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Late Paleoindian through Middle Archaic Faunal Evidence from Dust Cave, Alabama

Renee Beauchamp Walker
University of Tennessee - Knoxville

To the Graduate Council:

I am submitting herewith a dissertation written by Renee Beauchamp Walker entitled "Late Paleoindian through Middle Archaic Faunal Evidence from Dust Cave, Alabama." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Anthropology.

Walter E. Klippel, Major Professor

We have read this dissertation and recommend its acceptance:

Paul W. Parmalee, Gerald F. Schroedl, David A. Etnier, Boyce N. Driskell

Accepted for the Council:
Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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THE LATE PALEOINDIAN THROUGH MIDDLE ARCHAIC FAUNAL EVIDENCE FROM DUST CAVE, ALABAMA

A Dissertation
Presented for the
Doctor of Philosophy Degree
The University of Tennessee, Knoxville

Renee Beauchamp Walker
May 1998

DEDICATION

This dissertation is dedicated to my mother,

Marie Helen Kane Beauchamp,

who gave me encouragement

when I needed it the most.

Acknowledgments

There are so many people to thank for help throughout my graduate career. I am particularly grateful to my advisor, Dr. Walter E. Klippel, who cheerfully read draft after draft of this document, even on short notice. His encouragement over the years has meant so much to me and I would not have come this far without it. Other members of my committee, Drs. Paul Parmalee and Gerald Schroedl, were always willing to spare the time to talk about my research. I particularly enjoyed the visits Dr. Parmalee made to Dust Cave while I was there, discussing the fauna and collecting salamanders from the bottom of the cave was truly enlightening. Dr. David Etnier was gracious enough to come onto my committee late in the game and his volume (with Wayne C. Starnes) on the freshwater fishes of Tennessee was an invaluable aid for this research. Dr. Boyce Driskell is the person responsible for the whole topic of this dissertation and has been unfailingly supportive. The summers I have so far spent at Dust Cave, under his direction, have taught me more about archaeology than I learned in the ten years previous.

Other Dust Cave crew members that have helped me through the years include Scott Meeks, who never complained about slogging through the mud "one last time." Nurit

Goldman-Finn was a pleasure to work with and I particularly benefitted from her research on a regional perspective of Dust Cave. Jane Ellis taught me how to be a "real" woman during our work at Dust Cave. All of the students and other co-workers helped me in so many ways it would be impossible to summarize it all here. Finally, without the help of my fellow U.T.K. graduate student, Sarah C. Sherwood, I would not have made it through all of those tick, mosquito, snake, and armadillo infested days at Dust Cave. She supplied help, encouragement, "girl-talk", and a good kick in the pants when needed.

Many other U.T.K. graduate students were also helpful along the way. Joanne Bennett and Taylor Slemmer were always willing to listen when I was stuck or feeling discouraged. Chris Davenport was always very supportive. Mike Ruddel supplied much needed paleoenvironmental articles. Judy Patterson ventured to Dust Cave for a week and so understood the trials and tribulations of working there. My office-mate of seven years, Sean P. Coughlin, was always there for me, reading drafts, offering support, and overall encouragement.

My family has been very understanding through the years, even though they probably cannot fathom why I would want to live in a swamp for two months during the summer. I would like to thank all of them for supporting me in what I chose to do with my life. Finally, I would like to thank my husband Charles R. Walker, Jr. for being so patient and comforting throughout the many long years it took to complete this research.

ABSTRACT

This research involves the faunal evidence from the site of Dust Cave in northwest Alabama. The site was occupied by prehistoric hunter-gatherers from 10,500 to 5,200 years ago. Dust Cave is significant to archaeological research because it represents one of the earliest known, stratified Late Paleoindian and Archaic deposits in the Southeast. Test excavations were conducted at the cave from 1989-1994 and the materials for this dissertation were collected during this period. Results of the faunal analysis indicate that changes occurred in resource selection, habitat exploitation, and natural environment through time. A shift from a concentration on avian species to mammalian species occurred from the Late Paleoindian to the Middle Archaic periods. In addition, aquatic resources, which were important to Late Paleoindian people at the cave, were much less important by the Middle Archaic. Utilization of species from open, ecotone, and closed habitats also changed through time. Closed habitat species, such as squirrels and raccoons, were much more important during the early occupation of the cave. Ecotone species, such as rabbits and whitetail deer became more important during later occupations. A comparison of the Dust Cave fauna to several other archaeological sites reveals that Dust Cave is

the only site in which birds are a significant resource. The faunal assemblages from almost all of the other sites were predominantly composed of mammal remains. In addition, at Dust Cave the utilization of aquatic resources decreases through time while at other sites the use of aquatics increases. The Dust Cave faunal assemblage exhibits trends observed in other southeastern faunal assemblages such as an increase in the use of whitetail deer and an increase in species from ecotone habitats through time. In sum, information on faunal remains from Dust Cave has signified that Late Paleoindian and Archaic period hunter-gatherers living at the site practiced subsistence adaptations that were particular to regional habitat conditions.

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INTRODUCTION AND OBJECTIVES

INTRODUCTION

Archaeological research of the Paleoindian and Archaic periods in the southeastern United States has provided information on hunting and gathering adaptations such as stone tool technology and settlement patterns (Anderson *et al*. 1996, Bense 1994, Caldwell 1958, Ford and Willey 1941, Kelly and Todd 1988, Sassaman *et al*. 1988, Steponaitis 1986, Webb 1950, 1974, Webb and Haag 1947). However, direct information on subsistence has been fairly poor for most of the Paleoindian sites as well as some of the Early Archaic sites located in the southeastern United States (Wing 1977). This is probably due to several factors. First, there is a paucity of Paleoindian and Early Archaic sites with intact, stratified deposits in the archaeological record. In addition, there is often a lack of bone preservation at the few stratified Paleoindian and Early Archaic sites that have been excavated. Dust Cave, in northwest Alabama, is an exception that has the potential to make a major contribution to Paleoindian and Archaic subsistence studies because the deeply stratified deposits have excellent bone preservation.

Deposits from Dust Cave date between 10,500 and 5,200 years ago with five distinct occupations. These include the Late Paleoindian component, the Early Side-Notched and Kirk Stemmed components(Early Archaic), and the Eva/Morrow Mountain component and Seven Mile Island phase (Middle Archaic). The preservation, and subsequent recovery, of faunal material at the site is exceptional, with an abundance of small fish and mammals, birds, and amphibians. Because of the antiquity, integrity, and preservation of the deposits at the site, a zooarchaeological analysis of the faunal remains from Dust Cave offers unique insights into prehistoric human subsistence strategies.

OBJECTIVES

The objectives of this dissertation are to obtain as much information as possible on changes in hunter-gatherer subsistence adaptations through time. The first objective is to identify the faunal remains from the site and to document which faunal resources were selected for use during each of the five cultural components. Differences between the components are investigated along several avenues. First, changes in animal class composition are examined through time. In addition, changes in the environment are documented by observing differences in habitat exploitation.

Finally, changes in modification of bone are observed through time.

Another objective is to identify patterns of subsistence for the entire site. For example, element distribution of animal classes is used to document transport, butchering, and disposal patterns at the cave. Additionally, the availability of different species throughout the course of the year is used to assess the season of site occupation. Finally, human predation of whitetail deer is also examined by estimating the age of deer teeth recovered from the site and comparing the Dust Cave mortality pattern to other mortality studies. The results from these analyses are utilized to interpret subsistence strategies adapted by the inhabitants of Dust Cave.

The final objective is to compare the subsistence strategy of the Dust Cave occupants to strategies documented for other Paleoindian and Archaic hunter-gatherers in the Southeast. Faunal assemblages from six different sites were chosen for comparison based on the location of the sites and the antiquity of the deposits. Comparisons between the assemblages were made in four areas including the importance of certain animal classes in the assemblages, changes in whitetail deer utilization through time, shifts in the use of aquatic and terrestrial species, and changes in habitat exploitation. The results of these comparisons are used to develop a pattern of Paleoindian and Archaic subsistence adaptations in southeastern North America and to understand how Dust Cave fits into this pattern.

CONTEXTUAL FRAMEWORK

Issues in southeastern archaeology, environmental change, and previous research at Dust Cave must be addressed in order to place the site in a contextual framework. First, research conducted on Paleoindian and Archaic period archaeological sites in the southeastern United States is presented. Next, environmental studies on the changing forests of the eastern United States throughout the Late Pleistocene and Holocene are addressed because these changes probably affected the subsistence strategies of prehistoric humans. Finally, research on the artifacts recovered from Dust Cave is presented.

Southeastern Archaeological Research

Chapter II contains a review of several important topics in Paleoindian and Archaic archaeology. One topic involves the arrival of humans in the New World and their subsequent migration into the Southeast. This has been the subject of much debate in North American archaeology (Dillehay 1989, 1997, Haynes 1983, Martin and Klein 1984, Mead and Meltzer 1984). Other topics reviewed in this chapter include settlement and mobility, tool technology, subsistence adaptations, and chronology (Anderson and Sassaman 1996, Anderson *et al.* 1992). These topics are discussed in order to provide a framework for understanding the archaeology of Dust Cave.

Environment

Issues of environment are considered in Chapter III. The regional environment is investigated through the results of pollen studies (Delcourt and Delcourt 1981, 1983, 1985). Paleontological assemblages from other southeastern sites such as Clark's Cave (Guilday *et al.* 1977), Baker's Bluff Cave (Guilday *et al.* 1978), Savage Cave (Guilday and Parmalee 1979), and Cheek Bend Cave (Klippel and Parmalee 1982) were also reviewed. Environment of the Pickwick Basin is documented through analysis of sites in the vicinity of Dust Cave. The importance of Dust Cave's situation between the Tennessee River Valley and adjacent uplands is also considered.

Dust Cave Research

Research conducted at the Dust Cave site is reviewed in Chapter IV. The research at Dust Cave has included a variety of topics, such as depositional history, culture chronology, technology, vertebrate and invertebrate remains, and regional environment. The depositional history of Dust Cave was investigated with geoarchaeological and micromorphological studies (Collins *et al*. 1994, Goldberg and Sherwood 1994). Additionally, the projectile points were used, in conjunction with radiocarbon dates, to establish a chronology of the site (Driskell 1994). Lithic analysis was conducted on the tools and debitage from the Dust Cave deposits (Meeks 1994). Bone tools were categorized according to conventional typologies (Goldman-Finn and Walker 1994). Subsistence was examined through a study of the mussel remains and a preliminary investigation of the faunal remains (Grover 1994, Morey 1994, Parmalee 1994, Walker 1997). Finally, human burials encountered during the excavations were also investigated (Hogue 1994).

Zooarchaeological Methods

Zooarchaeological methods utilized in this faunal analysis are addressed in Chapter V. Specimens were identified using the zooarchaeological comparative skeletal collection at the Department of Anthropology, University of Tennessee, Knoxville. Information collected on the various specimens includes provenience, taxon, element, element side, portion of element, modification, weight, count, and specimen age when possible.

The means of quantification are an important issue in order to maintain comparability with other sites. In particular, number of identified specimens and minimum number of individuals are discussed. Number of identified specimens presents the actual count of bone fragments recovered from the site. Minimum number of individuals calculates the number of individual animals that may have been brought to the site.

Taphonomic factors are also often addressed in zooarchaelogical analyses. Taphonomic signatures are produced by both human and nonhuman agents. Human taphonomic factors include prey butchery, transport, and food sharing (Behrensmeyer and Hill 1980, Gifford-Gonzales 1989, Lyman 1994, Marshall 1993, Stiner 1991). Nonhuman agents include carnivores and rodents (Morey and Klippel 1991), as well as the impacts of bioturbation, fluvial transport, and soil acidity (Lyman 1994). Studies of the element distribution of different animal classes present at the site and subsequent modification of these remains will be used to document taphonomic processes at the site.

Determination of site seasonality through the examination of animal remains is also an important issue in zooarchaeological research (Monks 1981). There are several techniques that can be used to determine seasonality based on the type of fauna present in the assemblage. These include the presence/absence of migratory animals, such as waterfowl, and the growth of seasonal appendages such as antlers.

Mortality studies of prey species have been used to understand hunting intensity, prey selection, and procurement techniques (Hudson 1991, Stiner 1991). Whitetail deer are one of the dominant prey species in North America and are investigated as part of the faunal analysis at Dust Cave. Mortality profiles for the whitetail deer assemblage are estimated and interpretations of hunting strategy are made by comparing the results to other mortality patterns.

Materials

A summary of the faunal material recovered from the Dust Cave site is presented in Chapter VI. These remains were recovered from the excavations at the entrance to the cave. Excavations in the entrance trench consisted of six two by two meter units on a north transect into the mouth of the cave. Faunal remains were recovered from 1/4 inch water screen and a soil sample was also recovered for flotation. All of the faunal remains were analyzed according to provenience. The materials are presented by class, with summaries of habits and habitat preferences for each species.

RESULTS

Intra-Site Comparisons

The results of the Dust Cave faunal analysis are presented in Chapter VII. A specific comparison includes differences in the percentages of animal classes for each component. Habitat exploitation is evaluated to discern if any occupations revealed an emphasis on aquatic or terrestrial species. Component assemblages are also compared to discover whether animals were acquired from open, ecotone, or closed habitats. The effect of the Late Pleistocene and Early and Mid-Holocene environment on animal composition are also presented according to each component. Research conducted on element distribution, seasonality, and whitetail deer mortality is presented for the site as a whole. Finally, modification of the bone material is investigated.

Inter-Site Comparisons

The trends observed in the faunal assemblage from Dust Cave are compared to several other archaeological sites. Specifically, the changes in resource selection, habitat exploitation, and natural environment are investigated. Criteria for selecting sites for comparison prescribed that each site must be within a cave or rock shelter, contain preserved faunal remains, have intact, stratified deposits, and be along a river of the Mississippi River drainage. Six sites were chosen for comparison to Dust Cave, including Graham Cave, Rodgers Shelter, Modoc Rock Shelter, Russell Cave, Smith Bottom Cave, and Stanfield-Worley Bluff Shelter.

CONCLUSION

Finally, the conclusions from this research at Dust Cave are summarized in Chapter IX. The implications of Dust Cave as a unique account of the subsistence activities for Late Paleoindian and Archaic period hunter-gatherers are tremendous. Very few sites of this antiquity exist in the Southeast and even fewer have the excellent degree of preservation found at Dust Cave. As Anderson (1995:152) has noted, "Another good example of a model project making use of large numbers of scholars is the excavation at Dust Cave". Therefore, the large scope of research ongoing at

Dust Cave provides a distinctive opportunity to evaluate the faunal remains in context with other early sites in the southeastern United States.

CHAPTER II

ARCHAEOLOGICAL RESEARCH IN THE SOUTHEAST

INTRODUCTION

Archaeology in the southeastern United States has emphasized several important research topics. Among them are culture history, the origins of agriculture, and the study of cultural complexity (Bense 1994, Dunnell 1990, Johnson 1993, Smith 1986, Watson 1990, Yarnell 1986). Archaeology in the Southeast during the WPA era generated large amounts of material. Webb and DeJarnette at Pickwick (1942) excavated many sites and contributed greatly to southeastern archaeology. However, besides an analysis in the Pickwick report by Morrison (1942) on the use of freshwater mussels as a prehistoric food resource, subsistence data was generally not a major consideration.

Later work by Griffin (1952) and Lewis and Kneberg (1959) focused on developing cultural chronologies for the Southeast. Their research was significant in establishing the sequence of archaeological phases and relied mainly on ceramics, stone tool typologies, and dendrochronology. Changes in settlement and technology were noted, but the mechanisms for change did not include a consideration of environmental variables. Subsistence data was considered unessential to the prehistory of the Southeast. However, subsistence data became an important part of archaeology in the Southeast as archaeologists began linking subsistence information to settlement patterns (Johnson 1977, 1993, Smith 1986). Subsistence data began to take a front seat in archaeology of the Southeast as researchers became more interested in environmental explanations for change and understanding behavior in an ecological context.

All periods of archaeological occupation in the Southeast have been addressed by zooarchaeologists, but for the purposes of this review only Paleoindian and Archaic periods are discussed because they pertain specifically to Dust Cave. Studies of Paleoindian and Early Archaic subsistence are limited because many of these sites in the Southeast are comprised mainly of lithic tool surface collections (Anderson *et al.* 1996). Therefore, the basis of most settlement and subsistence models is the lithic assemblages of the sites (Anderson and Sassaman 1996). For example, a deer procurement model suggested by Luchterhand (1970) for the Lower Illinois Valley was not based on a study of faunal remains, but rather on the distribution of projectile points in the uplands. In contrast, sites such as Koster and Modoc Rock Shelter in Illinois (Fowler 1959, Neusius 1982), Stanfield-Worley Bluff Shelter and Russell

Cave in Alabama (Griffin 1974, Parmalee 1962), and Graham Cave in Missouri (Logan 1952) contained faunal assemblages from which subsistence and settlement strategies could be reconstructed.

Archaic period subsistence in the Southeast has mostly focused on the shell mounds of the Middle Archaic. Archaic shell middens such as the Hayes site in Middle Tennessee (Morey 1988), and the Green River shell middens (Stein 1982) have contributed greatly to our knowledge of southeastern subsistence. Subsistence and settlement models pertaining to shell mounds are focused on shell fish as a significant food resource and mobility based on the occupation of river flood plains. This focus excludes settlement and subsistence patterns in other areas of the Southeast, such as the uplands.

In sum, although Dunnell (1990) has criticized southeastern archaeology as lagging behind new archaeology, there have been tremendous contributions to subsistence studies since southeastern archaeologists have begun to ask questions concerning the influence faunal resources had on settlement patterns. Because many resources are seasonally available, understanding their importance in prehistoric diets impacts the explanations archaeologists have for hunter-gatherer mobility. The Southeast has the potential for expanding our knowledge of changes in subsistence and mobility because the occupation of prehistoric Indians spans the Paleoindian and Mississippian cultural periods.

PALEOINDIAN PERIOD

Research of the Paleoindian Period has been a growing area of interest in the southeastern United States because of debate over the timing of human arrival in North America and the discovery of many more early sites. In particular, topics of study include mobility models, site location, tool technology, subsistence adaptations, and chronologic associations (MacDonald 1983, Anderson and Sassaman 1996). The first issue deals with the arrival of people in the southeastern United States (Figure 2.1) and this topic is enmeshed in the debate over when people first arrived in North America (Martin and Klein 1984, Meltzer 1989, Meltzer *et al.* 1986). Related to this is research on the location of sites, particularly through the study of mobility patterns (Anderson *et al.* 1992). Studies of tool technology have identified the types of tool kits, raw materials, and group organization associated with the earliest human occupants of the Southeast (Carr 1991). In addition, subsistence adaptations have been investigated at

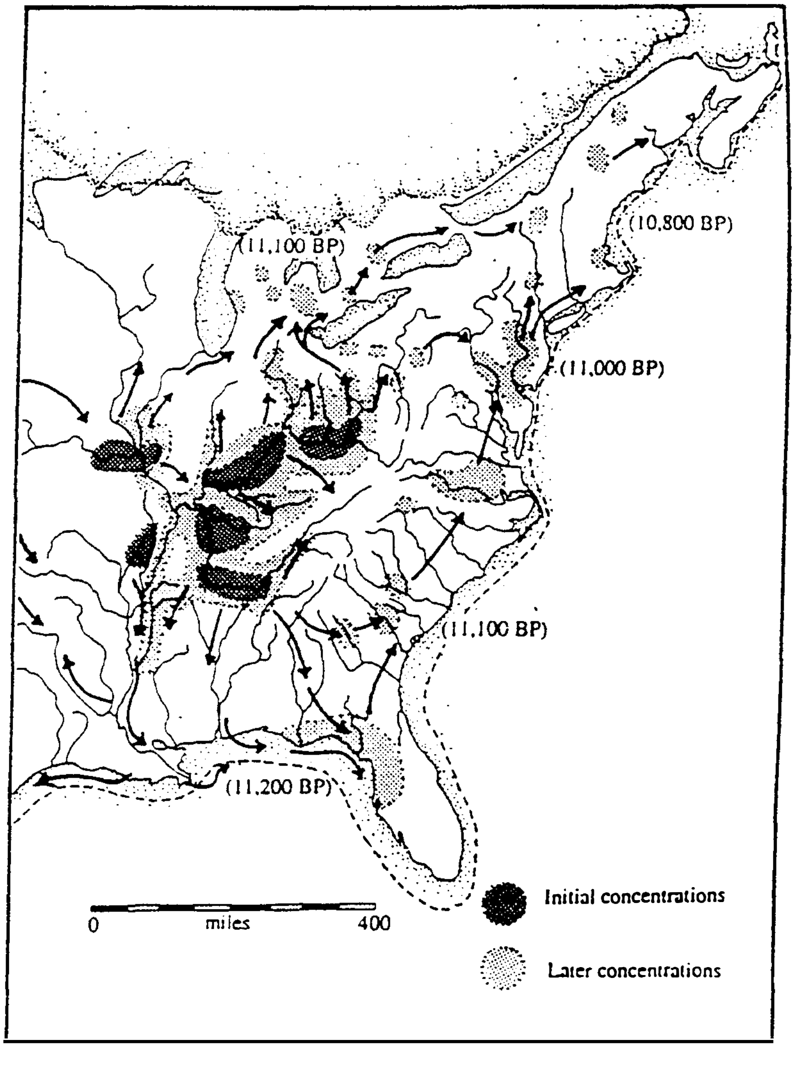


Figure 2.1. Initial colonization model of the eastern and southeastern United States by Early Paleoindians (reprinted from Anderson 1990:190, with permission of JAI Press, Inc.).

Paleoindian and Archaic period sites that have preserved faunal and botanical remains (Clausen *et al.* 1979). Finally, chronological associations have been documented through the use of absolute dating methods and tool typologies.

Previous research on Paleoindian sites was primarily limited to data on the location and number of projectile points (Figure 2.2). Although attesting to the presence of Paleoindians in the Southeast, other information, such as the timing of Paleoindian arrival, remained relatively unclear (Fladmark 1983). In addition, the isolated projectile points provided data about technology, but because faunal and botanical remains were seldom associated with the points, knowledge about subsistence strategies was poor (Shutler 1983). Therefore, as shown in Figure 2.3, the recent increase in systematic excavations of sites in the eastern United States has greatly enhanced information about Paleoindian life ways (Anderson and Sassaman 1996, MacDonald 1983).

New World Paleoindian

The question of when people first arrived in the New World is heavily debated (Meltzer 1989). For the most part, researchers studying the arrival of humans into North

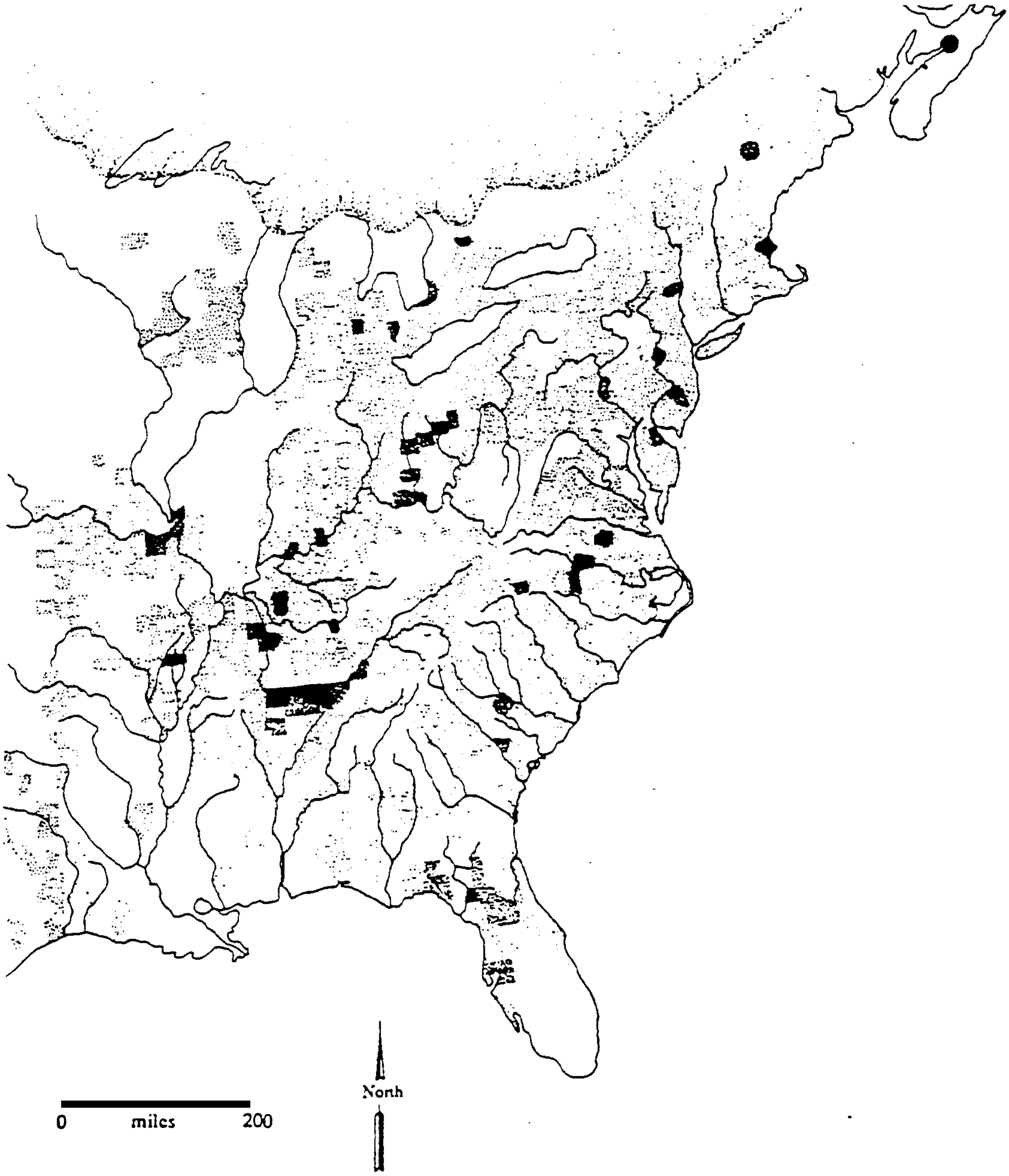


Figure 2.2. Early and Middle Paleoindian projectile points across the eastern United States. Darker areas indicate higher artifact concentrations (modified from Anderson 1991:6, with permission of the Eastern States Archaeological Federation).

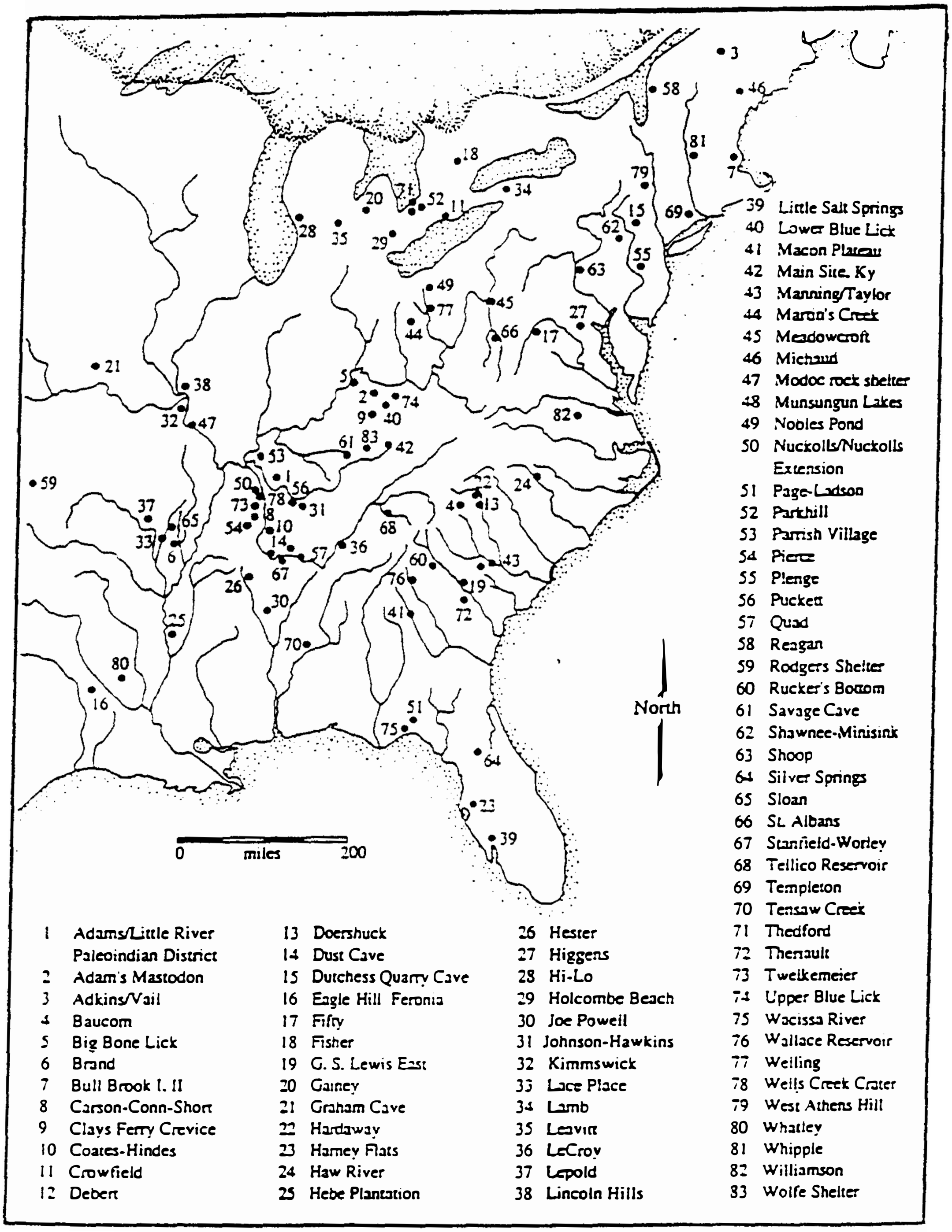


Figure 2.3. Major Paleoindian and Early Archaic Sites in the eastern United States (reprinted from Anderson and Sassaman 1996:17, with permission of the University of Alabama Press).

America fall into two camps: the pre-12,000 B.P. camp and the post-12,000 B.P. camp. Those following the pre-12,000 B.P. camp argue that, even though little evidence exists for a widespread occupation, researchers need to be open minded (Bryan 1983, 1986, MacNeish 1976, 1983). Sites such as Meadowcroft Rockshelter, Bluefish Cave, Wilson Butte Cave, and Old Crow Basin in North America, and Taima-Taima, Pikamachay Cave, and Monte Verde in South America all have components which presumably date prior to 15,000 B.P. (Bryan 1983, Mead and Meltzer 1984). However, due to problems with dating (as in the case of Meadowcroft Rock Shelter's possible contamination with coal), many researchers have argued against sites dating prior to 15,000 B.P.(Haynes 1983).

Recent research at sites, such as Monte Verde in Chile, has prompted archaeologists to re-evaluate the pre-12,000 B.P. chronology (Dillehay 1989, 1997, Meltzer *et al*. 1997). Monte Verde has an occupation well dated to around 13,000 years ago and another possible occupation at more than 30,000 years ago (Dillehay 1989, 1997). A noted aspect of this site is the extremely well preserved organic remains including wood, animal bone, and cordage, in addition to lithic remains, which have been verified by several different researchers (Meltzer *et al*. 1997:662). Although no firm conclusions have been made about the antiquity of the site, Monte Verde does offer some compelling evidence for a pre-12,000 B.P. migration into North and South America.

The followers of the second camp, or arrival of humans at or around 12,000 years ago, have amassed much more concrete evidence to support their claims (Haynes 1983). Most sites dating to this period contain highly diagnostic Clovis points and are more widespread across the landscape than sites with earlier dates. Some important Paleoindian sites in eastern North America include Big Bone Lick, Graham Cave, Harney Flats, Hardaway, Johnson Site, Little Salt and Warm Mineral Springs, Page-Ladson, Aucilla, Wacissa River, Pine Tree, Quad, and Thunderbird (Bense 1994:49). These sites are generally well-dated and have good contexts.

For the purposes of this research, the Paleoindian is separated into early, middle, and late periods (Bense 1994). The Early Paleoindian, dating from approximately 12,000 B.P. to 11,000 B.P., represents the earliest, best established evidence for the first migration of people into North America and subsequently the southeastern United States. This period is characterized by highly mobile people using Clovis stone tools, a fluted projectile point technology. Subsistence during this time is presumably based on the hunting of large herds of megafauna. The Middle Paleoindian, dating from 11,000 to 10,500 years ago, is characterized by an increase in the human population across the landscape. Finally, the Late Paleoindian dates from 10,500 to 10,000 years ago and is characterized by a more diverse tool kit and greater population than in the earlier periods. The subsistence of Late Paleoindian people is based primarily on Holocene flora and fauna.

Southeastern Paleoindian

Intact Early Paleoindian occupation sites in the Southeast are extremely scarce, although surface finds of Clovis projectile points have been numerous (Anderson and Sassaman 1996). For example, the Johnson site in Tennessee dates between 12,150 and 11,750 B.P. (Broster and Barker 1992). Sites from Kentucky, such as Big Bone Lick, Parrish Village, and several others, have been reported as containing Clovis points associated with extinct or extirpated fauna (Freeman *et al.* 1996). In addition, at least two underwater sites in Florida date to the Early Paleoindian period. The first is Little Salt Spring, which contained a tortoise shell pierced with a wooden stake (Clausen *et al*. 1979). Secondly, a site in the Wacissa River contained a *Bison antiquus* (Medium Horned Bison) specimen with a stone point in the cranium (Webb *et al.* 1984). Although sites of this antiquity are scarce, they provide some insight into Paleoindian life ways, such as big game hunting, high mobility, and a specialized tool kit.

Dates for the Middle Paleoindian period range from 11,000 to 10,500 years ago. This period is distinguished from the earlier stage by a more diverse stone tool technology (Bense 1994). The stone tool types during this period include Cumberland, Simpson, Suwanee, and Quad projectile points (Anderson *et al*. 1992). In addition, the tools from this time are more commonly made of local materials rather than the exotic materials associated with the Early Paleoindian. Subsistence during the Middle Paleoindian began to shift from megafauna to other resources as megafauna such as mammoth, mastodon, giant sloth, and tapir, became extinct (Grayson 1984, Mead and Meltzer 1984).

The increase in the human population during the Middle Paleoindian allows the definition of several culture areas based on the differences in stone tool technology (Figure 2.4). These include Redstone-Quad-Beaver Lake, Middle Paleoindian, Clovis Variant, Suwanee-Simpson, Cumberland, Plano, and Crowley's Ridge (Anderson 1990, Bense 1994, Futato 1982, Gardner 1974, 1977). The Redstone-Quad-Beaver Lake area is located in northern Alabama, Mississippi, and

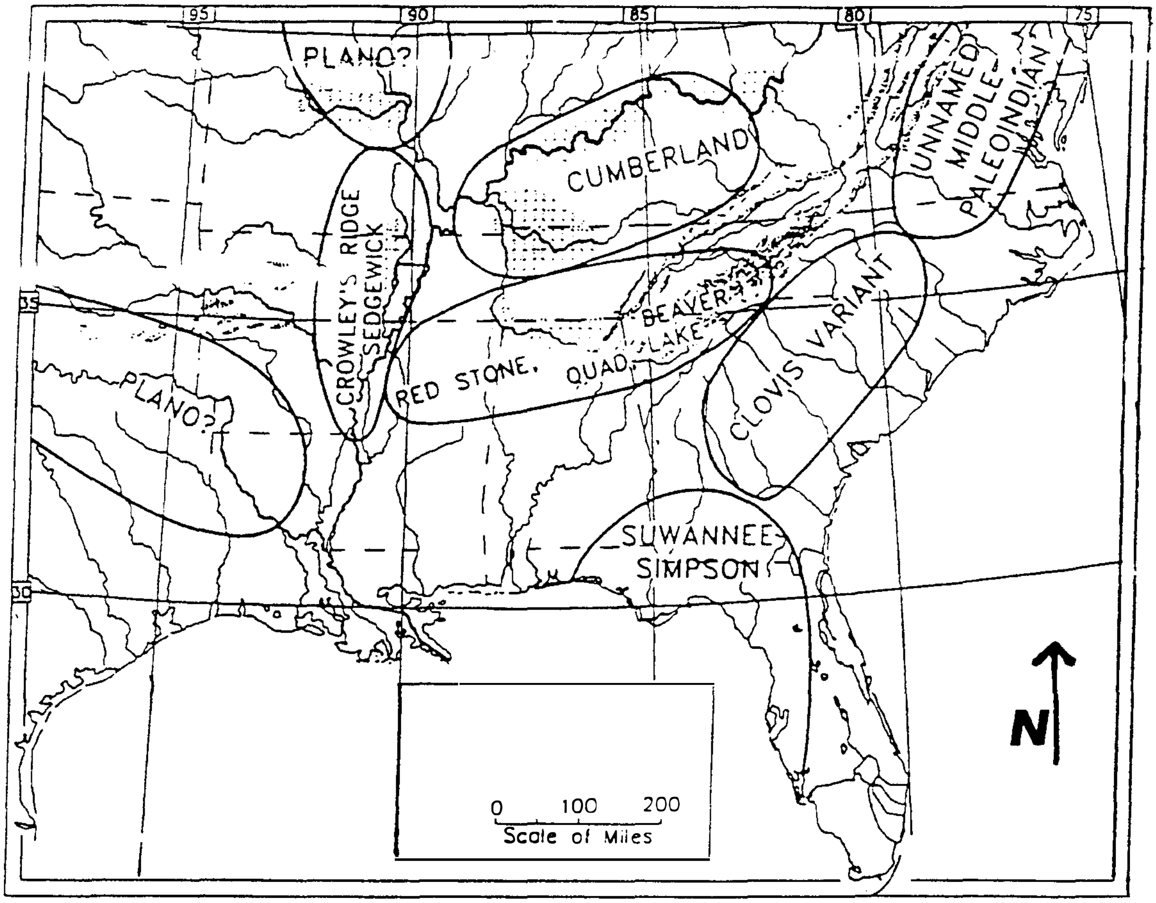


Figure 2.4. Culture areas for the Early and Middle Paleoindian periods (reprinted from Bense 1994:48, with permission of Academic Press).

Tennessee, and has the most bearing on research at Dust Cave because it is located nearest to the site and the projectile points are similar (Futato 1982). Anderson (1990) has also defined the Clovis Variant in the coastal and piedmont areas of North and South Carolina. In the Suwanee-Simpson culture area, the Page-Ladsen site in Florida contains a variety of fauna, including some mastodon remains (Dunbar *et al.* 1988). Other sites associated with this culture area include the Silver Springs site and Harney Flats site. The Crowley's Ridge culture area was defined from many fluted points found in Arkansas (Gillam 1995, Morse and Morse 1983). The Cumberland culture area is located in what is now Kentucky and Plano is further west in Missouri and Texas. Finally, the unnamed Paleoindian culture area is located in northern Virginia and is associated with the Thunderbird site, a large Paleoindian base camp (Gardner 1974, 1977).

The Late Paleoindian is characterized by an increase in population and is the most studied of the Paleoindian periods (Bense 1994). Sites dating to this period range in age from 10,500 to 10,000 years B.P. and are associated with variations of the Dalton point. Some rock shelters with Dalton components and preserved faunal remains include Graham Cave in Missouri (Logan 1952), Modoc Rock Shelter in Illinois (Fowler 1959), and Russell Cave in Alabama (Griffin

1974). Dust Cave also dates to the Late Paleoindian period and contains artifacts associated with the Late Paleoindian, such as Beaver Lake points (Driskell 1994, 1996).

Three culture areas have been defined as part of the Late Paleoindian Period. Morse and Morse (1983) have documented that the Central Mississippi Valley contains more than 100 Dalton sites (Figure 2.5). The Georgia Piedmont contains Dalton sites located along the upper Oconee River Valley (O'Steen *et al.* 1986). Finally, the Coastal Plain is characterized by use of uplands for base camps (Bense 1994).

ARCHAIC PERIOD

In contrast to Paleoindian sites in the southeastern United States, Archaic sites are more numerous (Figure 2.6). In Florida and southeastern Georgia, major Archaic sites include Mount Taylor, Groves Orange, Windover, Republic Groves, Little Salt and Warm Mineral Springs, and Bay West. Atlantic Coastal drainage sites include Haw River, Gregg Shoals, Sara's Ridge, Stalling's Island, Rucker's Bottom, and G.S. Lewis. Several areas in Tennessee, Alabama, and Kentucky are also worth noting. These are Tellico Reservoir, Flint River, Mulberry Creek, Perry, Dust Cave, Anderson, Hester, Walnut, Eva, and Indian Knoll (Chapman *et al.* 1982). Mississippi River area sites include Jaketown,

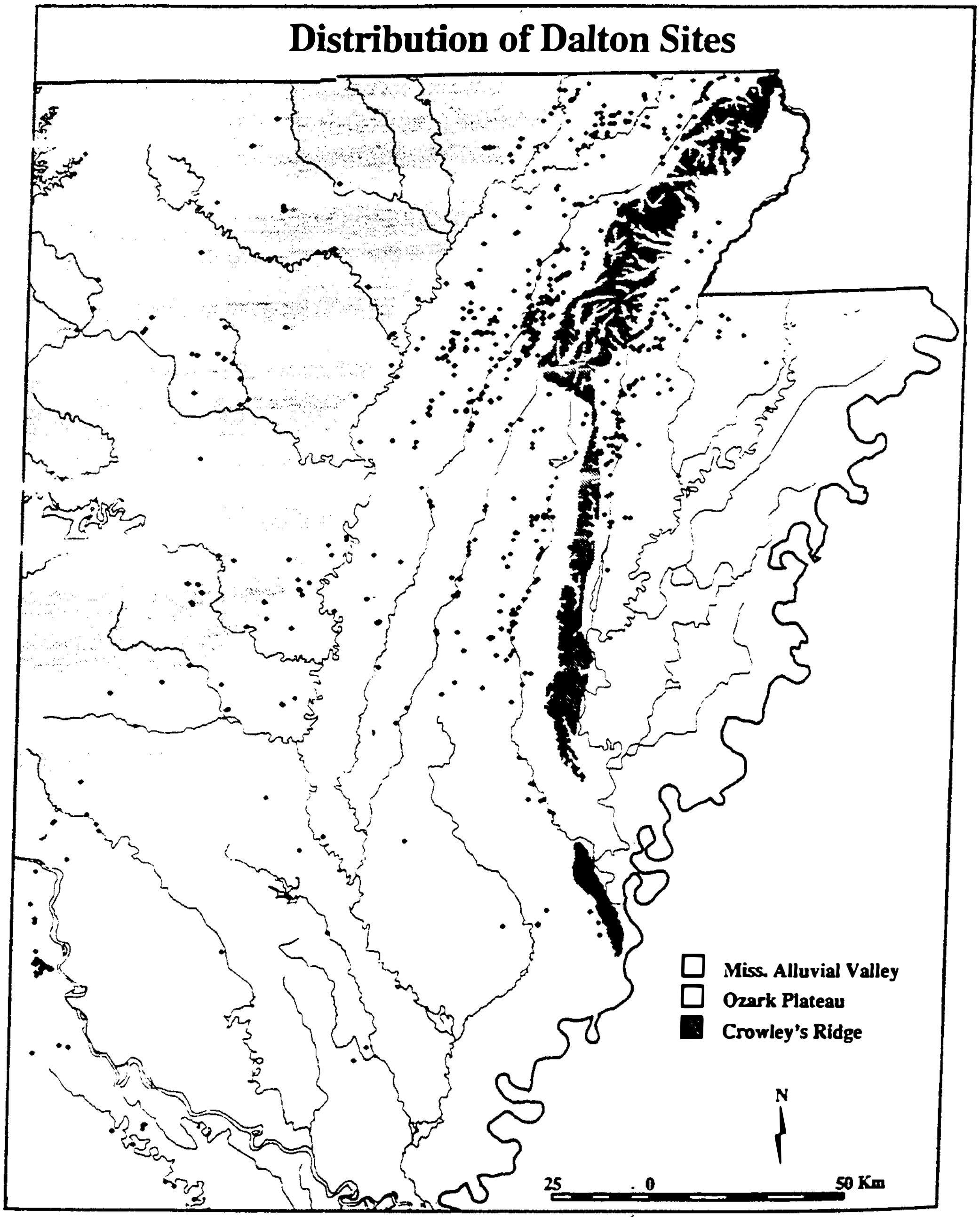
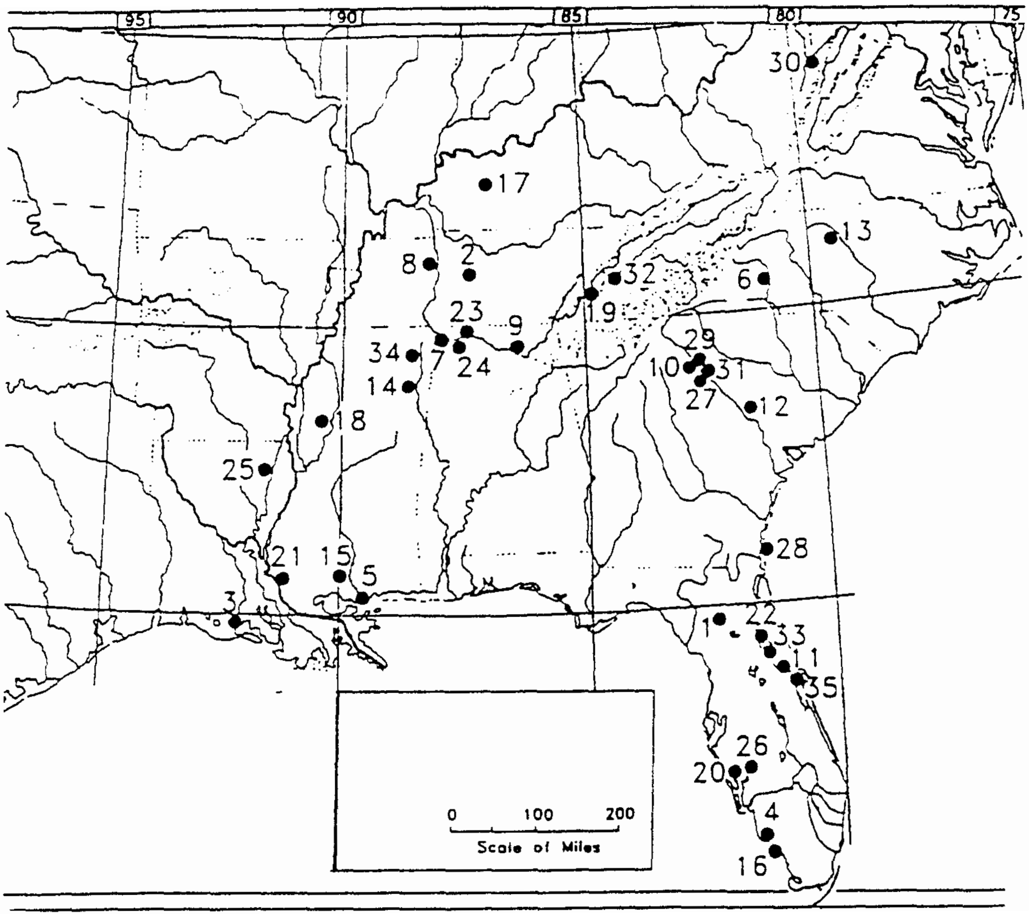


Figure 2.5. Dalton sites in the Central Mississippi Valley (reprinted from Gillam 1996:278, with permission of J.C. Gillam, Volume 41, "A View of Paleoindian Settlement from Crowley's Ridge", *Plains Anthropologist*).



1. 8-A-356
2. Anderson
3. Banana Bayou
4. Bay West
5. Claiborne
6. Doerschuck – Hardaway
7. Dust Cove
8. Eva
9. Flint River
10. Gregg Shoals
11. Groves Orange
12. G. S. Lewis
13. Haw River
14. Hester
15. Hornsby
16. Horr's Island
17. Indian Knoll
18. Jaketown
19. Kimberly-Clark
20. Little Salt and Warm Mineral Springs
21. Monte Sano & LSU
22. Mount Taylor
23. Mulberry Creek
24. Perry
25. Poverty Point
26. Republic Groves
27. Rucker's Bottom
28. Sapelo Island
29. Sara's Ridge
30. St. Albans
31. Stalling's Island
32. Tellico Reservoir
33. Tick Island
34. Walnut
35. Windover

Figure 2.6. Major Archaic Sites in the Southeastern United States (reprinted from Bense 1994:70, with permission of Academic Press).

Poverty Point, Claiborne, Monte Santo, and Hornsby.

Some of the earliest Archaic sites in the Southeast include Russell Cave, Stanfield-Worley Bluff Shelter, and Icehouse Bottom (Chapman 1977, Griffin 1974). Sites such as the Eva site and the Perry site date to the Middle Archaic Period (Lewis and Lewis 1961). Research on Archaic sites has focused on increasing complexity of mortuary patterns, stone tool technologies, subsistence strategies, and environmental reconstruction. During the Archaic, in particular the Middle Archaic, the burial of the dead became a common practice. Stone tool technologies have been extensively studied for Archaic period sites (Anderson and Sassaman 1996). Several of these studies document a shift from non-logistically organized foragers in the Early Archaic to logistically organized collectors by the Middle Archaic (Amick 1987, Carr 1991).

Early Archaic

Research at caves and rock shelters such as Russell Cave and Stanfield-Worley Bluff Shelter plays an important part in understanding the adaptations of Archaic hunter-gatherers. These sites with Early Archaic components often contain better preserved organic remains than open-air sites and are a valuable source for botanical and zooarchaeological studies. The human occupation of caves and uplands may represent fall to winter occupations when hunter-gatherers would collect mast and hunt whitetail deer and turkeys (Luchterhand 1970). The occupation of the river valleys may have been primarily during the spring and summer seasons.

An important study on the Early Archaic settlement of river flood plains was conducted in the Tellico Reservoir, Tennessee (Chapman 1977). Sites dating to the Early Archaic along the Little Tennessee River drainage included Icehouse Bottom, Rose Island, Calloway Island, and Bacon Farm (Kimball 1996:156). One of the earliest burials in the Southeast is from Icehouse Bottom and dates to around 8,500 B.P. (Chapman 1977). In general, the residences were primarily adjacent to rivers, while field camps were farther away from the river terrace.

Middle Archaic

An interesting aspect of research on Archaic sites involves attributing changes in cultural patterns to changes in the environment. Deposits of the Middle Archaic span a climatic condition called the Hypsithermal (Delcourt and Delcourt 1981). This warming and drying trend has been used to explain the increase in shell midden sites across the landscape. Shell midden sites probably increased because the Hypsithermal caused widespread stabilization of river bottoms (Walthall 1980). This in turn allowed people to occupy areas with greater resources for longer periods of time. Thus, huge accumulations of shells occurred as people occupied these sites.

The shell mound complex was first defined by Webb and DeJarnette (1942) as part of their archaeological survey of the Pickwick Basin. General traits of this complex included shell mound habitation sites, and partially and fully flexed burials in shell mounds (Webb and DeJarnette 1942:23). The documentation of these traits was an important first step in identifying some of the earliest sites known at that time in the southeastern U.S. Many sites, such as McKelvey Mound, Smithsonia Landing, Eva, and Perry, correspond to the Webb and DeJarnette classification. However, additional research has shown that the shell mound complex, though an obvious phenomenon on the landscape, was only part of a seasonal mobility schedule for Archaic people (Stein 1982, Waselkov 1982).

In particular, the sites associated with the shell mound Archaic of the mid-South, such as the Green River shell middens in Kentucky, have received much notice (Stein 1982). Waselkov's (1982) dissertation is an especially important contribution to the study of shell middens around the world. Waselkov notes an increase in occurrence of shell midden deposits around 10,000 B.P. and links it to changes in climatic conditions. In other words, at the end of the Pleistocene a warmer climate prompted increased use of riverine resources such as shellfish. The sites he discusses are mainly coastal adaptations such as those in Spain, Mesoamerica, and California. These sites occur over a wide span of time (40,000 B.P. to present) but constitute a consistent reliance on shellfish, at least at certain times of the year. He argues that reliance on shellfish caused increased sedentism. This has been supported by work on the interior and coastal shell middens of the United States (Claassen 1986, Klippel and Morey 1986, Matteson 1960, Quitmeyer *et al.* 1985, Sanger 1981, Stein 1982).

CONCLUSION

Paleoindian and Archaic period research has focused on the adaptations of hunter-gatherers. In particular, mobility, settlement patterns, technology, and subsistence have become important areas of study. Researchers have debated about the arrival of Paleoindians in the New World and their subsequent movement across the continent. Generally, it is agreed that the Southeast was probably first inhabited around 12,000 years ago. The inhabitants were small, mobile groups of people hunting large game. People of the Archaic were also fairly mobile, but may have occupied riverine areas for longer periods of time in order to take advantage of aquatic resources. The relative scarcity of Paleoindian and Archaic sites in the Southeast in comparison to later periods makes sites dating to these earlier periods extremely important for research.

The potential for Dust Cave to contribute information about the Late Paleoindian period is enormous. The extended time span of occupation at Dust Cave provides a sequence of Paleoindian and Archaic artifacts to be studied. For example, the large numbers of stone tools and debitage recovered from the cave allow for an intense investigation of changing technology. Botanical and faunal material provide information on subsistence and the regional environment. Data have also been recovered from several human burials in the cave. Therefore, the deposits of Dust Cave contain material that represent all aspects of Late Paleoindian through Middle Archaic hunter-gatherer lifeways.

CHAPTER III

LATE PLEISTOCENE THROUGH MID-HOLOCENE ENVIRONMENT

INTRODUCTION

This chapter places Dust Cave in context with the surrounding environment on both regional and local scales. Techniques used in reconstructing past environments include, for the purposes of this study, paleobotany, paleontology, zooarchaeology, and alluvial stratigraphy. Studies using these techniques for interpretations of various archaeological sites are applied to reconstruct several aspects of environment, such as vegetational changes, river stability or instability, and faunal composition. Changes between Late Pleistocene and Early Holocene environments are documented. In addition, both Early and Mid-Holocene climatic conditions in the Midsouth are explored. The local environment, such as the area of the Pickwick Basin in Alabama, is investigated through sites that are contemporaneous to Dust Cave. The environmental data is then compared to several settlement models that have been developed for southeastern hunter-gatherers.

Early scholars researching the archaeological record of southeastern sites acknowledged change through time but provided a strictly cultural impetus for change (Caldwell

1958). This period of archaeological theory, known as the cultural historical period (Dunnell 1990, Griffin 1952, Johnson 1993), focused on changes in artifact types to explain differences in prehistoric cultures. For example, pottery styles and point types were linked to different time periods. Although early nineteenth century archaeologists were correct in their assumptions about the links between artifacts and evolution, the effect of the environment on prehistoric people was not pursued in a stringent manner.

The focus on environmental issues beginning in the 1960s brought about new ideas for change in the archaeological record. Hunter-gatherers began to be linked to their environment, rather than viewed as living in a static, unchanging environment. Paleobotanical research by the Delcourts allowed the archaeological record of the Southeast to be placed into an environmental framework (Delcourt *et al.* 1980, Delcourt and Delcourt 1979, 1981, 1983, 1985). Zooarchaeological and paleontological research has also contributed to our knowledge of these ancient environments (Guilday *et al.* 1977, 1978, Guilday and Parmalee 1979, Saunders 1977). Subsequent applications of settlement models to environmental data provide a better picture of prehistoric life ways in the southeastern United States.

ENVIRONMENTAL RECONSTRUCTION

The use of paleobotany, paleontology, alluvial stratigraphy, and zooarchaeology to reconstruct past environments in the southeastern United States is an important component of archaeology. These studies have contributed greatly to understanding how changes in climatic conditions affected the settlement and subsistence patterns of prehistoric Indians. Paleobotanical work has documented changes in vegetation from glacial to postglacial conditions (Delcourt *et al.* 1980, 1983, Delcourt and Delcourt 1981). Data studied by paleontologists has presented a base to compare glacial and postglacial faunas found in the Southeast (Guilday *et al.* 1977, 1978, Pielou 1991, Saunders 1977). In addition, alluvial stratigraphy has contributed to knowledge about riverine environments in the Southeast (Brackenridge 1984). Finally, zooarchaeological research has been used to reconstruct fauna found in certain environments for various areas of the southeastern United States (Klippel and Parmalee 1982). These techniques are combined to present a reconstruction of the Late Pleistocene and Early and Middle Holocene environment for the Dust Cave area.

FLORA

Late Pleistocene Flora

Environment during the Late Pleistocene changed significantly. The climate became appreciably warmer thus causing the Laurentide ice sheet to retreat northward. A warmer climate also caused a rise in sea level, to at least 120 meters higher than present (Delcourt and Delcourt 1981). Changes also occurred in flora: plants were affected as much of the southeastern United States shifted from a mixed deciduous forest at the end of the Pleistocene to a southeastern evergreen forest in the Holocene (Figure 3.1).

Vegetational dynamics studies by Delcourt and Delcourt (1979, 1981, 1983, 1985) of the eastern United States pollen record suggest forests of around 25,000 years ago were primarily jack pine, spruce, and fir (1979:268). Between 19,000 and 16,300 years ago the pollen record suggests full glacial conditions with spruce and jack pine being primarily represented. Around 12,500 years ago, the spruce and jack pine forests were reduced and replaced by a variety of deciduous trees as the climate gradually warmed. Finally, at around 10,000 years ago, the forest contained abundant "oaks, ash, ironwood, hickory, birch, walnut, elm, beech, sugar maple, basswood, and hemlock" (Delcourt 1979:270).

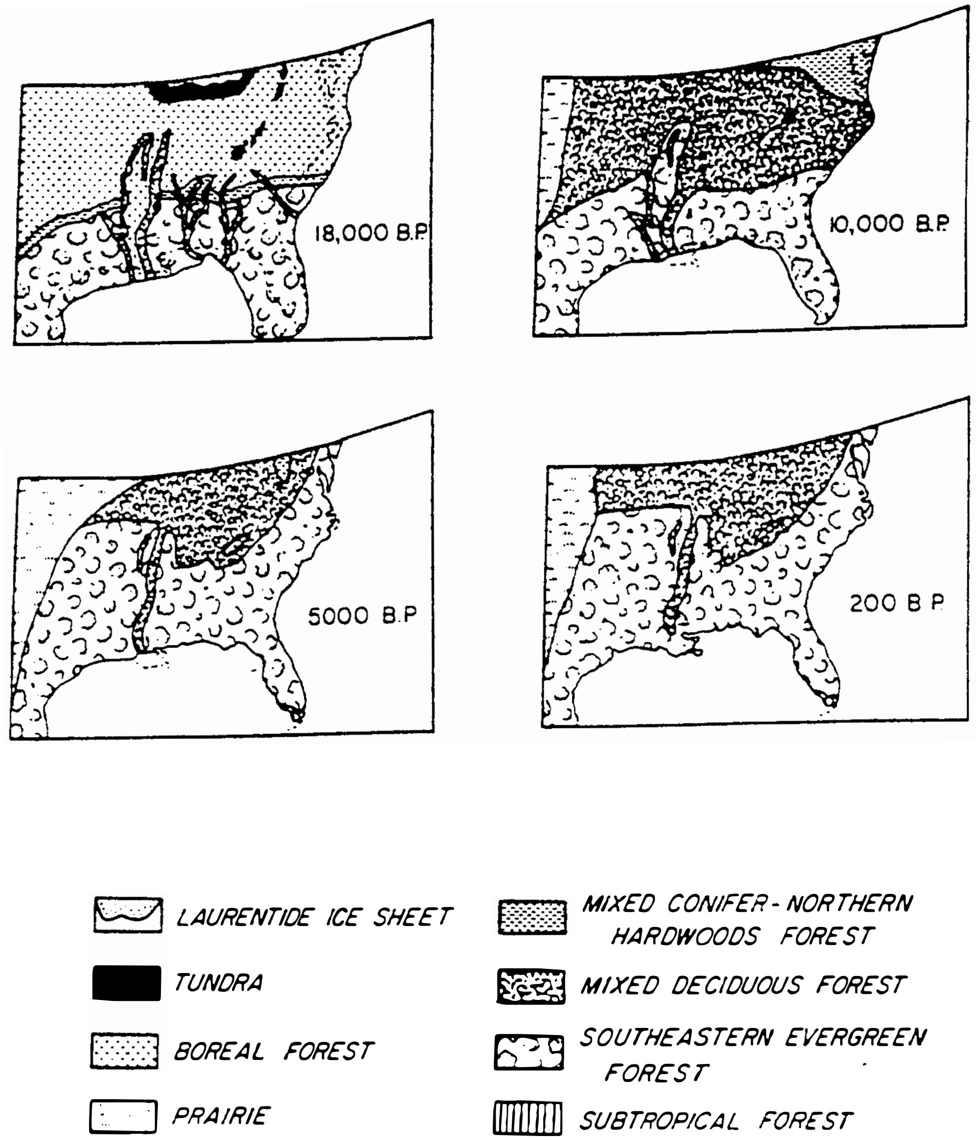


Figure 3.1. Paleovegetation maps from 18,000 to 200 years ago in the southeastern U.S. (modified from Delcourt and Delcourt 1985:16, with permission of the American Association of Stratigraphic Palynologists).

Dust Cave is situated between the Delcourt and Delcourt (1983) pollen study sites of Anderson Pond, Tennessee and Goshen Springs, Alabama (Figure 3.2). Anderson Pond is situated at approximately 36 degrees north latitude, 85 degrees west longitude. At around 20,000 to 12,000 years ago the environment around Anderson Pond shifted from boreal forest (20,000 B.P.) to a short interlude as mixed conifer-northern hardwoods (12,000 B.P.) to finally settling as cool-temperate deciduous forest at around 10,000 B.P. (Delcourt and Delcourt 1983).

Goshen Springs, located at approximately 31 degrees latitude, is characterized by an almost unchanging pollen record (Delcourt *et al.*1980). The vegetational trend from 20,000 years ago to the present is a warm-temperate southeastern evergreen forest (Delcourt and Delcourt 1983:269).

Dust Cave is located at approximately 34 degrees 46 minutes north latitude and is two degrees south of Anderson Pond and three degrees north of Goshen Springs. As shown in Figure 3.2, the vegetation around Dust Cave between 10,000 and 8,000 years ago was primarily cool-temperate deciduous forest. At 8,000 years ago, in synchrony with the onset of the Hypsithermal, the vegetation around Dust Cave shifted to a warm-temperate southeastern evergreen forest.

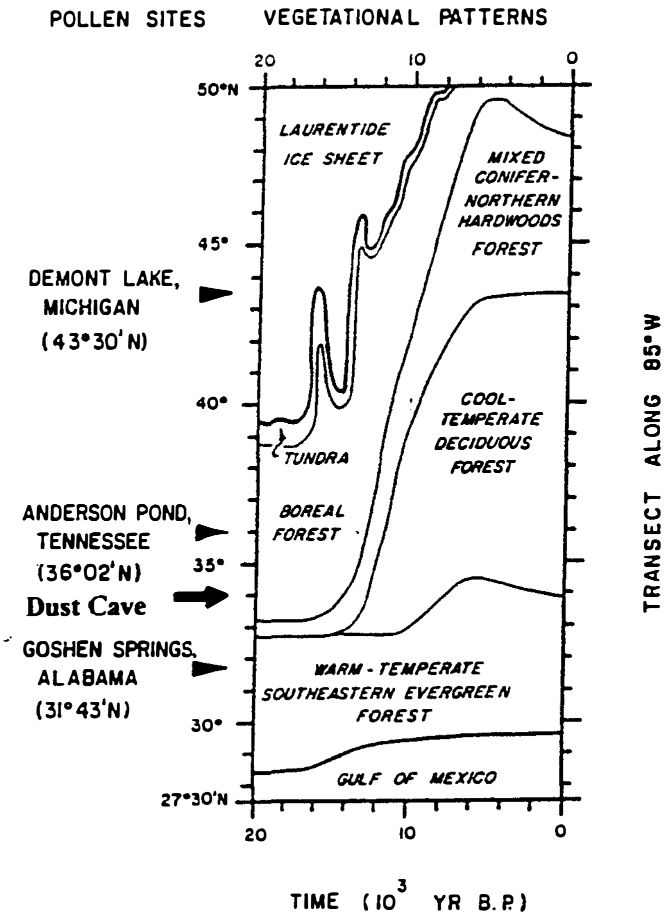


Figure 3.2. Changes in vegetation for the last 20,000 years along 85 degrees west longitude in the eastern U.S.; Dust Cave is illustrated by the arrow at 34 degrees north latitude (modified from Delcourt and Delcourt 1983:267; with permission of Quaternary Research).

Early Holocene Flora

Climatic changes in the Southeast have been documented as shifting from glacial conditions around 12,500 B.P. to more modern conditions by 3,000 B.P. (Delcourt and Delcourt 1981). In addition, from 10,000 B.P. to 6,000 B.P. the summer season experienced an increase in temperature and a decrease in precipitation (Delcourt *et al*. 1983). Added to changes in summer precipitation and temperature were changes in sea level. Between 10,000 and 3,000 B.P. the level of the sea gradually increased approximately 120 meters (Straus *et al*. 1996). According to Delcourt *et al*. (1983:52-53) it is the "greatest rate of change in the physical environment that triggers major biotic readjustments, including extinction, migration, or speciation".

Paleobotanical research conducted by the Delcourts during the late 1970s and early 1980s contributed greatly to understanding climatic conditions in the Early Holocene. Research has been conducted on pollen cores taken throughout the eastern United States (Delcourt and Delcourt 1981). These pollen cores documented that prior to the Hypsithermal the Southeast was characterized by boreal conditions at the end of the Pleistocene and mixed western mesophytic forests into the Early Holocene.

Middle Holocene Flora

The Middle Holocene is characterized by a warming and drying trend that occurred approximately 8,000 years ago and lasted until 5,000 years ago (Delcourt and Delcourt 1981, Chapman *et al.* 1982). This trend is termed the Hypsithermal and is documented by the Delcourts as having increased temperatures, increased stability of rivers, and decreased rainfall. The climatic effects of the Hypsithermal in the Southeast have been documented with paleobotanical, archaeological, and paleontological evidence indicating possible changes in settlement and subsistence patterns of Native Americans (Crites 1987, 1991).

During the Hypsithermal, vegetation was characterized with an expansion of prairie, grasslands, and cedar glades (Klippel and Parmalee 1982). Vegetational maps constructed by the Delcourts established an important picture of changing environments in the Southeast (Delcourt and Delcourt 1979, 1983). Following the hypsithermal, the environment assumed modern conditions with mixed oak-hickory and western mesophytic forests due to slightly cooler temperatures and increased rainfall.

FAUNA

Late Pleistocene Fauna

Paleontological and archaeological animal remains have been very important sources of information for Late Pleistocene environments. Many of these remains have been recovered from cave deposits. For example, data from the Ozark Highlands in Missouri document a wide variety of animals adapted to colder climates (Saunders 1977). Extinct species such as mammoth, mastodon, giant armadillo, sloth, dire wolf, saber-toothed cat, and tapir have been recovered from Boney Spring and Trolinger Spring (Saunders 1977:10-17). Other species not currently present in Missouri were recovered from these springs, including snowshoe rabbits, 13-lined ground squirrels, and bog lemmings (Saunders 1977).

In the southeastern United States, extinct species and species not currently present in the area were recovered from deposits at Savage Cave, Clark's Cave, and Baker's Bluff Cave. Savage Cave, located in southwestern Kentucky, produced two extinct species: the flat-headed and the long-nosed peccary (Guilday and Parmalee 1979). Other species not present in the area today are the porcupine, red squirrel, and pocket gopher. In addition, prairie chicken remains suggest that a grassland habitat was located near the cave (Guilday and Parmalee 1979:10). Thus, the paleontological remains at Savage Cave suggest a different climate and therefore a different availability of faunal species than in the Holocene.

The site of Clark's Cave in the central mountains area of Virginia contained a variety of paleontological remains. Guilday *et al.* (1977) interpreted the cave as a possible owl roost, providing information on the local environment. The presence of ptarmigan and least chipmunk indicates a colder climate during late glacial times. In addition, other species present at the site suggested a spruce/pine forest with nearby bog and meadowlands.

Baker's Bluff Cave, located in Tennessee, has fauna that represents a transition from a cool temperate climate to open woodland environment (Guilday *et al.* 1978). Most of the non-extinct mammals recovered in the deposits are now found in areas north or west of the site and other mammals are related to higher elevations (Guilday *et al.* 1978). Six extinct or extirpated species were identified from the site, including jaguar, beautiful armadillo, giant beaver, fugitive deer, flat-headed peccary, and tapir. Thus, the faunal evidence from Baker's Bluff corresponds to environmental conditions found in other paleontological assemblages from Late Pleistocene contexts in the Southeast.

Early Holocene Fauna

Most of the species recovered from archaeological sites occupied during the Early Holocene are or were present in the Southeast and were prey species of prehistoric Native Americans. Archaeological research conducted at Stanfield-Worley Bluff Shelter, Smith Bottom Cave, and Modoc Rock Shelter has documented changes in faunal assemblages from the Pleistocene to the Holocene (Parmalee 1962, Snyder and Parmalee 1991, Styles *et al.* 1983).

Stanfield-Worley Bluff Shelter is located in northwestern Alabama and was excavated in 1960 and 1961 (Parmalee 1962). Faunal remains from the Dalton zone of the site were associated with the Holocene environment. Mammals such as whitetail deer, squirrel, rabbit, fox, opossum, raccoon, chipmunk, wood rat, bobcat, porcupine, and skunk were recovered (Parmalee 1962). Birds included turkey, passenger pigeon, woodpecker, crow, barred owl, hawk, black vulture, and bobwhite. In addition, several species of turtle and fish, as well as snakes were identified. These remains are all common at archaeological sites occupied throughout the Holocene. However, the occurrence of porcupine at Stanfield-Worley Bluff Shelter documents the Early Holocene environment around the site as slightly cooler than at present (Hall and Kelson 1959:782).

Faunal remains from Smith Bottom Cave, in the northwest corner of Alabama, were investigated by Snyder and Parmalee (1991). Over half of the specimens recovered from this assemblage were mammals, a quarter were reptiles, a tenth were birds, and the remains were fish and amphibian (Snyder and Parmalee 1991:4). The wide variety of birds, primarily ducks and geese, recovered in this assemblage is likely due to Smith Bottom's location near the Tennessee River. It is noted, however, that the distribution of animals during the almost 8,000 years of the site's human occupation changed very little through time (Snyder and Parmalee 1991:12).

Modoc Rock Shelter, in Missouri, contained a variety of fauna indicative of the Early Holocene. In one of the earliest zooarchaeological analyses, Parmalee (1956) identified the faunal remains from the rock shelter. Thirty years later, in 1983, Styles and her colleagues again examined the animal remains from Modoc Rockshelter. Crediting him with precise identifications, Styles *et al.* (1983) concur with Parmalee's documentation of a large variety of mammals, birds, and some reptiles that were recovered from the lower levels of Modoc.

Middle Holocene Fauna

The faunal remains associated with the Middle Holocene are indicative of the warming and drying trend known as the Hypsithermal. It is during the Hypsithermal that animals such as prairie chickens occur more frequently at southeastern sites than during the Early Holocene. In addition, the stabilization of river systems may have increased the reliance on fish and shellfish. These resources are often found in greater numbers in archaeological deposits dating to the Mid-Holocene.

Animal resources, identified from deposits that date to the Hypsithermal at Modoc Rock Shelter, Smith Bottom Cave, and Stanfield-Worley Bluff Shelter were consistent with the warmer and dryer climates of the Middle Holocene (Parmalee 1956, 1959, Snyder and Parmalee 1991, Styles *et al*. 1983). For example, Smith Bottom Cave faunal material, identified by Snyder and Parmalee (1991), showed an increase in grouse and turkey during Hypsithermal conditions. Research at Stanfield-Worley Bluff Shelter indicated that fish and freshwater mussels were not present in the Early Holocene levels, but were present, though rare, in the Middle Holocene features (Parmalee 1962). Faunal remains from deeply stratified archaeological sites spanning the Hypsithermal supports information from paleobotanical research.

Perhaps the most informative research conducted with faunal remains on changing climatic conditions in the Southeast is by Klippel and Parmalee (1982) on Cheek Bend Cave. Cheek Bend Cave is located along the Duck River in Middle Tennessee. A preliminary investigation indicated cultural deposits dating to Woodland periods on the surface, in addition to deeply stratified deposits continuing to the bottom of the cave. A wealth of data on insectivores led to information on changing environmental conditions.

In the lowest levels of Cheek Bend Cave, boreal mammals, such as arctic shrews, were discovered. These levels were dated to around 13,000 B.P. (Klippel and Parmalee 1982). Conversely, in levels corresponding to Hypsithermal conditions, animals preferring drier habitats, such as prairie voles, were documented and species intolerant of very dry conditions, such as meadow voles, became more scarce (Klippel 1987:215).

Klippel and Parmalee (1982) documented the sympatric occurrence of boreal and contemporary species and the species found generally support conclusions made by paleoethnobotanists about climatic conditions in the Midsouth. For example, the palynological record indicates that plant species underwent similar transitions to that of the insectivores at Cheek Bend Cave (Delcourt and Delcourt 1985). First, boreal forests were dominant until around

13,000 years ago. Then, in the northeastern and mid-southern United States, the cool-temperate deciduous forest expanded around 10,000 years ago. In some areas, from around 34 degrees latitude and south, the cool-temperate deciduous forest was replaced with the warm-temperate southeastern evergreen forest around 8,000 years ago.

ALLUVIAL STRATIGRAPHY

Early Holocene

Research on the alluvial stratigraphy of the Midsouth region has provided several models for Early Holocene settlement. Prior to the Hypsithermal, river valleys were unstable and prone to flooding, similar to modern conditions. In addition, development of terraces eroded by rivers provided areas above the river flood plains for Native Americans to occupy (Brackenridge 1984). Thus, many early Holocene sites are located on river terraces (Turner *et al*. 1982).

Middle Holocene

Alluvial stratigraphy reconstructed by Brackenridge (1984) for the Duck River Valley provided an excellent framework for changes in river stability for the Holocene in the Midsouth. During the Hypsithermal rivers stabilized and allowed prolonged occupation of flood plains with reduced occurrences of flooding. Later, as climatic conditions became cooler and wetter, river systems destabilized and began depositing vast amounts of sediment in low-lying areas (Turner *et al.* 1982).

PICKWICK BASIN ENVIRONMENT

The present-day environment of Dust Cave is a cyprus swamp along a limestone bluff within Coffee Slough, a backwater area of the Tennessee River (Goldman-Finn 1994). The swampy environment is a result of the inundation of the Tennessee River to form the Pickwick Reservoir. Based on information from paleobotanical and zooarchaeological studies, the regional environment during the occupation of Dust Cave was highly variable. Late Paleoindian habitat may have been wetter than in subsequent Archaic times, dependent upon the location of the Tennessee River. Later, with the onset of the Hypsithermal during the Early Archaic and proceeding into the Middle Archaic, the environment was probably much drier and warmer (Delcourt and Delcourt 1981).

Additionally, information on the local environment at the time of the cave's occupation can be inferred from the paleobotanical data. The paleobotanical data indicate that nuts, particularly from oak and hickory trees, were procured by people at Dust Cave throughout its occupation (Gardner 1994).

Dust Cave is located in the Tennessee River Valley. Other sites in this area have been the object of extensive archaeological investigation of prehistoric occupation in the southeastern United States. The occupation of sites in this area can be investigated according to elevation. Early Archaic sites are largely located in areas of higher elevation, while an increase in the use of flood plains is evident during the Middle Archaic (Goldman-Finn 1994:222). This is probably due to the increased stability of the flood plain areas during the Hypsithermal drying trend of the Middle Archaic (Delcourt and Delcourt 1981). The location of Dust Cave between the river flood plain and upland allowed for at least two different habitats to be exploited.

SETTLEMENT MODELS

Archaeological research has used information on changes in the environment to construct settlement models and investigate mobility patterns for hunter-gatherers in the Southeast. This is based on the assumption that if archaeologists know what the environment was like during the time sites were occupied then they may be able to better understand how people settled and moved throughout the year.

For example, the evidence for the warming and drying in the Hypsithermal and its associated riverine stabilization may explain the increased settlement along the river areas. These areas were visited transiently in the Early Holocene, but it is not until the Mid-Holocene that archaeologists observe more prolonged settlement along rivers.

Pleistocene Settlement Models

Several settlement models have been proposed for Paleoindian hunter-gatherers during the Late Pleistocene. A model called the high-technology forager is offered by Kelly and Todd (1988). This model suggests that the highly curated tool kit of Paleoindians allowed them to move rapidly from place to place. Once in an area, these prehistoric people would deplete the resources and necessitate quick movement to another locale (Anderson 1996:32).

Meltzer (1989) supports a model of Paleoindians as more settled and practicing a more general foraging strategy, at least in eastern and southern areas of the United States. However, in more northern areas, a specialized concentration on animals such as megafauna was probably still the norm (Anderson 1996:32).

Holocene Settlement Models

Environmental data can also be useful for inferring mobility and subsistence strategies during the Holocene. Carr (1991) documented change in settlement for the Hayes site, located in Middle Tennessee. Based on stone tool manufacture and raw material procurement, Carr (1991) predicted that the Hayes site prehistoric occupants changed their adaptive strategy from foragers to collectors. He concluded that prior to the Hypsithermal Hayes occupants practiced a foraging strategy; this strategy also extended into Hypsithermal-maximum times. At the end of the Hypsithermal hunter-gatherers at Hayes began to practice a combined foraging and collecting strategy. This change in strategy corresponds to changes in the environment and provides an opportunity for archaeologists to predict and model behavior based on environment.

Anderson and Hanson (1988) have proposed a model for hunter-gatherers occupying the Southeast prior to Hypsithermal climates. They argue that prior to the Hypsithermal, settlement is characterized as highly mobile. This is probably due to the predictability of resources. However, Mid-Holocene settlement is characterized by a decrease in mobility beginning with the Hypsithermal and extending into later prehistoric times.

Sassaman (1992, 1996) has examined settlement and mobility of prehistoric hunter-gatherers of South Carolina during the Holocene. On the Coastal Plain of South Carolina, the sites along the terraces of rivers contained dense concentrations of artifacts representing base camps (Sassaman 1996:81). The artifact concentrations from other sites were less dense, and probably specialized hunting camps (Sassaman 1996:82). The occupation of these camps was seasonal and linked to changes in the environment.

Settlement models have been used to indicate the significance of the environment in hunter-gatherer life ways. Changes in the environment are integrally linked to changes in settlement and subsistence. Strategies for being more or less mobile are predicted by the confines of the environment, and therefore archaeologists are able to build models for explaining these patterns.

CONCLUSION

Using information on paleobotany, alluvial stratigraphy, zooarchaeology, and paleontology Dust Cave can be seen in both a regional as well as a local environmental context. Based on the above-mentioned data, the regional vegetation at the end of the Pleistocene was primarily boreal forest (Delcourt and Delcourt 1983, 1985, Klippel and

Parmalee 1982). However, by the time Dust Cave was occupied, the forest was probably composed of cool-temperate deciduous trees. The vegetation changed to a southeastern evergreen forest by the Middle Holocene. Settlement models based on environmental changes imply that people were more mobile prior to the Hypsithermal and became prone to more permanent settlement after the Hypsithermal. Thus, the Dust Cave faunal remains provide a unique opportunity to observe adaptations to broad environmental changes, as well as the study of local habitat exploitation and settlement.

CHAPTER IV

RESEARCH AT DUST CAVE 1989-1994

INTRODUCTION

This summary of research at Dust Cave chronicles the studies conducted at the site during the testing phase of excavations from 1989 to 1994. Although discovered in 1984 as part of a regional survey of caves (Cobb 1987), the extent of the deposits at Dust Cave was not fully appreciated until test excavations were undertaken in 1989. Several units were placed in various locations throughout the cave to document the location of artifacts. The units from the entrance of the cave contained the most archaeological material, and therefore, excavation efforts were concentrated in this area.

Preliminary analyses of the artifacts recovered during archaeological excavations were published in the *Journal of Alabama Archaeology* as a complete volume in 1994. This report includes sections on all aspects of the excavations. Geomorphological analysis interprets the cave's formation, as well as depositional history (Collins *et al.* 1994). Cultural chronology is established through projectile point typology and radiocarbon dating (Driskell 1994). The technology of the prehistoric occupants of Dust Cave is documented through studies of debitage, stone tools, and modified bone tools (Goldman-Finn and Walker 1994, Meeks 1994). The recovery of bone from human burials and animals allowed interpretations of diet and overall health of the population (Grover 1994, Hogue 1994, Morey 1994, Parmalee 1994). Finally, the regional implications of Dust Cave were established by summarizing the information provided from other sites in the area (Goldman-Finn 1994).

DUST CAVE HISTORY

Site History

Dust Cave is located in the northwest corner of Alabama in what is presently the Tennessee River section of the Pickwick Reservoir (Figure 4.1). The cave is situated along a limestone bluff and was discovered in 1984 by Dr. Richard Cobb, a local teacher, who brought it to the attention of the Alabama Cave Survey (Goldman-Finn and Driskell 1994). Dust Cave was later reported to the Alabama State Site File (Cobb 1987). Test excavations were conducted at Dust Cave from 1989 to 1994 by a research team from the University of Alabama Division of Archaeology headed by Dr. Boyce Driskell. The six years of archaeological excavations revealed approximately five meters of stratified deposits, with abundant faunal, lithic, and botanical remains.

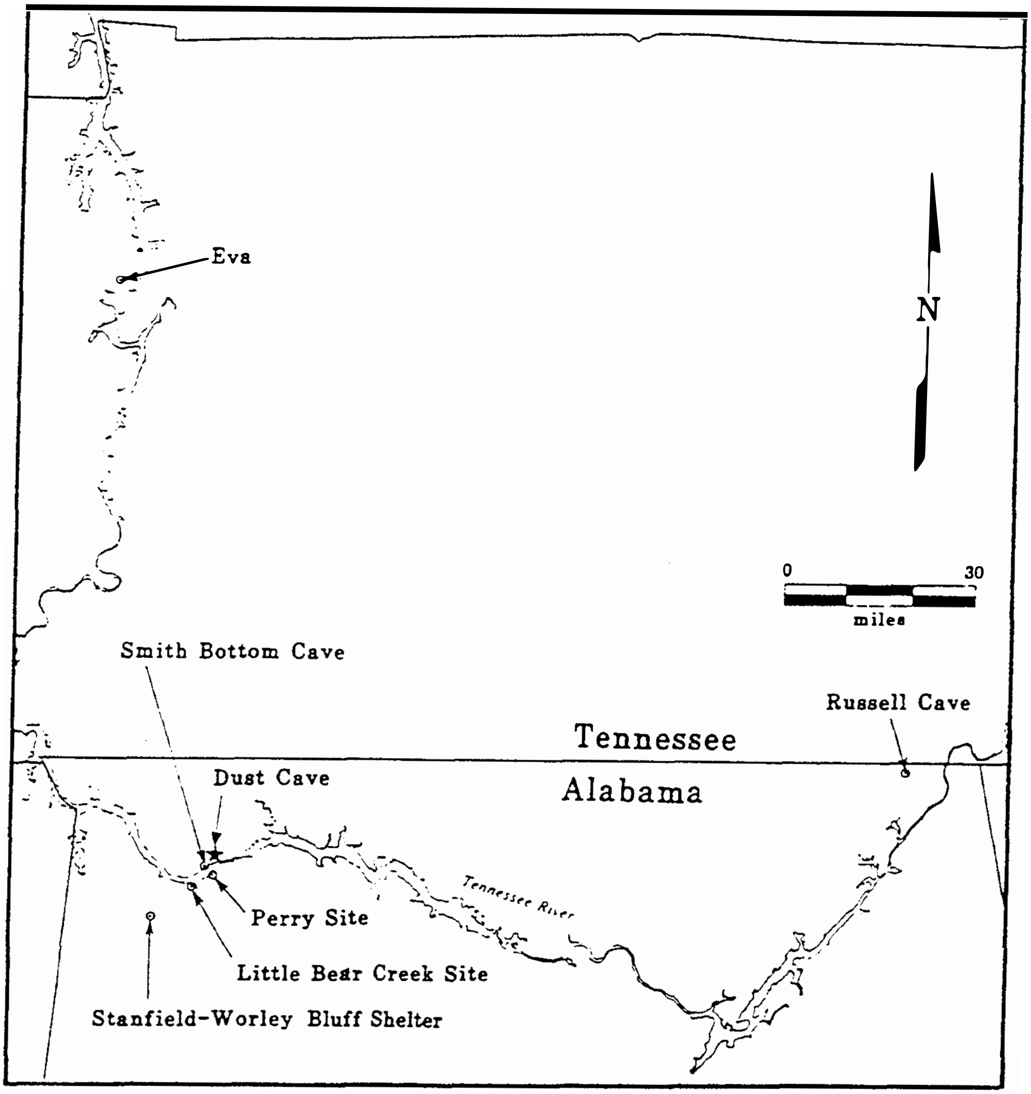


Figure 4.1. Location of Dust Cave in northwest Alabama (reprinted from Goldman-Finn and Driskell 1994:2; with permission of the *Journal of Alabama Archaeology*).

The investigation of Dust Cave was conducted by excavating seven test units (Figure 4.2). For the first three years (1989-1991) of excavation, test units were excavated in ten centimeter arbitrary levels. This strategy was employed in order to understand the extent and stratigraphy of the site. Beginning in 1992, a 12-meter trench was started in the entrance of the cave. This trench was divided into six two by two meter units and excavated in arbitrary ten centimeter levels. Later, in the 1993 season the units were divided into four one by one meter quads and excavated in five centimeter levels. In addition, the northwest quadrant of each one by one meter unit was removed as a flotation sample. Finally, in 1994, each one by one meter quad was given its own designation and excavated in arbitrary five centimeter levels. Stratigraphic zones were excavated separately for each of these levels. A quarter of each one by one was excavated for flotation. Flotation samples were later sorted in the laboratory at the Division of Archaeology, in Moundville, Alabama. The remaining material from each unit was water-screened through one-quarter inch mesh, and these materials were also sorted at the laboratory in Moundville (Goldman-Finn and Driskell 1994:9).

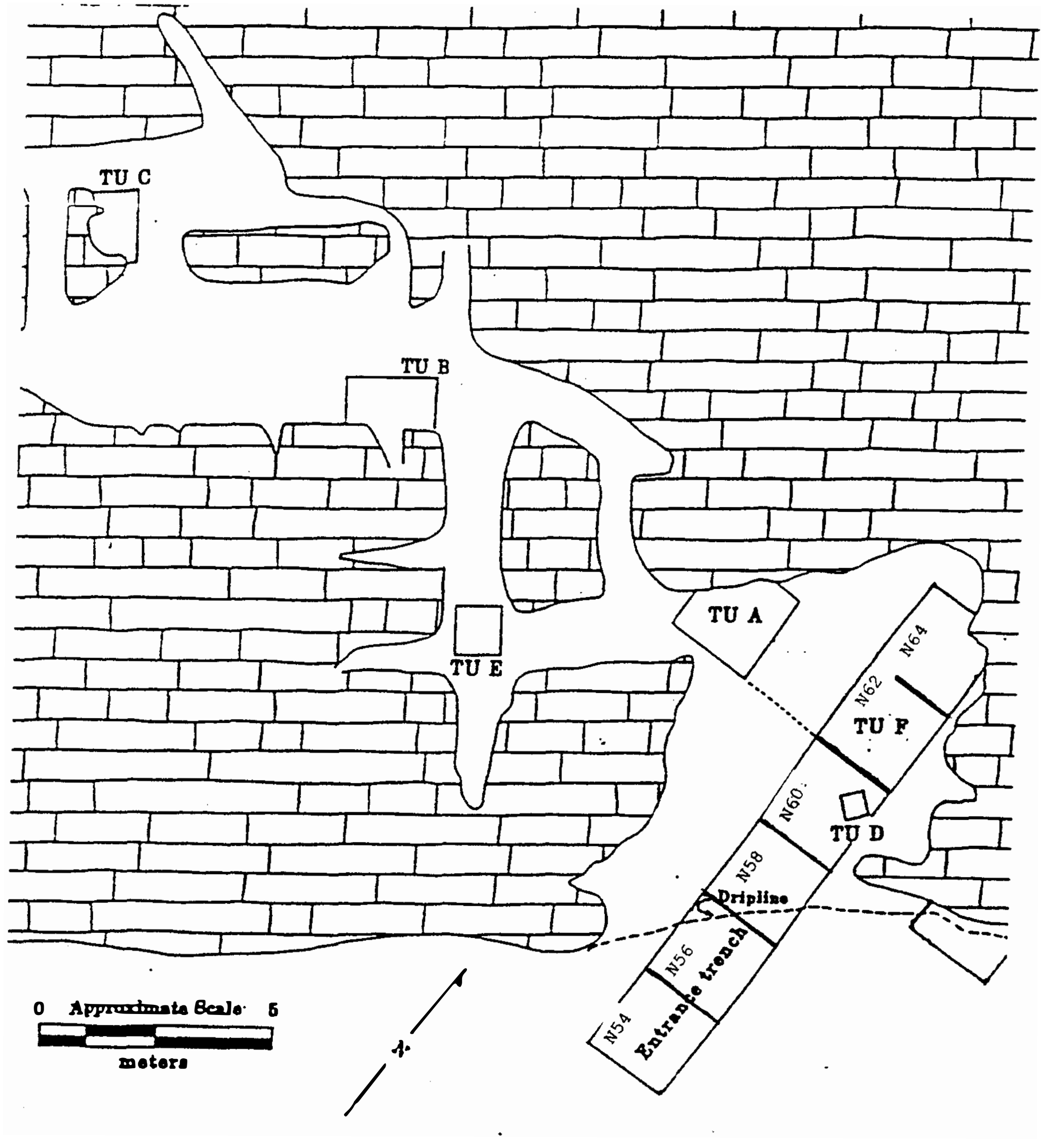


Figure 4.2. Location of Dust Cave Excavations (reprinted from Goldman-Finn and Driskell 1994:3; with permission of the *Journal of Alabama Archaeology*).

Depositional History

Geomorphological studies have revealed that Dust Cave was completely filled with sediment from the Tennessee River around 17,000 to 15,000 years ago (Collins *et al.* 1994). As the level of the Tennessee River decreased, Dust Cave became a conduit for spring water. This in turn flushed out most of the sediments. Following this sediment removal, the cave was periodically inundated with Tennessee River alluvium as evidenced in the sterile silty clays at the rear and base of the cave (Goldberg and Sherwood 1994). Approximately 10,500 years ago, the continued down-cutting of the river caused the cave spring to dry up, and the cave at this time became suitable for habitation. The subsequent sedimentation of the cave was due to human occupation and sediment falling from the bluff above the cave (Figure 4.3). Thus, occupation of the cave probably occurred circa 10,500 years ago and continued until 5,200 years ago (Table 4.1).

In addition, micromorphological analysis of the sediment has provided information about the depositional history of the cave. Micromorphology involves taking a field sample of sediments and then drying and impregnating them with an epoxy resin (Goldberg and Sherwood 1994). These sediment samples are then thin sectioned and examined under a petrographic microscope to observe sediment

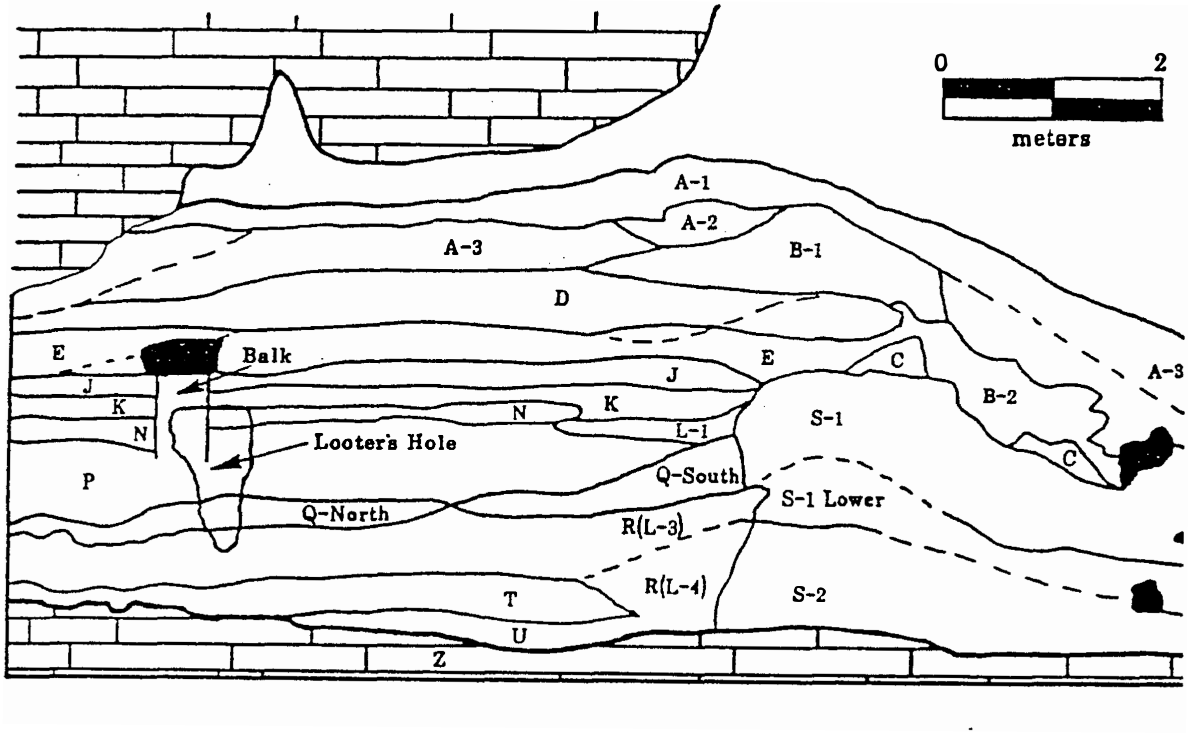


Figure 4.3. Major Stratigraphic Units along the east profile of the entrance trench (reprinted from Driskell 1994:18; with permission of the *Journal of Alabama Archaeology*).

Table 4.1. Stratigraphic Zones Associated with Radiocarbon Dates for Dust Cave (Driskell 1996:320).

Stratigraphic Zones	Radiocarbon Dates	Component/Phase
T, U, S2, Y	10,570 +/- 60 to 10,070 +/- 70	Late Paleoindian
Q, R, S1	9,990 +/- 140 to 9,190 +/- 130	Early Side-Notched
L1, P, Q1	8,720 +/- 90 to 7,040 +/- 80	Kirk Stemmed
E, J, K, N	7,010 +/- 90 to 6,050 +/- 100	Eva/Morrow Mountain
B, C, D	5,910 +/- 70 to 5,280 +/- 130	Seven Mile Island

composition.

Analysis suggests that the sediments from the main entrance chamber of the cave are primarily anthropogenic ashes, charcoal layers, and reddish clayey silts (Goldberg and Sherwood 1994:57). Field interpretation of these red lenses indicate that they were living floors. However, the micromorphological study revealed that the red lenses are a result of redeposition of mixed soil and anthropogenic sediments from the mouth of the cave (Goldberg and Sherwood 1994). These sediments have been cemented in place from the calcium carbonate dripping from the cave ceiling.

Culture Chronology

Five distinct cultural occupations have been defined for Dust Cave based on projectile point typologies and radiocarbon dates (Driskell 1994, 1996). As of 1996, 39 dates have been published from samples of the cave deposits (Driskell 1994:21, 1996:320). The radiocarbon dates for the cave range from 5,280 +/- 130 B.P. to 10,570 +/- 60 B.P. (Figure 4.4) Archaeological components include Late Paleoindian, Early Side-Notched, Kirk Stemmed, Eva/Morrow Mountain, and Seven Mile Island (Figure 4.5).

The Late Paleoindian component has been radiocarbon

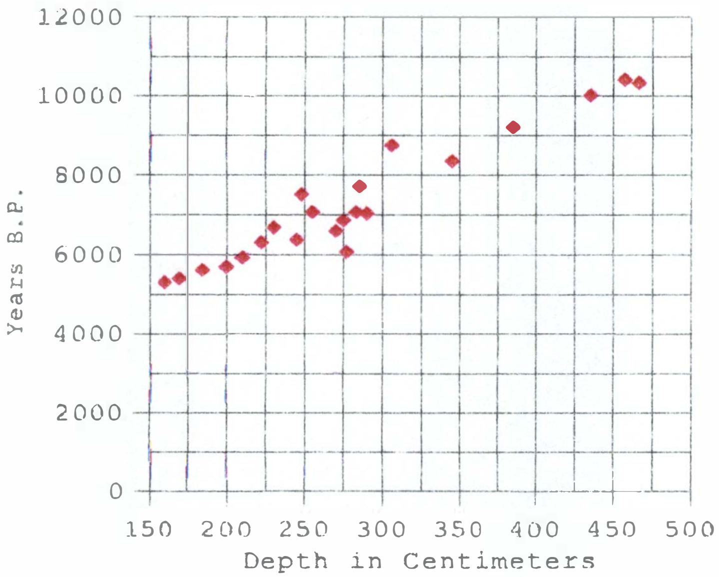


Figure 4.4. Radiocarbon dates plotted by depth for the entrance trench (after Driskell 1994:21).

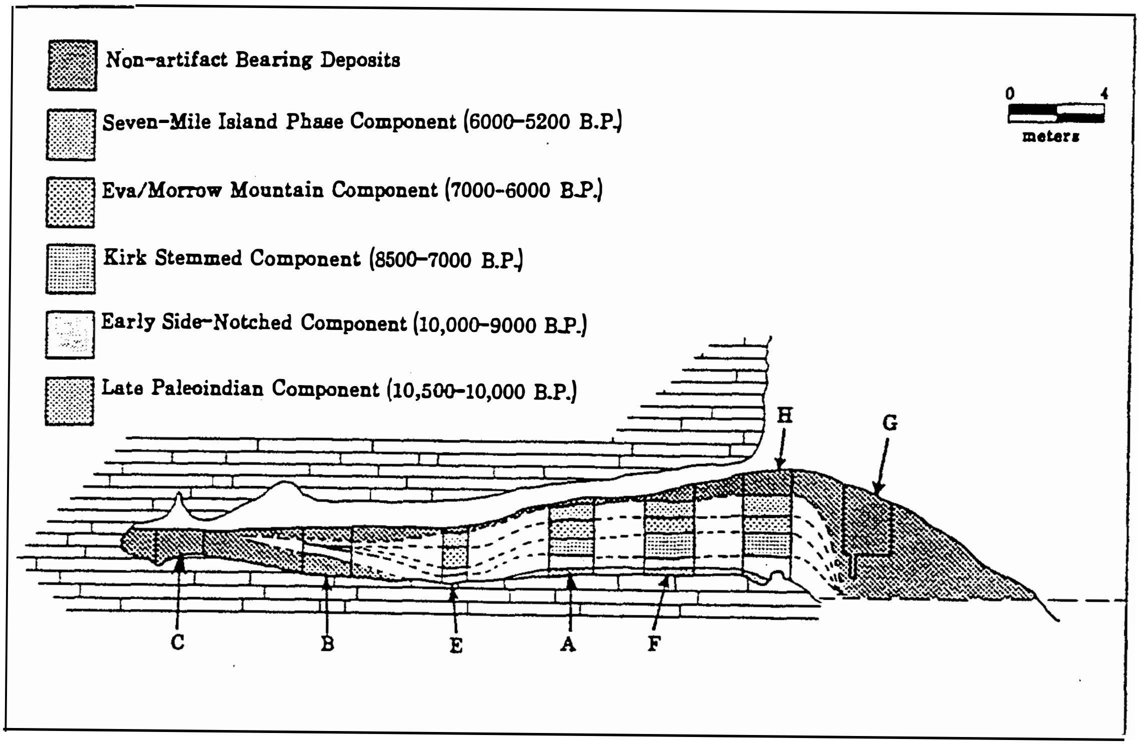


Figure 4.5. Cultural Composition along the east profile of the entrance trench (reprinted from Driskell 1994:20; with permission of the *Journal of Alabama Archaeology*).

dated to between 10,000 and 10,500 years ago. Associated point types found at the site include Cumberland, Quad, Hardaway, two Dalton-like fragments, one fluted fragment, and three Beaver Lake projectile points (Driskell 1994:28). These points were found in sedimentary units T and U (see Figure 4.3) from which other botanical, faunal, and lithic remains were recovered.

Following the Late Paleoindian occupation, the Early Archaic includes the Early-Side Notched and the Kirk Stemmed components (Driskell 1992, 1994). The Early Side-Notched component had Big Sandy projectile points and dates from 9,000 to 10,000 years ago. Big Sandy projectile points are found frequently in the Tennessee Valley area but also occur elsewhere in the Southeast (Driskell 1994, Justice 1987). The Big Sandy occupation is associated with sedimentary units Q and R, and may also include S1 (see Figure 4.3).

The later Early Archaic component is represented by the Kirk Stemmed and Serrated projectile points. This component dates from 7,000 to 8,500 years ago. These points are found throughout the eastern United States (Driskell 1994, Justice 1987). Kirk Stemmed and Serrated projectile points occurred in sedimentary units P, L1, and Q1 (see Figure 4.3).

The Middle Archaic period consists of the Eva/Morrow Mountain component and the Seven Mile Island phase (Driskell

1994). The former component dates from 6,000 to 7,000 years ago and includes both Eva and Morrow Mountain projectile point types. Eva projectile points were defined at the Eva Site in Tennessee by Lewis and Lewis (1961). Morrow Mountain projectile points are found throughout the Midsouth (Driskell 1994, Justice 1987). Eva and Morrow Mountain projectile points were found in sedimentary units E, J, K, and N (see Figure 4.3).

The Seven Mile Island phase, which is the final occupation of the cave, dates from 5,200 to 6,000 years ago and had primarily projectile points that were of the Benton type (Driskell 1994:19). This phase also includes Buzzard Roost Creek, Crawford Creek, and Sykes projectile point types. These points were found in association with sedimentary units B1, C, and D (see Figure 4.3).

TECHNOLOGY

Lithic Technology

The chipped stone artifacts recovered from Test Unit F (see Figure 4.5) of Dust Cave were analyzed by Meeks (1994). This study placed the lithic artifacts from Dust Cave into morphological, technological, and functional categories. The largest morphological category of tools was bifaces, most of which were made from Fort Payne chert (Meeks 1994:

85). Technologically, most of the lithic artifacts could be assigned to the primary shaping category. This indicates that preliminary reduction of tools occurred elsewhere (Meeks 1994:100). Although no micro-wear analysis has been conducted on the lithic material to date, several functional interpretations are offered. The bifaces would have been useful for cutting, sawing, chopping, and drilling, while the unifaces would have served better as scrapers (Meeks 1994:97).

Bone Tool Technology

Bone tools recovered from the site included 146 specimens classified as modified tools or ornaments (Goldman-Finn and Walker 1997). Fourteen bone tool classes were identified from the Dust Cave assemblage including awls, awl/points, beads, fish hooks, needles, perforated teeth, pins, projectile points, spatulas, tines, tube/beads, turtle carapace, wedges, and worked objects (Goldman-Finn and Walker 1994:108). Most of the bone tools were classified as awls (n=79). Chronologic distribution of the bone tools shows that they are primarily from the Middle Archaic components (Goldman-Finn and Walker 1994).

VERTEBRATE AND INVERTEBRATE REMAINS

Human Remains

Fourteen human burials were recovered from the Dust Cave deposits from the 1989 to the 1993 seasons. Twelve of the individuals were recovered from the Middle Archaic components, while the remaining two were from the Early Archaic, Kirk Stemmed component (Hogue 1994:174). Most of the burials from the cave were well preserved. Burial pits were difficult to distinguish and often the only indication of a burial was the presence of several limestone spalls. No other materials were recovered with the burials (Hogue 1994).

Sex of the adult human skeletons was determined; five were females and two were males (Hogue 1994:187). The ages of the humans buried in the cave ranged from newborn to around 55 years old. Overall health of the population was fairly good, similar to that of other hunter-gatherer groups (Hogue 1994).

Faunal Remains

An evaluation of mussel shells indicated that people were collecting almost half of their freshwater mussels from small creeks and rivers in the vicinity of Dust Cave, even though the larger Tennessee River had a vast mussel fauna.

Therefore, at least to some extent, occupants of Dust Cave utilized small creeks and rivers to meet their subsistence needs (Parmalee 1994).

Faunal data analyzed by Grover in her analysis of Test Unit F, now unit N62W64 (see Figure 4.5), only included medium and large mammals and birds (Grover 1993, 1994). Smaller mammals and birds, fish, amphibians, and reptiles were excluded from her analysis. However, Grover's findings indicate that a large number of the remains recovered from Test Unit F were from waterfowl and small game. In addition, four *Lagochila lacera* (Harelip Sucker) elements were recovered from this test unit. Harelip suckers became extinct during the early 1900's (Etnier and Starnes 1993:281).

The remains of *Canis familiaris* (Domestic Dog) were also recovered from Dust Cave. One dog burial was recovered prior to 1993 and was associated with the Seven Mile Island phase (Morey 1994:163). This specimen was probably a young adult between two and four years old and is similar in size to other prehistoric dogs recovered at archaeological sites dating to this time period (Morey 1994:165). In addition to this dog burial, five other *Canis* elements were recovered from the Early Archaic levels of Dust Cave. These remains most probably represent *Canis latrans* (Morey 1994).

CONCLUSION

Preliminary research has made great strides in documenting the prehistory of Dust Cave. The site was discovered as part of an archaeological survey in 1984. Preliminary testing revealed five meters of stratified deposits that date from 10,500 to 5,200 years B.P. Studies of its depositional history suggested that the site did not become habitable for humans until around 10,500 years B.P. Micromorphological analysis revealed that the sediment was deposited through both human and natural processes.

Culture chronology of the cave was established through projectile point typologies. The typologies indicated a consecutive, though probably intermittent, occupation from the Late Paleoindian through the Middle Archaic periods. Technological studies of lithic and bone materials were also conducted. Examination of lithic material indicated that stone tool reduction occurred elsewhere and finished bifaces were brought back to the cave for further reduction. Bone tools were primarily classified as awls; the presence of fish hooks, needles, and beads was also documented. Analysis of human skeletal remains from Dust Cave indicate that the health of the population was similar to that of other hunting and gathering groups of the Early and Mid-Holocene. That is, the population had generally good health due to a varied diet, but many individuals suffered periodic deficiencies in nutrition.

Skeletal remains of canids indicated that at least one individual from the Middle Archaic levels was probably domestic dog. Other specimens of dogs were identified at the site, several of which were associated with human remains.

Environmental data were gathered from paleobotanical, malacological, and zooarchaeological remains. These data indicated that the inhabitants utilized oak and hickory trees to obtain nut mast. In addition, mussel fauna suggests that small stream habitats were included within their subsistence rounds. Finally, faunal remains from Test Unit F indicate that waterfowl and small game were abundant in the assemblage. Thus, the research at Dust Cave has provided a variety of data to study Late Paleoindian and Archaic hunter-gatherers in the southeastern United States.

CHAPTER V

ZOOARCHAEOLOGICAL METHODS

INTRODUCTION

Several issues of importance to zooarchaeological research need to be addressed in any analysis of faunal remains. These issues concern the techniques used to interpret faunal assemblages. Quantification of faunal remains is an important issue because many techniques have been used by researchers to count remains and this effects interpretations (Chaplin 1971, Grayson 1973, 1984, Hesse and Wapnish 1985, Klein and Cruz-Uribe 1984). In addition, taphonomic factors impact interpretations of faunal assemblages (Lyman 1994). For example, the influence of human and nonhuman agents on bones alters the resulting data. Finally, specific interpretations, such as seasonality, are affected by the factors used to assess them. Therefore, faunal analyses need to be explicit as to basis of interpretations.

QUANTIFICATION

Zooarchaeology arose as a way of interpreting subsistence from archaeological sites. Its increasing significance in the late 1900s has resulted in a proliferation of faunal reports and studies. Zooarchaeologists have developed a variety of techniques for quantifying and reporting these data, but one of the major criticisms of these efforts has been the lack of standardization (Grayson 1973, 1984). Proponents of standardization argue that in order to compare faunal assemblages similar techniques of quantification must be employed. The pros and cons of common techniques utilized by faunal analysts are presented below.

Number of Identified Specimens (NISP)

The most widely used and reported technique for evaluating faunal remains is number of identified specimens (NISP). This is the most basic quantification measure which counts the number of bone fragments at a site (Davis 1987). However, NISP is subject to a number of biases. First, NISP is effected by the degree of bone fragmentation at a site. Taphonomic factors such as butchering and carnivore gnawing will affect the completeness of elements. Second, NISP is subject to the degree of bone preservation, weathering, abrasion, and fossilization. The advantages of this technique are that it is easily calculated and included in almost all faunal reports.

Minimum Number of Individuals

The estimation of minimum number of individuals (MNI) by White (1953) brought about another avenue for quantifying archaeological data. MNI is calculated by taking the most abundant element and the most abundant side for species to represent the numbers of individuals. This in turn allows calculation of edible meat weight for species (White 1953). MNI was adopted by zooarchaeologists in the 1960s and widely presented in faunal reports. However, Grayson (1984) documented a degree of bias in MNI estimates. He discovered that the MNIs of small samples are over-estimated, while the MNIs of large samples are under-estimated. Grayson's (1984) critique generated considerable debate in zooarchaeology over the merits of using MNI or NISP. However, MNI is valuable for estimating pounds of edible meat and is still widely used in zooarchaeological studies.

TAPHONOMY

Taphonomy has become one of the most important areas in zooarchaeological research. Zooarchaeological analysis involves at least some aspects of taphonomy (Lyman 1994). It was not long ago that taphonomy was of small importance in the reconstruction of subsistence and environments. In 1940, Efremov defined taphonomy as the "science of the laws of embedding." However, it was not until the 1970s that archaeologists began to recognize its importance. Since that time, archaeologists and zooarchaeologists alike have amassed considerable information on taphonomic processes affecting animal remains from archaeological sites (Behrensmeyer and Hill 1980, Bonnichsen and Sorg 1989, Gifford-Gonzalez 1989, 1991, Hudson 1993).

Gifford-Gonzales (1989) recognizes several stages of taphonomy: death, decomposition, disarticulation, weathering, abrasion, and burial. She has illustrated detailed charts showing how animals come to die, decompose, are buried, and then recovered (Gifford-Gonzales 1989). All stages of taphonomy must be studied to recognize patterns that may arise in the archaeological record. Based on studies by Gifford-Gonzalez (1989) and others, two areas of taphonomic studies have been identified (Bonnichsen and Sorg 1989, Hudson 1993): these are depositional and post-depositional processes.

Depositional processes are affected by a variety of human and nonhuman factors. Human factors include hunting practices, butchery, transport, and sharing. Nonhuman factors include impact of other carnivores on animal remains found at archaeological sites. Other nonhuman factors, such as post-depositional and/or post-burial processes, include differential preservation of bones, and natural processes such as weathering, fluvial transport, and bioturbation (Lyman 1985, 1988, 1994). In addition, archaeologists also affect the taphonomic record through the process of archaeological recovery and laboratory procedures. In sum, all of these factors play a role in the interpretation of animal remains from archaeological sites.

Human Agents

Human agents of taphonomic impact are a major focus of archaeological studies. Hunting practices and prey selection play a significant role in taphonomy because the technique and choice involved in acquiring meat effects what is later deposited at archaeological sites. For example, a large prey animal killed by bow and arrow at a far distance from the site may not necessarily be brought back to the site as a whole (Binford 1981). This, of course, depends on the number of hunters in a hunting party. This is called the Schlepp effect and has been analyzed by several researchers to determine what parts of an animal are left behind at a kill site and what parts are returned to a residential or processing site (Binford 1981). When large mammals are procured, such as a bison weighing 1,000 to 2,000 pounds, the carcass is generally butchered at the kill site and the meatier units brought back to a residential site for consumption (Frison 1991). In contrast, a whitetail deer from the southeastern United States, weighing around 100-150 pounds (Burt and Grossenheider 1976), could probably be carried back to camp as a whole unit by one to two hunters.

Binford (1978, 1980, 1981) and others (Guilday *et al.* 1962, Lyman 1987) have included cut marks, bone cracking for marrow, and the deposition of bone debris in taphonomic studies. In addition, different aspects of butchering such as skinning, defleshing, and disarticulating often have specific signatures (Binford 1984).

Bone burning has also been identified as a human impact on faunal remains. Bone can be burned both by direct and indirect causes. Direct causes include heating of meat units during cooking and discard of bone debris in fires. Indirect burning of bone has been documented to occur when bone is located even up to 15 centimeters below a fire (Bennett 1996). These factors must be considered when interpreting taphonomic effects of burning on faunal assemblages.

Recently, food sharing has been recognized as a factor that may affect where animal remains are deposited at an archaeological site. Marshall (1993) has studied the Okiek of Africa to determine the taphonomic factors involved in sharing. She has documented that hunting skill and gender play a role in deposition of animal remains. The best hunters will more often acquire game and subsequently take the most desired portions of meat for themselves. The rest of the meat from a kill will be distributed according to a person's role in the hunt. Marshall (1993) has recognized that small animals or animals acquired by trapping are often not shared. As far as gender is concerned there are differences in the degree of burning of animals because females keep a fire going all day and males will quickly cook and eat animals with the use of a large temporary fire.

Non-Human Agents

Several nonhuman agents are responsible for taphonomic impact on zooarchaeological assemblages. One is the destruction of bones by carnivore and rodent gnawing. This has been important in research on early hominid behavior. Early hominid behavior studied by archaeologists has been interpreted as either focusing on hunting or scavenging (Bunn and Kroll 1986, Potts and Shipman 1981). The examination of taphonomic processes involved in destruction of animal carcasses by carnivores has been contrasted with the destruction of carcasses by humans. Some researchers argued that Pleistocene hominids were primarily marginal hunters who often scavenged kills left by large carnivores (Brain 1981).

In North America, the impact of dog gnawing on animal remains from archaeological sites has been studied (Morey and Klippel 1991, Snyder 1991). Dogs have been documented in burials from prehistoric Native American sites and were probably domesticated around 8,000 B.P. (Morey 1992). These animals have been a taphonomic factor at prehistoric sites because they are very efficient destroyers of bone. Often dogs consume all but the most dense portions of bone (i.e., a distal humerus) and this will undoubtedly bias the archaeological record. Also, the bones of young animals (such as deer fawns) can be completely destroyed by carnivores and are then unobservable in subsequent excavations of an archaeological site (Snyder 1991).

Rodents also have a tendency to gnaw on bones left behind by humans. The impact is generally less than that of carnivores, but rodents will drag bones around in order to gnaw on them. Gnawing by rodents is generally characterized by long, parallel striations. These gnaw marks are easily recognizable as caused by rodents (Lyman 1994:196-197).

Raptors, such as owls, are also a factor in archaeological deposits of cave sites. Owls tend to roost in the same place over the course of the year, regurgitating the remains of meals, and thus producing accumulations of the small animals they have consumed (Klippel *et al*. 1987, Klippel and Parmalee 1982). Caves make excellent roosts for owls and are therefore prone to bone accumulations by these nonhuman agents. As in the case of Granite Quarry Cave, located in southeast Missouri, bone accumulations may be due largely to owls (Klippel *et al*. 1987:155). Thus, the impact of owls on faunal assemblages must be considered when studying faunal remains particularly from caves.

Post-depositional factors must also be recognized when analyzing the animal bones from archaeological sites. An example of this is differential preservation of bone. As previously stated, young animals have less dense bone than older ones and their preservation is negligible in all but the best conditions (Snyder 1991). Also, different parts of animal bones preserve better. For example, the dense distal humerus of the whitetail deer is often recovered from sites, while other fragments such as broken skull pieces, ribs, and vertebral fragments are not. Information about animal butchery and the importance of particular meat portions could be severely biased due to differential preservation (Lyman 1994). Furthermore, bones of animals such as birds and fish can be severely affected by differential preservation. Often, the bones of birds are broken or too eroded for identification (Parmalee 1976, 1977). Fish remains are often fragile (except for example drum pharyngeals) and too fragmentary for identification (Casteel 1972). This is significant because of the potential importance of fish and birds in prehistoric hunter-gatherer diets.

In addition, natural factors such as bioturbation and fluvial activity are problems at archaeological sites. Bioturbation includes the activities of small burrowing mammals and worms. Careful excavation and observation can help alleviate the problem of bioturbation. Fluvial activity is a taphonomic problem for open-air and cave sites alike. Open-air sites are often found along the flood plains and river terraces and are subject to mixing of remains during flood episodes. Also, some sites can become deeply buried in fluvial sediments. Movement of bones in fluvial settings has been studied in Africa, where some bone deposits were preliminarily interpreted as hominid sites, but on further evaluation fluvial activity was found to be the cause of these deposits (for discussions see Lyman 1994). Caves can often become flooded, washing material out of the cave or into jumbled piles as in the case of Smith Bottom Cave, which is located along the Tennessee River in northwest Alabama (Snyder and Parmalee 1991).

The bone recovered from Dust Cave is in excellent condition but taphonomic factors must be taken into consideration. First, rodent burrows are frequent in the cave, but careful excavation has hopefully controlled the problem. Second, the activities of carnivores are a taphonomic consideration due to the discovery of two dog burials in the Middle Archaic components, and dog or coyote coprolites in the Early Archaic strata. Observations of gnaw marks on bone will help identify the extent of carnivore damage. Third, in caves where raptors such as owls are known to roost large amounts of microfauna can be introduced (Klippel and Parmalee 1982). This can be recognized through identification of species habitually preyed upon by owls (Klippel and Parmalee 1982). Finally, fluvial activity was negligible (Driskell 1992) because the level of the cave was well above the Tennessee River during the its human occupation.

SEASONALITY

Discerning site seasonality from the archaeological record has been a great concern of archaeologists (Dunnell 1990, Davis 1983, 1987, Lyman 1994, Monks 1981, Wing 1977). As Binford (1981) has acknowledged, season is linked to the differentiation of archaeological places and is largely related to hunter-gatherer mobility patterns. Hunters and gatherers procure specific resources at different times of the year, live in different places, and aggregate and disperse during different seasons (Anderson and Hanson 1988, Binford 1981, Lyman 1994). Thus, documentation of faunal resources known to inhabit areas at certain times of the year is instrumental to understanding seasonal movements of humans.

There are several techniques that can be used in zooarchaeology to determine site seasonality. These techniques include more subjective ones such as species presence/absence, and bone growth (Davis 1987). Also, more objective techniques such as thin sectioning of fish spines (Monks 1981), mussel shells (Quitmeyer *et al.* 1985), and mammal teeth (Spinage 1973), and mortality data (Stiner 1990, 1991) can be used to interpret seasonality. Site seasonality can be assessed with both approaches.

Presence/Absence

Species presence/absence can be quickly and easily applied to most faunal assemblages to interpret season of site occupation. The basic principle is that certain animals are present in an environment, or easily accessible, at certain seasons of the year and not present during other seasons. One example is the presence/absence of migratory birds. By relating migratory bird remains found at archaeological sites to information on modern flyways it is possible to determine season of site occupation.

Despite the simplicity of this approach, there are several problems with this method. First, migratory waterfowl may not have been a part of prehistoric diet. Second, climatic conditions might interrupt the timing of seasonal migration patterns. Finally, the evidence of waterfowl does not always indicate that a site was only occupied during the spring and fall, but at least occupied during this time.

Another species presence/absence method is the identification of amphibian and reptile remains. The same principles as migratory waterfowl are involved, but using amphibian and reptile remains is even more problematic. For example, the presence of turtle remains has been used to interpret warm season occupation of a site. However, turtles are not entirely absent from an area during the cold season but often burrow into the mud during the winter making them largely inaccessible (Conant and Collins 1991). The same also applies to amphibian remains.

Bone Growth

A technique that is also subjective but useful for interpreting seasonality is differential bone growth, such as antler growth (Davis 1987, Wemmer 1987). Cervids such as whitetail deer grow antlers at certain times of the year (Wemmer 1987). The presence of antler remains can be used to indicate fall occupation of a site. However, antlers can be picked up after male deer shed them in the late winter. In addition, bone tools such as antler tines may have been acquired at a fall occupation site but carried year round as a valuable part of a tool kit.

Incremental growth on certain animal bones can also be studied to document seasonality. Bones such as fish spines and mammal teeth, as well as mussel shells, grow a layer of cementum over the course of the year; with more rapid growth during the warm months and slow growth during the cold months (Quitmeyer *et al*. 1985, Spinage 1973).

Mortality Data

Mortality data have also contributed to zooarchaeological interpretations of seasonality (Grigson and Payne 1982, Todd 1991). Often, animals such as cervids and bovids, have births at certain times of the year. If this birth season is known, and the age at death can be estimated, then the season for site occupation is interpretable (Davis 1983, Frison 1991, Lyman 1987, Todd 1991). Mortality data from whitetail deer (Beauchamp 1993, Konigsberg *et al*. 1997), red deer (Klein *et al*. 1981, Klein and Cruz-Uribe 1983), gazelles (Davis 1983), and bison (Frison 1991, Todd 1991) have been utilized to interpret seasonality.

Several problems exist for this method as well. One problem is that the birth date of species can fluctuate according to climatic conditions. For example, whitetail deer in Maine birth primarily in early May, but can range from April to June (Jacobson and Reiner 1989). This problem can be alleviated by setting wide seasonal durations (such as three months for fall, and three for winter). In addition, the techniques used to age the animals must be accurate. Despite these problems mortality data is a useful way to assess season of site occupation.

Determination of site seasonality is an important aspect of zooarchaeological analysis. Seasonality can be derived from more subjective techniques such as species presence/absence or antler growth. It can also be derived from more objective, albeit more time consuming, methods such as thin sectioning and mortality data. In any case, seasonality determinations provided by zooarchaeologists are essential to determinations of hunter-gatherer life ways.

CONCLUSION

In sum, zooarchaeological studies must clarify the techniques utilized during analysis. The use of NISP and MNI is essential because most other faunal reports use this type of quantification. Therefore, the results of faunal analysis can be compared between sites. Taphonomic factors must also be investigated to document the effect of human and nonhuman agents on bone, preservation of the bone, and effects of post-depositional processes. Finally, a determination of seasonality by studying animal remains is useful to document hunter-gatherer mobility patterns. Seasonality is determined by identifying the presence/absence of some animals such as migratory birds or cold-blooded amphibians, reptiles, and fish. Seasonal growth of bones such as antlers and the incremental growth of fish spines, mussel shells, and mammal teeth can also be used to document the season of occupation. Finally, mortality data can provide clues to site seasonality. The techniques discussed in this chapter are applied to the faunal assemblage from Dust Cave, Alabama.

CHAPTER VI

MATERIALS

INTRODUCTION

The materials for this research on the Dust Cave faunal remains were excavated from the entrance trench of the site (see Figure 4.2). All components of human occupation, from the Late Paleoindian through Middle Archaic periods, were represented. Materials were sampled from five two by two meter square units that constituted approximately 15% of the site matrix by volume. Fifty percent of the N64W64 unit was sampled, and 25% of units N60W64, N58W64, N56W64, and N54W64 were sampled.

The faunal remains were selected by using a random numbers table to choose proveniences from each unit. A total of 207 proveniences was analyzed. Out of the 207 proveniences analyzed, 46 (22%) were from flotation and 161 (78%) were water-screened. In addition, of the 46 flotation samples, 11 were from feature contexts, such as hearths and pits.

Identification of the remains was conducted at the University of Tennessee using the comparative zooarchaeological skeletal collection. Remains are presented according to class, family, genus, and species with habitat and ranges provided for identifiable specimens. In addition, number of identified specimens and minimum number of individuals are presented for the site. The sum of 11,023 animal remains weighing 5,122.1 grams (g) was examined. Of these, 6,167 (1,929.8 g) specimens were not identifiable.

MAMMALIAN FAUNAL REMAINS

Mammalian faunal remains are extremely common in archaeological sites in the southeastern United States. The taxonomic classification for mammals is presented according to the arrangement of the Peterson field guide by Burt and Grossenheider (1976) from most primitive to least primitive, with habitat and ranges provided. Hall and Kelson's *Mammals of North America* (1959) provides animal distributions from early historic accounts. Gilbert's (1980) and Olsen's (1964) osteology texts aided in identifications. In addition, Whitaker's Audubon field guide for mammals (1980), Schwartz and Schwartz *Mammals of Missouri* (1964), and Brown's guide to mammals of the southeastern states (1997) were used to supplement information on different mammal species. Table 6.1 presents the mammals identified from the cave deposits.

Table 6.1. Mammalian Faunal Remains

Taxonomic Classification	NISP	MNI
Didelphis marsupialis (Opossum)	24	3
Sorex sp. (Shrews)	2	1
Blarina brevicauda (Shorttail Shrew)	1	1
Talpidae (Moles)	1	1
Scalopus aquaticus (Eastern Mole)	1	1
Vespertilionidae (Plainnose Bats)	8	1
Pipistrellus subflavus (Eastern Pipistrel)	1	1
Procyon lotor (Raccoon)	50	3
Mustelidae (Minks, Weasels, Skunks)	4	1
Mustela sp. (Minks, Weasels)	1	1
Mustela vison (Mink)	1	1
Lutra canadensis (River Otter)	1	1
Mephitis mephitis (Striped Skunk)	1	1
Canidae (Dogs, Wolves, Foxes)	2	1
Canis sp. (Dogs, Coyotes, Wolves)	17	2
Vulpes fulva cf. (Red Fox)	3	1
Urocyon cinereoargenteus (Gray Fox)	2	1
Marmota monax (Woodchuck)	3	1
Tamias striatus (Eastern Chipmunk)	1	1
Sciurus sp. (Squirrels)	9	1
Sciurus carolinensis (Eastern Gray Squirrel)	170	10
Sciurus niger (Eastern Fox Squirrel)	10	2
Castor canadensis (Beaver)	4	1
Cricetidae (Mice, Rats, Lemmings, Voles)	7	1
Peromyscus sp. (White-footed/Deer Mice)	4	1
Neotoma floridana (Eastern Woodrat)	4	1

Taxonomic Classification	**NISP**	**MNI**
Microtus sp. (Voles)	15	4
Ondatra zibethica (Muskrat)	23	4
Sylvilagus sp. (Rabbits)	11	1
Sylvilagus floridanus (Eastern Cottontail)	48	4
Sylvilagus aquaticus (Swamp Rabbit)	9	1
Sus scrofa (Pig)	1	1
Odocoileus virginianus (Whitetail Deer)	145	6
Indeterminate Mammal	58	
Large Mammal	171	
Medium/Large Mammal	166	
Medium Mammal	96	
Medium/Small Mammal	49	
Small Mammal	174	
Small Mammal/Bird	79	
Total	1377	62

Didelphiidae

Didelphis marsupialis (Opossum)

The opossum is found in open woods, farmlands and sometimes near streams. Opossums are found throughout much of the United States (Hall and Kelson 1959). Twenty-four opossum bones were recovered.

Soricidae

Sorex sp. (Shrews)

These small animals are found in different habitats in much of North America. In the southeastern United States nine species are common (Brown 1997). Two *Sorex* sp. skull fragments were identified.

Blarina brevicauda (Shorttail Shrew)

Shorttail shrews are found in forests and grasslands of eastern North America (Burt and Grossenheider 1976). One left mandible was identified as this species.

Talpidae (Moles)

This family includes moles, and one element was identified to this family. The Eastern, Star-nosed, and Hairy-tailed mole species are found in the southeastern United States (Brown 1997).

Scalopus aquaticus (Eastern Mole)

"This mole prefers moist sandy loam; lawns, golf courses, gardens, fields, meadows; avoids extremely dry soil" (Burt and Grossenheider 1976:18). One eastern mole innominate was identified from the cave deposits.

Vespertilionidae (Plain-nose Bats)

This family consists of plain-nose bats such as the Little Brown bats, Myotis, pipistrels, and the Big Brown bat (Burt and Grossenheider 1976). These bats are generally found in caves and other dark crevices in much of North America. Eight specimens were recovered.

Pipistrellus subflavus (Eastern Pipistrel)

This species of pipistrel is found in caves throughout much of eastern North America (Brown 1997). One complete right humerus was recovered.

Procyonidae

Procyon lotor (Raccoon)

Raccoons are primarily nocturnal animals found in wetland areas in forests and occur throughout North America (Schwartz and Schwartz 1964). Fifty raccoon elements were identified.

Mustelidae (Weasels, Skunks, etc.)

One left canine was placed in this family but was similar in size and shape to that of a fisher. Fishers now occur primarily in Canada, but according to Hall and Kelson (1959:903) they have been known to range historically in the northeastern and northwestern United States. In addition, three other mustelid elements, two distal femurs and one proximal ulna, were identified to this family.

Mustela sp. (Minks, Weasels)

This genus includes animals such as minks and weasels. One mandible fragment was assigned to this genus.

Mustela vison (Mink)

Mink are found throughout most of North America and live along streams and lakes (Burt and Grossenheider 1976). One left mandible was identified to this species.

Lutra canadensis (River Otter)

River otters are found along streams, ponds, and lakes. Historically, river otters ranged throughout North America (Hall and Kelson 1959:944). Range of the otter has been restricted in recent times but they have been reintroduced to river systems everywhere but the southwestern United

States (Brown 1997). One river otter mandible was found.

Mephitis mephitis (Striped Skunk)

The striped skunk is found in open woods, brushy areas, and prairies throughout much of the United States and southern Canada (Burt and Grossenheider 1976). One right mandible was recovered.

Canidae (Dogs, Wolves, Foxes)

This family includes coyotes, wolves, domestic dogs, and foxes. The cave contained two fragments identified to the family Canidae.

Canis sp. (Dogs, Coyotes, Wolves)

This category includes domestic dogs, coyotes and wolves. A total of 17 *Canis sp.* specimens was recovered.

Vulpes fulva cf. (Red Fox)

This species of fox is found in forests and open areas throughout much of North America (Hall and Kelson 1959). One humerus, one tibia, and one maxilla were tentatively identified as red fox due to the large size of the elements.

Urocyon cinereoargenteus (Gray Fox)

This species of fox is generally found in brushy woodlands and is primarily nocturnal. Its range includes much of the United States and Mexico (Hall and Kelson 1959:862). One right astragalus and one right ulna were identified. The right ulna was identified as gray fox because it was much smaller than the ulna of a red fox female.

Sciuridae

Marmota monax (Woodchuck)

Woodchucks are found in the open woods and hilly grasslands of eastern and northwestern North America (Brown 1997). Three elements, two incisors and one left tibia, were identified as woodchuck.

Tamias striatus (Eastern Chipmunk)

Eastern chipmunks are generally found in deciduous forests in eastern North America (Schwartz and Schwartz 1964). One right mandible and one left femur were identified to this species.

Sciurus sp. (Squirrels)

Nine squirrel elements could be identified only to a genus due to their incompleteness.

Sciurus carolinensis (Eastern Gray Squirrel)

The habitat of the gray squirrel is limited to hardwood forest, probably due to nut mast concentrations (Brown 1997:98-99). This species of squirrel is found in abundance throughout eastern North America. The Dust Cave units contained a total of 170 gray squirrel elements.

Sciurus niger (Eastern Fox Squirrel)

The eastern fox squirrel is habitually found in open deciduous forest throughout much of the United States (Brown 1997:101, Hall and Kelson 1959:388). Ten fox squirrel elements were identified from the cave deposits.

Castoridae

Castor canadensis (Beaver)

Beavers are generally found near "streams and lakes with trees or alders on banks" (Burt and Grossenheider 1976). The range of this aquatic mammal was historically widespread throughout much of the United States and Canada (Hall and Kelson 1959:549). However, widespread trapping decimated beaver populations. Beavers have been reintroduced in many states and are currently present in the northwest Alabama area. Four beaver elements were recovered.

Cricetidae (Mice, Rats, Voles, Lemmings)

This family includes mice, rats, lemmings and voles. (Burt and Grossenheider 1976). Seven elements were identified to this family.

Peromyscus sp. (White-footed/Deer Mice)

The members of this genus include at least five species found in eastern North America, such as the white-footed mouse, deer mouse, old-field mouse, cotton mouse, and florida mouse (Brown 1997:118-124). Four mandible elements were identified to this genus. Unfortunately, no teeth were included with the mandibles so a species designation was not possible.

Neotoma floridana (Eastern Woodrat)

This species of rat lives primarily in lowland and wooded areas in the southeastern United States (Brown 1997). Four elements were recovered.

Microtus sp. (Voles)

Voles are found in a variety of habitats throughout North America. Fourteen vole elements were recovered, including 12 mandibles that could not be identified to species due to lack of teeth and two post-cranial elements.

Ondatra zibethica (Muskrat)

These animals live in marshy areas and are found particularly around ponds, rivers, and lakes. Muskrats range throughout much of the United States and Canada with the exception of Florida and California (Burt and Grossenheider 1976:194). Twenty-three muskrat elements were found.

Leporidae

Sylvilagus sp. (Rabbits)

Eleven elements were identified to this genus.

Sylvilagus floridanus (Eastern Cottontail)

Cottontail rabbits are found in open areas such as forest edges, abandoned fields, heavy brush, and weeds. Their range is throughout almost all of eastern North America and Mexico (Burt and Grossenheider 1976). A total of 48 cottontail remains was recovered.

Sylvilagus aquaticus (Swamp Rabbit)

The swamp rabbit is quite a bit larger than the average cottontail. In addition, the swamp rabbit is generally found in swamps and bottom lands throughout northern Georgia, Alabama, western Tennessee, Arkansas, Mississippi, Louisiana, and eastern Texas, and southern Illinois (Burt and Grossenheider 1976). Nine swamp rabbit elements were recovered from the units.

Suidae

Sus scrofa (Pig)

This species was probably first brought to North America from the Old World by Hernando DeSoto in 1539 (Brown 1997:180). One deciduous tooth was recovered from the lower deposits of the cave; the specimen was found near an area of profile collapse in the entrance trench, and is, therefore, intrusive. The pig tooth may have been dragged into the cave in recent times by rodents or carnivores and fell to the lower levels when that section of the profile slumped during the 1994 excavations.

Cervidae

Odocoileus virginianus (Whitetail Deer)

Whitetail deer are habitually found in farmlands, swamps, timbered bottom lands, and edge areas of forests. They range throughout the southern half of Canada and most of the United States, with the exception of several western states (Whitaker 1980). One hundred and forty-five elements were identified as whitetail deer.

Indeterminate Mammal

A total of 58 faunal remains was placed in the indeterminate mammal category. This category includes specimens that are extremely fragmentary.

Large Mammal

Specimens were placed in this category when family, genus or species could not be determined absolutely but it was evident that the bone came from a large animal, such as a deer, bear, or gray wolf. Large mammal individuals include species with adult specimens weighing more than 75 pounds. A total of 171 specimens was recovered.

Medium/Large Mammal

The medium/large mammal category includes bone fragments of animals that are smaller than 75 pounds in size but may be approximately the size of a coyote (50-75 pounds). One hundred and sixty-six bone fragments were recovered from this category.

Medium Mammal

Ninety-six specimens were placed in the medium-sized mammal category. Animals in this category might include fox, beaver, and raccoon with adult weights around 20-50 pounds (Burt and Grossenheider 1976).

Medium/Small Mammal

Forty-nine specimens were categorized as either medium or small sized animal bone fragments. These specimens are generally 5-20 pounds, such as rabbits, opossums, and striped skunks (Burt and Grossenheider 1976).

Small Mammal

This category includes mammals such as gray and fox squirrels which weigh less than five pounds (Burt and Grossenheider 1976). One hundred and seventy-four bone fragments were identified to this category.

Small Mammal/Bird

Specimens were placed in this category when no exact determination of class could be made. Seventy-nine small mammal or small bird bone fragments were recovered.

AVIAN FAUNAL REMAINS

Avian faunal remains are not always recovered in large numbers from archaeological sites, but at Dust Cave there is quite an abundance of avifauna (Table 6.2). Similar to the mammal remains, the avian taxonomic classification is organized according to the Peterson field guide (Peterson 1980). Additional information on habitat and range is provided from the Audubon field guide (Bull and Farrand 1995). Gilbert *et al.*'s (1985) avian osteology text was used to aid identifications. A list of families, genera, and species identified from the cave deposits follows.

Anatidae (Swans, Geese, Ducks)

This family includes waterfowl such as swans, geese, and ducks. Fourteen elements examined were not complete enough for an identification of genus or species and were therefore placed in this family.

Anserinae (Geese)

The subfamily Anserinae includes snow geese, Canada geese, white-fronted geese, Ross' geese, barnacle geese, and brants (Peterson 1980). Five elements were identified to this subfamily.

Table 6.2. Avian Faunal Remains

Taxonomic Classification	**NISP**	**MNI**
Anatidae (Waterfowl)	21	2
Anserinae (Geese)	5	1
Chen caerulescens (Snow Goose)	1	1
Branta canadensis (Canada Goose)	5	1
Anas sp. (Marsh Ducks)	23	2
Anas platyrhynchos (Mallard)	4	2
Aythyinae (Diving Ducks)	1	1
Mergus sp. (Mergansers)	1	1
Meleagris gallopavo (Wild Turkey)	18	2
Phasianidae (Pheasants, Prairie Chickens)	1	1
Tympanuchus cupido (Greater Prairie Chicken)	11	2
Colinus virginianus (Common Bobwhite)	15	4
Accipitridae (Kites, Hawks, Eagles)	2	1
Strix varia (Barred Owl)	1	1
Ectopistes migratorius (Passenger Pigeon)	16	3
Icteridae (Grackles, Meadowlarks, Blackbirds)	1	1
Quiscalus quiscula (Common Grackle)	2	1
Indeterminate Bird	1,790	
Large Bird	57	
Medium Bird	142	
Small Bird	91	
Total	2208	27

Chen caerulescens (Snow Goose)

This species inhabits arctic regions of North America during the breeding season. However, during the fall, these birds migrate south, passing through Mississippi and Alabama, to winter at the Gulf Coast (Bull and Farrand 1995). In the spring they migrate north again. One left coracoid of a snow goose was recovered.

Branta canadensis (Canada Goose)

A common North American goose that inhabits lakes, ponds, marshy areas and is often found grazing in fields (Peterson 1980). Five specimens were identified.

Anas sp. (Marsh Ducks)

Marsh ducks live on ponds, lakes, and swamps. This genus includes the mallard, black duck, pintail, wigeons, shoveler, and teals. All are migratory, breeding in northern North America and wintering in southern North America (Bull and Farrand 1995:390-398). Twenty-three elements were identified to this genus.

Anas platyrhynchos (Mallard)

Mallards are present in great abundance throughout North America, breeding in the northern states and Canada and wintering in the southeastern part of the United States (Peterson 1980). Four mallard specimens, two left proximal humeri, one left distal humerus, and one left coracoid, were recovered.

Aythyinae (Diving Ducks)

This subfamily includes diving ducks which live on big rivers, lakes, salt bays, and estuaries (Peterson 1980:58). Diving ducks include scoters, eiders, canvasbacks, redheads, ring-necked ducks, scaups, goldeneyes, and buffleheads. All are migratory, breeding in northern North America and spending the winter months in warmer southern North America. One humerus was identified to this group.

Mergus sp. (Mergansers)

This genus designates the "diving fish ducks with spikelike bills, [and] saw-edged mandibles" (Peterson 1980:62). These ducks are migratory and breed in northern North America and winter in southern North America. They inhabit lakes, ponds, and rivers. One right coracoid was identified to the genus *Mergus*, but the species could not be determined.

Meleagrididae

Meleagris gallopavo (Wild Turkey)

Turkeys are large birds found in meadows, farmlands, and open woodlands throughout the United States and northern Mexico (Peterson 1980). Twelve elements were identified as turkey.

Phasianidae

This family includes birds such as pheasants, grouse, and prairie chickens. One element was identified to this family.

Tympanuchus cupido (Greater Prairie Chicken)

Prairie chickens are found primarily in "tall-grass prairie" now limited to the north-central United States (Bull and Farrand 1995:448). These birds previously occurred throughout more of North America. Eleven elements were recovered from the deposits in Dust Cave.

Colinus virginianus (Common Bobwhite)

The bobwhite is generally found in pastures, farmlands, and other open areas. Primarily limited in range to eastern United States, but they have been introduced elsewhere. Fifteen specimens have been identified as bobwhite.

Accipitridae

This family includes "diurnal birds of prey, with hooked beaks, hooked claws" (Peterson 1980:150). Species in this family include kites, hawks, and eagles. Two elements, a left coracoid fragment and a terminal phalanx, were identified as belonging to a representative of this family.

Strigidae

Strix varia (Barred Owl)

Barred owls generally inhabit "low, wet woods and swampy forests" (Bull and Farrand 1995:551). This species inhabits much of North America and parts of western Canada. One barred owl element was recovered.

Columbidae

Ectopistes migratorius (Passenger Pigeon)

The passenger pigeon is now extinct; it was once abundant and widespread throughout much of eastern North America. Passenger pigeons flew in huge flocks, migrating from the Great Lakes region to the Gulf Coast (Schorger 1955:257). It would have been present in Alabama from November to February or March (Schorger 1955:269-285). Sixteen elements of this bird were recovered from Dust Cave.

Icteridae

This family includes various species of blackbirds, grackles, and meadowlarks which are generally found throughout North America. One element was identified to a representative of this family.

Quiscalus quiscula (Common Grackle)

The common grackle is found in fairly open ecotone areas as well as woodlands, brushy fields, stands of timber, and wooded farm lots (Peterson 1980). They range throughout eastern North America. Two elements from this species were identified.

Indeterminate Bird

This category was established for bird bones that were very fragmentary. A total of 1,790 fragments were recovered.

Large Bird

This size group includes large birds such as turkeys, raptors, and geese. A total of 57 bones was identified.

Medium Bird

This category includes birds, generally the size of a large duck, such as a mallard or a merganser. A total of 142 elements was identified as medium-sized birds.

Small Bird

Bird bone fragments assigned to this category include smaller birds such as jays, warblers, and buntings. Ninety-one fragments were assigned to this category.

AMPHIBIAN FAUNAL REMAINS

Several amphibian specimens were identified from the Dust Cave deposits. The amphibian remains are taxonomically organized according to the Peterson field guide (Conant and Collins 1991). Additional information is provided from the Audubon field guide on amphibians of North America (Behler and King 1995). Identifications were assisted with the use of Olsen's (1968) *Fish, Amphibian, and Reptile Remains from Archaeological Sites*. The taxonomic classification is provided in Table 6.3.

Table 6.3. Amphibian Faunal Remains

Taxonomic Classification	**NISP**	**MNI**
Rana sp. (True Frogs)	8	1
Rana catesbeiana (Bullfrog)	3	1
Bufo terrestris cf. (Southern Toad)	1	1
Indeterminate Amphibian	8	1
Total	20	4

Ranidae

Rana sp. (True Frogs)

This genus includes more than 20 species of frogs that occur in many different areas throughout North America (Behler and King 1995). Common eastern species include the crawfish frog, bullfrog, green frog, pig frog, river frog, pickerel frog, southern leopard frog, and wood frog. Eight elements were identified to this genus.

Rana catesbeiana (Bullfrog)

This large species of frog lives in waterways throughout eastern North America and parts of eastern Canada (Behler and King 1995). One left innominate, one right maxilla, and one urohyal were identified to this species.

Bufonidae

Bufo terrestris cf. (Southern Toad)

Southern toads are found in "pools and flooded meadows" of the southeastern United States (Behler and King 1995:397). One left innominate was recovered.

Indeterminate Amphibian

Eight specimens were assigned to this category when they were only identifiable as amphibians.

REPTILIAN FAUNAL REMAINS

Reptilian remains can be frequent on archaeological sites. This is largely because of dense turtle shell fragments which preserve well. The specimens are discussed in the order presented in the Peterson field guide on reptiles (Conant and Collins 1991). Further data on habitat and range are included from the Audubon field guide (Behler and King 1995). Identifications were aided with Olsen (1968). Table 6.4 represents the taxa identified to this class.

Testudines (Turtles)

Specimens were placed in this category when family, genus, or species could not be identified. One hundred and thirty-eight elements were identified as indeterminate turtles.

Kinosternidae

Sternotherus odoratus (Stinkpot)

This species of turtle is found in ponds, slow-moving streams, and rivers in eastern North America. Stinkpots are particularly found in "shallow, clear-water lakes, ponds, and rivers." (Conant and Collins 1991:44). Thirty-two shell fragments were identified.

Table 6.4. Reptilian Faunal Remains

Taxonomic Classification	**NISP**	**MNI**
Testudines (Turtles)	138	
Sternotherus odoratus (Stinkpot)	32	2
Emydidae (Pond, Marsh, Box Turtles)	30	
Terrapene carolina (Eastern Box Turtle)	49	1
Chrysemys picta (Painted Turtle)	10	1
Serpentes (Snakes)	3	
Colubridae (Non-venomous Snakes)	20	
Crotalidae (Venomous Snakes)	7	
Total	289	4

Emydidae

This is the largest of all families of turtles and includes the pond, marsh, and box turtles (Conant and Collins 1991:50). Elements were identified to this family when genus or species could not be determined. Thirty elements were identified.

Terrapene carolina (Eastern Box Turtle)

This terrestrial species of turtle inhabits forests and forest/grassland ecotones. Box turtles are very common throughout the eastern United States, particularly from "northeast Massachusetts to Georgia and west to Michigan, Illinois, and Tennessee" (Conant and Collins 1991:52). Forty-three shell fragments, three humeri, one femur, and two scapula were identified as eastern box turtle.

Chrysemys picta (Eastern Painted Turtle)

Painted turtles are often found in slower moving streams and rivers with "soft bottoms ... and half-submerged logs" (Behler and King 1995:450). The eastern variety ranges from Canada to Georgia (Conant and Collins 1991). Ten elements were attributed to this species.

Serpentes (Snakes)

This suborder includes more than 100 species of snakes found in North America. Specimens were placed in this category when family, genus, or species could not be determined. Three elements were placed in this suborder.

Colubridae (Non-venomous Snakes)

This family includes the non-venomous snakes which are found in a variety of habitats throughout North America. In North America, approximately 85% of all snake species are included in this family (Conant and Collins 1991:146). Twenty vertebrae were identified as those of non-venomous snakes.

Crotalidae (Venomous Snakes)

This subfamily includes venomous snakes such as the copperhead, cottonmouth, and rattlesnakes (Conant and Collins 1991:225). These snakes can be identified by the characteristic "hemal" spine on the vertebra (Olsen 1968). Seven vertebrae were identifiable to this family.

OSTEICHTHYES FAUNAL REMAINS

Fish are a common element in many archaeological faunal assemblages. Fish elements recovered from Dust Cave were all from freshwater species. Taxonomic classification follows the Peterson field guide to Freshwater Fishes (Page and Burr 1991). Other information was obtained from a variety of sources. Habitat preferences and ranges of fish were obtained from the Audubon field guide (Boschung *et al.* 1980). Information on Catostomid fishes was derived from Eastman (1977). The biogeography of fish in the Tennessee and Cumberland River drainages was obtained from Etnier and Starnes (1996) and Starnes and Etnier (1986). Finally, fish skeletal anatomy was obtained from Gregory (1932), Krause (1977), and Olsen (1968). Table 6.5 presents the recovered fish remains.

Acipenseridae

Sturgeons, such as the shovelnose and lake, are included in this family. These fish live in rivers and lakes of central North America, particularly in the Mississippi River drainage (Page and Burr 1991). Some species have also been documented as occurring in the Tennessee and Cumberland River drainages (Starnes and Etnier 1986:340). One element was identified as sturgeon.

Table 6.5. Osteichthyes Faunal Remains

Taxonomic Classification	**NISP**	**MNI**
Acipenseridae (Sturgeons)	1	1
Lepisosteus sp. (Gars)	4	1
Esocidae (Pikes/Pickerels)	4	1
Cyprinidae (Minnows)	1	1
Catostomidae (Suckers)	80	
Moxostoma sp. (Redhorse)	13	1
Moxostoma carinatum (River Redhorse)	5	1
Moxostoma duquesnei (Black Redhorse)	3	1
Moxostoma erythrurum (Golden Redhorse)	9	1
Ictaluridae (Bullhead, Catfish)	12	
Ictalurus punctatus (Channel Catfish)	3	1
Centrarchidae (Sunfishes/Bass)	17	
Micropterus sp. (Bass)	6	1
Micropterus salmoides (Largemouth Bass)	7	1
Stizostedion sp. (Walleye/Sauger)	1	1
Aplodinotus grunniens (Freshwater Drum)	20	5
Indeterminate Fish	776	
Total	962	17

Lepisosteidae

Lepisosteus sp. (Gars)

Gars are generally found in swamps and backwaters of larger rivers throughout the central and eastern United States. Four scales were identified as gar.

Esocidae

This family includes the northern pike, pickerels, and muskellunge that are found in lakes, swamps, and backwaters. The redfin and chain pickerels, northern pike and muskellunge are currently present in the Mississippi River System (Page and Burr 1991:60-62). The northern pike occurs as far south as Illinois, and may have occurred as far south as Alabama in the early Holocene (Etnier and Starnes 1996:336). However, only the redfin and chain pickerels have been documented in western Tennessee (Etnier and Starnes 1996:335-340). Four elements were identified.

Cyprinidae (Minnows)

This extremely large family includes fish found in a variety of habitats in North America (Page and Burr 1991:63). One element was identified to this family.

Catostomidae (Suckers)

This family includes fish that are generally bottom feeders. A total of 80 bones was identified.

Moxostoma sp. (Redhorse)

This genus includes species of suckers such as river, golden, black, blacktail redhorse, and striped jumprock, which are common to southeastern North America (Page and Burr 1991). Thirteen specimens were identified as redhorse.

Moxostoma carinatum (River Redhorse)

River redhorse is found in large creeks and rivers throughout the central United States (Page and Burr 1991). They are particularly common in the Mississippi River and Gulf Coast drainages (Eastman 1977). Five elements were identified to this species.

Moxostoma duquesnei (Black Redhorse)

This species of suckers inhabits creeks and rivers of central and southeastern United States (Page and Burr 1991). Three elements were identified as black redhorse.

Moxostoma erythrurum (Golden Redhorse)

The golden redhorse lives in a habitat of slow-moving creeks and rivers and its distribution includes northern and central North America (Page and Burr 1991). Nine elements of this species were recovered in the Dust Cave deposits.

Ictaluridae

This family includes species such as blue catfish, black, yellow and brown bullheads, channel and flathead catfish, and madtoms (Krause 1977). Catfish are generally bottom feeders and live in a variety of habitats. Twelve elements were identified to this family.

Ictalurus punctatus (Channel Catfish)

Channel catfish are common throughout the rivers and lakes of the central United States (Page and Burr 1991). Three specimens were identified to this species.

Centrarchidae (Sunfish, Bass, Crappies)

The sunfish family includes 30 species found in North America. Sunfish, bass, and crappies are common throughout the freshwater drainages of the eastern and central United States (Boschung *et al.* 1980). Seventeen specimens were identified to this family.

Micropterus sp. (Bass)

The genus *Micropterus* includes bass such as smallmouth, spotted, and largemouth (Page and Burr 1991). Six elements were identified to this genus.

Micropterus salmoides (Largemouth Bass)

This species of bass lives in rivers, lakes and backwaters of eastern and central North America (Boschung *et al.* 1980). Seven elements were identified as largemouth bass.

Percidae

Stizostedion sp. (Walleye/Sauger)

Walleye and sauger are native to the Great Lakes and the Mississippi River drainage (Page and Burr 1991:273-274). The habitat of the walleye is lakes, pools, and backwaters while the sauger is found more often in sandy and gravel runs. One left dentary was identified to the genus *Stizostedion*.

Sciaenidae

Aplodinotus grunniens (Freshwater Drum)

The Freshwater Drum is the only member of the Scianidae in North America that is a freshwater species (Page and Burr

1991:326). They are found on the bottoms of rivers and lakes throughout eastern and central North America. Twenty specimens were identified as freshwater drum.

Indeterminate Fish

Elements were placed in this category when no family, genus, or species could be determined. Overall, 777 specimens were identified as indeterminate fish.

CONCLUSION

The faunal material from Dust Cave includes representatives of five vertebrate classes that inhabited a variety of different environments. Twelve families of mammals are represented that include five genera and 18 species. Eastern gray squirrel and whitetail deer are the most commonly represented mammals. Raccoons, muskrats, and eastern cottontails were also fairly common. In terms of the size categories, large, medium/large and small mammals each had more than 150 specimens. The medium, medium/small, and small mammal/bird categories had less than 100 specimens.

Ten bird families and subfamilies are represented in the Dust Cave faunal remains; two genera and nine species were identified. The majority of the bird remains were waterfowl. Other species include turkey, prairie chicken, bobwhite, and passenger pigeon.

Amphibian remains are represented by two genera and two species. Four families of reptiles were identified in the faunal assemblage, including three different species. All reptile remains were those of turtles (particularly stinkpots, box turtles, and painted turtles) or snakes. No lizard elements were recovered.

Eight families of fish were represented and included eight genera and species. The majority of the identified fish were suckers including river, black, and golden redhorse. Catfish, sunfish/bass, and freshwater drum were also common.

In conclusion, a diverse vertebrate fauna was represented from the archaeological deposits in Dust Cave. Although bird remains were the most numerous, mammal elements were a major component of the assemblage. The remaining fish, reptile, and amphibian remains represent a diverse group of taxa. These remains attest to the diversity of habitat collected or hunted by the Late Paleoindian and Archaic human occupants of the cave.

CHAPTER VII

RESULTS: INTRA-SITE COMPARISON

INTRODUCTION

In this chapter faunal remains are discussed by archaeological component. First, remains recovered from the Late Paleoindian component are presented. Then, the two Early Archaic components, the Early Side-Notched and the Kirk Stemmed, are discussed. Finally, the two Middle Archaic occupations, the Eva/Morrow Mountain component and the Seven Mile Island phase, are presented. A comparison of the five assemblages is undertaken to document differences in resource selection, habitat exploitation, and environmental change through time. In addition, element distributions and seasonality are determined for the site as a whole. Element distributions are used to interpret the preservation, butchering, and disposal of animal remains at the site. Seasonality is investigated primarily through the study of migratory birds and whitetail deer antler recovered from the cave deposits.

Mortality of the whitetail deer remains from Dust Cave was analyzed to examine procurement strategies. Ages of the deer were estimated using crown height measurements on the first molars. These measurements were then analyzed using a quadratic regression equation and results were presented for the site.

Finally, the modified bone recovered from the site was analyzed to interpret butchering and food preparation techniques. Bone at the site was modified by burning, cutting, and manufacturing into tools. Bone tools recovered frcm the site were analyzed by type. Types of bone tools recovered from the site included awls, points, beads, tubes, fishhooks, needles, perforated teeth, antler tines, worked turtle shell, wedges, spatulas, and miscellaneous worked objects.

COMPONENT COMPOSITIONS

Late Paleoindian Component (10,500-10,000 B.P.)

The Late Paleoindian component contained a total of 2,413 vertebrate remains (Table 7.1). Sixty-three percent (N=1,516) of the remains were identifiable to class, family, genus, or species. The remaining 897 bone fragments, or 37%, were unidentifiable.

Early Side-Notched Component (10,000-9,000 B.P.)

The first Early Archaic occupation, the Early Side-Notched component, included a total of 3,908 faunal remains of which 38% were identifiable to class, family, genus, or species (see Table 7.1). Overall, 2,487, or 62%, of these were unidentifiable.

Kirk Stemmed Component (8,500-7,000 B.P.)

The later Early Archaic occupation, the Kirk Stemmed component, contained a total of 1,479 bone fragments (see Table 7.1). Over half, or 57%, of the remains in this assemblage were unidentifiable while 43% were identifiable at least to class, family, genus, or species.

Eva/Morrow Mountain Component (7,000-6,000 B.P.)

The earliest Middle Archaic occupation is the Eva/Morrow Mountain component (see Table 7.1). The faunal material recovered from this component contained a total of 2,127 faunal remains. Approximately 56% of these remains were not identifiable. However, 44% were identifiable to class, family, genus, or species.

Seven Mile Island Phase (6,000-5,200 B.P.)

The latest Middle Archaic occupation of the site, the Seven Mile Island phase, contained a total of 1,096 faunal remains (see Table 7.1). Approximately 66% percent of these remains were unidentifiable and 34% were identifiable.

Table 7.1. Faunal Remains (NISP) recovered from the Dust Cave Components

Taxonomic Classification	Late Paleoindian	Early Side Notched	Kirk Stemmed	Eva/ Morrow Mountain	Seven Mile Island
Didelphis marsupialis (Opossum)	1	7	7	7	2
Sorex sp. (Shrews)	2				
Blarina brevicauda (Shorttail Shrew)	1				
Talpidae (Moles)	1				
Scalopus aquaticus (Eastern Mole)	1				
Vespertilionidae (Bats)	5	1	2		
Pipistrellus subflavus (E. Pipistrel)					1
Procyon lotor (Raccoon)	15	9	8	13	5
Mustelidae (Weasels/Skunks/Mink)	1	2		1	
Lutra canadensis (River Otter)				1	
Mustela sp. (Weasel/Mink)		1			
Mustela vison (Mink)	1				
Mephitis mephitis (Striped Skunk)			1		
Canidae (Dogs/Wolves/Coyotes/Foxes)		1	1		
Canis sp. (Dogs/Wolves/Coyotes)	12		2	2	1
Vulpes fulva cf. (Red Fox)	1	2			
Urocyon cinereoargenteus (Gray Fox)	2				

Taxonomic Classification	Late Paleoindian	Early Side Notched	Kirk Stemmed	Eva/ Morrow Mountain	Seven Mile Island
Tamias striatus (Eastern Chipmunk)	2				
Marmota monax (Woodchuck)		1			2
Sciurius sp. (Squirrels)		3		3	3
Sciurius carolinensis (Gray Squirrel)	9	70	51	29	11
Sciurius niger (E. Fox Squirrel)	1	4	3	1	1
Castor canadensis (Beaver)		1		2	1
Cricetidae (Mice, Rats, Voles)	4	3			
Peromyscus sp. (White-footed/ Deer Mice)	1	3			
Neotoma floridana (Eastern Woodrat)	2	1	1		
Microtus sp. (Voles)	14	1			
Ondatra zibethica (Muskrat)	11	10	1		1
Sylvilagus sp. (Rabbits)			6	3	2
Sylvilagus floridanus (E. Cottontail)	14	13	8	10	3
Sylvilagus aquaticus (Swamp Rabbit)	5		2	1	1
Sus scrofa (Domestic Pig)		1			
Odocoileus virginianus (Whitetail Deer)	7	35	9	52	42
Indeterminate Mammal	25	1	13	2	17
Large Mammal	13	54	27	45	32
Medium/Large Mammal	89	12	8	38	19

Taxonomic Classification	Late Paleoindian	Early Side Notched	Kirk Stemmed	Eva/ Morrow Mountain	Seven Mile Island
Medium Mammal	28	29	17	17	5
Medium/Small Mammal	3	25	5	4	12
Small Mammal	19	47	50	43	15
Small Mammal/Bird	1		3	17	58
Anatidae (Waterfowl)	8	7	2	3	1
Anserinae (Geese)	3	2			
Aythyinae (Diving Ducks)		1			
Chen caerulescens (Snow Goose)	1				
Branta canadensis (Canada Goose)	2	3			
Anas sp. (Marsh Ducks)	10	10	2	1	
Anas platyrhynchos (Mallard)	2	2			
Mergus sp. (Merganser)				1	
Meleagris gallopavo (Turkey)	1	5	1	9	2
Phasianidae (Pheasants/Prairie Chicken)			1		
Tympanuchus cupido (Prairie Chicken)	7	3			1
Colinus virginianus (Common Bobwhite)	9	4	1	1	
Accipitridae (Hawks/Eagles)	2				
Strix varia (Barred Owl)			1		
Ectopistes migratorius (P. Pigeon)	8	4	1	2	1

Taxonomic Classification	Late Paleoindian	Early Side Notched	Kirk Stemmed	Eva/ Morrow Mountain	Seven Mile Island
Icteridae (Blackbirds/Orioles)	1				
Quiscalus quiscula (Common Grackle)	1			1	
Indeterminate Bird	911	372	164	301	42
Large Bird	16	22	16	1	2
Medium Bird	38	76	4	23	1
Small Bird	23	29	13	16	10
Anura	4	1		1	2
Rana sp. (Frogs)	6	1		1	
Rana catesbeiana (Bullfrog)	2			1	
Bufo terrestris cf. (Southern Toad)				1	
Testudines (Turtles)	18	27	18	51	24
Sternotherus odoratus (Stinkpot)		5	4	18	5
Emydidae (Pond, Marsh, Box Turtles)	1	18	6	3	2
Terrapene carolina (E. Box Turtle)	9	13	2	25	
Chrysemys picta (Painted Turtle)			1	9	
Serpentes (Snakes)	1	2			
Colubridae (Non-venomous Snake)	13	5	2		
Crotalinae (Venomous Snake)		6	1		
Acipenseridae (Sturgeons)	1				

Taxonomic Classification	**Late Paleoindian**	**Early Side Notched**	**Kirk Stemmed**	**Eva/ Morrow Mountain**	**Seven Mile Island**
Lepisosteus sp. (Gars)		2	1	1	
Esocidae (Pikes/Pickerels)		1	1	1	1
Cyprinidae (Minnows)				1	
Catostomidae (Suckers)	20	43	10	7	
Moxostoma sp. (Redhorse)	1	4	4	2	2
Moxostoma carinatum (River Redhorse)		5			
Moxostoma duquesnei (Black Redhorse)				3	
Moxostoma erythrurum (Golden Redhorse)	5	3	1		
Ictaluridae (Bullhead Catfish)	2	3	3	3	1
Ictalurus punctatus (Channel Catfish)	2			1	
Centrarchidae (Bass/Sunfish)	1	11	4		1
Micropterus sp. (Bass)		1	1	1	3
Micropterus slamoides (Largemouth Bass)		5	2	1	
Stizostedion sp. (Walleye/Sauger)	1				
Aplodinotus grunniens (Freshwater Drum)	7	10			1
Indeterminate Fish	88	378	140	135	35
Unidentifiable	897	2487	847	1211	725
Total	2413	3908	1479	2127	1096

COMPONENT COMPARISONS

Resource Selection

The exploitation of certain animal classes by prehistoric people during the occupation of Dust Cave changed through time (Figure 7.1). The Late Paleoindian component had a much higher percentage (69%) of avian remains than in later occupations. None of the later components had an avifauna comprising more than 40% of the assemblage. In addition, a large percentage (47%), of the avian remains from the Late Paleoindian component were those of waterfowl. Other animal classes were also represented in the Late Paleoindian assemblage. Nineteen percent of the identifiable remains were represented by mammals, nine percent by fish, two percent were reptiles, and only one percent of the assemblage was amphibian.

The Early Side-Notched component also had a relatively high percentage of bird remains (38%). Fish was the next most abundant class represented for a total of 32 percent. Mammals were also fairly abundant representing almost a quarter of the assemblage (24%). Finally, reptiles constituted five percent and amphibians one percent.

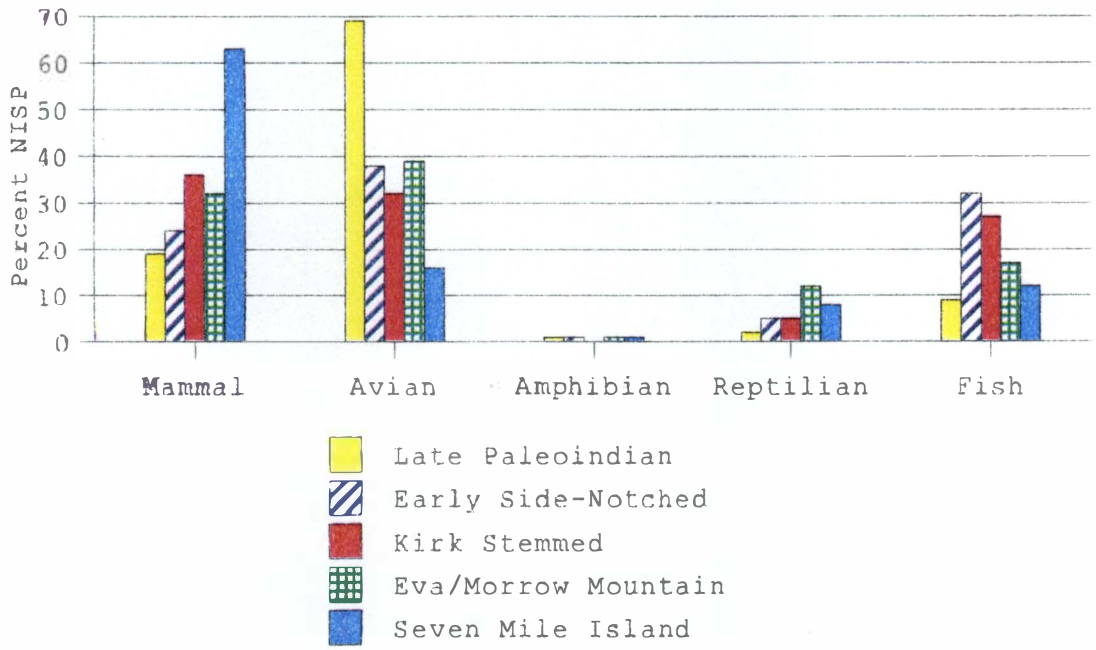


Figure 7.1. Resource Selection from the Late Paleoindian through the Seven Mile Island Components.

Animal classes in the Kirk Stemmed component were distributed with approximately one-third each of the assemblage comprised by mammals (36%), birds (32%), and fishes (27%). Five percent of the component was composed of reptile remains, and no representatives of the amphibian class were recovered from the Kirk Stemmed component.

The Eva/Morrow Mountain component had a slightly higher percentage of birds (39%) over mammals (32%). The avian remains were composed largely (72%) of terrestrial birds such as turkey, bobwhite, passenger pigeon, and grackle. In addition, 17 percent of the assemblage consisted of fish remains, 12 percent of reptile remains, and one percent of amphibian remains.

Finally, the Seven Mile Island phase had a higher percentage of mammal remains than any of the other components (63%). Next important in abundance was birds (16%) and fishes (12%). Reptile remains (8%) and amphibian remains (1%) were also represented.

In sum, the use of mammals increases through time, while the exploitation of birds decreases through time. In addition, from the Early Side-Notched component to the Seven Mile Island phase, the utilization of fish decreases through time. Meanwhile, the utilization of reptiles and amphibians is fairly consistent. These trends are probably linked to changes in the environment and reflect adaptations by prehistoric hunter-gatherers at Dust Cave to variations in animal populations.

Habitat Exploitation

A heavy reliance on aquatic species, such as waterfowl, muskrat, swamp rabbit, and pond turtles in the Late Paleoindian component changed to a dependence on terrestrial animals, such as whitetail deer, turkey, squirrels, and box turtle in later occupations (Figure 7.2). In the Late Paleoindian period, 62% of the resources were aquatic and 38% were terrestrial. In the Early Side-Notched component the aquatic resources constituted 76% of the assemblage, while terrestrial resources comprised only 24%. The Kirk Stemmed component contained 65% aquatic and 35% terrestrial resources.

The Middle Archaic components had a slightly higher or almost equal distribution of terrestrial than aquatic resources. The Eva/Morrow Mountain component contained 48% aquatic and 52% terrestrial resources. Finally, the Seven Mile Island phase contained 52% aquatic and 48% terrestrial resources.

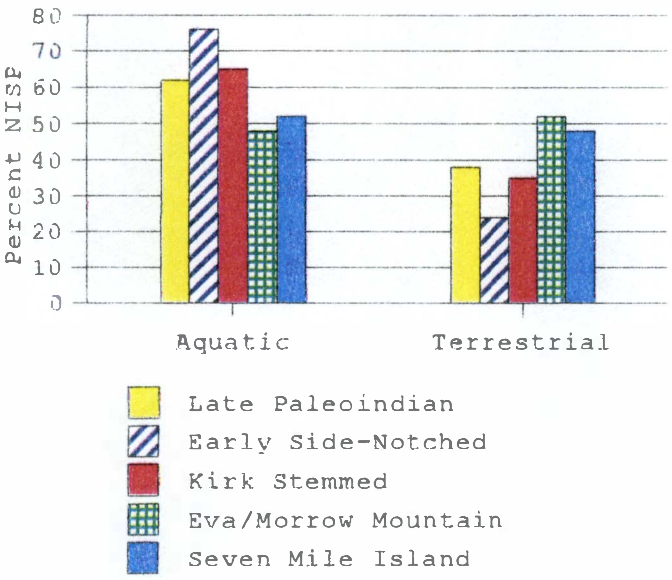


Figure 7.2. Exploitation of Aquatic and Terrestrial Habitats from the Late Paleoindian through Seven Mile Island Components.

Changes also occurred in the exploitation of animals from open, ecotone, and closed habitats. Species of animals found in the cave deposits from open environments include prairie chicken and bobwhite (Peterson 1980). Ecotone species include red fox, gray fox, whitetail deer, grackle, cottontail rabbit, and striped skunk (Burt and Grossenheider 1976, Peterson 1980). Closed habitat species include passenger pigeon, gray squirrel, raccoon, river otter, beaver, woodrat, muskrat, swamp rabbit, barred owl, opossum, and box turtle (Burt and Grossenheider 1976, Conant and Collins 1991, Peterson 1980).

The utilization of open, ecotone, and closed habitats varied between the components for Dust Cave (Figure 7.3). In general, open habitats were exploited the least among all habitats. However, the Late Paleoindian and Early Side-Notched components contained the highest percentages of open habitat species. The ecotone habitats were exploited slightly more frequently. The primary ecotone species accounting for this are whitetail deer and cottontail rabbits. Finally, most resources were exploited from closed habitats, with the exception of the Seven Mile Island phase which had a higher percentage of ecotone species.

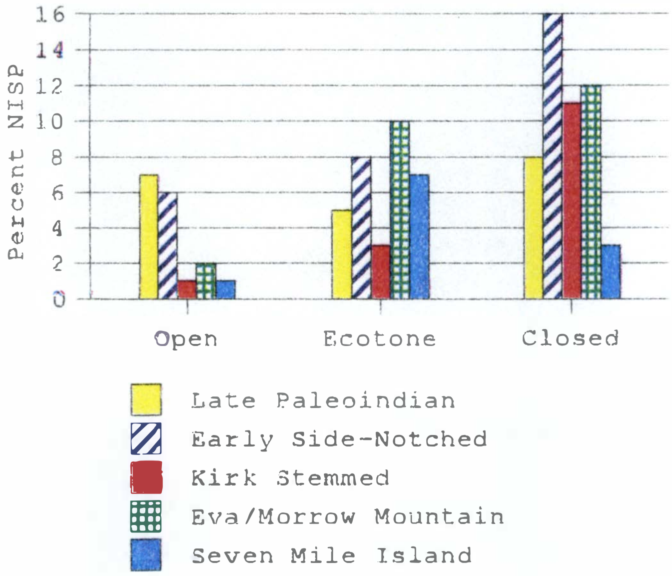


Figure 7.3. Exploitation of Open, Ecotone, and Closed Habitats from the Late Paleoindian through Seven Mile Island Components.

The high numbers of closed habitat species is primarily due to the number of gray squirrels in the deposits. Bottomland marsh species such as swamp rabbits, box turtles, and raccoons also were exploited from this habitat. As with the aquatic and terrestrial animals, the animals from open, ecotone, and closed habitats also added to the variation in diet for the inhabitants of Dust Cave.

Environmental Change

The shift in focus on aquatic and terrestrial resources and differing exploitation of open, ecotone, and closed habitats throughout the cave's occupation are supported by environmental data. Paleovegetation maps indicate that Late Pleistocene conditions were wetter and cooler than during the Middle Holocene (Delcourt and Delcourt 1983). The presence of many waterfowl and other aquatic animals suggests that marshes and riverine areas conducive to attracting these animals were located nearby. Subsequently, during the warming and drying conditions of the Hypsithermal these marshy areas were depleted and terrestrial resources became the more reliable subsistence base.

Change in use of open, ecotone, and closed habitats is also supported by paleovegetational data. Prairie chickens and bobwhites are indicative of open conditions found during the Late Paleoindian and Early Side-Notched components. As the deciduous forest expanded, a reliance on animals from closed habitats became more pronounced. Finally, during the Seven Mile Island phase, the Hypsithermal caused an opening of the forest area creating an ecotone habitat preferable to species such as whitetail deer and cottontail rabbits. Thus, changes in environmental conditions around the cave were reflected in the subsistence adaptations of prehistoric people inhabiting Dust Cave.

ELEMENT DISTRIBUTION

The distribution of elements can be used to illustrate taphonomic factors such as differential preservation, butchering practices, and/or disposal patterns (Binford 1981, Guilday *et al.* 1962, Lyman 1994, White 1953). The faunal remains identified from the site were separated by class into six body part categories (Table 7.2). These include cranial, vertebra, forelimbs, forefeet, hindlimbs, and hindfeet.

Fish were represented by cranial elements (86%) and vertebrae (14%). These are generally the most identifiable elements of fish. Amphibian remains were primarily

Table 7.2. Element Distribution by Class.

Taxon	Cranial	Vertebra/ Axial/Other	Forelimb	Forefeet	Hindlimb	Hindfeet	NISP
Fish	86%	14%	-	-	-	-	185
Amphibian	5%	33%	12%	-	50%	-	19
Reptiles	-	98%	2%	-	-	-	289
Bird	2%	2%	65%	-	30%	1%	416
Small/Medium Mammal	50%	1%	24%	1%	16%	8%	415
Large Mammal	42%	15%	3%	19%	1%	20%	170

hindlimbs (50%) and vertebrae (33%), with forelimbs (12%) and cranial elements (5%) also represented. Many of the reptile remains were placed in the axial/vertebra/other category due to the large quantities of carapace and plastron fragments identified as turtle shell (98%). The one forelimb element (2%) was identified as an eastern box turtle humerus. Bird remains consisted mostly of wing elements (65%) such as the humerus, carpometacarpus, and ulna. Hindlimb elements were less common (30%), and hindfeet (1%), head elements (2%), and vertebrae (2%) were very uncommon. Both the large mammal (42%) and small/medium mammal (50%) categories were comprised mainly of cranial elements due to the presence of teeth, mandibles, and maxilla that are readily identifiable to genus or species. Also common in the small to medium mammal category was the fore- (24%) and hindlimb (16%) elements. However, in the large mammal category the fore- and hindlimbs were relatively uncommon (less than 4%), while the foot elements were often recovered (35% total).

In sum, the element distribution for all the components at the site suggests that the faunal remains from the cave are primarily the head, fore- and hindlimbs, and fore- and hindfeet for the mammal and bird classes. This suggests that, in general, whole mammal and bird carcasses were being brought back to the site, processed and discarded in the cave. The fish, amphibian, and reptile remains are primarily represented by cranial and axial elements, with the exception of the 50 percent amphibian elements which are composed of hindlimb. These elements may be over-represented in the assemblage due to their high degree of identifiability to class, and the differential preservation of these elements. For example, the cranial elements of fish tend to be larger and better preserved than the thin, easily broken ribs, rays, and spines. In addition, the preparation of fish may be such that the bodies are cooked as a whole, with the heads removed and discarded.

SEASONALITY/SPECIES AVAILABILITY

Seasonality of the cave's occupation can be inferred from species availability and seasonal bone growth. Remains of birds which migrate at different times of the year, such as passenger pigeon, have been identified from the cave's faunal assemblage. In addition species of ducks and geese, such as snow goose, Canada goose, and mallard have been identified. The seasonal growth of bones, such as whitetail deer antlers, can also be used to infer seasonality. A whitetail deer antler specimen from the

Early Archaic period of the cave is used to estimate seasonality. Finally, certain cold-blooded species such as fish, amphibians, and reptiles can be used to document seasonality in the assemblage. Because the migratory bird, whitetail deer, and cold-blooded taxa are represented in the faunal assemblages for all of the components, seasonality is discussed for the site as a whole.

Migratory Birds

The passenger pigeon, now an extinct species, was available in great numbers prehistorically and during early historic times (Schorger 1973). Flocks of passenger pigeons were present in the Southeast during the fall and winter after which they would migrate north to nest in the upper Great Lakes region (Figure 7.4). In the mid to late 1800s passenger pigeons were recorded in western Tennessee and Alabama during the months of October and November (Schorger 1973:269-280). For example, on November 17, 1883 the passenger pigeon is documented as arriving in Marion, Alabama approximately 200 miles south of Dust Cave (Edisto 1883:509). Thus, this bird would have been available to prehistoric hunter-gatherers at Dust Cave during the fall and winter seasons.

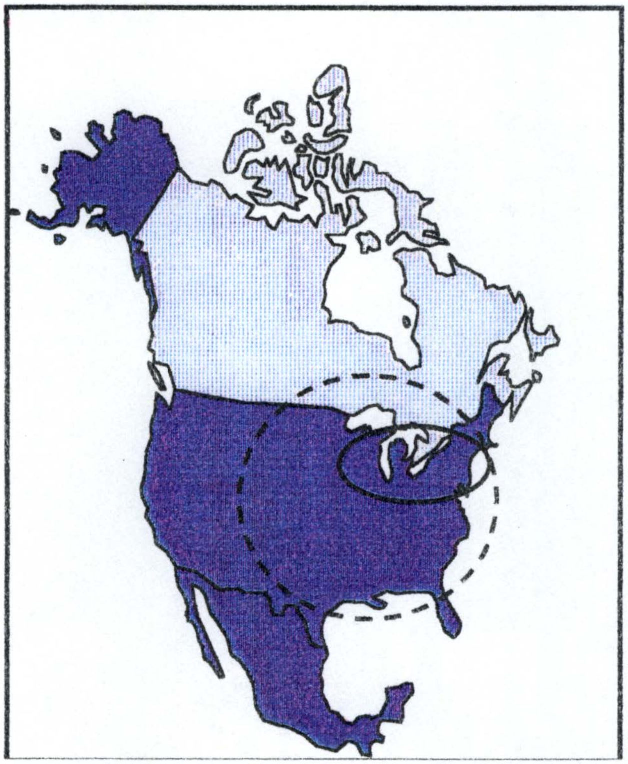


Figure 7.4. Migration of Passenger Pigeons. The solid line indicates approximate breeding areas. The dashed line indicates approximate range (after Schorger 1973).

Other migratory birds, such as ducks and geese, would have passed through and perhaps rested in the Dust Cave area on their way south during the fall and again in the spring on their way north. For example, flocks of snow and Canada geese have been observed leaving from James Bay, Canada, in the fall and traveling a distance of 1,700 miles to the Gulf Coast of the United States in approximately 60 hours (Griffin 1962:15). These waterfowl follow the Mississippi flyway, which is one of "the most important of all American flyways" (Griffin 1962:128). Other waterfowl, including mallards and Canada geese, follow this route south in the fall to their wintering grounds, and again in the spring when they migrate back to their nesting sites (Figure 7.5).

Whitetail Deer

Evidence for fall to winter occupation is provided by the presence of a large section of whitetail deer antler still attached to the frontals. This specimen was recovered from the Early Side-Notched component of the cave. The base shows evidence that it has been cut from the skull. Male whitetail deer develop antlers from spring through the summer and they are primarily used to compete for females during the fall rut. In the fall, the vascular

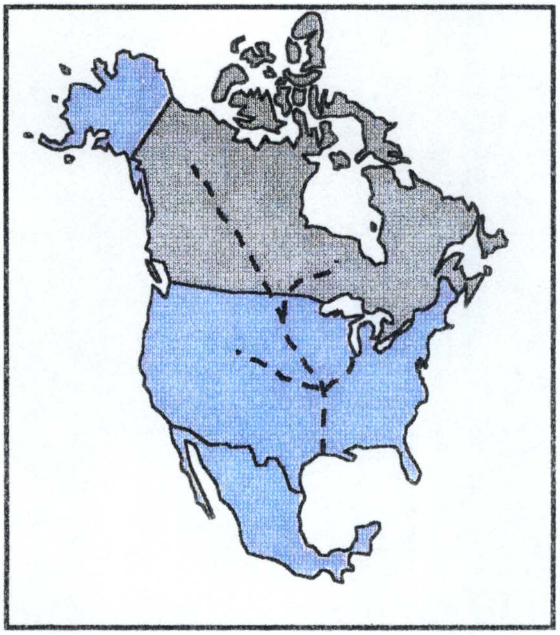


Figure 7.5. The Mississippi Flyway: a major migration route for ducks and geese (after Dorst 1962:126).

covering of the antler is scraped off and the hard, bony structure of the antler is complete (Brown 1997, Wemmer 1987). Antlers are then shed during the late winter and early spring when a weakened area forms near the base (Brown 1997:183). The presence of the antler with the base still attached supports a fall to early winter season occupation of the site in the Early Side Notched deposit.

Fish, Amphibians, and Reptiles

Suckers present in the faunal assemblage at the site could have been captured during the spring spawning season. One hundred and ten suckers were identified from the deposits at Dust Cave, including 13 identified to the genus *Moxostoma*, five as river redhorse, three as black redhorse, and nine as golden redhorse. During the spring, many species of suckers would abandon larger rivers in favor of smaller streams to lay and fertilize eggs (Etnier and Starnes 1996:260). Catostomidae prefer the gravel bottoms and shallow water of these smaller streams (Walden 1964:170). The exploitation of small streams by inhabitants of Dust Cave has already been established with malacalogical data (Parmalee 1994).

The spring spawning of suckers was an excellent opportunity for the inhabitants of Dust Cave to capture these fish. Fishing techniques, such as the use of a weir or traps made of rocks, would have been conducive to catching suckers in shallow water during the spring (Rostlund 1952). This is primarily because weirs are only successful when natural movement of many fish occurs, such as during spawning, and weirs are most effective when placed in small, shallow rivers and streams (Rostlund 1952:101). No remains of weirs were recovered from the cave because they are generally constructed of plant fibers, but they have been documented ethnographically as used by Native Americans (Rostlund 1952).

The species availability of reptiles, amphibians, and fish would have been restricted to warmer periods of the year. The majority of turtles, snakes, frogs, and toads were also unavailable during the middle to late winter and early spring seasons. The presence of relatively small numbers of reptiles, amphibians, and fish in the assemblage lends support to the fall to early winter occupation. The whitetail deer antler base suggests a fall season occupation for at least the Early Side Notched component. However, there may have been spring occupation of the cave perhaps corresponding with the capture of redhorse during spring spawning and the migration north of waterfowl.

WHITETAIL DEER MORTALITY

Analyses of mortality profiles have been successfully applied to Old World herbivores such as red deer, caribou, and gazelle (Davis 1987, Klein and Cruz-Uribe 1983, Stiner 1990, 1991) to determine procurement techniques, hunting intensity, and seasonal use of animals by humans. However, relatively little has been done with mortality profiles for whitetail deer in North America. There are some exceptions, such as Lyman's study in eastern Washington (1985, 1988), McDonald's study of deer from the Trigg site, Virginia (1984), and Smith's study of Mississippian whitetail deer (1975). Although the whitetail deer is one of the primary game animals in eastern North America, a serious gap still exists in our knowledge about prehistoric utilization of this animal.

Aging Technique

Crown height measurements estimate age by the height of the crown for molar teeth and have been used to age high-crowned ungulates in archaeologically recovered faunal assemblages (Beauchamp 1993, Klein *et al.* 1981, Klein 1982a, 1982b, Koike and Ohtaishi 1985, 1987, Gifford-Gonzales 1991, Morris 1972). Crown height measurements were chosen for this study because they provide easily replicable results, and are fairly objective (Klein *et al.* 1981). Most important, this technique can be applied to the isolated teeth which were recovered from Dust Cave.

The crown height measurement technique measures "a given tooth ... from the occlusal surface to the crown-root junction down one side of the tooth" (Davis 1987:43). High-crowned ungulate teeth wear throughout the life of an animal with most wear occurring early in the attritional process (Gifford-Gonzales 1991). Crown height measurements can also be obtained without destroying valuable archaeological specimens (Levine 1983).

Age Classes

The population of whitetail deer from Dust Cave was analyzed according to sub-adult, prime-adult, and aged-adult categories (Caughley 1966, 1977, Stiner 1990). Sub-adult whitetail deer range in age from 1 to 18 months and represent individuals that are below maximum weights, reproduction, and antler development (Jacobson and Reiner 1989). In addition, sub-adult deer still retain some deciduous teeth and the permanent molars are not fully erupted. Prime-adult whitetail deer range from 19 to 73 months of age and have reached maximum weight, reproduction and lactation (in the case of females), antler development, and mature dentition (Hall and Kelson 1959, Schwartz and Schwartz 1964). Aged-adults are more than 74 months old and represent deer that have probably begun to decline in weight, reproduction, and antler development. Teeth of aged-adults are severely worn, with almost all of the dentine being exposed (Severinghaus 1949).

Mortality Profile

The Dust Cave whitetail deer tooth assemblage consisted of only 26 specimens, so the results are limited (Appendix II). In addition, the 26 specimens were so few as to render separation into components infeasible, so it was decided to construct the mortality profile for the site as a whole. Results indicate that almost all individuals were less than three years of age, with 84% in the sub-adult category, and 16% in the prime-adult category, and no aged adults (Figure 7.6). The presence of so many young deer can be interpreted in several ways. First, a seasonal occupation of Dust Cave during the fall would furnish an abundance of first and second cohort deer (ages 6 and 18 months). Second, the hunting techniques of the Dust Cave occupants may have been more conducive to acquiring groups of deer which would contain more sub-adults, such as net-hunting (Hudson 1991).

Sub-Adult	N=22	84
Prime-Adult	N=4	16
Aged-Adult		0

Figure 7.6. Whitetail Deer Mortality Pattern for Dust Cave.

Third, there may have been a cultural preference for the selection of young whitetail deer. Finally, studies of hunting pressure have shown that young deer increase when a population is over-hunted (Mitchell 1989).

BONE MODIFICATION

Faunal remains from the Dust Cave assemblage were examined for any cultural or natural modification (Table 7.3). Approximately 69%, or 7,653 faunal remains, were not modified in any discernable manner. The remaining 3,370 bone specimens were modified (31%). Of these, 3,164 bones were calcined (29%). The remaining modified bones were burned(2%), cut (.5%), carnivore gnawed (.02%), rodent gnawed (.01%), or fashioned into tools (.02%). In addition, 89 bone tools from a previous analysis (Goldman-Finn and Walker 1994) are added to the four bone tools discovered during the present analysis.

Modification

The Late Paleoindian component contained 727 calcined bone fragments (Figure 7.7). The remaining modified bone consisted of 16 burned fragments, eight cut elements, two carnivore gnawed fragments, and two rodent gnawed bones. The Early Side Notched component contained 963 calcined

Table 7.3. Bone Modification for Dust Cave Faunal Remains.

Modification	Weight	Count	Percentage
None	3,379.4	7,653	69%
Calcined	1,142.5	3,164	29%
Burned	98.5	153	2%
Cut	493.4	29	.5%
Carnivore Gnawed	15.3	4	.02%
Rodent Gnawed	1.4	3	.01%
Tool	2.3	4	.02%

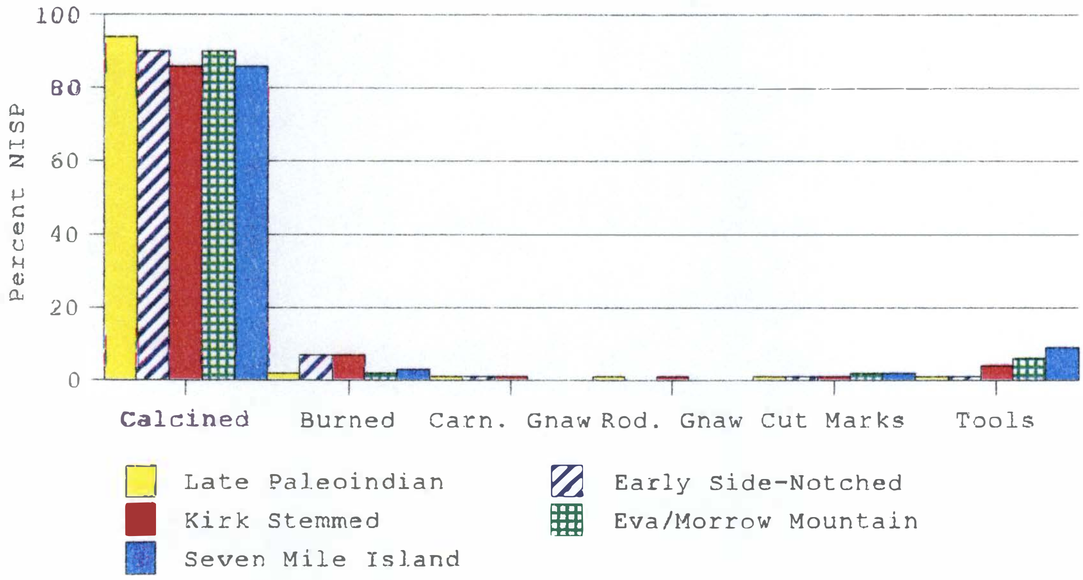


Figure 7.7. Bone Modification for the Late Paleoindian through Seven Mile Island Components.

bones, 75 burned fragments, one cut bone element, one carnivore gnawed bone, and one bird bone needle. In the Kirk Stemmed period, 386 calcined bones, 33 burned fragments, one cut element, one carnivore gnawed bone, one rodent gnawed bone, one polished Emydidae carapace bone, and one polished bone fragment were represented. The Eva/Morrow Mountain component consisted of 628 calcined bones, 11 burned bones, seven cut bones, and one indeterminate animal bone awl tip. Finally, the Seven Mile Island phase contained 460 calcined bones, 18 burned bones, and seven cut bone elements.

A comparison of animal classes from all the components at the site reveals differences in modification (Table 7.4). The mammal and bird remains were predominantly calcined or burned. In addition, only mammal elements exhibited any carnivore or rodent gnaw marks. Cut marks were primarily on mammal and bird remains, with the exception of several turtle shell fragments that were cut, scraped, or polished. Generally, the amphibian, reptile, and fish remains were subject to very little modification.

In sum, the majority of faunal remains recovered from the site were modified by humans. The high percentages of calcined and burned bones indicates that most of the animal carcasses brought into the cave were heated in or near

Table 7.4. Percentage of Bone Modification by Animal Class.

Animal Class	Calcined	Burned	Gnawed	Cut Marks
Mammal	30.5%	7%	.2%	2%
Bird	44%	2%	-	1%
Amphibian	.1%	-	-	-
Reptile	8%	2%	-	.2%
Fish	2%	1%	-	-

fires. The relatively low percentage of rodent or carnivore gnawed bones suggests that the cave was used infrequently by animals as a den or hibernation site. This could indicate that humans were present at the cave often enough to discourage settlement by cave dwelling species.

Bone Tools

Eighty-nine bone tools from a previous analysis (Goldman-Finn and Walker 1994, Appendix III) were added to the four bones from the present analysis for a total of 93 bone tools (Figure 7.8). The majority of these were bone awls (56%). The next most common tool type was whitetail deer antler tines (11%). Indeterminate worked objects were also recovered (7%). The remaining bone tools included awl/points (1%), bead/tubes (2%), fish hooks (1%), needles (5%), perforated teeth (2%), points (5%), spatulas (5%), polished turtle carapace fragments (3%), and wedges (1%).

The Late Paleoindian component contained four awls, one perforated tooth, and one worked object. The Early Side Notched component contained three awls, one bead/tube, one needle, one point, and one antler tine. The Kirk Stemmed component contained eight awls, one fishhook, two needles, one perforated tooth, three polished turtle carapace fragments, and one worked object.

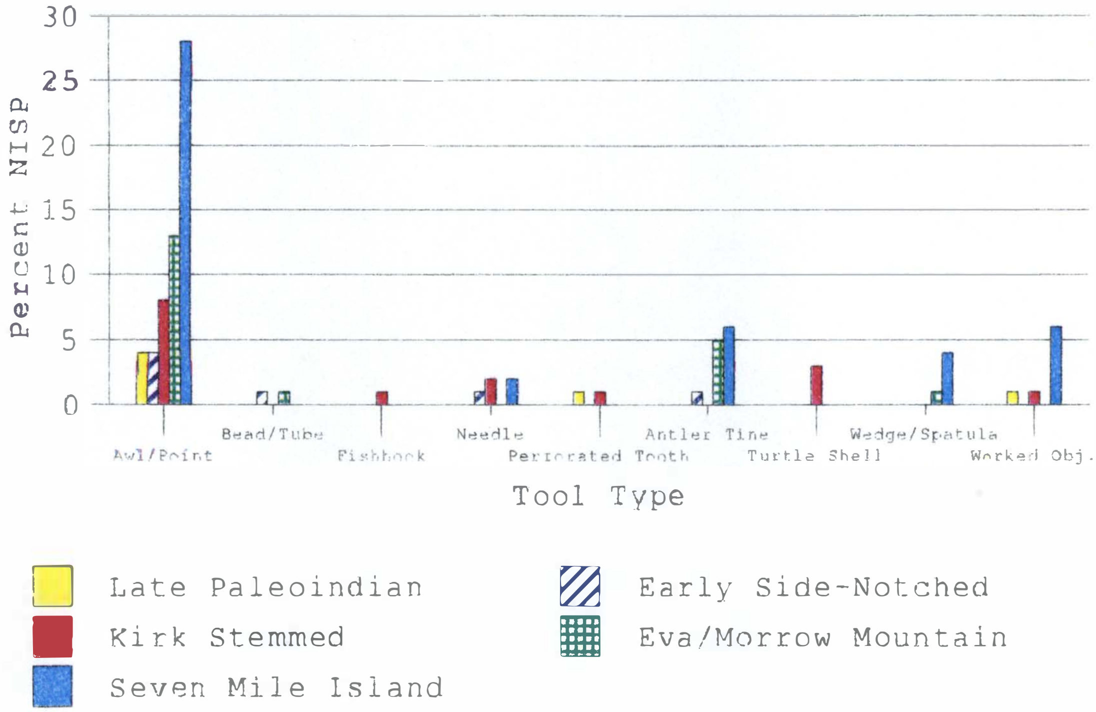


Figure 7.8. Bone Tools for the Late Paleoindian through Seven Mile Island Components.

The Eva/Morrow Mountain component contained 13 awls, one bead/tube, three antler tines, and one spatula. Finally, the Seven Mile Island phase contained 24 awls, one awl/point, three needles, three points, three spatulas, six antler tines, one wedge, and six worked objects.

The majority of the bone tools were recovered from the Middle Archaic period. Sixty-nine percent of the bone tools were from the Eva/Morrow Mountain component and the Seven Mile Island phase. The Early Side-Notched and Kirk Stemmed components contained only 24% of the bone tools from the site. Finally, the bone tools from the Late Paleoindian component totaled only 7% of the assemblage.

CONCLUSION

The faunal remains consisted of 11,023 bone fragments. The Late Paleoindian component contained 2,413 faunal remains with a variety of taxa represented. Birds were the most significant class of animals represented. The Early Side-Notched component consisted of 3,908 bone specimens. Taxa from this component were largely comprised of bird and fish remains. The Kirk Stemmed component contained 1,479 bone fragments. Mammal and fish bone quantities comprised the majority of the identifiable remains. Faunal remains from the Eva/Morrow Mountain component totaled 2,127 bones.

This component is largely composed of bird and mammal remains. Finally, the Seven Mile Island phase contained 1,096 bones. The bone remains from this component were largely mammals.

The bone remains from the Dust Cave assemblage provided insight into resource selection, habitat exploitation, environmental changes, seasonality, whitetail deer mortality, and bone modification. The resource selection for the earliest occupants of the cave exhibits a reliance on birds while later hunting efforts appear to have emphasized mammals. Habitat exploitation also changed through time at the site. The percentage of aquatic resources in the Late Paleoindian (particularly waterfowl) was high and in the Middle Archaic terrestrial resources were more important. Changes were also observed in the exploitation of open, ecotone, and closed habitats. Most animal resources came from a closed habitat, and a third from ecotone zones, and a small number from open habitats. Late Paleoindian, Early Side-Notched, Kirk Stemmed, and Eva/Morrow Mountain faunas were primarily acquired from closed habitats. This is due to the larger number of raccoons and squirrels in these components. The Seven Mile Island phase exhibits a shift to fauna from ecotone habitats, such as whitetail deer and rabbits. All of these patterns are correlated by change in the regional environment from a cooler, wetter Late Pleistocene/ Early Holocene conditions to a drier and warmer mid-Holocene climate.

Season of human occupation at the site is suggested as fall to early winter, with the possibility of a spring occupation. The fall and winter occupation is corroborated by the presence of passenger pigeon, waterfowl, and an unshed whitetail deer antler base in the cave deposits. Identification of suckers suggests that they may have been captured during the spring spawning season and waterfowl which may have been acquired during spring migration northward. Thus, the cave may have been occupied at several times over the course of the year, particularly during the fall and early winter and then later on in the spring.

Finally, interpretations of bone modification suggest that a majority of the remains were calcined or burned. In addition, several specimens had cut marks which suggest skinning, defleshing, and/or disarticulation for consumption. Very few of the faunal remains were gnawed by carnivores or rodents, indicating that the primary accumulation of bones was due to humans. Bones modified as tools were primarily awls, antler tines, points, and other worked objects. This suggests that the tools were primarily constructed to be functional, such as awls and needles, rather than ornamental, as in the case of beads and pendants.

In sum, this interpretation of the faunal remains from Dust Cave suggests a variety of environmental and behavioral adaptations by the prehistoric people who occupied the site. Changes in environment were reflected in the subsistence strategies practiced. People apparently adapted readily when shifts in local vegetation, brought on by regional climatic changes, affected the animal composition of the area. Although prehistoric inhabitants of Dust Cave began with a reliance on avifauna such as waterfowl, this trend did not continue throughout the sites occupation. The onset of the Hypsithermal around 8,000 years ago prompted a shift in subsistence to a reliance on more terrestrial faunas. This trend continued until abandonment of the cave around 5,200 years ago.

CHAPTER VIII

RESULTS: INTER-SITE COMPARISONS

INTRODUCTION

A recent review of *Archaeology in the Mid-Holocene Southeast* characterizes the ethnobotanical, faunal, and biocultural data of this period as "meager" (Cable 1998:184). Therefore, Dust Cave stands as one of the few sites in the Southeast with Late Paleoindian and Archaic deposits from which subsistence information can be derived from faunal remains. At Dust Cave, not only are organic materials well preserved, but also the sequence of deposits allows changes in subsistence through the Early and Mid-Holocene to be observed. It is important to compare the Dust Cave faunal assemblage to assemblages from other archaeological sites of similar antiquity. Six sites were chosen for comparison based on their contemporaneity with the Dust Cave deposits.

The comparison between Dust Cave and other archaeological sites is conducted to understand how Dust Cave compares to established ideas about subsistence adaptations. The comparisons are based on major trends observed in the faunal assemblages from Early and Middle Holocene sites. One of these trends is the utilization of a particular groups of animals, such as mammals. Another trend includes overall changes in the faunal assemblage through time. Specifically, the abundance of whitetail deer remains is compared because whitetail deer are considered one of the most important game animals in eastern North America and typically their remains are usually recovered from prehistoric sites (McDonald 1984). Another comparison is the increased or decreased reliance on aquatic resources through time. Finally, a correlation is made between the use of fauna from different habitats and the shift from closed to ecotone habitat species through time.

ARCHAEOLOGICAL SITES

The sites chosen for this comparison contain deposits of similar antiquity to those from Dust Cave, that is, they contain deposits which date to between 10,500 and 5,200 years ago. According to Anderson and Sassaman (1996:17, see also Figure 2.3), there are at least 83 sites which contain deposits dating to the Paleoindian or Early Archaic periods in eastern North America. Bense (1994) lists 26 Paleoindian sites and 35 Archaic sites in the Southeast. A set of criteria was developed in order to select the sites which could best be compared to Dust Cave.

The most important criterion for choosing a site for comparison was that it must contain preserved faunal remains. Another criterion involves similar recovery techniques that included screening material through mesh at least one-quarter inch in size. Sites chosen for comparison were located adjacent to or near rivers within the Mississippi River drainage. In addition, the sites were limited to caves or rock shelters because they would have the greatest similarities in organic preservation and geologic processes.

Six sites, three located in caves and three in rock shelters, were chosen for comparison based on these criteria (Figure 8.1). The sites are Graham Cave (Logan 1952, McMillan and Klippel 1981) and Rodgers Shelter in Missouri (McMillan 1976), Modoc Rock Shelter in Illinois (Fowler 1959, Parmalee 1959, Styles *et al*. 1983), and Russell Cave (Griffin 1974, Weigel *et al*. 1974), Stanfield-Worley Bluff Shelter (Parmalee 1962), and Smith Bottom Cave in Alabama (Snyder and Parmalee 1991). The sites are described below with reviews of chronology, excavation techniques, and a brief summary of the faunal remains. In addition, Table 8.1 presents the components/zones and radiocarbon dates which correspond to the dates and components from Dust Cave. It must be noted that some of these correlations are not exact but are as precise as possible given the available data.

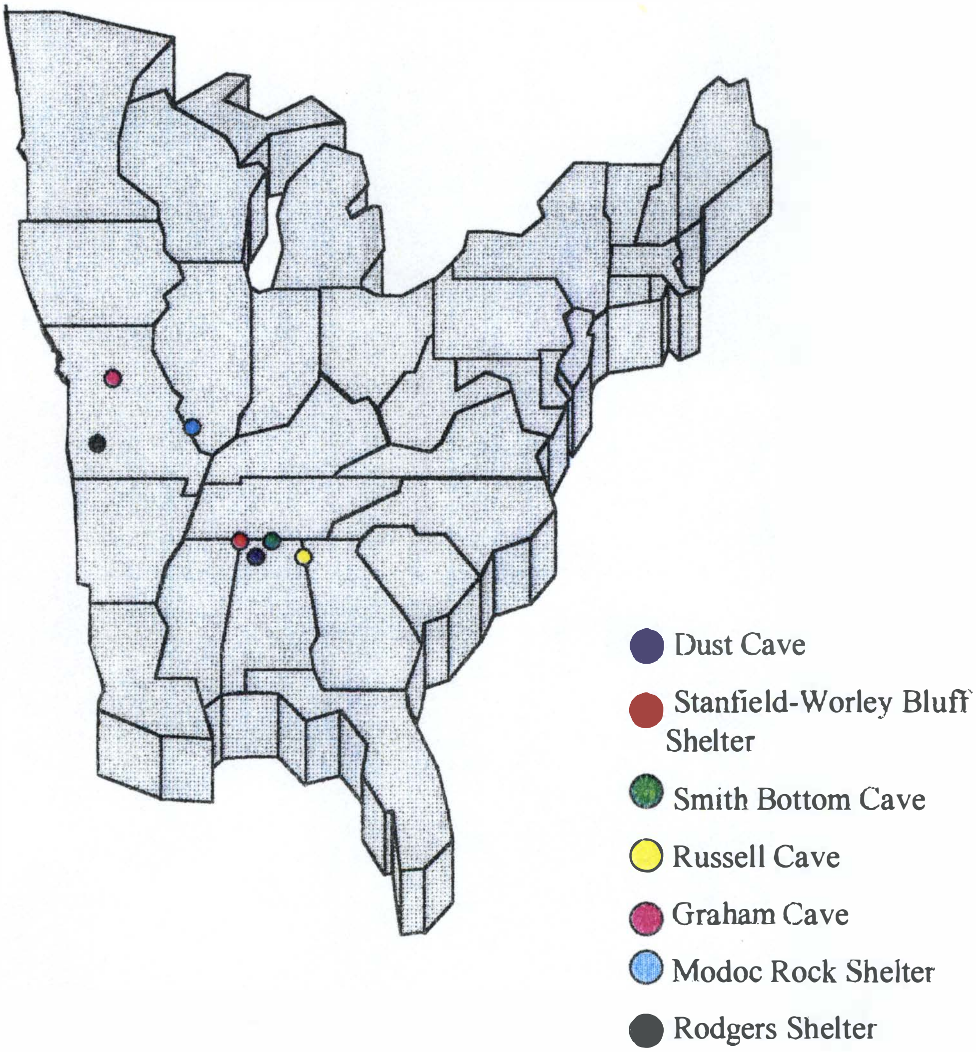


Figure 8.1. Location of the Sites Chosen for Comparison with Dust Cave.

Table 8.1. Radiocarbon Dates and Corresponding Components/Zones for each Site.

Dates (B.P.)	Dust Cave	Graham Cave	Rodgers Shelter	Modoc Rock Shelter	Russell Cave	Stanfield-Worley Bluff Shelter	Smith Bottom Cave
10,500-10,000	Late Paleo-indian		Lower Zone I	Lower Zone I			
10,000-9,000	Early Side-Notched	Zone IV	Upper Zone I	Upper Zone I	Zone G	Dalton Zone	Levels 20-25
8,500-7,000	Kirk Stemmed	Zone III	Zone II	Zone III	Zone F		Levels 15-19
7,000-6,000	Eva/ Morrow Mtn.	Zone II					
6,000-5,200	Seven Mile Island		Zone III	Zone IV			

Graham Cave

Graham Cave is located in Montgomery County, central Missouri, near the Loutre River. Radiocarbon dates for the Graham Cave deposits range from 9,700 to 7,300 years ago (McMillan and Klippel 1981). Zone IV dates to between 9,700 +/- 500 B.P. and 8,830 +/- 500 B.P. and the sediments in this zone accumulated slowly. Zone III accumulated more rapidly and dates range from 7,900 +/- 500 B.P. to 7,360 +/- 125 B.P. Cave sediments from these zones were screened through one-quarter inch mesh.

More than 12,000 vertebrate and invertebrate specimens were identified from the Graham Cave deposits. The analysis of invertebrate fauna suggests that "little use" of mussels was made during the earlier occupation of the cave but increased during later occupations (Klippel 1971:84). The majority of terrestrial gastropod species identified from the cave prefer an oak-hickory forest habitat. Mammals were the most numerous group of species represented in the faunal assemblage. Eighty-five percent of this class consisted of four species: whitetail deer, squirrel, raccoon, and rabbit (Klippel 1971:94). Very few birds, reptiles and fish, and no amphibians, were represented. The remains identified as bird mainly consisted of terrestrial species such as turkey, prairie chicken, bobwhite, and passenger pigeon.

Interpretations of the faunal remains indicate that forest mammals, such as squirrels and raccoons, were more prevalent in the Zone IV deposits (McMillan and Klippel 1981). Later, around 7,500 years ago, the frequency of ecotone mammals increased (McMillan and Klippel 1981:238). This increase is linked to the onset of a warming and drying period which began around 8,000 years ago. This warming and drying period probably opened up forest areas and allowed ecotone animals, such as whitetail deer and cottontail rabbits, to become more abundant.

Rodgers Shelter

Rodgers Shelter is located along the Pomme de Terre River, Benton County, in southwestern Missouri and was excavated during the summers of 1963 through 1968 (McMillan 1976, McMillan and Klippel 1981). Deposits were water-screened through one-quarter inch mesh with the exception of some sediments from the lower levels which were screened through one-half inch mesh (McMillan 1976:119). Occupation of the cave ranges from 10,500 to 1,000 years ago (Ahler 1976:124). Stratum I is the earliest deposit from the site. Lower deposits of Stratum I date 10,500 to 10,000 years ago and correspond to the Late Paleoindian component of Dust Cave. Upper deposits of Stratum I date from 9,000 to 8,000 and correspond to the Early Side-Notched component. Stratum II, dating from approximately 8,000 to 7,000 years ago, correlates with the Kirk Stemmed component of Dust Cave. Finally, Stratum III ranges in age from 6,300 to 5,100 years ago and corresponds with the Middle Archaic occupations of Dust Cave.

A total of 46,230 faunal remains was recovered from the Rodgers Shelter excavations (Parmalee *et al.* 1976). Most of the remains identified from the site were mammals (90%), with very few bird, amphibian, reptile, and fish remains recovered overall. Whitetail deer was the most abundant mammal from the site. Other mammal species important to the diet of the Rodgers Shelter occupants included squirrel, rabbit, and raccoon. Extinct species or those extirpated from the area include extinct peccary (*Platygonus compressus*), passenger pigeon, pocket mouse (*Perognathus* sp.), and meadow vole (*Microtus pennsylvanicus*). Presently, pocket mice occur only in western North America and meadow voles in the cooler climates of northern and western North America (Burt and Grossenheider 1976).

Changes in general subsistence trends can also be observed in the Rodgers Shelter deposits (Parmalee *et al.* 1976). For example, whitetail deer remains were recovered from all levels of the shelter but decrease in abundance from the Early to the Middle Archaic periods, and then increase again after 3,000 years ago. Although aquatic species are not abundant in the assemblage, specimens of mussels, fish, and pond turtles increase through time. Overall, there are few waterfowl bones in the assemblage; the majority of bird remains are those terrestrial species such as turkey, passenger pigeon, prairie chicken, and bobwhite.

Modoc Rock Shelter

Modoc Rock Shelter, first excavated in the early 1950s, was reinvestigated in 1980 to analyze the deposits with more current excavation techniques, and to obtain additional artifacts and radiocarbon dates (Styles *et al*. 1983). One-quarter and one-sixteenth inch mesh was used to screen the sediment from the rock shelter during the 1980 excavations. The radiocarbon dates of the rock shelter range from 10,651 +/- 650 B.P. to 4,720 +/- 300 B.P. (Styles *et al*. 1981:69). These dates correspond roughly with all of the components from Dust Cave.

Results of the faunal analysis from Modoc Rock Shelter indicate that fish and mammals are the most important fauna in the assemblage. An increased number of aquatic resources is also documented during the latest occupation of the site.

For example, fish bone densities in the water-screen samples increase from approximately five bones per liter in the lowest deposits of the cave to more than 70 bones per liter in the upper deposits (Styles *et al.* 1983:288). In addition, the only mussel shell specimens were recovered from the upper deposits. Generally, bird bone and turtle shell densities are low throughout the shelter's occupation and small mammals tend to be more prevalent in the deposits than large mammals.

Russell Cave

Russell Cave is located in northeastern Alabama approximately seven miles from the Tennessee River (Griffin 1974:1). Excavated by the National Park Service, the deposits date from 8,500 to 1,000 years ago spanning the Early, Middle, and Late Archaic, and Woodland periods. The levels dating from 8,500 to 5,500 years ago correspond to the Kirk Stemmed compenent, Eva/Morrow Mountain component, and Seven Mile Island phase from Dust Cave. The deposits from Russell Cave were excavated in six inch levels and water-screened through one-quarter inch mesh.

More than 30,000 animal remains were recovered during the excavations (Weigel *et al.* 1974). The majority of the animal remains consisted of mammals and birds. In particular, Weigel *et al.* (1974:81) note that "On the basis of biomass, deer, turkey, raccoon, squirrel, and bear comprised the major portion of the vertebrate diet." Aquatic species such as fish, pond turtles, and waterfowl were not abundant in any of the cave deposits. Extinct species such as peccary (*Mylohyus* cf. *M. nasutus*) and passenger pigeon were recovered from the cave. Remains of extinct peccary were recovered from the lowest level of the cave. In addition, 18 porcupine (*Erethizon dorsatum*) bones were identified from the Early Archaic deposits. Porcupines are currently only found in the northern and western regions of North America (Burt and Grossenheider 1976, Hall and Kelson 1959:782).

Stanfield-Worley Bluff Shelter

Stanfield-Worley Bluff Shelter is located in Colbert County, Alabama approximately 12 miles from Dust Cave. The Stanfield-Worley Bluff Shelter deposits were generally screened through one-quarter inch mesh (DeJarnette *et al.* 1962). Excavations at Stanfield-Worley represent one of the first attempts to systematically investigate a rock shelter site in eastern North America. The Dalton zone is the only zone at the site which has analyzed faunal remains that correspond to the Dust Cave components. However, the faunas from Zone A features analyzed by Parmalee (1962) were included to observe changes in subsistence through time.

Approximately 900 faunal remains were identified and analyzed from this excavation (Parmalee 1962:112). The majority of the remains recovered from the Dalton Zone (10,000-9,000 B.P.), which probably correspond to the Late Paleoindian or Early Side-Notched components of Dust Cave, consisted of mammals. Whitetail deer, squirrel, and raccoon were important species in the assemblage (Parmalee 1962). Aquatic resources, such as fish and mussels, and avifauna were relatively scarce in this bluff shelter, particularly in the Dalton Zone deposits.

Smith Bottom Cave

Smith Bottom Cave, excavated from 1987 to 1989, is located in Lauderdale County, Alabama approximately one mile west of Dust Cave. The cave is in a limestone bluff above the Tennessee River and is only three-quarters of a mile from the main river channel. Sediment from the cave was extracted in ten centimeter levels and water-screened through one-quarter inch mesh (Snyder and Parmalee 1991). Deposits from the cave dated from 9,000 to 1,300 years ago. The lowest strata generally correspond to the Early and Middle Archaic periods at Dust Cave.

More than 30,000 bone remains were analyzed from the cave deposits (Snyder and Parmalee 1991). The majority of the identifiable remains were mammals (N=16,603), with 39% of the mammal remains identified as whitetail deer. Reptile remains totaled 8,644 specimens with approximately 80% consisting of turtle shell fragments. Bird remains were also abundant in the deposits, accounting for 3,628 of the identified bones. More than 50% of the avian elements identified were waterfowl. Finally, fish bones totaled 1,343 specimens and amphibian bones 193. Extinct species identified from the cave deposits included the beautiful armadillo (*Dasypus bellus*) and passenger pigeon. Extirpated mammal species included the gray wolf (*Canis lupus*) and a mountain lion (*Felis concolor*).

An evaluation of the distribution of faunal remains from the site indicates several trends. First, an abundance of aquatic species were present in the Archaic deposits of the cave. Pond turtles were recovered much more frequently in the Early Archaic levels than in later deposits. In addition, the lower deposits not only account for 66% of the bird remains recovered but over half of these are waterfowl (Snyder and Parmalee 1991). Another trend is the increase in whitetail deer during the later Archaic period. There is also a greater number of terrestrial birds, such as turkey, in the upper deposits of the cave. Finally, several specimens of meadow vole (*Microtus pennsylvanicus*) were recovered from the Early Archaic period. Meadow voles prefer a cooler climate and are now primarily only distributed in northern North America (Snyder and Parmalee 1991:14).

COMPARISONS

Species Abundance

The first comparison made between the faunal analyses from the six sites and Dust Cave is the overall importance of certain animal classes (Figure 8.2). This comparison was conducted by adding the number of identified specimens (NISP) by class from all the components at the sites. Percentages were then calculated for these values by dividing the NISP by the total number of faunal remains identified from the site. In the case of Rodgers Shelter, fauna recovered from the one-quarter and one-eighth inch meshes were added together and only the material recovered from the main shelter area was considered. The one-quarter and one-sixteenth inch samples from Modoc Rock Shelter were also combined. It should be pointed out that the faunal assemblages from Russell Cave and Stanfield-Worley Bluff

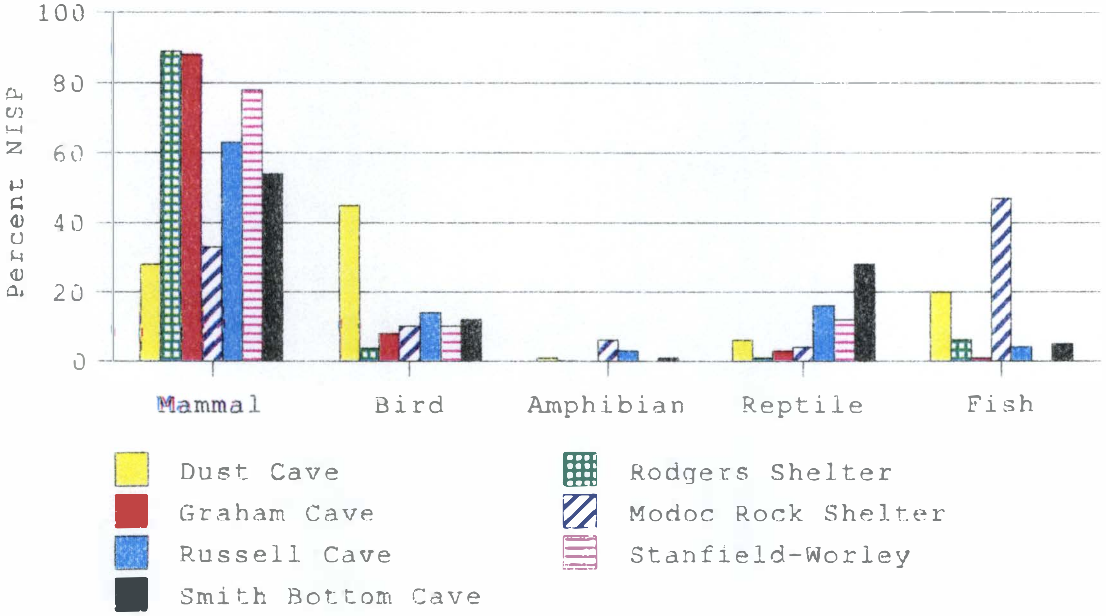


Figure 8.2. Differences in Abundance of Vertebrate Class for each Site (note the abundance of fish in the Modoc Rock Shelter assemblage and the abundance of birds in the Dust Cave assemblage).

Shelter included fauna only identifiable to genus or species.

In comparison to all the other sites in the sample, the Dust Cave faunal material contained the highest frequency of birds. Mammals were most numerous in the faunal assemblages from the other sites. The one exception is in the Modoc Rock Shelter assemblage which has a higher percentage of fish, however, this is due to the large quantities of fish in the one-sixteenth inch mesh sample. The one-quarter inch mesh sample has a higher percentage of mammals.

A more specific comparison was made on the distribution of whitetail deer. This comparison was made by calculating percentages of NISP for whitetail deer within the overall assemblage (Figure 8.3). Modoc Rock Shelter, Rodgers Shelter, and Russell Cave faunal assemblages exhibit a decrease in the number of whitetail deer bones through time. Whitetail deer remains peak in abundance around 8,000-7,000 years ago from Rodgers Shelter, decrease in the Middle Archaic, followed by an increase in the Late Archaic period. McMillan (1976) suggests the decrease is due to prairie expansion in the Rodgers Shelter area causing a decline in oak-hickory forest, which the deer rely on for nut mast. There is also a decrease in whitetail deer bones

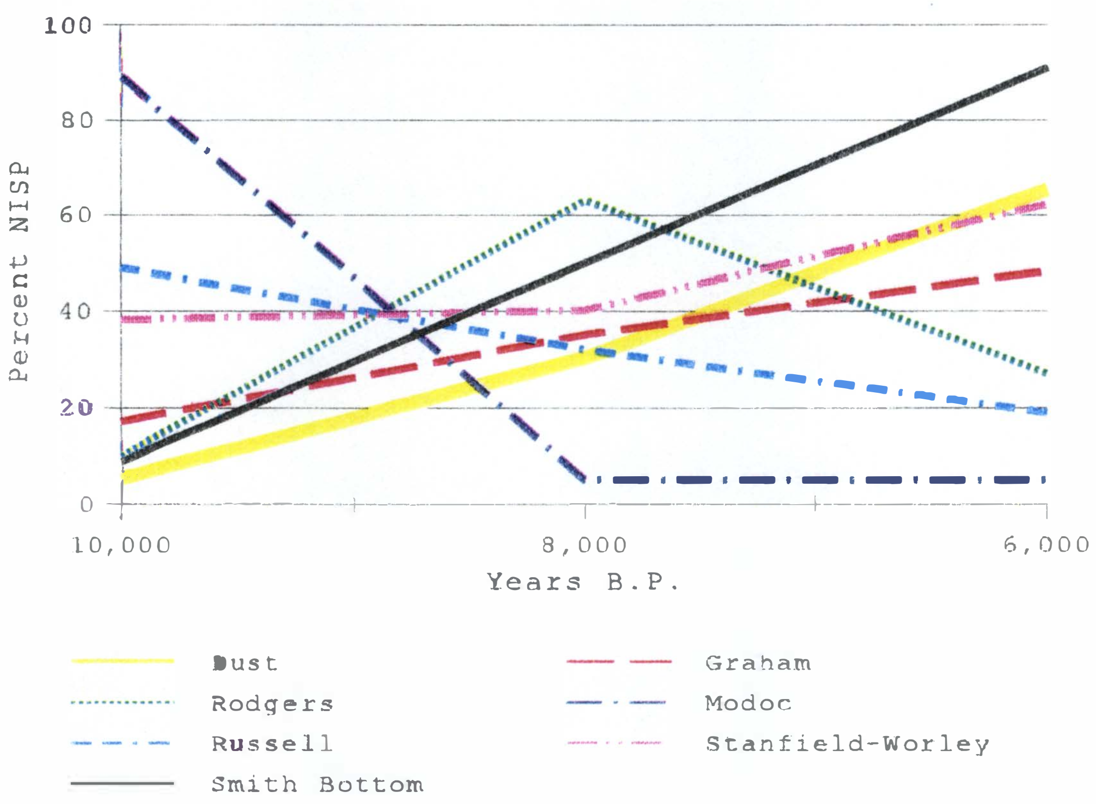


Figure 8.3. Percentage of Whitetail Deer in the Assemblages.

between the Early and Middle Archaic periods at Modoc Rock Shelter, however, deer remains increase again in the deposits above the Middle Archaic zone (Styles *et al.* 1983:290-291).

The whitetail deer bones increase through time at Dust Cave, Graham Cave, Stanfield-Worley Bluff Shelter, and Smith Bottom Cave. As previously noted, McMillan and Klippel (1981) have explained the increase in whitetail deer bones at Graham Cave as due to the Hypsithermal warming and drying which opened up forest areas and allowed ecotone species to increase. This may also explain why browsing species, such as whitetail deer, are more numerous in the Middle Archaic period occupations at Dust Cave.

Comparison of Aquatic and Terrestrial Resources

The percent of aquatic resources utilized through time at all of the sites was calculated (Figure 8.4). Species were considered aquatic when they can be found primarily in or around aquatic habitats. This includes fish, most amphibians, pond turtles, muskrats, river otters, beavers, and waterfowl. Dust Cave is the only site to exhibit a decrease in aquatic resources through time.

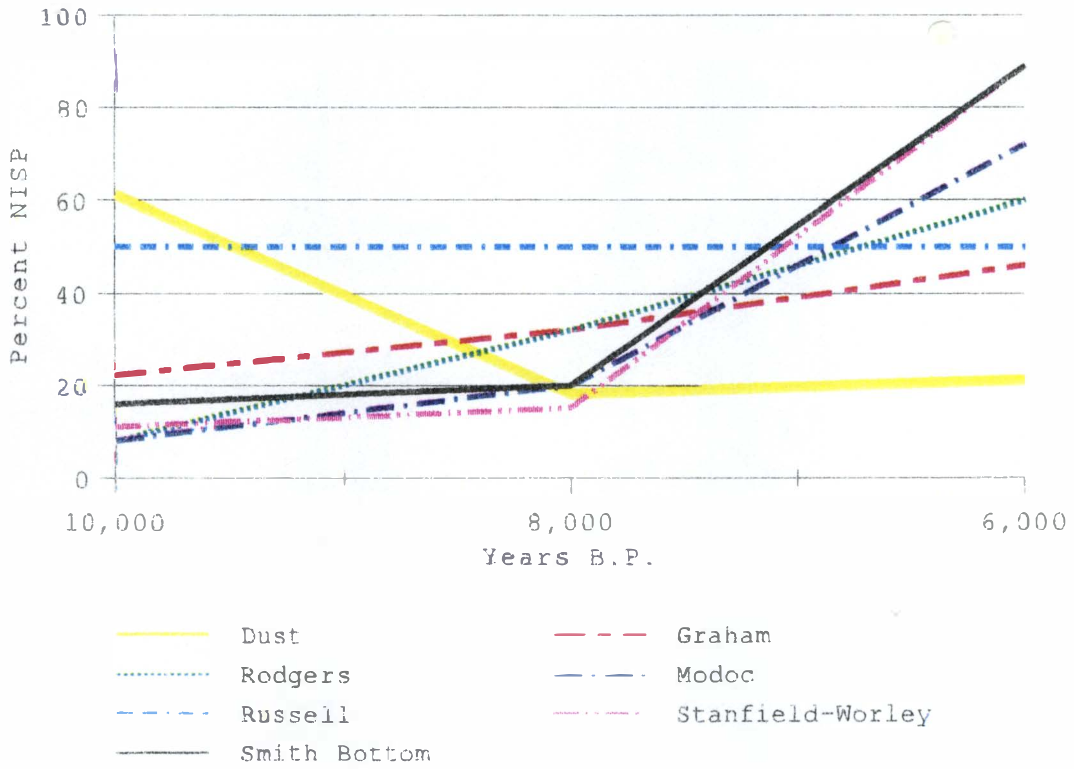


Figure 8.4. Percentage of Aquatic Resources Utilized through Time.

The other sites exhibited an increase in the exploitation of aquatic resources through time, with the exception of Russell Cave which stayed the same. At most of the sites, such as Modoc Rock Shelter, the increase in fish accounts for the greater exploitation of aquatic habitats. Smith Bottom Cave had a greater number of fish, as well as waterfowl, in the upper levels. Graham Cave showed an increase in the quantities of aquatic mammals. However, it must be mentioned that while Graham Cave and Russell Cave exhibited an increase in aquatic species, the majority of the fauna overall is comprised of terrestrial species.

Ecotone & Closed Habitats

Previous comparisons of habitat specific fauna at Dust Cave revealed that most of the assemblage was comprised of closed habitat species, with the exception of the latest occupation at the site which had a higher percentage of ecotone species. Therefore it was determined that the comparison between the sites should be conducted with ecotone and closed species. Ecotone species are generally found in forest and forest border habitats and closed species primarily occupy forest habitats (McMillan and Klippel 1981). For example, at Rodgers Shelter and Graham Cave, the differences were examined in four species from ecotone and closed habitats (McMillan and Klippel 1981). The two most common mammals found in ecotone habitats, whitetail deer and cottontail rabbits, were compared with the two most common closed habitat mammals, squirrels and raccoons (see Figure 7.3).

This comparison indicates that almost all of the sites showed a shift from exploiting closed to ecotone fauna through time (Figure 8.5). The importance of ecotone species such as whitetail deer and rabbit is evident in the later occupations of the sites. However, there are some minor fluctuations in this shift. Two of the sites, Modoc Rock Shelter and Dust Cave, have high percentages of ecotone species in the early deposits (ca. 10,000-9,000 B.P.). Around 8,000 years ago the quantity of ecotone species from these sites decreases, followed by an increase in deposits dating to 6,000 years ago. The four remaining sites, Rodgers Shelter, Graham Cave, Smith Bottom Cave, and Stanfield-Worley Bluff Shelter, all have higher percentages of closed habitat fauna in the earlier deposits which shifts to a higher percentage of ecotone species in the later deposits.

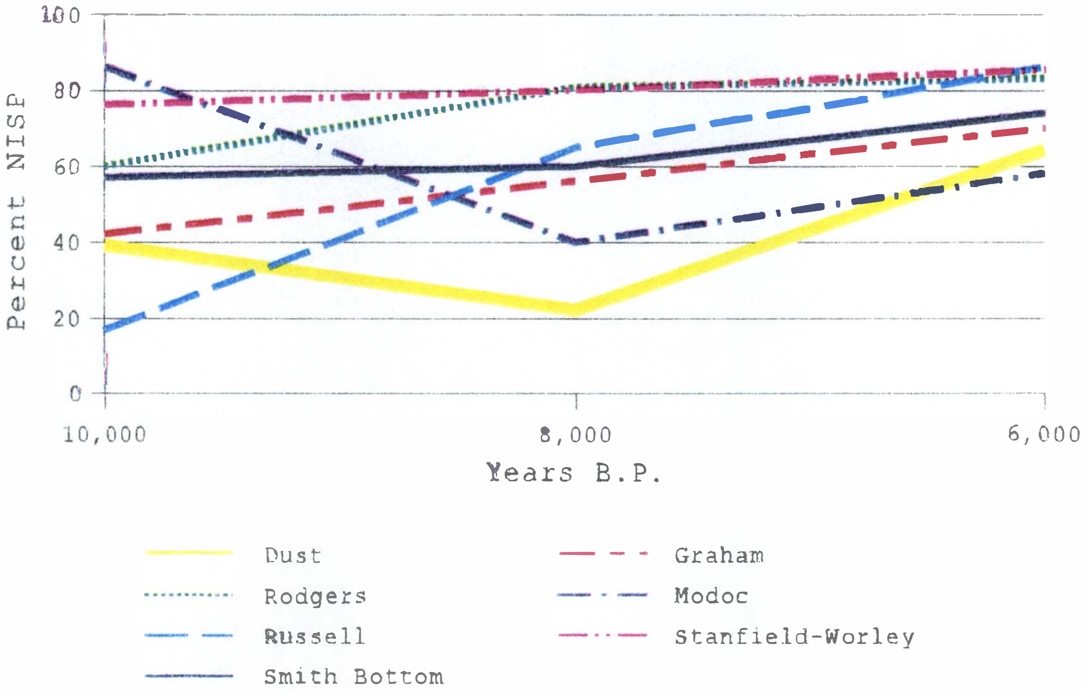


Figure 8.5. Reliance on Ecotone Habitat Species (Whitetail Deer and Rabbit) through Time.

CONCLUSION

The comparison of the Dust Cave faunal assemblage with six other sites provides some interesting results concerning changes in subsistence adaptations through time (Table 8.2). Dust Cave is the only site to have birds comprise a majority of the faunal remains. Mammalian fauna constituted the majority of the remains when the entire Early and Middle Holocene assemblages were considered from the other sites. The exception to this is Modoc Rock Shelter in which fish dominate the assemblage. However, fish are only the majority in the Modoc assemblage when the one-sixteenth inch mesh was included in the comparison.

The quantities of whitetail deer bone in the assemblages were also compared because deer is an important food item at all of the sites. Faunal assemblages from four of the sites, Dust Cave, Graham Cave, Stanfield-Worley, and Smith Bottom Cave all exhibited an increase in whitetail deer bone through time. Warmer temperatures and drier climates between 8,000 and 5,000 years ago opened the forests and provided an ideal habitat for deer. Deer populations probably increased as a result of this habitat change and thereby provided Middle Archaic hunter-gatherers with a reliable food resource.

Table 8.2. Major Trends Observed in the Faunal Assemblages.

Site	Major Class Represented	Utilization of Whitetail Deer	Utilization of Aquatic Resources	Utilization of Ecotone Species
Dust Cave	Bird	Increase	Decrease	Increase
Graham Cave	Mammal	Increase	Increase	Increase
Rodgers Shelter	Mammal	Decrease	Increase	Increase
Modoc Rock Shelter	Fish	Decrease	Increase	Increase
Russell Cave	Mammal	Decrease	Constant	Increase
Stanfield-Worley Bluff Shelter	Mammal	Increase	Increase	Increase
Smith Bottom Cave	Mammal	Increase	Increase	Increase

Faunal assemblages from three of the sites, Rodgers Shelter, Modoc Rock Shelter, and Russell Cave, exhibited a decline in whitetail deer utilization through time. According to McMillan (1976) the drier conditions caused a reduction in oak-hickory forest around Rodgers Shelter which decreased the nut mast available for whitetail deer (McMillan 1976). The decline at Modoc Rock Shelter and Russell Cave ceased following the Middle Archaic period and deer quantities increased in later occupations of the sites (Styles *et al.* 1983).

The utilization of aquatic resources increased through time in almost all of the faunal assemblages analyzed except for Dust Cave and Russell Cave. The increase in use of aquatic resources at other sites may be due to several factors (Styles *et al.* 1983). First, there is a reliance on floodplain resources when flood plains became stable during the Hypsithermal. Second, there is an increase in human populations which required a broader spectrum of food resources. Finally, technological advances in procurement of aquatic resources probably occurred (Styles *et al.* 1983:291). However, at Dust Cave there is a decrease in the use of aquatic resources through time. Perhaps the location of the cave away from the main Tennessee River channel prohibited a continued reliance on aquatic resources when back water sloughs and streams dried up during the Hypsithermal.

The final comparison was between the quantities of closed and ecotone habitat species in the seven faunal assemblages. There was a universal increase in utilization of ecotone species during the Middle Holocene at all of the sites. This trend fits closely with explanations of environmental change observed at other sites in the Southeast (Styles and Klippel 1996). In the Early Holocene oak-hickory forests predominated, thus providing ideal habitats for closed canopy species such as raccoons and squirrels. In the Middle Holocene the warming and drying of the environment caused oak-hickory forests to open up, thus providing ideal habitat for ecotone species such as whitetail deer and cottontail rabbits.

CHAPTER IX

SUMMARY AND CONCLUSIONS

SUMMARY

Dust Cave is one of relatively few stratified Paleoindian and Archaic sites in the Southeast. A study of the faunal material recovered from the cave provides information on hunter-gatherer subsistence strategies during these periods. The contextual framework for this study was based on archaeological research in the Southeast, Late Pleistocene through Mid-Holocene environmental change, and previous research at Dust Cave. Zooarchaeological methods of analysis were applied to the faunal material which consisted of 11,023 vertebrate bone fragments. Intra-site comparisons were made between the components of the site. Comparisons were based on changes in resource selection, habitat exploitation, and environment through time. Seasonality, element distribution, whitetail deer mortality, and bone modification were also investigated. Inter-site comparisons were made between Dust Cave and six other archaeological sites dating to the same time period.

Archaeological Research in the Southeast

Research on Late Paleoindian and Archaic sites in the Southeast was synthesized in Chapter II. Information from Paleoindian sites indicates that the southeastern United States was occupied by at least 12,000 years ago (Anderson 1996, Bense 1994). The Paleoindian period was characterized by highly mobile hunter-gatherers who subsisted mainly on large game. Early Archaic people subsisted on a more varied diet, including whitetail deer, small game, and turkey. Subsistence during the Middle Archaic was characterized by an increase in the use of aquatic resources.

Late Pleistocene through Mid-Holocene Environment

A variety of studies were used to document the environment in the southeastern United States from 10,500 to 5,000 years ago (Delcourt and Delcourt 1981, Guilday and Parmalee 1979, Brackenridge 1984). Palynological and paleontological data indicate that the environment was cooler and wetter at the end of the Pleistocene (Delcourt and Delcourt 1983, 1985). Around 8,000 years ago, with the onset of the Hypsithermal, the climate became warmer and drier.

Dust Cave is located between two palynological sites (Delcourt and Delcourt 1985). Anderson Pond, in Middle

Tennessee, is situated at 36 degrees north latitude. The forest around this area was primarily cool-temperate deciduous forest during the Holocene. Goshen Springs, Alabama, is located at 31 degrees north latitude and the palynological record indicates the forest was generally warm-temperate southeastern evergreen forest during the Holocene. Dust Cave is located at 34 degrees north latitude. The diagram in Figure 3.2 indicates that the area around the cave prior to 8,000 years ago was cool-temperate deciduous forest. Subsequently, after 8,000 years ago, the forest was primarily warm-temperate southeastern evergreen forest.

Research at Dust Cave, 1989-1994

Previous research at Dust Cave indicates that the cave was first occupied around 10,500 years ago (Collins *et al.* 1994). Five cultural occupations were documented at the site. The earliest, the Late Paleoindian, contained Beaver Lake, Cumberland, Quad, and Dalton projectile point types, and one fluted stone tool fragment (Driskell 1994). The two Early Archaic components included the Early Side-Notched and Kirk Stemmed. The Middle Archaic period at the site was represented by the Eva/Morrow Mountain component and the Seven Mile Island phase. Preliminary analyses included sediment deposition, chronology, stone and bone tool technology, and studies of invertebrate, vertebrate, and botanical remains (Driskell 1994, Goldberg and Sherwood 1994, Grover 1994, Parmalee 1994, Meeks 1994).

Methods and Materials

The methods used in the zooarchaeological analysis are described in Chapter V. Data are presented according to NISP and MNI calculations. Specific studies of the bone fragments included taphonomic factors, seasonality studies, and mortality data.

The faunal remains for this study were recovered from the entrance trench of the cave (see Figure 4.2). A sample of 11,023 bone fragments was analyzed. Chapter VI presents the identified faunal remains according to class, family, genus, and species. Twelve mammal families, five mammal genera, and 18 species were identified. Ten families, two genera, and nine species of birds were identified. Amphibians were represented by one genus and two species. Four families and three species of reptiles were identified. Finally, a variety of fish was recovered including eight families and eight genera or species.

Intra-Site Comparisons

The analysis of the Dust Cave faunal remains indicates that changes occurred in the exploitation of some classes of animals through time. Late Paleoindian deposits contained a high percentage of birds. Early and Middle Archaic occupations exhibit a marked decrease in the number of birds while, at the same time, the exploitation of mammals increases. The overall use of fish tends to decrease through time. The decrease in waterfowl and fish is probably due to the drying of marshy areas around the cave with the onset of the Hypsithermal period 8,000 years ago.

Some slight variation in the use of open, ecotone, and closed habitat species was observed through time. Late Paleoindian occupants of the cave relied somewhat on open habitat species but more heavily on closed habitat species. The Early Side-Notched inhabitants exhibited a reliance on closed habitat species. The same is true for the Kirk Stemmed and Eva/Morrow Mountain components. In contrast, the Seven Mile Island phase contained more ecotone species, such as whitetail deer and rabbits. Differences in habitats exploited are probably due to regional changes in the environment as the climate became warmer and drier, opening up forest areas.

An analysis of element distribution was used to assess differential preservation, butchering practices, and disposal patterns. The majority of identifiable fish remains were cranial elements. Reptile elements primarily fell into the vertebra/axial/other category due to the high numbers of turtle shell fragments and snake vertebra. Similarly, amphibian remains were mostly vertebrae, but some hindlimb elements were also recovered. The bird remains consisted primarily of wing elements. Finally, the small/ medium and large mammal faunal categories all showed similar patterns of element distribution. Cranial, forelimb, and hindlimb elements dominated the mammal assemblage. These results suggest that differential preservation between classes is not a factor since the small, fragile fish, bird, and amphibian bones are fairly well preserved. Mammals were brought to the site as whole carcasses and processed. Foot and cranial elements were then discarded. Fish were probably processed by removing and discarding the head portion. The rest of the fish was cooked which would destroy most of the body elements.

Results from the study of seasonality and species availability indicate that the probable season of occupation for the site is fall to early winter, and periodically in the spring. The presence of migratory birds such as passenger pigeons strongly implies a fall season occupation.

Migratory waterfowl would have been available during the fall migration and again during the spring migration. Fish such as suckers, which spawn in the spring, are also present in the assemblage and indicate a spring occupation of the site.

A majority of the whitetail deer remains were sub-adults (1-18 months), while a minority were prime adults (19-72 months). No older adults were represented. This age structure corresponds to a living-structure mortality pattern. Previous studies have shown that such patterns occur when a prey species is over-hunted, hunted at restricted times of the year (such as in the fall when many whitetail deer fawns are available), or when entire groups of deer are captured.

The majority of the modified bone from all periods at Dust Cave was calcined or burned. Very few of the bones had been modified by the actions of nonhuman agents such as carnivores or rodents. Relatively few of the bones had identifiable cut marks.

A few bone tools were recovered from the Late Paleoindian and Early Archaic components but most came from the Middle Archaic components. The bone tools were primarily awls, but other categories such as needles, points, fish hooks, and pendants were also represented.

Inter-Site Comparisons

Dust Cave is the only site in which birds comprise a majority of the faunal remains in the assemblage. Mammals constitute the majority of the fauna from five of the sites used in the comparison: Graham Cave, Rodgers Shelter, Stanfield-Worley Bluff Shelter, Russell Cave, and Smith Bottom Cave. Fish dominate at Modoc Rock Shelter. Whitetail deer bone increases through time at Dust Cave, Graham Cave, Stanfield-Worley, and Smith Bottom Cave, while they decline at Rodgers Shelter, Modoc Rock Shelter, and Russell Cave. The utilization of aquatic resources increased through time in all of the faunal assemblages analyzed except Dust Cave. There was an increased utilization of ecotone species during the Middle Holocene at all of the sites.

CONCLUSIONS

The faunal remains recovered from Dust Cave provide new and exciting information concerning some of the earliest human inhabitants of the southeastern United States. Several major trends have been observed in the Dust Cave fauna:

1) Avian species constitute the major vertebrate fauna utilized in the Dust Cave assemblage; a large portion of the avifauna in the Late

Paleoindian component consists of waterfowl.

2) The utilization of whitetail deer at Dust Cave increased through time. Mortality data indicate that most of the deer were sub-adults at the time of death.

3) There is a shift in the use of aquatic resources in the faunal assemblage. A decrease in utilization of aquatic species occurs in the Middle Archaic deposits.

4) A majority of the fauna was acquired from closed habitats. However, during the Seven Mile Island phase the majority of the fauna was acquired from ecotone habitats.

5) Seasonal occupation of the cave was primarily during the fall and winter in which deer, ducks, geese, and passenger pigeons were acquired. Occupation may also have occurred during the spring when suckers were collected during spawning.

6) Human modification of the fauna was largely due to processing meat for consumption. In addition, some bones were modified into tools with awls being the most abundant bone tool type in the deposits.

Comparisons of the faunal assemblages from other archaeological sites to the Dust Cave faunal assemblage revealed that subsistence at Dust Cave is unique in some situations:

1) Dust Cave is the only site in which bird remains were the most abundant. At five of the other sites mammal remains were most important, and at one site (Modoc) fish were most important.

2) Similar to Dust Cave, half of the sites in the comparison exhibited an increase in the utilization of whitetail deer. The exceptions to this are Modoc Rock Shelter, Rodgers Shelter, and

Russell Cave.

3) Only the Dust Cave faunal assemblage had a decrease in the use of aquatic resources during the Middle Holocene.

4) All of the sites in the comparison show a greater reliance on closed habitat species in the Early Holocene, and a greater reliance on ecotone habitat species in the Middle Holocene.

The analysis of the faunal remains from Dust Cave supports the view that hunter-gatherers in the Early and Mid-Holocene Southeast did not practice a universal subsistence adaptation (Styles and Klippel 1996:115). Rather, they adapted to local environmental changes that occurred through time. Decades after the analysis of sites such as Stanfield-Worley Bluff Shelter, Modoc Rock Shelter, Rodgers Shelter, and Graham Cave, archaeologists are still unwilling to accept the idea that Early and Middle Holocene period hunter-gatherers subsisted on a variety of animal resources. In his review of subsistence data for the Southeast, Cable (1998:184) contends that it is "difficult to believe the Early Archaic systems were dependent on small game as opposed to deer". The research on faunal assemblages from sites such as Dust Cave indicates that a reliance on a variety of game, including waterfowl and other birds, small and medium-sized mammals, fish, and whitetail deer is the primary subsistence pattern in the Southeast.

Therefore, because the sites which contain information on faunal resources and changes in environment through time are few, Dust Cave faunal remains provide an ideal reflection of hunter-gatherer subsistence adaptations to environmental change during the Late Paleoindian and Archaic periods.

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APPENDICES

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
716	1	N64W64	8		Unident	unident	U	none	3.2	9
716	2	N64W64	8		Unident	unident	U	calc	2.9	7
716	3	N64W64	8		Indet bird	unident	U	none	0.2	1
716	4	N64W64	8		Indet fish	unident	U	none	0.1	2
716	5	N64W64	8		Wt deer	scaphoid	R	none	3.1	1
716	6	N64W64	8		Wt deer	cuneiform	R	none	2.0	1
716	7	N64W64	8		Sm bird	femur	U	none	0.1	1
716	8	N64W64	8		Indet amphib	innominate	U	none	0.1	1
716	9	N64W64	8		Emydidae	shell	U	none	0.4	1
726	1	N64W64	8		Wt deer	phal 1	R	calc	6.1	1
726	2	N64W64	8		Wt deer	phal 1, d	R	calc	1.4	1
726	3	N64W64	8		Indet fish	unident	U	none	0.1	1
726	4	N64W64	8		Unident	unident	U	calc	7.6	19
716	1	N64W64	8		Wt deer	magnum	R	none	2.8	1
716	2	N64W64	8		Med/lg mam	unident	U	calc	1.2	1
483	1	N64W64	2A		Lg mam	unident	U	none	1.2	1
512	1	N64W64	4		Wt deer	phal 1	R	cut	7.0	1
512	2	N64W64	4		Unident	unident	U	none	11.5	23
512	3	N64W64	4		Unident	unident	U	calc	14.3	27
512	4	N64W64	4		Indet bird	unident	U	calc	0.2	2
512	5	N64W64	4		Indet bird	unident	U	none	1.1	7
512	6	N64W64	4		Indet turt	shell	U	calc	1.0	3
512	7	N64W64	4		Lg mam	rib, p	U	none	7.2	1
512	8	N64W64	4		P. lotor	scapula	R	none	2.3	1
512	9	N64W64	4		P. lotor	humerus, m	R	none	4.7	1
512	10	N64W64	4		Med mam	metapod	U	none	0.4	1
512	11	N64W64	4		Lg bird	skull frag	U	none	0.4	1
512	12	N64W64	4		E. americanus	parasphen	U	none	0.4	1
512	13	N64W64	4		Ictaluridae	articular	U	none	1.6	1
512	14	N64W64	4		Micropterus sp.	dors spine	U	none	0.2	1
512	15	N64W64	4		Indet fish	unident	U	none	0.9	7
565	1	N64W64	6B		P. lotor	astrag	L	none	0.9	1
565	2	N64W64	6B		Unident	unident	U	none	0.3	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
565	3	N64W64	6B		Unident	unident	U	calc	2.9	5
570	1	N64W64	5B		Unident	unident	U	none	15.6	17
570	2	N64W64	5B		Unident	unident	U	calc	5.6	7
570	3	N64W64	5B		Indet bird	unident	U	calc	0.7	4
570	4	N64W64	5B		Indet bird	unident	U	none	1.6	5
570	5	N64W64	5B		Sm mam/bird	unident	U	none	0.1	2
570	6	N64W64	5B		S. carolinensis	mandible	R	none	1.0	1
570	7	N64W64	5B		S. carolinensis	mandible	L	none	0.8	1
570	8	N64W64	5B		Wt deer	rostrum	R	none	4.8	1
570	9	N64W64	5B		Wt deer	rostrum	L	none	0.9	1
570	10	N64W64	5B		Lg mam	skull frag	U	none	4.0	6
570	11	N64W64	5B		Wt deer	lat mall	L	calc	1.5	1
570	12	N64W64	5B		Wt deer	molar 1, t	L	none	2.0	1
570	13	N64W64	5B		Wt deer	metapod fr	U	none	0.7	1
570	14	N64W64	5B		S. floridanus	tibia	R	none	2.4	1
570	15	N64W64	5B		Med/sm mam	metapod	U	none	0.2	1
570	16	N64W64	5B		Med/sm mam	ulna frag	U	none	0.5	1
570	17	N64W64	5B		M. gallapavo	vertebra	U	none	1.6	1
570	18	N64W64	5B		M. gallapav	pelvis	L	none	2.6	1
570	19	N64W64	5B		Sciurius sp.	innominate	L	none	1.8	2
570	20	N64W64	5B		Sciurius sp.	maxilla	R	none	0.3	1
570	21	N64W64	5B		E. migratorius	coracoid	L	none	0.2	1
570	22	N64W64	5B		Moxostoma sp.	hyomandib	U	none	0.4	1
570	23	N64W64	5B		Moxostoma sp.	operculum	U	none	0.6	1
570	24	N64W64	5B		Indet fish	unident	U	none	1.1	5
586	1	N64W64	6A		Unident	unident	U	none	19.5	57
586	2	N64W64	6A		Unident	unident	U	calc	23.5	86
586	3	N64W64	6A		Indet bird	unident	U	calc	2.1	11
586	4	N64W64	6A		Indet bird	unident	U	none	2.1	7
586	5	N64W64	6A		Indet turt	shell	U	none	0.2	2
586	6	N64W64	6A		Indet turt	shell	U	calc	0.6	4
586	7	N64W64	6A		Wt deer	phal 3	R	calc	0.6	1
586	8	N64W64	6A		Wt deer	phal 2	R	none	0.6	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
586	9	N64W64	6A		Anura	vert	U	none	0.1	1
586	10	N64W64	6A		Med/lg mam	maxilla fr	R	none	1.8	1
586	11	N64W64	6A		S. aquaticus	radius	R	none	0.6	1
586	12	N64W64	6A		Sylvilagus sp.	maxilla fr	L	none	0.4	1
586	13	N64W64	6A		O. zibethica	maxilla fr	L	none	0.2	1
586	14	N64W64	6A		S. floridanus	molar	U	none	0.1	1
586	15	N64W64	6A		S. niger	maxilla fr	R	none	0.5	1
586	16	N64W64	6A		Sm mam	mandible f	U	none	0.3	1
586	17	N64W64	6A		Sm mam	mandible f	U	calc	0.3	1
586	18	N64W64	6A		P. subflavus	humerus	R	none	0.1	1
586	19	N64W64	6A		Micropterus sp.	cleithrum	U	none	0.1	1
586	20	N64W64	6A		Sylvilagus sp.	mandible f	R	none	0.3	1
586	21	N64W64	6A		Indet fish	unident	U	none	0.8	6
732	1	N64W64	9		Unident	unident	U	calc	0.9	12
732	2	N64W64	9		Unident	unident	U	none	0.2	3
732	3	N64W64	9		Sm mam	metapod	U	none	0.1	1
732	4	N64W64	9		Sm mam	unident	U	calc	0.3	1
732	5	N64W64	9		Sm bird	unident	U	calc	0.1	1
732	6	N64W64	9		Sm bird	coracoid	U	none	0.2	1
754	1	N64W64	10		Unident	unident	U	calc	0.1	1
772	1	N64W64	11		Lg mammal	longbone	U	none	4.2	1
772	2	N64W64	11		Unident	unident	U	calc	5.2	24
772	3	N64W64	11		Indet bird	unident	U	none	2.4	3
772	4	N64W64	11		Med mam	metapod	U	none	0.3	1
772	5	N64W64	11		T. carolina	plastron	U	none	0.6	2
772	6	N64W64	11		Sm mam/bird	unident	U	none	0.1	2
772	7	N64W64	11		P. lotor, imm	vertebra	U	none	1.8	1
772	8	N64W64	11		Indet turt	vertebra	U	none	0.2	1
783	1	N64W64	11		Sm mam/bird	unident	U	none	0.2	2
783	2	N64W64	11		Sm mam/bird	unident	U	calc	1.0	12
783	3	N64W64	11		Lg mam	carp/tars	U	calc	1.4	1
783	4	N64W64	11		C. canadensis	preml 4, t	R	calc	2.3	1
787	1	N64W64	12B		Unident	unident	U	calc	1.7	7

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
787	2	N64W64	12B		Unident	unident	U	none	1.7	12
787	1	N64W64	12		Unident	unident	U	none	4.4	11
787	2	N64W64	12		Unident	unident	U	calc	3.8	8
787	3	N64W64	12		Indet bird	unident	U	calc	0.3	2
787	4	N64W64	12		Indet bird	unident	U	none	0.7	10
787	5	N64W64	12		Lg mam	carp/tars	U	calc	1.1	1
787	6	N64W64	12		Med mam	humerus fr	U	calc	0.3	1
787	7	N64W64	12		Med bird, imm	coracoid	U	none	0.5	1
787	8	N64W64	12		S. floridanus	molar, b	R	none	0.1	1
787	9	N64W64	12		S. niger	molar, b	L	none	0.1	1
787	10	N64W64	12		Indet fish	unident	U	none	0.3	8
793	1	N64W64	12		Unident	unident	U	calc	0.3	3
793	2	N64W64	12		Unident	unident	U	none	0.1	1
793	3	N64W64	12		Ictaluridae	pect sp	U	calc	0.1	1
793	1	N64W64	12		Unident	unident	U	calc	0.1	1
813	1	N64W64	13	J2	Indet fish	unident	U	none	1.2	13
813	2	N64W64	13	J2	Unident	unident	U	none	2.7	7
813	3	N64W64	13	J2	Unident	unident	U	calc	0.2	2
813	4	N64W64	13	J2	Indet turt	shell	U	burn	0.4	1
813	5	N64W64	13	J2	Indet turt	shell	U	none	1.1	1
813	6	N64W64	13	J2	Sm bird	unident	U	none	0.7	4
813	7	N64W64	13	J2	Sm bird	unident	U	calc	0.5	2
813	8	N64W64	13	J2	Sm bird	humerus	U	none	0.3	1
813	9	N64W64	13	J2	Sm bird	sternum	U	none	0.1	1
813	10	N64W64	13	J2	Indet amphib	longbone	U	none	0.1	1
813	11	N64W64	13	J2	Sm mam	mandible	U	none	0.4	1
824	1	N64W64	14	J3	Med/lg mam	unident	U	none	11.4	17
824	2	N64W64	14	J3	Unident	unident	U	calc	11.8	26
824	3	N64W64	14	J3	Unident	unident	U	none	3.4	32
824	4	N64W64	14	J3	Indet bird	unident	U	none	11.2	24
824	5	N64W64	14	J3	Sm mam	skull fr	U	none	0.7	1
824	6	N64W64	14	J3	Indet turt	shell	U	none	1.4	1
824	7	N64W64	14	J3	Indet fish	unident	U	none	0.7	9

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
824	8	N64W64	14	J3	Indet fish	vertebra	U	none	0.9	2
824	9	N64W64	14	J3	Indet fish	preoperc	U	none	0.2	2
824	10	N64W64	14	J3	P. lotor	maxilla	R	none	3.2	1
824	11	N64W64	14	J3	Sm mam	radius	U	none	0.3	1
824	12	N64W64	14	J3	Med/lg mam	metapod, d	U	none	0.6	1
824	13	N64W64	14	J3	Catostomidae	hyomandib	U	none	0.1	1
824	14	N64W64	14	J3	A. grunniens	scapula	U	none	0.1	1
824	15	N64W64	14	J3	Canis sp.	phal	L	calc	0.9	1
824	16	N64W64	14	J3	Sylvilagus sp.	radius, d	L	calc	0.2	1
824	17	N64W64	14	J3	Sciurius sp.	metapod	U	calc	0.1	1
824	18	N64W64	14	J3	Unident	unident	U	none	0.2	1
824	19	N64W64	14	J3	Med/lg mam	metapod	U	none	0.9	1
824	20	N64W64	14	J3	Med bird, imm	ulna	U	none	1.1	1
824	21	N64W64	14	J3	P. lotor	maxilla	L	none	3.3	1
824	1	N64W64	14	J3	C. canadensis	incisor fr	U	none	0.3	1
824	2	N64W64	14	J3	Unident	unident	U	none	3.2	10
824	3	N64W64	14	J3	Unident	unident	U	calc	5.5	14
824	4	N64W64	14	J3	Bird	unident	U	none	0.2	1
824	5	N64W64	14	J3	Indet turt	vert	U	none	0.2	1
824	6	N64W64	14	J3	Sylvilagus sp.	hum epi	U	calc	0.2	1
824	7	N64W64	14	J3	M. gallapavo	tarsomt, p	L	calc	0.6	1
824	8	N64W64	14	J3	Sciurius sp.	tibia	R	none	1.0	1
824	9	N64W64	14	J3	P. lotor	molar 1, t	R	none	0.5	1
824	1	N64W64	14	J3	Indet fish	unident	U	none	0.4	5
824	2	N64W64	14	J3	Indet bird	unident	U	none	1.9	6
824	3	N64W64	14	J3	Unident	unident	U	none	4.1	7
824	4	N64W64	14	J3	Unident	unident	U	calc	4.4	13
824	5	N64W64	14	J3	Sciurius sp.	metapod	U	none	0.1	1
824	6	N64W64	14	J3	Sylvilagus sp.	femur, p	U	none	0.2	1
824	7	N64W64	14	J3	M. gallapavo	femur, p	R	none	0.2	1
813	1	N64W64	13	J2	T. carolina	shell	U	none	0.2	1
824	1	N64W64	14	J3	Unident	unident	U	calc	1.2	2
824	2	N64W64	14	J3	Indet bird	unident	U	none	1.5	5

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
824	3	N64W64	14	J3	Pelecypoda	shell	U	none	2.2	1
846	1	N64W64	14	J3	Unident	unident	U	none	2.9	12
846	2	N64W64	14	J3	E. americanus	parasphen	U	none	0.3	1
880	1	N64W64	16	K2	Unident	unident	U	none	0.4	1
880	1	N64W64	16	K2	Unident	unident	U	none	10.7	22
880	2	N64W64	16	K2	Unident	unident	U	calc	2.8	11
880	3	N64W64	16	K2	Indet bird	unident	U	calc	0.2	2
880	4	N64W64	16	K2	Indet bird	unident	U	none	0.7	4
880	5	N64W64	16	K2	Sm mam	skull fr	U	none	0.2	1
880	6	N64W64	16	K2	Sm mam	metapod	U	none	0.1	1
880	7	N64W64	16	K2	Sm mam	incisor	U	none	0.2	1
880	8	N64W64	16	K2	Indet fish	unident	U	none	0.2	2
880	9	N64W64	16	K2	S. aquaticus cf	tibia-d	R	calc	0.4	1
880	10	N64W64	16	K2	Med/sm mam	unident	U	calc	1.8	1
880	11	N64W64	16	K2	D. marsupialis	scapula	L	none	3.6	1
880	1	N64W64	16	K2	Unident	unident	U	none	0.6	5
880	2	N64W64	16	K2	Unident	unident	U	calc	2.3	4
880	3	N64W64	16	K2	E. migratorus	humerus	R	calc	0.8	1
880	1	N64W64	16	K2	Unident	unident	U	calc	0.6	1
1017	1	N64W64	19		Wt deer	vert-cerv	U	calc	23.5	1
1017	1	N64W64	19	K2	Med/lg mam	rib fr	U	calc	1.6	1
1060	1	N64W64	20	K7	Unident	unident	U	none	4.6	19
1060	2	N64W64	20	K7	Unident	unident	U	calc	0.7	3
1060	3	N64W64	20	K7	Indet fish	rib/ray	U	none	0.2	5
1060	4	N64W64	20	K7	Indet fish	operculum	U	none	0.1	1
1060	5	N64W64	20	K7	Sm mam	humerus fr	U	none	0.5	1
1060	6	N64W64	20	K7	S. carolinensis	scapula	R	none	0.3	1
1060	7	N64W64	20	K7	Wt deer	mandible	L	none	10.5	1
1060	1	N64W64	20	K7	Wt deer	maxilla	R	none	5.8	1
1060	1	N64W64	20	K7	Lg mam	rib	U	none	6.0	1
1115	1	N64W64	23	N	Unident	unident	U	none	0.3	2
1115	2	N64W64	23	N	Med mam	metapod	U	none	0.3	1
1115	3	N64W64	23	N	Micropterus sp.	dentary	U	none	0.2	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1115	4	N64W64	23	N	Indet fish	rib/ray	U	none	0.1	2
1195	1	N64W64	26	Pl	Unident	unident	U	none	3.5	4
1195	2	N64W64	26	Pl	Unident	unident	U	calc	1.2	6
1195	3	N64W64	26	Pl	Indet bird	unident	U	calc	0.4	2
1195	4	N64W64	26	Pl	Indet bird	vert	U	calc	0.3	1
1195	5	N64W64	26	Pl	Canis sp.	phal	U	calc	1.2	1
1195	1	N64W64	26	Pl	Unident	unident	U	none	2.2	8
1195	2	N64W64	26	Pl	Unident	unident	U	calc	5.8	18
1195	3	N64W64	26	Pl	Sm bird	unident	U	calc	0.2	2
1195	4	N64W64	26	Pl	Sm bird	carpometa	U	calc	0.3	1
1195	5	N64W64	26	Pl	Indet turt	vert	U	calc	0.2	1
1195	6	N64W64	26	Pl	Sm mam	mandible	U	calc	0.2	1
1195	7	N64W64	26	Pl	P. lotor	radius	R	calc	0.8	1
1195	8	N64W64	26	Pl	Lg bird	unident	U	none	1.2	1
1195	9	N64W64	26	Pl	D. marsupialis	humerus	L	calc	1.8	1
1152	1	N64W64	24	N1a	Indet turt	shell	U	calc	0.6	3
1152	2	N64W64	24	N1a	Unident	unident	U	calc	0.5	2
1152	3	N64W64	24	N1a	Sm mam	mandible	L	calc	0.3	1
1152	1	N64W64	24	N1a	Med mam	metapod-d	U	calc	1.1	2
1152	2	N64W64	24	N1a	Indet turt	shell	U	calc	0.2	1
1152	3	N64W64	24	N1a	Unident	unident	U	calc	1.3	6
1152	4	N64W64	24	N1a	Sm mam/bird	longbone	U	none	0.1	1
1169	1	N64W64	25	N1a	Chrysemys picta	pleural	U	none	3.3	3
1169	2	N64W64	25	N1a	Chrysemys picta	peripheral	U	none	3.2	6
1169	3	N64W64	25	N1a	Indet turt	shell	U	calc	0.1	2
1169	4	N64W64	25	N1a	Unident	unident	U	calc	2.3	6
1169	5	N64W64	25	N1a	Sm mam	metapod	U	calc	0.1	1
1169	6	N64W64	25	N1a	Indet bird	unident	U	none	0.5	2
1169	7	N64W64	25	N1a	Indet fish	rib/ray	U	none	0.1	1
1169	1	N64W64	25	N1a	Unident	unident	U	none	0.7	4
1169	2	N64W64	25	N1a	Sm mam	skull fr	U	none	0.5	1
1169	3	N64W64	25	N1a	Unident	unident	U	calc	1.1	3
1194	1	N64W64	26	N1a	Unident	unident	U	calc	1.9	5

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1194	2	N64W64	26	Nla	Indet bird	unident	U	calc	0.2	2
1194	3	N64W64	26	Nla	Indet bird	unident	U	none	0.6	5
1194	4	N64W64	26	Nla	Med/lg mam	phal	U	none	0.5	1
1194	5	N64W64	26	Nla	Sm mam	phal	U	none	0.2	2
1194	6	N64W64	26	Nla	Emydidae	peripheral	U	calc	0.7	1
1194	7	N64W64	26	Nla	Indet fish	rib/ray	U	calc	0.2	2
1313	1	N64W64	24		Indet fish	spine	U	none	0.1	1
1313	2	N64W64	24		Indet fish	rib/ray	U	calc	0.1	1
1313	3	N64W64	24		Unident	unident	U	calc	2.0	3
1313	4	N64W64	24		Lg mam	unident	U	calc	0.9	1
1313	5	N64W64	24		Unident	unident	U	none	4.3	8
1313	1	N64W64	24		Wt deer	tibia-d	L	cuts	33.6	1
1313	2	N64W64	24		Unident	unident	U	none	2.5	8
1313	3	N64W64	24		Indet bird	unident	U	none	5.9	12
1313	4	N64W64	24		Indet bird	unident	U	calc	1.8	5
1313	5	N64W64	24		Indet turt	shell	U	calc	0.3	1
1313	6	N64W64	24		Indet turt	shell	U	none	2.5	6
1313	7	N64W64	24		Indet fish	unident	U	none	1.5	10
1313	8	N64W64	24		Indet fish	rib/ray	U	none	1.1	15
1313	9	N64W64	24		E. americanus	parasphen	U	none	0.1	1
1313	10	N64W64	24		M. erythrurum	cleithrum	U	none	0.5	1
1313	11	N64W64	24		Lepisosteus sp.	scale	U	none	0.1	1
1313	12	N64W64	24		Sm mam	metapod	U	none	0.4	2
1313	13	N64W64	24		Sm mam	vert-caud	U	none	0.2	1
1313	14	N64W64	24		S. floridanus	calcaneus	L	calc	0.6	1
1313	15	N64W64	24		S. carolinensis	mandible	R	none	0.6	1
1313	16	N64W64	24		S. carolinensis	mandible	L	none	0.5	1
1313	17	N64W64	24		S. carolinensis	humerus-d	L	none	0.3	1
1313	18	N64W64	24		S. carolinensis	tibia-p	L	none	0.2	1
1313	19	N64W64	24		Sylvilagus sp.	mandible f	U	none	0.6	1
1313	20	N64W64	24		S. niger	maxilla	L	none	0.9	1
1313	21	N64W64	24		Sylvilagus sp.	molar	U	none	0.1	1
1313	22	N64W64	24		D. marsupialis	humerus-d	R	none	0.8	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1313	23	N64W64	24		S. carolinensis	innom. fr	R	none	0.1	1
1313	24	N64W64	24		Gastropoda	shell	U	none	0.7	1
1478	1	N64W64	28	P3	N. floridana	mandible	R	none	0.6	1
1478	2	N64W64	28	P3	Sm mam	metapod	U	calc	0.2	1
1478	3	N64W64	28	P3	Unident	unident	U	calc	1.2	3
1478	4	N64W64	28	P3	S. aquaticus	tibia-p	R	calc	0.8	1
1478	5	N64W64	28	P3	Indet fish	unident	U	none	0.1	3
1478	6	N64W64	28	P3	Micropterus sp.	quadrate	U	none	0.1	1
1505	1	N64W64	31	P3	Indet bird	unident	U	none	1.6	5
1505	2	N64W64	31	P3	Sm mam	unident	U	calc	0.1	1
1505	3	N64W64	31	P3	D. marsupialis	radius	U	calc	0.5	1
1507	1	N64W64	31	P3	Lg mam	rib frag	U	none	3.6	6
1507	2	N64W64	31	P3	Wt deer	phal 1-p	R	none	4.7	1
1507	3	N64W64	31	P3	P. lotor	manidble	R	none	5.6	1
1507	4	N64W64	31	P3	S. niger	maxilla	L	none	0.7	1
1507	5	N64W64	31	P3	P. lotor	ulna-p	R	calc	0.6	1
1507	6	N64W64	31	P3	S. carolinensis	humerus-d	R	calc	0.3	1
1507	7	N64W64	31	P3	Indet fish	unident	U	none	0.2	3
1507	8	N64W64	31	P3	Sm mam	unident	U	none	0.3	4
1507	9	N64W64	31	P3	Unident	unident	U	calc	0.2	1
1507	10	N64W64	31	P3	Strix varia	tarsometa	R	calc	1.0	1
1521	1	N64W64	32	P3	Unident	unident	U	none	2.0	5
1521	2	N64W64	32	P3	Indet bird	unident	U	none	0.3	2
1521	3	N64W64	32	P3	Indet bird	unident	U	calc	0.6	4
1521	4	N64W64	32	P3	S. floridanus	humerus-d	L	calc	0.3	1
1521	5	N64W64	32	P3	Indet fish	unident	U	none	0.1	2
1521	6	N64W64	32	P3	Med mam	metapod	U	none	0.4	1
1521	7	N64W64	32	P3	Lg mam	tooth	U	none	0.6	1
1521	1	N64W64	32	P3	Unident	unident	U	calc	1.1	2
1563	1	N64W64	33	P3/O	Unident	unident	U	calc	0.2	2
1563	2	N64W64	33	P3/O	Lg bird	vertebra	U	none	0.7	1
1813	1	N64W64	33	P4	S. carolinensis	mandible	L	none	0.6	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1813	2	N64W64	33	P4	Unident	unident	U	none	0.5	3
1813	3	N64W64	33	P4	Sm mam	aud. bulla	U	none	0.1	1
1813	4	N64W64	33	P4	Indet turt	shell	U	none	0.4	1
1813	5	N64W64	33	P4	Unident	unident	U	calc	0.5	2
1836	1	N64W64	36	P5b	S. niger	maxilla	R	none	0.2	1
1836	2	N64W64	36	P5b	Sm mam/bird	unident	U	none	1.0	3
1836	3	N64W64	36	P5b	Unident	unident	U	calc	1.7	2
1836	4	N64W64	36	P5b	S. floridanus	tibia-p	L	calc	1.2	1
1836	5	N64W64	36	P5b	Med mam	longbone	U	none	2.0	1
1836	6	N64W64	36	P5b	Indet fish	vert	U	none	0.1	1
1836	7	N64W64	36	P5b	Indet fish	unident	U	none	0.3	1
1853	1	N64W64	38	P5b	S. carolinensis	maxilla	L	none	0.5	1
1853	2	N64W64	38	P5b	S. carolinensis	zygomatic	R	none	0.2	1
1853	3	N64W64	38	P5b	Sm mam	unident	U	none	0.1	1
1853	4	N64W64	38	P5b	Indet fish	unident	U	none	0.1	1
1853	5	N64W64	38	P5b	Unident	unident	U	none	1.3	2
1853	6	N64W64	38	P5b	Unident	unident	U	calc	0.4	2
1870	1	N64W64	40	R1	Unident	unident	U	none	18.4	24
1870	2	N64W64	40	R1	Unident	unident	U	calc	5.6	11
1870	3	N64W64	40	R1	Indet bird	unident	U	none	11.5	22
1870	4	N64W64	40	R1	Indet bird	unident	U	calc	2.0	4
1870	5	N64W64	40	R1	Med/sm mam	phal	U	none	0.2	1
1870	6	N64W64	40	R1	Med/sm mam	metapod	U	none	0.3	1
1870	7	N64W64	40	R1	Sm mam	metapod	U	none	0.2	2
1870	8	N64W64	40	R1	Sm mam	rib	U	none	0.2	1
1870	9	N64W64	40	R1	D. marsupialis	radius	R	none	0.1	1
1870	10	N64W64	40	R1	Med/lg mam	mand fr	U	none	1.4	1
1870	11	N64W64	40	R1	C. canadensis	incisor	U	none	0.9	1
1870	12	N64W64	40	R1	Med mam	vert	U	none	0.7	1
1870	13	N64W64	40	R1	Unident	vert	U	none	0.2	1
1870	14	N64W64	40	R1	Emydidae	shell	U	none	0.3	2
1870	15	N64W64	40	R1	T. carolina	plastron	U	none	3.6	3
1870	16	N64W64	40	R1	T. carolina	shell	U	none	6.1	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1870	17	N64W64	40	R1	Wt deer-imm	metapod	U	none	3.3	1
1870	18	N64W64	40	R1	S. carolinensis	mand	R	none	0.8	1
1870	19	N64W64	40	R1	S. carolinensis	mand	L	none	0.6	1
1870	20	N64W64	40	R1	S. carolinensis	hum-p	L	none	0.3	1
1870	21	N64W64	40	R1	S. carolinensis	scap	L	none	0.1	1
1870	22	N64W64	40	R1	S. carolinensis	maxilla	R	none	0.2	1
1870	23	N64W64	40	R1	S. carolinensis	innom	R	calc	0.5	1
1870	24	N64W64	40	R1	O. zibethica	mand	L	none	1.8	1
1870	25	N64W64	40	R1	S. floridanus	hum-d	R	none	0.6	1
1870	26	N64W64	40	R1	Indet fish	unident	U	none	0.3	6
1870	27	N64W64	40	R1	Indet fish	vert	U	none	0.1	1
1870	28	N64W64	40	R1	A. grunniens	premax	R	none	0.7	1
1870	29	N64W64	40	R1	A. grunniens	premax	L	none	0.4	1
1870	30	N64W64	40	R1	M. erythrurm cf	hyomand	U	none	0.2	1
1870	31	N64W64	40	R1	C. virginianus	coracoid	L	none	0.2	1
1870	32	N64W64	40	R1	C. virginianus?	tarsometa	R	none	0.1	1
1874	1	N64W64	41	R1	Unident	unident	U	none	17.9	118
1874	2	N64W64	41	R1	Unident	unident	U	calc	34.1	140
1874	3	N64W64	41	R1	Lg mam	longbone	U	none	14.9	7
1874	4	N64W64	41	R1	Indet bird	longbone	U	none	6.1	19
1874	5	N64W64	41	R1	Indet fish	vert	U	none	2.1	12
1874	6	N64W64	41	R1	Indet fish	unident	U	none	0.6	9
1874	7	N64W64	41	R1	Wt deer	scaphoid	R	none	2.3	1
1874	8	N64W64	41	R1	Wt deer-imm	femur-pepi	U	none	3.3	1
1874	9	N64W64	41	R1	Wt deer	phal-d	U	calc	0.6	2
1874	10	N64W64	41	R1	Wt deer	sesmoid	U	calc	0.5	2
1874	11	N64W64	41	R1	Wt deer	phal-p	U	calc	0.7	1
1874	12	N64W64	41	R1	Wt deer	tooth fr	U	none	0.1	1
1874	13	N64W64	41	R1	O. zibethica	max	L	none	1.1	1
1874	14	N64W64	41	R1	Med/sm mam	skull fr	U	none	0.4	6
1874	15	N64W64	41	R1	O. zibethica	tibia-d	L	calc	0.2	1
1874	16	N64W64	41	R1	O. zibethica	ischium	R	none	0.5	1
1874	17	N64W64	41	R1	S. niger	ischium	R	none	0.2	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1874	18	N64W64	41	R1	Sm mam	innom fr	U	none	0.1	1
1874	19	N64W64	41	R1	Med mam	phal fr	U	calc	0.6	2
1874	20	N64W64	41	R1	P. lotor	metacarp 3	R	none	0.6	1
1874	21	N64W64	41	R1	S. niger	metacarp 3	U	none	0.2	1
1874	22	N64W64	41	R1	Med mam	aud bulle	U	none	0.4	2
1874	23	N64W64	41	R1	S. niger	mand	L	none	0.5	1
1874	24	N64W64	41	R1	Sciurius sp.	hum fr	U	none	0.2	1
1874	25	N64W64	41	R1	Sciurius sp.	tib fr	U	none	0.2	1
1874	26	N64W64	41	R1	Indet fish	rib/ray	U	none	0.6	5
1874	27	N64W64	41	R1	Indet fish	anal sp	U	none	0.1	1
1874	28	N64W64	41	R1	D. marsupialis	ulna-p	L	none	0.4	1
1874	29	N64W64	41	R1	D. marsupialis	ulna-p	R	none	0.2	1
1874	30	N64W64	41	R1	Gastropoda	shell	U	none	0.1	1
1874	31	N64W64	41	R1	Emydidae	shell	U	none	1.9	6
1874	32	N64W64	41	R1	Emydidae	shell	U	calc	0.6	1
1874	33	N64W64	41	R1	M. erythrurum	dentary	L	none	0.1	1
1874	34	N64W64	41	R1	M. erythrurum	maxilla	R	none	0.9	1
1874	35	N64W64	41	R1	M. salmoides	dentary	R	none	0.6	1
1874	36	N64W64	41	R1	Indet fish	unident	U	none	2.0	14
1874	37	N64W64	41	R1	Aythyinae	hum-d	R	none	0.8	1
1874	38	N64W64	41	R1	M. gallapavo	tibiotar-d	L	none	1.1	1
1874	39	N64W64	41	R1	Lg bird	tibiotar-p	U	none	1.2	2
1874	40	N64W64	41	R1	Lg bird	tarsomet-p	U	none	1.8	1
1874	41	N64W64	41	R1	Sm bird	tibiotar-d	U	none	0.1	1
1874	42	N64W64	41	R1	E. migratorus	synsacrum	L	none	0.1	1
1874	43	N64W64	41	R1	C. virginianus	coracoid	R	none	0.1	1
1874	44	N64W64	41	R1	Sm bird	fem-p	U	none	0.1	1
1874	45	N64W64	41	R1	Indet bird	unident	U	none	1.7	7
1960	1	N64W64	47	T	Unident	unident	U	none	13.5	89
1960	2	N64W64	47	T	Med/lg mam	unident	U	none	14.9	14
1960	3	N64W64	47	T	Indet bird	unident	U	none	5.8	45
1960	4	N64W64	47	T	Unident	unident	U	calc	12.0	41
1960	5	N64W64	47	T	Indet bird	unident	U	calc	0.5	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1960	6	N64W64	47	T	Wt deer	astrag	L	ing	4.8	1
1960	7	N64W64	47	T	O. zibethica	ulna	L	none	0.9	1
1960	8	N64W64	47	T	S. aquaticus	tib-d	L	calc	0.2	1
1960	9	N64W64	47	T	S. aquaticus	metatars	U	none	1.4	4
1960	10	N64W64	47	T	Canis sp.	metacarp 5	L	none	1.1	1
1960	11	N64W64	47	T	Canis sp.	metac/tars	U	none	1.4	2
1960	12	N64W64	47	T	Canis sp.	phal	U	rodg	0.3	1
1960	13	N64W64	47	T	Canis sp.	phal 3	U	calc	0.4	1
1960	14	N64W64	47	T	Canis sp.	incisor-u3	L	none	0.2	1
1960	15	N64W64	47	T	Indet fish	vert	U	none	1.2	6
1960	16	N64W64	47	T	Indet fish	vert	U	calc	0.2	1
1960	17	N64W64	47	T	A. grunniens	pharyng	U	calc	0.2	1
1960	18	N64W64	47	T	Canis sp.	incisor	U	calc	0.1	1
1960	19	N64W64	47	T	Catostomidae	pharyng	U	none	0.8	2
1960	20	N64W64	47	T	Indet fish	spine	U	none	0.1	3
1960	21	N64W64	47	T	M. erythrurum	metaptery	R	none	0.6	2
1960	22	N64W64	47	T	M. erythrurum	dentary	L	none	0.2	1
1960	23	N64W64	47	T	M. erythrurum	palatine	U	none	0.1	1
1960	24	N64W64	47	T	M. erythrurum	operculum	U	none	0.1	1
1960	25	N64W64	47	T	Indet fish	unident	U	none	0.4	3
1960	26	N64W64	47	T	Acipenseridae ?	scale	U	none	0.1	1
1960	27	N64W64	47	T	Lg bird	phal	U	none	0.3	1
1960	28	N64W64	47	T	Lg bird	synsacrum	U	none	0.7	1
1960	29	N64W64	47	T	Lg bird	vert	U	none	2.6	1
1960	30	N64W64	47	T	Indet bird	unident	U	none	3.4	13
1960	31	N64W64	47	T	Med bird	ulna	U	none	0.6	1
1960	32	N64W64	47	T	Med bird	tarsometa	U	none	0.6	1
1960	33	N64W64	47	T	Med bird	carpometa	U	none	0.4	1
1960	34	N64W64	47	T	Med bird	hum fr	U	none	0.4	1
1960	35	N64W64	47	T	Anas sp.	coracoid	R	none	1.1	1
1960	36	N64W64	47	T	Q. quiscula	hum	R	none	0.2	1
1960	37	N64W64	47	T	E. migratorus	coracoid	R	none	0.2	1
1960	38	N64W64	47	T	Anas sp.	tarsometa	U	none	0.4	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1960	39	N64W64	47	T	Anas sp.	coracoid f	U	none	0.2	2
1960	40	N64W64	47	T	Sm bird	ulna	U	none	0.1	1
1960	41	N64W64	47	T	Microtus sp.	fem	R	none	0.1	1
1960	42	N64W64	47	T	Microtus sp.	tib	L	none	0.1	1
1960	43	N64W64	47	T	Sm mam	radius	U	none	0.1	1
1960	44	N64W64	47	T	Microtus sp.	mand	L	none	0.1	1
1960	45	N64W64	47	T	Microtus sp.	mand	R	none	0.1	1
1960	46	N64W64	47	T	N. floridanus	mand	L	none	0.1	1
1960	47	N64W64	47	T	R. catesbeiana	innom	L	none	0.1	1
1960	48	N64W64	47	T	R. catesbeiana	mand	R	none	0.1	1
1960	49	N64W64	47	T	Anura	vert	U	none	0.1	1
1960	50	N64W64	47	T	Indet turt	longbone	U	none	0.4	1
1970	1	N64W64	50	T	Unident	unident	U	none	11.1	53
1970	2	N64W64	50	T	Indet bird	unident	U	none	4.8	17
1970	3	N64W64	50	T	Unident	unident	U	calc	13.2	42
1970	4	N64W64	50	T	Lg mam	unident	U	calc	0.8	1
1970	5	N64W64	50	T	Canis sp.	metacarp 4	R	none	1.3	1
1970	6	N64W64	50	T	Canis sp.	phal 1	R	none	0.5	1
1970	7	N64W64	50	T	U. cinereoargen	astrag	R	none	0.6	1
1970	8	N64W64	50	T	S. niger	astrag	R	none	0.2	1
1970	9	N64W64	50	T	Lg mam	thor vert	U	none	0.4	1
1970	10	N64W64	50	T	Lg mam	vert	U	none	0.6	1
1970	11	N64W64	50	T	Indet turt	shell	U	none	0.4	1
1970	12	N64W64	50	T	Lg bird	vert	U	none	1.0	2
1970	13	N64W64	50	T	Med bird	rib	U	none	0.1	1
1970	14	N64W64	50	T	Med bird	longbone	U	none	0.8	2
1970	15	N64W64	50	T	Anserinae	coracoid	R	none	1.1	1
1970	16	N64W64	50	T	Anatidae	tarsomet-d	L	none	0.2	1
1970	17	N64W64	50	T	Indet fish	vert	U	none	0.4	1
1970	18	N64W64	50	T	I. punctatus	dentary	L	none	0.5	1
1970	19	N64W64	50	T	I. punctatus	articular	L	none	0.6	1
1970	20	N64W64	50	T	Indet fish	unident	U	none	0.4	4
1970	21	N64W64	50	T	Colubridae	vert	U	none	0.2	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1970	22	N64W64	50	T	Anura	innom	U	none	0.5	1
1970	23	N64W64	50	T	Sorex sp.	skull	U	none	0.1	1
1970	24	N64W64	50	T	Sorex sp.	mandible	R	none	0.1	1
1970	25	N64W64	50	T	Microtus sp.	mandible	R	none	0.1	1
1970	26	N64W64	50	T	Microtus sp.	mandible	L	none	0.1	1
1970	27	N64W64	50	T	Peromyscus sp.	mandible	R	none	0.1	1
1970	28	N64W64	50	T	P. lotor	molar-up 2	L	none	0.4	1
1976	1	N64W64	52	T	Indet bird	unident	U	none	9.3	35
1976	2	N64W64	52	T	Indet bird	unident	U	calc	3.8	12
1976	3	N64W64	52	T	Unident	unident	U	calc	10.4	52
1976	4	N64W64	52	T	Unident	unident	U	none	5.6	47
1976	5	N64W64	52	T	T. carolina	shell	U	none	2.1	1
1976	6	N64W64	52	T	P. lotor	astrag	L	calc	0.6	1
1976	7	N64W64	52	T	S. floridanus	ulna-p	L	calc	0.2	1
1976	8	N64W64	52	T	S. floridanus	hum-d	R	calc	0.2	1
1976	9	N64W64	52	T	Lg mam	tooth fr	U	calc	0.2	1
1976	10	N64W64	52	T	Sm mam	radius	U	calc	0.1	1
1976	11	N64W64	52	T	P. lotor	calcan	L	none	1.9	1
1976	12	N64W64	52	T	P. lotor-imm	calcan	L	none	0.7	1
1976	13	N64W64	52	T	Med mam	metapod	U	none	0.3	1
1976	14	N64W64	52	T	Microtus sp.	mand	L	none	0.1	1
1976	15	N64W64	52	T	Microtus sp.	femur	R	none	0.1	1
1976	16	N64W64	52	T	Colubridae	vert	U	none	0.1	1
1976	17	N64W64	52	T	Tympanuchus sp.	coracoid-d	R	none	0.4	1
1976	18	N64W64	52	T	Anatidae	coracoid-p	L	none	0.4	1
1976	19	N64W64	52	T	Indet fish	vert	U	none	1.2	5
1976	20	N64W64	52	T	Moxostoma sp.	operculum	U	none	0.1	1
1976	21	N64W64	52	T	Ictaluridae	dentary	U	none	0.1	1
1976	22	N64W64	52	T	Ictaluridae	pect spine	U	none	0.1	1
1976	23	N64W64	52	T	Indet fish	unident	U	none	1.9	16
1976	24	N64W64	52	T	Scal. aquaticus	innom	U	none	0.1	1
1976	25	N64W64	52	T	Sm mam	skull fr	U	none	0.3	1
1983	1	N64W64	55	T	Unident	unident	U	none	2.2	13

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1983	2	N64W64	55	T	Unident	unident	U	calc	4.3	8
1983	3	N64W64	55	T	Indet bird	unident	U	calc	0.4	5
1983	4	N64W64	55	T	Indet bird	unident	U	none	1.5	10
1983	5	N64W64	55	T	Sm mam	vert	U	none	0.1	1
1983	6	N64W64	55	T	Lg bird	vert	U	calc	0.5	1
1983	7	N64W64	55	T	Lg bird	synsac	U	none	1.2	1
1983	8	N64W64	55	T	Sm bird	tibiotars	U	none	1.0	1
1983	9	N64W64	55	T	Icteridae	hum-d	L	none	0.2	1
1983	10	N64W64	55	T	Rana sp.	illium	U	calc	0.4	1
1983	11	N64W64	55	T	Med mam	phal	U	calc	0.3	1
1983	12	N64W64	55	T	Med mam	mandible	U	calc	0.1	1
1983	13	N64W64	55	T	Canis sp.	cuboid	L	calc	0.9	1
1898	1	N63W63	50	T	Med bird	longbone	U	none	1.4	2
1898	2	N63W63	50	T	Med/lg mam	longbone	U	none	5.5	2
1981	1	N64W64	54	T	Unident	unident	U	calc	6.3	27
1981	2	N64W64	54	T	Sm bird	unident	U	none	3.2	13
1981	3	N64W64	54	T	Unident	unident	U	none	1.8	12
1981	4	N64W64	54	T	Med mam	femur. pr	U	none	0.9	1
1981	5	N64W64	54	T	Med bird	vert frag	U	none	0.2	1
1981	6	N64W64	54	T	Indet fish	vert frag	U	none	0.1	1
1981	7	N64W64	54	T	A. grunniens	pharyngeal	U	none	0.2	1
1981	8	N64W64	54	T	Med bird	tibio,d	U	burn	0.8	1
1981	9	N64W64	54	T	Med bird	tibio,d	U	none	0.5	1
1981	10	N64W64	54	T	Wt deer	vest meta	U	none	0.1	1
1981	11	N64W64	54	T	Canis sp.	carnassial	L	none	1.5	1
1981	12	N64W64	54	T	S. floridanus	tibia,d	R	none	0.1	1
1981	13	N64W64	54	T	S. floridanus	hum,d	R	burn	0.2	1
1981	14	N64W64	54	T	S. floridanus	scapula	R	none	0.2	1
1978	1	N64W64	53	T	Unident	unident	U	calc	4.2	24
1978	2	N64W64	53	T	Unident	unident	U	none	9.8	52
1978	3	N64W64	53	T	Indet bird	longbone	U	none	3.5	11
1978	4	N64W64	53	T	Wtdeer	antler fr	U	calc	1.1	1
1978	5	N64W64	53	T	Sm mam	unident	U	none	0.3	2

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1978	6	N64W64	53	T	Med/lg mam	fibula fr	U	none	0.5	1
1978	7	N64W64	53	T	Med bird	femur d	U	none	0.1	1
1978	8	N64W64	53	T	Indet fish	vert	U	none	0.5	1
1978	9	N64W64	53	T	Indet fish	unident	U	none	0.1	1
1978	10	N64W64	53	T	Med bird	vert	U	none	0.1	1
1978	11	N64W64	53	T	Catostomidae	operculum	U	none	1.0	1
1978	12	N64W64	53	T	S. carolinensis	tibia d	L	none	0.2	1
1978	13	N64W64	53	T	Med bird	ulnar carp	U	none	0.2	1
1978	14	N64W64	53	T	O. zibethicus	mandible	L	none	2.1	1
1978	15	N64W64	53	T	O. zibethicus	molar	U	none	0.2	1
1978	16	N64W64	53	T	Lg mam	carp/tars	U	calc	0.9	1
1979	1	N64W64	53	T	Med bird	longbone	U	calc	2.7	4
1979	2	N64W64	53	T	Med bird	longbone	U	none	1.3	5
1979	3	N64W64	53	T	Med/lg mam	unident	U	none	3.0	5
1979	4	N64W64	53	T	Med/lg mam	unident	U	calc	4.9	11
1979	5	N64W64	53	T	S. floridanus	incisor	U	none	0.1	1
1979	6	N64W64	53	T	Med/sm mam	fibula	U	none	0.2	1
1979	7	N64W64	53	T	Cricetidae	mandible	U	none	0.1	1
1869	1	N63W64	50	T	Unident	unident	U	calc	10.3	39
1869	2	N63W64	50	T	Unident	unident	U	none	11.3	53
1869	3	N63W64	50	T	Indet bird	unident	U	none	7.0	16
1869	4	N63W64	50	T	Indet turt	plastron	U	none	5.6	3
1869	5	N63W64	50	T	Med bird	synsacrum	U	calc	2.4	1
1869	6	N63W64	50	T	Med bird	synsacrum	U	none	2.2	1
1869	7	N63W64	50	T	Med bird	vert	U	none	0.7	1
1869	8	N63W64	50	T	A. grunniens	pharyng	U	none	0.4	2
1869	9	N63W64	50	T	Indet fish	vert	U	none	0.1	1
1869	10	N63W64	50	T	Indet fish	unident	U	none	0.8	2
1869	11	N63W64	50	T	Stizostedion sp	dentary	L	none	0.2	1
1869	12	N63W64	50	T	Catostomidae	pect spine	U	none	0.1	1
1869	13	N63W64	50	T	Catostomidae	operculum	U	none	0.5	1
1869	14	N63W64	50	T	Catostomidae	hyomandib	U	none	0.5	2
1869	15	N63W64	50	T	Sm mam	metapod	U	none	0.5	4

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1869	16	N63W64	50	T	Med mam	phalanx	U	none	0.2	1
1869	17	N63W64	50	T	Sm mam	skull frag	U	none	0.1	1
1869	18	N63W64	50	T	S. carolinensis	incisor	U	none	0.1	1
1869	19	N63W64	50	T	S. carolinensis	humerus d	R	none	0.2	1
1869	20	N63W64	50	T	Med mam	mandible	U	burn	0.7	1
1869	21	N63W64	50	T	Med/lg mam	femur p ep	U	burn	1.7	1
1869	22	N63W64	50	T	Anas sp.	hum d	R	none	0.5	1
1869	23	N63W64	50	T	Anas sp.	coracoid	L	none	0.4	1
1869	24	N63W64	50	T	M. gallopavo	phalanx	R	none	0.4	1
1869	25	N63W64	50	T	Anatidae	phalanx	U	none	0.3	1
1851	1	N63W64	48	T	Med/lg mam	unident	U	none	2.4	2
1851	2	N63W64	48	T	Indet bird	unident	U	none	14.0	39
1851	3	N63W64	48	T	Lg bird	carpometa	U	none	0.8	1
1851	4	N63W64	48	T	Indet fish	unident	U	none	0.2	1
1851	5	N63W64	48	T	Catostomidae	articular	U	none	0.3	1
1851	6	N63W64	48	T	Catostomidae	weberian	U	none	1.5	1
1851	7	N63W64	48	T	E. migratorius	coracoid	R	none	0.2	1
1851	8	N63W64	48	T	B. canadensis	coracoid	R	none	3.7	1
1851	9	N63W64	48	T	Anatidae	coracoid p	R	none	1.0	1
1851	10	N63W64	48	T	Med bird	coracoid d	L	none	0.5	1
1851	11	N63W64	48	T	Raptor-Hawk?	term phal	U	none	0.2	1
1851	12	N63W64	48	T	S. floridanus	calcaneus	R	none	0.6	1
1986	1	N64W64	56	T	Unident	unident	U	burn	3.1	3
1986	2	N64W64	56	T	Unident	unident	U	none	7.6	15
1986	3	N64W64	56	T	Sm mam	humerus p	U	none	0.3	1
1986	4	N64W64	56	T	Sm/med mam	aud bulla	U	none	0.1	1
1986	5	N64W64	56	T	O. zibethica	mandible	L	none	1.9	1
1986	6	N64W64	56	T	cf. M. pennanti	canine u	L	none	0.3	1
1986	7	N64W64	56	T	cf. T. striatus	femur	L	none	0.1	1
1988	1	N64W64	56	/	Unident	unident	U	none	0.1	1
1988	2	N64W64	56	/	Unident	unident	U	burn	0.2	1
1988	3	N64W64	56	/	S. floridanus	maxilla	R	none	0.9	1
1972	1	N64W64	50	T	Unident	unident	U	calc	16.0	57

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1972	2	N64W64	50	T	Unident	unident	U	none	15.0	69
1972	3	N64W64	50	T	Lg mam	unident	U	none	9.1	6
1972	4	N64W64	50	T	S. floridanus	mandible	R	none	0.7	1
1972	5	N64W64	50	T	S. floridanus	molar	U	none	0.1	1
1972	6	N64W64	50	T	Med mammal	acetabulum	R	none	0.6	1
1972	7	N64W64	50	T	Med mammal	mandible	U	none	0.8	1
1972	8	N64W64	50	T	Vespertilionid	humerus p	U	none	0.1	2
1972	9	N64W64	50	T	Sm mam	humerus p	U	none	0.1	1
1972	10	N64W64	50	T	Talpidae	hum frag	U	none	0.1	1
1972	11	N64W64	50	T	Med mam	vert epi	U	none	0.1	1
1972	12	N64W64	50	T	Med/lg mam	unident	U	cut	0.7	1
1972	13	N64W64	50	T	Med bird	coracoid d	U	none	0.1	1
1972	14	N64W64	50	T	Sm bird	fulcrum	U	none	0.1	1
1972	15	N64W64	50	T	Sm bird	fulcrum	U	burn	0.1	1
1972	16	N64W64	50	T	Sm bird	tibio med	U	none	0.1	1
1972	17	N64W64	50	T	Wtdeer	metapod ep	U	none	0.9	1
1972	18	N64W64	50	T	Med bird	vert	U	none	0.4	1
1972	19	N64W64	50	T	Indet bird	unident	U	none	2.2	6
1972	20	N64W64	50	T	Indet turt	shell	U	none	2.4	3
1972	21	N64W64	50	T	Colubridae	vert	U	none	0.2	2
1972	22	N64W64	50	T	Catostomidae	operculum	U	none	0.2	1
1972	23	N64W64	50	T	Catostomidae	quadrate	U	none	0.1	1
1972	24	N64W64	50	T	Catostomidae	hyomandib	U	none	0.2	2
1972	25	N64W64	50	T	A. grunniens	pharyng	U	none	0.4	1
1972	26	N64W64	50	T	Indet fish	unident	U	none	1.1	6
1972	27	N64W64	50	T	A. grunniens	dorsal sp	U	none	0.4	1
1993	1	N64W64	59	T	Colubridae	vert	U	none	1.9	6
1993	2	N64W64	59	T	S. carolinensis	maxilla	R	none	0.3	1
1993	3	N64W64	59	T	S. floridanus	tib d epi	L	none	0.1	1
1993	4	N64W64	59	T	Unident	unident	U	none	7.9	20
1993	5	N64W64	59	T	Indet bird	unident	U	none	1.4	6
1925	1	N63W64	57	T	Unident	unident	U	calc	1.3	3
1925	2	N63W64	57	T	Unident	unident	U	none	1.9	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1925	3	N63W64	57	T	Med/lg mam	caudal ver	U	none	0.7	1
1876	1	N63W64	47	T	Med/lg mam	unident	U	none	5.2	6
1876	2	N63W64	47	T	Indet turt	shell	U	none	0.2	1
1876	3	N63W64	47	T	Gastropoda	shell	U	none	0.1	1
1876	4	N63W64	47	T	Indet mam	unident	U	calc	6.5	25
1876	5	N63W64	47	T	Indet bird	unident	U	calc	9.8	65
1876	6	N63W64	47	T	Indet bird	unident	U	none	39.6	182
1876	7	N63W64	47	T	P. lotor	calcaneum	L	none	1.1	1
1876	8	N63W64	47	T	Med mam	phal	U	calc	0.2	1
1876	9	N63W64	47	T	Indet fish	unident	U	none	1.1	4
1876	10	N63W64	47	T	Indet fish	vert	U	none	0.3	3
1876	11	N63W64	47	T	S. floridanus	tibia d	U	none	0.4	1
1876	12	N63W64	47	T	Rana sp.	urostyle	U	none	0.1	1
1876	13	N63W64	47	T	Colubridae	vert	U	none	0.2	1
1876	14	N63W64	47	T	Microtus	mandible	U	none	0.1	2
1876	15	N63W64	47	T	Canis sp.	mandible	L	none	4.4	1
1876	16	N63W64	47	T	Med mammal	femur prox	U	none	0.5	1
1876	17	N63W64	47	T	Lg bird	vert	U	none	1.1	1
1876	18	N63W64	47	T	Lg bird	carpo fr	U	none	0.8	1
1876	19	N63W64	47	T	Med bird	carpo fr	U	none	0.2	1
1876	20	N63W64	47	T	Sm bird	ulna fr	U	none	0.1	1
1876	21	N63W64	47	T	Med bird	trachea	U	none	0.1	2
1876	22	N63W64	47	T	C. caerulescens	coracoid	L	none	2.7	1
1876	23	N63W64	47	T	C. virginianus	coracoid	R	none	0.4	2
1876	24	N63W64	47	T	E. mirgratorius	coracoid p	R	none	0.1	1
1876	25	N63W64	47	T	E. mirgratorius	coracoid d	L	none	0.2	1
1876	26	N63W64	47	T	E. mirgratorius	sternum	U	none	0.2	1
1876	27	N63W64	47	T	cf. Emberizidae	humerus	L	none	0.1	1
1876	28	N63W64	47	T	Anatidae	femur d	R	calc	0.2	1
1876	29	N63W64	47	T	T. cupido	tibio d	L	cut	0.3	1
1876	30	N63W64	47	T	T. cupido	humerus p	R	cut	0.8	1
1830	1	N63W64	47	T	Med/lg mam	unident	U	none	9.8	7
1830	2	N63W64	47	T	Med/lg mam	unident	U	calc	6.3	20

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1830	3	N63W64	47	T	Med mam	longbone	U	cut	0.7	1
1830	4	N63W64	47	T	Indet bird	unident	U	none	10.1	68
1830	5	N63W64	47	T	Indet bird	unident	U	calc	5.0	30
1830	6	N63W64	47	T	Indet snake	vert	U	calc	0.2	1
1830	7	N63W64	47	T	Rana sp.	urostyle	U	none	0.2	2
1830	8	N63W64	47	T	Rana sp.	illium	U	none	0.1	1
1830	9	N63W64	47	T	Indet turt	shell	U	none	1.3	1
1830	10	N63W64	47	T	T. carolina	shell	U	calc	0.2	1
1830	11	N63W64	47	T	P. lotor	carnass 1	L	none	0.4	1
1830	12	N63W64	47	T	S. floridanus	mandible	L	none	1.2	1
1830	13	N63W64	47	T	S. floridanus	astragalus	L	none	0.3	1
1830	14	N63W64	47	T	Med mam	metapod	U	none	0.1	1
1830	15	N63W64	47	T	S. carolinensis	humerus p	L	none	0.1	1
1830	16	N63W64	47	T	Vespertilionid	humerus p	U	none	0.1	1
1830	17	N63W64	47	T	Catostomidae	hyomandib	U	none	0.6	2
1830	18	N63W64	47	T	Indet fish	vert	U	none	0.1	1
1830	19	N63W64	47	T	Indet fish	unident	U	none	1.4	6
1830	20	N63W64	47	T	Catostomidae	quadrate	U	none	0.1	1
1830	21	N63W64	47	T	Catostomidae	pharyngeal	U	none	0.4	1
1830	22	N63W64	47	T	Catostomidae	maxilla	U	none	0.5	1
1830	23	N63W64	47	T	Lg bird	carpometa	U	none	2.4	1
1830	24	N63W64	47	T	E. migratorius	coracoid p	L	none	0.2	1
1830	25	N63W64	47	T	T. cupido	humerus p	L	none	1.7	2
1830	26	N63W64	47	T	T. cupido	humerus p	R	none	0.7	1
1830	27	N63W64	47	T	C. virginianus	coracoid d	L	none	0.2	1
1830	28	N63W64	47	T	Med bird	coracoid p	R	none	0.4	1
1830	29	N63W64	47	T	Med/lg mam	phalanx	U	burn	0.6	1
1830	30	N63W64	47	T	Med/lg mam	carp/tars	U	burn	0.3	1
1830	31	N63W64	47	T	O. zibethica	ulna p	L	none	0.4	1
1830	32	N63W64	47	T	Anura	humerus	R	none	0.1	1
1830	33	N63W64	47	T	Indet turt	phalanx	U	worn	0.5	1
1927	1	N63W63	55	T	Indet bird	unident	U	calc	2.9	7
1927	2	N63W63	55	T	Indet bird	unident	U	none	2.2	11

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1927	3	N63W63	55	T	Lg bird	ulnar carp	U	calc	0.2	1
1927	4	N63W63	55	T	Med mam	phalanx	U	none	0.1	1
1927	5	N63W63	55	T	Cricetidae	incisor	U	none	0.1	1
1956	1	N64W63	53	T	Indet bird	unident	U	calc	0.3	3
1923	1	N63W63	54	T	Indet bird	unident	U	calc	6.2	13
1923	2	N63W63	54	T	Indet bird	unident	U	none	1.0	4
1923	3	N63W63	54	T	A. grunnien	dorsal sp	U	none	2.1	1
1923	4	N63W63	54	T	P. lotor	tibia d	L	none	1.3	1
1920	1	N63W64	56	T	Indet bird	unident	U	none	0.8	5
1920	2	N63W64	56	T	Catostomidae	maxilla	U	none	0.4	1
1920	3	N63W64	56	T	Emydidae	plastron	U	none	0.6	1
1920	4	N63W64	56	T	Indet turt	shell	U	calc	0.3	1
1920	5	N63W64	56	T	Wtdeer	phalanx d	R	none	0.5	1
1895	1	N63W64	54	T	Indet bird	unident	U	calc	1.0	5
1895	2	N63W64	54	T	Indet bird	unident	U	none	2.1	12
1895	3	N63W64	54	T	Med/lg mammal	unident	U	none	7.2	9
1895	4	N63W64	54	T	Med/lg mammal	unident	U	calc	2.8	5
1895	5	N63W64	54	T	Med/lg mammal	carp/tars	U	none	0.5	1
1895	6	N63W64	54	T	D. marsupialis	mandible	R	none	1.1	1
1881	1	N64W63	52	T	Lg bird	tibio d	U	none	0.4	1
1881	2	N64W63	52	T	Lg bird	vert cent	U	none	1.0	1
1881	3	N64W63	52	T	Indet bird	unident	U	none	4.0	19
1881	4	N64W63	52	T	Indet bird	unident	U	calc	0.1	1
1881	5	N64W63	52	T	O. zibethica	calcaneus	R	none	0.4	1
1901	1	N63W63	51	T	Indet bird	unident	U	none	1.8	5
1901	2	N63W63	51	T	Indet bird	unident	U	calc	1.8	3
1984	1	N64W64	55	T	O. zibethica	mandible	L	none	1.8	1
1984	2	N64W64	55	T	O. zibethica	hum p epi	L	none	0.3	1
1984	3	N64W64	55	T	C. virginianus	coracoid	L	none	0.4	1
1984	4	N64W64	55	T	Med bird	tarsomet	U	none	0.6	1
1984	5	N64W64	55	T	Med bird	vert	U	none	0.4	1
1984	6	N64W64	55	T	Indet bird	unident	U	none	3.1	11
1984	7	N64W64	55	T	Indet bird	unident	U	calc	0.7	4

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1984	8	N64W64	55	T	Indet turt	shell	U	none	0.6	1
1984	9	N64W64	55	T	cf. U. cinereo	ulna p	R	burn	1.2	1
1968	1	N64W64	48	T	Indet bird	unident	U	none	5.5	33
1968	2	N64W64	48	T	Indet bird	unident	U	calc	0.8	5
1968	3	N64W64	48	T	Med mam	phalanx	U	calc	0.3	2
1968	4	N64W64	48	T	S. carolinensis	ulna p	R	none	0.2	1
1968	5	N64W64	48	T	Indet fish	unident	U	none	0.3	2
1968	6	N64W64	48	T	Indet fish	vert	U	none	0.4	1
1968	7	N64W64	48	T	Anura	innominate	U	none	0.1	1
1968	8	N64W64	48	T	Med mam	canine fr	U	none	0.2	1
1968	9	N64W64	48	T	E. migratorius	coracoid	R	none	0.2	1
1968	10	N64W64	48	T	C. virginianus	coracoid	L	none	0.3	1
1968	11	N64W64	48	T	T. carolina	shell	U	none	5.3	7
1968	12	N64W64	48	T	Anas sp.	humerus p	R	none	0.3	1
1968	13	N64W64	48	T	E. migratorius	humerus	R	none	0.6	1
1968	14	N64W64	48	T	Accipitridae	coracoid p	L	none	0.4	1
1899	1	N63W64	55	T	Unident	unident	U	none	0.9	2
1899	2	N63W64	55	T	Indet turt	shell	U	none	0.4	1
1899	3	N63W64	55	T	Sm mam/bird	skull frag	U	none	0.2	1
1899	4	N63W64	55	T	Sm bird	ulna	U	none	0.2	1
1899	5	N63W64	55	T	Indet bird	unident	U	none	0.7	6
1899	6	N63W64	55	T	Indet bird	unident	U	calc	1.8	8
1899	7	N63W64	55	T	C. virginianus	humerus p	R	none	0.1	1
1899	8	N63W64	55	T	Rana sp.	illium	L	none	0.3	1
1969	1	N64W63	54	T	Indet turt	shell	U	calc	0.7	1
1969	2	N64W63	54	T	Unident	unident	U	calc	2.0	11
1969	3	N64W63	54	T	Indet bird	unident	U	none	5.3	33
1969	4	N64W63	54	T	cf. Vulpes fulv	maxilla fr	L	calc	0.7	1
1969	5	N64W63	54	T	Med/lg mam	mandib fr	U	calc	0.8	1
1969	6	N64W63	54	T	P. lotor	calcaneus	L	none	0.7	1
1969	7	N64W63	54	T	Indet fish	vert	U	none	0.1	1
1969	8	N64W63	54	T	Indet fish	unident	U	none	0.1	1
1969	9	N64W63	54	T	Lg bird	phalanx	U	calc	0.1	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1969	10	N64W63	54	T	Lg bird	vert	U	none	0.3	1
1969	11	N64W63	54	T	Med mam	vert	U	none	0.1	1
1969	12	N64W63	54	T	Med bird	femur d	U	none	0.5	1
1969	13	N64W63	54	T	Microtus sp.	mandible	R	none	0.1	1
1969	14	N64W63	54	T	Microtus sp.	mandible	L	none	0.1	2
1969	15	N64W63	54	T	cf. B. brevicau	mandible	L	none	0.1	1
1969	16	N64W63	54	T	Sm mam	innominate	U	none	0.6	1
1969	17	N64W63	54	T	Vespertilionid	humerus	L	none	0.1	1
1991	1	N64W64	58	T	Indet bird	unident	U	none	1.6	10
1991	2	N64W64	58	T	Indet turt	shell	U	none	0.8	1
1991	3	N64W64	58	T	Unident	unident	U	none	2.3	7
1991	4	N64W64	58	T	Med mam	phalanx	U	none	0.6	2
1991	5	N64W64	58	T	Colubridae	vert	U	none	0.2	1
1991	6	N64W64	58	T	Med mam	phalanx	U	rodg	0.2	1
1991	7	N64W64	58	T	Med mam	vert	U	none	0.1	1
1991	8	N64W64	58	T	T. striatus	mandible	R	none	0.3	1
0497	1	N64W64	2B		Unident	unident	U	calc	1.0	5
0497	2	N64W64	2B		Sm/md bird	longbone	U	none	0.3	1
0503	1	N64W64	3		D. marsupialis	humerus	R	none	4.0	1
0503	2	N64W64	3		S. carolinensis	maxilla	L	none	0.2	1
0503	3	N64W64	3		Med/lg mam	longbone	U	burn	11.9	7
0503	4	N64W64	3		Mammal	unident	U	none	6.6	12
0503	5	N64W64	3		Indet turt	shell	U	calc	0.9	2
0513	1	N64W64	4		S. carolinensis	mandible	L	none	1.1	1
0513	2	N64W64	4		P. lotor	mandible	L	none	7.1	1
0513	3	N64W64	4		Wtdeer	molar 2 1	L	none	2.7	1
0513	4	N64W64	4		Wtdeer	phal 1	R	none	1.4	1
0513	5	N64W64	4		Med mam	rib frag	U	none	1.3	1
0513	6	N64W64	4		Mammal	unident	U	burn	8.3	5
0513	7	N64W64	4		Unident	unident	U	none	3.7	8
0513	8	N64W64	4		Sm mam	radius	U	none	0.1	1
0513	9	N64W64	4		Indet fish	spine	U	none	0.1	1
0571	1	N64W64	5		Wtdeer	phal 1	R	cut	6.7	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
0571	2	N64W64	5		cf. Castor	maxilla fr	R	none	3.9	1
0571	3	N64W64	5		Unident	unident	U	none	1.0	5
0571	4	N64W64	5		Sm mam	phal	U	none	0.1	1
0571	5	N64W64	5		Pelecypoda	shell	U	none	5.0	1
0571	6	N64W64	5		Unident	unident	U	calc	64.7	60
0587	1	N64W64	6B		Unident	unident	U	calc	2.0	11
0587	1	N64W64	6B		Med mam	phal	U	none	0.6	1
0713	1	N64W64	7B		Unident	unident	U	none	2.5	3
0713	2	N64W64	7B		S. floridanus	humerus d	R	none	0.8	1
0713	3	N64W64	7B		Wt deer	phal frag	U	calc	1.1	1
0713	4	N64W64	7B		Wt deer	tooth frag	U	none	0.2	1
0713	5	N64W64	7B		Unident	unident	U	calc	26.7	47
0730	1	N64W64	9B		Unident	unident	U	calc	10.1	7
0730	2	N64W64	9B		Lg mam	unident	U	none	16.4	3
0730	3	N64W64	9B		Sm mam/bird	unident	U	none	5.8	27
0730	4	N64W64	9B		P. lotor	unident	U	none	4.5	1
0730	5	N64W64	9B		Med bird	synsacrum	U	none	1.4	1
0730	1	N64W64	9B		Lg mam	longbone f	U	none	15.5	2
0730	2	N64W64	9B		Sm mam/bird	unident	U	none	3.7	21
0730	3	N64W64	9B		Sm mam/bird	unident	U	calc	2.0	8
0730	4	N64W64	9B		Sm/med mam	vert	U	none	0.6	4
0730	5	N64W64	9B		Sm/med mam	phal	U	none	0.1	1
0730	6	N64W64	9B		A. grunniens	pharyngeal	U	calc	0.3	1
0752	1	N64W64	9		Unident	unident	U	calc	1.4	3
0752	2	N64W64	9		Unident	unident	U	none	1.2	5
0752	3	N64W64	9		Indet turt	shell	U	none	1.1	1
0730	1	N64W64	9B		Lg mam	longbone f	U	none	6.4	2
0730	2	N64W64	9B		Unident	unident	U	none	15.2	70
0730	3	N64W64	9B		Unident	unident	U	calc	13.3	40
0730	4	N64W64	9B		Indet turt	shell	U	calc	0.5	1
0730	5	N64W64	9B		Sm mam	ulna frag	U	calc	0.1	1
0730	6	N64W64	9B		S. carolinensis	mandible	L	none	0.6	1
0730	7	N64W64	9B		Indet fish	rib	U	none	0.1	2

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
0730	8	N64W64	9B		Indet fish	unident	U	none	0.6	5
0730	9	N64W64	9B		Micropterus sp.	quadrate	U	none	0.3	1
0730	10	N64W64	9B		Indet fish	vert	U	none	0.2	1
0730	11	N64W64	9B		Wtdeer	tooth frag	U	none	0.6	2
0730	12	N64W64	9B		Wtdeer	mandible	L	none	4.8	1
0730	13	N64W64	9B		Wtdeer	femur d fr	U	none	14.6	1
0730	14	N64W64	9B		Canis sp.	caranas u	R	none	1.5	1
0763	1	N64W64	10		Indet bird	unident	U	none	2.0	7
0763	2	N64W64	10		Indet fish	unident	U	none	0.1	2
0763	3	N64W64	10		Unident	unident	U	calc	1.1	2
0763	4	N64W64	10		Med/lg mam	longbone	U	none	6.5	4
0763	5	N64W64	10		Wtdeer	phalans, 3	L	none	3.1	1
0763	6	N64W64	10		M cf duquesnei	dentary	L	none	0.3	1
0791	1	N64W64	12		Unident	unident	U	none	1.2	1
0825	1	N64W64	14	J3	Indet bird	phalanx	U	none	0.1	1
0825	2	N64W64	14	J3	Unident	unident	U	none	0.1	1
0825	3	N64W64	14	J3	Indet bird	unident	U	none	1.2	6
0825	4	N64W64	14	J3	Unident	unident	U	calc	0.1	2
0849	1	N64W64	15	J3	T. carolina	shell	U	burn	0.9	2
0849	1	N64W64	15	J3	Unident	unident	U	calc	2.2	8
0849	2	N64W64	15	J3	Indet bird	longbone	U	none	2.3	12
0849	3	N64W64	15	J3	Pelecypoda	shell	U	none	0.8	1
0849	5	N64W64	15	J3	Sm mam	ulna frag	U	none	0.1	1
0849	6	N64W64	15	J3	S. floridanus	calcaneum	R	none	0.9	1
0849	7	N64W64	15	J3	Wtdeer	phal 2 dis	R	none	2.6	1
0849	1	N64W64	15	J3	Unident	unident	U	calc	1.5	8
0849	2	N64W64	15	J3	Pelecypoda	shell	U	none	0.4	1
0849	3	N64W64	15	J3	Med mam	metapod	U	none	0.4	2
0849	4	N64W64	15	J3	Med mam	phalanx	U	none	0.4	2
0849	5	N64W64	15	J3	Lg mam	skull frag	U	none	7.1	3
0849	6	N64W64	15	J3	Sm mam	skull frag	U	none	0.1	1
0849	7	N64W64	15	J3	S. odoratus	shell	U	none	1.6	10
0849	8	N64W64	15	J3	Indet bird	longbone	U	none	11.4	43

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
0849	9	N64W64	15	J3	Indet fish	rib	U	none	0.1	1
0849	10	N64W64	15	J3	Indet fish	suboperc	U	none	0.1	1
0849	11	N64W64	15	J3	Indet fish	unident	U	none	0.3	1
0849	12	N64W64	15	J3	P. lotor	mandible	R	none	1.8	1
0849	13	N64W64	15	J3	S. carolinensis	humerus d	R	none	0.2	1
0849	14	N64W64	15	J3	Sm mam	distal tib	U	none	0.1	1
0849	15	N64W64	15	J3	Wtdeer	molar u	U	none	3.5	2
0849	16	N64W64	15	J3	Unident	unident	U	none	0.1	1
0849	17	N64W64	15	J3	Wtdeer	premolar u	R	none	4.8	1
0849	1	N64W64	15	J3	Anatidae	coracoid p	L	none	0.3	1
0849	2	N64W64	15	J3	Catostomidae	hyomandib	U	none	0.2	1
0849	3	N64W64	15	J3	Indet fish	unident	U	none	0.3	3
0849	4	N64W64	15	J3	Indet bird	longbone	U	none	1.6	8
0849	5	N64W64	15	J3	Med/lg mam	longbone	U	none	5.0	3
0849	6	N64W64	15	J3	Unident	unident	U	none	1.9	7
0849	7	N64W64	15	J3	Unident	unident	U	calc	0.8	5
0849	8	N64W64	15	J3	Sm mam	metapod	U	none	0.1	1
0849	9	N64W64	15	J3	Sm/med mam	caudal ver	U	none	0.3	1
0849	10	N64W64	15	J3	T. carolina	shell	U	none	5.8	7
0849	11	N64W64	15	J3	Indet turt	shell	U	calc	0.1	1
0849	1	N64W64	15	J3	Indet bird	unident	U	none	1.9	10
0849	2	N64W64	15	J3	S. carolinensis	maxilla	L	none	0.4	1
0849	3	N64W64	15	J3	S. carolinensis	incisor	L	none	0.1	1
0849	4	N64W64	15	J3	Med/lg mam	rib frag	U	none	1.5	1
0849	5	N64W64	15	J3	Lg mam	longbone	U	none	10.0	1
0849	6	N64W64	15	J3	Indet fish	unident	U	none	0.3	2
0849	7	N64W64	15	J3	Indet fish	vert	U	none	0.1	1
0849	8	N64W64	15	J3	Unident	unident	U	none	1.7	4
0849	9	N64W64	15	J3	Unident	unident	U	calc	1.5	5
0849	10	N64W64	15	J3	S. carolinensis	tibia d	R	calc	0.5	1
0851	1	N64W64	15	J3	Wtdeer	phalanx	U	none	1.5	1
0851	2	N64W64	15	J3	Med mam	phalanx	U	calc	0.8	1
0851	3	N64W64	15	J3	Rana sp.	ulna	U	none	0.1	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
0851	4	N64W64	15	J3	Indet bird, imm	unident	U	none	1.2	8
0851	5	N64W64	15	J3	Indet bird	unident	U	none	1.3	15
0851	6	N64W64	15	J3	Unident	unident	U	calc	0.3	4
0851	7	N64W64	15	J3	D. marsupialis	mandible	L	none	6.1	1
0868	1	N64W64	16	J3	S. floridanus	innominate	R	none	1.2	1
0868	2	N64W64	16	J3	S. floridanus	molar	U	none	0.1	1
0868	3	N64W64	16	J3	S. carolinensis	tibia d	R	calc	0.2	1
0868	4	N64W64	16	J3	S. carolinensis	radius	U	none	0.3	1
0868	5	N64W64	16	J3	S. carolinensis	incisor	U	none	0.2	1
0868	6	N64W64	16	J3	S. carolinensis	maxilla	L	none	0.2	1
0868	7	N64W64	16	J3	S. carolinensis	femur prox	L	none	0.7	1
0868	8	N64W64	16	J3	S. carolinensis	calcaneus	L	none	0.2	1
0868	9	N64W64	16	J3	Unident	unident	U	calc	1.5	7
0868	10	N64W64	16	J3	Unident	unident	U	none	7.1	21
0868	11	N64W64	16	J3	Indet bird	unident	U	none	1.6	8
0868	12	N64W64	16	J3	Lg mam	vert frag	U	none	1.6	1
0868	13	N64W64	16	J3	Wtdeer	metapod	U	none	4.8	1
0868	14	N64W64	16	J3	Wtdeer	phalanx	U	none	1.5	1
0868	15	N64W64	16	J3	Catostomidae	hyomandib	U	none	0.2	1
0868	16	N64W64	16	J3	I. punctatus	ceratohyal	R	none	0.7	1
0868	1	N64W64	16	J3	Unident	unident	U	calc	1.2	4
0868	2	N64W64	16	J3	Unident	unident	U	none	0.1	2
0870	1	N64W64	16	J3c	Lg mam	longbone	U	none	6.7	1
0870	2	N64W64	16	J3c	Unident	unident	U	none	1.5	13
0870	3	N64W64	16	J3c	Unident	unident	U	calc	0.2	6
0870	4	N64W64	16	J3c	Indet fish	unident	U	none	0.2	3
0884	1	N64W64	16	J3d	R. catesbiana	urohyal	U	none	0.2	1
0884	2	N64W64	16	J3d	Sm mam	unident	U	calc	0.4	3
0884	3	N64W64	16	J3d	Unident	unident	U	none	0.7	10
0884	4	N64W64	16	J3d	D. marsupialis	maxilla	L	none	1.1	1
0929	1	N64W64	17	K3	Emydidae	shell	U	none	2.5	1
0929	2	N64W64	17	K3	Unident	unident	U	none	7.7	8
0929	3	N64W64	17	K3	Unident	unident	U	calc	1.3	7

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
0929	4	N64W64	17	K3	Indet bird	unident	U	calc	0.3	2
0929	5	N64W64	17	K3	Indet bird	unident	U	none	1.5	13
0929	6	N64W64	17	K3	Indet fish	unident	U	none	0.4	4
0929	7	N64W64	17	K3	S. floridanus	molar	U	none	0.2	1
0929	8	N64W64	17	K3	P. lotor	canine	U	burn	0.6	1
0929	1	N64W64	17	K3	Unident	unident	U	calc	4.2	20
0929	1	N64W64	17	K3	Indet turt	shell	U	calc	0.7	2
0929	2	N64W64	17	K3	S. carolinensis	maxilla	L	none	1.3	2
0929	3	N64W64	17	K3	S. carolinensis	incisor	U	none	0.2	2
0929	4	N64W64	17	K3	S. carolinensis	mandible	L	burn	0.2	1
0929	5	N64W64	17	K3	S. floridanus	mandible	R	none	3.7	1
0929	6	N64W64	17	K3	Wtdeer	mandible	L	none	13.4	1
0929	7	N64W64	17	K3	Lg mam	longbone	U	none	15.2	2
0929	8	N64W64	17	K3	Wtdeer	maxilla	R	none	5.0	1
0929	9	N64W64	17	K3	Wtdeer	sesmoid	U	none	0.8	1
0929	10	N64W64	17	K3	S. carolinensis	tibia	R	none	1.5	2
0929	11	N64W64	17	K3	Indet bird	unident	U	none	2.9	6
0929	12	N64W64	17	K3	Unident	unident	U	calc	3.6	12
0929	13	N64W64	17	K3	Unident	unident	U	none	10.3	42
0929	14	N64W64	17	K3	Med bird	coracoid	L	none	0.4	1
0929	15	N64W64	17	K3	Med bird	carpometa	L	none	0.5	1
0929	16	N64W64	17	K3	Anatidae	tibiotar d	R	none	0.2	1
0929	17	N64W64	17	K3	Lg mam	manubrium	U	none	1.9	1
0930	1	N64W64	17	K6	Lg mam	longbone	U	none	5.5	2
0930	2	N64W64	17	K6	Wtdeer	maxilla	U	none	2.3	2
0930	3	N64W64	17	K6	Wtdeer	vest metap	U	none	0.7	1
0930	4	N64W64	17	K6	Med bird	longbone	U	cut	1.3	1
0930	5	N64W64	17	K6	Med bird	unident	U	none	3.9	18
0930	6	N64W64	17	K6	Unident	unident	U	calc	1.0	9
0930	7	N64W64	17	K6	S. carolinensis	tibia d	L	calc	0.1	1
0930	8	N64W64	17	K6	S. carolinensis	tibia p	L	calc	0.3	1
0930	9	N64W64	17	K6	S. floridanus	molar	U	none	0.2	1
0930	10	N64W64	17	K6	cf C virginianu	tarsomet d	L	none	0.1	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
0930	1	N64W64	17	K6	Unident	unident	U	calc	1.8	5
0930	2	N64W64	17	K6	S. carolinensis	scapula	L	none	0.1	1
0930	3	N64W64	17	K6	Unident	unident	U	none	22.8	27
0930	4	N64W64	17	K6	M. gallopavo	coracoid	L	none	6.5	1
0930	1	N64W64	17	K6	Unident	unident	U	calc	3.8	10
0930	2	N64W64	17	K6	Unident	unident	U	none	7.2	21
0930	3	N64W64	17	K6	Indet fish	spine	U	none	0.1	1
0930	4	N64W64	17	K6	Indet turt	shell	U	calc	0.2	1
0930	5	N64W64	17	K6	M. gallopavo	tarsomet d	R	none	1.5	1
0930	1	N64W64	17	K6	Wtdeer	phal	U	none	3.7	1
0930	2	N64W64	17	K6	Lg mam	rib	U	none	2.1	1
0930	3	N64W64	17	K6	S. floridanus	tibia d	L	calc	0.2	1
0930	4	N64W64	17	K6	Indet turt	shell	U	calc	0.7	1
0930	5	N64W64	17	K6	Unident	unident	U	calc	5.4	9
0930	6	N64W64	17	K6	Unident	unident	U	none	13.7	13
0967	1	N64W64	18	K6	Wtdeer	humerus d	R	c&tw	58.7	1
0967	1	N64W64	18	K6	Sm mam	metapod	U	none	0.1	1
0967	2	N64W64	18	K6	Indet fish	unident	U	none	0.2	2
0967	3	N64W64	18	K6	Indet turt	shell	U	none	1.4	3
0967	4	N64W64	18	K6	S. carolinensis	humerus d	L	none	0.1	1
0967	5	N64W64	18	K6	S. floridanus	mandible	R	none	2.1	1
0967	6	N64W64	18	K6	Unident	unident	U	calc	2.5	7
0967	7	N64W64	18	K6	Unident	unident	U	none	2.4	15
0967	8	N64W64	18	K6	M. gallopavo	humerus d	R	none	2.9	1
0967	9	N64W64	18	K6	Anatidae	sternum fr	U	none	1.6	1
0967	1	N64W64	18	K6	Unident	unident	U	calc	1.8	6
0967	2	N64W64	18	K6	S. carolinensis	astragalus	L	none	0.1	1
0967	3	N64W64	18	K6	Lg mam	longbone	U	none	4.0	3
0967	4	N64W64	18	K6	Unident	unident	U	none	7.0	42
0967	5	N64W64	18	K6	Indet bird imm	unident	U	none	0.9	7
0967	6	N64W64	18	K6	Sm mam	mandible	L	none	0.1	1
0967	7	N64W64	18	K6	Indet fish	unident	U	none	0.2	3
0967	8	N64W64	18	K6	Catostomidae	hyomandib	U	none	0.4	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
0967	9	N64W64	18	K6	Ictaluridae	ceratohyal	U	none	0.5	1
0967	1	N64W64	18	K6	Wtdeer	molar 1 lo	L	none	2.1	1
0967	2	N64W64	18	K6	Wtdeer	mandible	R	none	12.8	1
0967	3	N64W64	18	K6	Lg mam	longbone	U	none	8.0	2
0967	4	N64W64	18	K6	Unident	unident	U	calc	3.4	15
0967	5	N64W64	18	K6	Unident	unident	U	none	9.1	31
0967	6	N64W64	18	K6	Indet bird	unident	U	none	0.9	6
0967	7	N64W64	18	K6	Indet fish	unident	U	none	0.2	1
0967	8	N64W64	18	K6	M. gallopavo	tarso&spur	R	cut	12.5	1
0967	1	N64W64	18	K6	Indet turt	shell	U	calc	6.6	20
0967	2	N64W64	18	K6	Unident	unident	U	calc	3.3	8
0967	3	N64W64	18	K6	Unident	unident	U	none	5.8	19
0967	4	N64W64	18	K6	Indet bird	unident	U	none	1.7	2
0967	5	N64W64	18	K6	Indet fish	unident	U	none	0.8	2
0967	6	N64W64	18	K6	S. carolinensis	mandible	R	burnt	0.6	1
0967	7	N64W64	18	K6	Unident	unident	U	tool	0.1	1
1026	1	N64W64	19	K3	P. lotor	tibia d	R	cut	1.9	1
1026	2	N64W64	19	K3	S. odoratus	shell	U	none	0.5	1
1026	3	N64W64	19	K3	Unident	unident	U	calc	0.9	6
1026	4	N64W64	19	K3	Unident	unident	U	none	5.2	16
1026	5	N64W64	19	K3	Indet bird	unident	U	none	0.1	2
1026	6	N64W64	19	K3	Wtdeer	molar up	U	none	1.9	1
1026	7	N64W64	19	K3	S. carolinensis	mandible	L	none	0.8	1
1026	8	N64W64	19	K3	S. carolinensis	skull	U	none	0.2	1
1026	9	N64W64	19	K3	Indet fish	spine	U	none	0.1	1
1026	10	N64W64	19	K3	Catostomidae	operc frag	U	none	0.1	1
1026	11	N64W64	19	K3	Indet fish	ribs	U	none	0.2	5
1026	12	N64W64	19	K3	Indet fish	pectoral	U	none	0.2	1
1026	1	N64W64	19	K3	Indet bird	unident	U	none	0.9	2
1026	2	N64W64	19	K3	M. gallopavo	tibiotar d	R	none	2.8	1
1026	3	N64W64	19	K3	Wtdeer	maxilla	R	none	16.3	1
1026	4	N64W64	19	K3	Wtdeer	premol up	L	none	1.2	1
1026	5	N64W64	19	K3	Unident	unident	U	calc	1.2	7

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1026	6	N64W64	19	K3	Lg mam	longbone	U	calc	11.3	3
1026	7	N64W64	19	K3	Med mam	metapod	U	calc	0.4	1
1026	8	N64W64	19	K3	Med mam	metapod	U	none	0.8	3
1026	9	N64W64	19	K3	Unident	unident	U	none	20.1	41
1026	10	N64W64	19	K3	Indet turt	shell	U	calc	0.2	1
1026	11	N64W64	19	K3	Indet turt	shell	U	none	1.5	1
1026	12	N64W64	19	K3	S. odoratus	shell	U	none	3.0	7
1026	13	N64W64	19	K3	Lepisosteus sp.	scale	U	none	0.6	1
1026	14	N64W64	19	K3	Lg mam	vert frag	U	calc	1.3	1
1026	15	N64W64	19	K3	Wtdeer	phal 2	U	none	0.8	1
1026	16	N64W64	19	K3	Indet fish	rib	U	none	0.4	6
1026	17	N64W64	19	K3	Indet fish	unident	U	none	2.0	10
1026	18	N64W64	19	K3	Indet fish	parasphen	U	none	0.3	2
1026	19	N64W64	19	K3	Indet fish	pectoral	U	none	0.1	1
1026	20	N64W64	19	K3	Indet fish	vert	U	none	0.4	2
1026	21	N64W64	19	K3	Indet fish	spine	U	none	0.3	5
1026	22	N64W64	19	K3	Catostomidae	hyomandib	U	none	0.1	1
1026	23	N64W64	19	K3	M. duquesnei	dentary	R	none	0.3	1
1026	24	N64W64	19	K3	D. marsupialis	premax	R	none	0.3	1
1026	1	N64W64	19	K3	Wtdeer	tibia	L	none	34.7	1
1026	2	N64W64	19	K3	Unident	unident	U	calc	6.4	14
1026	3	N64W64	19	K3	Indet fish	vert	U	calc	0.1	1
1026	4	N64W64	19	K3	Indet fish	spine	U	none	0.1	2
1026	5	N64W64	19	K3	Indet fish	unident	U	none	0.1	2
1026	6	N64W64	19	K3	P. lotor	molar up	R	calc	0.4	1
1026	7	N64W64	19	K3	Indet turt	shell	U	calc	1.1	4
1026	8	N64W64	19	K3	Unident	unident	U	none	6.5	25
1026	9	N64W64	19	K3	Bufo terrestris	innominate	L	none	0.1	1
1026	10	N64W64	19	K3	Sm mam	vert	U	none	0.1	1
1026	11	N64W64	19	K3	L. canadnesis	mandible	L	none	5.7	1
1026	12	N64W64	19	K3	Indet bird	unident	U	none	0.8	2
1026	13	N64W64	19	K3	Mergus sp.	coracoid	R	none	1.5	1
1060	1	N64W64	20	K7	Indet fish	rib	U	none	0.1	4

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1060	2	N64W64	20	K7	P. lotor	maxilla	R	none	3.8	1
1060	3	N64W64	20	K7	P. lotor	ulna p	R	none	1.5	1
1060	4	N64W64	20	K7	Unident	unident	U	none	4.1	2
1114	1	N64W64	23	K8	Indet bird	unident	U	none	5.5	14
1114	2	N64W64	23	K8	Unident	unident	U	none	2.0	11
1114	3	N64W64	23	K8	Unident	unident	U	calc	0.7	4
1114	4	N64W64	23	K8	Sm mam	metapod	U	none	0.1	1
1114	5	N64W64	23	K8	Indet fish	rib	U	none	0.2	1
1114	6	N64W64	23	K8	M. duquesnei	dentary	L	none	0.2	1
1154	1	N64W64	24	N	Unident	unident	U	none	1.2	3
1151	1	N64W64	24	N1a	C. cf. carpio	hyomandib	R	none	0.7	1
1151	2	N64W64	24	N1a	Catostomidae	hyomandib	U	calc	0.1	1
1151	3	N64W64	24	N1a	Indet fish	unident	U	none	0.3	6
1151	4	N64W64	24	N1a	Lg mam	longbone	U	none	7.8	1
1151	5	N64W64	24	N1a	T. carolina	shell	U	none	1.5	1
1151	6	N64W64	24	N1a	Indet turt	shell	U	none	1.3	4
1151	7	N64W64	24	N1a	Unident	unident	U	none	1.7	8
1155	1	N64W64	24	P1	Indet mammal	skull frag	U	none	2.8	2
1155	2	N64W64	24	P1	Indet bird	unident	U	none	2.0	9
1155	3	N64W64	24	P1	Med/lg mam	longbone	U	none	2.8	1
1150	1	N64W64	24	N	Indet fish	unident	U	none	0.1	1
1150	2	N64W64	24	N	Unident	unident	U	calc	0.9	2
1150	3	N64W64	24	N	Unident	unident	U	none	1.0	3
1235	1	N64W64	27	P3	S. carolinensis	mandible	L	none	0.7	1
1235	2	N64W64	27	P3	Anatidae	tibio d	R	none	0.2	1
1235	3	N64W64	27	P3	Indet turt	shell	U	burn	0.3	1
1235	4	N64W64	27	P3	Unident	unident	U	calc	4.1	9
1235	5	N64W64	27	P3	Indet bird	longbone	U	none	0.9	4
1235	6	N64W64	27	P3	Sm mam	maxilla	U	none	0.1	1
1235	7	N64W64	27	P3	Indet fish	unident	U	none	0.1	1
1235	8	N64W64	27	P3	S. aquaticus	calcaneus	L	none	1.2	1
1235	9	N64W64	27	P3	Unident	unident	U	none	11.4	32
1235	1	N64W64	27	P3	Sm mam	radius d	U	none	0.1	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1235	2	N64W64	27	P3	S. carolinensis	ulna	L	none	0.1	1
1235	3	N64W64	27	P3	S. carolinensis	mandible	R	none	1.5	2
1235	4	N64W64	27	P3	P. lotor	canine u	R	none	0.6	1
1235	5	N64W64	27	P3	Indet bird	longbone	U	none	3.7	17
1235	6	N64W64	27	P3	Unident	unident	U	none	8.5	13
1235	7	N64W64	27	P3	Pelecypoda	shell	U	none	0.1	1
1235	8	N64W64	27	P3	Unident	unident	U	burn	2.5	4
1235	9	N64W64	27	P3	Unident	unident	U	rodg	0.9	1
1235	10	N64W64	27	P3	Unident	unident	U	gnaw	2.3	1
1235	11	N64W64	27	P3	D. marsupialis	mandible	R	none	3.5	1
1235	1	N64W64	27	P3	D. marsupialis	mandible	R	none	1.9	1
1235	2	N64W64	27	P3	Med mam	vert	U	none	0.4	1
1235	3	N64W64	27	P3	Indet bird	unident	U	none	4.0	15
1235	1	N64W64	27	P3	Unident	unident	U	calc	0.9	6
1235	2	N64W64	27	P3	Unident	unident	U	none	2.9	12
1235	3	N64W64	27	P3	Indet fish	unident	U	none	0.1	2
1235	4	N64W64	27	P3	Indet bird	unident	U	none	0.4	2
1235	5	N64W64	27	P3	Lg bird	synsacrum	U	none	2.3	1
1341	1	N64W63	27		Lg bird	unident	U	none	5.8	10
1341	2	N64W63	27		Indet bird	longbone	U	none	2.9	5
1341	3	N64W63	27		Unident	unident	U	calc	2.9	8
1341	4	N64W63	27		Unident	unident	U	none	6.3	7
1341	5	N64W63	27		Med mam	vert epi	U	none	0.2	1
1341	6	N64W63	27		Wtdeer	phal 3	U	none	1.9	1
1341	7	N64W63	27		Indet fish	unident	U	none	0.2	1
1341	8	N64W63	27		Canidae	radius d	L	none	3.7	1
1341	9	N64W63	27		Emydidae	shell	U	none	1.5	3
1365	1	N64W63	29	P2	Unident	unident	U	calc	0.1	1
1365	2	N64W63	29	P2	Sm mam	longbone	U	none	0.2	1
1391	1	N64W63	30	P3d	Indet bird	longbone	U	none	0.6	7
1391	2	N64W63	30	P3d	Unident	unident	U	calc	2.4	13
1391	3	N64W63	30		S. floridanus	innominate	L	none	0.7	1
1447	1	N63W64	29	R3	Sm mam	skull frag	U	none	1.5	4

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1447	2	N63W64	29	R3	Gastropoda	shell	U	none	0.5	1
1447	3	N63W64	29	R3	Med mam	metapod	U	calc	0.2	1
1447	4	N63W64	29	R3	Unident	unident	U	calc	2.5	8
1447	5	N63W64	29	R3	Unident	unident	U	none	0.9	6
1448	1	N63W64	30		Gastropoda	shell	U	none	0.4	1
1448	2	N63W64	30		Indet fish	spine	U	none	0.1	1
1448	3	N63W64	30		Moxostoma sp.	hyomandib	U	none	0.1	1
1448	4	N63W64	30		Indet turt	shell	U	calc	0.3	1
1448	5	N63W64	30		Med mam	metapod	U	calc	0.1	1
1448	6	N63W64	30		Unident	unident	U	calc	3.5	11
1448	7	N63W64	30		Unident	unident	U	none	6.7	18
1448	8	N63W64	30		Indet bird	longbone	U	none	1.5	7
1448	9	N63W64	30		Phasianidae	sternum	U	none	0.1	1
1448	10	N63W64	30		P. lotor	humerus d	L	none	2.5	1
1457	1	N64W64	28		Med mam	skull frag	U	none	2.2	1
1457	2	N64W64	28		Indet bird	longbone	U	none	2.2	4
1457	3	N64W64	28		Unident	unident	U	none	2.9	15
1457	4	N64W64	28		Unident	unident	U	calc	10.0	11
1500	1	N64W64	30	P3j	Unident	unident	U	calc	0.2	4
1500	2	N64W64	30	P3j	Unident	unident	U	tool	0.1	1
1550	1	N64W64	33	P3	Sm mam	tibia prox	U	calc	0.2	1
1550	2	N64W64	33	P3	Sm bird	unident	U	none	0.4	4
1550	3	N64W64	33	P3	Unident	unident	U	calc	2.4	6
1550	4	N64W64	33	P3	Unident	unident	U	none	1.7	4
1550	5	N64W64	33	P3	Sm mam	metapod	U	none	0.3	2
1550	6	N64W64	33	P3	S. carolinensis	incisor	U	none	0.2	1
1550	7	N64W64	33	P3	Ictaluridae	dentary	L	none	0.1	1
1843	1	N64W64	37	P5d	Indet fish	vert	U	none	0.3	4
1843	2	N64W64	37	P5d	Indet bird	unident	U	none	0.6	4
1843	3	N64W64	37	P5d	Indet fish	unident	U	none	0.5	5
1843	4	N64W64	37	P5d	M. salmoides	premax	U	none	0.1	1
1843	5	N64W64	37	P5d	Catostomidae	supratemp	U	none	0.1	1
1843	6	N64W64	37	P5d	Catostomidae	hyomandib	U	none	0.1	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1843	7	N64W64	37	P5d	Ictaluridae	ceratohyal	U	none	0.1	1
1843	8	N64W64	37	P5d	Ictaluridae	articular	U	none	0.2	1
1843	9	N64W64	37	P5d	Catostomidae	quadrate	U	none	0.2	1
1843	10	N64W64	37	P5d	Indet fish	maxilla	U	none	0.1	1
1843	11	N64W64	37	P5d	Unident	unident	U	calc	1.8	15
1843	12	N64W64	37	P5d	Unident	unident	U	none	5.2	47
1843	13	N64W64	37	P5d	S. odoratus	plastron	U	none	0.6	1
1843	14	N64W64	37	P5d	S. carolinensis	ulna	R	none	0.2	2
1843	15	N64W64	37	P5d	S. carolinensis	ulna	L	none	0.2	1
1843	16	N64W64	37	P5d	S. carolinensis	tibia frag	U	none	0.3	1
1843	17	N64W64	37	P5d	S. carolinensis	mandible	R	none	0.6	1
1843	18	N64W64	37	P5d	Sm mam	scapula	U	none	0.1	1
1843	19	N64W64	37	P5d	S. carolinensis	humerus d	R	none	0.1	1
1843	20	N64W64	37	P5d	Sm mam	mandible	U	none	0.4	1
1843	21	N64W64	37	P5d	Sm mam	metapod	U	none	0.1	3
1843	22	N64W64	37	P5d	M. mephitis	mandible	R	none	1.1	1
1844	1	N64W64	37		Unident	unident	U	none	2.2	5
1844	2	N64W64	37		Unident	unident	U	burn	0.1	1
1844	3	N64W64	37		Indet fish	spine	U	none	0.1	1
1844	4	N64W64	37		Indet turt	shell	U	none	0.2	1
1844	5	N64W64	37		S. carolinensis	ulna	L	none	0.2	1
1844	6	N64W64	37		Catostomidae	operculum	L	none	0.3	1
1844	7	N64W64	37		Indet bird	scapula	R	none	0.3	1
1818	1	N64W64	34	P4	Unident	unident	U	calc	0.3	5
1818	2	N64W64	34	P4	Unident	unident	U	none	5.4	10
1555	1	N64W64	33	P31	Unident	unident	U	none	0.7	3
1555	2	N64W64	33	P31	Sm mam	metapod	U	calc	0.1	1
1555	3	N64W64	33	P31	Sm mam	radius	U	none	0.3	1
1729	1	N64W63	35	P5	Lg mam	longbone	U	none	7.1	2
1729	2	N64W63	35	P5	Indet bird	longbone	U	calc	3.3	9
1729	3	N64W63	35	P5	Indet bird	longbone	U	none	3.0	11
1729	4	N64W63	35	P5	Indet bird	humerus	R	none	1.0	1
1729	5	N64W63	35	P5	Indet fish	vert	U	none	0.3	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1729	6	N64W63	35	P5	Indet fish	unident	U	none	0.6	2
1729	7	N64W63	35	P5	Sm mam	radius	U	none	0.2	1
1729	8	N64W63	35	P5	Wtdeer	phal 3	U	none	2.4	1
1678	1	N63W64	37	P3q	S. carolinensis	tibia	R	none	0.4	1
1678	2	N63W64	37	P3q	O. zibethicus	molar	U	none	0.1	1
1678	3	N63W64	37	P3q	Unident	unident	U	none	5.9	18
1779	1	N64W63	36	P3d	Sm mam	tibia d	U	none	0.3	1
1779	2	N64W63	36	P3d	Sm mam	innom	U	none	0.6	2
1779	3	N64W63	36	P3d	S. floridanus	innom	L	none	1.6	1
1779	4	N64W63	36	P3d	Med mam	metapod	U	none	0.4	1
1779	5	N64W63	36	P3d	Crotalidae	vert	U	none	0.1	1
1779	6	N64W63	36	P3d	Indet fish	unident	U	none	0.2	3
1779	7	N64W63	36	P3d	Unident	unident	U	none	2.8	19
1779	8	N64W63	36	P3d	Unident	unident	U	calc	1.4	4
1779	9	N64W63	36	P3d	Sm mam	skull frag	U	none	0.1	1
1551	1	N64W64	33	P3	Moxostoma sp.	dentary	L	none	0.8	1
1551	2	N64W64	33	P3	Lg mam	longbone	U	none	4.2	1
1551	3	N64W64	33	P3	Unident	unident	U	none	3.3	22
1551	4	N64W64	33	P3	Unident	unident	U	calc	5.5	21
1551	5	N64W64	33	P3	Sm bird	tibiotars	U	calc	0.3	1
1551	6	N64W64	33	P3	Sm mam	metapod	U	none	0.5	2
1551	7	N64W64	33	P3	Indet turt	shell	U	none	0.4	1
1551	8	N64W64	33	P3	S. carolinensis	mandible	R	none	1.2	1
1561	1	N64W64	33	P3m	Unident	unident	U	calc	0.1	1
1561	2	N64W64	33	P3m	Unident	unident	U	none	0.1	1
1562	1	N64W64	33	P3n	Unident	unident	U	none	0.1	1
1562	2	N64W64	33	P3n	Unident	unident	U	calc	0.1	1
1648	1	N63W64	35	P3p	S. carolinensis	innom	L	none	1.6	1
1648	2	N63W64	35	P3p	S. carolinensis	mandible	L	none	0.7	1
1648	3	N63W64	35	P3p	Med/sm mam	radius	U	none	1.2	1
1648	4	N63W64	35	P3p	Med mam	phal	U	none	0.1	1
1648	5	N63W64	35	P3p	Med bird	carpomet	U	none	0.4	1
1648	6	N63W64	35	P3p	Moxostoma sp.	dentary	R	none	0.3	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1648	7	N63W64	35	P3p	Moxostoma sp.	articular	R	none	0.8	1
1648	8	N63W64	35	P3p	Indet fish	vert	U	none	0.2	3
1648	9	N63W64	35	P3p	Indet fish	rib/spine	U	none	0.5	7
1648	10	N63W64	35	P3p	Indet fish	unident	U	none	3.2	28
1648	11	N63W64	35	P3p	Catostomidae	supraeth	U	none	0.1	1
1648	12	N63W64	35	P3p	Catostomidae	urohyal	U	none	0.1	1
1648	13	N63W64	35	P3p	Colubridae	vert	U	none	0.1	1
1648	14	N63W64	35	P3p	Catostomidae	skull	U	none	3.5	1
1648	15	N63W64	35	P3p	Centrarchidae	dentary	L	none	0.3	1
1648	16	N63W64	35	P3p	Centrarchidae	dentary	R	none	0.1	1
1648	17	N63W64	35	P3p	Indet turt	shell	U	none	1.6	3
1648	18	N63W64	35	P3p	S. odoratus	plastron	U	none	1.1	1
1648	19	N63W64	35	P3p	Unident	unident	U	none	1.9	6
1648	20	N63W64	35	P3p	Unident	unident	U	calc	3.4	20
1659	1	N63W64	35	P3r	Unident	unident	U	calc	2.6	3
1659	2	N63W64	35	P3r	Unident	unident	U	none	0.4	2
1659	3	N63W64	35	P3r	Indet bird	unident	U	none	1.5	2
1659	4	N63W64	35	P3r	Indet fish	vert	U	none	0.1	1
1659	5	N63W64	35	P3r	S. carolinensis	incisor	U	none	0.2	1
1659	6	N63W64	35	P3r	Anatidae	maxilla	U	none	0.5	1
1661	1	N63W64	36	P3	Lg mam	longbone	U	none	14.1	3
1661	2	N63W64	36	P3	D. marsupialis	mandible	L	burn	3.4	1
1661	3	N63W64	36	P3	Unident	unident	U	burn	4.1	3
1661	4	N63W64	36	P3	Unident	unident	U	none	1.5	10
1661	5	N63W64	36	P3	S. carolinensis	maxilla	R	none	0.1	1
1661	6	N63W64	36	P3	S. carolinensis	innom	R	burn	0.4	1
1661	7	N63W64	36	P3	P. lotor	maxilla	R	burn	0.6	1
1661	8	N63W64	36	P3	Sm bird	tibiotars	R	burn	0.1	1
1661	9	N63W64	36	P3	Centrarchidae	quadrate	U	none	0.2	1
1661	10	N63W64	36	P3	S. odoratus	plastron	U	burn	0.9	1
1672	1	N63W64	36	P3q	Indet fish	vert	U	none	0.2	1
1672	2	N63W64	36	P3q	S. carolinensis	innom	L	none	0.3	1
1672	3	N63W64	36	P3q	S. carolinensis	tibia d	R	burn	0.4	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1672	4	N63W64	36	P3q	Unident	unident	U	none	0.8	4
1780	1	N64W63	36	P5b	Unident	unident	U	none	2.0	15
1780	2	N64W63	36	P5b	Unident	unident	U	calc	2.5	10
1780	3	N64W63	36	P5b	Indet fish	unident	U	none	0.5	6
1780	4	N64W63	36	P5b	Med bird	longbone	U	none	0.7	1
1780	5	N64W63	36	P5b	Colubridae	vert	U	none	0.2	1
1780	6	N64W63	36	P5b	Indet fish	vert	U	none	0.1	1
1780	7	N64W63	36	P5b	Centrarchidae	quadrate	U	none	0.1	1
1780	8	N64W63	36	P5b	Sm mam	ulna	U	none	0.2	1
1780	9	N64W63	36	P5b	S. carolinensis	maxilla	U	none	0.7	3
1780	10	N64W63	36	P5b	S. carolinensis	mandible	R	none	0.7	1
1780	11	N64W63	36	P5b	D. marsupialis	canine	U	none	0.4	1
1780	12	N64W63	36	P5b	S. carolinensis	tibia d	R	none	0.3	1
1733	1	N63W64	40	Q1a	Unident	unident	U	none	6.0	22
1733	2	N63W64	40	Q1a	Unident	unident	U	calc	2.8	11
1733	3	N63W64	40	Q1a	Sm mam	mandible	U	calc	0.7	1
1733	4	N63W64	40	Q1a	Indet turt	shell	U	calc	0.3	2
1733	5	N63W64	40	Q1a	Sm mam	radius	U	none	0.1	1
1733	6	N63W64	40	Q1a	Indet bird	longbone	U	none	0.6	2
1733	7	N63W64	40	Q1a	Colubridae	vert	U	none	0.1	1
1733	8	N63W64	40	Q1a	Indet fish	vert	U	none	1.5	2
1746	1	N63W64	41	Q	Unident	unident	U	calc	3.9	7
1746	2	N63W64	41	Q	Unident	unident	U	none	3.5	15
1746	3	N63W64	41	Q	Sm bird	longbone	U	none	3.4	10
1746	4	N63W64	41	Q	Lg mam	longbone	U	none	4.9	2
1746	5	N63W64	41	Q	Sm mam	fem epi p	U	none	0.1	1
1746	6	N63W64	41	Q	Sm mam	metapod	U	none	0.1	1
1746	7	N63W64	41	Q	Wtdeer	metapod	U	cgna	7.7	1
1746	8	N63W64	41	Q	Oppossum/coon	ulna	R	none	1.5	1
1746	9	N63W64	41	Q	Oppossum/coon	radius	R	none	0.8	1
1746	10	N63W64	41	Q	Crotalidae	vert	U	none	0.3	1
1746	11	N63W64	41	Q	Indet fish	vert	U	none	0.4	3
1746	12	N63W64	41	Q	Indet fish	parasphen	U	none	1.5	2

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1746	13	N63W64	41	Q	Indet fish	rib	U	none	0.2	3
1746	14	N63W64	41	Q	Med/lg mam	vert epi	U	none	0.4	1
1758	1	N63W64	42	R	Unident	unident	U	none	29.6	118
1758	2	N63W64	42	R	Unident	unident	U	calc	25.9	76
1758	3	N63W64	42	R	Indet bird	longbone	U	calc	0.8	2
1758	4	N63W64	42	R	Indet bird	longbone	U	none	4.5	5
1758	5	N63W64	42	R	Anatidae	humerus	U	none	1.2	1
1758	6	N63W64	42	R	M. gallopavo?	femur	R	cut	2.3	1
1758	7	N63W64	42	R	Anatidae?	tibio	R	burn	0.9	1
1758	8	N63W64	42	R	Anatidae?	coracoid	R	none	0.5	1
1758	9	N63W64	42	R	S. floridanus	humerus d	U	burn	0.2	1
1758	10	N63W64	42	R	S. carolinensis	innom	L	burn	0.3	1
1758	11	N63W64	42	R	S. carolinensis	incisor	U	burn	0.1	1
1758	12	N63W64	42	R	S. carolinensis	incisor	U	none	0.4	1
1758	13	N63W64	42	R	S. floridanus	molar	U	none	0.1	1
1758	14	N63W64	42	R	Sm mam	ulna frag	U	burn	0.3	1
1758	15	N63W64	42	R	Gastropoda	shell	U	none	0.3	2
1758	16	N63W64	42	R	Indet turt	shell	U	none	1.1	4
1758	17	N63W64	42	R	Sm mam	metapod	U	none	0.1	1
1758	18	N63W64	42	R	Sm mam	phal	U	burn	0.1	1
1758	19	N63W64	42	R	Indet snake	vert	U	burn	0.1	1
1758	20	N63W64	42	R	Sm mam	vert	U	burn	0.3	1
1758	21	N63W64	42	R	Indet fish	vert	U	none	0.4	3
1758	22	N63W64	42	R	Indet snake	vert	U	none	0.1	1
1758	23	N63W64	42	R	Med/lg mam	vert	U	none	0.7	1
1758	24	N63W64	42	R	Indet amphib	vert	U	none	0.1	1
1758	25	N63W64	42	R	Indet fish	unident	U	none	2.6	15
1758	26	N63W64	42	R	Catostomidae	quadrate	U	none	0.3	1
1758	27	N63W64	42	R	Catostomidae	maxilla	U	none	0.1	1
1769	1	N63W63	40	R1	Unident	unident	U	none	18.4	97
1769	2	N63W63	40	R1	Unident	unident	U	calc	21.1	75
1769	3	N63W63	40	R1	Lg mam	longbone	U	none	12.5	1
1769	4	N63W63	40	R1	Wtdeer	metapod	U	none	7.4	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1769	5	N63W63	40	R1	Wtdeer	phalanx	U	calc	1.2	2
1769	6	N63W63	40	R1	Med/lg mam	tooth frag	U	calc	0.2	1
1769	7	N63W63	40	R1	Indet turt	shell	U	burn	1.1	3
1769	8	N63W63	40	R1	Sm mam	ulna	U	none	0.2	1
1769	9	N63W63	40	R1	S. carolinensis	mandible	L	none	0.5	1
1769	10	N63W63	40	R1	O. zibethicus	mandible	R	none	2.4	1
1769	11	N63W63	40	R1	Anatidae	coracoid	U	none	0.4	1
1769	12	N63W63	40	R1	Indet bird	longbone	U	none	5.8	11
1769	13	N63W63	40	R1	Colubridae	vert	U	none	0.4	1
1769	14	N63W63	40	R1	Indet fish	vert	U	none	0.7	15
1769	15	N63W63	40	R1	Indet fish	unident	U	none	4.0	22
1769	16	N63W63	40	R1	Catostomidae	quadrate	U	none	0.3	1
1769	17	N63W63	40	R1	Indet fish	dors spine	U	none	1.3	2
1769	18	N63W63	40	R1	Esocidae	mand/max	U	none	0.9	1
1770	1	N63W64	43	R1	Lg mam	longbone	U	none	9.3	4
1770	2	N63W64	43	R1	Lg mam	longbone	U	burn	3.7	2
1770	3	N63W64	43	R1	Unident	unident	U	calc	10.7	47
1770	4	N63W64	43	R1	Unident	unident	U	none	17.6	81
1770	5	N63W64	43	R1	Sm mam	metapod	U	none	0.7	4
1770	6	N63W64	43	R1	Sm mam	phal	U	calc	0.1	1
1770	7	N63W64	43	R1	S. carolinensis	innom	L	none	1.1	1
1770	8	N63W64	43	R1	Sm mam	innom	R	calc	0.1	1
1770	9	N63W64	43	R1	Sm bird	longbone	U	none	0.9	4
1770	10	N63W64	43	R1	Lg bird	vert	U	none	0.7	1
1770	11	N63W64	43	R1	Indet fish	vert	U	none	0.2	2
1770	12	N63W64	43	R1	Indet fish	dors spine	U	none	0.2	2
1770	13	N63W64	43	R1	Indet fish	unident	U	none	1.7	12
1770	14	N63W64	43	R1	Catostomidae	pharyng	U	calc	0.1	1
1770	15	N63W64	43	R1	Catostomidae	quadrate	U	none	0.4	2
1770	16	N63W64	43	R1	Centrarchidae	quadrate	U	none	0.1	1
1770	17	N63W64	43	R1	M. salmoides	maxilla	U	none	0.6	1
1770	18	N63W64	43	R1	Ictaluridae	articular	U	none	0.1	1
1770	19	N63W64	43	R1	Indet turt	scapula	U	none	0.1	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1770	20	N63W64	43	R1	Indet turt	scapula	U	none	0.1	1
1770	21	N63W64	43	R1	T. carolina	humerus	L	none	0.5	1
1879	1	N64W63	39	Q	Unident	unident	U	calc	16.6	64
1879	2	N64W63	39	Q	Suidae?	molar dec	U	none	1.5	1
1879	3	N64W63	39	Q	Med mam	ulna frag	U	none	1.1	1
1879	4	N64W63	39	Q	Med mam	vert epi	U	none	0.4	1
1879	5	N64W63	39	Q	Med mam	metapod	U	none	1.5	2
1879	6	N64W63	39	Q	Med mam	phalanx	U	none	0.5	1
1879	7	N64W63	39	Q	Sm mam	metapod	U	none	0.3	1
1879	8	N64W63	39	Q	Sm mam	metapod	U	none	0.1	1
1879	9	N64W63	39	Q	Med/sm mam	femur epi	U	none	0.8	2
1879	10	N64W63	39	Q	S. floridanus	innominate	R	none	3.8	1
1879	11	N64W63	39	Q	S. floridanus	mandible	R	none	0.7	1
1879	12	N64W63	39	Q	S. floridanus	maxilla	R	none	0.3	1
1879	13	N64W63	39	Q	Wtdeer	scapula p	L	none	7.0	1
1879	14	N64W63	39	Q	Wtdeer	phalanx	U	none	2.6	2
1879	15	N64W63	39	Q	Wtdeer	tooth frag	U	none	0.3	2
1879	16	N64W63	39	Q	S. floridanus	humerus d	R	none	0.2	1
1879	17	N64W63	39	Q	S. carolinensis	mandible	R	none	0.5	1
1879	18	N64W63	39	Q	S. carolinensis	mandible	L	none	0.9	2
1879	19	N64W63	39	Q	S. carolinensis	incisor up	U	none	0.2	1
1879	20	N64W63	39	Q	S. carolinensis	skull frag	U	none	0.3	1
1879	21	N64W63	39	Q	Sm mam	metapod	U	calc	0.1	1
1879	22	N64W63	39	Q	Sm mam	vert	U	burn	0.1	1
1879	23	N64W63	39	Q	Sm mam	vert	U	none	0.1	1
1879	24	N64W63	39	Q	S. odoratus	shell	U	none	0.3	2
1879	25	N64W63	39	Q	T. carolina	shell	U	none	0.3	2
1879	26	N64W63	39	Q	Indet fish	scale	U	none	0.1	1
1879	27	N64W63	39	Q	Indet fish	vert	U	burn	0.1	1
1879	28	N64W63	39	Q	Indet fish	vert	U	none	1.4	8
1879	29	N64W63	39	Q	Indet fish	unident	U	none	2.5	13
1879	30	N64W63	39	Q	Indet fish	spine	U	none	0.1	3
1879	31	N64W63	39	Q	Catostomidae	maxilla	U	none	0.9	3

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1879	32	N64W63	39	Q	Catostomidae	operculum	U	none	1.1	3
1879	33	N64W63	39	Q	Catostomidae	urohyal	U	none	0.1	1
1879	34	N64W63	39	Q	Catostomidae	hyomandib	U	none	0.9	1
1879	35	N64W63	39	Q	Moxostoma sp.	hyomandib	U	none	1.0	1
1879	36	N64W63	39	Q	Crotalidae	vert	U	burn	0.2	1
1879	37	N64W63	39	Q	Crotalidae	vert	U	none	0.2	1
1879	38	N64W63	39	Q	Unident	unident	U	none	27.7	121
1879	39	N64W63	39	Q	Indet bird	unident	U	none	4.9	14
1879	40	N64W63	39	Q	Lg bird	humerus m	U	none	2.5	1
1879	41	N64W63	39	Q	Passerine	tibiotar	U	none	0.1	1
1879	42	N64W63	39	Q	Anas sp.	tibiotar d	R	none	0.2	1
1879	43	N64W63	39	Q	Sm bird	scapula	U	none	0.2	1
1879	44	N64W63	39	Q	Sm bird	phalanx 1	U	none	0.2	1
1879	45	N64W63	39	Q	Sm bird	coracoid	U	none	0.2	2
1879	46	N64W63	39	Q	Anas sp.	tarsometa	L	none	0.1	1
1879	47	N64W63	39	Q	Sm bird	sternum fr	U	none	0.1	1
1879	48	N64W63	39	Q	Peromyscus sp.	mandible	R	none	0.1	1
1879	49	N64W63	39	Q	Cricetidae	scapula	R	none	0.2	1
1863	1	N64W64	39	Q	Unident	unident	U	burnt	10.8	25
1863	2	N64W64	39	Q	Unident	unident	U	calc	4.7	18
1863	3	N64W64	39	Q	Unident	unident	U	none	8.9	58
1863	4	N64W64	39	Q	Lg mam	unident	U	none	9.7	5
1863	5	N64W64	39	Q	Indet mam	longbone	U	cut	0.2	1
1863	6	N64W64	39	Q	Med bird	longbone	U	none	5.0	15
1863	7	N64W64	39	Q	Med bird	carpometa	U	none	0.4	2
1863	8	N64W64	39	Q	Indet fish	unident	U	none	0.2	3
1863	9	N64W64	39	Q	Indet fish	vert	U	none	0.3	2
1863	10	N64W64	39	Q	Catostomidae	pharyng	U	none	0.3	1
1863	11	N64W64	39	Q	A. grunniens	pharyng	U	none	1.8	1
1863	12	N64W64	39	Q	Ictaluridae	pect spine	U	none	0.1	1
1863	13	N64W64	39	Q	Indet turt	shell	U	none	0.5	2
1863	14	N64W64	39	Q	T. carolina	plastron	U	none	1.1	1
1863	15	N64W64	39	Q	S. carolinensis	maxilla	R	none	0.3	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1863	16	N64W64	39	Q	S. carolinensis	incisor	U	burn	0.1	1
1863	17	N64W64	39	Q	Sm mam	scapula	U	none	0.4	1
1863	18	N64W64	39	Q	Sm mam	metapod	U	none	0.2	2
1863	19	N64W64	39	Q	Sm mam	tibia	U	none	0.4	1
1863	20	N64W64	39	Q	Sm mam	innominate	U	burn	0.1	1
1863	21	N64W64	39	Q	Microtus sp.	mandible	R	none	0.1	1
1863	22	N64W64	39	Q	V. vulpes cf.	tibia d	R	burn	0.8	1
1799	1	N64W63	28	Q	Indet bird	longbone	U	none	3.9	9
1799	2	N64W63	28	Q	Sm bird	coracoid	U	none	0.4	1
1799	3	N64W63	28	Q	Unident	unident	U	none	10.3	39
1799	4	N64W63	28	Q	Unident	unident	U	calc	9.0	20
1799	5	N64W63	28	Q	Indet fish	unident	U	none	1.1	5
1799	6	N64W63	28	Q	Centrarchidae	quadrate	U	none	0.1	1
1799	7	N64W63	28	Q	T. carolina	scapula	U	none	0.6	1
1799	8	N64W63	28	Q	S. odoratus	plastron	U	none	0.8	1
1799	9	N64W63	28	Q	Indet turt	shell	U	none	0.8	2
1799	10	N64W63	28	Q	S. floridanus	mandible	R	none	2.0	1
1799	11	N64W63	28	Q	S. floridanus	maxilla	R	none	0.9	1
1799	12	N64W63	28	Q	O. zibethica	molar	U	none	0.3	1
1799	13	N64W63	28	Q	S. carolinensis	incisor	U	none	0.1	1
1799	14	N64W63	28	Q	Lg bird imm	unident	U	none	1.6	1
1799	15	N64W63	28	Q	P. lotor	molar up	U	none	0.1	1
1799	16	N64W63	28	Q	S. floridanus	tibia d	R	calc	0.2	1
1799	17	N64W63	28	Q	Indet fish	unident	U	burn	0.7	1
1799	18	N64W63	28	Q	Indet fish	vert	U	none	0.5	1
1799	19	N64W63	28	Q	Catostomidae	pharyng	U	none	0.6	1
1799	20	N64W63	28	Q	Centrarchidae	spine	U	none	0.2	2
1176	1	N60W64	37	P3	Emydidae	pleural	U	poli	1.8	1
1176	2	N60W64	37	P3	Passerine	tibiotars	U	none	0.1	1
1176	3	N60W64	37	P3	Med bird	tibiotars	U	none	1.5	1
1176	4	N60W64	37	P3	Unident	unident	U	burn	6.1	5
1176	5	N60W64	37	P3	Unident	unident	U	none	9.8	20
1176	6	N60W64	37	P3	S. carolinensis	mandible	R	none	0.4	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1176	7	N60W64	37	P3	S. carolinensis	mandible	L	none	0.6	1
1176	8	N60W64	37	P3	Med mam	humerus d	U	calc	1.0	1
1794	1	N63W63	42	R3d	Unident	unident	U	calc	1.3	8
1794	2	N63W63	42	R3d	Unident	unident	U	none	2.7	13
1794	3	N63W63	42	R3d	A. grunniens	otolith	R	none	0.9	1
1790	1	N63W63	41	R1	Unident	unident	U	calc	13.8	57
1790	2	N63W63	41	R1	Med/lg mam	vert epi	U	none	0.7	2
1790	3	N63W63	41	R1	D. marsupialis	maxilla	L	none	0.6	1
1790	4	N63W63	41	R1	Sm mam	skull frag	U	none	0.5	3
1790	5	N63W63	41	R1	S. carolinensis	madible	L	none	0.7	1
1790	6	N63W63	41	R1	Sciurius sp.	incisor fr	U	none	0.3	1
1790	7	N63W63	41	R1	M. monax	incisor fr	U	none	1.3	1
1790	8	N63W63	41	R1	O. zibethica	molar	U	none	0.3	1
1790	9	N63W63	41	R1	Sm mam	ulna	U	none	0.2	1
1790	10	N63W63	41	R1	Wtdeer	phalanx fr	U	none	1.3	3
1790	11	N63W63	41	R1	Med mam	calcaneus	U	calc	0.7	2
1790	12	N63W63	41	R1	Med mam	humerus fr	U	calc	0.6	1
1790	13	N63W63	41	R1	Indet fish	rib/spine	U	none	0.3	5
1790	14	N63W63	41	R1	Indet fish	unident	U	none	5.0	25
1790	15	N63W63	41	R1	Indet fish	scale	U	none	0.1	1
1790	16	N63W63	41	R1	Indet fish	vert	U	none	0.5	3
1790	17	N63W63	41	R1	Catostomidae	pelvic gir	U	none	2.8	1
1790	18	N63W63	41	R1	Catostomidae	pharyng	U	calc	0.4	1
1790	19	N63W63	41	R1	Catostomidae	hyomandib	U	none	0.1	1
1790	20	N63W63	41	R1	Catostomidae	supratemp	U	none	0.6	1
1790	21	N63W63	41	R1	Med bird	longbone	U	none	5.0	7
1790	22	N63W63	41	R1	Med bird	furculum	U	none	0.6	1
1790	23	N63W63	41	R1	B. canadensis	humerus d	R	none	2.5	1
1790	24	N63W63	41	R1	Unident	unident	U	none	25.9	111
1790	25	N63W63	41	R1	Med mam	metapod	U	none	0.4	1
1790	26	N63W63	41	R1	Catostomidae	hypohyal	U	none	0.4	1
1917	1	N64W63	45	R3f	Med bird	unident	U	calc	2.5	17
1917	2	N64W63	45	R3f	Med bird	unident	U	none	1.3	4

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1917	3	N64W63	45	R3f	V. fulva	humerus d	L	cut	2.6	1
1917	4	N64W63	45	R3f	Cricetidae	tibia	L	none	0.3	1
1917	5	N64W63	45	R3f	Anas sp.	humerus p	L	calc	0.7	1
1917	6	N64W63	45	R3f	Anas sp.	humerus d	R	calc	0.3	1
1917	7	N64W63	45	R3f	Anas sp.	humerus d	L	none	0.5	1
1891	1	N64W63	41	R1	Med bird	unident	U	none	9.5	20
1891	2	N64W63	41	R1	Lg mam	vert frag	U	none	13.8	6
1891	3	N64W63	41	R1	Lg mam	rib frag	U	none	6.0	2
1891	4	N64W63	41	R1	Lg bird	scapula	U	none	0.9	1
1891	5	N64W63	41	R1	M. carinatum	maxilla	L	none	1.9	1
1891	6	N64W63	41	R1	Indet fish	rib	U	none	0.2	1
1891	7	N64W63	41	R1	Indet fish	vert	U	none	0.7	3
1891	8	N64W63	41	R1	Indet fish	unident	U	none	1.1	8
1891	9	N64W63	41	R1	A. grunniens	pharyng	U	none	0.2	1
1891	10	N64W63	41	R1	Emydidae	shell	U	none	2.0	1
1891	11	N64W63	41	R1	Med mam	phalanx	U	none	0.4	1
1891	12	N64W63	41	R1	Sm mam	metapod	U	none	0.5	2
1891	13	N64W63	41	R1	Sm mam	skull frag	U	none	0.5	3
1891	14	N64W63	41	R1	S. carolinensis	incisor	U	none	0.1	1
1891	15	N64W63	41	R1	S. carolinensis	mandible	L	none	0.6	1
1891	16	N64W63	41	R1	Wtdeer	term phal	U	cut	1.7	1
1891	17	N64W63	41	R1	Unident	unident	U	calc	8.6	21
1891	18	N64W63	41	R1	Unident	unident	U	none	7.2	43
1789	1	N63W63	41	R3d	Lg bird	femur p	L	none	0.9	1
1789	2	N63W63	41	R3d	Lg bird	vert	U	none	0.2	1
1789	3	N63W63	41	R3d	Indet bird	unident	U	none	8.0	15
1789	4	N63W63	41	R3d	Wtdeer	phalanx 1	U	none	1.6	1
1789	5	N63W63	41	R3d	Med mam	rib	U	none	2.5	1
1789	6	N63W63	41	R3d	Med mam	metapod	U	none	0.2	1
1789	7	N63W63	41	R3d	Unident	unident	U	calc	2.8	12
1789	8	N63W63	41	R3d	Unident	unident	U	none	6.5	20
1789	9	N63W63	41	R3d	Indet fish	vert	U	none	0.1	1
1789	10	N63W63	41	R3d	Indet fish	unident	U	none	0.1	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1789	11	N63W63	41	R3d	Catostomidae	hyomandib	U	none	0.4	1
1789	12	N63W63	41	R3d	Centrarchidae	dentary	U	none	0.5	2
1875	1	N64W64	41	R1	O. zibethica	mandible	L	none	3.6	1
1875	2	N64W64	41	R1	S. carolinensis	mandible	L	none	0.6	1
1875	3	N64W64	41	R1	S. carolinensis	maxilla	R	burn	0.9	1
1875	4	N64W64	41	R1	Unident	unident	U	burn	0.5	2
1875	5	N64W64	41	R1	Anas sp.	humerus d	L	none	0.4	1
1875	6	N64W64	41	R1	Med bird	carpometa	U	none	0.7	1
1875	7	N64W64	41	R1	Anserinae	carpometa	U	none	4.0	1
1875	8	N64W64	41	R1	Indet bird	unident	U	none	4.9	1
1871	1	N64W64	40	R1	P. lotor	mandible	L	none	2.4	1
1871	2	N64W64	40	R1	Indet bird	unident	U	tool	0.3	1
1871	3	N64W64	40	R1	Indet bird	unident	U	none	2.5	8
1871	4	N64W64	40	R1	T. cupido	carpometa	L	none	0.3	1
1871	5	N64W64	40	R1	S. carolinensis	ulna	R	none	0.6	1
1871	6	N64W64	40	R1	Unident	unident	U	calc	3.5	6
1866	1	N63W64	46	R1	Unident	unident	U	calc	19.4	27
1866	2	N63W64	46	R1	Indet bird	unident	U	none	26.1	83
1866	3	N63W64	46	R1	Lg bird	unident	U	burn	2.4	3
1866	4	N63W64	46	R1	Med/lg mam	unident	U	none	3.1	3
1866	5	N63W64	46	R1	Canidae	canine	U	none	0.4	1
1866	6	N63W64	46	R1	P. lotor imm	ulna	R	none	3.0	1
1866	7	N63W64	46	R1	Wtdeer	term phal	U	burn	1.8	1
1866	8	N63W64	46	R1	Sm mam	skull frag	U	none	0.2	1
1866	9	N63W64	46	R1	Sm mam	vert	U	none	0.2	1
1866	10	N63W64	46	R1	O. zibethica	tibia	U	calc	0.3	1
1866	11	N63W64	46	R1	S. carolinensis	humerus d	R	burn	0.3	1
1866	12	N63W64	46	R1	S. carolinensis	mandible	L	none	0.7	1
1866	13	N63W64	46	R1	Med mam	rib	U	none	1.0	1
1866	14	N63W64	46	R1	P. lotor	calcaneus	R	cut	0.8	1
1866	15	N63W64	46	R1	Indet fish	vert	U	none	1.6	2
1866	16	N63W64	46	R1	Indet fish	vert	U	calc	0.1	1
1866	17	N63W64	46	R1	Catostomidae	hyomandib	U	none	0.4	2

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1866	18	N63W64	46	R1	Catostomidae	pharyng	U	none	0.4	1
1866	19	N63W64	46	R1	M. carinatum	pharyng	R	none	2.6	1
1866	20	N63W64	46	R1	Catostomidae	operculum	U	none	0.3	1
1866	21	N63W64	46	R1	Catostomidae	pect gird	U	none	0.5	1
1866	22	N63W64	46	R1	A. grunniens	pharyng	U	burn	0.5	1
1866	23	N63W64	46	R1	Centrarchidae	quadrate	U	none	0.1	1
1866	24	N63W64	46	R1	Micropterus sp.	articular	R	none	0.8	1
1866	25	N63W64	46	R1	Ictaluridae	pect spine	U	none	0.4	1
1866	26	N63W64	46	R1	Unident	unident	U	none	0.5	2
1866	27	N63W64	46	R1	Lg bird	scapula	U	none	3.5	2
1866	28	N63W64	46	R1	Med bird	scapula	U	none	1.6	3
1866	29	N63W64	46	R1	Passerine	femur	L	none	0.1	1
1866	30	N63W64	46	R1	Indet bird	vert	U	none	0.6	2
1866	31	N63W64	46	R1	Med bird	tibiotars	U	none	0.2	1
1866	32	N63W64	46	R1	Lg bird	first phal	U	none	2.1	1
1866	33	N63W64	46	R1	Anserinae	carpometa	U	none	3.4	1
1866	34	N63W64	46	R1	E. migratorius	coracoid	R	none	0.1	1
1866	35	N63W64	46	R1	Anatidae	coracoid	L	none	0.2	1
1866	36	N63W64	46	R1	B. canadensis	coracoid	L	none	4.1	1
1866	37	N63W64	46	R1	cf. T. cupido	coracoid	L	none	1.1	1
1880	1	N64W63	39	R1	Anas sp.	coracoid	L	none	1.3	1
1880	2	N64W63	39	R1	M. galopavo	coracoid p	R	none	1.3	1
1880	3	N64W63	39	R1	B. canadensis	carpometa	R	none	4.5	1
1880	4	N64W63	39	R1	E. migratorius	tarsometa	L	none	0.1	1
1880	5	N64W63	39	R1	Sm bird	sternum	U	none	0.4	1
1880	6	N64W63	39	R1	Indet bird	unident	U	burn	2.3	8
1880	7	N64W63	39	R1	Indet bird	unident	U	none	25.9	87
1880	8	N64W63	39	R1	Lg bird	unident	L	none	3.3	1
1880	9	N64W63	39	R1	Lg bird	first phal	U	none	0.7	1
1880	10	N64W63	39	R1	Lg mam	lonbone fr	U	none	6.6	4
1880	11	N64W63	39	R1	Lepisosteus sp.	operculum?	U	none	0.6	1
1880	12	N64W63	39	R1	A. grunniens	pharyng	U	burn	0.2	1
1880	13	N64W63	39	R1	Centrarchidae	quadrate	U	none	0.2	2

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1880	14	N64W63	39	R1	M. salmoides	articular	U	none	0.3	1
1880	15	N64W63	39	R1	Catostomidae	quadrate	U	none	0.4	2
1880	16	N64W63	39	R1	Catostomidae	hyomandib	U	none	0.1	1
1880	17	N64W63	39	R1	Moxostoma sp.	dentary	U	none	0.1	1
1880	18	N64W63	39	R1	Indet fish	rib	U	none	0.2	5
1880	19	N64W63	39	R1	Indet fish	unident	U	burn	0.6	3
1880	20	N64W63	39	R1	Indet fish	unident	U	none	8.3	47
1880	21	N64W63	39	R1	Colubridae	vert	U	none	0.3	2
1880	22	N64W63	39	R1	Colubridae	vert	U	burn	0.1	1
1880	23	N64W63	39	R1	Unident	unident	U	calc	19.5	64
1880	24	N64W63	39	R1	Unident	unident	U	none	37.8	288
1880	25	N64W63	39	R1	Indet fish	vert	U	none	4.7	23
1880	26	N64W63	39	R1	Indet fish	vert	U	burn	0.1	1
1880	27	N64W63	39	R1	Catostomidae	articular	U	none	0.1	1
1880	28	N64W63	39	R1	Gastropoda	shell	U	none	0.1	2
1880	29	N64W63	39	R1	D. marsupialis	mandible	R	none	2.9	1
1880	30	N64W63	39	R1	D. marsupialis	mandible	L	none	0.9	1
1880	31	N64W63	39	R1	P. lotor	carnass 1	R	none	0.5	1
1880	32	N64W63	39	R1	Lg mam	vert frag	U	none	2.1	2
1880	33	N64W63	39	R1	Med mam	mand frag	U	none	1.0	2
1880	34	N64W63	39	R1	S. carolinensis	maxilla-wh	U	none	0.6	3
1880	35	N64W63	39	R1	S. carolinensis	mandible	L	none	0.5	1
1880	36	N64W63	39	R1	S. carolinensis	incisor fr	U	none	0.9	5
1880	37	N64W63	39	R1	S. carolinensis	ulna p	R	none	0.4	1
1880	38	N64W63	39	R1	S. carolinensis	innom	R	none	1.0	1
1880	39	N64W63	39	R1	S. carolinensis	tibia d	L	none	0.1	1
1880	40	N64W63	39	R1	S. carolinensis	tibia d	R	none	0.1	1
1880	41	N64W63	39	R1	Med/sm mam	metaod	U	none	1.7	8
1880	42	N64W63	39	R1	Med mam	caud vert	U	none	0.3	1
1880	43	N64W63	39	R1	Med mam	caud vert	U	burn	0.4	1
1880	44	N64W63	39	R1	Med mam	tarsal	U	burn	0.2	1
1880	45	N64W63	39	R1	S. carolinensis	scapula	L	none	0.1	1
1880	46	N64W63	39	R1	Sm mam	tib p epi	L	none	0.1	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1880	47	N64W63	39	R1	Med mam	tib p epi	R	none	0.6	1
1880	48	N64W63	39	R1	Cricetidae	humerus	R	none	0.1	1
1880	49	N64W63	39	R1	Wtdeer	carp/tars	U	none	0.9	1
1880	50	N64W63	39	R1	Wtdeer	term phal	U	none	0.9	1
1880	51	N64W63	39	R1	Wtdeer	phal epi	U	none	1.1	1
1880	52	N64W63	39	R1	Wtdeer	metapod ep	U	calc	2.1	1
1880	53	N64W63	39	R1	Wtdeer	radi d epi	R	none	2.9	1
1880	54	N64W63	39	R1	Lg mam	vert epi	U	none	1.4	1
1880	55	N64W63	39	R1	T. carolina	shell	U	none	0.9	2
1880	56	N64W63	39	R1	Emydidae	shell	U	burn	0.7	2
1880	57	N64W63	39	R1	Emydidae	shell	U	none	0.4	4
1880	58	N64W63	39	R1	Med/lg mam	unident	U	none	1.9	2
1880	59	N64W63	39	R1	Med/lg mam	vert	U	burn	0.4	1
585	1	N60W64	6		Lg bird	longbone	U	none	2.8	1
585	2	N60W64	6		D. marsupialis	maxilla	L	none	3.3	1
585	3	N60W64	6		Med/sm mam	scapula	U	none	0.6	1
585	4	N60W64	6		Emydidae	shell	U	none	1.3	1
585	5	N60W64	6		Unident	unident	U	none	5.9	13
491	1	N60W64	3		Sm bird	longbone	U	calc	0.5	2
491	2	N60W64	3		Indet turt	shell	U	calc	0.2	1
491	3	N60W64	3		Unident	unident	U	calc	0.7	3
491	4	N60W64	3		S. carolinensis	incisor	U	none	0.2	1
595	1	N60W64	5B		Med mam	caud vert	U	calc	0.6	1
595	2	N60W64	5B		Med mam	phalanx	U	calc	0.8	1
595	3	N60W64	5B		S. carolinensis	maxilla	R	none	0.2	1
595	4	N60W64	5B		Unident	unident	U	calc	4.2	10
632	1	N60W64	8		Lg mam	longbone	U	cut	13.2	2
632	2	N60W64	8		Lg mam	longbone	U	none	7.3	3
632	3	N60W64	8		Sm mam	metapod	U	none	0.2	1
632	4	N60W64	8		Indet turt	shell	U	calc	0.5	1
632	5	N60W64	8		Unident	unident	U	calc	4.6	15
632	6	N60W64	8		Unident	unident	U	none	1.3	6
611	1	N60W64	7		Unident	unident	U	burn	0.1	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
611	1	N60W64	7		Unident	unident	U	none	2.5	5
611	2	N60W64	7		Unident	unident	U	calc	0.5	5
611	3	N60W64	7		Sm mam	tibia d	U	burn	0.2	1
611	4	N60W64	7		Sm bird	longbone	U	none	0.5	3
800	1	N60W64	16	K1	Med/lg mam	longbone	U	none	10.9	2
800	2	N60W64	16	K1	Wtdeer	tooth frag	U	none	0.6	1
800	3	N60W64	16	K1	Sm mam	metapod	U	none	0.1	1
800	4	N60W64	16	K1	Emydidae	shell	U	none	0.2	1
800	5	N60W64	16	K1	Unident	unident	U	calc	1.9	7
800	6	N60W64	16	K1	Unident	unident	U	none	4.1	9
800	7	N60W64	16	K1	Indet bird	unident	U	none	7.5	13
800	8	N60W64	16	K1	T. carolina	plastron	U	none	9.6	1
767	1	N60W64	14		Unident	unident	U	calc	4.2	5
819	1	N60W64	16	K2a	Med/lg mam	unident	U	none	7.9	5
819	2	N60W64	16	K2a	Unident	unident	U	calc	1.5	4
819	3	N60W64	16	K2a	Unident	unident	U	none	0.9	8
819	4	N60W64	16	K2a	Med mam	phalanx	U	none	0.3	1
819	1	N60W64	16	K2	Med/lg mam	thor vert	U	none	0.9	1
819	2	N60W64	16	K2	Unident	unident	U	burn	0.1	1
819	3	N60W64	16	K2	Unident	unident	U	none	1.5	5
839	1	N60W64	18	K3	Unident	unident	U	calc	0.1	1
839	2	N60W64	18	K3	Wtdeer	term phal	U	none	2.0	1
839	1	N60W64	18		Med mam	mand frag	U	none	3.7	1
839	2	N60W64	18		Unident	unident	U	burn	1.5	3
839	3	N60W64	18		Indet turt	shell	U	none	0.2	1
839	4	N60W64	18		Unident	unident	U	none	3.2	9
711	1	N60W64	12b		Med/sm mam	femur p	U	calc	0.7	1
711	2	N60W64	12b		Med/sm mam	tibia d	U	calc	0.3	1
711	3	N60W64	12b		S. carolinensis	tibia d	R	none	0.2	1
711	4	N60W64	12b		S. carolinensis	incisor	U	none	0.1	1
711	5	N60W64	12b		S. carolinensis	skull frag	U	none	0.2	1
711	6	N60W64	12b		D. marsupialis	mandible	U	none	1.7	1
711	7	N60W64	12b		D. marsupialis	canine	U	none	0.3	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
711	8	N60W64	12b		Indet turt	shell	U	calc	0.2	1
711	9	N60W64	12b		Ictaluridae	articular	U	calc	0.2	1
711	10	N60W64	12b		Indet bird	unident	U	none	4.1	6
711	11	N60W64	12b		Lg mam	unident	U	none	16.4	5
711	12	N60W64	12b		Wtdeer	phal 2	U	none	3.1	1
711	13	N60W64	12b		Unident	unident	U	none	11.4	32
711	14	N60W64	12b		Unident	unident	U	calc	21.7	43
711	15	N60W64	12b		S. floridanus	scapula	R	none	0.8	1
711	16	N60W64	12b		Sm mam	calcaneus	U	none	0.1	1
733	1	N60W64	12c		P. lotor	mandible	R	none	6.4	1
733	2	N60W64	12c		D. marsupialis	ulna	R	none	1.3	1
733	3	N60W64	12c		Indet bird	unident	U	none	2.0	5
733	4	N60W64	12c		Unident	unident	U	calc	3.5	8
733	5	N60W64	12c		Lg mam	unident	U	none	10.9	4
780	1	N60W64	15		Wtdeer	term phal	U	none	1.7	1
780	2	N60W64	15		Wtdeer	term phal	U	calc	1.3	1
780	3	N60W64	15		Unident	unident	U	calc	0.9	4
780	4	N60W64	15		Sm mam	radius d	U	none	0.1	1
780	5	N60W64	15		Indet bird	unident	U	none	5.1	15
780	6	N60W64	15		Indet fish	unident	U	none	0.1	1
794	1	N60W64	15b		Sm mam	unident	U	calc	1.2	9
794	2	N60W64	15b		Sm mam	unident	U	none	0.6	6
903	1	N60W64	19	K3	Unident	unident	U	calc	0.9	8
903	1	N60W64	19	K3	Lg bird	unident	U	none	2.9	1
903	2	N60W64	19	K3	Unident	unident	U	none	0.6	2
903	3	N60W64	19	K3	Unident	unident	U	calc	11.3	23
903	1	N60W64	19	K3	Sm bird	unident	U	calc	0.9	4
903	2	N60W64	19	K3	Sm bird	unident	U	none	1.0	4
903	3	N60W64	19	K3	Wtdeer	phalanx	U	none	1.4	1
934	1	N60W64	21	K5	Unident	unident	U	none	0.6	2
932	1	N60W64	21	N?	Wtdeer	antler	U	cut	258.6	1
932	2	N60W64	21	N?	Wtdeer	radius med	U	cut	30.1	1
991	1	N60W64	24	P1	S. carolinensis	tibia d	R	calc	0.4	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
991	2	N60W64	24	P1	Sm mam	metapod	U	none	0.2	1
991	3	N60W64	24	P1	Lg bird	tibiotars	U	none	4.3	1
991	4	N60W64	24	P1	Unident	unident	U	none	1.8	8
991	5	N60W64	24	P1	Unident	unident	U	calc	2.3	8
991	6	N60W64	24	P1	Wtdeer	term phal	U	calc	2.1	1
991	1	N60W64	24	P1	S. carolinensis	mandible	R	none	0.8	1
991	2	N60W64	24	P1	S. carolinensis	ulna	R	calc	0.3	1
991	3	N60W64	24	P1	Sm mam	vert	U	none	0.1	1
991	4	N60W64	24	P1	Indet fish	rib	U	none	0.1	1
991	5	N60W64	24	P1	Unident	unident	U	none	4.1	11
991	6	N60W64	24	P1	Unident	unident	U	calc	3.9	11
1038	1	N59W64	27	P2	M. gallopavo	tarsometa	L	none	8.1	1
1038	2	N59W64	27	P2	Lg bird	vert	U	none	1.4	1
1038	3	N59W64	27	P2	Med bird	femur p	U	calc	1.0	1
1038	4	N59W64	27	P2	Indet bird	unident	U	none	1.8	5
1038	5	N59W64	27	P2	Med/lg mam	longbone	U	none	7.6	3
1038	6	N59W64	27	P2	Indet bird	longbone	U	calc	5.6	6
1038	7	N59W64	27	P2	Indet mam	longbone	U	calc	5.4	13
1038	8	N59W64	27	P2	Unident	unident	U	none	3.2	14
1038	9	N59W64	27	P2	T. carolina	plastron	U	burn	2.9	2
1038	10	N59W64	27	P2	C. picta	scapula	U	burn	0.3	1
1038	11	N59W64	27	P2	S. carolinensis	mandible	R	none	0.8	1
1038	12	N59W64	27	P2	S. carolinensis	maxilla	R	none	0.3	1
1038	13	N59W64	27	P2	Sm mam	metapod	U	none	0.1	1
1038	14	N59W64	27	P2	Med mam	metapod	U	none	1.3	1
1038	15	N59W64	27	P2	Unident	unident	U	burn	0.4	2
1038	16	N59W64	27	P2	Sylvilagus sp.	skull frag	U	burn	2.3	4
1057	1	N60W64	28	P3	Vespertilionid	ulna	U	none	0.1	1
1057	2	N60W64	28	P3	Passerine	coracoid	L	none	0.2	1
1057	3	N60W64	28	P3	Sm bird	unident	U	none	0.2	2
1057	4	N60W64	28	P3	Sm mam	skull frag	U	none	0.2	1
1057	5	N60W64	28	P3	Unident	unident	U	calc	1.0	3
1057	6	N60W64	28	P3	Unident	unident	U	none	2.3	7

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1057	7	N60W64	28	P3	Emydidae	shell	U	none	1.1	1
1057	8	N60W64	28	P3	Med/lg mam	rib frag	U	none	1.8	1
1075	1	N60W64	29	P3	Med mam	metapod	U	none	0.3	1
1075	2	N60W64	29	P3	S. carolinensis	maxilla	L	none	0.4	1
1075	3	N60W64	29	P3	Med/sm mam	scap frag	U	none	0.2	1
1075	4	N60W64	29	P3	Unident	unident	U	none	3.4	8
1075	5	N60W64	29	P3	Unident	unident	U	calc	4.6	11
1080	1	N59W64	29	P3	Vespertilionid	ulna	U	none	0.1	1
1080	2	N59W64	29	P3	Med mam	radius	U	none	0.8	1
1080	3	N59W64	29	P3	Med/sm mam	metapod	U	burn	0.1	2
1080	4	N59W64	29	P3	Med/sm mam	hum frag	U	none	0.4	1
1080	5	N59W64	29	P3	Sm mam	innom frag	U	calc	0.1	1
1080	6	N59W64	29	P3	S. carolinensis	maxilla	L	none	0.4	1
1080	7	N59W64	29	P3	S. carolinensis	maxilla	R	none	0.3	1
1080	8	N59W64	29	P3	Indet bird	unident	U	none	1.7	4
1080	9	N59W64	29	P3	Lg mam	longbone	U	none	23.5	5
1080	10	N59W64	29	P3	Unident	unident	U	none	4.8	15
1080	11	N59W64	29	P3	Unident	unident	U	calc	1.3	10
1080	12	N59W64	29	P3	S. carolinensis	ulna frag	U	none	0.5	1
1080	13	N59W64	29	P3	Indet fish	vert	U	none	0.2	1
1080	14	N59W64	29	P3	Indet fish	unident	U	none	0.2	2
1094	1	N60W64	20	P2	Unident	unident	U	burn	0.2	1
1121	1	N59W64	32	S1	P.lotor	mandible	L	none	6.7	1
1121	1	N59W64	32	S1	Unident	unident	U	none	0.8	2
1120	1	N59W64	32	P3	S. carolinensis	maxilla	U	none	0.3	1
1120	2	N59W64	32	P3	Unident	unident	U	none	2.4	5
1120	3	N59W64	32	P3	Unident	unident	U	calc	0.7	4
1122	1	N60W64	33	P3	Anas sp.	phal 1	R	none	0.2	1
1122	2	N60W64	33	P3	Sm mam	metapod	U	none	0.2	2
1122	3	N60W64	33	P3	Catostomidae	parasphen	U	none	0.1	1
1122	4	N60W64	33	P3	Indet turt	shell	U	burn	0.4	1
1122	5	N60W64	33	P3	Unident	unident	U	calc	1.1	8
1122	6	N60W64	33	P3	Unident	unident	U	none	2.8	12

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1122	1	N60W64	33	P3	S. floridanus	skull frag	U	none	0.5	1
1122	2	N60W64	33	P3	S. carolinensis	innom	L	none	1.0	2
1122	3	N60W64	33	P3	S. carolinensis	tibia	L	none	0.8	1
1122	4	N60W64	33	P3	S. carolinensis	incisor	U	none	0.3	2
1122	5	N60W64	33	P3	Sm mam	metapod	U	none	0.2	1
1122	6	N60W64	33	P3	Sm mam	rib	U	none	0.2	1
1122	7	N60W64	33	P3	Med/lg mam	scap frag	U	none	3.1	1
1122	8	N60W64	33	P3	Med/lg mam	skull frag	U	none	4.3	3
1122	9	N60W64	33	P3	Unident	unident	U	calc	7.0	13
1122	10	N60W64	33	P3	Indet bird	unident	U	none	2.2	7
1122	11	N60W64	33	P3	Indet fish	vert	U	none	0.9	1
1122	12	N60W64	33	P3	Indet fish	unident	U	none	0.5	5
1122	13	N60W64	33	P3	M. salmoides	premax	U	none	0.1	1
1122	14	N60W64	33	P3	Catostomidae	pect gird	U	none	0.4	1
1122	15	N60W64	33	P3	Catostomidae	ceratohyal	U	none	0.3	1
1122	16	N60W64	33	P3	S. odoratus	plastron	U	none	0.7	1
1122	17	N60W64	33	P3	Indet turt	shell	U	none	0.3	1
1122	18	N60W64	33	P3	Anas sp.	humerus d	L	calc	1.0	1
1122	19	N60W64	33	P3	C. virginianus	tibiotars	L	none	0.2	1
1122	20	N60W64	33	P3	Unident	unident	U	none	14.8	43
1158	1	N60W64	35	S1	Unident	unident	U	calc	2.9	8
1158	2	N60W64	35	S1	Indet bird	unident	U	none	1.5	8
1158	3	N60W64	35	S1	Indet fish	unident	U	none	0.4	3
1167	1	N60W64	36	P3	Unident	unident	U	calc	1.6	2
1167	2	N60W64	36	P3	Indet bird	unident	U	none	2.9	9
1167	1	N60W64	36	P3	Lg bird	furculum	U	none	1.2	1
1167	2	N60W64	36	P3	Indet fish	unident	U	none	1.1	2
1167	3	N60W64	36	P3	S. carolinensis	mandible	R	none	1.4	1
1167	4	N60W64	36	P3	S. floridanus	maxilla	L	none	0.5	1
1167	5	N60W64	36	P3	Sm mam	metapod	U	none	0.1	3
1167	6	N60W64	36	P3	Unident	unident	U	none	7.8	20
1167	7	N60W64	36	P3	Unident	unident	U	calc	1.7	10
1200	1	N60W64	39	L3	Crotalinae	vert	U	none	0.1	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1200	2	N60W64	39	L3	Emydidae	shell	U	none	3.0	2
1200	3	N60W64	39	L3	Indet turt	shell	U	none	0.4	2
1200	4	N60W64	39	L3	P. lotor	ulna	L	none	3.3	1
1200	5	N60W64	39	L3	S. carolinensis	maxilla	L	none	1.1	2
1200	6	N60W64	39	L3	S. carolinensis	mandible	L	none	1.0	1
1200	7	N60W64	39	L3	Sm mam	metapod	U	none	0.4	2
1200	8	N60W64	39	L3	Lg mam	unident	U	none	22.1	6
1200	9	N60W64	39	L3	Indet fish	unident	U	none	2.4	11
1200	10	N60W64	39	L3	Indet fish	vert	U	none	0.9	4
1200	11	N60W64	39	L3	M. salmoides	dentary	R	none	1.2	1
1200	12	N60W64	39	L3	Catostomidae	quadrate	U	none	0.6	2
1200	13	N60W64	39	L3	Moxostoma sp.	dentary	U	none	0.4	1
1200	14	N60W64	39	L3	Catostomidae	operculum	U	none	0.8	1
1200	15	N60W64	39	L3	Catostomidae	urohyal	U	none	0.1	1
1200	16	N60W64	39	L3	Catostomidae	hyomandib	U	none	0.3	1
1200	17	N60W64	39	L3	Unident	unident	U	calc	1.9	11
1200	18	N60W64	39	L3	Unident	unident	U	none	9.0	51
1207	1	N60W64	41	R2	Indet bird	unident	U	none	2.5	7
1207	2	N60W64	41	R2	Unident	unident	U	calc	2.1	5
1207	3	N60W64	41	R2	Mustela sp.	mandible	R	calc	0.3	1
1207	4	N60W64	41	R2	Indet turt	shell	U	calc	1.6	1
1207	1	N60W64	41	R2	S. floridanus	molar	U	none	0.2	1
1207	2	N60W64	41	R2	S. floridanus	tibia d	L	calc	1.1	1
1207	3	N60W64	41	R2	S. carolinensis	mandible	R	none	0.9	1
1207	4	N60W64	41	R2	Indet turt	shell	U	none	0.1	1
1207	5	N60W64	41	R2	A. platyrhyn	humerus	L	calc	3.5	1
1207	6	N60W64	41	R2	Catostomidae	pharyng	U	none	0.1	1
1207	7	N60W64	41	R2	Indet fish	vert	U	none	0.1	1
1207	8	N60W64	41	R2	Unident	unident	U	calc	1.0	6
1207	9	N60W64	41	R2	Unident	unident	U	none	11.5	21
1214	1	N60W64	43	R3	Med bird	carpomet	U	none	0.5	1
1214	2	N60W64	43	R3	Med bird	ulna	U	none	2.3	3
1214	3	N60W64	43	R3	Indet bird	unident	U	none	4.3	9

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1214	4	N60W64	43	R3	Indet fish	unident	U	none	0.4	5
1214	5	N60W64	43	R3	S. carolinensis	maxilla	U	none	0.1	1
1214	6	N60W64	43	R3	Unident	unident	U	calc	5.0	18
1214	7	N60W64	43	R3	Unident	unident	U	none	7.9	24
1214	1	N60W64	43	R3	Wtdeer	mand ant	R	none	5.0	1
1214	2	N60W64	43	R3	S. carolinensis	mandible	L	none	1.8	2
1214	3	N60W64	43	R3	S. floridanus	tibia d	L	none	1.6	1
1214	4	N60W64	43	R3	Indet turt	shell	U	cut	0.2	1
1214	5	N60W64	43	R3	Med mam	humerus d	U	calc	0.7	1
1214	6	N60W64	43	R3	T. cupido	humerus d	R	none	2.9	1
1214	7	N60W64	43	R3	Passerine	ulna	U	none	0.1	1
1214	8	N60W64	43	R3	Indet bird	longbone	U	none	2.8	5
1214	9	N60W64	43	R3	M. carinatum	pharyng	R	none	1.6	1
1214	10	N60W64	43	R3	Indet fish	vert	U	none	2.1	3
1214	11	N60W64	43	R3	Indet fish	parasphen	U	none	0.1	1
1214	12	N60W64	43	R3	Indet fish	unident	U	none	1.8	2
1214	13	N60W64	43	R3	Unident	unident	U	none	6.8	20
1214	14	N60W64	43	R3	Unident	unident	U	calc	8.2	23
1222	1	N60W64	47	R3	N. floridana	mandible	R	none	0.7	1
1222	2	N60W64	47	R3	Unident	unident	U	calc	6.0	16
1222	3	N60W64	47	R3	Lg mam	vert	U	none	7.5	1
1222	4	N60W64	47	R3	Indet turt	shell	U	calc	0.3	1
1222	5	N60W64	47	R3	Indet turt	shell	U	none	0.7	1
1222	6	N60W64	47	R3	C. virginianus	coracoid	L	none	0.1	1
1222	7	N60W64	47	R3	Sm bird	sternum	U	calc	0.3	1
1222	8	N60W64	47	R3	Indet fish	unident	U	none	0.7	2
1222	9	N60W64	47	R3	Indet fish	vert	U	none	0.1	1
1222	10	N60W64	47	R3	Indet bird	unident	U	none	4.3	11
1222	11	N60W64	47	R3	Unident	unident	U	none	3.4	20
1222	12	N60W64	47	R3	Unident	unident	U	calc	4.3	11
1222	1	N60W64	47	R3	P. lotor	mandible	L	burn	0.9	1
1222	2	N60W64	47	R3	D. marsupialis	calcaneus	L	burn	0.6	1
1222	3	N60W64	47	R3	S. carolinensis	ulna	R	none	0.5	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1222	4	N60W64	47	R3	Vespertilionid	humerus	U	none	0.1	1
1222	5	N60W64	47	R3	Indet fish	unident	U	none	1.4	5
1222	6	N60W64	47	R3	Indet fish	vert	U	none	0.1	1
1222	7	N60W64	47	R3	Catostomidae	unident	U	none	0.2	2
1222	8	N60W64	47	R3	Centrarchidae	unident	U	none	0.1	1
1222	9	N60W64	47	R3	Unident	unident	U	none	6.3	36
1222	10	N60W64	47	R3	Unident	unident	U	calc	18.8	48
1222	11	N60W64	47	R3	Catostomidae	quadrate	U	calc	0.3	1
1230	1	N60W64	50	R3	Unident	unident	U	calc	2.5	9
1230	2	N60W64	50	R3	Unident	unident	U	none	1.4	10
1244	1	N60W64	54	T	P. lotor	mandible	U	calc	2.1	1
1244	2	N60W64	54	T	Unident	unident	U	calc	5.1	7
1244	3	N60W64	54	T	Cricetidae	tibia	U	none	0.1	1
1244	4	N60W64	54	T	Indet fish	unident	U	none	0.5	7
1244	5	N60W64	54	T	Indet turt	shell	U	none	0.3	1
1244	6	N60W64	54	T	Indet bird	unident	U	calc	3.8	18
1244	7	N60W64	54	T	Indet bird	unident	U	none	7.1	40
1246	1	N60W64	55	T	Med/sm mam	innom frag	U	none	0.4	1
1246	2	N60W64	55	T	O. zibethica	maxilla	R	none	2.1	1
1246	3	N60W64	55	T	Med mam	maxilla	U	burn	0.4	1
1246	4	N60W64	55	T	Anas sp.	coracoid d	R	burn	1.0	1
1246	5	N60W64	55	T	Unident	unident	U	calc	2.7	10
1246	6	N60W64	55	T	Unident	unident	U	none	4.3	15
1246	7	N60W64	55	T	Catostomidae	pharyng	U	none	0.1	1
1256	1	N60W64	58	U1	C. virginianus	coracoid	L	none	0.1	1
1256	2	N60W64	58	U1	Sm bird	furculum	U	none	0.1	1
1256	3	N60W64	58	U1	Indet fish	unident	U	none	0.2	1
1256	4	N60W64	58	U1	Unident	unident	U	calc	1.0	6
1256	5	N60W64	58	U1	Indet bird	unident	U	none	11.9	35
1256	6	N60W64	58	U1	Mustela vison	mandible	L	none	0.8	1
1256	7	N60W64	58	U1	Vespertilionid	humerus	U	none	0.1	1
1256	8	N60W64	58	U1	Cricetidae	femur	L	none	0.1	1
1256	9	N60W64	58	U1	S. carolinensis	incisor	U	none	0.4	1

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1256	10	N60W64	58	U1	S. carolinensis	scapula	L	none	0.1	1
1270	1	N60W64	63	U2	Wtdeer	tooth frag	U	none	0.5	1
1270	2	N60W64	63	U2	Indet fish	unident	U	none	0.2	1
1722	1	N59W64	50	T	Unident	unident	U	none	0.5	1
1791	1	N59W64	54	T	Indet bird	unident	U	calc	8.2	31
1791	2	N59W64	54	T	Colubridae	vert	U	none	0.1	1
1791	3	N59W64	54	T	Med mam	mand frag	U	cut	0.9	1
1791	4	N59W64	54	T	P. lotor	mol 2 1	R	none	0.3	1
1791	5	N59W64	54	T	P. lotor	canines	U	none	1.8	4
1815	1	N60W64	53	T	Anas sp.	humerus d	L	calc	1.1	1
1815	2	N60W64	53	T	Med mam	metapod	U	calc	0.4	1
1815	3	N60W64	53	T	P. lotor	scapula	R	none	1.1	1
1815	4	N60W64	53	T	N. floridana	humerus d	L	none	0.3	1
1815	5	N60W64	53	T	Unident	unident	U	none	5.3	6
1815	6	N60W64	53	T	Unident	unident	U	calc	15.1	45
1859	1	N60W64	56	T	Indet fish	unident	U	none	0.1	3
1859	2	N60W64	56	T	Indet turt	shell	U	calc	0.2	1
1859	3	N60W64	56	T	Med mam	phalanx	U	none	0.2	1
1859	4	N60W64	56	T	Sm mam	radius	U	none	0.1	1
1859	5	N60W64	56	T	Sm mam	scapula	L	none	0.3	1
1859	6	N60W64	56	T	Anas sp.	tibiotar d	R	calc	0.5	1
1859	7	N60W64	56	T	C. virginianus	tibiotar d	R	calc	0.2	1
1859	8	N60W64	56	T	Unident	unident	U	none	5.7	12
1859	9	N60W64	56	T	Unident	unident	U	calc	3.3	16
1877	1	N60W64	57	T	A. platyrhyn	humerus p	L	cut	1.1	1
1877	2	N60W64	57	T	T. cupido	coracoid	R	none	0.6	1
1877	3	N60W64	57	T	C. virginianus	coracoid	R	none	0.1	1
1877	4	N60W64	57	T	O. zibethica	mandible	L	burn	1.5	1
1877	5	N60W64	57	T	Sm mam	vert	U	burn	0.2	1
1877	6	N60W64	57	T	Unident	unident	U	calc	4.2	7
1877	7	N60W64	57	T	Unident	unident	U	none	6.7	10
1248	1	N60W64	55	R4	Lg mam	vert	U	none	3.2	1
1248	2	N60W64	55	R4	Unident	unident	U	calc	0.9	4

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1248	3	N60W64	55	R4	Unident	unident	U	none	9.0	24
1248	4	N60W64	55	R4	Peromyscus sp.	mandible	R	none	0.1	1
1248	5	N60W64	55	R4	Mustelidae	femur d	L	none	0.4	1
1248	6	N60W64	55	R4	Lg bird	carpometa	U	none	6.3	1
475	1	N58W64	2		Med/lg mam	unident	U	none	3.7	1
475	2	N58W64	2		Unident	unident	U	calc	0.2	1
475	3	N58W64	2		Indet turt	shell	U	calc	0.1	1
475	4	N58W64	2		Unident	unident	U	none	0.7	4
481	1	N58W64	3		Unident	unident	U	calc	1.0	8
481	2	N58W64	3		Unident	unident	U	none	0.5	1
538	1	N58W64	6a		Unident	unident	U	none	1.1	5
538	2	N58W64	6a		Unident	unident	U	calc	5.0	8
538	3	N58W64	6a		Med/lg mam	longbone	U	none	13.6	8
538	4	N58W64	6a		Med/lg mam	vert epi	U	none	1.6	1
538	5	N58W64	6a		Sm mam	unident	U	none	0.2	2
613	1	N58W64	8b		Wtdeer	molar 3 l	R	none	6.1	1
613	2	N58W64	8b		Wtdeer	aud bulla	U	none	3.6	1
613	3	N58W64	8b		Wtdeer	phal 1	U	none	5.0	1
613	4	N58W64	8b		Med/sm mam	thor vert	U	none	0.4	1
613	5	N58W64	8b		Med/sm mam	metapod	U	none	0.7	3
613	6	N58W64	8b		S. odoratus	plastron	U	none	0.9	2
613	7	N58W64	8b		Unident	unident	U	calc	1.7	4
613	8	N58W64	8b		Unident	unident	U	none	8.3	16
613	9	N58W64	8b		Indet bird	unident	U	none	1.4	2
613	10	N58W64	8b		Anatidae	coracoid	L	none	1.1	1
613	11	N58W64	8b		T. cupido	carpometa	L	none	0.4	1
636	1	N58W64	9a		Wtdeer	radius d	L	cut	8.0	1
636	2	N58W64	9a		Wtdeer	metapod	U	none	16.4	1
636	3	N58W64	9a		Lg mam	vert frag	U	none	7.7	2
636	4	N58W64	9a		Wtdeer	mand/max	U	none	1.2	1
636	5	N58W64	9a		Wtdeer	tooth frag	U	none	0.3	1
636	6	N58W64	9a		Sm bird	ulna	U	none	0.5	1
636	7	N58W64	9a		Lg mam	longobne	U	none	28.4	9

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Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
636	8	N58W64	9a		Unident	unident	U	calc	7.5	16
636	9	N58W64	9a		Unident	unident	U	none	16.4	47
636	10	N58W64	9a		Indet fish	unident	U	none	0.6	4
636	11	N58W64	9a		M. monax	incisor	U	none	1.0	1
636	12	N58W64	9a		S. carolinensis	maxilla	L	none	0.1	1
636	13	N58W64	9a		S. carolinensis	incisor	U	none	0.1	1
636	14	N58W64	9a		S. carolinensis	humerus	R	none	0.7	1
636	15	N58W64	9a		S. carolinensis	ulna	L	none	0.3	1
636	16	N58W64	9a		Sm mam	metapod	U	none	0.6	3
636	17	N58W64	9a		Sm mam	vert	U	none	0.3	1
636	18	N58W64	9a		Indet turt	shell	U	none	2.8	7
636	19	N58W64	9a		Indet turt	shell	U	calc	0.1	1
636	20	N58W64	9a		S. odoratus	plastron	U	none	2.9	3
665	1	N58W64	11b		Unident	unident	U	calc	0.9	7
684	1	N58W64	12a		T. carolina	shell	U	none	9.5	7
684	2	N58W64	12a		T. carolina	humerus p	R	none	0.5	1
684	3	N58W64	12a		Canis sp.	innom	R	none	4.4	1
684	4	N58W64	12a		Wtdeer	phal frag	U	none	1.3	1
684	5	N58W64	12a		Unident	unident	U	calc	4.6	9
684	6	N58W64	12a		M. gallopavo	phal	U	none	0.2	1
684	7	N58W64	12a		Unident	unident	U	none	14.8	28
713	1	N58W64	13a		Wtdeer	radius d	R	chop	22.2	1
713	2	N58W64	13a		Wtdeer	mandible	R	none	14.1	1
713	3	N58W64	13a		Wtdeer	ulan p	L	none	3.8	1
713	4	N58W64	13a		E. migratorius	coarcoid d	R	none	0.2	1
713	5	N58W64	13a		Unident	unident	U	none	12.5	16
713	6	N58W64	13a		Unident	unident	U	calc	4.1	23
744	1	N58W64	16a		Lg mam	longbone	U	none	4.8	1
744	2	N58W64	16a		Unident	unident	U	burn	0.1	1
744	3	N58W64	16a		Unident	unident	U	none	0.2	2
744	4	N58W64	16a		Moxostoma sp.	dentary	U	none	0.2	1
745	1	N58W64	16b		Lg mam	longbone	U	none	52.1	9
745	2	N58W64	16b		Wtdeer	metatars	L	none	7.0	1

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
745	3	N58W64	16b		T. carolina	shell	U	none	4.5	2
745	4	N58W64	16b		Mustelidae	ulna p	R	none	0.3	1
745	5	N58W64	16b		P. lotor	ulna p	L	none	0.7	1
745	6	N58W64	16b		Med mam	maxilla	U	calc	0.4	1
745	7	N58W64	16b		P. lotor	canine	U	none	0.3	1
745	8	N58W64	16b		M. gallopavo	phal	U	none	0.5	1
745	9	N58W64	16b		Indet fish	vert	U	none	0.2	1
745	10	N58W64	16b		Moxostoma sp.	dentary	U	none	0.2	1
745	11	N58W64	16b		Indet fish	unident	U	none	1.2	4
745	12	N58W64	16b		Indet bird	unident	U	none	6.3	13
745	13	N58W64	16b		Anas sp.	coracoid p	L	none	0.4	1
745	14	N58W64	16b		Q. quiscula	tarsomet d	R	none	0.3	1
745	15	N58W64	16b		Unident	unident	U	none	15.2	41
745	16	N58W64	16b		Unident	unident	U	calc	14.4	29
882	1	N58W64	20	L1	Lg mam	longbone	U	none	30.4	8
882	2	N58W64	20	L1	Indet bird	longbone	U	none	2.1	2
882	3	N58W64	20	L1	Indet fish	unident	U	none	0.5	2
882	4	N58W64	20	L1	Emydidae	shell	U	none	1.4	1
882	5	N58W64	20	L1	Unident	unident	U	calc	3.0	7
882	6	N58W64	20	L1	Unident	unident	U	none	3.7	13
882	7	N58W64	20	L1	Sm mam	humerus	U	none	0.3	1
913	1	N58W64	22	L1	P. lotor	maxilla	L	none	4.9	1
913	2	N58W64	22	L1	S. floridanus	mandible	R	none	1.3	1
913	3	N58W64	22	L1	Med mam	metapod	U	none	0.5	2
913	4	N58W64	22	L1	Med mam	phal	U	calc	0.1	1
913	5	N58W64	22	L1	Indet fish	unident	U	none	0.1	2
913	6	N58W64	22	L1	Indet fish	vert	U	none	1.6	15
913	7	N58W64	22	L1	E. migratorius	coracoid	R	calc	0.1	1
913	8	N58W64	22	L1	Unident	unident	U	calc	4.0	9
913	9	N58W64	22	L1	Unident	unident	U	none	5.9	14
928	1	N58W64	23	L1	Med mam	skull frag	U	none	1.1	1
928	2	N58W64	23	L1	Unident	unident	U	calc	1.0	4
928	3	N58W64	23	L1	Unident	unident	U	none	2.4	7

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
983	1	N58W64	26	L1	Unident	unident	U	none	0.5	3
990	1	N60W64	24	L1	Canis sp.	canine	U	none	1.0	1
990	2	N60W64	24	L1	Indet bird	longbone	U	none	1.1	3
990	3	N60W64	24	L1	Unident	unident	U	none	3.9	7
990	4	N60W64	24	L1	Unident	unident	U	calc	1.6	4
1010	1	N58W64	28	L2	Indet bird	unident	U	none	0.1	2
1010	2	N58W64	28	L2	Unident	unident	U	calc	1.0	4
1033	1	N58W64	29	L2	Unident	unident	U	none	1.4	6
1068	1	N58W64	31	L3	Unident	unident	U	calc	37.0	63
1068	2	N58W64	31	L3	Lg mam	longbone	U	none	42.5	6
1068	3	N58W64	31	L3	Wtdeer	metapod	U	none	9.6	1
1068	4	N58W64	31	L3	Wtdeer	maxilla	L	none	8.5	1
1068	5	N58W64	31	L3	Lg mam	rib frag	U	none	1.5	1
1068	6	N58W64	31	L3	A. grunniens	pharyng	U	none	1.8	1
1068	7	N58W64	31	L3	A. grunniens	anal spine	U	none	1.1	2
1068	8	N58W64	31	L3	Indet fish	vert	U	none	4.7	19
1068	9	N58W64	31	L3	Indet fish	vert	U	calc	0.8	1
1068	10	N58W64	31	L3	Catostomidae	supratemp	U	calc	0.5	1
1068	11	N58W64	31	L3	Moxostoma sp.	dentary	U	calc	0.4	1
1068	12	N58W64	31	L3	M. carinatum	dentary	U	none	0.5	1
1068	13	N58W64	31	L3	Catostomidae	quadrate	U	none	0.3	1
1068	14	N58W64	31	L3	Indet fish	rib/ray	U	none	0.1	4
1068	15	N58W64	31	L3	Indet fish	unident	U	none	4.1	9
1068	16	N58W64	31	L3	S. odoratus	plastron	U	none	1.4	2
1068	17	N58W64	31	L3	Indet turt	shell	U	none	1.5	2
1068	18	N58W64	31	L3	Indet turt	shell	U	calc	0.6	1
1068	19	N58W64	31	L3	Crotalinae	vert	U	none	0.2	1
1068	20	N58W64	31	L3	Ranidae	ulna	U	none	0.2	1
1068	21	N58W64	31	L3	Anatidae	coracoid d	L	none	1.2	1
1068	22	N58W64	31	L3	Anas sp.	coracoid p	L	none	0.8	1
1068	23	N58W64	31	L3	E. migratorius	carpometa	R	none	0.3	1
1068	24	N58W64	31	L3	M. gallopavo	term phal	U	none	0.2	1
1068	25	N58W64	31	L3	Indet bird	unident	U	none	4.1	14

Appendix I. Dust Cave Faunal Remains Database.

Bag#	ID#	Unit	Lev	Str	Taxon	Elem	S	Mod	Wt	#
1068	26	N58W64	31	L3	Sm bird	femur	L	none	0.1	1
1068	27	N58W64	31	L3	Unident	unident	U	none	36.9	134
1068	28	N58W64	31	L3	Lepisosteus sp.	scale	U	none	0.1	1
1068	29	N58W64	31	L3	S. carolinensis	mandible	R	none	1.5	2
1068	30	N58W64	31	L3	S. carolinensis	mandible	L	none	2.1	2
1068	31	N58W64	31	L3	S. carolinensis	maxilla	L	none	0.1	1
1068	32	N58W64	31	L3	S. carolinensis	radius d	U	none	0.1	1
1068	33	N58W64	31	L3	S. carolinensis	ulna p	L	none	0.4	1
1068	34	N58W64	31	L3	S. carolinensis	innom	L	none	0.5	1
1068	35	N58W64	31	L3	S. carolinensis	innom	R	none	0.4	1
1068	36	N58W64	31	L3	S. carolinensis	innom	U	none	0.2	1
1068	37	N58W64	31	L3	S. carolinensis	femur p	L	none	0.4	1
1068	38	N58W64	31	L3	S. carolinensis	tibia p	L	none	0.1	1
1068	39	N58W64	31	L3	Med/sm mam	metapod	U	none	1.6	7
1068	40	N58W64	31	L3	Med mam	vert	U	none	1.6	1
1068	41	N58W64	31	L3	Wtdeer	skull frag	U	cut	4.4	1
1068	42	N58W64	31	L3	Mustelid	femur d	L	none	3.1	1
1068	43	N58W64	31	L3	Indet fish	spine	U	none	1.8	1
1068	44	N58W64	31	L3	Lg mam	unident	U	none	4.0	1

Appendix II. Whitetail Deer Tooth Database.

ID#	Bag#	Unit	Level	Depth cm B.D.	Strata	DPM4 CH	M1 CH	Side	Age-months
1	66	N62W68	8	231-251			9.51	R	18.27
2	64	N62W68	9	251-271			11.43	L	8.39
3	121	N62W64	5	165-175			9.67	L	17.16
4	66	N62W68	8	251-271		6.95	10.34	L	13.06
5	194	N62W68	21	371-381		6.88	11.96	L	7.01
6	28	N62W68	1	134-154			7.94	L	32.04
7	28	N62W68	1	134-154			13.08	R	6.01
8	18	N62W68	2	147-167			10.14	L	13.96
9	28	N62W68	1	134-154		4.83		L	4.81
10	121	N62W64	5	165-175			7.83	L	33.19
11	736	N58W64	15A	240-250		5.67		R	3.37
12	1810	N63W63	43	380-385	R1		10.83	R	10.66
13	714	N58W64	13B	220-230			9.61	R	17.57
14	839	N60W64	18	255-260			11.2	L	9.17
15	967	N64W64	18	255-260	K6		10.85	R	10.57
16	298	N62W64					9.36	R	19.37
17	637	N58W64	9B	180-190			9.99	L	15.09
18	570	N64W64	5B	170-180			8.52	L	26.36
19	538	N58W64	6A	150-160			10.74	L	11.06
20	730	N64W64	9B	210-220		4.81		L	4.84
21	711	N60W64	12B	220-230		4.61		R	4.21
22	523	N56W64	5B	190-200			10.56	L	11.92
23	623	N56W64	11A	260-280			12.13	R	6.69
24	519	N56W64	5A	190-200			12.47	L	6.23
25	3520	N63W62	17	155-160	D4		8.01	R	31.31
26	3707	N63W68	25	240-245	K1		5.79	R	59.19

Appendix III. Bone Tool Database.

Cat#	Unit	Taxon	Common Name	Elem	Tool
1080.7.1	N54W64	Bird		Unident	Awl
468.7.2	N54W64	Mammal		Unident	Awl
479.7.3	N54W64	Mammal		Unident	Awl
479.7.3	N54W64	Unident		Unident	Awl
479.7.2	N56W64	Mammal		Unident	Awl
510.7.1	N56W64	Unident		Unident	Awl
523.7.1	N56W64	Mammal		Unident	Awl
535.7.1	N56W64	O. virginianus	Whitetail Deer	Antler	Wedge
558.7.1	N56W64	O. virginianus	Whitetail Deer	Antler	Tine
577.7.1	N56W64	Bird		Unident	Spatula
737.7.1	N56W64	Mammal		Unident	Awl
1072.7.1	N58W64	Mammal		Unident	Awl
1127.7.1	N58W64	Mammal		Unident	Awl
1127.7.2	N58W64	Mammal		Unident	Awl
500.7.1	N58W64	Mammal		Unident	Incised Object
538.7.1	N58W64	Mammal		Unident	Worked Object
538.7.2	N58W64	Mammal		Unident	Worked Object
561.7.1	N58W64	Mammal		Unident	Awl
561.7.2	N58W64	O. virginianus	Whitetail Deer	Antler	Tine
561.7.3	N58W64	O. virginianus	Whitetail Deer	Antler	Tine
561.7.4	N58W64	Unident		Unident	Worked Object
612.7.1	N58W64	Mammal		Unident	Awl
612.7.2	N58W64	O. virginianus	Whitetail Deer	Antler	Tine
613.7.1	N58W64	Mammal		Unident	Awl
636.7.1	N58W64	O. virginianus	Whitetail Deer	Antler	Tine
723.7.1	N58W64	Mammal		Unident	Point
723.7.2	N58W64	Mammal		Unident	Worked Object
745.7.1	N58W64	O. virginianus	Whitetail Deer	Antler	Tine
745.7.2	N58W64	Mammal		Unident	Awl
745.7.3	N58W64	Bird		Unident	Awl
749.7.1	N58W64	Mammal		Unident	Awl

Appendix III. Bone Tool Database.

Cat#	Unit	Taxon	Common Name	Elem	Tool
796.7.1	N58W64	Mammal		Unident	Awl
882.7.1	N58W64	Mammal		Unident	Awl
913.7.1	N58W64	O. virinianus	Whitetail Deer	Ulna-Left	Awl
939.7.1	N58W64	Mammal		Unident	Awl
993.7.1	N58W64	Procyon lotor	Raccoon	L Canine-Right	Perforated Tooth
993.7.2	N58W64	Procyon lotor	Raccoon	Proximal Ulna-Right	Awl
1100.7.1	N59W64	Mammal		Unident	Fish Hook
1124.7.1	N59W64	Mammal		Unident	Awl
1109.7.1	N60W64	Testudines	Indeterminate Turtle	Carapace	Carapace
1122.7.1	N60W64	Testudines	Indeterminate Turtle	Carapace	Carapace
1142.7.1	N60W64	Mammal		Unident	Awl
1158.7.1	N60W64	Unident		Unident	Needle
1216.7.1	N60W64	Mammal		Unident	Awl
1218.7.1	N60W64	Bird		Unident	Tube/ Bead
1218.7.1	N60W64	Unident		Unident	Awl?
1220.7.1	N60W64	Unident		Unident	Awl
546.7.1	N60W64	Mammal		Unident	Awl
666.7.1	N60W64	Mammal		Unident	Spatula
666.7.2	N60W64	Nonfaunal-?Pottery		Unident	Worked Object
676.7.1	N60W64	Mammal		Unident	Awl
686.7.1	N60W64	Sylvilagus floridanus	Cottontail Rabbit	Humerus-D Right	Worked Object
712.7.1	N60W64	Unident		Unident	Awl
741.7.1	N60W64	Unident		Unident	Awl
814.7.1	N60W64	Bird		Unident	Tube/ Bead
814.7.1	N60W64	O. virginianus	Whitetail Deer	Metapodial	Awl
832.7.1	N60W64	Mammal		Unident	Awl
849.7.1	N60W64	Mammal		Unident	Awl
917.7.1	N60W64	Unident		Unident	Awl
917.7.1	N60W64	Unident		Unident	Awl?
937.7.1	N60W64	Bird		Unident	Awl

Appendix III. Bone Tool Database.

Cat#	Unit	Taxon	Common Name	Elem	Tool
949.7.1	N60W64	Mammal		Unident	Awl
950.7.1	N60W64	O. virginianus	Whitetail Deer	Antler	Tine
317.7.1	N60W69	O. virginianus	Whitetail Deer	Phalanx	Perforated Object
100.6.2	N62W64	Pelecypoda	Freshwater Mussel		Shell Bead
1001.7.1	N62W64	Mammal		Unident	Perforated Object
1020.7.1	N62W64	Mammal		Unident	Awl
121.7.1	N62W64	Mammal		Unident	Awl
175.1.2	N62W64	Meleagris gallopavo	Turkey	Distal Tibiotarsus -R	Awl
175.7.3	N62W64	Mammal		Unident	Awl
247.7.1	N62W64	Unident		Unident	Bead
263.7.1	N62W64	Unident		Unident	Awl
267.7.1	N62W64	Mammal		Unident	Awl
267.7.2	N62W64	Mammal		Unident	Needle
269.7.1	N62W64	Mammal		Unident	Awl
280.7.1	N62W64	O. virginianus	Whitetail Deer	Antler	Tine
282.7.1	N62W64	Mammal		Unident	Point
298.7.1	N62W64	Mammal		Unident	Awl
298.7.2	N62W64	Mammal		Unident	Awl
988.7.1	N62W64	Procyon lotor	Raccoon	L Canine-Right	Perforated Tooth
1052.7.1	N64W64	Bird		Unident	Spatula
1116.7.1	N64W64	O. virginianus	Whitetail Deer	Antler	Tine
569.7.1	N64W64	Mammal		Unident	Needle
569.7.2	N64W64	Mammal		Unident	Awl
570.6.1	N64W64	Pelecypoda	Freshwater Mussel		Shell Bead
570.7.1	N64W64	Unident		Unident	Awl
669.7.1	N64W64	Mammal		Unident	Point
669.7.2	N64W64	Mammal		Unident	Awl
719.7.1	N64W64	Mammal		Unident	Awl
719.7.2	N64W64	Mammal		Unident	Awl
730.7.1	N64W64	Bird		Distal Ulna-Left	Awl

Appendix III. Bone Tool Database.

Cat#	Unit	Taxon	Common Name	Elem	Tool
730.7.2	N64W64	Mammal		Unident	Point
730.7.3	N64W64	O. virginianus	Whitetail Deer	Antler	Tine
793.7.1	N64W64	Mammal		Unident	Awl
812.7.1	N64W64	Mammal		Unident	Needle
929.7.1	N64W64	Mammal		Unident	Awl
111.7.1	TUA	O. virginianus	Whitetail Deer	Antler	Tine
141.7.1	TUA	Bird		Unident	Awl
141.7.2	TUA	Lynx rufus	Bobcat	Proximal Ulna-Right	Awl
152.7.1	TUA	Unident		Unident	Awl
160.7.1	TUA	Bird		Unident	Tube/ Bead
160.7.2	TUA	Bird		Unident	Awl
187.7.1	TUA	Mammal		Unident	Awl
187.7.2	TUA	Mammal		Unident	Awl
187.7.3	TUA	Mammal		Unident	Awl
194.7.1	TUA	Bird		Unident	Tube/ Bead
200.7.1	TUA	Bird		Unident	Tube/ Bead
200.7.3	TUA	Bird/Small Mammal		Unident	Tube/ Bead
200.7.4	TUA	Bird/Small Mammal		Unident	Tube/ Bead
206.7.2	TUA	Bird/Small Mammal		Unident	Tube/ Bead
208.7.1	TUA	Mammal		Unident	Awl
208.7.66	TUA	Mammal		Unident	Needle
22.7.1	TUA	Mammal		Unident	Awl
44.7.1	TUA	Mammal		Unident	Awl
66.7.1	TUA	O. virginianus	Whitetail Deer	Antler	Tine
66.7.3	TUA	O. virginianus	Whitetail Deer	Antler	Tine
242.7.1	TUB	Mammal		Unident	Awl
321.7.1	TUB	O. virginianus	Whitetail Deer	Antler	Wedge
321.7.2	TUB	Bird		Unident	Awl
321.7.3	TUB	Mammal		Unident	Needle
326.7.1	TUB	Mammal		Unident	Awl

Appendix III. Bone Tool Database.

Cat#	Unit	Taxon	Common Name	Elem	Tool
326.7.2	TUB	Mammal		Unident	Needle
339.7.1	TUB	Bird/Small Mammal		Unident	Awl?
339.7.2	TUB	Mammal		Unident	Awl
347.7.1	TUB	Unident		Unident	Awl
119.7.1	TUE	Mammal		Unident	Socketed Object
128.7.1	TUE	Mammal		Unident	Spatula
214.7.1	TUE	Mammal		Unident	Awl
26.7.1	TUE	O. virginianus	Whitetail Deer	Antler	Tine
40.7.1	TUE	Mammal		Unident	Awl
40.7.2	TUE	Mammal		Unident	Pin
40.7.3	TUE	Mammal		Unident	Pin
40.7.4	TUE	O. virginianus	Whitetail Deer	Antler	Tube/ Bead
40.7.5	TUE	Unident		Unident	Awl
54.7.1	TUE	O. virginianus	Whitetail Deer	Antler	Awl
62.7.1	TUE	Bird/Mammal		Unident	Awl
62.7.2	TUE	Mammal		Unident	Awl
63.7.4	TUE	Mammal		Unident	Awl
95.6.4	TUE	Elliptio dilatata cf.	Spike		Shell pendant
95.7.1	TUE	Mammal		Unident	Awl
95.7.2	TUE	Mammal		Unident	Awl
95.7.3	TUE	Mammal		Unident	Awl or Point
336.7.1	TUH	Mammal		Unident	Awl
341.7.1	TUH	O. virginianus	Whitetail Deer	Antler	Tine
345.7.1	TUH	Mammal		Unident	Awl
376.7.1	TUH	O. virginianus	Whitetail Deer	Antler	Tine
376.7.2	TUH	O. virginianus	Whitetail Deer	Antler	Tine
426.7.1	TUH	Unident		Unident	Awl
967.1.5	N64W64	Unident		Unident	Worked Object
1500.1.1	N64W64	Unident		Unident	Worked Object

Appendix III. Bone Tool Database.

Cat#	Unit	Taxon	Common Name	Elem	Tool
1871.1.1	N64W64	Indet bird		Unident	Worked Object
1176.1.1	N60W64	Emydidae	Pond, Box, Marsh Turtles	Pleural	Polished Object

VITA

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