and soil probes placed inside and outside unexcavated portions of the house. With the step included, the house had a maximum size of 4 x 5 m.

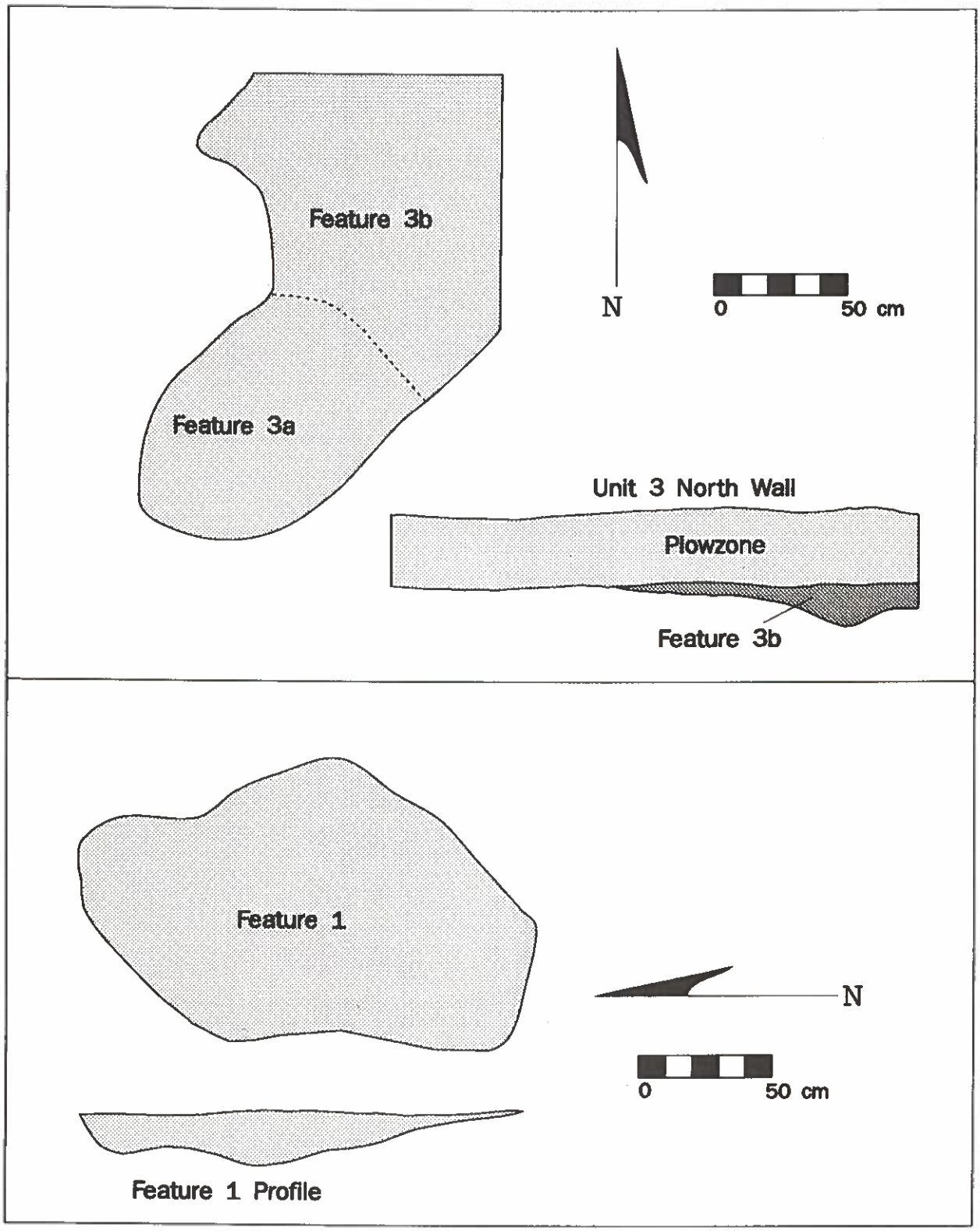


Figure 4. Features 1 and 3.

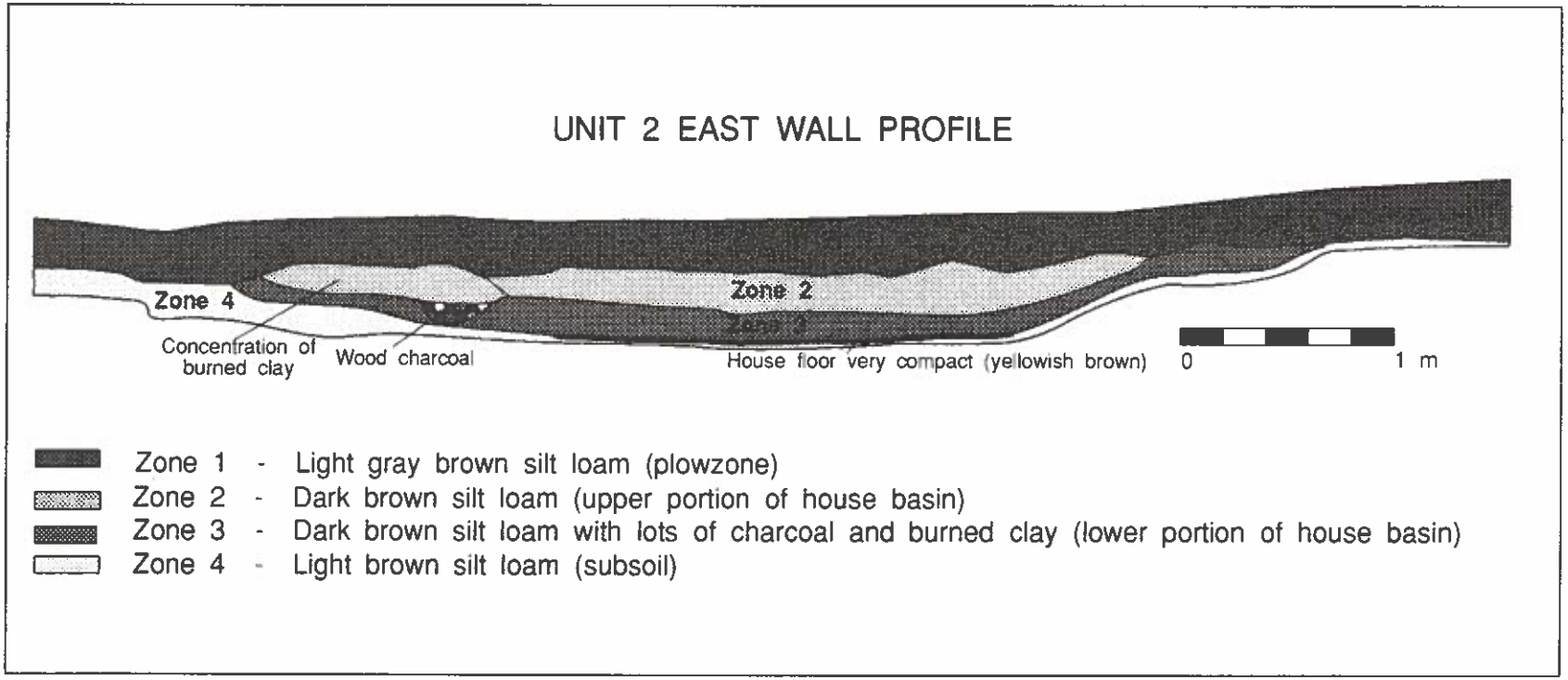


Figure 5. Profile of House Basin (Feature 2).

MATERIALS RECOVERED

A small sample of ceramic and lithic artifacts as well as faunal and botanical remains were recovered from the site. In addition to these materials, several radiocarbon samples were collected. Radiocarbon dates were obtained from charcoal samples taken from the floor or just above the floor of the structure. At two standard deviations these samples produced calibrated dates (Stuiver and Pearson 1986) of A.D. 1220(1279)1395 (700±60 - Beta-46450), A.D. 1280(1322,1340,1392)1430 (590±60 - Beta-46451), and A.D. 1290(1407)1450 (540±60 - Beta-46452). Unlike the latter two samples, which were obtained from individual small timbers recovered from the floor of structure, the date of A.D. 1220(1279)1395 was derived from a sample of consisting of several different timbers.

The three dates overlap between A.D. 1290 and A.D. 1395 and when averaged produce a date of A.D. 1283(1312,1353,1384)1407. Based on the materials recovered from the site and their comparison with assemblages from other Fort Ancient sites such as the Florence Site Complex (Sharp and Pollack this volume), Guilfoil (Fassler 1987), and Capitol View (Henderson this volume) and the radiocarbon dates it is suggested that the Carpenter Farm Fort Ancient component dates to the mid-fourteenth century.

Ceramics

A total of 1,742 sherds were recovered from the Carpenter Farm Site (Table 1). Of these, 161 are larger than 4 cm^2 and 1,551 are smaller than 4 cm^2. All rims, appendages, and decorated body sherds, were analyzed regardless of size. Body sherds smaller than 4 cm^2 were lotted by provenience and counted. Of the 191 sherds that were analyzed (161 greater than 4 cm^2 and 30 less than 4 cm^2), 119 (63.3 percent) were classified as Jessamine Plain and 72 (37.7 percent) were classified as Jessamine Cordmarked (Figure 6). (Based on their investigation of the Florence Site Complex and comparison to other central Kentucky early and middle Fort Ancient ceramic assemblages, Sharp and Pollack [1992] concluded that the Jessamine Series as defined by Turnbow [1988a] should be broadened to include shell tempered ceramics and that it should not be restricted to the early Fort Ancient period. As originally defined by Turnbow [1988a], only limestone or mixed limestone and shell tempered sherds were assigned to this series. Shell tempered ceramics, even though in all other respects identical to the limestone or mixed tempered specimens, were not assigned to the Jessamine Series or any other ceramic series).

Almost 25 percent of the Jessamine Plain sherds from Carpenter Farm are well smoothed, with another 25 percent being poorly smoothed. One of the poorly smoothed Jessamine Plain sherds is thick and appears to be part of a pinch pot. This specimen would be classified as McAfee Plain by some researchers (Henderson this volume; Turnbow 1988a).

Of the 72 cordmarked specimens, 28 exhibit smoothed-over cordmarked exterior surfaces. One of the smoothed-over cordmarked specimens is burnished. A few neck sherds have both plain and cordmarked (n=2) or plain and smoothed-over cordmarked (n=3) exterior surfaces. Cordage twist could be determined for 54 specimens. Most were impressed with S-Twist (70.4 percent) cordage, but some were impressed with Z-Twist (20.4 percent) cordage, with a few being impressed with both (9.2 percent). The number of cords per centimeter range from 3.0 to 5.0 cords with a mean of 2.8 cords.

Table 1. Ceramics.

	Jessamine Cordmarked		Jessamine Plain		Total	
	Number	Percent	Number	Percent	Number	Percent
Size						
Greater than 4 cm^2	69	95.8	92	77.3	161	84.3
Less than 4 cm^2	3	4.2	27	22.7	30	15.7
Total	72	100.0	119	100.0	191	100.0
Ceramic Object						
Body	61	80.8	68	57.1	129	67.5
Rim	7	14.1	34	28.8	41	21.5
Neck	1	1.3	4	3.3	5	2.6
Shoulder	3	3.8	2	1.7	5	2.6
Base	0	0.0	3	2.5	3	1.6
Detached Appendage	0	0.0	8	6.7	8	4.2
Total	72	100.0	119	100.0	191	100.0
Temper						
Limestone	3	4.1	5	4.2	8	4.2
Limestone and Shell	14	19.4	3	2.5	17	8.9
Shell	19	26.4	45	37.8	64	33.5
Shell and Limestone	36	50.0	66	55.5	102	53.4
Total	72	100.0	119	100.0	191	100.0
Exterior Surface Color						
Tan	20	26.9	36	30.0	56	29.5
Orange	11	16.7	27	22.5	38	20.0
Medium Brown	11	15.4	14	11.7	25	13.2
Light Brown	8	10.3	18	15.0	26	13.7
Dark Brown	8	10.3	8	7.5	16	8.4
Reddish Brown	5	7.7	3	3.3	8	4.2
Dark Grey	2	2.6	5	4.2	7	3.7
Medium Grey	3	3.8	3	2.5	6	3.2
Black	3	3.8	1	0.8	4	2.1
Other	1	1.3	3	2.5	4	2.1
Total	72	100.0	118	100.0	190	100.1
Interior Surface Color						
Tan	7	10.3	24	20.0	31	16.3
Medium Brown	7	11.5	20	16.7	27	14.2
Orange	6	7.7	19	15.8	25	13.2
Dark Grey	9	11.5	13	10.8	22	11.6
Black	17	21.8	2	1.7	19	10.0
Medium Grey	8	11.5	9	7.5	17	8.9
Dark Brown	5	6.4	12	11.7	17	8.9
Light Brown	9	11.5	7	5.8	16	8.4
Reddish Brown	2	3.8	5	4.2	7	3.7
Light Grey	0	1.3	4	3.3	4	2.1
Reddish Orange	2	2.6	2	1.7	4	2.1
Other	0	0.0	1	0.8	1	0.5
Total	72	100.0	118	100.0	190	99.9
Rim Form						
Direct	0	0.0	6	40.0	6	27.3
Inslanting	7	100.0	1	6.7	8	36.4
Slightly Outflaring	0	0.0	7	46.7	7	31.8
Strongly Outflaring	0	0.0	1	6.7	1	4.5
Total	7	100.0	15	100.1	22	100.0

Table 1. Continued

	Jessamine Cordmarked		Jessamine Plain		Total	
	Number	Percent	Number	Percent	Number	Percent
Rim Side Wall						
No Modification	2	28.6	14	56.0	16	50.0
Thicken Towards lip	2	28.6	6	24.0	8	25.0
Thin Towards Lip	3	42.8	5	20.0	8	25.0
Total	7	100.0	25	100.0	32	100.0
Lip Shape						
Pointed	0	0.0	4	11.8	4	9.8
Round	1	14.3	12	35.3	13	31.7
Flat	5	71.4	13	38.2	18	43.9
Rounded Exterior Protrusion	1	14.3	4	11.8	5	12.2
Flat Exterior Protrusion	0	0.0	1	2.9	1	2.4
Total	7	100.0	34	100.0	41	100.0
Decoration						
Loop Handle	0	0.0	3	18.7	3	15.0
Appendage Scar	1	20.0	3	18.7	4	20.0
Thick Strap Handle	0	0.0	2	12.5	2	10.0
Thin Strap Handle	0	0.0	3	18.7	3	15.0
Incised Lip	2	40.0	2	12.5	4	20.0
Cordmarked Lip	1	20.0	0	0.0	1	5.0
Incised Design	1	20.0	2	12.5	3	15.0
Total	5	100.0	15	99.9	20	100.0
	mm		mm		mm	
Orifice						
Mean	8.0		17.3		15.4	
Minimum	8.0		8.0		8.0	
Maximum	8.0		25.0		25.0	
Lip Thickness						
Mean	7.8		5.8		6.1	
Minimum	5.7		3.4		3.4	
Maximum	10.4		11.7		11.7	
Rim Thickness						
Mean	6.8		6.0		6.2	
Minimum	6.0		4.3		4.3	
Maximum	7.9		8.3		8.3	
Body Thickness						
Mean	7.5		7.5		7.5	
Minimum	4.5		4.5		4.5	
Maximum	10.8		12.2		12.2	

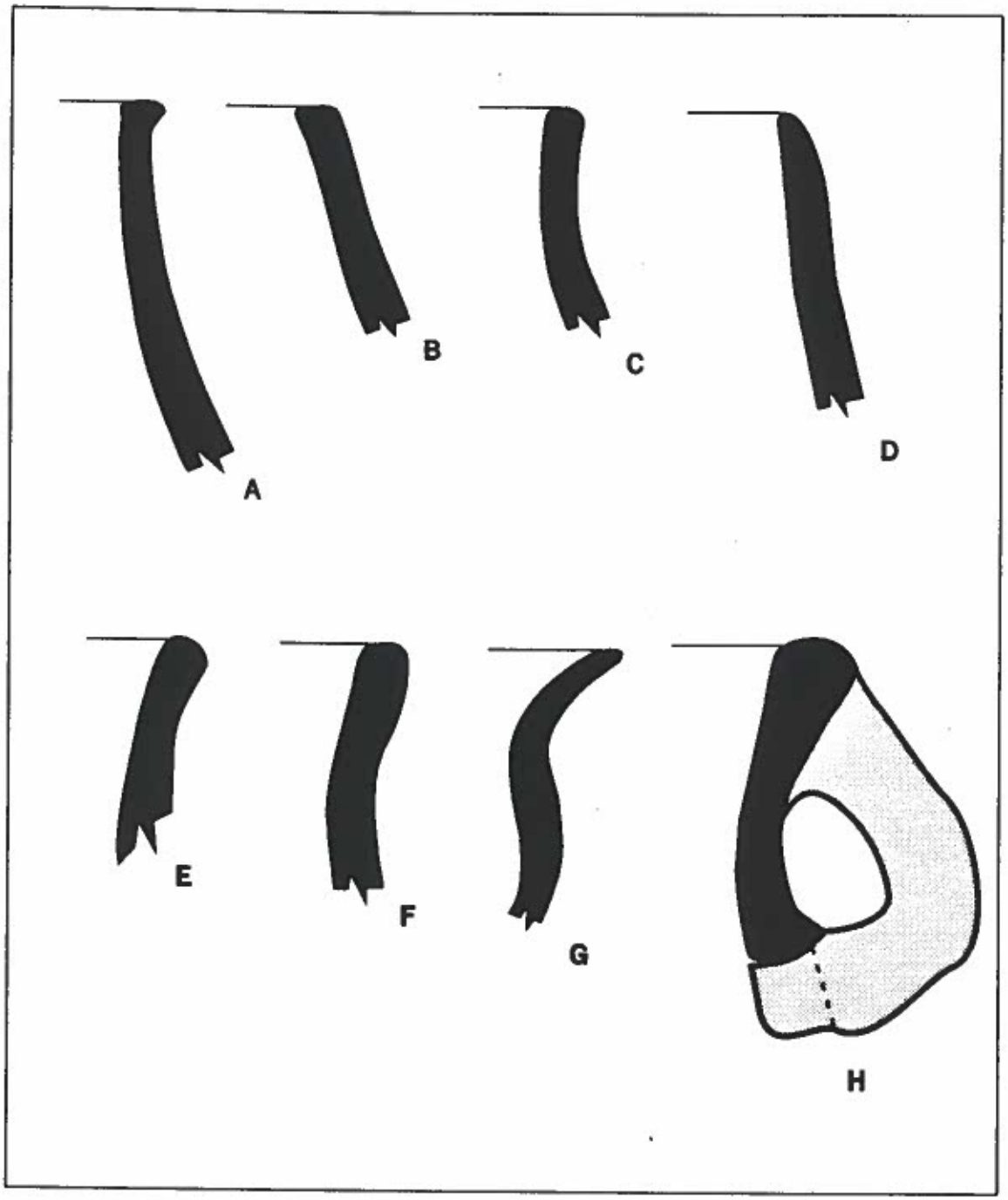


Figure 6. Ceramic rim profiles (shown actual size).

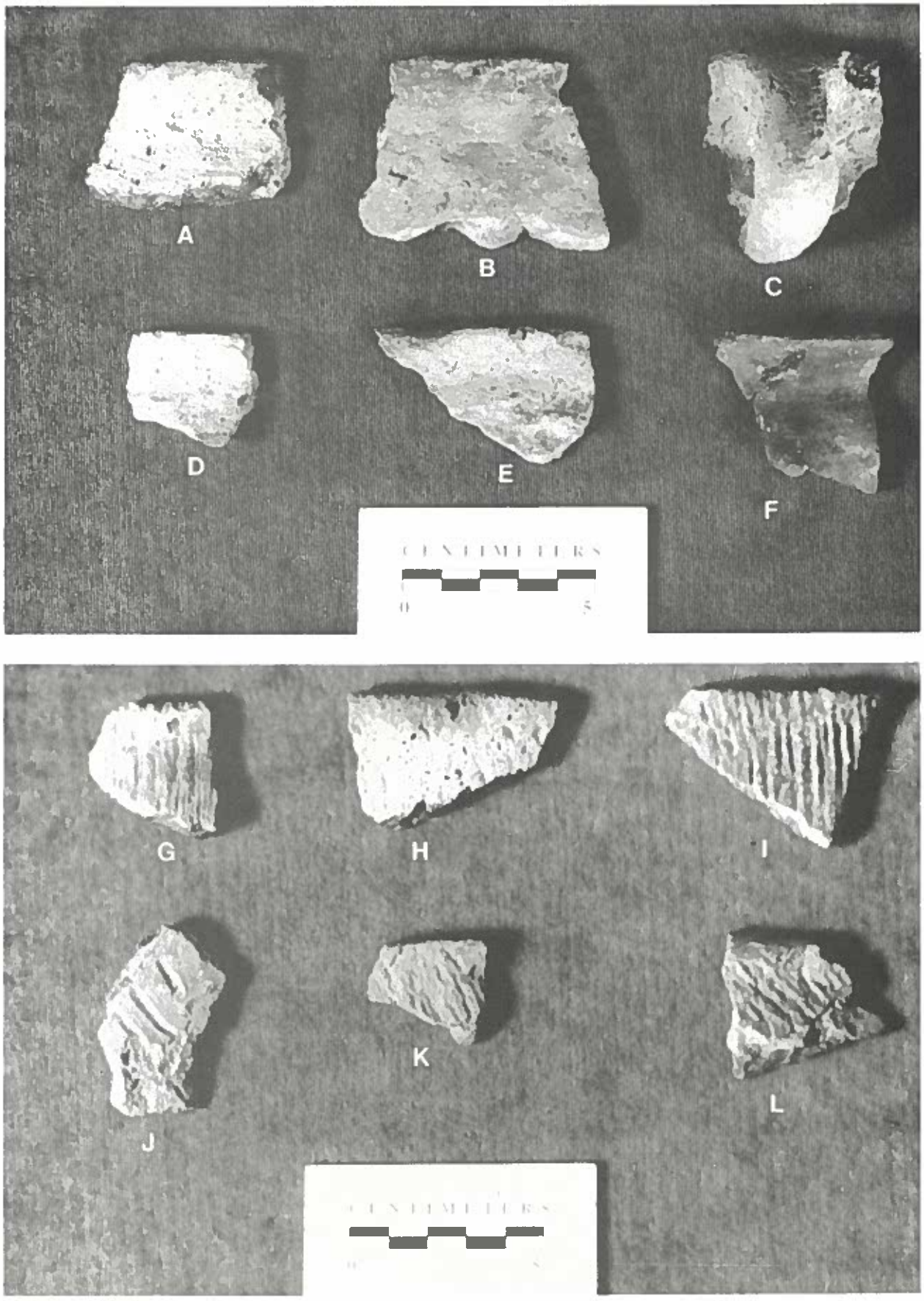


Figure 7. Ceramics: a-f,j, Jessamine Plain; g-i,k,l, Jessamine Cordmarked.

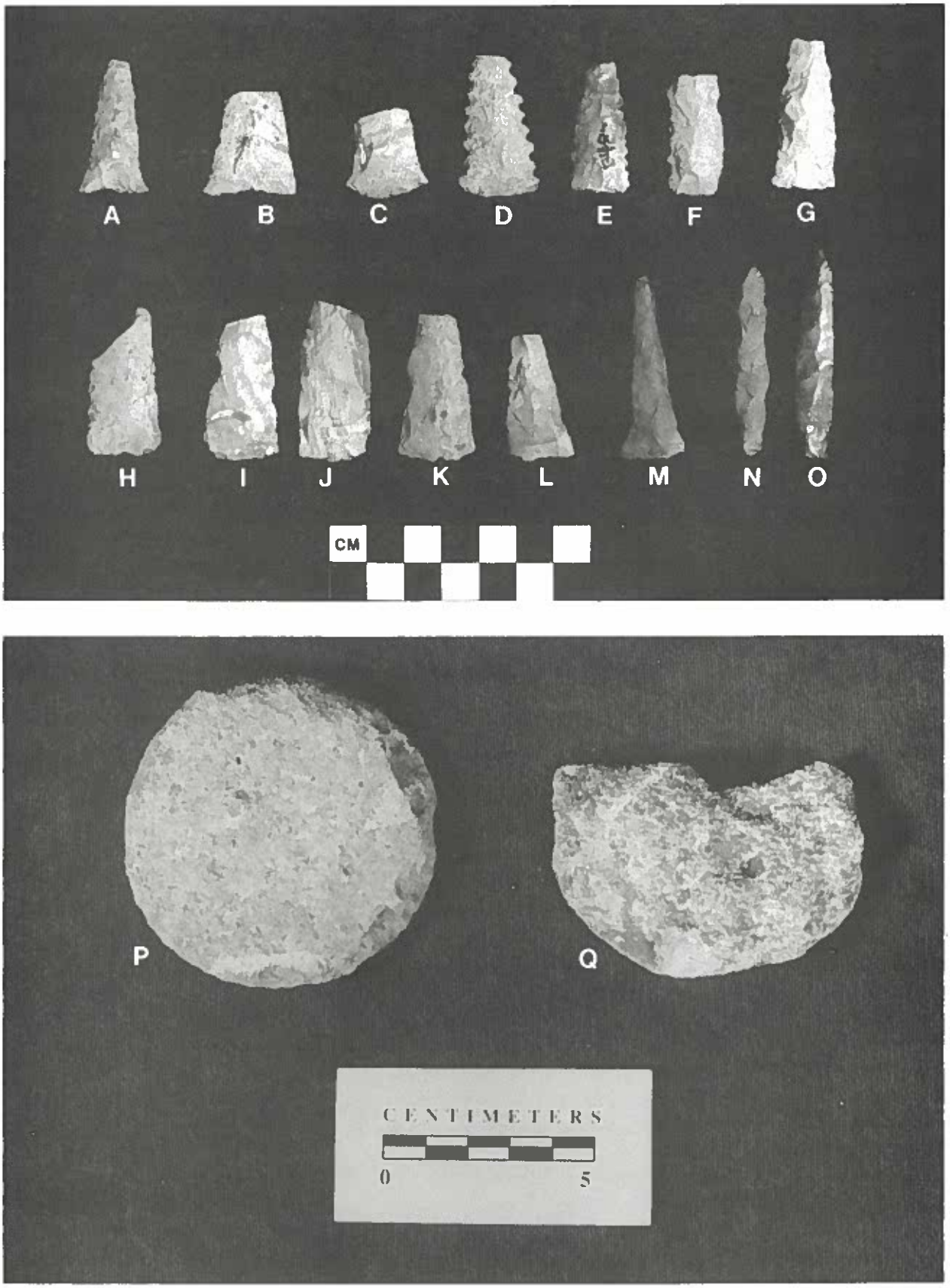


Figure 8. Chipped Stone. Projectile points: a-c, Type 2 Fine Triangular; d-f, Type 3 Fine Triangular; g-l, Type 5 Fine Triangular. Drills: m, expanded base; n-o, spiked. Chipped limestone disks: p-q.

The most common exterior surface colors are tan, orange, medium brown, and light brown, and the most common interior surface colors are tan, medium brown, dark grey, and orange (Table 1). Ceramics from Carpenter Farm are tempered with a combination of shell and limestone (53.4 percent), shell (33.5 percent), limestone and shell (8.9 percent), or limestone (4.2 percent). A few specimens are well-fired, with temper particles that are quite small. Many of the well-fired specimens also are well-smoothed and are reminiscent of Bell Plain (Phillips et al. 1951), a common Mississippian ceramic type. Most of the sherds in the collection, however, are not as well-fired and contain larger temper particles. Limestone temper fragments tend to be very small and, in mixed tempered sherds, often account for a very low percentage of the overall observed temper. Manganese concretions are quite common in all sherds, and the holes left by these concretions were often difficult to distinguish from those left by eroded limestone fragments.

Rims are almost evenly divided between inslanted, direct, and outflaring specimens (Table 1). All of the rims are portions of jars, most of which have elongated bodies and weak shoulders. Vessel orifices range in diameter from 8.0 to 25.0 cm with a mean of 15.4 cm. Lips tend to be either flat (46.3 percent) or round (43.9 percent) but some are pointed (9.8 percent). Both rims and lips tend to be thinner than body sherds, having a mean thickness of 6.1 mm and 6.2 mm, respectively, compared to 7.5 mm for body sherds. Basal sherds, which are rounded, range in thickness from 9.1 to 12.2 mm with a mean of 10.5 mm.

Decoration, which is present on eight specimens, consists of incised or cordmarked impressions on smoothed vessel lips (n=5) and incising (n=3) (Figure 7j). The lips of four rims exhibit incised lines placed perpendicular to the rim and another specimen exhibits individual cord impressions also placed perpendicular to the rim. Two of the incised sherds exhibit portions of curvilinear designs and another exhibits part of a rectilinear design.

Handles (n=12) were the only type of appendage found at the site. Three are loops, two are thick straps, and three are thin strap handles. Four other sherds exhibit appendage scars: three of these specimens have rivet holes. All of the handles were attached to a vessel's lip and loop handles were riveted to the body of the vessel. The one complete loop handle measures 21.2 mm in width and 14.3 mm in thickness with a width to thickness ratio of 1.5 mm. Only one of the loop handle fragments was large enough to measure. It had a width of 17.8 mm and a thickness of 18.6 mm with a width to thickness ratio of 1.0 mm.

The one complete thick strap (figures 6h and 7c), is 19.4 mm wide and 7.6 mm thick and has a width to thickness ratio of 2.6 mm. The other thick strap handle has a thickness of 7.3 mm. None of the thin straps, which ranged in thickness from 5.1 to 5.5 mm with a mean of 5.3 mm, were of a sufficient size to determine their width.

Discussion

In most respects the Carpenter Farm ceramic assemblage is similar to that of other middle Fort Ancient Elkhorn phase ceramic assemblages (Table 2). Shell temper is present in almost all of the sherds, but a majority of the specimens also contain limestone temper. Almost all of the vessels are jars that have elongated bodies, and direct and inslanting specimens account for approximately two-thirds of the rims. Vessel lips tend to be flat or rounded. Appendages include loop, thick strap, and thin strap handles (Table 2). The Carpenter Farm assemblage is distinguished from other middle Fort Ancient sites in central Kentucky by a low percentage of Jessamine Cordmarked sherds. In northeastern Kentucky, Henderson et al. (1992:264) documented

Table 2. Comparison of Elkhorn Phase ceramics.

	Gulfoil		15Hr21		15Hr22		Carpenter Farm	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Temper								
Shell and Limestone	351	64.0	194	69.3	195	48.4	102	53.4
Shell	148	27.0	58	20.7	188	47.1	64	33.5
Limestone and Shell	0	0.0	23	8.3	18	4.5	17	8.9
Limestone	50	9.0	5	1.8	0	0.0	8	4.2
Total	549	100.0	280	100.1	403	100.1	191	100.0
Exterior Surface Treatment								
Cordmarked	365	68.2	193	71.0	1112	74.4	72	37.7
Plain	168	30.6	50	18.4	339	22.4	119	63.3
Knot Roughened	6	1.2	29	10.7	65	4.3	0	0.0
Total	549	100.0	272	100.1	1516	100.1	191	100.0
Rim Orientation[1]								
Direct	11	37.5	9	60.0	122	59.2	6	27.3
Inslanting	17	9.4	2	13.3	20	9.7	8	36.4
Slightly Outflaring	4	53.1	4	26.7	64	31.1	8	36.4
Total	32	100.0	15	100.0	204	100.0	22	100.1
Twist								
S	71	84.0	91	91.0	82	82.8	38	70.4
Z	13	15.0	8	8.0	17	17.2	11	20.4
Both	1	1.0	1	1.0	0	0.0	5	9.2
Total	85	100.0	100	100.0	99	100.0	54	100.0
Lip Shape								
Rounded	26	56.3	13	52.0	63	27.5	18	43.9
Flat	21	43.7	8	32.0	127	55.4	19	46.3
Pointed	0	0.0	4	16.0	29	17.0	4	9.8
Total	47	100.0	25	100.0	229	99.9	41	100.0
Decoration/Appendages								
Lip	2	6.6	0	0.0	20	11.4	5	25.0
Handles	15	50.2	3	18.8	49	27.8	12	60.0
Lugs	2	6.6	0	0.0	8	4.5	0	0.0
Effigies	0	0.0	1	6.3	0	0.0	0	0.0
Applied Clay Strip	0	0.0	0	0.0	5	2.8	0	0.0
Incising	11	36.6	12	75.0	92	52.3	3	15.0
Punctation	0	0.0	0	0.0	2	1.1	0	0.0
Total	30	100.0	16	100.1	176	99.9	20	100.0
Percent of assemblage that is decorated or an appendage: taken as percent of all sherds with identifiable exterior surface treatment	5.5		5.9		11.6		11.0	
Percent of assemblage that are appendages: taken as percent of all sherds with identifiable exterior surface treatment	3.3		1.1		3.8		6.3	
Percent of assemblage that is decorated: taken as percent of all sherds with identifiable exterior surface treatment	2.4		4.8		7.8		4.7	
Percent of assemblage that is incised: taken as percent of all sherds with identifiable exterior surface treatment	2.0		4.4		6.1		1.6	

[1] Differences in rim orientation are related to sample size and to analyst biases. They are not interpreted as representing significant variation among the collections.

interregional variation in the percentage of cordmarked to plain exterior surfaces during the middle Fort Ancient Manion phase, with cordmarking accounting for only 4 percentage of the sherds at Island Creek but as much as 61 percent of the assemblage from Fox Farm. As with northeastern Kentucky, the low percentage of cordmarked sherds at Carpenter Farm may be indicative of interregional ceramic differences in the Central Bluegrass region.

Another trait that serves to distinguish the Carpenter Farm ceramic assemblage from other central Kentucky Fort Ancient assemblages, is an absence of Jessamine Knot Roughened sherds (Table 2). Sherds with knot roughened exterior surfaces account for anywhere from 1.2 to 10.7 percent of other central Kentucky middle Fort Ancient ceramic collections and 6.6 of the contemporary Manion phase component at Fox Farm (Turnbow and Henderson 1992a:119). The absence of knot roughened specimens in the Carpenter Farm collection could be due to the small size of the collection. Alternatively, since sherds with knot roughened exterior surfaces are most common in the Cumberland Plateau region of Eastern Kentucky, where they account for as much as two-thirds of site ceramic collections (Sharp 1990a:513), their absence at Carpenter Farm may indicate that the inhabitants of this site had less interaction with groups in this region. It also could reflect the presence of intraregional ceramic differences within central Kentucky during the middle Fort Ancient period.

Several attributes serve to distinguish the Carpenter Farm ceramic collection from that of the nearby early Madisonville horizon Capitol View Site (Henderson this volume, 1992). Decoration in the form of incising is much more prevalent at Capitol View occurring on almost 20 percent of the sherds compared to less than 2 percent of the sherds at Carpenter Farm. The Carpenter Farm assemblage also lacks bowls and pans, which are present albeit in low numbers at Capitol View. Overall, the Carpenter Farm Site collection contains more mixed tempered sherds, a greater number of direct and inslanted rims, and more flat lips than the Capitol View collection. Most of the sherds in the latter collection are tempered with shell, rims tend to be outflaring, and lips tend to be rounded. The differences noted between middle Fort Ancient and early Madisonville horizon ceramics in central Kentucky parallel those documented by Turnbow and Henderson (1992a) for northeastern Kentucky.

Chipped Stone

Chipped stone artifacts recovered from the Carpenter Farm Site include objects manufactured from chert (bifaces, cores, unifaces, flakes, and a hammerstone) and limestone (disks and a hoe).

Chert Tools

Bifaces

For the purposes of this study, the 51 bifaces found at the site were subdivided into three categories (initial reduction, primary trimming, and secondary trimming) that represent different stages in the manufacturing process. During initial reduction, the first stage of stone tool manufacture, artifacts are "...formed by the removal of at least a portion of the natural exterior surfaces of raw material, or 'decortication' as it is commonly called. This process may continue without a shift in flaking strategy until the raw material piece is exhausted" (Fenwick and Collins 1975:4). During the second stage, primary trimming, bifaces receive "...their general outline and sectional form" (Fenwick and Collins 1975:7). Secondary trimming represents the final stage of manufacture where "...the final edge qualities and shape attributes are imparted to the biface" (Fenwick and Collins 1975:7).

The nine initial reduction bifaces recovered from the site have a maximum length of 35-82 mm, a maximum width of 23-45 mm, and a maximum thickness of 10-27 mm. Eight are complete specimens and one is a proximal end. Three bifaces retain portions of yellowish brown cortex, which indicates that they were made from pebble chert.

In general, primary trimming bifaces (n=9) from the site are shorter, not as wide, and thinner than initial reduction bifaces. These specimens have a maximum length of 35-46 mm, a maximum width of 19-34 mm, and a maximum thickness of 9-15 mm. At least four of these specimens appear to represent aborted triangular projectile points.

Almost two-thirds of the specimens were classified as secondary trimming bifaces. Of these, five were drills and 14 were projectile points. The remaining specimens included 11 distal ends, two proximal fragments, one midsection, and one edge fragment. Of the 11 distal ends, 10 are very thin and probably represent fragments of triangular projectile points.

Drills

Two spike drills (Figure 8n-o), one expanded base drill (Figure 8m), one contracting stem drill, and a drill midsection were recovered from the site. The spike drills, which lack hafting elements, are long and slender, and have pointed or rounded ends. One specimen has a length of 52 mm, a width of 11 mm, and a thickness of 9 mm. Both ends of this specimen have been worn smooth by extensive use. The other specimen has a slight twist in the bit, exhibits only minor edgewear. This specimen has a length of 57 mm, a width of 12 mm, and a thickness of 6 mm.

The expanded base drill resembles a triangular projectile point with a convex base and very narrow blade. It has a length of 50 mm, a basal width of 18 mm, a blade width of 10 mm, and a thickness of 7 mm. The distal end of this specimen exhibits moderate wear and some polish. The contracting stem drill is a proximal fragment (35 mm long, 12 mm wide, and 7 mm thick). No wear is evident on the blade. The midsection fragment is from a very thin, finely made drill that has a width of 6 mm and a thickness of 3 mm.

Projectile Points

In addition to the 14 identifiable projectile points recovered from the site during the Heritage Council's investigations, four triangular projectile points recovered by the Department of Transportation and two triangular projectile points collected from the surface by Bob Rowe, a local collector also were analyzed. Except for a specimen with an expanding stem, all of the projectile points are fine triangular specimens.

Three of the projectile points (Figure 8a-c) were classified as Type 2 Fine Triangulars (Railey 1992:156-158). All have a flared base. None of these specimens are complete, but one nearly complete specimen is 38 mm long. These projectile points range in width from 20-26 mm and range in thickness from 6-7 mm. These points are most common during the early Fort Ancient period, but are also known from middle Fort Ancient contexts in the Central Bluegrass region (Railey 1992:158).

Three specimens resemble Type 3 Fine Triangulars (Railey 1992:158) (Figure 8d-f). All have coarsely serrated margins and the tip of each has been broken. These specimens range in length from 34-39 mm, in basal width from 16-23 mm, and in thickness from 6-7 mm. Type 3 Fine Triangulars projectile points are primarily associated with Fort Ancient contexts that date between A.D. 1200 and 1400 (Railey 1992:158).

A majority (n=11) of the projectile points are similar to Type 5 Fine Triangulars (Railey 1992:161-163) (Figure 8:g-l). These points have straight sides. The one complete specimen has a length of 30 mm. As with the Type 3 Fine Triangulars, the other specimens assigned to this group were missing their tips. These specimens range in length from 34-43 mm long, in basal width from 16-21 mm, and in thickness from 5-8 mm. Although made throughout the Fort Ancient sequence, Type 5 Fine Triangular points are most common from A.D. 1400-1550 contexts (Railey 1992:163).

The remaining projectile point has a small expanding stem. Three similar projectile points were recovered from the western half of the site (15Fr36B). These specimens range in length from 28-34 mm, in width from 19-21 mm, and in thickness from 5-6 mm with a stem width that ranges in length from 6-7 mm and in width from 12-14 mm and they resemble Merom Expanding Stemmed projectile points, which date to the Late Archaic period (Justice 1987:130-132).

Unifaces

Three unifacial tools were recovered. These artifacts have a maximum length of 27-48 mm, a maximum width of 20-35 mm, and a maximum thickness of 5-12 mm. One of the specimens has a steep working edge and probably functioned as a scraper. The remaining specimens were probably cutting tools. One is oval and the other is crescent shaped with serrated edges.

Cores

The 60 cores recovered from the site vary greatly in size. Slightly more than one-third (36.6 percent) of the cores have a yellowish brown cortex, which indicates that they represent pebble cherts collected from streambeds. Another 16.6 percent of the cores appear to be tabular chert derived from limestone formations. Most of the cores exhibit random flake removal. Some cores were only tested (1 or 2 flakes removed), while others were totally exhausted by removing all usable flakes.

Flakes

Analysis of the chert debitage (n=5,707) suggests that chipped stone tool production and maintenance were important prehistoric activities conducted at the Carpenter Farm Site. Most of the flakes represent shatter (53.3 percent) or bifacial thinning flakes (32.8 percent) from the manufacture and maintenance of chipped stone tools, while the remaining specimens were classified as cortex (2.2 percent), semi-cortex (3.3 percent), or edge cortex (8.4 percent) flakes. The variety of flakes types identified in this collection indicates that all phases of biface reduction took place at the Carpenter Farm Site. The large number of very small pressure flakes suggests that final tool shaping, blade resharpening, and tool maintenance activities were conducted at the site.

An examination of the flakes revealed that 388 exhibited patterned retouching on one or more margins. These flakes tended to be larger and thinner than those that lacked evidence of retouching. Retouched flakes may have been used to cut or scrape hides, wood, or other materials. It should be noted, however, that some of the observed retouching on flake edges may represent platform preparation. Another 112 flakes have randomly modified edges, which could have resulted from either prehistoric use or accidental damage.

Hammerstone

A single chert hammerstone was recovered. This specimen is a discarded core that was subsequently used as a hammer. This oval stone is 61 mm long, 55 mm wide, and 22 mm thick. One side of the stone has been battered from use. Most likely, it was used for percussion flaking during the manufacturing of chipped stone tools.

Limestone Tools

Three chipped limestone disks and a chipped limestone hoe were recovered from the site. The largest limestone disk (Figure 8p) has a roughly chipped shape, a diameter of 7.5 cm, and ranges in thickness from 13-15 mm. One side of this specimen was ground smooth, while the other was left unfinished. The second limestone disk (Figure 8q) measures 7.4 cm in diameter and ranges in thickness from 11-15 mm. Like the first specimen, it was chipped into shape, but both sides were left rough. The third limestone disk measures 3.9 cm in diameter and 8 mm thick. Any chipping has been obliterated by weathering. Its surfaces were left rough. Turnbow (1992:179) notes that limestone disks are primarily associated with the middle Fort Ancient sites.

The limestone hoe is roughly oval in form and has been bifacially chipped into its final shape. The edges retain a sharp cutting edge. Near the center of the specimen are shallow notches on both sides. One flat surface of the hoe has either grinding or wear from use. The hoe measures 13.3 cm in length, 11 cm in width, and ranges from 21-25 mm in thickness.

Discussion

Chipped stone artifacts recovered from the Carpenter Farm Site were manufactured from locally available pebble, tabular, and nodular cherts. Sources for all three types of chert are located near the site (Tanglewood Limestone Member, which is located beneath the site; Tyrone Limestone, which outcrops less than 1 km from the site; and Tertiary fluvial gravels located within 500 m of the site [Pomeroy 1968]) and thus chert could have been easily procured by the Fort Ancient inhabitants of the site. Many of the cores and flakes contain the yellowish brown cortex characteristic of pebble chert. Other cores and large shatter blocks either exhibit adhering limestone or angular weathered edges that suggest they were recovered from chert beds. Finally, a few pieces of chert appear to be from nodules.

Triangular projectile points and drills appear to have been manufactured from large flakes struck from cores and small chert pebbles. Some of the larger and thinner flakes appear to have been modified by removing a series of small pressure flakes on one or more margins. The battered chert hammerstone suggests that hard hammer percussion may have been used during the initial phases of biface reduction. However, antler pressure flaking tools were probably utilized during the final phase of tool shaping and blade sharpening.

The chipped stone collection from Carpenter Farm is consistent with those recovered from other middle Fort Ancient sites in central Kentucky (Fassler 1987; Sharp and Pollack this volume; Turnbow 1988b). Type 3 triangular projectile points and chipped limestone disks, both of which are diagnostic of this period, were recovered from the site. These types of artifacts were not recovered from the nearby early Madisonville horizon Capitol View Site.

BOTANICAL REMAINS

By
Jack Rossen
Vermont Division For Historic Preservation
Montpelier, Vermont
and
Middlebury College
Middlebury, Vermont

INTRODUCTION

A total of 6,062 (351.9 g) botanical specimens were analyzed. These remains were recovered from 132 liters of floated soil. In addition to the flotation-recovered remains, wooden structural timbers and posts associated with the house basin (Feature 2) also were examined. Unlike most Fort Ancient archaeobotanical assemblages that have been primarily collected from pit feature and general midden contexts, almost two-thirds (82 liters) of the Carpenter Farm assemblage was recovered from a house basin.

In this section, the methods of recovery and analysis are first described, followed by a description of the recovered remains, which include wood charcoal, nutshell, and carbonized seeds of cultigens and wild plants. The wood charcoal collection is indicative of an oak-hickory forest with a preference suggested for the use of black walnut and hickory as building material and fuel. Nutshell and carbonized seeds recovered from the site are representative of a Fort Ancient subsistence pattern (Rossen 1992a; Wagner 1987) that consists of a heavy reliance on corn and beans augmented with squash, gourd, fleshy fruits, and nuts.

METHODS

Soil samples were processed in a water flotation tank. The tank, designed by John Carter, consists of a portable two-tub utility basin with a drain and two control valves. One valve regulates water agitation while the other controls a hand-held sprayer. Once floated and dried, each sample was sieved through 2 mm mesh prior to sorting charcoal from roots and other noncarbonized contaminants. Charcoal specimens larger than 2 mm are representative of smaller specimens, with the possible exceptions of acorn and squash rind (Asch and Asch 1975). Identification of specimens larger than 2 mm also is more reliable, and thus sieving saves considerable laboratory sorting time. All materials less than 2 mm in size were carefully scanned for carbonized seeds.

All analyzed samples were examined under a microscope at magnifications of 10 to 30x. Identification of seeds and nuts was aided by a comparative collection of both archaeological and modern specimens, along with standard seed catalogues (Martin and Barkley 1973). Seeds and nutshell were sorted by species, counted, and weighed to the nearest tenth of a gram. Wood charcoal was identified when possible through direct comparison with wood blocks. Macroscopic wood characteristics were observed from specimen cross-sections. Changes in the visibility of macroscopic characteristics that occur during carbonization also were accounted for, to insure maximum accuracy of identification (Rossen and Olson 1985).

To supplement the flotation-collected data, a series of 19 wood charcoal samples collected from the floor of the house basin were examined. These samples represent house timbers and posts. Analysis of these specimens resulted in observations concerning the sizes and species of trees utilized in house construction.

PRESERVATION

Preservation of botanical remains was fair to poor at the Carpenter Farm Site. Some specimens were heavily eroded, and wood charcoal in particular exhibited fragmentation to the point of rendering many specimens unidentifiable. This preservation situation is typical of central Kentucky ridgetop sites, where the manganese pebbles in the soil have a tendency to grind charcoal into smaller fragments. Similar botanical preservation conditions were observed at the Muir (Turnbow and Sharp 1988), Florence Site Complex (Rossen 1992b; Sharp and Pollack this volume), Guilfoil (Fassler 1987), and Capitol View (Henderson this volume; Rossen 1992c) sites. Despite less than optimal preservation conditions, information concerning past environmental conditions and plant subsistence and selection practices have been recovered from these sites.

WOOD CHARCOAL

According to some botanists, prior to Euroamerican settlement, much of central and western Kentucky may have been covered by oak-hickory forests that contained a variety of secondary and tertiary hardwood species (Baskin et al. 1987; Campbell 1985). Wood charcoal profiles from central Kentucky ridgetops sites, such as the Florence Site complex, Muir, and Guilfoil, are heavily dominated by hickory (Carya spp.) and white oak (Quercus spp.) (Rossen 1987a, 1988, 1992b). These profiles, as well as those from Carpenter Farm and the nearby Capitol View Site (Rossen 1992c), tend to corroborate the botantist's hypotheses.

Wood charcoal at the Carpenter Farm Site comprises 97.5 percent of the recovered botanical remains (Table 3). Slightly more than half of these specimens were unidentifiable, either because of their small size or the collapse of their internal structure during carbonization. The Carpenter Farm wood charcoal profile is dominated by hickory (Carya spp.). Black locust (Robinia pseudoacacia), honey locust (Gleditsia triacanthos), black walnut (Juglans nigra), and white oak (Quercus spp.) are secondary species identified in the Carpenter Farm wood charcoal collection (Table 3). The latter species is under represented at Carpenter Farm in comparison to other central Kentucky Fort Ancient sites. For instance, white oak (Quercus spp.), which accounts for only 9.5 percent of the Carpenter Farm collection, accounts for 68.6 percent of the Guilfoil, 33.7 percent of the Muir, 26.5 percent of the Florence Site Complex, and 19.4 percent of the Capitol View collections.

Eight charcoal samples were examined to identify the types of woods associated with structures at this site (Table 4). These specimens are not included in the wood charcoal profile presented in Table 3, which was based on flotation-recovered materials. Black walnut (n=4) was the most common material, with hickory (n=2), white ash (n=1), and slippery elm (n=1) also used. These species are among the strongest and toughest wood species in present-day commercial use (Panshin and de Zeeuw 1970).

Table 3. Botanical Remains.

	Frequency	Percent*	Gram Weight	Percent*
Wood Charcoal				
Hickory (Carya spp.)	2575	44.9	59.1	44.2
Black Locust (Robinia pseudoacacia)	921	16.1	11.5	8.6
Honey Locust (Gleditsia triacanthos)	622	10.8	22.3	16.7
Black Walnut (Juglans nigra)	563	9.8	20.6	15.4
White Oak group (Quercus spp.)	547	9.5	7.0	5.2
White Ash (Fraxinus americana)	222	3.9	6.7	5.0
American Chestnut (Castanea dentata)	100	1.7	3.9	2.9
American Elm (Ulmus americana)	86	1.5	1.2	0.9
Pine group (Pinus spp.)	44	0.8	0.5	0.4
Red Oak group (Quercus spp.)	27	0.5	0.4	0.3
Slippery Elm (Ulmus rubra)	22	0.4	0.3	0.2
Cane (Arundinaria gigantea)	8	0.1	0.1	0.1
Total	5737	100.0	133.6	99.9
Unidentified wood charcoal	6660		79.5	
Nuts				
Hickory (Carya spp.)	130	69.5	2.3	71.9
Black Walnut (Juglans nigra)	45	24.1	0.9	28.1
Juglandaceae	12	6.4	0.0	0.0
Total	187	100.0	3.2	100.0
Tropical Cultigens				
Corn				
Kernels	57	52.8	0.4	57.1
Cupules	44	40.7	0.2	28.6
Glume	2	1.9	0.0	0.0
Rachis	1	0.9	0.1	14.3
Squash? (Cucurbita spp.) rind	1	0.9	0.0	0.0
Gourd? (Lagenaria spp.) rind	1	0.9	0.0	0.0
Beans				
Complete	1	0.9	0.0	0.0
Fragments	1	0.9	0.0	0.0
Total	108	99.9	0.7	100.0
Seeds				
Chenopod (Chenopodium spp.)	5	16.7		
Blackberry (Rubus spp.)	4	13.3		
Knotweed (Polygonum spp.)	4	13.3		
Bedstraw (Galium spp.)	2	6.7		
Pokeweed (Phytolacca spp.)	2	6.7		
Sumac (Rhus spp.)	2	6.7		
Grape (Vitis spp.)	1	3.3		
Grass (Gramineae)	1	3.3		
Unidentified	9	30.0		
Total	30	100.0		

* calculated to nearest 0.1 percent

Table 4. Logs and Posts from House Basin.

Sample No.	Section	Description	Species
57	C	Log from Floor	Black Walnut
58	D	Log from Floor	Hickory
64	E	Log from Floor	Black Walnut
66	E	Post A	White Ash
67	E	Post B	Black Walnut
74	E	Log from Floor	Black Walnut
75	H	Log from Floor	Hickory
83	J	Log from Floor	Slippery Elm

Some differences have been identified between the Carpenter Farm and the nearby Capitol View Site wood charcoal profiles. (It should be kept in mind that the more extensive Capitol View investigations produced a collection that is four times larger than the Carpenter Farm collection; and that the Carpenter Farm Site was probably occupied for a longer period of time than the Capitol View Site). Although both site profiles are dominated by hickory, this species accounts for 73.1 percent of the identified specimens at Capitol View but only 44.9 percent of the identified specimens at Carpenter Farm. This may in part reflect wood species selection decisions made by the inhabitants of these sites. Hickory is the hardest and most durable of eastern U.S. wood species and was probably a preferred species for both fuel and building purposes. It is possible that at sites occupied for very brief periods of time, such as Capitol View, people may have been more discriminating in the woods that they selected for fuel and buildings. On the other hand, at more substantial settlements or sites occupied for longer periods of time than Capitol View, as nearby stands of hickory or other preferred species were depleted people may have been forced to use of less-preferred species for firewood and building.

Even though it is a much smaller collection, five species (white ash, American elm, slippery elm, pine, and cane) present at Carpenter Farm were not found at Capitol View. On the other hand, the Capitol View Site contains three species (sycamore, soft maple, and hard maple) that were not found at the Carpenter Farm Site. It should be kept in mind that none of these species accounts for more than 5 percent of the wood charcoal collection at either site. The low frequency of these tertiary species within archaeobotanical collections illustrates the difficulty of attempts to determine the full range of tree species once present within a given locality based on one archaeological wood charcoal collection. By analyzing collections from several nearby sites, however, it may be possible to identify the full range of tertiary species that once were present in an area.

NUTSHELL

Hickory accounts for 69.2 percent and black walnut 24.1 percent of the nutshell remains identified in the Carpenter Farm collection (Table 3). The remaining 6.4 percent were classified as Juglandaceae, a general category of nutshell remains such as septums that lack diagnostic features. Fort Ancient sites usually contain relatively low densities of nutshell compared to earlier Late Woodland and contemporary Mississippian sites (Rossen and Edging 1987). If the Florence Site Complex, with its extremely high nutshell density, is removed from consideration, Fort Ancient nutshell densities per liter of soil range from 0.6 to 4.5 (Table 5). The Carpenter Farm density of 1.4 is similar to the low densities documented for the Capitol View (0.6), Larkin (0.8) and Thompson (1.4) sites. This collection reinforces the suggestion that by ca. A.D. 1000, there was a decline in nutshell utilization in central and northeastern Kentucky, and that for the next 750 years, nuts remained a minor component of the Fort Ancient subsistence system.

Table 5. Archaeobotanical Densities for Kentucky Fort Ancient Sites.

	Nutshell		Corn	
Site	Freq/liter	Grams/liter	Freq/liter	Grams/liter
Muir (15Js86)[1]	4.5	0.072	4.0	.034
Thompson (15Gp27)[2]	1.4	0.026	4.3	.059
Guilfoil (15Fa167)[3]	3.5	0.093	3.8	.027
Carpenter Farm (15Fr36A)	1.4	0.024	0.8	.005
Florence Site Complex[4]				
Site 15Hr21	11.9	0.216	1.8	.017
Site 15Hr22	40.4	1.343	4.5	.067
Capitol View (15Fr101)[5]	0.6	0.011	0.4	.006
Fox Farm (15Ms1)[2]	2.3	0.057	8.4	.262
Snag Creek (15Bk2)[2]	2.4	0.027	3.6	.031
Larkin (15Bb13)[6]	0.8	0.017	1.0	.010

References: [1] Rossen 1988; [2] Rossen 1992a; [3] Rossen 1987a; [4] Rossen 1992b, Sharp and Pollack this volume; [5] Rossen 1992c; [6] Rossen 1987b.

TROPICAL CULTIGENS

Corn, beans, and possible squash and gourd are the tropical cultigens present in the Carpenter Farm collection. Corn is present primarily in the form of cupules (n=57) (the outer structural layer of the cob that holds the kernels) and kernels (n=44). Two glumes and one rachis segment (series of connected cupules) also were recovered. Since no cobs or cob fragments were recovered, neither row number estimates nor morphological descriptions are presented here. The kernels, however, are low, wide and crescent-shaped, all traits that are typical of the eight-row "Eastern Eight" variety of corn. Because of the small size of this collection, no estimate of cob or kernel variability could be made.

As with nutshell, Carpenter Farm also produced low corn frequency (n=0.8) and weight (g=0.005) densities. Among Kentucky Fort Ancient sites, only Capitol View and Larkin have produced similar low corn densities (Table 5). It is difficult to explain this phenomenon. While preservation is not good in the ridgetop soils of central Kentucky, other Fort Ancient sites in similar environmental contexts, like Muir, the Florence Site Complex, and Guilfoil, have produced substantially higher corn densities (Table 5). In fact, if the Fox Farm Site is excluded from consideration, Kentucky Fort Ancient sites tend to produce very similar corn densities, ranging from 3.2 to 4.6 (frequency per liter).

The corn densities recorded for Carpenter Farm and Capitol View may have been influenced by the contexts from which these remains were recovered. In comparison to most Fort Ancient sites flotation samples, which have been collected from general midden and pit feature contexts (Rossen 1992a), the collections from Carpenter Farm and Capitol View were primarily recovered from house basin or house floor contexts, while at Larkin, they were primarily recovered from mortuary contexts. At the Capitol View Site, corn and beans tended to be recovered from the corners of house floors, suggesting that hearths were cleaned out and house floors swept. This suggests that lower corn densities may be expected from botanical collections recovered primarily from structures. If corn was of lesser importance to the overall subsistence strategy of the inhabitants of these sites than the residents of other Kentucky Fort Ancient sites, one would expect that other subsistence remains would occur in proportionally greater amounts to supplant the deemphasized species. Such a pattern has not been documented. Instead, the overall plant inventories and their relative proportions within the collection at the Carpenter Farm, Capitol View, and Larkin sites are very similar to those from other Fort Ancient sites (Rossen and Edging 1987; Wagner 1987).

Other cultigens present in the Carpenter Farm collection include two domesticated beans (Phaseolus spp.), a possible squash (Cucurbita spp.) rind fragment, and a possible gourd (Lagenaria spp.) rind fragment. Beans are present in the eastern U.S. by ca. A.D. 1000 and are particularly abundant at Fort Ancient sites such as Fox Farm, the Florence Site Complex, and Larkin in Kentucky and Campbell Island in Ohio (Rossen 1987b, 1992a, 1992b; Wagner 1987). They are absent, however, from western Kentucky and most central Mississippi Valley Mississippian sites prior to A.D. 1400 (Johannessen 1984; Rossen and Edging 1987). Their presence in small, poorly-preserved Fort Ancient collections, such as the one from Carpenter Farm, supports the suggestion that differences in Fort Ancient and Mississippian bean use cannot be attributed to preservation conditions or sampling differences. Squash and gourd are both common components of Fort Ancient sites, although they are almost always found in very low frequencies (Wagner 1987).

SEEDS

A total of 30 carbonized seeds, including 21 identifiable specimens, were recovered (Table 3). All are plants that were commonly utilized by Fort Ancient peoples, with the possible exceptions of the grass and pokeberry seeds, which may have been accidental inclusions in the site. Chenopod (Chenopodium spp.) is generally recognized to have been widely cultivated prehistorically over a broad area of the Eastern U.S. Woodlands (Smith 1985, 1987). It is found at about one-quarter of the Fort Ancient sites where flotation has been conducted (Wagner 1987). The five chenopod seeds in the Carpenter Farm collection are heavily eroded and were popped, with a resulting loss of their seedcoats. It is thus not possible to discuss their morphology in terms of traits such as thin seedcoats and expanded "truncate-margin" cross sections that might indicate the cultivated variety Chenopodium berlandieri (Smith 1985, 1987). The presence of truncate-margin specimens at two Fort Ancient sites, SunWatch in Ohio and Fox Farm in Kentucky, suggest that chenopod was a garden cultigen (Rossen 1992a; Wagner 1987).

Sumac (Rhus spp.), bedstraw (Galium spp.), and grape (Vitis spp.) are often present in Fort Ancient botanical assemblages (Rossen 1992a; Wagner 1983, 1987). Sumac is present in high frequencies at some Kentucky Fort Ancient sites, such as Fox Farm and Florence. This plant is a bush or tree, which produces edible berries that can be made into a vitamin C-rich tea. Certain aspects of sumac's ecology (Smith 1970), such as its scarcity in undisturbed habitats and its propensity for invading garden edges and other cleared zones, suggest that it could have been easily manipulated by Fort Ancient farmers to increase production.

Bedstraw (Galium spp.) is one of the largest and most diverse plant genera of North America. Some archaeobotanists consider the seeds to be accidental inclusions in the archaeological record, because the seeds readily stick to clothing and hair. However, the plant is recovered in almost all Fort Ancient sites where flotation is used, and it is the most abundant seed at the nearby Capitol View Site. Evidence supporting its prehistoric utilization is thus accumulating. As its name suggests, bedstraw could have been used as a bedding material. Its greens may be eaten and the plant may be used as a dye (Gail E. Wagner, personal communication 1986). In other regions of the United States, Galium was used as a diuretic among the Ojibwa and as a perfume among the Omaha and Ponca (Gilmore 1931:63).

Grape (Vitis spp.) as well as Blackberry (Rubus spp.) could have been eaten either fresh or fire-dried and stored for later use. Knotweed (Polygonum spp.) is an erect annual with edible seeds, and one variety (Polygonum erectum) has been proposed as an indigenous eastern U.S. cultigen. However, only one Fort Ancient site (Muir), has produced a large number of knotweed seeds, many of which exhibit the relatively robust morphology of the cultivated variety (Rossen 1988). The Carpenter Farm knotweed specimens have a triangular cross-section and do not represent the known cultivated variety.

Pokeberry (Phytolacca americana) could have been accidently introduced in the deposits, because the plant readily invades disturbed areas and gardens. Although its young greens are edible, the berries contain the poison saponin. The Pamunkey Indians of Virginia and the Cherokee were both reported to have consumed ripe pokeberries for the treatment of rheumatism (Banks 1953:42; Vogel 1982:351). Scattered archaeological specimens have been recovered at other Fort Ancient sites such as Fox Farm (Rossen 1992a).

DISCUSSION

As Table 5 illustrates, botanical collections from several Kentucky Fort Ancient sites have now been subject to detailed analysis. The data from these sites suggest that Fort Ancient plant subsistence patterns in central and northeastern Kentucky remained fairly stable throughout the Late Prehistoric period. The Fort Ancient subsistence pattern consists of a heavily reliance on corn and beans supplemented by minor cultigens such as squash, gourd, and chenopod, fleshy fruits such as sumac and grape, and nuts. With the exception of chenopod and in one case, erect knotweed, starchy-oily seeds of the Eastern Agricultural complex are absent from Fort Ancient sites (Rossen 1992a; Rossen and Edging 1987; Wagner 1983, 1987). In particular, the near absence of some starchy-oily seeds, such as maygrass (Phalaris caroliniana), from Fort Ancient sites suggests that Fort Ancient people choose not to grow some plants that had been utilized by earlier Late Woodland and contemporary Mississippian groups (Rossen and Edging 1987).

The Carpenter Farm botanical collection is typical of the Fort Ancient subsistence pattern. Corn, beans, and seeds of fleshy fruits are present, as are possible squash and gourd fragments. It also has a low nutshell density and an absence of starchy-oily cultigens (except possibly chenopod). Only its relatively low corn density distinguishes this site from the typical Fort Ancient botanical pattern. This anomaly may be due to the fact that almost two-thirds of the collection was recovered from house basin or house floor contexts. With the exception of the Capitol View Site, most site botanical collections have primarily have been recovered from midden and feature contexts, which in general contain higher densities of carbonized food remains. In summary, despite the small size of the Carpenter Farm collection, the botanical remains reinforce the established pattern of Fort Ancient peoples as corn and bean farmers who supplemented their diet with minor cultigens (represented here by chenopod and squash), and who collected nuts, and collected or actively encouraged the growth of plants with fleshy fruits.

FAUNAL REMAINS

By
Julie A. O'Shaughnessy
Program for Cultural Resource Assessment
University of Kentucky
Lexington, Kentucky
and
Teresa W. Tune
Department of Surface Mining and Reclamation Enforcement
Department of Natural Resources
Frankfort, Kentucky

The Carpenter Farm Site faunal assemblage consists of 843 vertebrate and 45 invertebrate remains recovered through dry screening and flotation. Analysis of the vertebrate remains resulted in the identification of 61 elements, representing 14 taxa. Approximately 14 percent of the vertebrate assemblage was assignable to order, family, genera, or species (Table 6). The invertebrate assemblage (analyzed by Samuel M. Call of the Kentucky Department of Water, Frankfort, Kentucky) was comprised entirely of freshwater bivalve remains, three of which were identifiable to the specie level.

Standard zooarchaeological methods were used during the analysis. When possible, faunal specimens were identified as to species, anatomical element, bone portion, and position (i.e., left or right side). The remaining specimens were identified to class (i.e., mammal, bird, reptile, amphibian, and fish) or placed in the indeterminate vertebrate category. Elements were identified by comparison with modern skeletal collections at the University of Kentucky Museum of Anthropology and with the aid of osteology manuals (Conant 1975; Gilbert 1980, 1981; Olsen 1964, 1968, 1979). Bone fragments that could be cross-mended were glued together. Descriptive data were recorded on faunal analysis code sheets. All faunal materials were counted and weighed to the nearest gram. Additional information was collected on the age, sex, and the number of burned, cut, and/or modified specimens associated with each category.

The minimum number of individuals (MNI) per species was calculated for the assemblage as a whole. MNI determinations for each taxa were based on the most commonly sided element for each taxon. Due to the relatively small sample size, the estimated pounds of usable meat per individual species was not computed. Instead, general comments will be made regarding the dietary contribution to the subsistence base of specific taxa.

Table 6. Identified and Unidentified Vertebrate Remains by Taxonomic Class.

Class	Number of Identified Elements	Percent of Identified Elements	Number of Unidentified Elements	Total	Percent of All Elements
Vertebrate	--	----	7	7	7.8
Mammal	51	83.6	684	735	87.2
Bird	2	3.3	18	20	2.4
Reptile	7	11.5	64	71	8.5
Fish	1	1.6	9	10	1.1
Total	61	100.0	782	843	100.0

Table 7. Summary of Identified Vertebrate Remains.

Vertebrate Taxon	Frequency	MNI
Mammals		
Odocoileus virginianus, White-tailed deer	40	2
Cervus canadensis, Elk	1	1
Ursus americanus, Black bear	4	1
Procyon lotor, Raccoon	2	1
Canis cf. familiaris, Domestic dog	1	1
Sciurus carolinensis, Gray squirrel	1	1
Sciurus spp., Squirrel	1	1
Sylvilagus floridanus, Eastern cottontail	1	1
Birds		
Meleagris gallopavo, Wild turkey	2	1
Reptiles		
Serpentes, Snake	1	1
Trionyx spiniforus, Softshell turtle	1	1
Terrapene carolina, Eastern box turtle	4	1
Turtle	1	1
Fish		
Aplodinotus grunniens, Drumfish	1	1
Total Identified Vertebrates	61	

VERTEBRATES

A total of eight mammal, one bird, four reptile, and one fish taxa are represented in the faunal assemblage (Table 7). Mammal remains account for 87.2 percent of all remains, followed by reptile (8.5 percent), bird (2.4 percent), fish (1.1 percent), and indeterminate vertebrate (0.8 percent). Evidence of burning is present on 37.7 percent of the bone assemblage. Indications of butchering were observed on seven elements, while rodent or carnivore gnawing is present on 20 elements. Four bones were modified as a result of tool manufacturing or use. Overall, bone preservation at the site was good.

MAMMALS

Mammal remains consist of 735 elements, of which 51 (6.9 percent) could be identified. Of the identified large mammals, deer, bear, and elk comprise over 80 percent of the bone, while smaller mammals (dog, raccoon, squirrel, and rabbit) account for the remaining 20 percent of the remains. Based on frequency and MNI, large mammals provided the bulk of the meat consumed by the site's residents.

Of the large mammals, white-tailed deer is the most common taxon, accounting for 79 percent of the mammal remains recovered from the site (Table 7). Black bear accounts for 8 percent and elk, 2 percent of the identified mammal bone. A minimum of two deer are present in the assemblage, based on the occurrence of two left astragali and a similar number of right scapulae. All major skeletal elements are represented in the assemblage indicating the occurrence of on-site butchering. Black bear and elk remains each account for a minimum of one individual. Identified black bear remains include a canine tooth, mandibular fragment, calcaneus, and radius, while the one elk element is a distal humerus.

Five species of small mammals were identified in the assemblage, each represented by one individual (Table 7). Recovered species include two carnivores (dog and raccoon) and two rodents (squirrels and rabbit). Small mammals constitute approximately 12 percent of the identifiable mammal bone.

Butchering marks are present on four deer bones: two calcanei, one metacarpal, and a scapula. Indications of carnivore/rodent gnawing are present on 11 deer specimens and a dog radius, and one deer bone had been burned. Two specimens had been modified for use as tools (see following section). None of the other mammal remains exhibited signs of butchering, gnawing, burning, or of modification for tool use.

BIRDS

Birds comprise 3.3 percent of the identified bone (Table 6). The only identifiable avian remains were those of wild turkey (Table 7). This species is represented in the assemblage by one individual. None of the remains show signs of burning, butchering or gnawing. One unidentified bird bone exhibits evidence of human alteration (see following section).

REPTILES

Reptiles comprise 8.5 percent of the identified faunal material (Table 6) and consist of turtle and snake (Table 7). Turtle remains (carapace fragments), which are represented by terrestrial eastern box and aquatic softshell turtle, account for 86 percent of the reptile sample. A snake vertebrae was the only other reptilian specimen identified. It could not be determined if the element is from a poisonous or nonpoisonous specie. No evidence of burning, gnawing, butchering or human modification is present on any of the reptile remains.

FISH

Fish accounts for less than 2 percent of all bone recovered from the site (Table 6). The only identifiable species was a freshwater drumfish, which was represented by a pharyngeal plate. Based on the size of the pharyngeal plate this, individual weighed about 2 kg. No indication of human modification is apparent on this specimen.

MOLLUSCS

Of the 41 molluscs recovered from the site, only three could be identified. These consisted of the following: Ptychobranchus faciolaris, Quadrula pustulosa, and Amblema plicata. These species are often found in riffle areas associated with a variety of stream sizes (Call 1992:247). No modified shell tools or ornaments were found at the Carpenter Farm Site.

BONE TOOLS

Four bones show signs of human modification as a result of tool manufacture and use. Of these, two are awls. One was manufactured from the proximal end of a deer metapodial. It measures 47 mm in length, has an acute tip, and exhibits longitudinal striations along the shaft. The other awl, which had been manufactured from the shaft portion of an unidentified bird bone, is 38 mm long and exhibits polish on the tip. The longitudinal striations and polish on the distal portions of both specimens suggest they were used for perforating hides or other materials.

The other two tools were manufactured from unidentified mammal bones. One is a cut antler fragment that is rectangular in shape and exhibits longitudinal striations. It is 30 mm long and 12 mm thick. The other specimen is from a large mammal and is 39 mm long and is 10 mm thick. This bone has been extensively polished on its exterior surface and exhibits deep striations and flaking on one end. The intended function of these implements could not be determined.

SUMMARY

Analysis of the Carpenter Farm Site faunal assemblage indicated that, in general, it is similar to other Kentucky Fort Ancient site faunal collections (Breitburg 1988, 1992; Sharp and Pollack this volume; Tune 1987, 1992a, 1992b). Deer, bear, and elk, constitute the primary animals exploited for food. Animal bones from these three large mammal species account for 74 percent of the identifiable remains, with deer accounting for most of the identifiable bone. Deer also provided most of the bone used to manufacture tools.

Turkey was the only bird species identified in the collection and the reptile remains are dominated by the eastern box turtle. Reliance on these two species is similar to that documented for other Kentucky Fort Ancient sites (Breitburg 1992). Also as with most Kentucky Fort Ancient sites fish appear to have been a minor subsistence resource.

The recovery of dog remains from several Kentucky Fort Ancient sites suggests that dogs may have been common in Fort Ancient communities. In addition to the dog specimen from Carpenter Farm, dog crania have been recovered from the Muir Site in Jessamine County (Breitburg 1988), the Florence Site Complex in Harrison County (Pollack and Sharp this volume; Tune 1992a), and from the nearby Capitol View Site (Tune 1992b).

CONCLUSIONS

The Carpenter Farm Site represents the remains of a mid-fourteenth century Elkhorn phase community. Unlike most middle Fort Ancient sites in the Central Bluegrass region, this community did not consist of concentric activity zones surrounding a central plaza. Rather, the site consisted of a linear band of midden. Because of the limited nature of the Carpenter Farm investigation, it was not possible to determine if this community contains spatially discrete mortuary, habitation, and refuse zones similar to those identified at circular villages (see Sharp and Pollack this volume). However, the midden width at Carpenter Farm is the same as that documented for some circular villages. This suggests the possible presence of activity zones within linear middens similar to those documented for circular Fort Ancient communities.

The Fort Ancient community at the Carpenter Farm Site appears to have been abandoned about 50 years before the nearby Capitol View community was established. This determination is based on differences observed in the ceramic and lithic collections and the radiocarbon dates obtained from these two sites. The Carpenter Farm ceramics are very similar to those from other middle Fort Ancient sites in central Kentucky, while the Capitol View ceramics are characteristic of early Madisonville horizon collections. Likewise, Type 2 and Type 3 Fine Triangular projectile points and limestone disks, which are common at Carpenter Farm, were not recovered from Capitol View. These differences reflect diachronic trends in ceramic and chipped stone tools that are similar to those identified for northeastern Kentucky (Henderson et al. 1992). Radiocarbon dates obtained from Carpenter Farm suggest that it was occupied during the mid-fourteenth century, while dates from Capitol View suggest that it was occupied during the early fifteenth century. Thus Carpenter Farm predates Capitol View; they do not represent the remains of contemporary Fort Ancient settlements.

The Carpenter Farm subsistence pattern is similar to that identified for other Kentucky Fort Ancient sites, including Capitol View. The botanical profile is characterized by a reliance on corn and beans supplemented with minor cultigens (e.g., squash), nuts, and fleshy fruits, while the faunal exploitation pattern reflects a heavy reliance on deer, bear, and elk.

The evidence from Carpenter Farm/Capitol View as well as sites such as Florence, Arrasmith, and Buckner, indicates that Fort Ancient groups periodically reoccupied the same locality. However, in so doing, new communities were established directly adjacent to or near earlier settlements. This pattern suggests that those who established the later community had some knowledge of the existence of the earlier settlement and its location. It also implies the existence of some degree of territorial continuity. If the second community represented movement of another group into an area, there is no reason to expect members of such groups to have known of the earlier community or to have intentionally avoided the location of such settlements.

ACKNOWLEDGEMENTS

The authors received assistance from several individuals during the course of field and laboratory work and preparation of this paper. During the excavations the authors were assisted in the field by Randy Boedy, John Carter, Christine K. Hensley, A. Gwynn Henderson, Bob Rowe, Sara Sanders, Thomas N. Sanders, William E. Sharp, and Teresa W. Tune. Equipment was provided by the Program for Cultural Resource Assessment at the University of Kentucky and the Kentucky Department of Transportation. Heidi Adams processed the materials in the laboratory and Tracy Polsgrove typed portions of the manuscript. Finally, we wish to thank David L. Morgan, Director of the Kentucky Heritage Council, for his continued support of Kentucky archaeology.

THE FLORENCE SITE COMPLEX: TWO FOURTEENTH CENTURY FORT ANCIENT COMMUNITIES IN HARRISON COUNTY, KENTUCKY

By

William E. Sharp
United States Forest Service
Berea, Kentucky
and
David Pollack
Kentucky Heritage Council
Frankfort, Kentucky

ABSTRACT

Archaeological investigations of the Florence Site Complex (15Hr21 and 15Hr22) in Harrison County, Kentucky, documented the remains of two Elkhorn phase (A.D. 1200-1400) villages and generated new data on middle Fort Ancient material culture, subsistence practices, and village configuration. Both sites were occupied during the fourteenth century, with Site 15Hr21 predating Site 15Hr22. The distribution of artifacts, burials, pits, and structures at these sites indicates that they consisted of concentric mortuary, residential, and refuse disposal zones surrounding a central plaza.

INTRODUCTION

This paper summarizes the results of archaeological investigations of two Fort Ancient sites (15Hr21 and 15Hr22) in Harrison County, Kentucky, collectively referred to as the Florence Site Complex. These sites are located approximately 4 km northeast of Cynthiana, Kentucky and are situated on the crest of a north-south ridge that separates the South Fork of the Licking River from Mill Creek (Figure 1). This broad, relatively level ridge is approximately 35 m higher in elevation than the nearby stream bottoms. Site 15Hr21, located west of Site 15Hr22, is separated from the latter by a swale that drains to the south.

The field investigations, which were conducted during the springs of 1989 and 1990, were designed to evaluate the integrity of the archaeological deposits at each site, and to collect data on middle Fort Ancient material culture and subsistence patterns in the Central Bluegrass region. In order to collect information on the internal organization of middle Fort Ancient communities, a larger area was excavated at Site 15Hr22 than at Site 15Hr21.

A 13 m^2 block was excavated at Site 15Hr21, while nine areas totaling 134.5 m^2 were investigated at 15Hr22. At each site, a small sample of the plowzone was screened through 6.35 mm mesh. Fill from all excavated features, structures, and burials also was screened through 6.35 mm mesh. Flotation and radiocarbon samples were taken from features, structures, and burial pits.

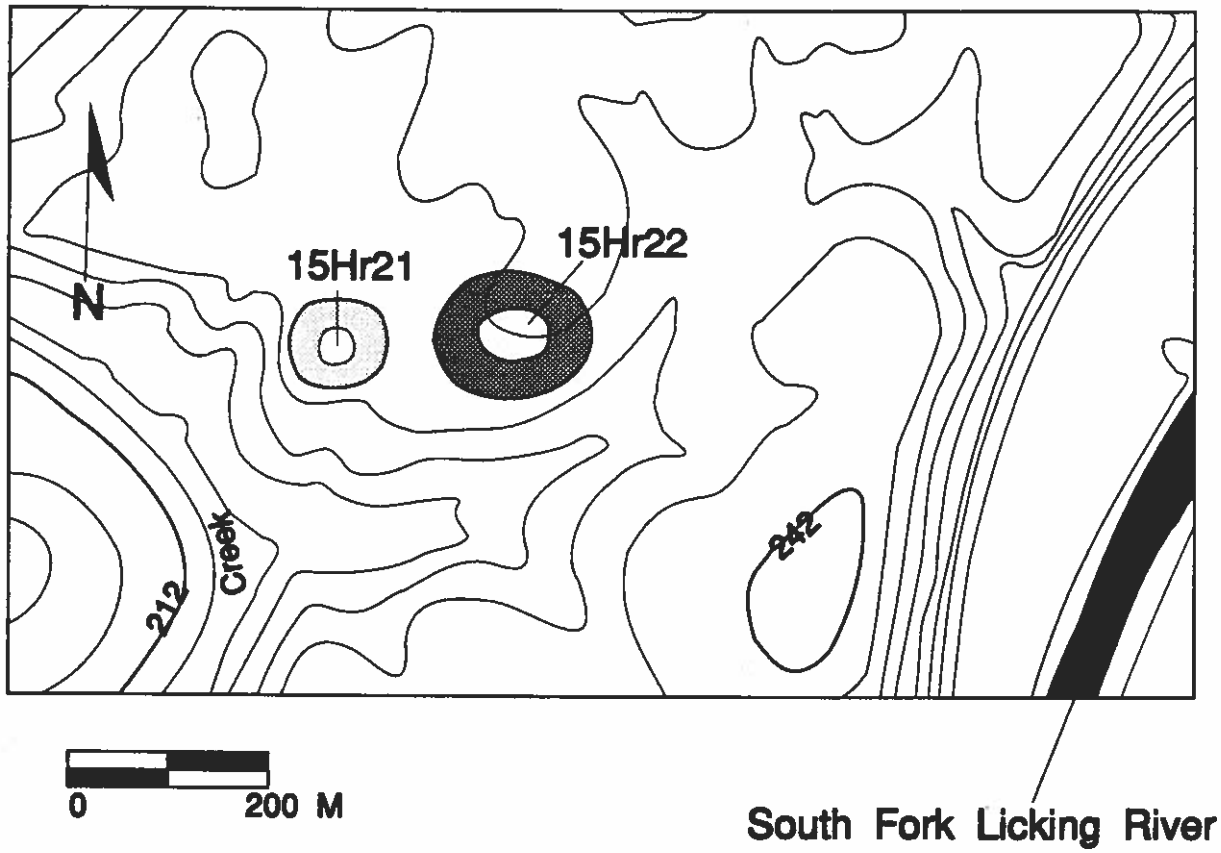


Figure 1. Relationship of Site 15Hr21 to Site 15Hr22

The types of artifacts recovered from both sites are consistent with collections from other middle Fort Ancient sites in central Kentucky (Fassler 1987; Sharp 1990a:482-484; Turnbow 1988b:286-289). Based on the data collected from the Florence Site Complex, as well as archaeological investigations conducted at Guilfoil (15Fa167) (Fassler 1987) and Carpenter Farm (15Fr36A) (Pollack and Hockensmith, this volume), the authors propose that the middle Fort Ancient (A.D. 1200-1400) period in the Central Bluegrass region of Kentucky be referred to as the Elkhorn phase. Designating a phase for this region distinguishes central Kentucky middle Fort Ancient from the middle Fort Ancient Manion phase (Henderson et al. 1992) of northeastern Kentucky and from other middle Fort Ancient phases in the middle Ohio River Valley, such as Schomaker (Cowan et al. 1990), Oehler (Riggs 1992), Anderson (Essenpreis 1978), and Baum (Prufer and Shane 1970). Other sites with components assignable to the Elkhorn phase include Buckner (15Bb12), Singer (15Sc3), Goff Village (15Ck363), and Mercer Village (15Me15) (Sharp 1990a; Turnbow 1988b).

Despite the fact that several Elkhorn phase sites have been investigated, these studies were not of sufficient intensity to determine the overall organization of these communities. Where more intensive investigations have been conducted (e.g., Buckner), provenience information is lacking for much of the collection (Sharp 1990a). However, intensive investigations conducted at the SunWatch Site in Ohio have generated some comparative information on middle Fort Ancient village organization (Heilman et al. 1990; Nass 1989). This information provides a framework for comparing and contrasting the village configuration documented at Site 15Hr22.

The remainder of this paper is organized as follows. A brief description of each site is presented, which includes a description of the cultural materials recovered, subsistence patterns identified, and the types of features encountered. This is followed by a description of the internal organization of Site 15Hr22 and a consideration of village population size and the temporal relationship of these two sites.

SITE 15HR21

Based on the horizontal distribution of artifacts and features, Site 15Hr21 appears to represent the remains of a circular Fort Ancient village with a diameter of ca. 80 m. Cultural materials and features at this site were restricted to a ca. 25-30 m wide band that encompasses an area with a diameter of ca. 25 m. Unlike other circular Fort Ancient villages such as Site 15Hr22, no differences in soil color were discernable between the artifact band and the central area. The stratigraphy in all areas of the site consists of a medium brown silt loam plowzone (ca. 30-35 cm thick) overlying a brownish orange silty clay subsoil or cultural features that intrude into the subsoil. Calibrated radiocarbon dates of A.D. 1280(1326,1353,1363,1365,1389)1430 and A.D. 1305(1415)1445 (Table 1) were obtained from two charcoal samples recovered from Site 15Hr21.

Table 1. Radiocarbon Dates.

Laboratory Number	Radiocarbon Age	Calibrated Radiocarbon Dates at two sigma (Stuiver and Pearson 1986)
Site 15Hr21		
Beta-38925	600±60 B.P.	A.D. 1280(1326,1353,1363,1365,1389) 1430
Beta-38926	520±50 B.P.	A.D. 1305(1415)1445
Site 15Hr22		
Beta-38927	470±50 B.P.	A.D. 1330(1432)1490
Beta-38928	600±50 B.P.	A.D. 1280(1326,1353,1363,1365,1389)1420
Beta-38929	630±50 B.P.	A.D. 1280(1304,1371,1384)1410

MATERIALS RECOVERED

Ceramics

A total of 591 sherds was recovered from Site 15Hr21 (Table 2). Of these, 261 are larger than 4 cm^2 and 330 are smaller than 4 cm^2. All sherds larger than 4 cm^2 were analyzed, as were all decorated body sherds, appendages, and rim sherds that measured less than 4 cm^2. This resulted in the analysis of a total of 281 sherds. Body sherds smaller than 4 cm^2 were simply lotted by provenience and counted.

Exterior surface treatment could not be determined for nine sherds. Of the remaining specimens, 71.0 were classified as Jessamine Cordmarked, 18.4 percent as Jessamine Plain, and 10.7 percent as Jessamine Knot Roughened (Table 2). The most common exterior surface colors are light brown, reddish brown, dark brown, and orange brown, while the most common interior surface colors are light brown, reddish brown, dark brown, white, and orange brown (Table 2). A majority of the rims that could be oriented are direct (Figure 2b,c), but 26.7 percent are slightly outflaring (Figure 2d) and another 13.3 percent are inslanted. More than 50 percent of the lips are rounded, but flat and pointed lips are well represented.

Ceramics from Site 15Hr21 are tempered with a combination of shell and limestone (69.3 percent), shell (20.7 percent), limestone and shell (8.3 percent), or limestone (1.8 percent). Some specimens are well-fired and temper particles are quite small, while others are not as well-fired and have very large temper particles including parts of mussel hinges. Most of the limestone fragments are very small, and in mixed tempered sherds they often account for a very small percentage of the observed temper. Manganese concretions are quite common in all sherds, and the holes left by these concretions were often difficult to distinguish from those left by small eroded limestone fragments.

The only decorative treatment identified in the Site 15Hr21 collection is incising on vessel necks (n=12). Almost two-thirds of the incising represents curvilinear designs (Figure 2a), while the remainder exhibit single incised lines, a rectilinear design, or a combination of rectilinear and curvilinear lines. Appendages consist of one thick strap handle, two thin strap handles, and an effigy. The effigy is a elongated human face (Figure 2e) that may have been attached to the rim of a vessel.

Table 2. Florence Site Complex Ceramics.

Site 15Hr21	Frequency	Percent	Site 15Hr22	Frequency	Percent
Ceramics Objects					
Body	561	94.9	Body	3595	91.7
Rim	25	4.2	Rim	245	6.3
Detached Appendage	4	1.7	Detached Appendage	48	1.2
Disk	1	0.2	Disk	21	.5
Total	591	100.0	Base	7	.2
			Bead	3	.1
			Total	3919	100.0
Exterior Surface Treatment					
Cordmarked	177	65.1	Cordmarked	930	61.3
Plain	50	18.4	Plain	339	22.4
Knot Roughened	29	10.6	Smoothed-Over Cordmarked	182	12.0
Smoothed-Over Cordmarked	16	5.9	Knot Roughened	65	4.3
Total	272	100.0	Total	1516	100.0
Temper					
Shell and Limestone	194	69.3	Shell and Limestone	195	48.4
Shell	58	20.7	Shell	190	47.1
Limestone and Shell	23	8.3	Limestone and Shell	18	4.5
Limestone	5	1.8	Total	403	100.0
Total	280	100.1			
Exterior Surface Color					
Light Brown	82	30.0	Light Brown	106	27.2
Reddish Brown	60	22.0	Dark Brown	84	21.6
Dark Brown	45	16.5	Light Gray	37	9.5
Orange Brown	37	13.6	Black	37	9.5
Reddish Orange	21	7.7	Dark Gray	31	8.0
Tan	18	6.6	Tan	29	7.5
Light Gray	4	1.5	Reddish Brown	19	4.9
Black	3	1.1	White	18	4.6
White	2	0.7	Reddish Orange	17	4.4
Dark Gray	1	0.4	Orange Brown	11	2.8
Total	273	100.0	Total	389	100.0
Interior Surface Color					
Light Brown	127	49.8	Dark Brown	83	23.9
Reddish Brown	39	15.3	Black	75	21.6
Dark Brown	37	14.5	Light Brown	71	20.4
White	20	7.8	Light Gray	31	8.9
Orange Brown	18	7.1	Dark Gray	30	8.6
Tan	7	2.7	Tan	21	6.0
Dark Gray	5	2.0	Reddish Brown	14	4.0
Reddish Orange	2	0.8	White	10	2.9
Total	255	100.0	Reddish Orange	8	2.3
			Orange Brown	5	1.4
			Total	348	100.0
Twist					
S	91	91.0	S	82	82.8
Z	8	8.0	Z	17	17.2
Both	1	1.0	Total	99	100.0
Total	100	100.0			

Table 1. Continued.

Site 15Hr21	Frequency	Percent	Site 15Hr22	Frequency	Percent
Rim Orientation					
Direct	9	60.0	Direct	122	59.2
Slightly Outflaring	4	26.7	Slightly Outflaring	64	31.1
Inslanting	2	13.3	Inslanting	20	9.7
Total	15	100.0	Total	204	100.0
Lip Shape					
Rounded	13	52.0	Flat	87	38.0
Flat	3	12.0	Rounded	63	27.5
Pointed	4	16.0	Pointed	39	17.0
Flat Exterior Protrusion	3	12.0	Flat Exterior Protrusion	31	13.5
Flat Interior and Exterior Protrusion	2	8.0	Flat Interior and Exterior Protrusion	9	3.9
Total	25	100.0	Total	229	100.0
Lip Decoration					
			Cordmarked	16	80.0
			Notched	1	5.0
			Incised	1	5.0
			Knot Roughened	1	5.0
			Smoothed-over Cordmarked	1	5.0
			Total	20	100.0
Rim and Neck Decoration					
Surface Treatment					
Cordmarked	6	50.0	Plain	56	59.6
Plain	2	16.7	Cordmarked	26	27.7
Plain and Cordmarked	2	16.7	Smoothed-over Cordmarked	10	10.6
Smooth-over Cordmarked	2	16.7	Plain and Cordmarked	1	1.1
Total	12	100.1	Knot Roughened	1	1.1
			Total	94	100.1
Type					
Curvilinear	7	63.6	Rectilinear	45	64.3
Single line	2	18.2	Curvilinear	11	15.8
Rectilinear	1	9.1	Recti- and Curvilinear	8	11.4
Recti- and Curvilinear	1	9.1	Single line	4	5.7
Total	11	100.0	Incised and Punctation	1	1.4
			Punctation	1	1.4
			Total	70	100.0
Rimfold or Rimstrip					
Rimfold	4	100.0	Rimfold	28	70.0
			Rimstrip	12	30.0
			Total	40	100.0
Appendage					
Thin Strap Handles	2	40.0	Thin Strap Handles	27	35.1
Thick Strap Handles	1	20.0	Thick Strap Handles	14	19.5
Handle Scar	1	20.0	Handle Scar	11	14.3
Effigy	1	20.0	Loop Handles	8	9.4
Total	5	100.0	Other Lugs	6	7.8
			Plain Clay Strip	4	6.5
			Simple U-Shaped Lugs	2	3.9
			Notched Clay Strip	1	1.3
			Lug Scar	1	1.3
			Total	74	100.0

Based on the analysis of the ceramics from the Florence Site Complex and its comparison to other early and middle Fort Ancient ceramic collections in the Central Bluegrass region (Fassler 1987; Pollack and Hockensmith this volume; Sharp 1984; Turnbow and Sharp 1988), Sharp and Pollack (1992) concluded that the Jessamine Series as defined by Turnbow (1988a) should be broadened to include shell tempered specimens. Originally restricted to limestone and mixed limestone and shell tempered sherds (Turnbow 1988a), shell tempered specimens, even though similar in all other respects, had not been assigned to the Jessamine Series. Similarly, Sharp and Pollack (1992) decided to expand the temporal parameters of the Jessamine Series to include the middle Fort Ancient period.

Since the Jessamine Series was defined (Turnbow 1988a), archaeological investigations have been conducted at several middle Fort Ancient sites in the Central Bluegrass region including Guilfoil (Fassler 1987), Carpenter Farm (Pollack and Hockensmith this volume), and the sites reported on here. It is clear, based on the results of these investigations, that middle Fort Ancient ceramics from central Kentucky are not assignable to the Fox Farm Series of northeastern Kentucky and that though middle Fort Ancient ceramic assemblages contain more shell or mixed tempered ceramics and a higher percentage of decorated ceramics than early Fort Ancient collections, in general they cannot be easily distinguished from early Fort Ancient ceramics.

Lithics

A total of 290 lithic artifacts were recovered from Site 15Hr21 (Table 3) (only those lithic artifacts greater than 12.7 mm were analyzed). Of these, 21 are chipped stone tools and 269 are flakes, shatter, or core fragments. No groundstone tools were recovered. Only the bifaces and projectile points are described here.

Various stages of lithic reduction are represented in the biface category. These consist of blanks or preforms as well as finished tools. Four thin bifaces are triangular in shape and exhibit edge damage. This suggests they were used for cutting or scraping activities and probably functioned as knives. The remaining bifaces and biface fragments appear to represent various stages of chipped stone tool reduction.

Two nontriangular projectile points were recovered from the site. They consist of a small Brewerton Side Notched-like point (Justice 1987:115) and an Adena Stemmed-like base (Justice 1987:191). These points may represent earlier Archaic and Woodland period use of this locality, or they may have been transported to the site by Fort Ancient people who found them in nearby agricultural fields.

Four triangular projectile points were recovered. One has serrated edges (Figure 7e) and is similar to Type 3 Fine Triangular points (Railey 1992:158). This type also has been referred to as the Fort Ancient point (Justice 1987:227) and is primarily associated with Fort Ancient contexts that date between A.D. 1200 and 1400. The remaining three specimens have slightly convex bases and are long in relation to their width. All three could be broadly classified as Type 2 Fine Triangular (Railey 1992:156-158) or Madison Triangular (Justice 1987:224) points. The basal convexity and length of these specimens are attributes commonly associated with pre-A.D. 1400 Fort Ancient projectile point styles in the Central Bluegrass region (Turnbow and Sharp 1988:195-197).

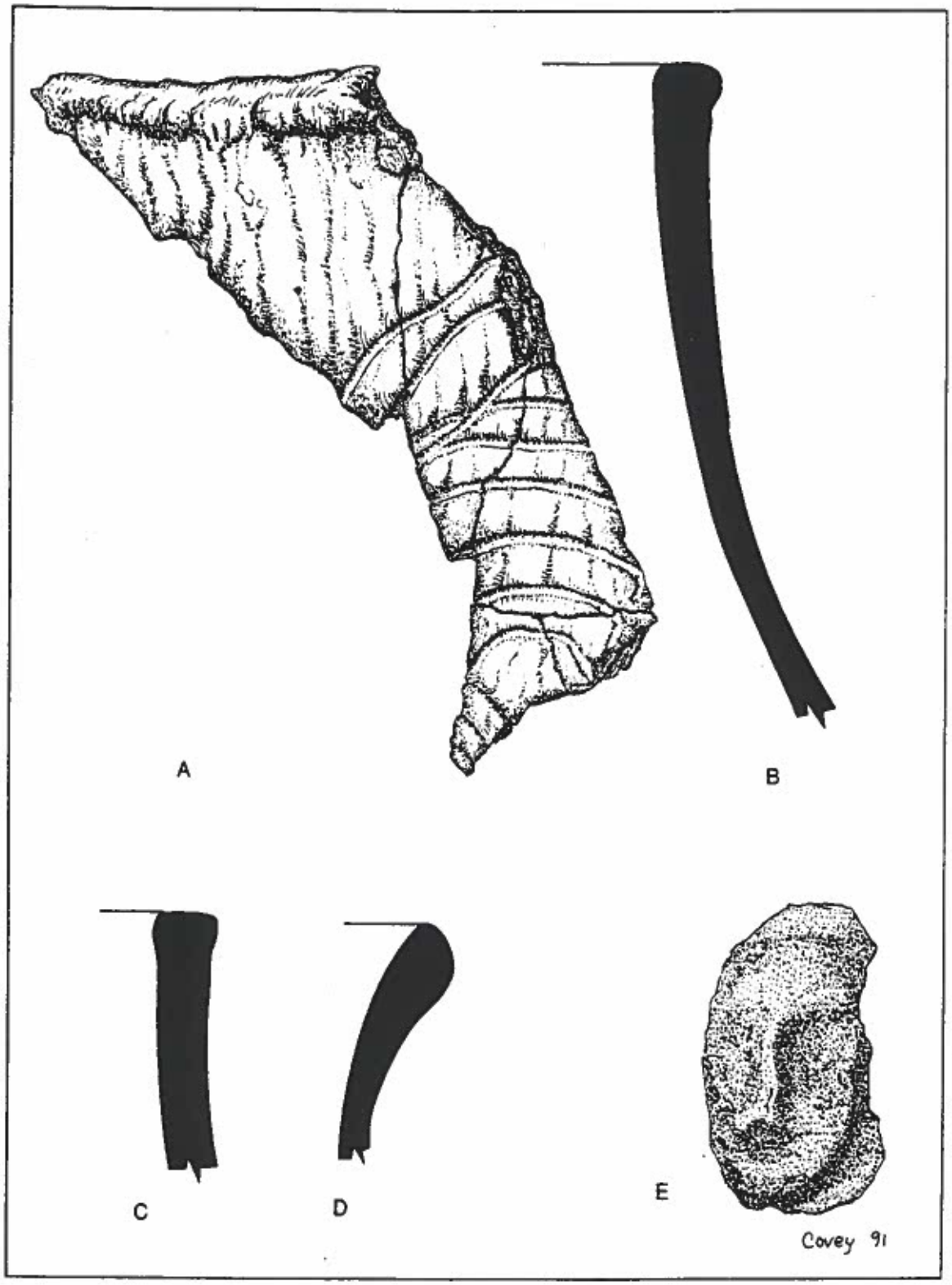


Figure 2. Site 15Hr21 Ceramics: a, decorated rim; b-d, rim profiles; e, human effigy.

Table 3. Lithic Artifacts.

Site 15Hr21	Frequency	Site 15Hr22	Frequency
Chipped Stone			
Flakes, shatter, or cores	269	Flakes, shatter, or cores	1,731
Thick bifaces	5	Thick bifaces	18
Thin bifaces	10	Thin bifaces	36
Projectile Points		Drills	6
Nontriangular	2	Unifacial scrapers	2
Type 2 Fine Triangular	3	Projectile Points	
Type 3 Fine Triangular	1	Nontriangular	6
Total	290	Crude Triangular	9
		Type 3 Fine Triangular	7
		Type 5 Fine Triangular	14
		Total	1,829
Groundstone			
		Granitic celt	1
		Possible limestone celt	2
		Coarse sandstone abraders	2
		Chipped limestone disks	11
		Pitted stones	2
		Fine-grained sandstone grinding slab	1
		Crinoid stem beads?	6
		Worked and polished cannel coal	1
		Siltstone elbow pipe	1
		Siltstone discoidal	1
		Total	28

Botanical Remains

Only 24 liters of soil were floated and analyzed from Site 15Hr21 (Table 4) (Rossen 1992b). The charcoal collection includes hickory (Carya spp.), yellow poplar (Liriodendron tulipifera) and white oak (Quercus spp.). Black walnut (Juglans nigra) accounts for about two-thirds of the nut shell. Cultigens are represented by maize, beans, and squash and possibly chenopod (Chenopodium spp.). Even though somewhat small, this collection is consistent with that recovered from other Fort Ancient sites (Rossen 1992a).

Faunal Remains

A sample of 784 faunal remains from 15Hr21 was analyzed (Table 5) (Tune 1992). Of the identifiable vertebrates, 69.9 percent are mammal, 16.2 percent are bird, 12.2 percent are reptile, and 0.8 percent are fish. Approximately 1 percent of the remains could not be assigned to a specific taxon. In general the faunal collection from Site 15Hr21 is similar to collections recovered from other Kentucky Fort Ancient sites (Breitburg 1988, 1992; Tune 1987). Animal exploitation focused on large mammals (deer, elk, and bear), small mammals (raccoons and squirrels), birds (wild turkey), and reptiles (primarily box turtles) (Table 6).

Table 4. Site 15Hr21 Botanical Remains.

	Frequency	Percent*	Gram Weight	Percent*
Wood Charcoal				
Hickory (Carya spp.)	151	26.4	1.6	25.4
White oak (Quercus spp.)	107	18.7	1.2	19.0
Black walnut (Juglans nigra)	29	5.1	0.4	6.3
Back locust (Robinia pseudoacacia)	80	14.0	0.9	14.3
Yellow poplar (Liriodendron tulipifera)	125	21.8	1.3	20.6
Sycamore (Platanus occidentalis)	81	14.1	0.9	14.3
Total identified wood charcoal	573	100.1	6.3	99.9
Unidentified wood charcoal	864		9.7	
Nuts				
Black walnut (Juglans nigra)	162	56.4	3.5	67.3
Hickory (Carya spp.)	113	39.4	1.7	32.7
Hazelnut (Corylus spp.)	1	0.4	0.0	0.0
Juglandaceae	11	3.8	0.0	0.0
Total	287	100.0	5.2	100.0
Tropical Cultigens				
Corn				
Kernels	17	37.0	0.0	0.0
Cupules	25	54.3	0.4	50.0
Beans				
Complete	1	2.2	0.1	12.5
Squash rind	3	6.5	0.3	37.5
Total	46	100.0	0.8	100.0
Seeds				
Chenopod (Chenopodium spp.)	2	28.6		
Bedstraw (Galium spp.)	3	42.8		
Unidentified	2	28.6		
Total	7	100.0		

* Calculated to nearest 0.1 percent

Table 5. Identified and Unidentified Vertebrate Remains from Site 15Hr21 by Taxonomic Class.

Class	Number of Identified Elements	Percent of Identified Elements	Number of Unidentified Elements	Total	Percent of All Elements
Vertebrate	--	----	7	7	0.9
Mammal	145	57.1	405	548	69.9
Bird	58	22.8	69	127	16.2
Reptile	51	20.1	45	96	12.2
Fish	0	0.0	6	6	0.8
Total	254	100.0	532	784	100.0

Table 6. Summary of Identified Vertebrate Remains from Site 15Hr21.

Vertebrate Taxon	Frequency	MNI
Mammals		
Odocoileus virginianus, White-tailed deer	115	6
Cervus canadensis, Elk	9	1
Lynx rufus, Bobcat	7	1
Felis concolor, Mountain lion	2	1
Procyon lotor, Raccoon	4	1
Ursus americanus, Black bear	6	1
Canis cf. familiaris, Domestic dog	1	1
Sciurus carolinensis, Gray Squirrel	1	1
Birds		
Meleagris gallopavo, Wild turkey	58	6
Reptiles		
Cherlydra serpentine, Snapping turtle	15	2
Terrapene carolina, Eastern box turtle	24	2
Chrysemys spp., Slider/Cooter	1	1
Serpentes, Snake	5	1
Colubridae, Nonpoisonous snake	5	1
Natrix spp., Water snake	1	1
Total Identified Vertebrates	254	

FEATURES

Features identified at Site 15Hr21 consist of two overlapping pits (Features 1 and 2) located near the northwestern edge of the site and an oxidized area (Feature 3) situated near the site's eastern edge. However, only the pit features were excavated during the course of this study. While most of Feature 1 was excavated, only the eastern portion of Feature 2 was investigated. Feature 1 (2.50 x 2.22 m) had sloping sides, a flat to undulating bottom, and a maximum depth of 40 cm. The excavated portion of Feature 2 (1.27 x .70 m) had a depth of 29 cm and sloping sides. The matrix of both features was a dark brown silt loam that contained an abundance of charcoal, faunal remains, ceramics, and other artifacts.

SITE 15HR22

Site 15Hr22 consists of an elliptical shaped, dark surface midden containing an abundance of cultural materials surrounding a central area that is lighter in color and devoid of artifacts. A burial mound is located at the interface of the northern edge of the central area and the midden zone (Figure 3). The entire site measures approximately 110 m north-south by 140 m east-west. The midden zone ranges in width from 22 to 40 m with an average width of about 30 m, and the central area measures 58 m north-south by 80 m east-west.

The low conical earth mound measures 17 m north-south by 23 m east-west and stands 40 to 50 cm tall. Modern agricultural practices have undoubtedly reduced the original height of the mound and distorted its horizontal dimensions. A core sample removed from the center of the mound using a split spoon soil core exhibited mottled deposits to a depth of 53 cm below the surface.

The stratigraphy of the midden zone at Site 15Hr22 consists of a dark brown silt loam plowzone (average thickness 30 to 35 cm) overlying a brownish orange silty clay subsoil or features that intrude into the subsoil. In the central area, the plowzone consists of a medium brown silt loam that is similar in color and texture to the plowzone at Site 15Hr21. Plowscars were readily apparent at the base of plowzone, and the depth of these scars indicates that portions of the site have been chisel plowed at least once in the past. Figure 3 shows the areas of Site 15Hr22 that were examined. Calibrated radiocarbon dates of A.D. 1330(1432)1490, A.D. 1280 (1326,1353,1363,1365,1389)1420, and A.D. 1280(1304,1371,1384)1410 were obtained from charcoal samples recovered from Site 15Hr22 (Table 1).

MATERIALS RECOVERED

Ceramics

A total of 3,919 sherds are present in the Site 15Hr22 ceramic collection (Table 2). Of these, 1,453 are larger than 4 cm^2 and 2,466 are smaller than 4 cm^2. Exterior surface treatment was recorded for all body sherds greater than 4 cm^2 (n=1,217), while those smaller than 4 cm^2 were simply lotted by provenience and counted. More detailed information was collected for all rims, appendages, and decorated body sherds, regardless of size. This resulted in 352 sherds being subject to detailed analysis (236 greater than 4 cm^2 and 116 less than 4 cm^2).

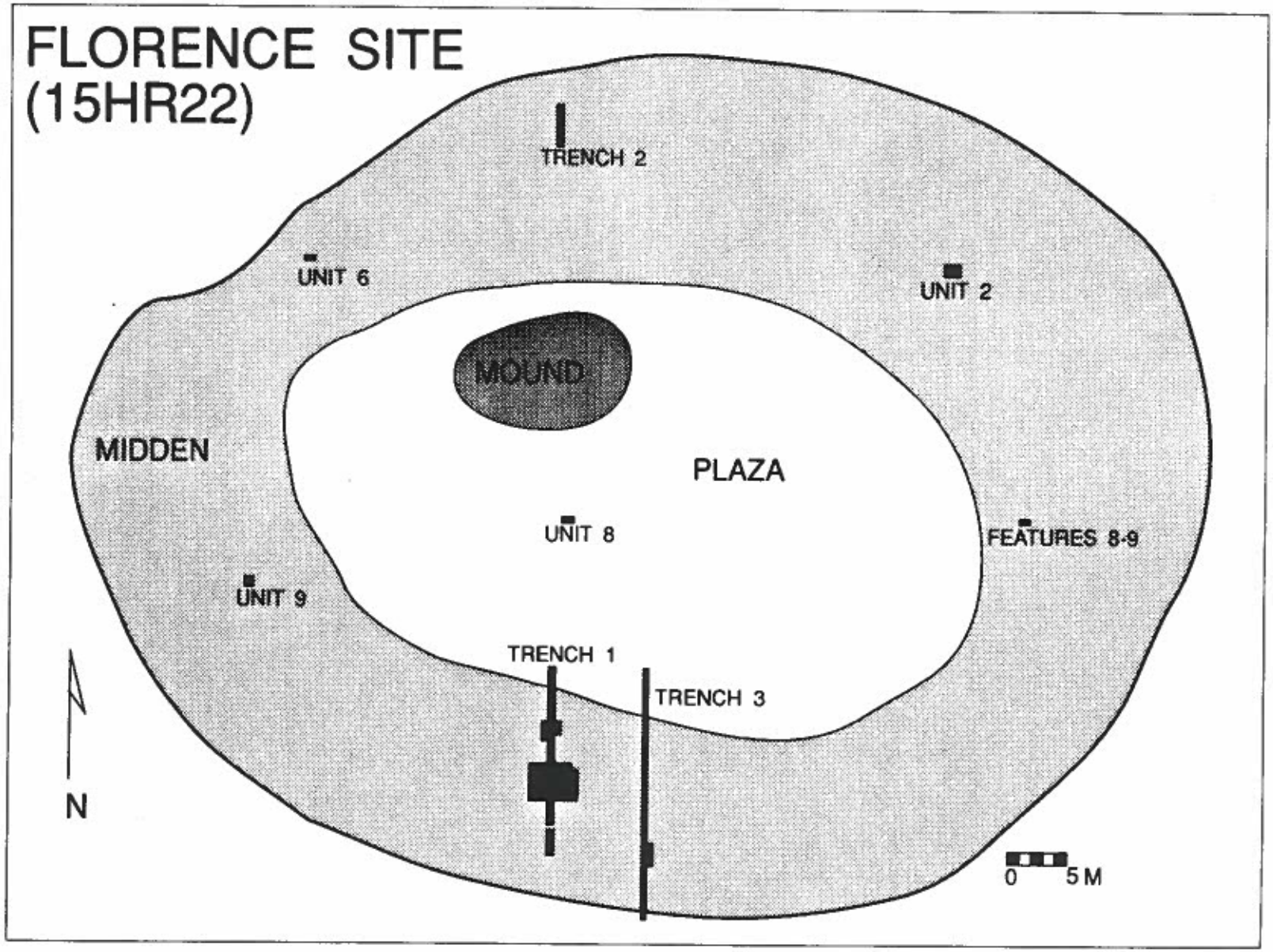


Figure 3. Planview of Site 15Hr22.

Exterior surface treatment could not be determined for 32 sherds. Of the remaining specimens, 73.3 percent were classified as Jessamine Cordmarked, 22.4 percent as Jessamine Plain, and 4.3 percent as Jessamine Knot Roughened (Sharp and Pollack 1992.). The most common exterior surface colors are light brown, dark brown, light gray, and black, while the most common interior surface colors are dark brown, black, and light brown (Table 2). A majority of the rims that could be oriented are direct, but 31.1 percent are slightly outflaring and 9.7 percent are inslanted (Figure 4). More than 50 percent of the lips are flat, but rounded and pointed lips are well represented.

Ceramics from Site 15Hr22 are tempered with a shell and limestone (48.4 percent), shell (47.1 percent), or limestone and shell (4.5 percent). Some specimens are well-fired and temper particles are quite small, while others are not as well-fired and contain very large temper particles including parts of mussel hinges. Most of the limestone fragments are very small, and in mixed tempered sherds they often account for a small percentage of the overall observed temper. Manganese concretions are quite common in all sherds, and the holes left by these concretions were often difficult to distinguish from those left by eroded limestone fragments.

Decoration consists of notched, incised, cordmarked, knot roughened, or smoothed-over cordmarked impressions on vessel lips; applied clay strips just below the rim; incising on vessel necks; or incising and punctations on vessel necks (Table 2). The clay strips consist of a narrow band of clay attached 2 to 5 mm below the rim. Four of the clay strips are plain and one is notched. Almost two-thirds of the incising represents rectilinear designs. Curvilinear designs or a combination of rectilinear and curvilinear designs also are present (Figures 5-6). Punctations were observed on two specimens.

Appendages include thin strap, thick strap, and loop handles as well as simple U-shaped lugs (Table 2). All of the loop handles have parallel sides, but most of the thick and thin strap handles have triangular shapes. Some of the loop and thick strap handles, but none of the thin strap handles, are associated with single or double ears that extend above the lip. The upper portion of all handles is attached to the vessel lip, while the lower portions of several specimens are riveted to the wall of the vessel. The thinnest part of the U-shaped lugs was attached to the lip, with the thickest part located below the lip.

Lithics

A total of 1,829 lithic artifacts greater than 12.7 mm were recovered from 15Hr22. Of these, 98 are chipped stone tools and 1,731 are flakes, shatter, or core fragments. Tools include bifaces, drills, and projectile points (Table 3). A variety of groundstone artifacts also were recovered.

The biface category includes items representing various stages of the lithic reduction sequence as well as finished tools. Most of the thick bifaces are blanks or preforms, but one appears to be a chopping tool. Edgewear observed on several thin bifaces suggests that they represent cutting tools or knives. One of these specimens is a slightly shouldered triangular biface that is nearly identical to specimens referred to by Converse (1973:70) as Fort Ancient knives. Another is a thick, pick-like biface (Figure 8v) whose function could not be determined. This biface is similar to specimens recovered from the early Fort Ancient Osborne phase sites of Dry Run (15Sc10) (Sharp 1984:107) and Muir (15Js86) (Turnbow and Sharp 1988:202).

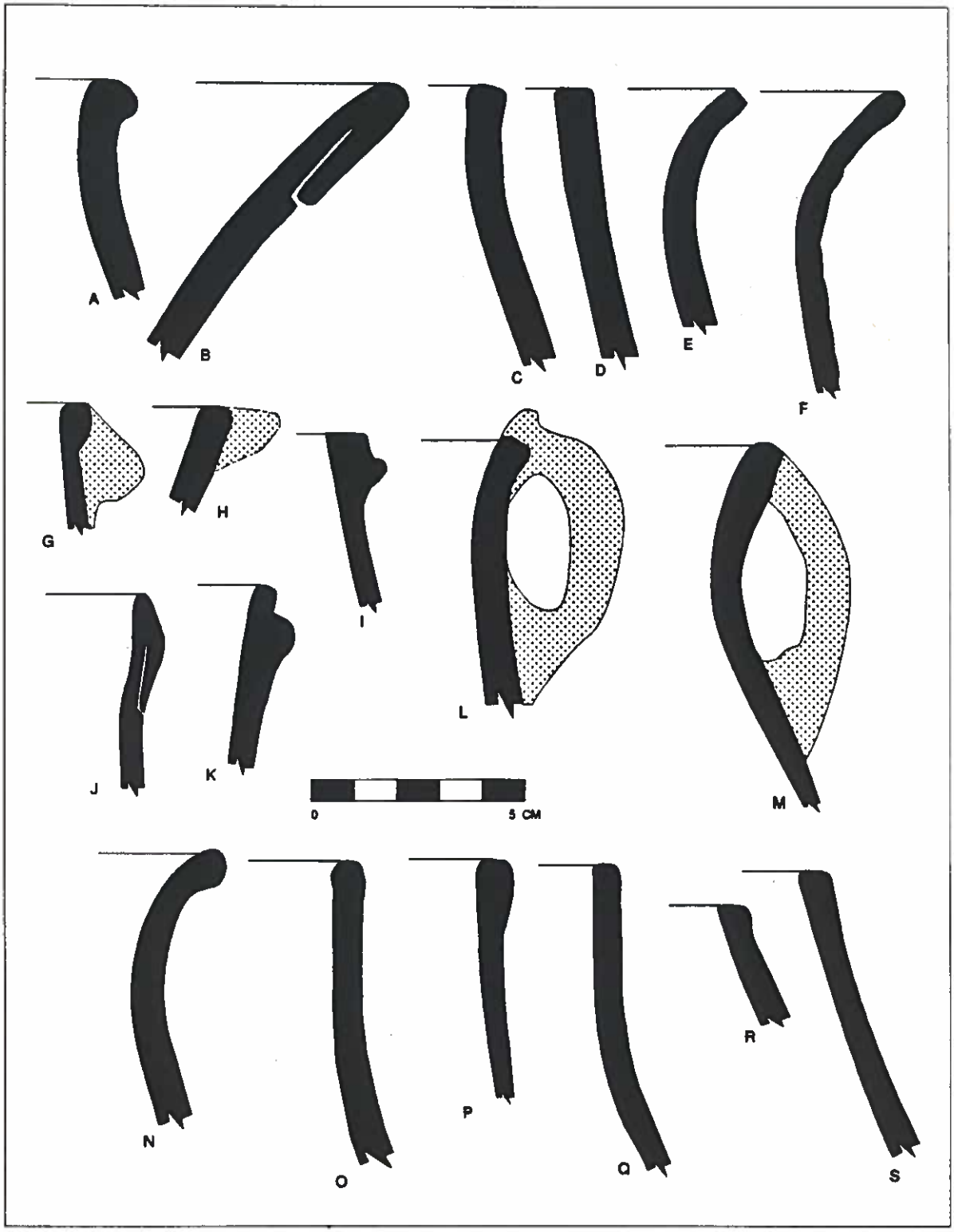


Figure 4. Rim profiles: a-b, Jessamine Knot Roughened; c-i,l, Jessamine Plain; j,k,m-s, Jessamine Cordmarked.

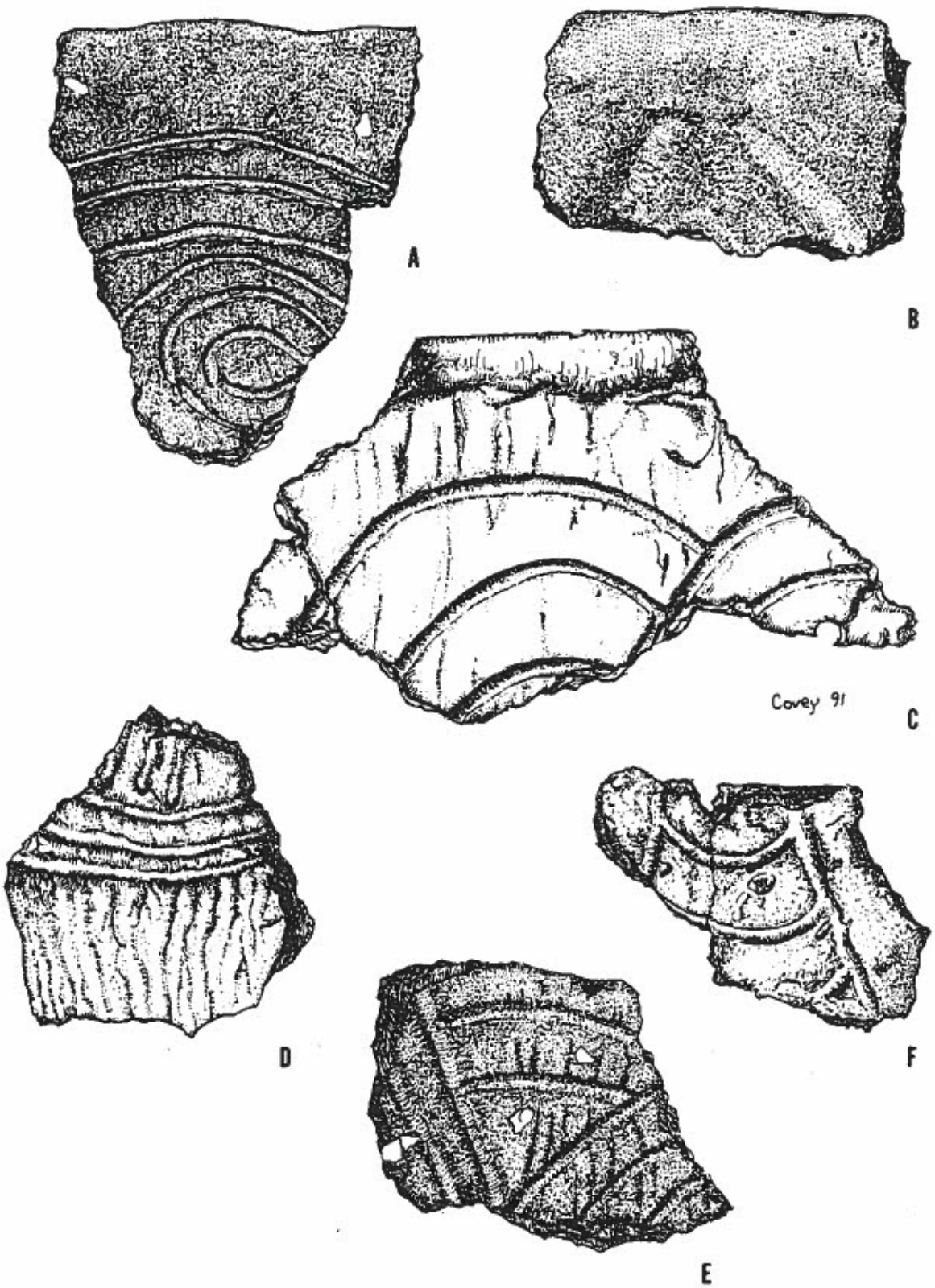


Figure 5. Site 15Hr22 incised ceramics: a,b, plain exterior surface; c-f, smoothed-over cordmarked exterior surface (shown actual size).

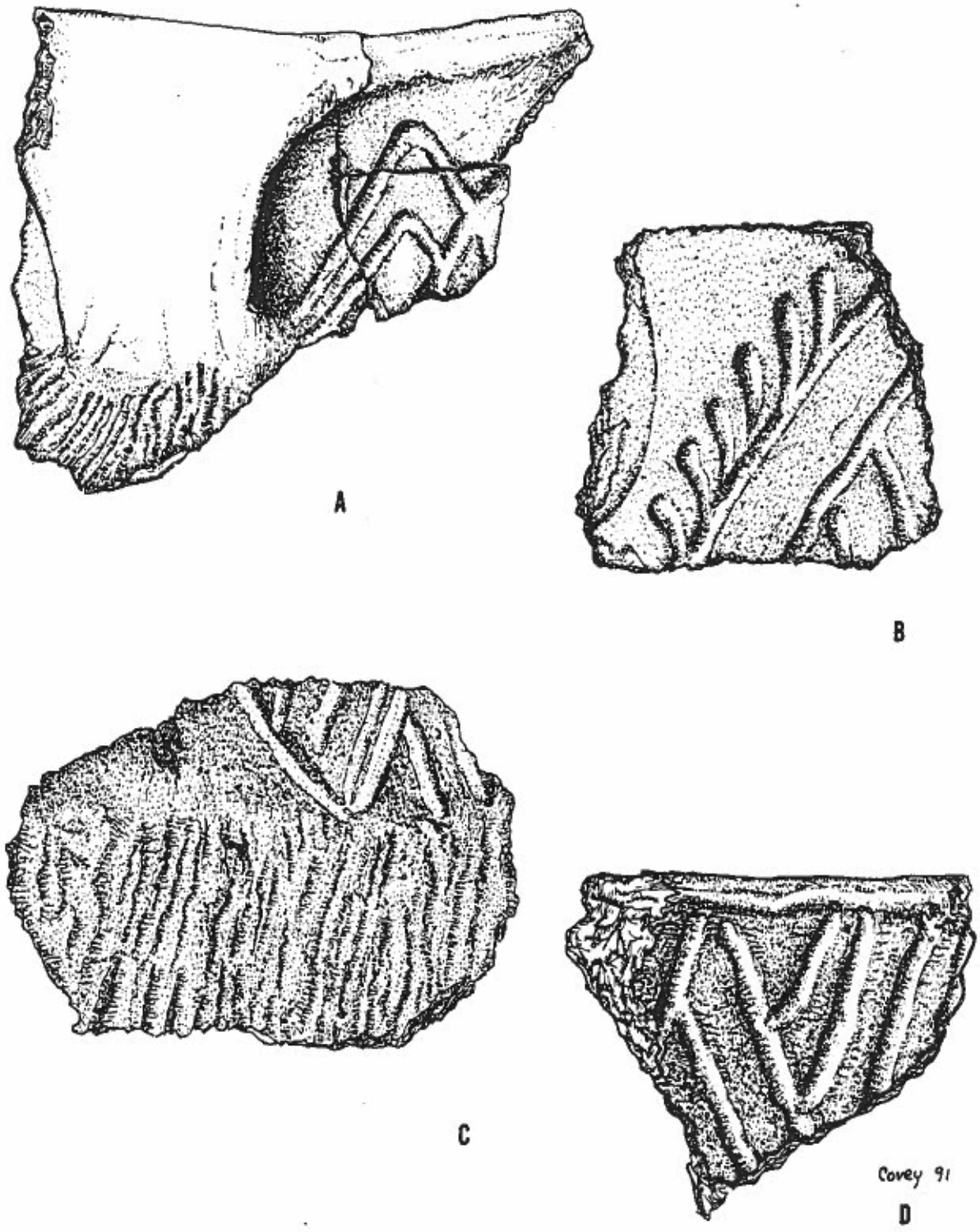


Figure 6. Site 15Hr22 incised ceramics: a-d, plain exterior surface (shown actual size).

Five of the six drills are small and spike-shaped (Figure 7o-t). The remaining specimen is a fragment of an expanded base drill (Figure 7u). Similar drill styles have been reported from other Fort Ancient sites in the region (Turnbow et al. 1983).

The morphology of the two unifacial scrapers and the six nontriangular projectile points suggests they are not products of the Fort Ancient occupation of Site 15Hr22. Except for a Chesser Notched-like (Justice 1987:213) projectile point recovered from a refuse pit, all of the unifacial scrapers and the nontriangular points were recovered from the surface or plowzone. As at Site 15Hr21, these materials may represent a minor pre-Fort Ancient component or they may have been transported to the site by Fort Ancient people who found them in nearby agricultural fields.

Based on gross morphological attributes, the triangular projectile points were divided into three groups. The first group consists of nine Crude Triangulars (Railey 1992:153-154). These points, which exhibit crude chipping, no edge retouch, and thick cross-sections, may represent unfinished triangular points. The second group of triangular projectile points (n=7) have serrated lateral margins (Figure 7c,d) and are similar to Type 3 Fine Triangular points (Railey 1992:158). As previously noted, this projectile point style is primarily known from Fort Ancient contexts that date from A.D. 1200 and 1400 (Railey 1992:158).

The remaining 14 triangular projectile points (Figure 7g-n) are isosceles triangles that are similar to Type 5 Fine Triangular (Railey 1992:161-163) as well as Madison Triangular (Justice 1987) projectile points. Although not particularly diagnostic, in the middle Ohio Valley these types of points are somewhat more common at sites that were occupied after A.D. 1400 than those occupied before that date.

Groundstone artifacts found at Site 15Hr22 include 11 chipped limestone disks, two pitted stones, a siltstone discoidal fragment, and a siltstone elbow pipe. Chipped limestone disks (Figure 8) are diagnostic of the middle Fort Ancient period in the Central Bluegrass region, although little is known about their function (Pollack and Hockensmith this volume; Turnbow 1992:179). They have not been recovered from Osborne phase sites in the Central Bluegrass nor were any found at the early Madisonville horizon Capitol View Site (Henderson this volume). The chipped limestone disks have an average diameter of 6.5 cm.

The centrally perforated, biconcave, incised siltstone discoidal is very similar to specimens found at Fox Farm (15Ms1) (Turnbow 1992:175). As with serrated triangular projectile points, these types of artifacts primarily have been recovered from middle Fort Ancient contexts. The same cannot be said for siltstone elbow pipes, which are common throughout the Fort Ancient sequence.

Botanical Remains

A total of 128 liters of soil was floated and analyzed from Site 15Hr22. Hickory and white oak account for about two-thirds of the wood charcoal (Table 7) (Rossen 1992b). The Site 15Hr22 nutshell collection is dominated by black walnut and hickory. Cultigens are represented by maize and beans, while sumac dominates the wild seed collection (Table 7). Except for chenopod (Chenopodium spp.) (Rossen 1992a; Wagner 1987), starchy-oily seeds of the Eastern Agricultural Complex (e.g., maygrass [Phalaris caroliniana]) were not recovered from Site 15Hr22.

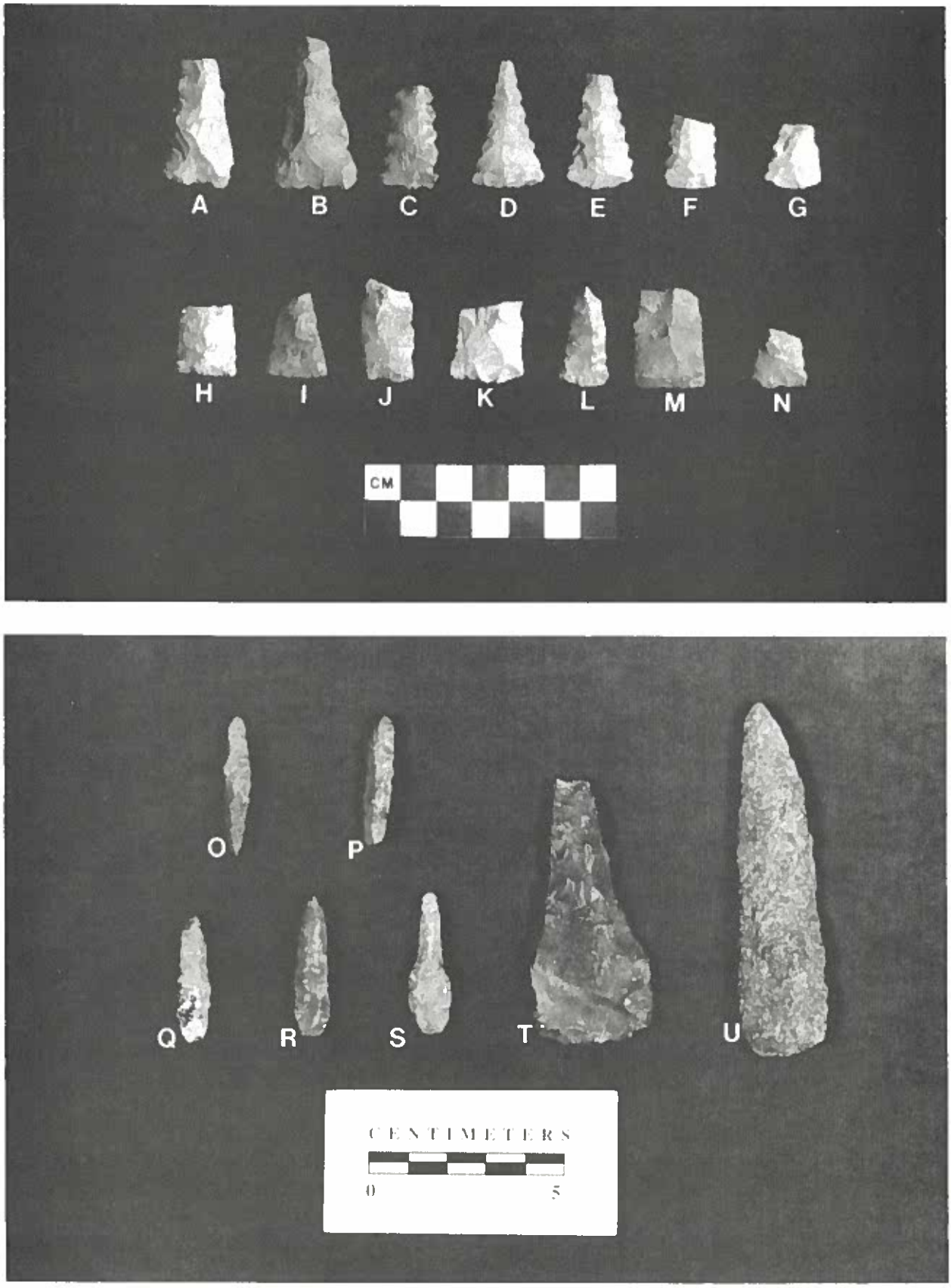


Figure 7. Chipped Stone Tools: a,b, Crude Triangular projectile points; c-e, Type 3 Fine Triangular projectile points; g-n, Type 5 Fine Triangular projectile points; o-s, spiked drills; t, expanded base drill; u, pick-like.

Figure 8. Chipped limestone disks.

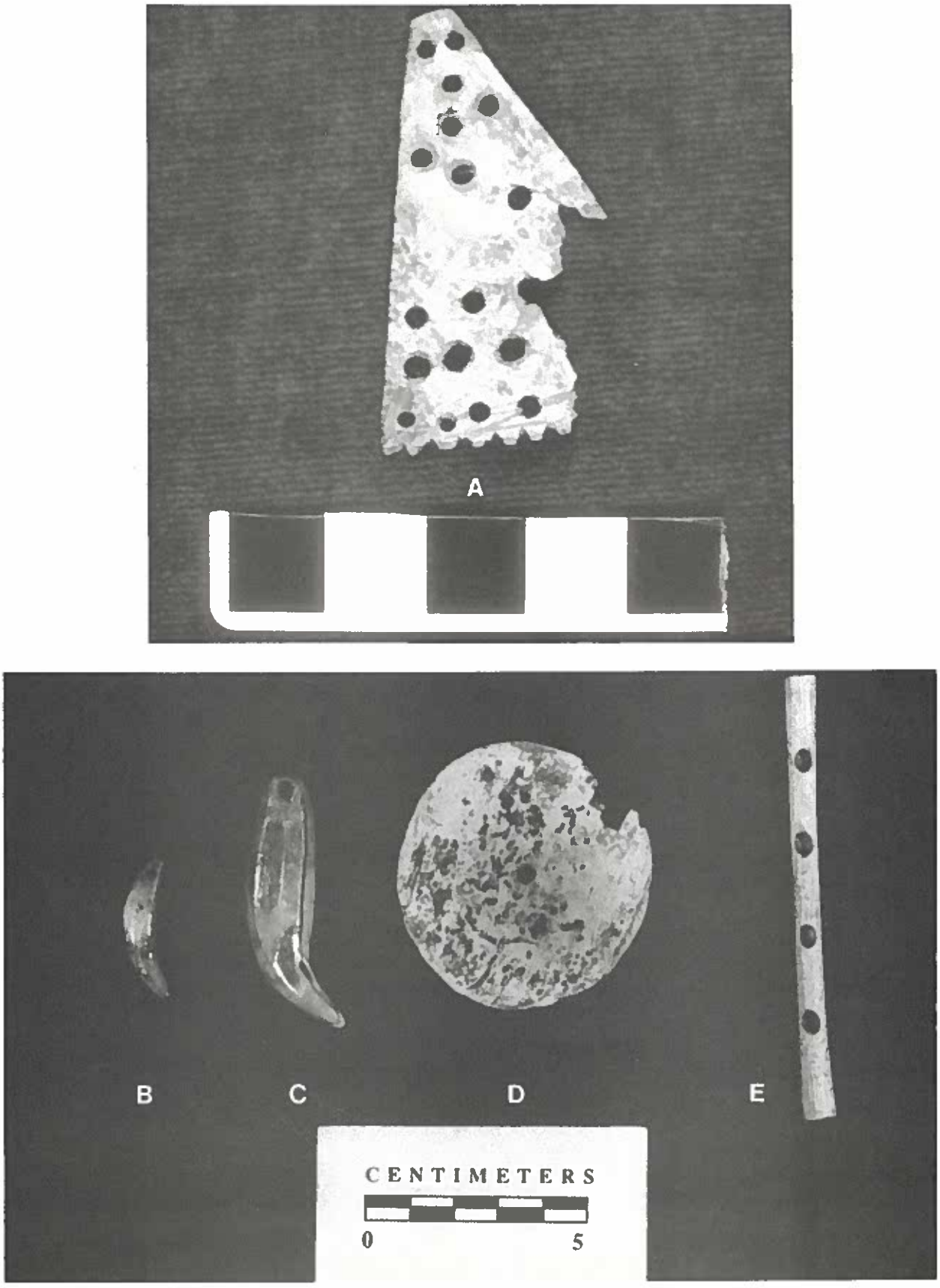


Figure 9. Bone and shell artifacts: a, bone pendant or hair spreader; b-c drilled canines; e, bone flute or whistle; d, plain circular shell gorget.

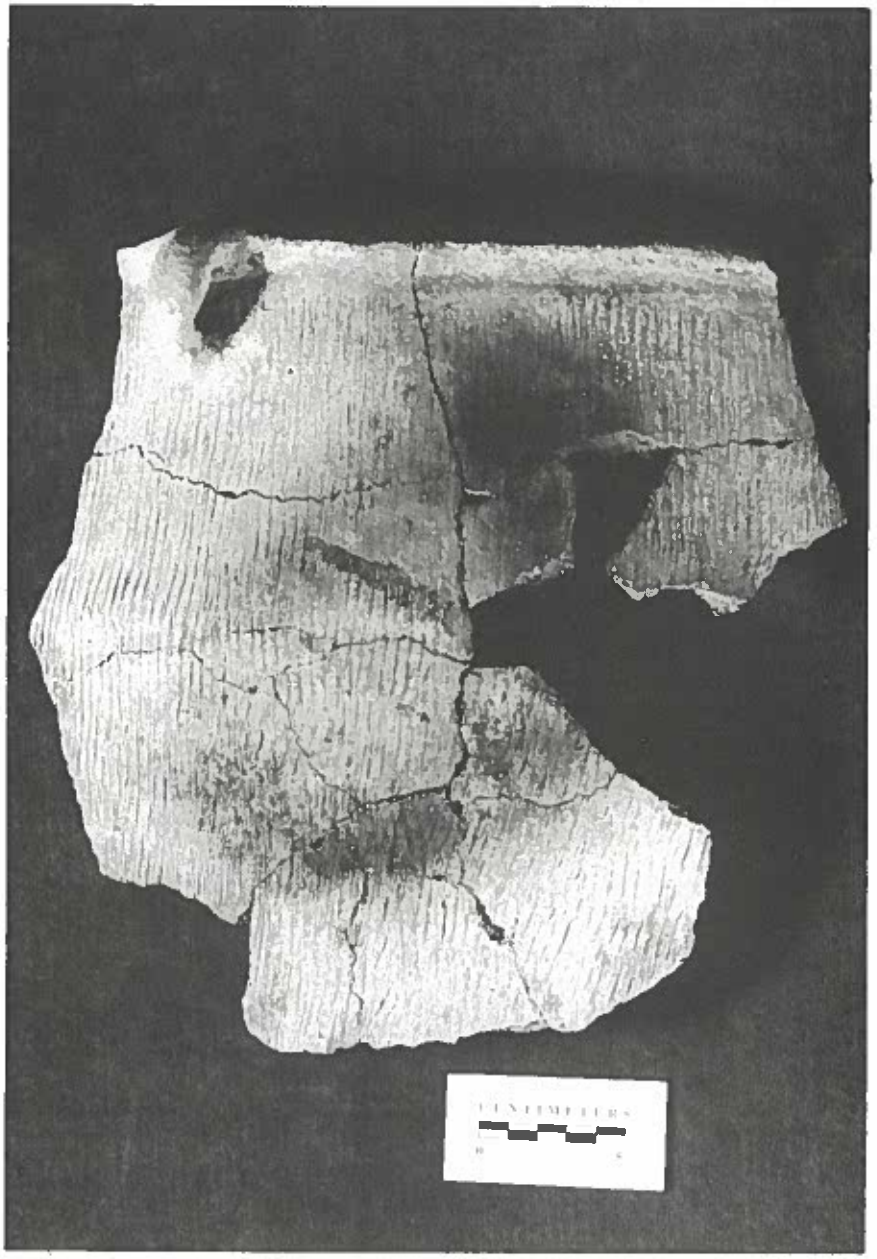


Figure 10. Portion of large ceramic jar from Structure 1.

Table 7. Site 15HR22 Botanical Remains.

	Frequency	Percent*	Gram Weight	Percent*
Wood Charcoal				
Hickory (Carya spp.)	2235	41.2	29.9	37.6
White oak (Quercus spp.)	1435	26.5	20.5	25.8
Black walnut (Juglans nigra)	626	11.6	9.0	11.3
Black locust (Robinia pseudoacacia)	481	8.9	7.7	9.7
Honey locust (Gleditsia triacanthos)	438	8.1	9.3	11.7
American elm (Ulmus americana)	105	1.9	1.7	2.1
Maple (Acer spp.)	46	0.8	0.6	0.8
Slippery elm (Ulmus rubra)	32	0.6	0.5	0.6
White ash (Fraxinus americana)	21	0.4	0.4	0.5
Total identified wood charcoal	5419	100.0	79.6	100.1
Unidentified wood charcoal	5932		68.9	
Bark (general)	224		2.8	
Nuts				
Black walnut (Juglans nigra)	2217	50.6	109.5	68.1
Hickory (Carya spp.)	1900	43.4	46.0	28.6
Butternut (Juglans cinerea)	13	0.3	2.1	1.3
Hazelnut (Corylus spp.)	1	0.0	0.0	0.0
Acorn (Quercus spp.)	6	0.1	0.0	0.0
Juglandaceae	241	5.5	3.2	2.0
Total	4378	99.9	160.8	100.0
Tropical Cultigens**				
Corn				
Kernels	259	39.8	3.5	31.5
Cupules	316	48.5	5.1	45.9
Beans				
Complete	21	3.2	1.5	13.5
Fragments	55	8.4	1.0	9.0
Total	651	99.9	11.1	99.9
Seeds				
Sumac (Rhus spp.)	96	69.6		
Chenopod (Chenopodium spp.)	22	15.9		
Knotweed (Polygonum spp.)	3	2.2		
Plum (Prunus spp.)	3	2.2		
Grape (Vitis spp.)	2	1.4		
Grass (Graminae)	2	1.4		
Pawpaw (Asimina triloba)	1	0.7		
Poke (Phytolacca spp.)	1	0.7		
Unidentified	8	5.8		
Total	138	99.9		

* Calculated to nearest 0.1 percent
** All flotation-recovered remains except for 5 beans and 3 plum seeds.

Two aspects of the Site 15Hr22 botanical collection are somewhat unusual: 1) nutshell accounts for a much higher percentage of the plant remains than at other Kentucky Fort Ancient sites and 2) sumac is unusually abundant. Although the density of nutshell at Site 15Hr22 is rather high, the density of corn is consistent with densities recorded for other Fort Ancient sites (see page 175). The high nutshell density, as well as the large number of sumac seeds suggests a greater reliance on these secondary food sources than has been documented for other Kentucky Fort Ancient sites. Perhaps during periods of subsistence stress caused by reduced yields of cultivated plants or a decrease in the availability of game, the inhabitants of Site 15Hr22 turned to secondary plant food resources such as nuts and sumac.

Faunal Remains

A sample of 6,410 faunal remains from eight features (six pits and two structures) was analyzed from Site 15Hr22 (Table 8) (Tune 1992a). Four classes of vertebrates were identified in the assemblage. Of these, 66 percent are mammal, 15 percent are bird, 9 percent are reptile, and 9 percent are fish. Approximately 1 percent of the remains could not be assigned to a specific taxon.

In general, the Site 15Hr22 faunal exploitation pattern is similar to that documented for other Kentucky Fort Ancient sites (Breitburg 1988, 1992; Tune 1987). Animal exploitation focused on three large mammals (deer, elk, and bear) supplemented by a variety of avian (primarily wild turkey), reptilian (primarily box turtles) and fish species (Table 10). The pattern documented at this site differs, however, from other Kentucky Fort Ancient sites in that fish remains account for almost 10 percent of the collection. At other Kentucky Fort Ancient sites, fish accounts for no more than 6 percent of the collection and can make up as little as 1.1 percent or 1.4 percent. As with the increased use of nuts and sumac, a greater reliance on fish may reflect an increased emphasis on secondary foods due to subsistence stress.

A wide range of work bone and shell artifacts were recovered from Site 15Hr22 (Table 9). In addition to the materials presented in Table 9, 66 specimens represent the debris from antler tool manufacturing. Except for an a possible emphasis on antler tool manufacturing, the worked bone and shell artifacts identified in the Site 15Hr22 collection are similar to those recovered from other Middle Fort Ancient sites (Henderson et al. 1992).

Molluscs (Table 10) recovered from Site 15Hr22 represent species from a mid-sized permanent stream with good water quality and riffle-pool environment. The presence of Quadrula cylindrica is of some interest since at present this species is only known from the Tennessee River and the Red River in western Kentucky.

Table 8. Identified and Unidentified Vertebrate Remains from Site 15Hr22 by Taxonomic Class.

Class	Number of Identified Elements	Percent of Identified Elements	Number of Unidentified Elements	Total	Percent of All Elements
Vertebrate	--	----	74	74	1.1
Mammal	384	60.8	3870	4254	66.4
Bird	64	10.1	871	935	14.6
Reptile	97	15.3	471	568	8.9
Fish	87	13.8	492	579	9.0
Total	632	100.0	5778	6410	100.0

Table 9. Worked Bone and Shell Artifacts.

	Frequency
Worked Bone	
Antler projectile points	15
Antler flaker or drift	1
Gouge (large mammal)	1
Splinter awls (bird)	5
Awls (mammal)	4
Bone beads	
bird	5
small mammal	1
Drilled canine teeth (Figure 9b,c)	
bear	1
dog	1
Pin	1
Counter (bird)	1
Flute (bird) (Figure 9e)	1
Flute preform (bird)	1
Bone pendant or hair spreader (Figure 9a)	1
Cup or bowl fragment (turtle shell)	1
Total	40
Worked Shell	
Beads (marginella)	5
Gorget or earring (Figure 9d)	1
Total	6

Table 10. Summary of Identified Vertebrate Remains and Molluscs from Site 15Hr22.

Vertebrate Taxon	Frequency	MNI
Mammals		
Cervidae, Deer/Elk	21	
Odocoileus virginianus, White-tailed deer	225	17
Cervus canadensis, Elk	18	2
Lynx rufus, Bobcat	2	1
Procyon lotor, Raccoon	12	1
Ursus americanus, Black bear	4	1
Canis cf. familiaris, Domestic dog	1	1
Rodentia, Rodent	3	
Castor canadensis, Beaver	3	1
Cricetidae, Rats/Mice	4	
Sciurus, spp., Squirrel	44	
Sciurus niger, Fox squirrel	4	2
Sciurus carolinensis, Gray squirrel	20	
Marmota monax, Woodchuck	2	1
Tamias striatus, Chipmunk	2	1
Sylvilagus floridanus, Cottontail rabbit	1	1
Scalopus aquaticus, Common mole	1	1
Birds		
Meleagris gallopavo, Wild turkey	64	
Ardea herodias?, Great blue heron	1	1
Reptiles		
Trionyx spiniforus, Spiny softshell turtle	2	1
Terrapene carolina, Box turtle	70	8
Cherlydra serpentine, Snapping turtle	13	2
Chrysemys spp., Slider/Cooter	1	1
Serpentes, Snake	4	
Fishes		
Catostomidae, Suckers	6	
Moxostoma cf. carinatim, River redhorse	2	1
Pomixis, spp., Crappie	1	1
Ictaluridae, Catfish	1	
Ictalurus punctatus, Channel catfish	4	1
Centrarchidae, Sunfish	2	
Aplodinotus grunniens, Freshwater drum	11	1
Lepisosteus osseus, Longnose gar	63	1
Percidae, Perch (sauger)	1	
Total Identified Vertebrates	613	
Molluscs		
Amblema plicata, Three ridge	13	
Cyclonaias tuloerulate, Purple warty-back	1	
Lampsilis ventricosa, Pocketbook	4	
Eliptio dilatatus, Spike	4	
Pleurobema sintoxia	1	
Lampsilis fasciol	1	
Quadrula cylindrica, Rabbits foot	1	
Total	24	

FEATURES

Features encountered at this site consist of pits, oxidized or fired areas, structures, and burials.

Pits

Pit features (n=18) range in diameter from 50 cm to 2.0 m, with a mean of 1.23 m, and have an average depth of 22.7 cm below the plowzone. These types of features tend to be located between the structures and the outer edge of the concentric midden zone. Most are large, shallow basins that were used for the disposal of trash. Large bell-shaped pits, which are common on many Fort Ancient sites north of the Ohio River (Seeman 1986), were not found at Site 15Hr22. However, the contents of the basin-shaped features at Site 15Hr22 is similar to that of large bell-shaped pits, indicating that though their initial functions may have differed, both types of pits eventually served as trash disposal facilities.

Oxidized Areas

Oxidized features (n=3) are definable areas of compact, bright red soil. All three were identified at the base of the plowzone. They range in diameter from 30 to 65 cm, are thin in cross-section (10 to 15 cm thick), and contain relatively few artifacts. These features are the result of very intense or prolonged burning, undoubtedly associated with surface fires or shallow hearths.

Structures

Several isolated postmolds (n=8) and three structures were investigated at Site 15Hr22. Postmolds range in diameter from 7 to 22 cm with a mean diameter of 13.3 cm. Some postmolds were chinked with small limestone rocks.

Structures at Site 15Hr22 appear to have been constructed in a shallow to fairly deep rectangular basin. The basin may have provided additional footer support for structure walls and may have helped to minimize drafts. All of the structures had hard packed floors that had been burned or baked in places. These structures also lacked large internal support posts that are usually associated with gabled roofs, and the absence of daub suggests that wattle and daub house construction was not common within this community. Compared to early Fort Ancient basin-shaped structures, those at Site 15Hr22 are larger and reflect greater energy expenditure in the form a prepared floor and larger posts.

Of the three structures examined at the site, only Structure 1 was completely excavated. It was rectangular and measured approximately 4 by 5 m, with the long axis oriented horizontally to the plaza (Figure 11). The basin increased in thickness from south to north or towards the central area of the site. Individually set posts, which ranged in diameter from 5 to 10 cm and extended to a depth of approximately 10 cm below the floor of the structure, lined the edge of the house basin. Some of the posts in the southwest corner of the structure had been chinked with rocks. The floor of this house was very compact, and in some places a considerable amount of ash had been pressed into it. This structure lacked an internal hearth.

A variety of objects were found on the floor of Structure 1 (Figure 11). A large antler rack, from which most of the tines had been removed, was documented near the structure's northern wall, and several scored antler tines were found on the floor west of the rack. A section of charred fibers of a reed or broad-leaf grass interwoven with larger twigs was found to the west of the antler rack. These materials may represent a portion of a collapsed house wall. Below these materials was a deer scapula hoe. A portion of a large ceramic vessel was recovered along the east wall, and over 15 ceramic disks were recovered from within or directly adjacent to the north wall.

Structure 2 measured at least 4.2 m long and was set in a basin that ranged from 5 to 20 cm in thickness. As with Structure 1, the basin increased in depth from south to north. The floor of this structure, which was bisected by a 1 m wide trench, was not as compact as the floor of Structure 1. Little in the way of artifactual materials was found on the floor of Structure 2.

Unlike structures 1 and 2, which lacked wall-trenches, the posts associated with Structure 3 had been set in a trench. This trench appears to have been dug so that large limestone slabs could be used to provide support for the posts that been placed within the soft matrix of a large pit feature. The size of Structure 3 is not presently known, and only a few large sherds were found in association with the floor of this structure.

Burials

Five burials were encountered during investigations at Site 15Hr22. Of these, four were excavated. Three contained human remains (Porter and Powell 1992). Burial 1 consisted of a child approximately three years old, who had been interred within a small basin-shaped pit. This pit, had a diameter of 60 cm and a depth of 18 cm, was situated adjacent to a concentration of refuse pits. Burial 1 had been placed in a fetal position oriented southeast-northwest, with its head facing the southwest. No grave goods were associated with Burial 1.

In contrast to the other burials documented at this site, Burial 2 had not been placed within a distinct burial pit. Rather, this infant, who was approximately 6 months old when death occurred, had been interred within the upper portion of a large refuse pit. The orientation of this individual could not be determined. Several shell beads were found in association with Burial 2.

Unlike burials 1 and 2, which were interred within or adjacent to several large refuse pits, Burial 3 was located in an area between the domestic structures and the central area. The pit within which this 16-17 year old had been interred measured 1.95 m in length and 70 cm in width and had a depth of 47 cm. This individual had been placed in an extended position with its arms laid across its chest. It was oriented east-west, with the head facing up. Several small limestone slabs had been placed over the chest area of Burial 3, and a lens of ash and carbonized wood charcoal was identified just above the limestone slabs. No grave goods were found in association with this individual.

A somewhat smaller oblong pit (1.65 m long, 50 cm wide, and 40 cm deep) excavated next to Burial 3 did not contain any human skeletal remains. Designated Burial 4, it appears to represent a pit within which an individual had been interred but whose remains had totally decomposed. Alternatively, this pit may have been dug in anticipation of an individual's imminent death, but for some reason was never used.

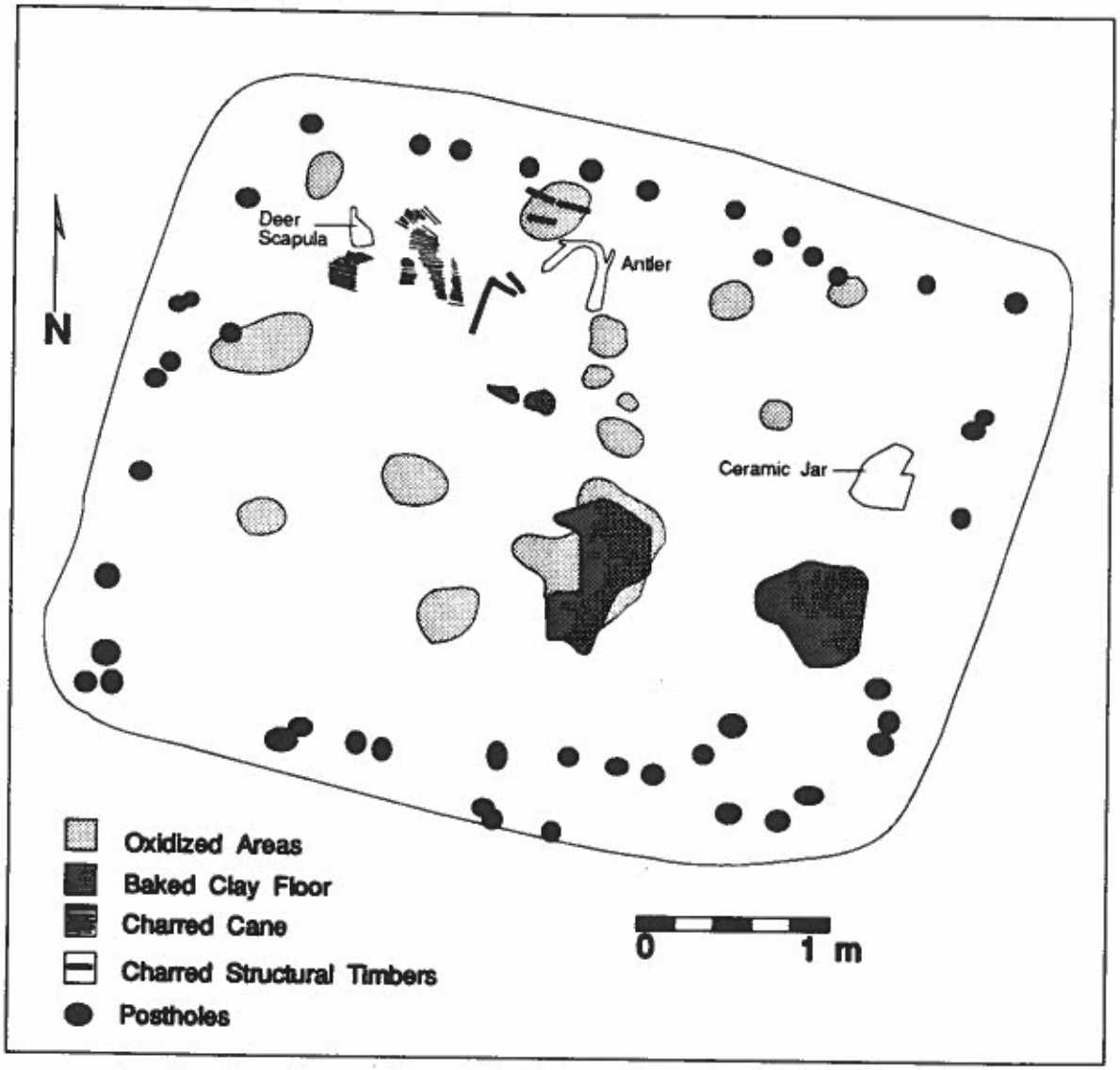


Figure 11. Structure 1.

Burial 5 is located just to the north of burials 3 and 4. Based on the shape of the exposed portion of the burial pit (40 cm long x 40 cm wide) and information obtained from soil cores, this burial pit appears to be oblong in shape and to contain the remains of an adult.

Individuals at Site 15Hr22 also were interred within a mound located at the interface of the central area and midden zone. However, no attempt was made during these investigations to excavate any of the burials interred within this mound.

Village Configuration

In this section, the general configuration of features within Site 15Hr22 is described and comparisons are made between areas 1 and 3. Rather than characterize each investigated area (Figure 4), the following discussion focuses on trenches 1 and 3 (Area 1) and Unit 2 (Area 3). Not surprisingly, these are the most intensively and extensively investigated localities within the ca. 30 m wide midden zone at Site 15Hr22.

In Trench 1 (Figure 12), a cluster of burials and features was located adjacent to the central area (plaza). It consisted of three burial pits, a large oxidized area, and two shallow pits. Very little in the way of artifactual materials was recovered from within or in the vicinity of the burials or features. Given their proximity to three burials, the oxidized area and small pit may have been associated with rituals performed during or after the dead were interred. The limestone slabs and ash and charcoal lens above the chest area of the 16-17 year old designated Burial 3 also may have been a product of mortuary rituals. Good evidence of feasting and mortuary rituals has been collected from the late Madisonville horizon Larkin Site (15Bb13) in Bourbon County (Pollack et al. 1987).

No features were identified between the mortuary zone and Structure 1, located 6 m to the south (Figure 12). Since structures within circular villages usually face the center of the community, this space may have been reserved for interactions with other members of the community and visitors and other activities that did not result in substantial subsurface features. The lack of features, such as hearths, in this area also may be due to subsurface plow disturbance or may reflect sampling biases. Although no features were found in front of Structure 1, pits containing large quantities of ash were found directly west and south of this structure. These pits presumably contained debris cleaned out of hearths.

Structure 1 was a basin-shaped house with a prepared clay floor (Figure 11). As noted previously, several objects, including a large portion of a ceramic vessel, ceramic disks, scored antler tines, an antler rack, and a deer scapula, were found within or adjacent to this structure. The size of the ceramic vessel found along the east wall suggests that it may have been used for storage. While the function of the ceramic disks is not presently known, it is worth noting that those associated with Structure 1 account for approximately 70 percent of the ceramic disks recovered from the site. Also, in comparison to the structures, only four ceramic disks were recovered from the 15 refuse pits investigated in areas 1 and 3. This suggests that these disks were used for household tasks conducted within or immediately adjacent to residential structures.

The recovery of the large antler rack and scored antler tines suggests that Structure 1 was a locus for the manufacture of antler projectile points. Additional antler racks lacking their tines were recovered from the pit features behind structures 1 and 2. In contrast, no antler racks were associated with the cluster of refuse pits in Area 3. The absence of antler racks in Area 3 suggests that antler projectile point manufacturing may have been restricted to certain areas of the village.

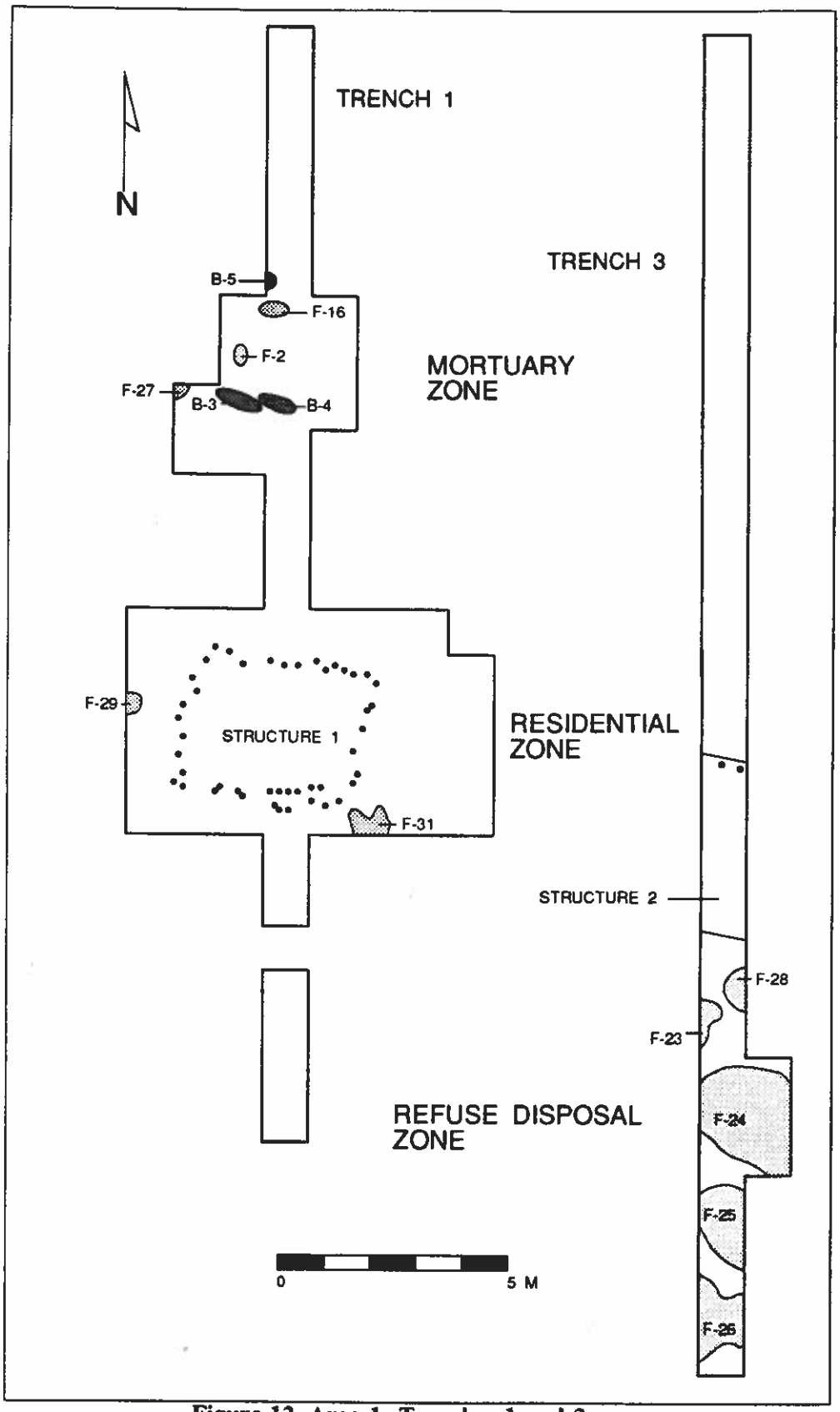


Figure 12. Area 1: Trenches 1 and 3.

Perhaps this was a group activity or was a task that required a specific expertise. Alternatively, the lack of antler racks in Area 3 maybe due to sampling biases.

In Trench 3 (Figure 13), no burials were identified between Structure 2 and the central area (plaza). However, unlike Trench 1, where no pits were encountered downslope from Structure 1, a line of five large trash-filled pits was encountered directly downslope from Structure 2 (Figure 12). A large quantity of ceramics and animal bones was recovered from these features, and most contained layers or pockets of ash from the cleaning of hearths.

Investigation of Area 3 was restricted to a cluster of pit features and two burials (Burials 1-2) (Figure 13). Except for an absence of antler racks, the contents of these features were very similar to those documented in Trench 3. Unlike Trench 3, however, where no burials were encountered within or adjacent to the refuse pits, a small child and an infant were recovered from Area 3 (Figure 13).

Based on these investigations, it appears that the Fort Ancient village at Site 15Hr22 was organized in the following manner. The central portion of the village was kept clean of debris and served as a central plaza for community events, rituals, and ceremonies. Around the plaza were three concentric rings: a mortuary zone, a residential zone, and a refuse zone. Individuals not interred within the burial mound or within the refuse disposal zone were buried in the mortuary area. The residential zone was a ring of basin-shaped houses and nearby domestic activity areas, while the refuse zone consisted of clusters of large basin-shaped pits. No evidence of a stockade was found in any of the trenches or units excavated at the site (Figure 3).

In general, the organization of Site 15Hr22 is similar to that documented for the SunWatch Site in southern Ohio (Heilman et al. 1990). Patterns identified at both sites include a circular arrangement of structures around a central plaza, a mortuary zone between the structures and the plaza, and the placement of infants and small children in refuse areas. However, at SunWatch, the primary refuse zone was situated between the mortuary and residential zones and not in back of the structures as at Site 15Hr22. Other traits that serve to distinguish the organization of these two sites is the absence of a burial mound and the presence of a stockade at SunWatch.

DEMOGRAPHIC AND TEMPORAL CONSIDERATIONS

Both of the sites that comprise the Florence Site Complex represent the remains of fourteenth century Fort Ancient villages that consisted of a circular arrangement of structures around a central plaza. However, Site 15Hr22 is about twice the size of Site 15Hr21 and appears to have been occupied for a longer period of time, based on a higher artifact density and darker midden stain.

Assuming that all of the structures at sites 15Hr21 and 15Hr22 were similar in size to Structure 1 at Site 15Hr22, were inhabited by six individuals, and were evenly spaced, an estimate of the population of each community can be derived. Using these parameters, 15 structures would have been present at Site 15Hr21, and it would have had a population of 90 people, while Site 15Hr22 would have had 25-30 structures and a population of 150 to 180 individuals. Although Site 15Hr22 is bigger and has a larger plaza than Site 15Hr21, the domestic occupation zone at each site has a width of ca. 30 m. This suggests that a similar range of activities (e.g., processing and discarding of plant and animal remains, cooking, eating, sleeping, and burial of the dead) were

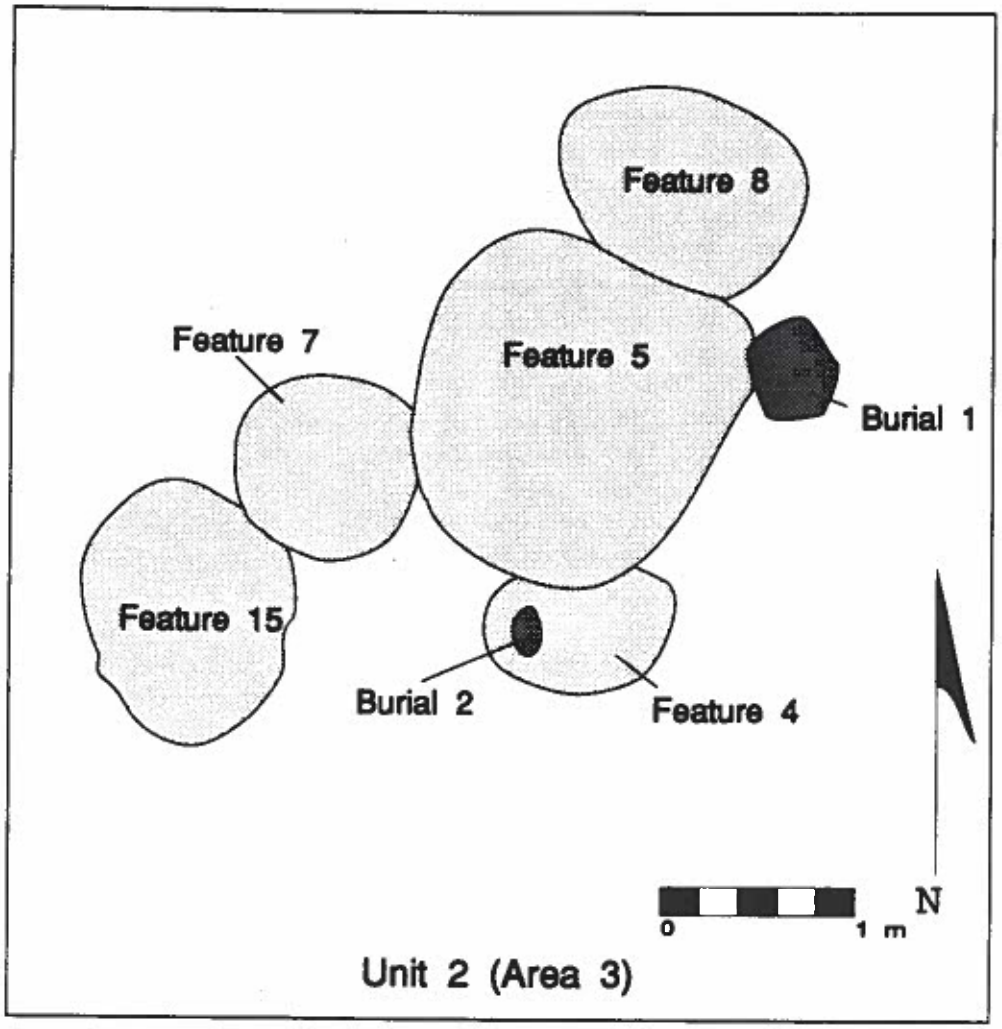


Figure 13. Area 3: Unit 2.

conducted within the domestic activity zones at both sites.

The cultural materials recovered from the Florence Site Complex and radiocarbon dates (Table 11) obtained from both sites suggest that sites 15Hr21 and 15Hr22 were occupied during the mid- to late A.D. 1300s. However, based on a comparison of the ceramics and, to a lesser extent the chipped stone tool assemblage, it can be suggested that Site 15Hr21 was occupied somewhat earlier than Site 15Hr22. Comparison of the ceramic collections from these two sites resulted in the identification of sufficient differences in exterior surface treatment, temper, and decoration to suggest that the two assemblages are not coeval. The Site 15Hr22 collection contains a higher percentage of Jessamine Plain specimens, shell temper, and decoration, and a lower percentage of Jessamine Knot Roughened sherds than the Site 15Hr21 collection (Table 1). Diagnostic chipped stone tools from 15Hr21 include three Type 2 Fine Triangular and one Type 3 Fine Triangular projectile points, while seven Type 3 Fine Triangular and 14 Type 5 Fine Triangular projectile points were recovered from Site 15Hr22.

Differences in exterior surface color also serve to distinguish the ceramic collections from these two sites. At both sites, light brown and dark brown sherds account for about half of each assemblage. But for Site 15Hr21, reddish brown, orange brown and reddish orange sherds account for almost 40 percent of the collection, while for Site 15Hr22, light gray, black, and dark gray account for almost 30 percent of the collection (Table 1). These differences suggest that the inhabitants of these sites either exploited different clay sources or used different technologies to fire their vessels.

In northeastern Kentucky, the end of the middle Fort Ancient Manion phase and the beginning of the early Madisonville horizon Gist phase is marked by an increase in plain surfaced ceramic vessels, the use of shell to temper ceramic vessels, exterior surface decoration, and Type 5 Fine Triangular projectile points, and a decrease in ceramic vessels with knot roughened exterior surfaces (Turnbow and Henderson 1992a). Based on a comparison of the Site 15Hr21 and Site 15Hr22 collections, similar trends appear to be present in central Kentucky and it can be suggested that Site 15Hr22 was occupied towards the end of the Elkhorn phase and the beginning of the Madisonville horizon.

SUMMARY AND CONCLUSIONS

Research at the Florence Site Complex (15Hr21 and 15Hr22) has generated new information on middle Fort Ancient material culture and village organization in central Kentucky. It also has led to the definition of the Elkhorn phase (A.D. 1200-1400) to denote the middle Fort Ancient period in the Central Bluegrass region. Many Elkhorn phase sites (e.g., Buckner, Guilfoil, Singer, and Goff Village) consist of a midden zone surrounding a central plaza (Sharp 1990a). (An exception to this pattern is the Carpenter Farm Site [see Pollack and Hockensmith, this volume].) At some of these sites (e.g., Goff and Singer) (Sharp 1990a), as with Site 15Hr22, some individuals were interred within a burial mound. A similar pattern has been identified for the Manion phase in northeastern Kentucky (Henderson et al. 1992).

The Florence Site Complex ceramic assemblage consists of Jessamine Cordmarked, Jessamine Plain, and Jessamine Knot Roughened. All of the identifiable vessels are jars with direct, slightly outflaring, or inslanting rims. Diagnostic lithic tools include Type 3 Fine Triangulars and chipped limestone disks.

The floral and faunal assemblages from the Florence Site Complex are consistent with those recovered from other Fort Ancient sites in the middle Ohio Valley (Breitburg 1992; Rossen 1992a; Tune 1987; Wagner 1987). There is a strong reliance on cultivated plants, such as corn and beans, supplemented by wild plants, such as nuts and sumac. Deer, bear, and elk provided most of the animal meat, with turkey, turtles, and fish also contributing to the diet. The Florence Site Complex subsistence profile is distinguished from other Fort Ancient sites by a higher nut density and a higher percentage of fish remains. Increased exploitation of these secondary resources may reflect the range of expected variation within Fort Ancient subsistence strategies, or it may indicate that the inhabitants of this site complex experienced periods of subsistence stress, which necessitated an increased reliance on secondary food sources.

Investigation of Site 15Hr22 also documented that this community consisted of concentric mortuary, residential, and refuse zones arranged around a central plaza. Adults and adolescents were interred within the mortuary zone. The hearths and shallow pits documented within this zone probably were used for mortuary rituals and ceremonies. However, while most individuals were interred within this zone, some people were placed in a mound or interred within the refuse zone. The placement of infants and small children in the upper portions of trash pits or in small pits within the refuse zone probably reflects a high infant mortality rate and suggests that these individuals had not yet become members of the community. The association of grave goods (e.g., shell beads) with one of these individuals may reflect, in part, their family's standing within the community or an aspect of Fort Ancient religious beliefs. Placement of some individuals in a burial mound suggests the existence of some degree of status differentiation within this Fort Ancient community. Thus at Site 15Hr22, an individual could be interred in a refuse zone, the mortuary zone, or in the mound, based upon his or her age and/or social standing in the community.

The habitation zone is marked by a band of basin-shaped houses. The floors of these structures were well-packed and some appear to have been prepared. Structure walls consisted of woven reeds or grasses interwoven with large twigs or sticks that may have been covered with bark, mats, skins, and possibly thatch. Besides providing shelter from the elements, structures were the locus of household tasks, such as the manufacturing of antler projectile points. The refuse disposal zone is marked by concentrations of large basin-shaped pit features. Debris from household activities associated with the processing of plants and animals was disposed of in these features, as were the contents of hearths located within or directly adjacent to houses.

Based on a comparison of the ceramic assemblages from sites 15Hr21 and 15Hr22, it has been suggested that Site 15Hr21 predates Site 15Hr22. If this is the case, the close proximity of these two communities, coupled with their nearly identical radiocarbon dates, suggests that the latter may represent a relocation of the residents of the former to accommodate an influx of new families. However, at present it is not known whether settlement shifted directly from Site 15Hr21 to Site 15Hr22 or if this locality was abandoned for a brief period of time.

ACKNOWLEDGEMENTS

Research at the Florence Site Complex was supported in part by a Federal Survey and Planning grant from the Kentucky Heritage Council to the senior author. An unusual aspect of this study was an interest on the part of the principal landowners, Mr. and Mrs. Virgil Florence, in not only the archaeological research activities but in the long-term preservation of the Florence Site Complex. They kindly granted us access to their property, and we appreciate their hospitality and interest in the preservation of these sites. We would also like to thank the field crew of Teresa Tune, Will Daley, and Gwynn Henderson, the laboratory crew directed by Julie O'Shaughnessy, and the many volunteers without whose assistance this project could not have been completed. The volunteers include Haidee Adams, George C. Arnold, Chris Begley, Warren C. (Covey) Brown, Samual Bulchor, Carrie Burns, Matt Conrad, Peggy Davis, Denise N. Elswick, Jim Evans, Ricky Ewalt, Frank Force, Beth Helfrick, Jerry Lewis, Kim and Steve McBride, Leif Meadows, Kathleen Millhoff, Lonnie Napier, Claire M. Porter, Chris Richardson, Natalie Scott, Clair Sipple, Mike Shott, Adonis Spivey, Tom Sussenbach, Wenjian Wang and Mao, Rita Wehner, Jo Anne Wilson, Daxon Caudill, and Chris Pool (a key volunteer) and the members of his class (Bryant Evans, Will Holmes, Angelia Martin, David Schotz, and Chris Cox). In addition, the authors would like to thank Covey Brown for producing the artifact illustrations, Jack Rossen for analyzing the botanical remains, and Teresa Tune for analyzing the faunal remains, Mr. and Mrs. Bob Caudell for granting us access to the eastern portion of Site 15Hr22, Mr. Bob Barnes and Harrison County Rural Electric for providing a bucket truck for taking photographs of Structure 1, Claire M. Porter for analyzing the human remains, and Phil Foley for bringing the Florence Site Complex to our attention.

CAPITOL VIEW: AN EARLY MADISONVILLE HORIZON COMMUNITY IN FRANKLIN COUNTY, KENTUCKY

By
A. Gwynn Henderson
Program for Cultural Resource Assessment
University of Kentucky
Lexington, Kentucky

ABSTRACT

The Capitol View Site represents the remains of a small Fort Ancient community occupied at the very beginning of the Madisonville horizon (circa A.D. 1400). Investigations conducted at this site have generated important information about late Fort Ancient material culture as well as the plan and organization of this particular community. Based on the results of these investigations, this village appears to have been inhabited for a relatively short period of time, perhaps less than ten years, by no more than 70 people.

INTRODUCTION

The Capitol View Site (15Fr101) is a small, semicircular Fort Ancient settlement located on the northwestern edge of the Inner Bluegrass section of the Bluegrass Physiographic region (McFarlan 1943:167) in southcentral Franklin County. The site is situated on the narrowest section of a 1.3 km long north-south trending ridge. The closest permanent water source is an unnamed stream located 750 m north of the site, while Vaughn Branch is located 940 m south and southeast of the site. Each of these small streams empties into the Kentucky River, which is located 1.8 km southwest of the site.

The site was first documented in 1989 during an archaeological survey of the 75 ha Carpenter Farm tract (Sharp 1989). Based on the recovery of four eroded sherds and many small thinning flakes from shovel probes, Sharp (1989:28-30, 39-40) recommended that a more intensive investigation of this site be undertaken. This additional work was carried out during January and February 1990 and consisted of plowing the site, conducting a controlled surface collection, mapping any concentrations that might be present, and investigating these concentrations with hand-excavated units (Sharp 1989:43).

The controlled surface collection resulted in the identification of seven concentrations of artifacts, charcoal, burnt clay, and burned limestone rock. These concentrations averaged 3-6 m in diameter and were generally located within the portions of the site exhibiting the highest artifact densities (Sharp 1990b:1). These concentrations were arranged in a semicircle, open to the west, that encompassed an area measuring approximately 120 m (N-S) by 100 m (E-W). A 90 m wide (N-S) area in the center of the site was devoid of any artifact concentrations, and only a very few isolated artifacts were recovered from this area.

Hand excavated units (ranging from 4 m^2 to 12 m^2 and totaling 24 m^2) were placed in the three best-defined concentrations (Sharp 1990b:2). In each concentration, directly below the plowzone, the remains of intact Fort Ancient structures were encountered. Based on the results of this investigation, the site was determined to be eligible for listing in the National Register of Historic Places and a data recovery plan was developed to collect sufficient information to securely date and characterize the Fort Ancient occupation of this locality.

Fieldwork was carried out from September to November 1990. First, mechanical equipment was used to remove the plowzone in the vicinity of each of the seven concentrations. The structures and features identified within each concentration were then mapped and excavated. Mechanical removal of the plowzone in short trenches within the site limits also was conducted in order to locate other structures or features that had not been identified during testing (Figure 1). Finally, removal of the remainder of the plowzone during building construction activities was monitored during December 1991 and January 1992, and additional features, burials, and one structure were documented. As a result of these efforts, all subplowzone features, burials, and structures at the Capitol View Site that had not previously been disturbed by plowing or other postdepositional activities, were identified, mapped, and investigated, and a sample of material culture and subsistence remains were recovered.

Sites such as Capitol View provide archaeologists with unique research opportunities. Few sites today are completely excavated. Removal of the plowzone within the entire site area at Capitol View permitted researchers to investigate every subsurface feature preserved at the site and to document the complete community plan. Similarly, single component sites occupied for short periods of time, like Capitol View, enable archaeologists to examine questions of a synchronic nature that are not possible at multicomponent sites. In this paper, general descriptions of the material culture assemblage, the human remains, and the structures and features are presented, the results of chronometric dating are discussed, and some observations are made about the age, length of occupation, population size, and plan of this early Madisonville horizon community. More detailed information about these topics are presented in the technical report (Henderson 1992).

MATERIAL CULTURE

Investigations at the Capitol View Site produced a representative, but not particularly extensive, collection of late Fort Ancient ceramic, lithic, botanical, and faunal remains. The distinguishing characteristics of these assemblages are summarized in this section.

CERAMICS AND OTHER BAKED CLAY OBJECTS

Of the 3,681 artifacts made of baked clay collected from the Capitol View Site, most are sherds (n=3,677). Four are nonvessel clay objects, consisting of a ceramic disk, a portion of a hand-modeled spoon or ladle fragment, a tiny figurine fragment, and a section of a fired piece of rolled clay.

The majority of the analyzed ceramics (n=595) are assignable to the Madisonville Series, with Madisonville Cordmarked and Madisonville Plain occurring in almost equal amounts (Figures

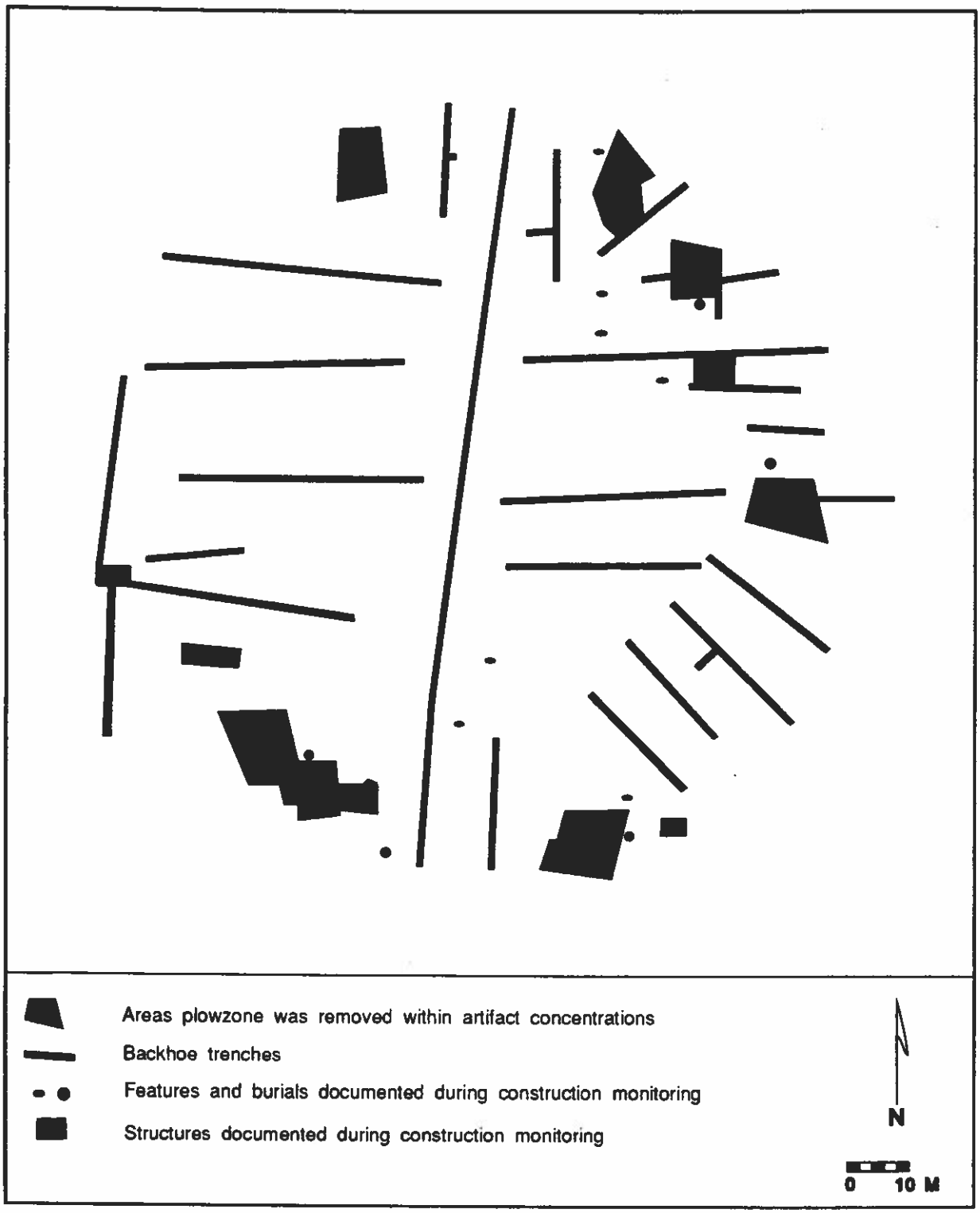


Figure 1. Location of artifact concentrations, trenches, and features.

2-3). Only a few specimens with check stamped and net-impressed exteriors are present in the collection. Most of the rims represent portions of jars, but a few specimens may represent bowls. Almost all of the jar rims represent fragments of slightly to strongly flared globular vessels with rounded lips (Figure 2a-l) and parallel-sided or convergent-sided (triangular) (Figure 3a-d) strap handles. Over 19 percent of the Madisonville Series ceramics are decorated. Decoration consists almost exclusively of incised designs on jar necks (Figure 3e-h). Lip decoration of any kind is rare.

The Todd Series, considered to be a companion to the Madisonville Series, is represented at Capitol View by three Todd Plain, var. Fox Farm (Turnbow and Henderson (1992b:325-326) specimens (Figure 2m). Their recovery from Capitol View is important, because pans have not been found at early or middle Fort Ancient sites in central Kentucky (Fassler 1987; Pollack and Hockensmith this volume; Sharp and Pollack this volume) or in northeastern Kentucky (Henderson et al. 1992:255-256). Pans, however, are diagnostic vessel forms of the Madisonville horizon (Turnbow and Henderson 1992a), and Todd Plain, var. Fox Farm is the variety that appears earliest during that time period (Turnbow and Henderson 1992b:325).

McAfee Series ceramics also were collected from the site. This series was defined by Turnbow (1988a) for hand-modeled (i.e., pinch pot) jars and bowls that contain no temper or only sparse amounts of shell temper. McAfee ceramics have been recovered from other sites in central and northeastern Kentucky that date from around A.D. 950 to at least the early A.D. 1500s (Turnbow and Henderson 1992b:328).

An important aspect of the Capitol View Site ceramic collection is its lack of variation. Lip shape, rim orientation, handle characteristics, and design motifs occur in almost repetitious association. The overall homogeneity of this assemblage suggests that the site occupation was of very short duration, a suggestion corroborated by other sources of information, notably the chronometric dates.

In their typological analysis of ceramics from well-dated Fort Ancient contexts in northeastern Kentucky, Turnbow and Henderson (1992a:114-117) characterized early Madisonville horizon ceramic assemblages as containing mainly Madisonville Series ceramics, with McAfee and Todd series ceramics occurring in very low numbers. Typologically, then, based on the series that are present and the proportion of the assemblage each series represents, the Capitol View Site assemblage can be assigned to the early centuries of the Madisonville horizon.

This temporal affiliation also can be supported with reference to attributes as well. Characteristics of post-A.D. 1400/pre-A.D. 1550 Fort Ancient ceramic assemblages include the predominant use of shell for temper; cordmarked and plain exterior surface treatments occurring in almost equal amounts; rounded lips occurring most frequently; slightly flared rims the most common rim orientation; little or no lip decoration, with decoration occurring mainly on the rim/neck area of jars; an overall increase in surface decoration in comparison to earlier sites; a diversity of vessel forms consisting of jars, bowls, pans, and pinch pots, including the Madisonville globular jar; and the predominance of strap handles (Turnbow and Henderson 1992a:128-131). These attributes characterize the ceramic assemblage collected from Capitol View, with the only minor difference being that a lower number of bowl rims than expected was recovered.

Within the Inner Bluegrass region, the Capitol View assemblage differs from other site assemblages mainly in terms of surface treatment preference: vessel exteriors are mainly plain by

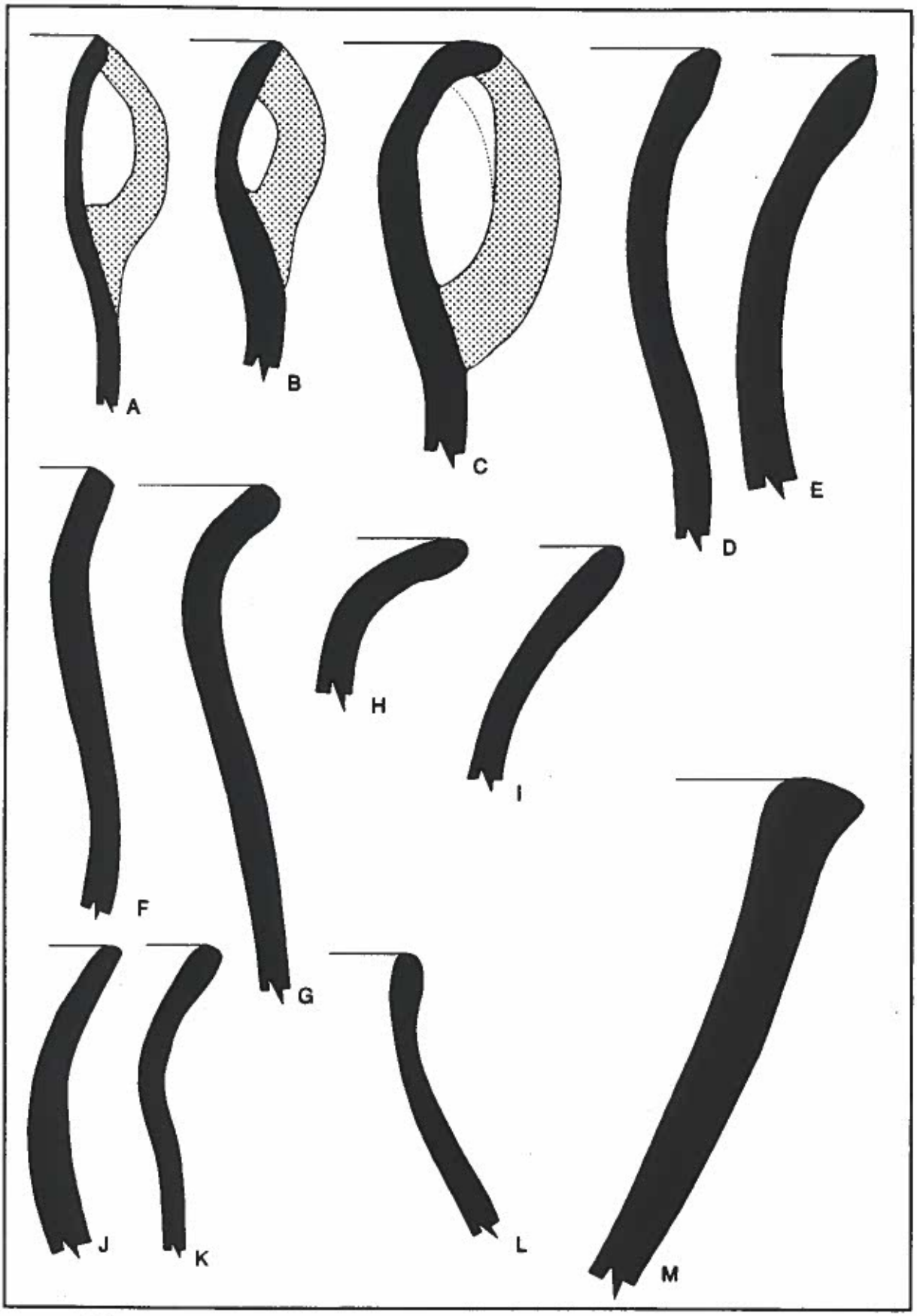


Figure 2. Rim profiles: a-l, Madisonville Series (cordmarked a,b,f,g,i-l; plain c-e,h); m, Todd Series (Todd Plain, var. Fox Farm) (shown actual size).

around A.D. 1400 in this area (Turnbow 1988b:292). For this characteristic, the Capitol View Site ceramics more closely resemble those examined by Turnbow and Henderson (1992a) in northeastern Kentucky.

LITHICS

The Capitol View lithic assemblage (n=9048) consists mainly of debitage, followed by chipped stone tools (n=268) and ground, pecked, and battered stone tools (n=13). Characteristics of cortex indicate that both outcrops and river and stream gravels were exploited for their raw materials, but some specimens in the Capitol View chipped stone assemblage exhibit patinated flake scars, indicating that older artifacts also were collected and reworked into tools by the site inhabitants.

Chipped stone tools and debris reflect a predominantly local procurement of chert resources. The most frequent chert types that appear in the assemblage are Ordovician limestone cherts (cf. Cane Run). Attributes of cortex examined mainly on debitage indicate procurement of these cherts from outcrops as well as from river or stream deposits. The second most frequently occurring chert is Boyle, procured mainly from river or stream deposits.

The projectile point assemblage collected from Capitol View is dominated by small triangular projectile points or point fragments (Figure 4). While examples or correlates to all of Railey's (1992) triangular projectile points are represented in the collection, Type 5 Fine Triangular (Figure 4l-s) and Crude Triangulars (Figure 4a-g) make up the overwhelming majority of identifiable specimens (42.7 percent and 33.0 percent, respectively). The presence of large numbers of Type 5 Fine Triangulars and Crude Triangulars in the Capitol View collection supports trends in triangular projectile point morphology outlined by Railey (1992) and indicates a post-A.D. 1400/pre-A.D. 1550 relative date for this assemblage. This supports the results of the ceramic analysis for the site and corroborates the chronometric dates.

Other types of chipped stone tools collected at Capitol View include shaped and unshaped bifaces, and drills. A variety of miscellaneous tools such as unifaces, a laterally retouched flake, a celt, a triangular projectile point modified into a drill (Figure 4y), and modified flakes also are present in the collection.

Only a few ground, pecked, and battered stone tools are present in the lithic collection. They consist of a diorite celt fragment, chert and sandstone battered stones, a pitted stone made of tabular sandstone, a cannel coal palette, and a siltstone pipe. It is important to note that no chipped limestone disks, which so commonly occur on central Kentucky middle Fort Ancient sites (Pollack and Hockensmith this volume; Sharp and Pollack this volume; Turnbow 1992), were found at Capitol View.

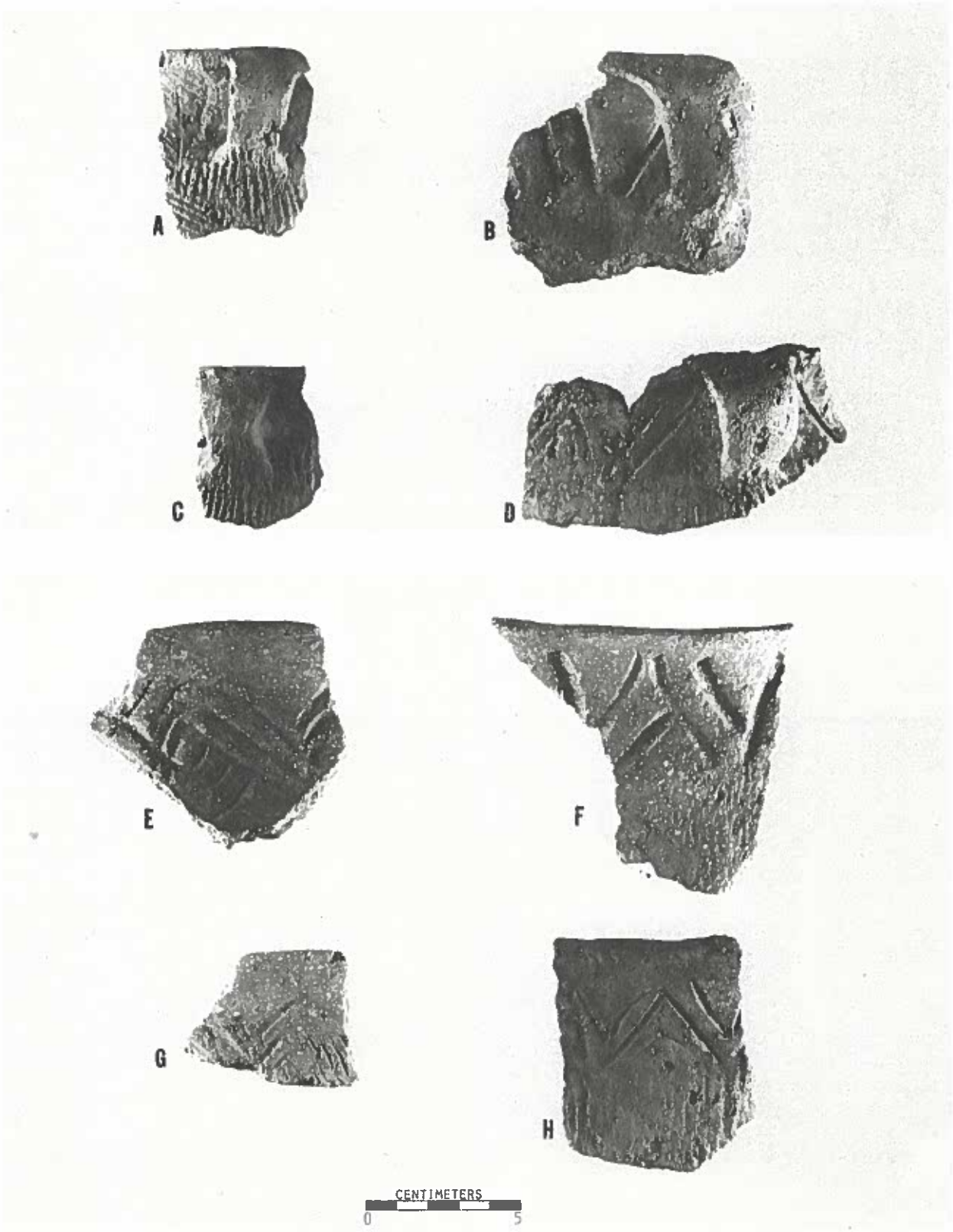


Figure 3. Madisonville Series jar rims: e, Madisonville Plain; a-d,f-h Madisonville Cordmarked.

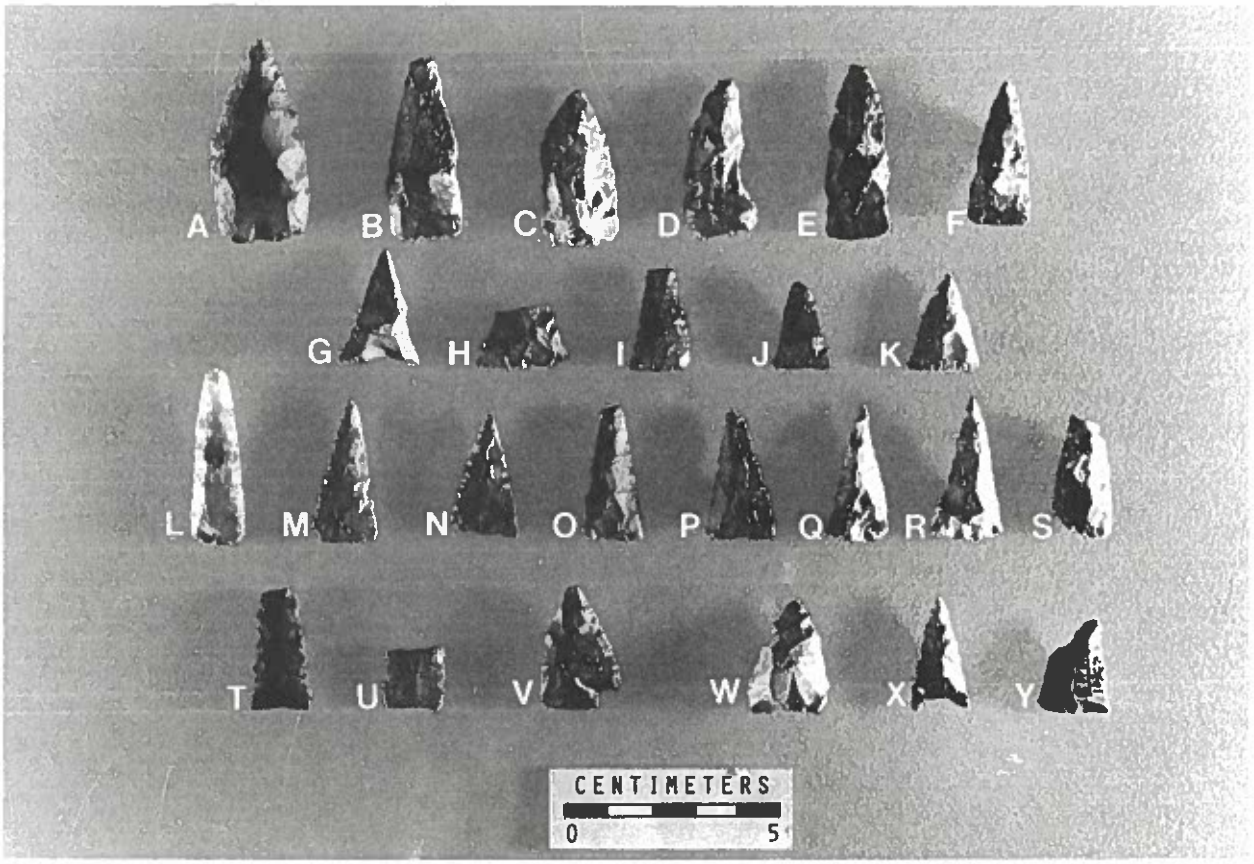


Figure 4. Triangular projectile points: a-g, Crude Trangulars; h-i, Type 2 Fine Triangulars; j-k, Type 4 Fine Triangulars, l-s, Type 5 Fine Triangulars; t-u, Type 6 Fine Triangulars; v-w, Type 7 Fine Triangulars; x, untyped serrated triangular; y, triangular projectile point modified into a drill.

SUBSISTENCE REMAINS

Analysis of the botanical and faunal remains suggests that the subsistence practices of the Capitol View residents were similar to those identified for other Kentucky Fort Ancient villages (Breitburg 1988, 1992; Rossen 1992a, this volume; Rossen and Edging 1987; Tune 1987, this volume). The botanical assemblage reflects the importance of domesticated crops supplemented by fleshy fruits and nuts. Corn, beans, and sunflower represent the cultigens documented from Capitol View, while the seeds of fleshy wild fruits include sumac, grape, blackberry/raspberry, and plum. Nutshell densities are very low and starchy oil seeds, except those of Chenopodium spp., are lacking. Relatively low corn densities and low corn ubiquities were recorded for this site. However, these figures are considered to reflect the nature of the contexts from which the samples were recovered (i.e., mainly from house floor contexts as opposed to primarily midden or pit feature contexts) instead of significant differences in subsistence practices at the Capitol View Site.

The faunal assemblage recovered from Capitol View, while poorly preserved, reflects an exploitation of interior ridgetop environments much like that documented by Breitburg (1988, 1992) for other central and northeastern Kentucky Fort Ancient groups. Deer, bear, and elk contribute about equally to the diet, and wild turkey also is very important. Smaller mammals, such as bobcat, raccoon, squirrel, opossum, skunk, rabbit, and muskrat, served as supplementary food sources, followed by amphibians (box, softshell, snapping, and painted turtle), reptiles, fish, and freshwater mussels. A large dog skull, which showed no evidence of butchering, also was recovered from the site.

HUMAN REMAINS

Ten human burials were documented at Capitol View: three during excavation (O'Shaughnessy et al. 1991) and seven during construction monitoring. There was no evidence that limestone slabs had been used to cover any of the graves (cf. descriptions of interments at Larkin, a late Madisonville horizon site in Bourbon County [Pollack et al. 1987]). Artifactual debris was recovered from the fill of most burial pits, but these remains were not considered to represent purposefully buried grave goods, except in one case. A palette made from a large fragment of high-quality cannel coal was found near the feet of one individual. One end of this artifact had been rounded by pecking, and the flat surfaces of this object exhibited many shallow to deep intentionally etched scratches. The function of this object could not be identified from its morphological characteristics. A few corn kernels and cupules were recovered from the fill above or within the body cavities of the three individuals examined during excavation, but it could not be determined if these items represent the remains of ritual feasting as identified at Larkin (Pollack et al. 1987).

While bone preservation was generally moderate to poor, some information concerning age at death, sex, and burial position was recorded. Only adults and adolescents were identified within the Capitol View burial population; no infant or child remains were recovered anywhere on the site. Both males and females were represented, and all had been buried in a semi-flexed position, except for one individual who had been buried in an extended position on his back. No evidence was present for the selected removal of long bones, as documented for Larkin (Pollack et al. 1987).

Many individuals buried at Capitol View exhibited bone pathologies and light to moderate incidence of tooth caries, both of which are typical for Fort Ancient burial populations (Cassidy 1972, 1980). Generalized periostitis indicates the occurrence of nonspecific stress for all of these individuals. One individual, however, exhibits lesions of endemic syphilis.

RADIOCARBON DATES

Four charred wood samples were submitted for chronometric dating from the Capitol View Site. Three samples represented sections of logs or branches collected from structures, while the fourth sample was collected from a large trash pit (Table 1). At two standard deviations, these dates overlap between A.D. 1323 and A.D. 1430. The weighted calibrated average date at two standard deviations is A.D. 1316(1407)1428. Thus, based solely on these four dates, the Capitol View Site appears to have been inhabited from the A.D. 1300s to mid-1400s. However, if only the latest dates are considered for those samples that intersect the calibration curve several times, the midpoints for these four dates range from A.D. 1391 to A.D. 1429. Given the characteristics of the ceramic and lithic assemblages, this appears to be a good date range for the site occupation.

Table 1. Radiocarbon Dates.

Laboratory Number	Radiocarbon Age	Calibrated Radiocarbon Dates at two sigma (Stuiver and Pearson 1986)	Material Dated
Beta-42595	550±50 B.P.	A.D. 1280(1407)1440	Mixed wood charcoal (hickory, white oak, black walnut, yellow poplar)
Beta-42596	590±50 B.P.	A.D. 1280(1328,1350,1391)1430	White oak wood charcoal (log or branch section)
Beta-42597	480±60 B.P.	A.D. 1323(1429)1490	Hickory wood charcoal (log or branch section)
Beta-42598	570±60 B.P.	A.D. 1280(1332,1343,1394)1440	Hickory wood charcoal (log section)

STRUCTURE AREAS AND ISOLATED FEATURES

Examination of the distribution of subplowzone features at the Capitol View Site suggests that this community consisted of two distinct segments organized into a loosely-formed semicircle that opened to the west (Figure 5). This semicircle contained a total of six structure areas representing eight structures and their associated postmolds, features (such as pits, a surface fired area, stains, and a sheet midden), burials, and earth ovens. Isolated trash pits and burials also were located within the semicircle.

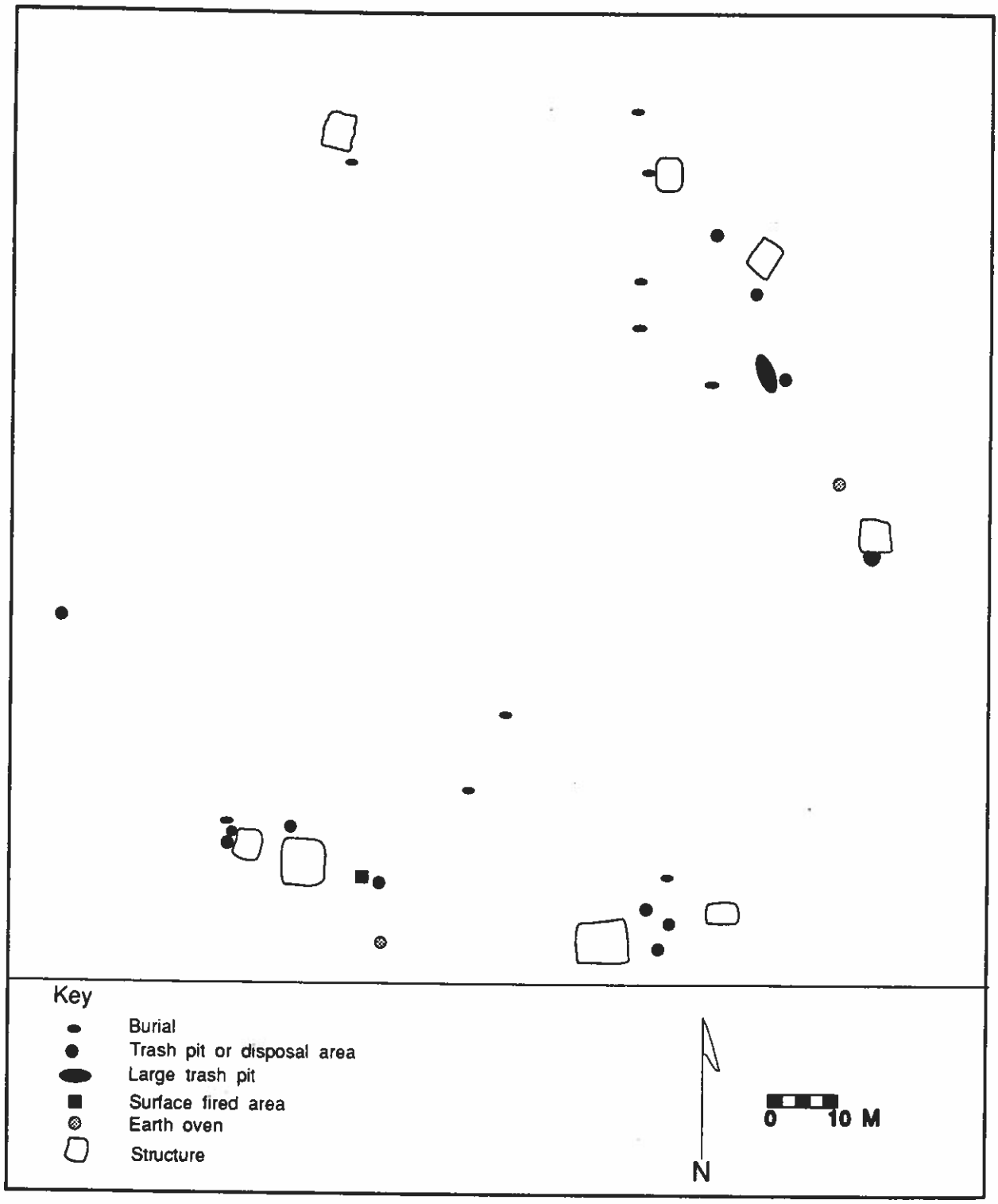


Figure 5. Community plan of the Capitol View Site.

The eight structures investigated at Capitol View were square to rectangular in shape and had rounded corners. No internal walls and few interior support postmolds or interior pits were documented for these structures. Nor was it possible to identify the location of structure entrances. The structures ranged in size from 14.45 m^2 (3.10 by 4.66 m) to 44.37 m^2 (6.12 by 7.25 m) (Table 2). Four were constructed in house basins that had been excavated 7 to 18 cm into the subsoil. Postmolds generally lined the perimeter of these basins. In one instance, posts had been set into wall trenches along two sides of the basin (Figure 6a). The remaining four structures were represented by a thin (approximately 4 to 7 cm thick) dark brown to black soil stain surrounded by postmolds (Figure 6b). The two largest structures were of the latter type. Examination of the wood remains in nine of the best-preserved postmolds from both house basin and nonhouse basin structures revealed that the Capitol View inhabitants selected mainly hickory or white oak as the raw material for posts.

Sections of house floors were preserved within some structures, almost always house basins. Floor remnants were characterized by patches of harder soil, almost brick-like in texture, that exhibited a smooth but crackled surface. Interior hearths were associated with both structure types and showed evidence of intensive burning and charred log remains and/or ashy deposits. These hearths generally were located in or near the center of the structures.

Near each structure were located isolated postmolds and other features such as pits, a surface fired area, stains, a sheet midden, burials, and earth ovens. A variety of pit types (primary refuse, general, unknown, and bone) was defined, determined on the basis of the quantities and types of materials recovered from the pit. Most pits were circular to oval in plan, represented basins with sloping to vertical pit walls, and averaged .94 m in length by .77 m in width (excluding the largest, most artifactually-rich trash pit that measured 5.20 by 2.60 m). The surface fired area was expressed as a thin amorphous concentration of red burned soil. Stains were thin amorphous concentrations of darker soil with some charcoal flecking that may be the bases of shallower pit features impacted by plowing. These feature types produced very few artifacts. One thicker amorphous stain which produced more artifacts may represent the very base of a sheet midden. Burial pits, when discernable, were oval in shape, with an average length of 1.44 m and an average width of .72 m.

Earth ovens were deep circular pits (approximately 1.0 m in diameter) that exhibited evidence of intensive heating of walls and floors. A layer of wood charcoal and charred logs (primarily hickory and white oak) was present at the base of each oven, below a layer of flat burned limestone rocks. Earth ovens were not associated with all structures, but each site segment contained an example of this feature type, as well as a few isolated pits and burials.

DISCUSSION

Based on the results of material culture analysis, radiocarbon dating, and the examination of the spatial configuration of structures, features, and burials at the Capitol View Site, the chronological position of the site occupation can be identified, the length of this occupation can be postulated, community population size can be estimated, and community plan can be identified. Each of these issues will be addressed briefly in this section.

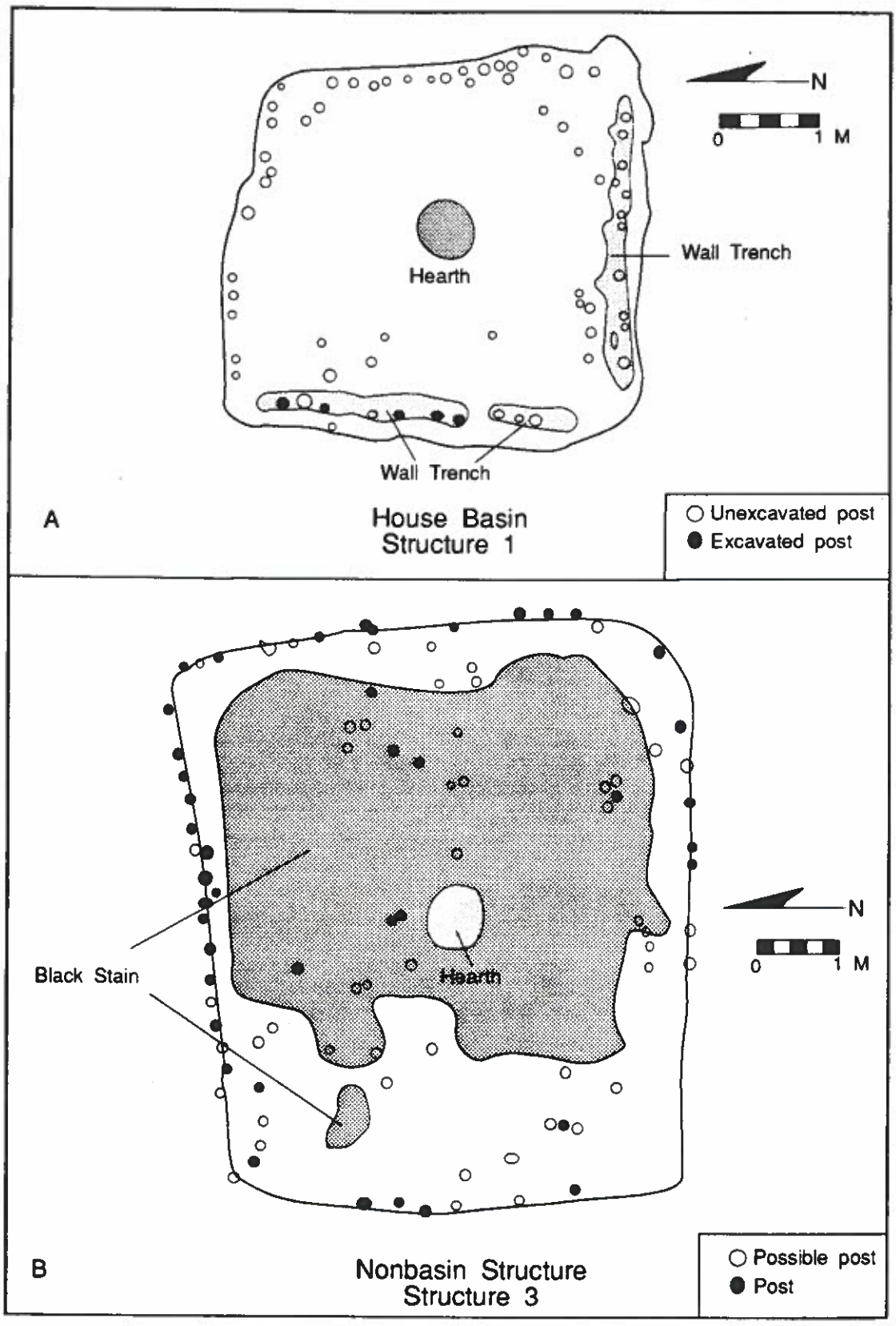


Figure 6. Examples of structure types: a, house basin; b, nonhouse basin.

CHRONOLOGICAL POSITION

The radiocarbon dates and characteristics of the ceramic and lithic assemblages from Capitol View are mutually supportive. It is clear from this evidence that the Capitol View Site is a single component site, occupied during the early decades of the Madisonville horizon, sometime during the early 1400s. Taken together, these data also show that the Capitol View Site occupation postdates that of the nearby Carpenter Farm Site (Pollack and Hockensmith, this volume) by about 50 years.

LENGTH OF OCCUPATION

A very short period of occupancy, perhaps less than ten years, can be suggested for the Fort Ancient occupation of the Capitol View Site. This statement can be supported with information from a number of data sources. Substantial midden deposits are absent at the site, and surface artifact density documented during the controlled surface collection was low to moderate.

A perspective on the relative artifact density of the Capitol View Site can be gained when its density is compared to those of other investigated Fort Ancient sites. For example, limited investigation of Site 15Hr22 of the Florence Site Complex (Sharp and Pollack, this volume) generated three times as many analyzable sherds from subplowzone features as did the excavation of the entire Capitol View Site.

Other, less quantifiable characteristics also can be cited. Relatively minor variation was documented for the ceramic and lithic assemblages. No evidence of house rebuilding or feature superposition was documented at the site.

COMMUNITY POPULATION SIZE

The population size of the Capitol View community can be estimated by applying floor area/occupant ratios to the structure data. Despite the difficulties that have been identified when such ratios are applied to archaeological data (cf. Casselberry 1974; Hassen 1978:60), an attempt to estimate population size in this manner using a number of formulae does provide a general, "ballpark" figure upon which to base an estimate of a community's population.

One limitation removed from the application of these formulae to the Capitol View data is that the number of total structures does not have to be estimated. For Capitol View, the total site area was examined and all preserved structures were examined. For this analysis, it is assumed that the eight structures were occupied simultaneously.

Three formulae were used to estimate the Capitol View population (Table 2): Cook (1972), Casselberry (1974), and Brose et al. (1979). Based on ethnographic studies of floor space use by native groups in California, Cook and Heizer (1968) suggested that less floor space is required per individual than Naroll found for his study of 18 societies worldwide, in which he stated that each individual required 10 m^2 of floor space (Naroll 1962). Cook (1972:16) allowed

for a higher density of individuals within each house. He estimated that the first six individuals occupied 13.5 m^2 of floor space and each additional individual required 9 m^2. Casselberry's (1974:119) formula, which was developed for multifamily dwellings and based on a study of eight New World cultures, estimates the population of a dwelling as "one-sixth the floor area of the dwelling as measured in square meters."

Table 2. Site Population Estimates

	Size			Population Estimates				
	Length	Width	m^2	Cook[1]	Casselberry[2]	Brose[3] Min	Brose[3] Mean	Brose[3] Max
Structure 1	4.35	4.25	18.48	6	3	4	5	7
Structure 2	4.90	4.15	20.33	6	3	4	6	7
Structure 3	6.12	7.25	44.37	9	7	9	13	16
Structure 4	*	*	*	6	3	5	6	7
Structure 5	6.56	6.00	39.36	8	7	8	12	14
Structure 6	5.10	3.90	19.89	6	3	4	6	7
Structure 7	4.20	3.63	15.25	6	3	3	5	5
Structure 8	3.10	4.66	14.45	6	2	3	4	5
Total				53	31	40	57	68

* Limits of structure could not be confidently defined. Population estimate for this structure represents the most commonly occurring number of individuals per structure as determined by each formula.

Note: Numbers of individuals were rounded off in the assumption that portions of individuals did not inhabit the site.

[1] Cook (1972): 2.25 m^2 for first six people and 9 m^2 for each additional person
[2] Casselberry (1974): one sixth floor area of structure
[3] Brose et al. (1979): 2.8 to 5.1 m^2 with a mean of 3.4 m^2

A figure that has been used to calculate population from floor space in the middle Ohio Valley (Brose et al. 1979:161-166; Brose 1982:15-16; Turnbow et al. 1983:596-598; Turnbow and Sharp 1988:270-271) is based on Algonquian data. These data suggest between 2.6 and 3.2 m^2 of floor space per occupant in the northern areas and between 2.8 and 5.1 m^2 in the southern areas. The mean is 3.4 m^2 per occupant (Brose et al. 1979:165). The southern areas measurements were used in this analysis.

These three formulae provide a range for the total number of inhabitants per structure (from a minimum of three to a maximum of seven for the smaller structures and a minimum of 7 to a maximum of 16 for the two larger structures), as well as the total number of inhabitants

at the site (a minimum of 31 to a maximum of 68). Brose et al.'s total (using mean floor area) and Cook's total are comparable (57 versus 53). Likewise, Brose et al.'s total (using minimum floor area) and Casselberry's total are comparable (39 versus 32). The similarity of these estimates suggests that the application of these formulae to estimate population size was appropriate in this case. From the results of this analysis, it appears safe to suggest that from 30 to 70 people inhabited the Capitol View Site during the early decades of the A.D. 1400s.

COMMUNITY PLAN

Organized into a loosely-formed semicircle, the Capitol View Site consists mainly of a series of habitation locales represented by structure areas containing houses, trash pits, other types of pits, a surface fired area, burials, and earth ovens (Figure 5). Additionally, a few isolated trash disposal areas and burials are located in this semicircle. An area devoid of any cultural features is enclosed by the semicircle and may represent a plaza where community activities were held.

Two segments can be identified in this semicircle (Figure 5), both of which contain habitation areas and isolated activity areas. The habitation areas are interpreted as representing areas where family or household groups lived and engaged in a full range of domestic activities. Trash was disposed of near their dwellings, as were their dead. An exterior surface fired area documents that outside cooking or some other type of heat-producing activities were conducted outdoors adjacent to the structures. Earth ovens also represent features associated with outside heating of foods or other items. They are not associated with each structure area but instead are associated with each site segment. This suggests that these features may have served a communal function for several families or households. The same can be said for the isolated trash disposal areas, given their location within the community.

While it appears that the same range of domestic activities was carried out in these segments, domestic space appears to have been organized in somewhat different ways within these two segments. These two different ways of organizing domestic space and the association of an earth oven with each site segment rather than each structure area within a segment may reflect the expression of some sort of social duality within this community.

In the southern segment, the largest structures at the site, both represented by stains encircled by posts, are paired with smaller (indeed the smallest) structures (one is a house basin and one is not). On the western side of the southern segment, two dwellings are located immediately adjacent to one another, encircled by trash pits, a surface fired area, and a burial. Approximately 24 m separate this area from the two dwellings on the eastern side of this segment. Here, several trash pits and a burial are located within a common area created by the relative placement of the two structures. The earth oven for this segment of the community is located closer to the western pair of structures. A trash pit is located far to the west of the western pair, and two burials are located to the interior of the semicircle, between the two structure pairs.

Four structure areas and an isolated trash disposal area comprise the major elements of the northern segment. In this part of the site, all but one of the structures had been set in a basin. As in the southern segment, burials and trash disposal areas tend to be associated with structure areas; and burials tend to be located toward the interior of the semicircle, though some are placed further from the structures than others. Unlike the southern segment, however, patterns of paired structures with associated features are not present in the northern segment. Structures are set apart

from one another, and trash disposal features and burials surround them. A trash disposal area is associated with this segment of the community, spatially segregated from but generally situated between the southernmost structure area and the nearest structure to the north. The earth oven in this segment of the community is located near the southernmost structure area.

Research at middle Fort Ancient circular villages, such as the Florence Site Complex (Sharp and Pollack this volume) in central Kentucky and the SunWatch Site [Heilman et al. 1990; Nass 1989] in southwestern Ohio, has demonstrated that these communities consisted of concentric refuse disposal, habitation, and mortuary zones around a central plaza. Such concentric rings cannot be identified clearly for Capitol View: the pattern of burial location alludes to the existence of a mortuary zone surrounding a plaza or open area, and the placement of habitation areas indicates the existence of a habitation zone, but there is no evidence for a concentric trash disposal zone either in front of or in back of the habitation zone.

The absence of easily identifiable activity zones at Capitol View, may be a product of its brief existence (less than 10 years). The spatial arrangement of the eight houses and other features suggests that gaps had been intentionally left between the six structure areas. Had this community continued to grow, the gaps could have been filled in by the arrival of new households, with the semicircle completed to form a circle. As this occurred, the use of space within the community may have become more formalized, and eventually, it may have been organized in a manner similar to the Florence Site Complex sites or SunWatch.

Alternatively, the lack of concentric zones at Capitol View may represent the beginning of a trend toward settlement plans consisting of clusters of houses within larger communities. The variation in the configuration of domestic space at Capitol View may indicate the beginning of a less structured use of space than has been documented for circular villages. Clusters of houses within larger communities have been suggested for the Madisonville horizon (Henderson et al. 1992:269, 273-275) and are reflected in the community organization of later Madisonville horizon sites in central Kentucky such as Newfield and Larkin (Henderson et al. 1986). In either the case the community appears to have been abandoned well before it could attract additional households.

The Capitol View Site also provides important information on the growth and development of Fort Ancient communities. All too often researchers have viewed the establishment and abandonment of Fort Ancient communities as representing the actions of a community rather than those of individual or groups of households. The organization of the Capitol View Site does not support such an assumption. Rather it suggests that Fort Ancient communities were established by a small number of households and that the success of these communities may have been dependant on their ability to attract other households.

SUMMARY

Research at the Capitol View Site documented the remains of an early Madisonville horizon community that was probably occupied for less than ten years by no more than 70 people who farmed and hunted the surrounding interior ridges and collected food and raw materials from the nearby river and streams. Capitol View has provided archaeologists with a rare opportunity to completely view a prehistoric community during a short "slice of time," thereby greatly adding to our understanding of late Fort Ancient material culture and community patterning. In the future, other sites in central Kentucky exhibiting low artifact densities and lacking extensive

midden deposits should be given the same careful consideration that resulted in the investigation of the Capitol View Site.

ACKNOWLEDGEMENTS

The author would like to thank her Capitol View Site colleagues for providing synopses of their respective analyses: Christopher A. Pool, Department of Anthropology, Ithaca Collage, Ithaca, New York, for the chipped stone data; Jack Rossen, Soil Conservation Service, Middlebury, Vermont, for the botanical data; Teresa W. Tune, Kentucky Department for Surface Mining, Reclamation, and Enforcement, Frankfort, for the faunal data; and Valerie A. Haskins, Kentucky Heritage Council, Frankfort, and JoAnn Wilson, Department of Anthropology, University of Kentucky, Lexington, for the human remains data. S.M. Call of the Kentucky Division of Water, Frankfort, identified the freshwater mussel fauna. Julie A. O'Shaughnessy, Program for Cultural Resource Assessment, University of Kentucky, Lexington, and Mary Lucas Powell, Museum of Anthropology, University of Kentucky, Lexington, participated in the analysis of the human remains recovered during mitigation. William E. Sharp aided in the analysis of the ground, pecked, and battered stone tools, served as field director for the Capitol View Site testing, and served as crew chief for the mitigation. His advice and support are reflected in this paper. University of Kentucky personnel were assisted during the mitigation activities by a total of 27 volunteers from the William S. Webb Archaeological Society, the University of Kentucky Department of Anthropology, the Program for Cultural Resource Assessment, and various friends. Personnel from the Kentucky Heritage Council, Kentucky Department of Transportation, Kentucky Department for Surface Mining, Reclamation, and Enforcement, and the Program for Cultural Resource Assessment volunteered during site monitoring activities.

ARCHAEOLOGICAL CONTEXTS AND ASSOCIATIONS: THE LEXTRAN ARCHAEOBOTANICAL COLLECTION

By
Jack Rossen
Vermont Division For Historic Preservation
Montpelier, Vermont
and
Middlebury College
Middlebury, Vermont

ABSTRACT

The nineteenth century archaeobotanical collection from the Lextran Site (15Fa191) in downtown Lexington, Kentucky, was recovered from well-dated contexts. Analysis of this collection documented general trends in urban subsistence patterns from ca. 1800 to ca. 1920. The study demonstrates that even small plant remains often maintain strong contextual integrity despite repeated site disturbance.

INTRODUCTION

This paper was written to illustrate the potential usefulness of historical remains for evaluating methodological issues of interest to all archaeologists. An important trend in archaeology is to emphasize the effects that site formation processes and natural and cultural disturbances have on the archaeological record (Nash and Petraglia 1987; Schiffer 1987). Although the substantive means for understanding and estimating site formation and deformation are poorly developed in archaeology, archaeological data are increasingly considered to be unrepresentative, skewed, or disturbed by a variety of formation and deformation processes. As a result, local culture histories constructed using archaeological data have been questioned. Due to the vagaries of site formation and deformation processes, some researchers are placing less emphasis on archaeological contexts and associations, and, on a larger scale, site distributional patterns.

An underlying assumption of this trend is that how and where plants are processed and how food is prepared as well as site preservation conditions and the spatial dispersion of artifacts within a site can skew the archaeological record. For example, although domesticated beans are abundant in Ohio Valley Fort Ancient sites and are rare or absent in the central Mississippi Valley to the west (Riley et al. 1990; Rossen and Edging 1987), many archaeologists attribute this difference to beans either having been processed, discarded, or preserved differently in the two regions (Adair 1988:80; for a general discussion see Wagner 1987:25-27). In doing so, they argue that this pattern does not represent cultural differences in food preferences. At the same time, archaeologists are placing more emphasis on biochemical techniques to evaluate archaeological data. For example, C3/C4 stable carbon isotope analysis is considered a better means of determining the amount of corn in a prehistoric diet than the relative amount of corn macroremains found on a site (Broida 1983, 1984; Conard 1983; Lynott et al. 1986; Tieszin

1978), even though some scholars have raised serious questions about the accuracy of the isotope technique (Flannery 1991; Schoeninger and Schurr 1990; Sillen et al. 1989).

Another example of the trend is the increasing reliance on new technologies to question the existence of Woodland period corn in the eastern United States (Ford 1985, 1987). With the advent of Accelerator Mass Spectrometer (AMS) dating of very small specimens, a new technique stands as judge and jury of the validity of archaeological evidence. Most archaeologists, including this author, do not understand the intricacies of these techniques nearly as well as they think they understand the nature of archaeological contexts and associations. Yet new techniques, which are often accepted uncritically because little is known about them, are often used to evaluate archaeological evidence, even when the data produced by these techniques conflict with contextual data (Rossen 1991:149-152, 517-529). This concern was recently raised by Flannery (1991).

Doubts about the integrity of the archaeological record are especially strong in the subdiscipline of archaeobotany, where the relatively small size of specimens often has led to assumptions that their contextual integrity must be relatively poor. Johannessen (1989) has specifically addressed this issue from the perspective of excavations undertaken in the American Bottom, Illinois. She concluded that the general integrity of archaeobotanical materials was high, based on the temporal progressions of archaeobotanical remains that were produced by multisite data seriations.

The advent of new technologies, including various aspects of bone chemistry, DNA sequencing, chromosome analysis, and paper chromatography, is beginning to affect evaluations of archaeological data. These techniques all represent potentially important advances for the discipline, and this paper does not advocate that archaeologists refrain from using them. Instead, it suggests that in evaluating the data derived from these techniques, researchers should not dismiss interpretations obtained through an examination of the contextual associations and distributions of artifacts within a site, especially when these results conflict with those obtained using new technologies. When archaeologists have examined the contextual associations of materials at a site, they have often found that these associations were better than originally thought. This suggests that perhaps data produced by examining contextual associations and site distributions should not always be abandoned in favor of those produced by new technologies.

One of the most effective ways of examining biases in the archaeological record is through the careful study of historic sites. In addition to contributing to historical knowledge, the tight temporal control possible in historical archaeology provides a framework for examining and understanding the nature of the archaeological record. Botanical remains from historic sites provide particularly good test cases because very small remains such as seeds are considered to be more prone to contextual displacement than larger artifacts.

LEXTRAN SITE ARCHAEOBOTANICAL PROFILE

The Lextran Site (15Fa191) was part of an urban residential neighborhood for much of its history (ca. 1800 to ca 1920). During its most recent period of use and immediately prior to excavation, much of the site had been covered with fill and asphalt, and the site was the location of a used car lot. Within the area examined, several house foundations, cisterns, basements, storage areas, and privies were identified and excavated under the supervision of Stephen and Kim McBride of the University of Kentucky's Program for Cultural Resource Assessment (McBride and McBride n.d.). The density and types of features (Figures 1-3) associated with these lots

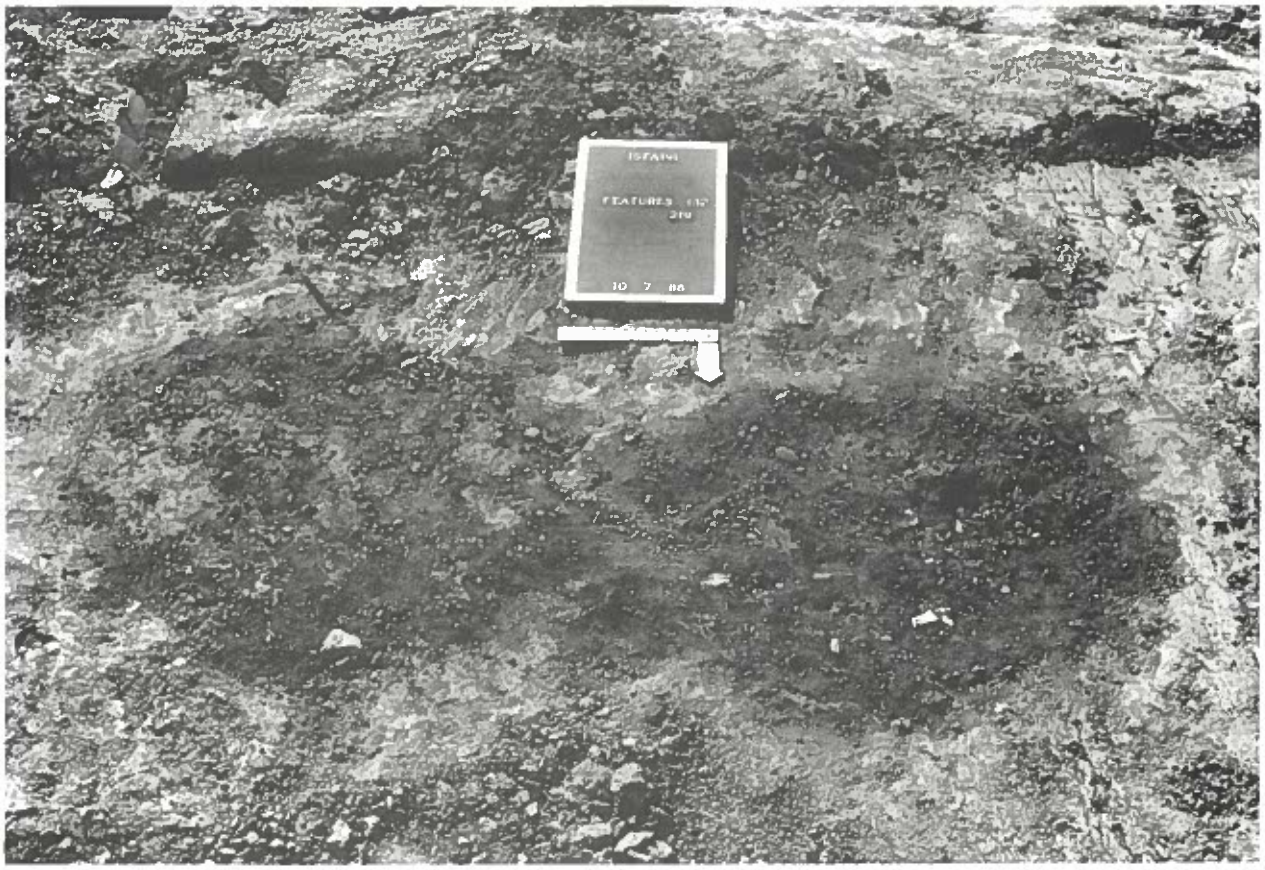


Figure 1. Two hole privy.

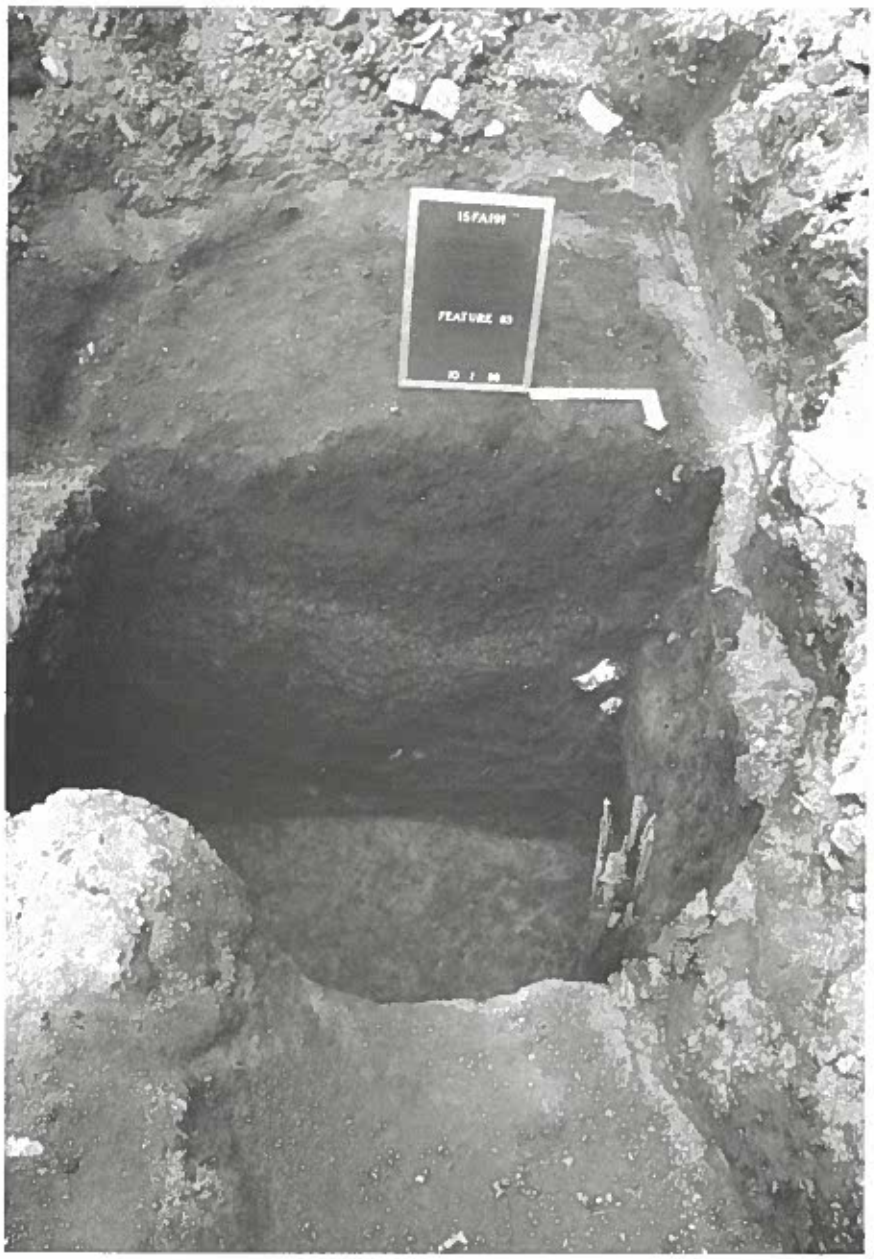


Figure 2. Profile of privy.

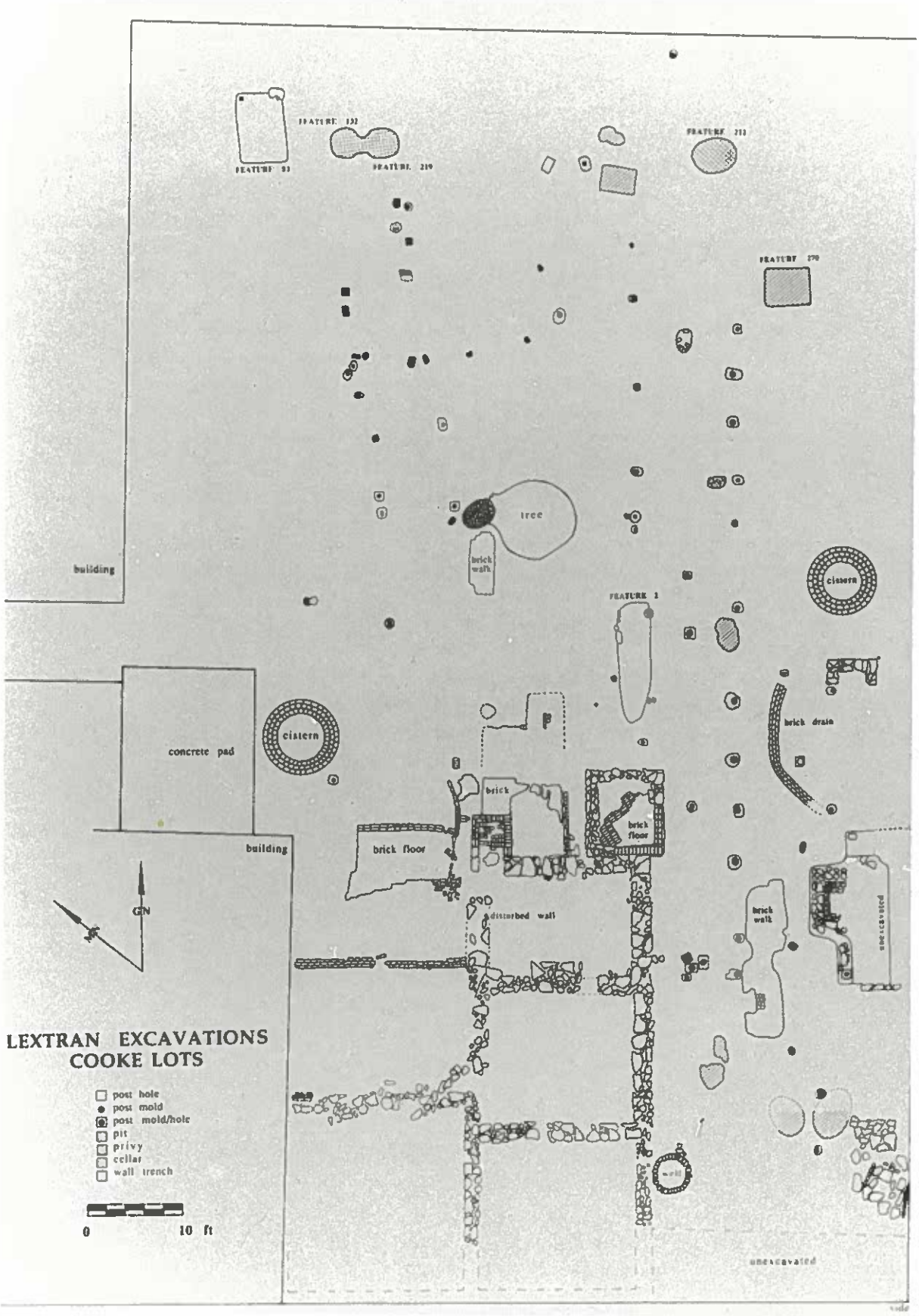


Figure 3. Map of a portion of the Lextran Site.

suggest that through time the activities conducted at the lots changed, with subsequent occupations disturbing earlier ones to some degree.

Despite the Lextran Site's long history of occupation, several features maintained their contextual integrity and thus were excavated as units. A total of 38 flotation samples (885 l) taken from features (n=26) and general midden deposits (n=12) was analyzed. The botanical remains from these samples were associated with debris from domestic activities, particularly cooking, storage, and human waste disposal. Table 1 depicts the temporal associations of the analyzed samples based on associated historic artifacts.

More than 12,000 seeds were recovered from the analyzed samples. Because of the high frequencies of seeds present in individual samples, a six-level grade frequency system was adopted (Table 2). This system facilitated the rapid analysis of a larger number of samples, which allowed more contexts to be sampled. Indeed, much analytical time was spent sorting through large numbers of one seed type searching for less common seeds.

The recovered remains are primarily seeds of edible fruits (Table 3). Nine species were identified. Blackberry (Rubus spp.), ground cherry (Physalis spp.) and grape (Vitis spp.) are the most abundant specimens, both in terms of frequency and ubiquity within the collection. Several thousand blackberry seeds are distributed in 44.9 percent of the flotation samples. Ground cherry is present in far lower frequencies but is widely distributed, having been found in 26.5 percent of the flotation samples. Although grape is the second most abundant species in frequency after blackberry, it was found in only 12.2 percent of the flotation samples. Of the remaining five species, tomato (Lycopersicon spp.) and blueberry (Vaccinium spp.) each were recovered from 4.1 percent of the samples and mulberry (Morus spp.), cherry (Prunus spp.) peach (Prunus persica), and sunflower (Helianthus spp.) were found in 2.0 percent of the samples. Very few inedible seeds were recovered.

Of the identified species, two (blackberry and blueberry) are perennial shrubs, one (grape) is a vine plant, two (tomato and sunflower) are annual herbaceous plants, and three (mulberry, cherry, and peach) are trees. Different species of ground cherry may be either annual or perennial plants (Small 1903:981; Straughsbaugh and Core 1978:834). These plants are all garden or backyard fruit-bearing species, although blackberry could have been collected wild along roadsides (Markham 1936; Riotte 1974; Shoemaker 1975; Straughsbaugh and Core 1978:500). All are present in Kentucky today, although blueberry is more scarce than in the past (Eck 1966).

Ground cherry, also called "husk tomato" or "Chinese lantern plant," is a member of the family Solanaceae and is related to tomatoes and the nightshades. It is only rarely cultivated today, usually as an ornamental plant, but it is considered delicious by most popular authors on wild plants (Cox 1985:270; Heiser 1987:108-9).

Virtually all recovered seeds have a dark brown cast, suggesting they were baked into pies or cobblers. A search of historic cookbooks at the University of Kentucky M.I. King Library Division of Special Collections and Archives revealed many fruit pie and cobbler recipes. Of these, many recommend including seeds and pits to enhance flavor. Ground cherries are not discussed in these books. This may indicate that ground cherries were used as a substitute for other fruits by lower and middle class cooks, as historic cookbooks often reflect the cooking habits of the upper class. An alternative hypothesis is that the recovered seeds have a brown cast because they passed through an intestinal tract. These are obviously not mutually exclusive hypotheses.

Table 1. Temporal Distribution of Flotation Samples by Frequency and Literage.

Time Period	Frequency	Percent	Liters	Percent
ca. 1800-1840	13	34.2	343.9	38.9
ca. 1840-1870	10	26.3	282.6	31.9
ca. 1870-1900	9	23.7	206.1	23.3
ca. post-1900	6	15.8	52.5	5.9
Totals	38	100.0	885.1	100.0

Table 2. Graded Frequency System Used in Analysis.

Number of Specimens	Grade Number
1-10	1
10-49	2
50-99	3
100-499	4
500-1000	5
>1000	6

Table 3. Recovered Species and Ubiquities.

Species	Ubiquity	
	Number	Percent
Blackberry (Rubus spp.)	22	44.9
Ground cherry (Physalis spp.)	13	26.5
Grape (Vitis spp.)	6	12.2
Tomato (Lycopersicon spp.)	2	4.1
Blueberry (Vaccinium spp.)	2	4.1
Mulberry (Morus spp.)	1	2.0
Cherry (Prunus spp.)	1	2.0
Peach (Prunus persica)	1	2.0
Sunflower (Helianthus spp.)	1	2.0
Total	49	99.8

When the samples are characterized and examined temporally, based on ceramics, glass and other diagnostic artifacts collected from features and general midden deposits, certain species are primarily associated with early to middle nineteenth century contexts while others are associated with late nineteenth and early twentieth century contexts (Table 4). Blackberry is found in some pre-1840 samples, but the highest frequencies are all associated with late nineteenth and early twentieth century samples. Grape is exclusively found in post-1850 samples. Conversely, ground cherry is primarily associated with earlier, pre-1850 samples, particularly those associated with the home of Betty Young, a free black (McBride and McBride n.d.).

Tomato seeds are found only in one late nineteenth and one early twentieth century sample. A myth that tomatoes were poisonous persisted in America until the middle of the nineteenth century, although Italian and French chefs had cooked with them since early in the eighteenth century (American Horticultural Society 1982:17; Heiser 1987:53). Paradoxically, the poison rumor reportedly was begun by the Italian naturalist Pietro Andrea Mattioli, who correctly noted the relationship of tomatoes to the poisonous and hallucinogenic nightshades in the family Solanaceae (Rupp 1987:13; Shultes 1979). A popular legend states that 2,000 people gathered to watch Colonel Robert G. Johnson eat a basket of tomatoes in Salem, New Jersey on September 26, 1820, as a brass band played funeral dirges (Rupp 1987:15-16). This event is thought to have begun the slow process of incorporation of tomatoes into the American diet, although tomatoes remained rare in gardens until quite late in the nineteenth century. This low-level experimentation with the tomato at that time is reflected by its presence in the later nineteenth century samples of the Lextran collection. By the 1980s, it was estimated that tomatoes were grown in 33 million, or 93 percent, of all gardens in the United States (American Horticultural Society 1982:10).

DISCUSSION

From the perspective of historical archaeology, the Lextran archaeobotanical collection illustrates how dietary information may be compiled through the use of water flotation. First, these data suggest that fruits and berries, especially consumed in baked goods, constituted a significant portion of the diet, based on the predominance of these remains in the flotation collection and the large number of recipes in historic cookbooks that call for the use of these plants. Fruit and berry consumption probably exceeded the 10 percent average caloric intake of today's American diet (Rupp 1987:2). Second, the furrows and wooden border markers of at least one garden area were exposed during the excavations (McBride and McBride n.d.), and thus the recovered botanical remains may be considered to at least partially represent plants grown in city gardens, although the site's inhabitants also may have purchased farm produce. In this sense, the analysis succeeded in documenting some elements of nineteenth century gardens. Historic gardens included plants, such as ground cherry, that are very uncommon in today's gardens and lacked other plants, such as tomato, that are considered basic and essential today.

The main theme of this brief paper, however, is not to present this historical information but to deal with the general issue of archaeological contexts and associations. It appears that, although the Lextran Site was occupied for over 120 years and that during this period the residential lots associated with this site were used for a variety of activities, the most fragile remains and those most subject to post-depositional disturbance (seeds) have managed to maintain much of their contextual integrity. An examination of the seriation of seeds by time period (based on associated artifacts) identified trends that make sense in terms of what is known historically about the people who occupied the site during the nineteenth and early twentieth centuries.

Table 4. Temporal Ordering of Flotation Data by Unit or Feature.

Provenience	Blackberry	Ground Cherry	Grape	Tomato	Time Period
Unit 9		1			1800-1835
Unit 17		2			1800-1835
Unit 18	4				1800-1835
Unit 24	1	2			1800-1835
Feature 73		4			1820-1840
Feature 288		2			1825-1840
Unit 24	1	3			1825-1835
Unit 17	1				1830-1865
Unit 20	1				1830-1865
Feature 73	1	3			1838-1850
Feature 73		2			1845-1855
Feature 80	1				1855-1870
Feature 91	4		3		1855-1870
Feature 189	5				1870-1890
Feature 192	4				1870-1885
Feature 212	6		1		1873-1885
Feature 315	4	1			1880-1900
Feature 348	6	2	4	4	1885-1900
Feature 259	1				1885-1900
Feature 33	2				1891-1910
Feature 100	6	2	4		1891-1910
Feature 83	6		4	4	1906-1920
Feature 314	1				1920-1930
(See Table 2 for graded frequency system used in this table.)					

Ground cherry was found in association with the early nineteenth century occupation of the site by a free black woman, and plants such as grape and tomato were associated exclusively with late nineteenth and early twentieth century features. The contextual integrity of small plant remains in a setting where substantial displacement was expected to have occurred suggests that, in many cases, the strength of archaeological contexts may be underestimated if too much emphasis is placed on site formation and disturbance processes and not enough importance is attached to the distributions and associations of archaeological remains.

Examination of the Lextran archaeobotanical collection supports the archaeologist's traditional faith in the fundamental tools of stratigraphy, seriation, and, on a broader level, site distributional patterns. Perhaps archaeology's growing concern with post-depositional disturbance and increased dependence on special studies and techniques should be balanced with a realization that, in many cases, our basic data are indeed (in Johannessen's [1989] words) "better than we think."

ACKNOWLEDGEMENTS

The author wishes to thank Steve and Kim McBride, who directed the excavation of the Lextran Site. Their interest in the flotation recovery of botanical remains from historic sites made this paper possible. Also, thanks go to Margaret Scarry, who helped make the identification of the mulberry specimens.

REFERENCES

Adair, Mary J.
1988 Prehistoric Agriculture in the Central Plains. Publications in Anthropology No. 16. University of Kansas, Lawrence.

Adovasio, J.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.

Ahler, Steven R.
1984 Archaic Settlement Strategies in the Modoc Locality. Ph.D. dissertation, University Microfilms International, Ann Arbor.

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

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

Allman, J.C.
1957 A New Late Woodland Culture for Ohio, the Lichliter Village Site near Dayton. In Ohio Archaeologist 7(2):59-68. Columbus, Ohio.

American Horticultural Society
1982 Tomatoes. American Horticultural Society, Mount Vernon, Virginia.

Anderson, David and Joseph Schuldenrein
1985 Chapter 15. In Prehistoric Human Ecology Along the Upper Savannah River, assembled by David Anderson and Joseph Schuldenrein, Vol. II, pp. 695-722.

Asch, David L. and Nancy B. Asch
1975 Plant Remains from the Zimmerman Site - Grid A: A Quantitative Perspective. In The Zimmerman Site: Further Excavations at the Grand Village of Kaskaskia, edited by Margaret I. Brown, Appendix V, Report of Investigations No. 23. Illinois State Museum, Springfield.

Atkinson, James R.
1974 Appendix A. In Archaeological Survey and Test Excavations in the Upper-Central Tombigbee River Valley: Aliceville-Columbus Lock and Dam and Impoundment Areas, Alabama and Mississippi, by Marc Rucker. Ms. on file, Department of Anthropology, Mississippi State University, Starkville.

Banks, William H., Jr.
1953 Ethnobotany of the Cherokee Indians. University of Tennessee Press, Knoxville.

Baskin, Jerry M., Carol C. Baskin, and Ronald L. Jones
1987 The Vegetation and Flora of Kentucky. Kentucky Native Plant Society, Department of Biological Sciences, Eastern Kentucky University, Richmond.

Benchely, Elizabeth
1990 Letter, April 17, 1990, personal communication with Pamela Schenian, Murray State University, Murray, Kentucky.

Bentz, Charles, Jr.
1988 The Late Archaic Occupation of the Bailey Site (40Gl26), Giles County, Tennessee. Tennessee Anthropologist 13(5):1-19.

Blasingham, Emily
1953 Temporal and Spatial Distribution of the Yankeetown Cultural Manifestation. Unpublished Master's thesis, Department of Anthropology, Indiana University, Bloomington.

Boisvert, Richard A.
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.

Bowen, William Rowe
1977 A Reevaluation of Late Archaic Subsistence and Settlement Patterns in the Western Tennessee Valley. Tennessee Anthropologist 2(2):101-120.

Brain, Jeffrey P.
1979 Tunica Treasure. Peabody Museum of Archaeology and Ethnology, Vol. 71. Harvard University, Cambridge.

Breitburg, Emanuel
1988 Faunal Remains. In Muir: An Early Fort Ancient Site in the Inner Bluegrass, edited by Christopher A. Turnbow and William E. Sharp, pp. 215-241. Archaeological Report No. 165. Program for Cultural Resource Assessment, University of Kentucky, Lexington.

1992 Vertebrate Faunal Remains. In Fort Ancient Cultural Dynamics in the Middle Ohio Valley, edited by A. Gwynn Henderson, pp. 209-242. Monographs in World Archaeology No. 8. Prehistory Press, Madison.

Broida, Mary O'Neal
1983 Maize in Kentucky Fort Ancient Diets: An Analysis of Carbon Isotope Ratios in Human Bone. Unpublished Master's thesis, Department of Anthropology, University of Kentucky, Lexington.

1984 An Estimate of the Percents of Maize in the Diets of Two Kentucky Fort Ancient Villages. In Late Prehistoric Research in Kentucky, edited by David Pollack, Charles Hockensmith, and Thomas Sanders, pp. 68-82. Kentucky Heritage Council, Frankfort.

Brooks, Pamela B., Robert L. Brooks, and Michael B. Collins
1979 The Bluestone Archaeological Project: Excavations at the 15Ro35-36 Site Complex. Special Report No. 1. Archaeological Services, Inc., Lexington.

Brose, David S.
1982 The Archaeological Investigations of a Fort Ancient Community Near Ohio Brush Creek, Adams County, Ohio. Kirtlandia No. 34. Cleveland Museum of Natural History, Cleveland, Ohio.

Brose, David S., Donald R. Bier, Jr., Judith Astramecki, Frederick Chapman, Richard Ford, Robert Mensforth, David Morse, and Paul Storch
1979 Prehistoric Occupation of the Killen Electric Generating Station Near Wrightsville, Adams County, Ohio. 2 vols. Submitted to the USDI Interagency Archaeological Services, Contract No. 5880-7-0070. Copies available through NTIS.

Broster, John
1973 Test Excavations at the Stone Site (40Sw23): The Land Between the Lakes. Ms. on file, Division of Archaeology, Department of Conservation, Nashville.

Broyles, Betty J.
1971 Second Preliminary Report: The Saint Albans Site, Kanawha County, West Virginia. Report of Archaeological Investigations No. 3. West Virginia Geological and Economic Survey, Morgantown.

Bryan, Hal D.
1991 An Investigation of Molluscan Fauna from 15Br118. In Phase II Archaeological Testing of the Kay Shelter (15Br118) and Crank Shelter (15Br119), Breathitt County, Kentucky by Betty J. McGraw, Kurt H. Fiegel, and James Lee Hixon, pp. 72-73. Report on file, Kentucky Heritage Council, Frankfort.

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

Bush David R. and Judith E. Thomas
1986 Phase II Assessment Testing of Enoch Fork Shelter (15Pe50), Redbird Ranger District, Daniel Boone National Forest, Kentucky. David R. Bush, Inc., Cleveland.

Butler, Brian
1991 Letter, February 14, 1991, personal communication with Ken Carstens, Murray State University, Murray, Kentucky.

Call, S.M.
1992 Molluscan Faunal Remains. In Fort Ancient Cultural Dynamics in the Middle Ohio Valley, edited by A. Gwynn Henderson, pp. 243-252. Monographs in World Archaeology No. 8. Prehistory Press, Madison.

Callahan, E.
1979 The Basics of Biface Knapping in the Eastern Fluted Point Tradition: A Manual for Flintknappers and Lithic Analysts. Archaeology of Eastern North America 7(1).

Campbell, Julian J.N.
1985 The Land of Cane and Clover: Presettlement Vegetation in the So-called Bluegrass Region of Kentucky. Ms. on file, School of Biological Science, University of Kentucky, Lexington.

Carr, Christopher and Derek W.G. Sears
1985 Toward an Analysis of the Exchange of Meteoritic Iron in the Middle Woodland. Southeastern Archaeology 4(2):79-92.

Carstens, Kenneth C.
1979 Reinstituting the Archaeological Program at Murray State University. Paper presented at the Annual Meeting of the Kentucky Archaeological Association, Natural Bridge, Kentucky.

1991 A Unique Clay Pot from the William P. McHugh Collection. Ms. submitted to Southeastern Archaeology.

Casselberry, Samuel
1974 Further Refinement of Formulae for Determining Population from Floor Area. World Archaeology 6(1):117-122.

Cassidy, Claire M.
1972 A Comparison of Nutrition and Health in Agricultural and Preagricultural 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 Populations. In Nutritional Anthropology: Contemporary Approaches to Diet and Culture, edited by N. Jerome, R. Kandel, and G. Pelto, pp. 117-146. Redgrave, Pleasantville, New York.

Chapman, Jefferson
1981 The Bacon Bend and Iddins Sites: The Late Archaic Period in the Lower Little Tennessee River Valley. Report of Investigations No. 31, Department of Anthropology, University of Tennessee, Knoxville and Publications in Anthropology No. 25, Tennessee Valley Authority, Norris.

Claassen, Cheryl
1985 An Analytical Study of Shellfish from the DeWeese Mound, Kentucky. In The Archaeology of the Middle Green River, edited by William Marquardt and Patty Jo Watson. Kent State University Press, Kent, Ohio (in press).

1986 Temporal Patterns in Marine Shellfish Species Use Along the Atlantic Coast in the Southeastern United States. Southeastern Archaeology 5:120-137.

1988 New Hypotheses for the Demise of the Shell Mound Archaic. Paper presented at the 46th Annual Meeting of the Southeastern Archaeological Conference, Tampa.

1991a New Hypotheses for the Demise of the Shell Mound Archaic. In The Archaic Period in the Mid-South, edited by Charles H. McNutt. Archaeological Report No. 24, Mississippi Department of Archives and History and Occasional Papers No. 16, Anthropological Research Center, Memphis State University, Memphis.

1991b Gender, Shellfishing, and the Shell Mound Archaic. In Engendering Archaeology: Women and Production in Prehistory, edited by Joan Gero and Meg Conkey, pp. 276-300. Basil Blackwells, London.

Clay, R. Berle
1979 A Mississippian Ceramic Sequence from Western Kentucky. Tennessee Anthropologist 4 (2):111-128.

1983 Pottery and Graveside Ritual in Kentucky Adena. Midcontinental Journal of Archaeology 8(1):109-126.

1991 Summary and Conclusions. In Excavations at the Andalex Village (15HK22) Hopkins County, Kentucky, edited by Charles M. Niquette, pp. 142-163. Contract Publication Series 91-03. Cultural Resource Analysts, Inc., Lexington.

Clay, R. Berle and Charles M. Niquette (editors)
1989 Phase III Excavations at the Niebert Site (46MS103) in the Gallipolis Locks and Dam Replacement Project, Mason County, West Virginia. Contract Publication Series 89-06. Cultural Resource Analysts, Inc., Lexington.

Coe, Michael D. and F. William Fischer
1959 Barkley Reservoir--Tennessee Portion: Archaeological Excavations 1959. Ms. on file, Department of Anthropology, University of Tennessee, Knoxville.

Cole, Faye-Cooper, Robert Bell, John Bennett, Joseph Caldwell, Norman Emerson, Richard MacNeish, Kenneth Orr, and Roger Willis
1951 Kincaid: A Prehistoric Illinois Metropolis. University of Chicago Press, Chicago.

Collins, Michael B.
1979 The Longworth-Gick Site (15Jf243). In Excavations at Four Archaic Sites in the Lower Ohio Valley, Jefferson County, Kentucky, Volume II, edited by Michael B. Collins, pp. 471-589. Department of Anthropology, University of Kentucky, Lexington.

Collins, Michael B., John T. Glover, and Careylyn Glover
1977 An Archaeological Survey and Assessment of the Proposed Newman Industrial Site, Daviess County, Kentucky. Report on file, Program for Cultural Resource Assessment, University of Kentucky, Lexington.

Conant, Roger
1975 A Field Guide to Reptiles and Amphibians: Eastern and Central North America. Houghton Mufflin, Boston.

Conard, Anthony R.
1983 A Preliminary Report on Incinerator Site Stable Carbon Isotope Ratios used in Dietary Reconstruction. Ms. on file, Department of Anthropology, University of Cincinnati, Cincinnati.

Converse, Robert N.
1973 Ohio Flint Types. The Archaeological Society of Ohio.

Cook, Thomas G.
1976 Koster, An Artifact Analysis of Two Archaic Phases in Westcentral Illinois. Prehistoric Records No. 1 and Koster Research Reports No. 3. Northwestern University Archaeological Program, Evanston, Illinois.

Cook, S.F. and R.F. Heizer
1968 Relationships Among Houses, Settlement Areas, and Population in Aboriginal California. In Settlement Archaeology, edited by K.C. Chang, pp. 79-116. National Press, Palo Alto, California.

Cook, Sherbourne
1972 Prehistoric Demography. McCaleb Module No. 16. Addison-Wesley, Reading, Massachusetts.

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

Cowan, C. Wesley, Sandra Dunavan, John P. Nass, Jr., and Susan Scott
1990 The Schomaker Site, A Middle Period Fort Ancient Town on the Great Miami River, Hamilton County, Ohio. West Virginia Archaeologist 42(1):11-35.

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.

Cox, Donald D.
1985 Common Flowering Plants of the Northeast. State University of New York Press, Albany.

Crawford, Ellis
n.d. Notes on the Rogers Site excavations and results, including field notes from 15Be33, and unfinished chapters and papers describing the Rogers sites excavations. On file at the Behringer-Crawford Museum, Covington, Kentucky.

1959 The Rogers Site and its Relationship to Adena and Hopewell. Paper presented at the 24th Annual Meeting of the Society for American Archaeology, Salt Lake City, Utah. On file at the Behringer-Crawford Museum, Covington, Kentucky.

Cridlebaugh, Patricia A.
1986 Penitentiary Branch: A Late Archaic Cumberland River Shell Midden in Middle Tennessee. Report of Investigations No. 4. Tennessee Department of Conservation, Division of Archaeology, Nashville.

Crites, Gary and Jonathan P. Kerr
1990 Botanical Remains. In Late Woodland Archaeology at the Parkline Site (46PU99), Putnam County, West Virginia, edited by Charles M. Niquette and Myra A. Hughes. Contract Publication Series 90-93. Cultural Resource Analysts, Inc., Lexington.

Dancey, William S.
1988 The Community Plan of an Early Late Woodland Village in the Middle Scioto River Valley. Midcontinental Journal of Archaeology 13(2):225-258.

Deetz, James
1977 Small Things Forgotten. Anchor Books, New York.

Dorwin, J. and J. Kellar
1967 Archaeological Salvage of the Yankeetown Site. Ms. on file, Glenn A. Black Laboratory, Indiana University, Bloomington.

Dowd, John T.
1989 The Anderson Site: Middle Archaic Adaptation in Tennessee's Central Basin. Miscellaneous Paper No. 13. Tennessee Anthropological Association, Knoxville.

Drooker, Penelope
1990 Attributes of Textiles Impressed on Pottery at the Stone Site (38Sw23), Tennessee. Ms. on file, Wickliffe Mounds Research Center, Wickliffe, Kentucky.

Dye, David H.
1980 Primary Forest Efficiency in the Western Middle Tennessee Valley. Ph.D. dissertation, University Microfilms International, Ann Arbor.

Eck, Paul (editor)
1966 Blueberry Culture. Rutgers University Press, New Brunswick, New Jersey.

Edging, Richard
1990 The Turk Site: A Mississippi Period Town in Western Kentucky-Test Excavations and Mapping Project. Kentucky Heritage Council, Frankfort.

Emerson, Thomas E.
1980 The Dyroff (11S463) and Levin (11S462) Sites: A Late Archaic Occupation in the American Bottoms. Illinois Department of Transportation, University of Illinois Press, Urbana.

Essenpreis, Patricia S.
1978 Fort Ancient Settlement. Differential Response at a Mississippian-Late Woodland Interface. In Mississippian Settlement Patterns, edited by Bruce D. Smith, pp. 143-167. Academic Press, New York.

Fassler, Heidi
1987 Guilfoil. A Middle Fort Ancient Village in Fayette County. In Current Archaeological Research in Kentucky: Volume One, edited by David Pollack, pp. 154-186. Kentucky Heritage Council, Frankfort.

Fenwick, Jason M. and Michael B. Collins
1975 Lithic Analysis in the Southeastern United States and in Texas. Paper presented at the 40th Annual Meeting of the Society for American Archaeology, St. Louis.

Flannery, Kent V.
1991 Discussion of Symposium entitled "The Transition to Agriculture in the New World." Discussion presented at the 56th Annual Meeting of the Society for American Archaeology, New Orleans.

Ford, Richard I.
1985 Patterns of Prehistoric Food Production in North America. In Prehistoric Food Production in North America, edited by Richard I. Ford. Anthropological Papers No. 75. Museum of Anthropology, University of Michigan, Ann Arbor.

1987 Dating Early Maize in the Eastern United States. Paper presented at the 10th annual conference of the Society for Ethnohistory, Gainesville, Florida.

Fortier, Andrew C.
1983 Settlement and Subsistence at the Go-Kart North Site: A Late Archaic Titterington Occupation in the American Bottom, Illinois. In Archaic Hunters and Gatherers in the American Midwest, edited by James Phillips and James Brown, pp. 243-260. Academic Press, New York.

Fried, Morton
1960 On the Evolution of Social Stratification and the State. In Culture and History, edited by Stanley Diamond, pp. 713-731. Columbia University Press, New York.

Funkhouser, William D. and William S. Webb
1932 Archaeological Survey of Kentucky. Reports in Anthropology and Archaeology 2. University of Kentucky, Lexington.

1937 The Chilton Site in Henry County, Kentucky. Reports in Archaeology and Anthropology 3(5). University of Kentucky, Lexington.

GAI Consultants
1984 Archaeological Investigations at Sites 12Sw89 and 12Sw99, IPL Patriot Site, Switzerland County, Indiana. GAI Consultants, Monroeville, Pennsylvania.

Gilbert, B. Miles
1980 Mammalian Osteology. Modern Printing Company, Laramie, Wyoming.

1981 Avian Osteology. Modern Printing Company, Laramie, Wyoming.

Gilmore, Melvin R.
1931 Uses of Plants by the Indians of the Missouri River. University of Nebraska Press, Lincoln.

Graybill, Jeffrey R.
1986 Fort Ancient East: Origins, Change, and External Correlations. Paper presented at 56th Annual Midwest Archaeological Conference, Columbus.

Green, Thomas J. and Cheryl Ann Munson
1978 Mississippian Settlement Patterns in Southwestern Indiana. In Mississippian Settlement Patterns, edited by Bruce D. Smith, pp. 292-330. Academic Press, New York.

Gremillon, Kristen J. and Cecil R. Ison
1989 Terminal Archaic and Early Woodland Plant Utilization along the Cumberland Plateau. Paper presented at 54th Annual Meeting of the Society for American Archaeology, Atlanta.

Griffin, David M.
1965 Correspondence from David M. Griffin (research associate at the Museum of Anthropology, University of Michigan) to Ellis Crawford concerning radiocarbon dates run on charcoal samples from 15Be35. On file at the Behringer-Crawford Museum, Covington, Kentucky.

Griffin, James B.
1949 Adena Pottery. American Antiquity 7:344-359.

1953-59 Correspondence from James Griffin to Ellis Crawford. On file at the Behringer-Crawford Museum, Covington, Kentucky.

Hally, David J.
1984 Vessel Assemblages and Food Habits: A Comparison of Two Aboriginal Southeastern Vessel Assemblages. Southeastern Archaeologist 3(1):46-64.

Hassen, Fekri A.
1978 Demographic Archaeology. In Advances in Archaeological Method and Theory, edited by Michael B. Schiffer, pp. 49-103. Academic Press, New York.

Heilman, Jay, Christopher A. Turnbow, and Robert S. Grumet
1990 Sunwatch National Historic Landmark Nomination. Ms. on file, Kentucky Heritage Council, Frankfort.

Heiser, Charles B.
1987 The Fascinating World of the Nightshades. 2nd edition. Dover Publications, New York.

Henderson, A. Gwynn
1988 Ceramics. In Archaeological Investigations at the Hansen Site (15Gp14), by Steven A. Ahler, pp. 535-590. Archaeological Report No. 173. Program for Cultural Resource Assessment, Department of Anthropology, University of Kentucky, Lexington.

Henderson, A. Gwynn (editor)
1992 Capitol View: An Early Madisonville Horizon Community in Central Kentucky. Archaeological Report No. 292. Program for Cultural Resource Assessment, University of Kentucky, Lexington (draft).

Henderson, A. Gwynn, Cynthia E. Jobe, and Christopher A. Turnbow
1986 Indian Occupation and Use in Northern and Eastern Kentucky During the Contact Period (1540-1795): An Initial Investigation. Report on file, Kentucky Heritage Council, Frankfort.

Henderson, A. Gwynn and David Pollack
1985 The Late Woodland Occupation at the Bentley Site. In Woodland Period Research in Kentucky, edited by David Pollack, Thomas Sanders, and Charles Hockensmith, pp. 140-164. Kentucky Heritage Council, Frankfort.

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

Henderson, A. Gwynn, David Pollack, and Christopher A. Turnbow
1992 Chronology and Cultural Patterns. In Fort Ancient Cultural Dynamics in the Middle Ohio Valley, edited by A. Gwynn Henderson, pp. 253-280. Monographs in World Archaeology No. 8. Prehistory Press, Madison.

Hensley, Christine K.
1991 The Middle Green River Shell Mounds: Challenging Traditional Interpretations Using Internal Site Structure Analysis. In The Human Landscape in Kentucky's Past: Site Structure and Settlement Patterns, edited by Charles Stout and Christine K. Hensley, pp. 78-97. Kentucky Heritage Council, Frankfort.

Herrmann, Nicholas P.
1991 Paleodemography of the Read Shell Midden. Unpublished Master's thesis, Department of Anthropology, Washington University, St. Louis.

Hofman, Jack L.
1986 Hunter-Gatherer Mortuary Variability: Toward an Explanatory Model. Unpublished Ph.D. dissertation, Department of Anthropology, University of Tennessee, Knoxville.

House, J. H. and R. W. Wogaman
1978 Windy Ridge: A Prehistoric Site in the Inter-riverine Piedmont in South Carolina. Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

Howard, Mark
1976 The Stone Site: Stewart County, Tennessee. Student paper summarizing the 1976 Field Season at 40Sw23. Ms. on file, Archaeology Laboratory, Murray State University, Murray, Kentucky.

Hudson, Charles
1976 The Southeastern Indians. University of Tennessee Press, Knoxville.

Hughes, Myra H., Charles M. Niquette, and Jonathan P. Kerr
1989 A Phase I Archaeological Assessment of a Proposed Industrial Park in the City of Grayson, Carter County, Kentucky. Contract Publication Series 89-15. Cultural Resource Analysts, Inc., Lexington.

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.

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

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.
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 Cleland, pp. 123-143. Anthropology Papers No. 61. Museum of Anthropology, University of Michigan, Ann Arbor.

Jefferies, Richard W.
1990 Archaic Period. In The Archaeology of Kentucky: Past Accomplishments and Future Directions (Two Volumes), edited by David Pollack, pp. 143-246. State Historic Preservation Comprehensive Plan Report No. 1. Kentucky Heritage Council, Frankfort.

Johannessen, Sissel
1984 Paleoethnobotany. In American Bottom Archaeology: A Summary of the FAI-270 Project Contribution to the Culture History of the Mississippi River Valley, edited by Charles J. Bareis and James W. Porter, pp. 197-224. University of Illinois Press, Urbana and Chicago.

1989 Plant Remains and Culture Change: Are Paleoethnobotanical Data Better Than We Think? In Current Paleoethnobotany, edited by Christine A. Hastorf and Virginia S. Popper, pp. 145-166. University of Chicago Press, Chicago.

Justice, Noel D.
1987 Stone Age Spear and Arrow Points of the Midcontinental and Eastern United States: A Modern Survey and Reference. Indiana University Press, Bloomington.

Keel, Bennie C.
1978 Sixth Report of the Normandy Archaeological Project: 1974 Excavations at the Nowlin II Site (40CF35), edited by Major C. R. McCollough and Charles H. Faulkner. Report of Investigation No. 21, Department of Anthropology, University of Tennessee, Knoxville and Notes in Anthropology No. 4, Laboratory of Anthropology, Wright State University, Dayton.

Kellar, James A.
1960 The C.L. Lewis Mound and the Stone Mound Problem. Prehistory Research Series 3(4). Indiana Historical Society, Indianapolis.

1967 Material Remains. In Angel Site: An Archaeological, Historical, and Ethnological Study Volume Two, by Glenn A. Black, pp. 431-487. Indiana Historical Society, Indianapolis.

Kelly, John
1986 Wells Incised Plates: Their Context and Affinities with O'Byam Incised. Ms. revision of a paper presented at the Paducah Ceramics Conference, Paducah, Kentucky.

Kerr, Jonathan P. and Charles M. Niquette
1989 A Phase II National Register Evaluation of Three Sites in the Proposed Grayson Industrial Park, Carter County, Kentucky. Contract Publication Series 89-30. Cultural Resource Analysts, Inc., Lexington.

Kreisa, Paul P.
1991 Overview of the Mississippian Period in West-Central Kentucky. In Excavations at the Andalex Village (15HK22) Hopkins County, Kentucky, edited by Charles M. Niquette, pp. 11-17. Contract Publication Series 91-03. Cultural Resource Analysts, Inc., Lexington.

Kuttruff, Jenna T.
1990 Mississippian Textile Remains from Wickliffe Mounds, Kentucky (15Ba4). Paper presented at the 47th Annual Meeting of the Southeastern Archaeological Conference, Mobile, Alabama.

Lane, Leon
1991 Human Skeletal Remains. In Phase II Archaeological Testing of the Kay Shelter (15Br118) and Crank Shelter (15Br119), Breathitt County, Kentucky by Betty J. McGraw, Kurt H. Fiegel, and James Lee Hixon, pp. 74-77. Report on file, Kentucky Heritage Council, Frankfort.

Ledbetter, R. Jerald and Lisa D. O'Steen
1991 The Grayson Site Phase III Investigations of 15CR73, Carter County, Kentucky. Southeastern Archaeological Services, Inc., Athens, Georgia.

Lewis, R. Barry
1983 The Mississippi Period in the Cairo Lowland, Missouri. Paper presented at the 48th Annual Meeting of the Society for American Archaeology, Pittsburgh.

Lewis, R. Barry (editor)
1986 Mississippian Towns of the Western Kentucky Border. Kentucky Heritage Council, Frankfort.

Lewis, Thomas M.N. and Madeline K. Kneberg
1959 The Archaic Culture in the Middle South. American Antiquity 25:161-183.

1961 Eva. University of Tennessee Press, Knoxville.

Lurie, Rochelle
1989 Lithic Technology and Mobility Strategies: the Koster Site Middle Archaic. In New Directions in Archaeology: Time, Energy and Stone Tools, edited by Robin Torrence, pp. 46-66. Cambridge University Press, Cambridge.

Lynott, M.J., T.W. Boutton, J.E. Price, and D.E. Nelson
1986 Stable Carbon Isotope Evidence for Maize Agriculture in Southeast Missouri and Northeast Arkansas. American Antiquity 57(1):57-65.

Magennis, Ann L.
1977 Middle and Late Archaic Mortuary Patterning: An Example from the Western Tennessee Valley. Unpublished Master's Thesis, Department of Anthropology, University of Tennessee, Knoxville.

Markham, Ernest
1936 Raspberries and Kindred Fruits. MacMillan and Company, London.

Marquardt, William H. and Patty Jo Watson
1983 The Shell Mound Archaic of Western Kentucky. In Archaic Hunters and Gatherers in the American Midwest, edited by J. A. Brown and J. L. Phillips, pp. 323-339. Academic Press, Orlando.

Martin, Alexander C. and William D. Barkley
1973 Seed Identification Manual, 2nd edition. University of California Press, Berkeley.

Matthews, James A.
1956 Field Notes. In possession of author.

1958 The Zorn Avenue Village Site, Jefferson County, Kentucky. Ohio Archaeologist 8(4):114-126.

McBride, Kim S. and Stephen W. McBride
n.d. Excavations of a Diverse and Changing Neighborhood: The Lextran Project. Archaeological Report No. 242. Program for Cultural Resource Assessment, University of Kentucky, Lexington (in preparation).

McElrath, Dale L. and Andrew C. Fortier
1983 The Missouri Pacific # 2 Site (11-S-46). Illinois Department of Transportation, University of Illinois Press, Urbana.

McFarlan, Arthur C.
1943 Geology of Kentucky. University of Kentucky, Lexington.

McGraw, Betty J., Kurt H. Fiegel, and James Lee Hixon
1991 Phase II Archaeological Testing of the Kay Shelter (15Br118) and Crank Shelter (15Br119), Breathitt County, Kentucky. Report on file, Kentucky Heritage Council, Frankfort.

McHugh, William P.
1974a Archaeological Field Notes, Daily Journal, and Log from the 1974 Archaeological Field Season at the Bear Creek Site (40Sw23).

1974b Murray State University-Land Between the Lakes Archaeology. Research Program, Progress Report. Ms. on file, Murray State University, Murray, Kentucky.

Milanich, Jerald and Charles Fairbanks
1980 Florida Archaeology. Academic Press, Orlando.

Milner, George R. and Richard W. Jefferies
1987 A Reexamination of the WPA Excavation of the Robbins Mound in Boone County, Kentucky. In Current Archaeological Research in Kentucky: Volume One, edited by David Pollack, pp. 33-42. Kentucky Heritage Council, Frankfort.

Mocas, Stephen T.
1976 Excavations at Arrowhead Farm Site (15Jf237). Ms. on file, Jefferson County Department of Archives and Records, Louisville.

1988 Pinched and Punctated Pottery of the Falls of the Ohio River Region: A Reappraisal of the Zorn Punctate Ceramic Type. In New Deal Era Archaeology and Current Research in Kentucky, edited by David Pollack and Mary Lucas Powell, pp. 115-142. Kentucky Heritage Council, Frankfort.

Moholy-Nagy, Hattula
1963 Shells and Other Marine Material from Tikal. Estudios de Cultura Maya Vol. 3.

Morgan, Richard G.
1952 Outline of Cultures in the Ohio Region. In Archaeology of the Eastern United States, edited by James B. Griffin, pp. 83-98. University of Chicago Press, Chicago.

Morse, Dan F.
1967 The Robinson Site and Shell Mound Archaic Culture in the Middle South. Unpublished Ph.D. dissertation, Department of Anthropology, University of Michigan, Ann Arbor.

Moselage, John
1962 The Lawhorn Site. Missouri Archaeologist 24:1-104.

Muller, Jon
1986 Archaeology of the Lower Ohio River Valley. Academic Press, New York.

Myers, Robin J.
1989 Ceramic Analysis. In Final Report on the Phase III Mitigation of the Clark Maritime Archaeological District, Clark County, Indiana, edited by Ellen Sieber and Ann I. Ottesen, pp. 220-275. Resources Analysts, Inc., Bloomington, Indiana.

Myers, Robin J. and Ann I. Ottesen
1989 Description of the Buried Sites. In Final Report on the Phase III Mitigation of the Clark Maritime Archaeological District, Clark County, Indiana, edited by Ellen Sieber and Ann I. Ottesen, pp. 388-409. Resources Analysts, Inc., Bloomington, Indiana.

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

Naroll, Paul
1962 Floor Area and Settlement Pattern. American Antiquity 27:587-589.

Nash, David T. and Michael D. Petraglia
1987 Natural Formation Processes and the Archaeological Record. B.A.R. International Series No. 352. Oxford, England.

Nass, John P, Jr.
1989 Household Archaeology and Functional Analysis as Procedures for Studying Fort Ancient Communities in the Ohio Valley. Pennsylvania Archaeologist 59(1):1-13.

Neuman, Thomas William
1979 Culture, Energy and Subsistence: A Model for Prehistoric Subsistence. Unpublished Ph.D. dissertation, Department of Anthropology, University of Minnesota, Minneapolis.

Neusius, Sarah W.
1982 Early Middle Archaic Subsistence Strategies: Changes in Faunal Exploitation at the Koster Site. Unpublished Ph.D. dissertation, University Microfilms International, Ann Arbor.

Niquette, Chuck 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.

Niquette, Charles M. and Myra A. Hughes (editors)
1990 Late Woodland Archaeology at the Parkline Site (46PU99), Putnam County, West Virginia. Contract Publication Series 90-93. Cultural Resource Analysts, Inc., Lexington.

Niquette, Charles M. and Jonathan P. Kerr
1989 Phase III Excavations at the Dow Cook Site (15LA4) in the Proposed Yatesville Reservoir, Lawrence County, Kentucky. Contract Publication Series 89-4. Cultural Resource Analysts, Inc., Lexington.

O'Malley, Nancy
1988 Adena Mound Ceramics in Retrospect. In New Deal Era Archaeology and Current Research in Kentucky, edited by David Pollack and Mary Lucas Powell, pp. 115-142. Kentucky Heritage Council, Frankfort.

1990 Ceramics from the Childers and Woods Sites. In Childers and Woods: Two Late Woodland Sites in the Upper Ohio Valley, Mason County, West Virginia, by Michael J. Shott, pp. 691-815. Archaeological Report No. 200. Program for Cultural Resource Assessment, University of Kentucky, Lexington.

O'Shaughnessy, Julie A., Jo Ann Wilson, and Mary Lucas Powell
1991 Preliminary Analysis of the Human Skeletal Remains from the Capitol View Site (15Fr101). Paper presented at the Eight Annual Kentucky Heritage Council Conference, Bowling Green, Kentucky.

O'Steen, Lisa D., Kristen J. Gremillon, and R. Jerald Ledbetter
1991 Archaeological Testing of Five Sites in Big Sinking Creek Oil Field, Lee County, Kentucky. Report on file, United States Forest Service, Stanton, Kentucky.

Oehler, C.
1973 Turpin Indians. Journal of the Cincinnati Museum of Natural History. 23(2). (Revised from Oehler 1950).

Ogden, Cal
1953 Field notes concerning 15Be33, and map of Rogers sites. On file at Behringer-Crawford Museum, Covington, Kentucky.

Olsen, Stanley J.
1964 Mammal Remains from Archaeological Sites. Part 1: Southeastern and Southwestern United States. Papers of the Peabody Museum of Archaeology and Ethnology, Harvard University 56(1).

1968 Fish, Amphibian and Reptile Remains from Archaeological Sites. Part 1: Southeastern and Southwestern United States. Papers of the Peabody Museum of Archaeology and Ethnology, Harvard University 56(2).

1979 Osteology for the Archaeologist. Papers of the Peabody Museum of Archaeology and Ethnology, Harvard University 56(3-5).

Orr, Kenneth
1951 Change at Kincaid: A Study of Cultural Dynamics. In Kincaid, A Prehistoric Illinois Metropolis, by Fay C. Cole, pp. 293-359. University of Chicago Press, Chicago.

Ottesen, Ann I.
1979 A Preliminary Study of Acquisition of Exotic Raw Materials by Late Woodland and Mississippian Groups. Unpublished Ph.D. dissertation, Department of Anthropology, New York University, New York.

1981 A Report on a Preliminary Study of Prehistoric Settlement Patterns in Three Counties in Northwestern Kentucky. Report on file, Kentucky Heritage Council, Frankfort.

1985 Woodland Settlement Patterns in Northwestern Kentucky. In Woodland Period Research in Kentucky, edited by David Pollack, Thomas Sanders, and Charles Hockensmith, pp. 166-186. Kentucky Heritage Council, Frankfort.

Panshin, A.J. and Carl de Zeeuw
1970 Textbook of Wood Technology, 3rd edition. McGraw-Hill, New York.

Pauketat, Timothy R.
1987 A Functional Consideration of a Mississippian Domestic Vessel Assemblage. Southeastern Archaeology 6(1):1-15.

Phillips, James L.
1986 Labras Lake: Investigations into the Prehistoric Occupation of a Mississippi Floodplain Locality in St. Clair County, Illinois, edited by James L. Phillips and Robert L. Hall. University of Illinois Press, Urbana.

Phillips, Philip
1970 Archaeological Survey in the Lower Yazoo Basin, Mississippi, 1947-1955. Papers of the Peabody Museum of Archaeology and Ethnology Vol. 60. Harvard University, Cambridge.

Phillips, Philip, James A. Ford, and James B. Griffin
1951 Archaeological Survey in the Lower Mississippi Alluvial Valley, 1940-1947. Papers of the Peabody Museum of Archaeology and Ethnology Vol. 25. Harvard University, Cambridge.

Pollack, David and A. Gwynn Henderson
1992 Toward a Model of Fort Ancient Society. In Fort Ancient Cultural Dynamics in the Middle Ohio Valley, edited by A. Gwynn Henderson, pp. 281-294. Monographs in World Archaeology No. 8. Prehistory Press, Madison.

Pollack, David and Jimmy A. Railey
1987 Chambers (15ML109): An Upland Mississippian Village in Western Kentucky. Kentucky Heritage Council, Frankfort.

Pollack, David, Mary Lucas Powell, and Audrey Adkins
1987 Preliminary Study of Mortuary Patterns at the Larkin Site, Bourbon County, Kentucky. In Current Archaeological Research in Kentucky: Volume One, edited by David Pollack, pp. 188-203. Kentucky Heritage Council, Frankfort.

Pollack, David, Thomas Sanders, and Charles Hockensmith
1985 Woodland Period Research in Kentucky. Kentucky Heritage Council, Frankfort.

Pomeroy, J. S.
1968 Geologic Map of the Frankfort East Quadrangle, Franklin and Woodford Counties, Kentucky. U.S. Geological Survey (Map GQ-707), Washington, D.C.

Porter, Claire M. and Mary Lucas Powell
1991 Analysis of Human Skeletal Remains from the Florence Site Complex. Paper presented at the Eighth Annual Kentucky Heritage Council Archaeological Conference, Bowling Green, Kentucky.

Prentice, Guy
1986 Origins of Plant Domestication in the Eastern United States. Promoting the Individual in Archaeological Theory. Southeastern Archaeology 5:103-119.

Prufer, Olaf H.
1965 The McGraw Site: A Study in Hopewellian Dynamics. Scientific Publications New Series, 4(1). Cleveland Museum of Natural History, Cleveland.

1968 Ohio Hopewell Ceramics: An Analysis of the Extant Collections. Anthropological Papers No. 33. Museum of Anthropology, University of Michigan, Ann Arbor.

Prufer, Olaf H. and Douglas H. McKenzie
1966 Peters Cave: Two Woodland Occupations in Ross County, Ohio. Ohio Journal of Science 66(3):233-253.

Prufer, Olaf H. and Orrin C. Shane
1970 Blain Village and the Fort Ancient Tradition in Ohio. Kent State University Press, Kent, Ohio.

Raab, L.M., G. Fritz, D. Wolfman, R.H. Ray, and G. Sabo III
1979 The Arkansas Ozarks. In Arkansas State Historic Preservation Plan, edited by Hester A. Davis. Research Series 21, Arkansas Archaeological Survey, Fayetteville.

Railey, Jimmy A.
1985 The Gillespie Site (15Ms50) National Register of Historic Places Nomination Form. On file, Kentucky Heritage Council, Frankfort.

1990 Woodland Period. In The Archaeology of Kentucky: Past Accomplishments and Future Directions (Two Volumes), edited by David Pollack, pp. 247-374. State Historic Preservation Comprehensive Plan Report No. 1. Kentucky Heritage Council, Frankfort.

1992 Chipped Stone. In Fort Ancient Cultural Dynamics in the Middle Ohio Valley, edited by A. Gwynn Henderson, pp. 137-170. Monographs in World Archaeology No. 8. Prehistory Press, Madison.

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

Redmond, Brian G.
1990 The Yankeetown Phase: Emergent Mississippian Cultural Adaptation in the Lower Ohio River Valley. Unpublished Ph.D. dissertation, Department of Anthropology, Indiana University, Bloomington.

Reidhead, Van A.
1976 Prehistoric Cultural Resources in the Clark Maritime Centre, Clark County, Indiana: Test Excavations. Glenn A. Black Laboratory of Archaeology, Indiana University, Bloomington.

1981 A Linear Programming Model of Prehistoric Subsistence Optimization: A southeastern Indiana Example. Prehistory Research Series 6(1). Indiana Historical Society, Indianapolis.

Riggs, Rodney E.

1986 New Stratigraphic Sequences From the Lower Little Miami Valley. In West Virginia Archaeologist 38(2):1-21.

1992 Ceramic Change from Middle Woodland to Terminal Fort Ancient in the Lower Little Miami Valley. Unpublished Ph.D. dissertation, Department of Anthropology, University of Wisconsin, Madison.

Riley, Thomas J., Richard Edging, and Jack Rossen

1990 Prehistoric Cultigens in Eastern North America: Changing Paradigms. Current Anthropology 31(5):525-541.

Riotte, Louise

1974 Complete Guide to Growing Berries and Grapes. Garden Way Publishing, Charlotte, Vermont.

Ritchie, William A.

1961 A Typology and Nomenclature for New York Projectile Points. Bulletin No. 384. New York State Museum and Science Service, Albany.

1965 The Archaeology of New York State. The Natural History Press, Garden City, New York.

Rolingson, Martha A. and Michael J. Rodeffer

1968 The Zilpo Site, 15Bh37: Preliminary Excavations in the Cave Run Reservoir, Kentucky: 1968. Report on file, Museum of Anthropology, University of Kentucky, Lexington.

Rolingson, Martha A.

1967 Temporal Perspective on the Archaic Cultures in the Middle South. Unpublished Ph.D. dissertation, Department of Anthropology, University of Michigan, Ann Arbor.

Rossen, Jack

1987a [Guilfoil Site] Botanical Remains. In Current Archaeological Research in Kentucky: Volume One, edited by David Pollack, pp. 167-172. Kentucky Heritage Council, Frankfort.

1987b Larkin Site Botanical Remains. Ms. on file, Department of Anthropology, University of Kentucky, Lexington.

1988 Botanical Remains. In Muir: An Early Fort Ancient Village in the Inner Bluegrass, by Christopher A. Turnbow and William E. Sharp, pp. 243-264. Archaeological Report No. 165. Program for Cultural Resource Assessment, University of Kentucky, Lexington.

1991 Ecotones and Low-Risk Intensification: The Middle Preceramic Habitation of Nanchoc, Northern Peru. Unpublished Ph.D dissertation, Department of Anthropology, University of Kentucky, Lexington.

1992a Botanical Remains. In Fort Ancient Cultural Dynamics in the Middle Ohio Valley, edited by A. Gwynn Henderson, pp. 189-208. Monographs in World Archaeology No. 8. Prehistory Press, Madison.

1992b [Florence Site Complex] Botanical Remains. In Archaeological Investigations of the Florence Site Complex, Harrison County, Kentucky, by William E. Sharp and David Pollack. Report in possession of authors, Lexington.

1992c [Capitol View] Botanical Remains. Ms. on file, Department of Anthropology, University of Kentucky, Lexington.

Rossen, Jack and Richard Edging
1987 East Meets West: Patterns in Kentucky Late Prehistoric Subsistence. In Current Archaeological Research in Kentucky: Volume One, edited by David Pollack, pp. 225-234. Kentucky Heritage Council, Frankfort.

Rossen, Jack and James Olson
1985 The Controlled Carbonization and Archaeological Analysis of Southeastern U.S. Wood Charcoals. Journal of Field Archaeology 12:445-456.

Rupp, Rebecca
1987 Blue Corn and Square Tomatoes. Storey Communications, Pownal, Vermont.

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

Scarry, C. Margaret
1991 Archaeobotanical Remains (Foster Site). In Archaeological Investigations at the Proposed Scott Paper Plant in Daviess County, Kentucky, by Tom Sussenbach, pp. 79-90. Archaeological Report No. 238. Program for Cultural Resource Assessment, University of Kentucky, Lexington.

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

Schoeninger, Margaret J. and Mark Schurr
1990 Carbon Stable Isotope Variation in Maize Varieties. Paper Presented at Conference on Corn and Culture in the Prehistoric New World, Minneapolis.

Schwartz, Douglas, Tacoma Sloan, and John Griffin
1958 Survey of the Archaeological Resources of the Barkley Reservoir Kentucky and Tennessee. A Project of the Interagency Archaeological and Paleontological Salvage Program, Department of the Interior, National Park Service, Richmond.

Seeman, Mark F.
1980 A Taxonomic Review of Southern Ohio Late Woodland. Paper presented at the 52nd Annual Meeting of the Midwest Archaeological Conference, Evanston, Illinois.

1986 Ash Pits, Turtle Pits, Or Corn Cribs? Storage Tactics in the Ohio Valley. Ms. in possession of author, Kent State University, Kent, Ohio.

Sharp, William E.
1984 The Dry Run Site: An Early Fort Ancient Site in the Bluegrass. In Late Prehistoric Research in Kentucky, edited by David Pollack, Thomas N. Sanders, and Charles D. Hockensmith, pp. 105-130. Kentucky Heritage Council, Frankfort, Kentucky.

1989 Cultural Resource Assessment of the 189 Acre Farm Tract, Franklin County, Kentucky. Archaeological Report No. 217. Program for Cultural Resource Assessment, University of Kentucky, Lexington.

1990a Fort Ancient Period. In The Archaeology of Kentucky: Past Accomplishments and Future Directions (Two Volumes), edited by David Pollack, pp. 467-557. State Historic Preservation Comprehensive Plan Report No. 1. Kentucky Heritage Council, Frankfort.

1990b Letter Report Describing Testing Results at Site 15Fr101. On file, Program for Cultural Resource Assessment, University of Kentucky, Lexington.

Sharp, William E. and David Pollack
1992 Archaeological Investigations of the Florence Site Complex, Harrison County, Kentucky. Report in possession of authors, Lexington.

Sheldon, Gregory A. and Myra A. Hughes
1990 A Coal Mine Survey Along Kay Fork and Eversole Creek in Breathitt and Perry Counties, Kentucky. Contract Publication Series 90-80. Cultural Resource Analysts, Inc., Lexington.

Shepard, Anna O.
1956 Ceramics for the Archaeologist. Carnegie Institution of Washington, Washington, D.C.

Shoemaker, James S.
1975 Small Fruit Culture. 4th edition. Avi Publishing Company, Westport, Connecticut.

Shott, Michael J.
1990 Childers and Woods: Two Late Woodland Sites in the Upper Ohio Valley, Mason County, West Virginia. Archaeological Report No. 200. Program for Cultural Resource Assessment, University of Kentucky, Lexington.

Shultes, Richard Evans
1979 Solanaceous Hallucinogens and Their Role in the Development of New World Cultures. In The Biology and Taxonomy of the Solanaceae, edited by John G. Hawkes, Richard N. Lester, and A.D. Skelding. Linnaen Society of London, Academic Press, New York.

Sieber, Ellen
1989 Features. In Final Report on the Phase III Mitigation of the Clark Maritime Archaeological District, Clark County, Indiana, edited by Ellen Sieber and Ann I. Ottesen, pp. 276-326. Resources Analysts, Inc., Bloomington, Indiana.

Sieber, Ellen and Ann I. Ottesen
1989 Final Report on the Phase III Mitigation of the Clark Maritime Archaeological District, Clark County, Indiana, edited by Ellen Sieber and Ann I. Ottesen. Resources Analysts, Inc., Bloomington, Indiana.

Sillen, Andrew, Judith C. Seally, and Nikolaas J. van der Merwe
1989 Chemistry and Paleodietary Research: No More Easy Answers. American Antiquity 54(3):504-512.

Small, John K.
1903 Flora of the Southeastern United States. New York Botanical Garden, New York.

Smith Bruce D.
1985 The Role of Chenopodium as a Domesticate in Pre-maize Garden Systems of the Eastern United States. Southeast Archaeology 4(1):51-72.

1987 The Independent Domestication of Indigenous Seedbearing Plants in Eastern North America. In Emergent Horticultural Economies of the Eastern Woodlands, edited by William F. Keegan, pp. 3-47. Occasional Paper 7. Center for Archaeological Investigations, Southern Illinois University, Carbondale.

Smith, Hanley K.
1970 The Biology, Wildlife Use and Management of Sumac in the Lower Peninsula of Michigan. Unpublished Ph.D. dissertation, Michigan State University, East Lansing.

South, Stanley
1977 Method and Theory in Historical Archaeology. Academic Press, New York.

Stein, Julie K.
1980 Geoarchaeology of the Green River Shell Mounds, Kentucky. Unpublished Ph.D. dissertation, Department of Anthropology, University of Minnesota, Minneapolis.

1982 Geologic Analysis of the Green River Shell Middens. Southeastern Archaeology 1:22-39.

Strausbaugh, P.D. and Earl L. Core
1978 Flora of West Virginia. 2nd edition. Seneca Books, Grantsville, West Virginia.

Stuiver, Minze and Bernd Becker
1987 Radiocarbon Calibration Program, Rev. 2.0. University of Washington Quaternary Isotope Lab, Seattle.

Stuiver, Minze and G. W. Pearson
1986 High Precision Calibration of Radiocarbon Time Scale A.D. 1950-500 B.C. Radiocarbon 28:805-838.

Stuiver, Minze and P. Reimer
1986 A Computer Program for Radiocarbon Age Calibration. Radiocarbon 28:1022-1030.

Styles, Bonnie
1985 Aquatic Exploitation: Paleoecological and Cultural Change. Northwestern University Archaeology Program, Evanston.

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

Turnbow, Christopher A. and A. Gwynn Henderson
1992a Ceramic Analysis. In Fort Ancient Cultural Dynamics in Northern Kentucky, edited by A. Gwynn Henderson, pp. 113-136. Monographs in World Archaeology No. 8. Prehistory Press, Madison.

1992b Ceramics and Other Baked Clay Objects. In Fort Ancient Cultural Dynamics in the Middle Ohio Valley, edited by A. Gwynn Henderson, pp. 295-382. Monographs in World Archaeology No. 8. Prehistory Press, Madison, Wisconsin.

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

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

Vickery, Kent D.
1976 An Approach to Inferring Archaeological Site Variability. Unpublished Ph.D. dissertation, Department of Anthropology, Indiana University, Bloomington.

1980 Preliminary Definition of Archaic Study Units in Southwestern Ohio. Ms. on file, Ohio Historical Society, Columbus.

Vogel, Virgil J.
1982 American Indian Medicine. University of Oklahoma Press, Norman.

Wagner, Gail E.
1983 Fort Ancient Subsistence: The Botanical Record. West Virginia Archaeologist 35(2):27-39.

1987 Uses of Plants by Fort Ancient Indians. Unpublished Ph.D. dissertation, Department of Anthropology, Washington University, St. Louis.

Walker, Winslow M. and Robert McCormick Adams
1946 Excavations in the Matthews Site New Madrid County, Missouri. Transactions of the Academy of Science of Saint Louis Volume XXXI-Number 4. St. Louis.

Walthall, John A.
1980 Prehistoric Indians of the Southeast. University of Alabama Press, University, Alabama.

Warren, Robert E.
1975 Prehistoric Unionacean Utilization at the Widows Creek Site (1JA305) Northeast Alabama. Unpublished Master's Thesis, Department of Anthropology, University of Nebraska, Lincoln.

Webb, William S.
1940 The Wright Mounds, Sites 6 and 7, Montgomery County, Kentucky. Reports in Anthropology and Archaeology 5(1):6-134. University of Kentucky, Lexington.

1950a The Carlston Annis Mound, Site 5, Butler County, Kentucky. Reports in Anthropology 7(4):266-354. University of Kentucky, Lexington.

1950b The Read Shell Midden, Site 10, Butler County, Kentucky. Reports in Anthropology 7(5):356-401. University of Kentucky, Lexington.

1951 The Parrish Village Site, Site 45, Hopkins County, Kentucky. Reports in Anthropology and Archaeology 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, Lexington.

Webb, William S. and John B. Elliott

1942 The Robbins Mounds, Site Be3 and Be14, Boone County, Kentucky. Reports in Anthropology and Archaeology 5(5), University of Kentucky, Lexington.

Webb, William S. and William G. Haag

1939 The Chiggerville Site, Site 1, Ohio County, Kentucky. Reports in Archaeology and Anthropology 4(1):1-62. University of Kentucky, Lexington.

1940 Cypress Creek Villages, Sites 11 and 12, McLean County, Kentucky. Reports in Archaeology and Anthropology 7(1). University of Kentucky, Lexington.

1947 Archaic Sites in McLean County, Kentucky. Reports in Archaeology and Anthropology 7(1):1-46. University of Kentucky, Lexington.

Weisenberger, B.C., C.W. Dowell, T.R. Leathers, H.B. Odor, and A.J. Richardson

1973 Soil Survey of Boone, Kenton, and Campbell Counties, Kentucky. United States Department of Agriculture, Soil Conservation Service, in cooperation with Kentucky Agricultural Experiment Station.

Wesler, Kit W.

1985 Archaeological Excavations at Wickliffe Mounds, 15Ba4: Mound A, 1984. Report No. 1, Wickliffe Mounds Research Center, Wickliffe, Kentucky.

1989 Archaeological Excavations at Wickliffe Mounds, 15Ba4: Mound D, 1989. Report No. 3, Wickliffe Mounds Research Center, Wickliffe, Kentucky.

1990a Aspects of Settlement Patterning at Wickliffe Mounds, 15Ba4. In The Human Landscape in Kentucky's Past: Site Structure and Settlement Patterns, edited Charles Stout and Christine K. Hensley, pp. 106-127. Kentucky Heritage Council, Frankfort.

1990b An Elite Burial Mound at Wickliffe? Paper presented at the Mid-South Archaeological Conference, Pinson, Tennessee.

1990c Assemblage Patterning Studies: An Approach to Small-scale Mississippian Chiefdoms in Western Kentucky. Paper presented at the 47th Annual Meeting of the Southeastern Archaeological Conference, Mobile, Alabama.

1991a Ceramics, Chronology, and Horizon Markers at Wickliffe Mounds. American Antiquity 56(2):278-290.

1991b Archaeological Excavations at Wickliffe Mounds, 15Ba4: North Village and Cemetery, 1988-89. Report No. 4, Wickliffe Mounds Research Center, Wickliffe, Kentucky.

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

Westover, Allan R.
1978 Archaeological Testing at 15Fr36, Franklin County, Kentucky. Division of Environmental Analysis, Kentucky Transportation Cabinet, Frankfort.

Winters, Howard D.
1963 An Archaeological Survey of the Wabash Valley in Illinois. Reports of Investigations No. 10. Illinois State Museum, Springfield.

1969 The 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, Lexington.

Wymer, Dee Anne
1989 Paleoethnobotanical Analysis. In Phase III Excavations at the Dow Cook Site (15LA4) in the Proposed Yatesville Reservoir, Lawrence County, Kentucky by Charles M. Niquette and Jonathan P. Kerr. Contract Publication Series 89-4. Cultural Resource Analysts, Inc., Lexington.