To the Graduate Council:

I am submitting herewith a thesis written by Elizabeth Ellen Lovett entitled "A Faunal Analysis of 1WX15, the Indian Hill site, Wilcox County, Alabama." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree Master of Arts, with a major in Anthropology.

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A Faunal Analysis of 1WX15, the Indian Hill Site, Wilcox County, Alabama

A Thesis Presented For

the Masters of Arts Degree

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Elizabeth Ellen Lovett

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Abstract

This study seeks to expand the knowledge of Woodland subsistence practices in the Alabama River valley by presenting an analysis of the faunal assemblage from the Indian Hill site, 1WX15. Additionally, this study presents a comparison of 1WX15 to other sites from the Tombigbee, Alabama, and Coosa river valleys in order to present a broad picture of Woodland subsistence in and near the Eastern Gulf Coastal Plain.

An intra-site comparison revealed the primary vertebrate resources exploited were mammals and turtles. The substantial amount of turtle fragments suggested the site was occupied during warm months, with a fall and winter occupation possible as well. Feature 38, a domestic dog skeleton, was of special interest. Characteristics of this feature indicated both intentional burial and post-mortem modifications consistent with food refuse.

An inter-site comparison demonstrated that three variables were influencing the composition of the faunal assemblages from the Tombigbee, Alabama, and Coosa river valleys. These three variables were seasonality, geography, and time. Seasonality and geography appeared to have greater influence than time.

This study has revealed three areas in which Eastern Gulf Coastal Plain faunal analyses are inadequate. There are few Middle Woodland faunal assemblages; those available have very small sample sizes. There are no faunal analyses available outside of alluvial valleys. Finally, there are very few winter assemblages; assemblages in which winter occupation is indicated are mixed with warm season material. Rectifying these shortcomings with future research will provide a more comprehensive picture of Woodland subsistence and variability thereof.

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Chapter 1: Introduction

The Woodland Period in the Southeast extended from about 1200 B.C. until about A.D. 1000 (Anderson and Mainfort 2002). The hallmark of the Woodland Period in the Southeast was the spread of pottery usage across the region (Sassaman 2002; Smith 1986). Other trends during the Woodland Period in parts of the Southeast were population increases; subsistence changes, including the continuing development and spread of horticulture as well as changes in the utilization of wild resources; increasing social complexity, resulting in identifiable hierarchies; and the expansion and contraction of trade networks (Anderson and Mainfort 2002; Steponaitis 1986). There also appears to be a trend of increasing diversification of cultural groups. However, this may only be an illusion related to the presence of pottery, which enabled researchers to define cultures and culture areas more specifically by qualitative and quantitative analyses of pottery.

In the Gulf Coastal Plain, the Woodland Period falls between the Gulf Formational Period and the Mississippian Period, and included the time between 300 B.C. and A.D. 1000. Because the Early Woodland is now called the Gulf Formational Period, the Woodland Period on the Gulf Coastal Plain begins with the Middle Woodland Period. The Middle Woodland Period lasted from 300 B.C. to A.D. 500, and the Late Woodland Period extended from A.D. 500 to 1000 (Walthall 1980).

Detecting Variation in Subsistence

Individual and group decisions concerning subsistence choices may be based on environmental factors, cultural factors, or, most likely, a mixture of the two. Climate is one of the primary environmental factors affecting subsistence choices. Geographically, the various

elements of climate - temperature, precipitation, frost dates, etc. - combine to restrict what flora and fauna can survive in a given region. This subset of resources is further bound by the geography of local areas - that is, the range of choices becomes further limited by local attributes such as topography, availability of water, and the nature of water features. It is from this sub-subset of resources that hunters/gatherers choose subsistence resources.

Climate variability can influence subsistence along multiple temporal scales. Certainly, within the calendar year, differing resources are available during different seasons. On a larger temporal scale, availability of resources is variable, ranging from poor crop production in a drought year to periods of cooling or warming lasting decades, hundreds, or thousands of years. A few degrees warmer or cooler can have significant effects on plant and animal resources, causing the appearance or disappearance of resources.

Cultural reasons for subsistence variability are many and varied, but often interrelated. Some researchers have identified food shortages due to population pressure as a cause of subsistence change. One strategy hunter/gatherers have used to cope with food shortages was to diversify their subsistence base by exploiting second-line resources (i.e. those plants and fauna that take more energy to capture or collect and process) (Cohen 1975). Two other strategies Cohen (1975) identified are expanding into new environments and intensifying the usage of preferred resources.

Two other cultural reasons for subsistence variability are differing technology and social organization. For example, one of the most revolutionary changes in Southeastern prehistory was the introduction of the bow and arrow, the use of which was widespread across the Southeast by the Late Woodland (Nassaney and Pyle 1999). The primary advantages of the bow

and arrow are longer range, better accuracy, and increased stealth (Nassaney and Pyle 1999). Those Late Woodland groups that adopted the bow and arrow could have increased their hunting prowess, thereby being able to more intensely exploit large game. Groups that did not adopt this technology may have continued to rely on other technology, such as darts and non-projectile forms of game procurement.

Differences in social organization can also have substantial effects on food procurement strategies. Social hierarchies became more apparent in the Woodland Period. While Woodland groups may not have reached the level of social stratification seen in the Mississippian Period, groups in which a "big man" emerged may have participated in more small-scale feasting or other ritual events than groups that remained more egalitarian. These activities could have resulted in the need to increase the quantity of food procured, and may have necessitated the procurement of specific species (Pluckhahn et al. 2006).

Horticulture, though having roots in the Late Archaic Period, became more widespread during the Woodland Period. Practicing horticulture not only changed the way people utilized plant resources, it changed the way people used wild game. Clearing land for fields created new fringe environments that many small and medium sized species utilized. Though horticulture was a new technology, like hunting and gathering, it was bound by climate and environment.

Goals and Strategies of This Study

The goal of the present study is to provide preliminary data concerning Woodland subsistence practices in the central portion of the Alabama River drainage through the analysis of 1WX15, the Indian Hill site. Individual features are compared with each other and with the general midden. Seasonality factors are also examined to understand when and why this

particular site was inhabited. This faunal assemblage is the largest available from the Alabama River valley. It is hoped this analysis of Woodland faunal usage will lead to further studies in the Alabama River valley, and that this assemblage will be used to answer more specific questions.

Furthermore, the 1WX15 assemblage is compared to other assemblages of the Alabama, Tombigbee, and Coosa river drainages to detect variability due to seasonality, geography, and time. Such comparisons are necessary in order to ascertain how subsistence practices differed, to what degree they differed, and, in conjunction with studies along other avenues, the causes of the differences.

Chapter 2 describes the physical setting both of the region and the local area in which 1WX15 is located. Chapter 3 reviews the history of archaeological research in the Alabama River drainage, and summarizes the local Woodland manifestations in the vicinity of the 1WX15. The Relevant Studies section of Chapter 3 presents summaries of the other archaeological sites discussed in this analysis. Chapter 4 describes methods and results of the analyses, and compares these results to other relevant studies. Due to some unusual factors associated with the nearly complete domestic dog skeleton (Feature 38), Chapter 5 is devoted to an analysis and discussion of this feature. Results and conclusions are summarized in Chapter 6, and future research directions are recommended.

Chapter 2: Environment

The Alabama River flows across the Gulf Coastal Plain in the state of Alabama and drains 22,800 mi^2 (United States Geological Survey 2008). The Coosa and Tallapoosa rivers join to form the Alabama River in central Alabama, just north of the Fall Line (Figure 1). As it crosses the Fall Line, the Alabama turns west following the Fall Line Hills, then turns south near Selma, Alabama. It joins the Tombigbee River in southern Clarke County. Together these rivers form the Mobile River, which empties into the Gulf of Mexico. Pine Barren Creek empties into the Alabama River at about river mile 157. This portion of the river is currently part of the William "Bill" Dannelly Reservoir. The reservoir was created by the completion of the Millers Ferry Lock and Dam in 1970. Prior to inundation, Pine Barren Creek was more narrow than depicted in Figure 1, and did not have the extensive backwater and pooling that it has now (John Cottier, personal communication 2010). The Indian Hill site, 1WX15, is located on the western bank of Pine Barren Creek, in northern Wilcox County, Alabama. This site is located about 2.5 miles southeast of the mouth of Pine Barren Creek.

Physiography

The Indian Hill site is located near the border of the alluvial valley and the Chunnennuggee Hills. "Winding river meanders, extensive backswamps, oxbow lakes, and broad terraces with river bank levees" and "intermittent high bluffs" characterize the Alabama River valley (Sheldon 2001:14). The Chunnennuggee Hills district is characterized by sand hills and cuestas underlain by the Prairie Bluff Chalk and Ripley formations of the Selma Group (Copeland 1968).

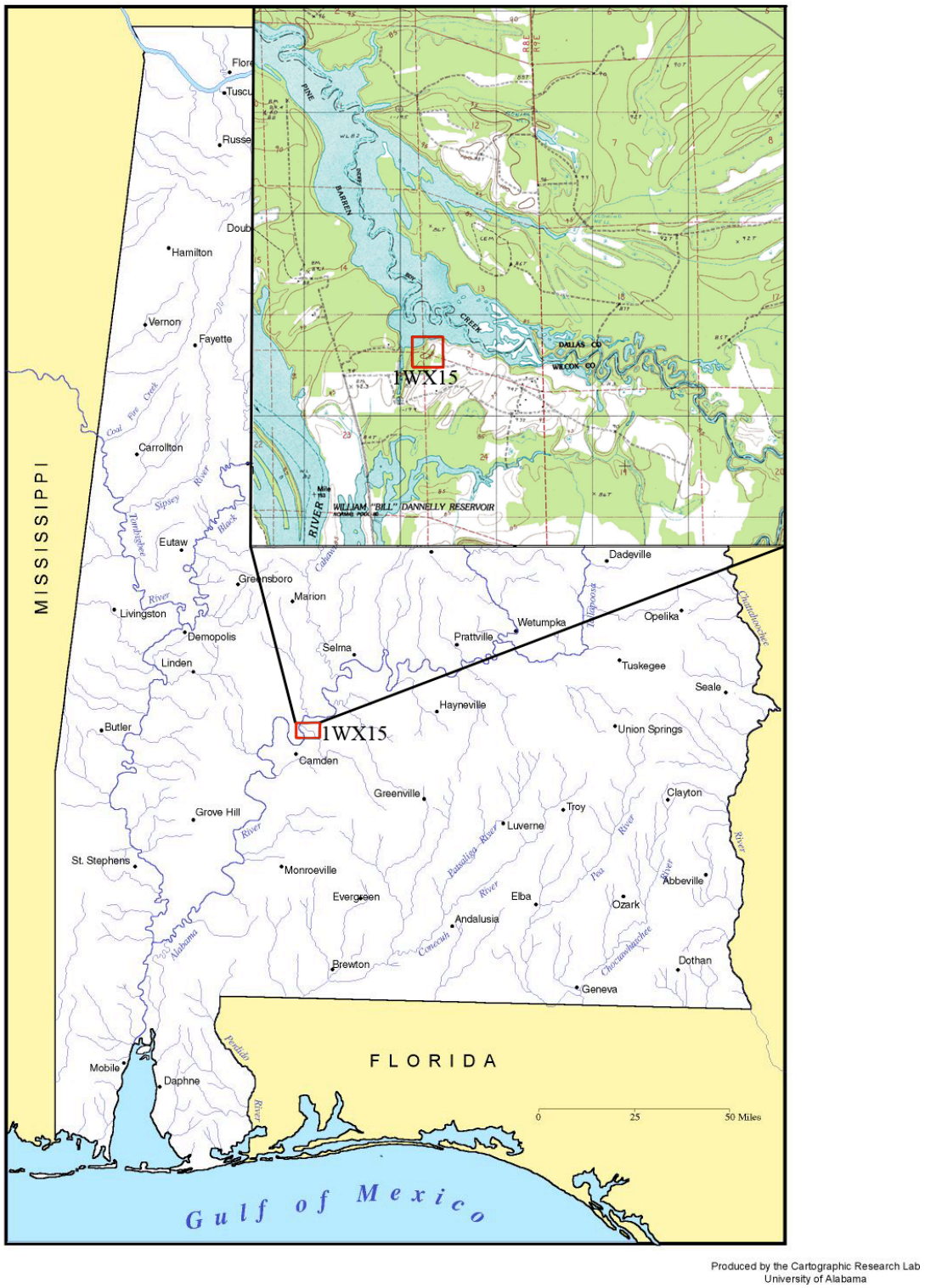


Figure 1. Map of Alabama, showing location of the Indian Hill site, 1WX15.

The Black Prairie district borders the Chunnennuggee Hills district to the north and is underlain primarily by Demopolis and Mooreville Chalk, also of the Selma Group. The topography of this district ranges from "broad, nearly level and gently sloping ridgetops...to highly dissected, hill topography" (Brannon 1998:11). The Black Prairie is one of the most agriculturally productive areas in Alabama.

The Southern Red Hills district is south of the Chunnennuggee Hills, and is underlain by formations of the Wilcox and Midway groups (Copeland 1968). Hilly topography and large areas of undissected uplands characterize the Southern Red Hills. There is an area within the Southern Red Hills, however, that exhibits little relief. Known as the Flatwoods Subdistrict, this area encompasses the northwestern section of the Southern Red Hills, only extending as far eastward as the western edge of the Alabama River valley.

Soil Characteristics

The Indian Hill site is situated on Bigbee sand, a deep, excessively well-drained soil that typically occurs on low stream terraces (Brannon 1998). The Bigbee series soils generally have AC profiles; such profiles are typical of soils in alluvial settings (Brannon 1998). The overall pH ranges from 4.5-6; the Ap horizon is moderately acidic, while the C1 and C2 horizons are strongly acidic. However, the presence of large amounts of freshwater mussel shells at 1WX15 undoubtedly had a neutralizing affect on the pH of the site deposits. The topography associated with Bigbee sand ranges from level to gently sloping. Flooding is occasional and brief; however, the ridge on which 1WX15 is located is high enough to be rarely inundated (Cottier 1968).

Climate

The current climate of Wilcox County is temperate to sub-tropical with mild winters and long, warm, and humid summers (Cottier 1982). The average daily temperature is 63.9°F. Summer daytime highs are often in the 90s with overnight lows in the upper 60s to 70s; winter daytime highs are in the 50s with overnight lows in the 30s (Brannon 1998). The first freeze date - defined here as a temperature of 32°F or lower - is in late October or early November; the last freeze date is in late March or early April. The average yearly precipitation is 55.5 in, which almost always falls in the form of rain (Brannon 1998). Afternoon thunderstorms occur almost daily during the summer months. Rivers are most likely to overflow their banks in late winter and early spring (Long 1974). August through October constitutes the peak of the Atlantic hurricane season. Because Wilcox County is just over 200 km inland, hurricanes making landfall along the Gulf Coast of Florida and Alabama have the potential to strongly affect Wilcox County.

Climate, however, is an ever-changing entity. Woodland people of the Southeast experienced several shifts in climate (Anderson 2001). Most of the Middle Woodland Period occurred during a somewhat stable climate episode known as the Roman Optimum (300 B.C. to A.D. 350) (Little 2003). Little (2003) identified an increase in sea level on the Gulf Coast, the Wulfer Sea-Level episode, during the second half of the Roman Optimum. During this episode sea levels rose from 40-60 cm below mean sea level (MSL) to 70-137 cm above MSL; such a rise in sea level indicates warmer temperatures than the present. This data is consistent with the North American Atlantic coast data as well as European Atlantic and Mediterranean sea level

data. This episode is further supported by evidence that typically Mediterranean flora, such as grapes and olives, occurred farther north in France than usual (Little 2003).

During the late Middle Woodland and throughout the Late Woodland, the climate cycled back towards a cooler, dryer climate. This period is known as the Vandal Minimum. Included within the Vandal Minimum is a dramatic period of cooling caused by an unknown atmospheric event in A.D. 536 (Gunn 2000). The Buck Key Sea-Level episode occurs from approximately A.D. 600-830 (Little 2003). During this time sea levels were lower than they currently are, indicating cooler, drier climate; again, data from around the globe support this occurrence.

The Medieval Maximum began at about A.D. 800 and ushered in a period of warming. In some areas this warming period was accompanied by an increase in the cultivation of maize, a species native to tropical latitudes. These changes set the stage for the Emergent Mississippian Period in many areas of the Southeast.

Although broad climate shifts are detectable through multiple lines of evidence, the way these broad trends play out locally can vary greatly. For example, late frosts can lessen, or even prevent, the production of acorns by red and white oaks, affecting all species that depend on acorns for fall sustenance. Woodall (2000) postulated the A.D. 536 event pushed the last frost to late spring in the Carolina Piedmont uplands, and growing conditions on the floodplains were greatly improved by the shift in rainfall patterns that accompanied this cooler period. This change likely induced people of the northwest Carolina Piedmont to move from the uplands to the floodplains, becoming more sedentary and relying more on horticulture.

Flora

The vegetation of the Gulf Coastal Plain consists of mixed deciduous and evergreen forests of oak, hickory and pine, with oak and cypress dominating the river valleys (Walthall 1980). Currently, the Bigbee sand at 1WX15 supports a variety of vegetation, including loblolly and longleaf pine, sweetgum, water oak, huckleberry, greenbrier, prickly pear cactus, blackberry, common persimmon, and blackjack oak (Brannon 1998).

In other areas of the Southeast, Woodland groups participated in horticulture in varying degrees of intensity. Cultigens included little barley, squash, bottle gourd, sunflower, sumpweed, chenopod, and maygrass (Yarnell and Black 1985). However, there is minimal evidence for cultivation in this part of Woodland Period Alabama. Whatever horticulture occurred remained peripheral to the collection of wild resources (Gremillion 2002).

Fauna

Native exploitable fauna include many species of vertebrates and invertebrates. There are just over 20 native mammal species squirrel-sized or larger in southwest Alabama. The largest and most important for Native Americans was the whitetail deer. In addition to providing meat and hides, the bones and antlers were made into tools and ornaments. Smaller mammals include a variety of canids, mustelids, rabbits, and rodents, as well as bobcats, raccoons, and opossums. Larger mammals were hunted with projectiles, but smaller and, especially, nocturnal animals were most likely obtained using snares or traps.

Due to the variety of aquatic habitats, fish and reptiles in the vicinity of 1WX15 are quite numerous and varied. Freshwater drum, catfish, bowfin, and gar are the most commonly identified fish from archaeological sites in this region. Other fish available were basses and

sunfishes, suckers, and minnows. Turtles were the most important of the available reptiles. Most turtles are aquatic or semi-aquatic, making them susceptible to both net and hook-and-line fishing. Terrestrial turtles are often slow and awkward, making them easy prey as well. Snakes may have been eaten as well, but it is possible recovered snake remains could have been intrusive.

The largest amphibians in the area are salamanders, frogs, and toads. Although these were possibly eaten, it can be difficult to discern the manner in which they entered the archaeological record. Many amphibians burrow into the ground for winter. Unless they are burned, calcined, or exhibit definite cut marks, determining whether amphibian remains are food refuse or intrusive may be impossible.

Birds include both year-round and migratory species. The wild turkey was one of the most important birds available because of its large size and year-round presence. Migratory waterfowl were also important meat-bearing birds. While passerines do show up in the archaeological record, they were likely an insignificant source of meat. Other birds native to southwest Alabama include bobwhites, herons, doves, cranes, and a variety of birds of prey. In addition to providing food, birds were also a source of feathers for ornamentation, bones for tools and, later, fletching for arrows.

Invertebrates were also available as a food resource. Mollusks, most notably bivalves, were an important source of food. Evidence of Native American exploitation of shellfish occurs in the form of shell middens along the rivers of Alabama (Baker 2007; Clute 1999; Peacock 2009; Waselkov 1982; Woodrick 1981, 1983). Though rarely found in archaeological contexts, crawfish are also common along the rivers and streams of Alabama.

Summary

The Indian Hill site, 1WX15, is located near the junction of two physiographic districts - the Alabama River valley and the Chunnennuggee Hills. These two districts and the nearby Black Prairie and Southern Red Hills districts were diverse ecosystems that had much to offer the native prehistoric people of southwest Alabama. Although the climate fluctuated throughout the Woodland Period, it remained subtropical, with warm, moist air from the Gulf of Mexico providing most of the rainfall. The variety of topography and vegetation created numerous "edge" environments, which were home to a wide variety of mammals, fish, reptiles, birds, and invertebrates. Although the soil tends to be acidic, the presence of freshwater mussels at 1WX15 helped to buffer the vertebrate faunal remains against decay.

Chapter 3: Literature Review

The Alabama River valley has a complicated cultural history because of its geographical location. It is surrounded on all sides by widespread and highly influential cultures. Indigenous groups of the Alabama River accepted, rejected, and reinterpreted these influences as they saw fit.

This chapter explores the history of archaeological research within the Alabama River drainage, and presents the current chronological framework for the Woodland Period in this region. Additionally, faunal studies from the Alabama, Coosa, and Tombigbee drainages are summarized and compared.

History of Archaeological Research in the Alabama River Drainage

The history of archaeological research in the Alabama River drainage begins with Edward Palmer's survey of archaeological sites conducted for the Smithsonian Institution (Curren 1984). Palmer was followed by Cyrus Thomas, who also noted archaeological sites in this area (Curren 1984).

Perhaps the best known early archaeological work is that of Clarence B. Moore (Sheldon 2001). In 1899 Moore and his crew spent 74 days looking for and investigating archaeological sites along the Mobile and Alabama rivers. They investigated two sites on the Mobile River and 23 sites on the Alabama River. However, the expedition excavated at only four locations, one on the Mobile River and three on the Alabama River. Of the three locations on the Alabama River, only two have been located by modern researchers - Matthew's Landing and Durant Bend (Sheldon 2001). Moore's interest was in the more spectacular finds of Late Mississippian

mounds and middens and Protohistoric burial urns; therefore his data are somewhat limited (Jeter 1977).

The Alabama Anthropological Society was formed in 1909 by amateur archaeologists and collectors as a result of intense interest in Alabama history and prehistory (Brannon 1921). Members of the society were encouraged to find and document archaeological sites and report their findings to the Alabama State Department of Archives and History. From 1920 to 1937 the society produced a journal, *Arrow Points*, in which most articles described the more glamorous artifacts found by its members (Dickens 1971).

Like much of the Southeast, archaeological reconnaissance and research in the Alabama River drainage from the 1960s to the present was driven by cultural resource management (CRM). Large-scale surveys began in the 1960s in preparation for the Claiborne, Miller's Ferry, and Jones Bluff locks and dams (Nance 1976). The Montgomery Chapter of the Alabama Archaeological Society was also active at this time, surveying, testing, and excavating sites along the Alabama River (Dickens 1971). David Chase of the Montgomery Museum of Fine Arts identified and investigated numerous sites throughout the latter half of the twentieth century.

Woodland Chronology of the Alabama River Drainage

Upper Alabama River Drainage. The upper portion of the Alabama River drainage is defined as the area from the confluence of the Coosa and Tallapoosa rivers to the confluence of the Cahaba and Alabama rivers.

The time period called Early Woodland in the rest of the Southeast is called the Gulf Formational Period in the Gulf Coastal Plain; therefore the Woodland Period in this area begins with the Middle Woodland Period (Figure 2). The earliest confirmed Middle Woodland phase

<table>
<tr><th>Approximate Dates</th><th>Period</th><th>Eastern Upper Alabama River</th><th>Western Upper Alabama River</th><th>Lower Alabama River</th></tr>
<tr><td>A.D. 1100</td><td rowspan="7">Late Woodland</td><td rowspan="3">Autauga</td><td rowspan="3">Autauga</td><td rowspan="4">Whiteoak and possibly Claiborne, Eureka Landing, and McLeod</td></tr>
<tr><td>A.D. 1000</td></tr>
<tr><td>A.D. 900</td></tr>
<tr><td>A.D. 800</td><td rowspan="2">Hope Hull</td></tr>
<tr><td>A.D. 700</td><td rowspan="5">Henderson</td><td rowspan="2">Whiteoak and possibly Claiborne</td></tr>
<tr><td>A.D. 600</td><td>Dead River</td></tr>
<tr><td>A.D. 500</td><td rowspan="3">Calloway</td><td rowspan="2">possibly unoccupied</td></tr>
<tr><td>A.D. 400</td><td rowspan="8">Middle Woodland</td></tr>
<tr><td>A.D. 300</td><td rowspan="5">Mixed Miller/Porter/Deptford</td></tr>
<tr><td>A.D. 200</td><td rowspan="5">Cobbs Swamp</td><td rowspan="5">Cobbs Swamp</td></tr>
<tr><td>A.D. 100</td></tr>
<tr><td>0</td></tr>
<tr><td>100 B.C.</td></tr>
<tr><td>200 B.C.</td></tr>
</table>

Figure 2. Middle and Late Woodland Phases of the Alabama River drainage.

in the upper Alabama River area is the Cobbs Swamp Phase (200 B.C. - A.D. 300) (Walthall 1980). Sites of this phase consist of small shell middens near the river and larger habitation sites distributed along tributaries. Cobbs Swamp ceramics include plain, check stamped, and simple stamped wares, as well as a fabric marked ware that Jenkins and Paglione (1982) suggested could be either Dunlap or Saltillo Fabric Marked. Later in the Cobbs Swamp Phase, Cobbs Swamp Complicated Stamped replaced this fabric marked ware. Greenstone, mica, and gulf marine shells are associated with this phase, indicating participation in the regional trading networks (Cottier 1979).

After the Cobbs Swamp Phase, the eastern and western portions of the upper Alabama River drainage diverge. In the eastern portion of the upper Alabama River drainage, the Calloway Phase (A.D. 300-600) follows the Cobbs Swamp Phase (Walthall 1980). It is divided into two subphases –Catoma and Maxwell (Cottier 1979). Calloway Phase ceramics were first described by Chase (1966) and include Tensaw Creek Plain, Tensaw Creek Stamped, and Calloway Plain. Tensaw Creek Stamped is associated with the early Calloway manifestation, and resembles the Gulf Coast Santa Rosa Swift Creek ceramics in the presence of notched rims, rocker stamping, and small tetrapods (Chase 1998). A Catoma Subphase pit dated to A.D. 175, while a Maxwell Subphase pit dated to A.D. 550 (Chase 1998). Lithics include projectile points resembling Swan Lake points and elongated biface blades (Walthall 1980).

The Dead River Phase (A.D. 500-700) follows the Calloway Phase (Walthall 1980). It was first identified at the Dead River site (1MT54), and dated to A.D. 775 (Chase 1968, 1998; Nance 1976). Dead River ceramics consist of Kilby Plain and Dead River Plain, and were associated with the Late Weeden Island tradition of the Gulf Coast. The Dead River Phase has

been only minimally described, and its importance appears to hinge on its position as an transitional stage linking the Calloway Phase to the later Hope Hull Phase. Lithic artifacts include Hamilton-like projectile points and greenstone celts (Walthall 1980).

The Hope Hull Phase (A.D. 700-900) is, perhaps, the best-known Woodland Phase in central Alabama (Walthall 1980). Dr. R. P. Burke of the Alabama Anthropological Society first recognized it in 1934 (Chase 1968b). Dr. Burke used the term "Orange-Red Pottery People"; later Dr. James B. Griffin changed the name to Hope Hull. These sites are characterized by the presence of plain, sand-tempered, and red-slipped ceramics, and graves containing exotic items such as marine shell gorgets and beads, and greenstone celts. Small mounds are present at Hope Hull Phase sites. About 90 percent of ceramics of the Hope Hull Phase are either Kennedy Plain or Adams Plain, while roughly 10 percent of ceramics are Montgomery Red Filmed (Chase 1968b). The Montgomery Red Filmed ware is particularly interesting because of the presence of incising and zone-punctating similar to Weeden Island ceramic traditions. Also of interest is the presence of a possible fortification at the Hope Hull site of Hickory Bend (1MT56) (Chase 1968b).

In the western portion of the upper Alabama River, the Henderson Phase (A.D. 400-800) follows the Cobbs Swamp Phase (Shorter1999). Dickens (1971) developed the Henderson Series based on excavations in the Jones Bluff Reservoir in Lowndes and Autauga counties. The Henderson Series includes Henderson Check Stamped, Henderson Plain (smooth), Henderson Plain (rough), and Henderson Punctated. Seriation of check-stamping clearly shows that it peaked during the Henderson Phase. Nutshell associated with early Henderson ceramics yielded a radiocarbon date of A.D. 530 ± 100 (Dickens 1971). Two dates, A.D. 870 ± 185 and A.D. 730

± 60, are both associated with ceramic assemblages in which approximately 50 percent of the sherds are check-stamped (Jeter 1977). Though similar to Weeden Island ceramics, Henderson Series ceramics are “coarser, more crudely decorated” (Dickens 1971: 67). Weeden Island sherds have been found in small numbers at numerous sites in the Jones Bluff Reservoir (Cottier 1982; Dickens 1971; Nielsen 1976).

The Autauga Phase (A.D. 800-1100) follows the Henderson Phase and the last Late Woodland Phase (Walthall 1980). According to Jeter (1977:116), "The most consistent ceramic indicator of chronological change in the Henderson-Autauga transition was the variation in relative abundance of check-stamped sherds." Only 10 percent of Autauga Series ceramics from Feature 1 at 1AU7 were check-stamped, a significant reduction from the Henderson Phase. A radiocarbon date from Feature 1 yielded a date of A.D. 920 ± 105 (Dickens 1971). Autauga Series ceramics include a variety of other surface treatments - plain, punctating, pinching, incising and cob-marking (Chase 1967). Minor numbers of Tallapoosa Punctated, Anderson Incised, Anderson Punctated, and Bear Creek Plain A and B also occur in the Autauga Phase (Cottier 1982). Although two kernels and one cupule of corn were found in Feature 1, the intensity of maize agriculture at this site remains unknown (Dickens 1971). Late Autauga Phase people appear to have spread eastward and occupied the Hope Hull Phase area (Chase 1968b).

Lower Alabama River Drainage. The lower Alabama River is the portion between the confluence of the Cahaba and Alabama rivers and the confluence of the Alabama and Tombigbee rivers. The Woodland Period in this area is significantly less understood than that of the upper Alabama River.

The earliest Woodland manifestation on the lower Alabama River consists of a mixture of Miller, Porter, and Deptford ceramics. Porter ceramics predominate as the Alabama River drainage nears the junction with the Tombigbee (Jenkins and Paglione 1982; Shorter 1999). Shorter (1999) suggests the majority of the lower Alabama River was unoccupied from approximately A.D. 400-600, while Tates Hummock Phase people from the Mobile Delta region occupied the southernmost portion of the drainage.

The Late Woodland Whiteoak Phase was limited to approximately the upper half of the lower Alabama River drainage, and is thought to be contemporaneous with the Henderson and Autauga phases of the upper Alabama River. Whiteoak ceramics were first described by Chase (1968a), and consist of plain, roughened, pinched, punctated, and check-stamped surface treatments. There does not seem to be any evidence of Weeden Island types. This observation is unusual because the Late Woodland Henderson Phase further up river clearly shows Weeden Island influences (Jenkins and Paglione 1982). A Claiborne Phase has been suggested for the lowest portion of the Alabama River, but presently there is too little data to infer much about this potential phase. The suggested dates for this phase are A.D. 750-1100 (Fuller 1998). Shorter (1999) suggested the McLeod Phase of the Tombigbee valley may have extended into the lower Alabama River valley, near the confluence with the Tombigbee. Later this area may have been occupied by a proposed Eureka Landing Phase group.

Relevant Studies

The following studies are a selection of faunal analyses from the Tombigbee, Coosa, and Alabama drainages. A complete list of the composition of each assemblage is provided in File 1. All sites presented have Middle or Late Woodland components, or both. The Woodland phases

of the middle and upper Tombigbee River drainage discussed are Miller I (100 B.C. - A.D. 300), Miller II (A.D. 300-600), and Miller III (A.D. 600-1100) (Jenkins and Krause 1986). In the lower Tombigbee River drainage, the Late Woodland McLeod Phase dates from approximately A.D. 400 to approximately A.D. 1100/1200 (Fuller 1998).

All of the sites below are within the East Gulf Coastal Plain Province except the Lightwood Shell Midden Complex, which is in the Alabama Valley and Ridge Province.

Kellogg Site (22CL527). The Kellogg site is located on the west bank of the Tombigbee River in east-central Mississippi (Figure 3) (Atkinson 1980a). This location is in the Black Prairie District of the Gulf Coastal Plain. Investigations indicated this site was occupied intermittently from the Archaic through Mississippian periods, with an additional occupation during the nineteenth century. The Woodland manifestation is represented by Miller II and Miller III components. Three Miller II features had a number of identified specimens (NISP) of 1,575; fourteen Miller III features yielded an NISP of 9,118 (Atkinson 1980b). Bone weights were not published.

Botanical remains indicated fall and early winter occupations during both the Miller II and Miller III phases (Crane 1980). One Miller III feature yielded nuts and immature pinecones suggesting a late summer or early fall occupation. The presence of Atlantic sturgeon scutes in both Miller II and Miller III features indicated a spring or early summer occupation as well.

Tibbee Creek Site (22LO600). The Tibbee Creek site is located on the bank of Tibbee Creek, a tributary to the Tombigbee River in east-central Mississippi (Jenkins 1993). This area is located near the intersection of the Tombigbee Sand Hills District, the Black Prairie District,

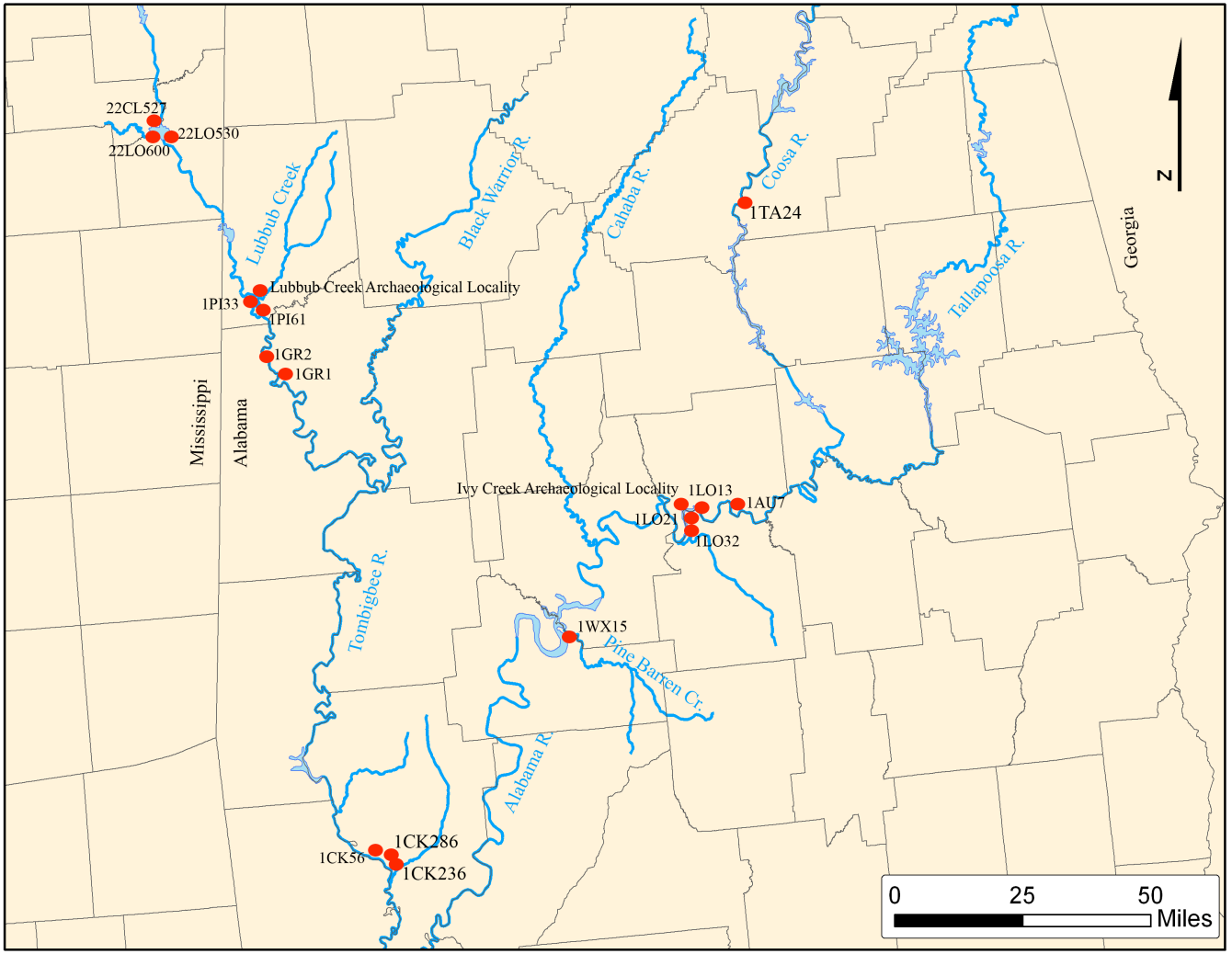


Figure 3. Location of sites discussed in this study.

and the Tombigbee alluvial valley. The primary component is Miller III, with a lesser Mississippian Period component present. Faunal material from four Miller III pit features was analyzed. The total NISP for these four features was 1,635. The total weight was 1501.92 g. Mammals were the most abundant, followed by birds, reptiles, and fish. Feature 105 exhibited an unusually high number of bird bones, 34.3 percent of that feature's NISP. Season of occupation was not indicated.

Shell Bluff Site (22LO530). The Shell Bluff site is located on the opposite bank of the Tombigbee River from the Tibbee Creek site in east central Mississippi (Futato 1987). Three features were identified conclusively as Miller III Phase features. The total vertebrate NISP for these three features was 1,574, and the total weight was 686.5 g (Reitz 1987). Fish were the most numerous by count, followed by mammals, then turtles. By weight, mammals were most abundant; turtles were second, followed by fish. By count and weight, birds were the fewest.

Macrobotanical remains consisted of hickory and acorn fragments, along with a single fragment of maize (Smith 1987). Nut fragments indicate at least a fall occupation. The high percentage of turtle suggests the site was occupied in the warmer months as well.

Lubbub Creek Archaeological Locality. Lubbub Creek is a tributary to the Tombigbee River, located in west-central Alabama. Excavations at the Lubbub Creek Archaeological Locality revealed minor Archaic through Middle Woodland occupations (Peebles 1983). Substantial occupation of the area began in the middle Miller III Phase and continued until the Summerville IV Phase (Proto-Historic). The Miller I/II assemblage had an NISP of 45 and weight of 10.38 g (Scott 1983). The Miller III assemblage was larger, with a NISP of 1,658 and weight of 408.2 g. Mammals dominated both assemblages. The percentage of other mammals

was much higher in the Miller I/II assemblage, but the Miller III assemblage had more fish, reptiles, and large mammals.

At Lubbub Creek there were some indications of seasonality. The presence of a black tern bone in Pit 22 of Hectare 300N/-300E suggested a late summer through mid-fall occupation (Scott 1983). Fish remains also suggested summer as the season of death. In Zone D of Pit 28 from Hectare 400N/-500E, a fragment from a blue-winged teal suggested an early to mid-spring occupation. Other zones of this pit suggested an occupation during winter as well. Therefore, the entire faunal assemblage from Lubbub Creek Miller III represented a nearly year-round occupation from winter to mid-fall. Seriation of vertebrate classes from Pits 22 and 32, Miller III features from Lubbub Creek, showed clear differences in the ratios of the different classes (Figure 3, Scott 1983:304). Zones from these pits showed an inverse relationship between large mammals and other vertebrates, suggesting different seasons of deposition.

Gainesville Lake. Gainesville Lake is located in west-central Alabama, downstream from the Lubbub Creek/Tombigbee confluence. The sites from this research area are situated within the Tombigbee alluvial valley and are adjacent to the Fall Line Hills District. The total sample size from four sites (1GR1X1, 1GR2, 1PI33, and 1PI61) was 45,597 fragments, which weighed 37,917.3 g; 99.4 percent of the recovered bone was Woodland (Woodrick 1981**)**. The majority of the features analyzed were Miller II or Miller III phase features. The Miller I assemblage was the smallest assemblage, weighing 121.1g. The Miller II assemblage weighed 7851.3 g. The Miller III assemblage was the largest from this location, weighing 13,685.5 g.

An analysis of the subsistence remains from these sites showed that although deer dominated all three assemblages, deer remains decreased and second-line fauna increased

through time. The authors suggested population pressure caused these changes in resource usage (Jenkins 1982). Research in the Gainesville Lake area revealed a dramatic increase in the number and size of sites from the early Miller phases to the Miller III Phase (Jenkins 1982). Osteological evidence pointed to increased nutritional stress and interpersonal violence, supporting the conclusions derived from faunal and site distribution data (Cole et al. 1982).

Plant remains from Gainesville Lake contributed to the identification of seasons of occupation (Caddell 1981). Miller I plant remains point to at least a fall occupation, while Jenkins and Curren (1975) suggested Miller I seasons of occupation to be spring and fall. Miller II and Miller III plant remains suggested occupation from late spring through fall.

The Corps Site (1CK56). The Corps site is a McLeod Phase (Late Woodland) site located in the Tombigbee alluvial valley in Clarke County, Alabama (Price 2009). Investigations yielded a total NISP of 90,090, weighing 11,144.13 g (Klippel and Synstelien 2009). The two most numerous classes were mammals and fish. By NISP, fish constituted nearly 70 percent of the assemblage; by weight fish constitute just over 30 percent. Reptiles were the third most common class. Birds and amphibians contributed insignificant numbers.

Both faunal and botanical remains indicated seasonality. The texture of deer antler fragments indicated the site was occupied in summer and early fall. Botanical evidence indicated the primary occupation was in fall, with a lesser summer occupation (Leone 2009).

Alabama Highway 177 Project. Approximately four river miles downstream from the Corps site, investigators located a cluster of four sites along Alabama Highway 177 (Shorter 1999). Though three of the four sites yielded faunal remains, only 1CK236 and 1CK286 were of sufficient size to analyze (Clute 1999). The site 1CK236 yielded the most vertebrate material,

12,644 NISP, weighing 973.35 g. The two most numerous classes were mammals and reptiles, with deer dominating the mammal category. Overall, deer accounted for just over 40 percent of the assemblage. However, the percentages of fish and birds were high.

The other site, 1CK286, had an NISP of 931 and a weight of 51.98 g. Mammals dominated the 1CK286 assemblage, with the percentages of deer and other mammals being nearly equal. Fish were well represented, but reptiles were unusually low.

Although there were no faunal indications of seasonality from 1CK236, the presence of several species of nuts and seeds from maygrass, knotweed, brambles, and sumac suggested spring through early winter occupation (Mickelson 1999).

Lightwood Shell Midden Complex (1TA241). The Lightwood Shell Midden Complex is a Late Woodland shell midden located in the Coosa River alluvial valley in the Valley and Ridge Province. Investigations yielded a total NISP of 5,785 and weight of 3,219 g (Sichler 2008). The two most numerous classes were mammals and reptiles, 56.08 percent and 16.37 percent of NISP, respectively. Fish made up 4.49 percent of the assemblage, and over half was freshwater drum. Birds and amphibians were both less than 1 percent of the assemblage. When biomass was calculated, mammals (primarily deer) and fish (primarily freshwater drum) were the most abundant, followed by turtles, then birds.

Sichler (2008) found no definitive indications of seasonality, but, based on the abundance of turtles, she suggested a warm weather occupation was the most likely. Botanical remains suggested fall occupation, with a possible spring through summer occupation as well (Hollenbach 2007).

Jones Bluff Reservoir. Faunal remains from three Henderson Phase sites and one Autauga Phase site were studied during the course of the Jones Bluff Reservoir project on the Alabama River (Dickens 1971). These four sites were located within the Alabama River alluvial valley, which is adjacent to the Black Prairie District to the south and the Fall Line Hills District to the north. At the Henderson Phase sites (1LO13, 1LO21, and 1LO32), the minimum number of individuals (MNI) was 32 for small vertebrates; whitetail deer MNI was 12. Bone weights and NISP were not reported.

At 1AU7 only Feature 1 was exclusively Autauga Phase. Feature 1 had an MNI of 7 for deer and 17 for small vertebrates. The author suggested the Henderson Phase sites were seasonal camps utilized primarily for collecting and processing mollusks, while the Autauga Phase component at 1AU7 was a base camp or semi-permanent village (Dickens 1971).

Although there were no faunal indications of seasonality, botanical remains from 1AU7 and 1LO32 indicated late summer through early fall occupation (Yarnell 1971).

Ivy Creek Archaeological Locality. Ivy Creek is a tributary to the Alabama River located in Autauga County, Alabama. This area is in the Fall Line Hills District, adjacent to the Alabama alluvial valley. Five sites were investigated near the confluence of Ivy Creek and the Alabama River, four of which (1AU139, 1AU146, 1AU148, and 1AU151) yielded a significant amount of faunal material. Although there was evidence of occupation of these sites from the Archaic Period through the Mississippian Period, the major occupation was the Henderson Phase component (Cottier 1982).

Total vertebrate NISP from 1AU139 was 7,865 and weighed approximately 4,739 g (Waselkov 1982). Although turtle and fish were the most numerous fragments identified, deer

was the most abundant by weight. The remaining three sites had much smaller assemblages. The vertebrate material from 1AU146 consisted of 253 fragments, weighing 171.4 g. The vertebrate material from 1AU148 consisted of 88 fragments, weighing 37.7 g. The vertebrate material from 1AU151 consisted of 141 fragments, weighing 96.2 g. At these sites, mammals were the most abundant, and reptiles were the second most abundant.

Seasonality was indicated by both faunal and botanical remains at 1AU139, but limited to botanical remains at the 1AU146, 1AU148, and 1AU151. At 1AU139, mandibles from four immature deer and a fragment from a Canada goose indicate that the site was occupied in winter, but other seasons of occupation cannot be conclusively ruled out. The number of reptile bones (12.48 percent of bones identified to class or below) suggests the site was occupied during warmer seasons as well. Botanical remains at all four sites indicated fall occupations (Sheldon 1982).

Summary

Research in the Alabama River drainage has continued for over a century, driven initially by the search for interesting artifacts and, later, by CRM efforts. Despite this body of work, there is a distinct scarcity of sizable faunal assemblages from the Alabama River drainage.

A chronology of Cobbs Swamp/Calloway (Catoma/Maxwell)/Dead River/Hope Hull is currently in use for the eastern portion of the upper Alabama River drainage. The western portion of the upper Alabama River drainage deviates from this chronology in the later phases – Cobbs Swamp is followed by the Henderson Phase, which is followed by the Autauga Phase. Later, Autauga Phase people seem to have spread eastward and occupied the area of the Hope Hull Phase people. The Henderson, Dead River, and, to a lesser extent, Hope Hull phases were

influenced by the Weeden Island traditions of the Gulf Coast. Evidence of contact with Weeden Island peoples is seen in the form of Weeden Island ceramic sherds, as well as local copies of these ceramics (Jenkins and Paglione 1982). Dating of most of these phases is limited to stratigraphic position; however a few phases have been dated using radiocarbon samples. Middle Woodland phases are not yet defined for the lower portion of the Alabama River drainage. Late Woodland phases include the Whiteoak Phase and a possible Claiborne Phase.

The chronology of the Alabama River drainage presented here is in need of further exploration and refinement. Compared with other areas of the Southeast, research in the Alabama River drainage is in its infancy despite over a century of exploration, site discovery, and excavation. Most researchers have focused on defining the chronology of the area based on ceramic traditions. Woodland social organization, settlement, and subsistence models in the Alabama River drainage are limited to the most general observations. Most researchers propose a mixed hunting and foraging economy, in which deer were the most relied upon vertebrate resource (Cottier 1982). Though there is evidence for increased sedentism, researchers believe groups continued to move in a "seasonal round" pattern, moving from one area to another following resources as they came into season (Cottier 1982).

Eight sites with faunal data are available from the upper Tombigbee drainage. These faunal assemblages date to the Middle Woodland Miller I and Miller II phases, as well as the Late Woodland Miller III Phase. Three sites, Kellogg (22CL527), Tibbee Creek (22LO600), and Shell Bluff (22LO530), were near the confluence of Tibbee Creek and the Tombigbee River. Five sites, Lubbub Creek and four from the Gainesville Lake area, were located further downriver. The three Late Woodland assemblages from the lower Tombigbee drainage dated to

the McLeod Phase. One Late Woodland assemblage, Lightwood Shell Complex (1TA241) was located on the bank of the Coosa River. Seven Late Woodland assemblages from the Alabama River date to the Henderson Phase, and one dates to the Autauga Phase.

Chapter 4: Methods and Findings

The purpose of this chapter is to describe the methods used to obtain and analyze the faunal material, and to report and interpret the results of this analysis. The first section reviews some methodological considerations associated with faunal analyses. The second section explains the excavation and laboratory methods used for this study. The third section provides a general overview of the entire assemblage. The fourth section provides an intra-site comparison of the 2-x-2-m units and the features. The fifth section compares 1WX15 with the studies described in the "Relevant Studies" section of Chapter 3. Lastly, the findings are summarized.

Methodological Considerations

Differential preservation is a key issue affecting faunal analyses. Taphonomic processes affect preservation from the moment an animal is killed and continue until the bones are excavated (Lyman 1982). Both natural and human taphonomic processes distort assemblages. Fragmentation, chemical alteration, and physical weathering make identification difficult as well as inhibit the calculation of accurate descriptive statistics.

Soil acidity is one of the main problems in southeastern archaeology. Although the presence of mussel shells at 1WX15 undoubtedly helped mitigate the effects of the acidic soil, the state of preservation within the assemblage varies greatly.

Differential recovery complicates the matter further. Excavation is a destructive process. Excavators simultaneously observe, describe, and destroy the archaeological record. Artifacts themselves may be damaged, especially the more fragile classes, such as bone.

Screen size is also a significant factor, both in excavation and analysis. Woodrick (1981) found that the fine screen caught the majority of the fish remains. Bird bones are also commonly

found in fine screen material. Woodrick (1981) found that analyzing 100 g of fine screen, heavy fraction material took one person five hours. The time-consuming nature of fine screen analysis often prevents a complete analysis from being performed. Yet, in many assemblages, if the fine screen material were eliminated from analysis, it would appear that fish and birds were unimportant resources.

There are inherent problems with each of the three descriptive statistics that are most commonly used to describe a faunal assemblage - number of identified specimens (NISP), minimum number of individual (MNI), and bone weight. All three statistics are subject to sample size. The smaller the sample size, the more likely that fewer specimens and taxa will be identified. The NISP can be inflated or deflated depending on the fragmentation of the assemblage. Cultural factors and post-depositional processes can result in highly fragmented assemblages with inflated NISP. Furthermore, the NISP of certain animals such as fish, with their numerous vertebrae, and turtles, with their carapace and plastron, can potentially overestimate the contribution by these animals to the assemblage..

Minimum number of individuals can be severely affected but in the opposite way. Fragmentation may decrease the number of portions complete enough to determine MNI, thereby deflating this statistic. Payne (1985) noted that using MNI might also skew results by placing undue importance on rare taxa, while Grayson (1978) demonstrated the disproportionate relationship between sample size and MNI.

Bone weight is a more robust measurement with regards to fragmentation, but taphonomic processes also affect it significantly. Burning can change the density, and thereby the weight of a bone. Animal size also affects bone weight; smaller animals naturally have

bones that weigh less; therefore results may be skewed towards larger animals. However, larger animals have greater potential meat yield to contribute to the diet than smaller animals.

Despite these concerns it is still important to analyze faunal material because it is a direct avenue towards understanding prehistoric subsistence. Taphonomic issues should not stand in the way of research. Rather, care should be taken to identify the most appropriate means to use when analyzing data and interpreting the results.

Methods

The Indian Hill site, 1WX15, was first excavated in 1968 during the Millers Ferry Lock and Dam cultural resource evaluation performed by the University of Alabama (Cottier 1968). Auburn University excavated it further in 1996. Dr. John Cottier was the lead investigator for both seasons. Only the faunal material from the 1996 excavations was available for analysis.

A total of 90 2-x-2-m units and 56 features were excavated during the 1996 summer season (Figure 4). The 2-x-2-m units were excavated in arbitrary 10-cm levels, to a maximum depth of 100 cm. Features were cross-sectioned along their long axes. After half of a feature was excavated, the exposed profile was drawn. In the case of the two largest features, Features 31 and 43, the second halves were excavated in arbitrary 10-cm levels. All features and 2-x-2-m units were screened simultaneously with coarse (one-quarter inch) and fine (one-sixteenth inch) screens.

From the general excavation (i.e. the 2-x-2-m units), material from 381 field specimen numbers (FS) was analyzed; 371 were from the arbitrary 10-cm levels and 10 were from profile collapses, floor scrapings, and suchlike. All of the coarse screen material was analyzed; a sample of fine screen material from seven 2-x-2-m units and five levels was analyzed.

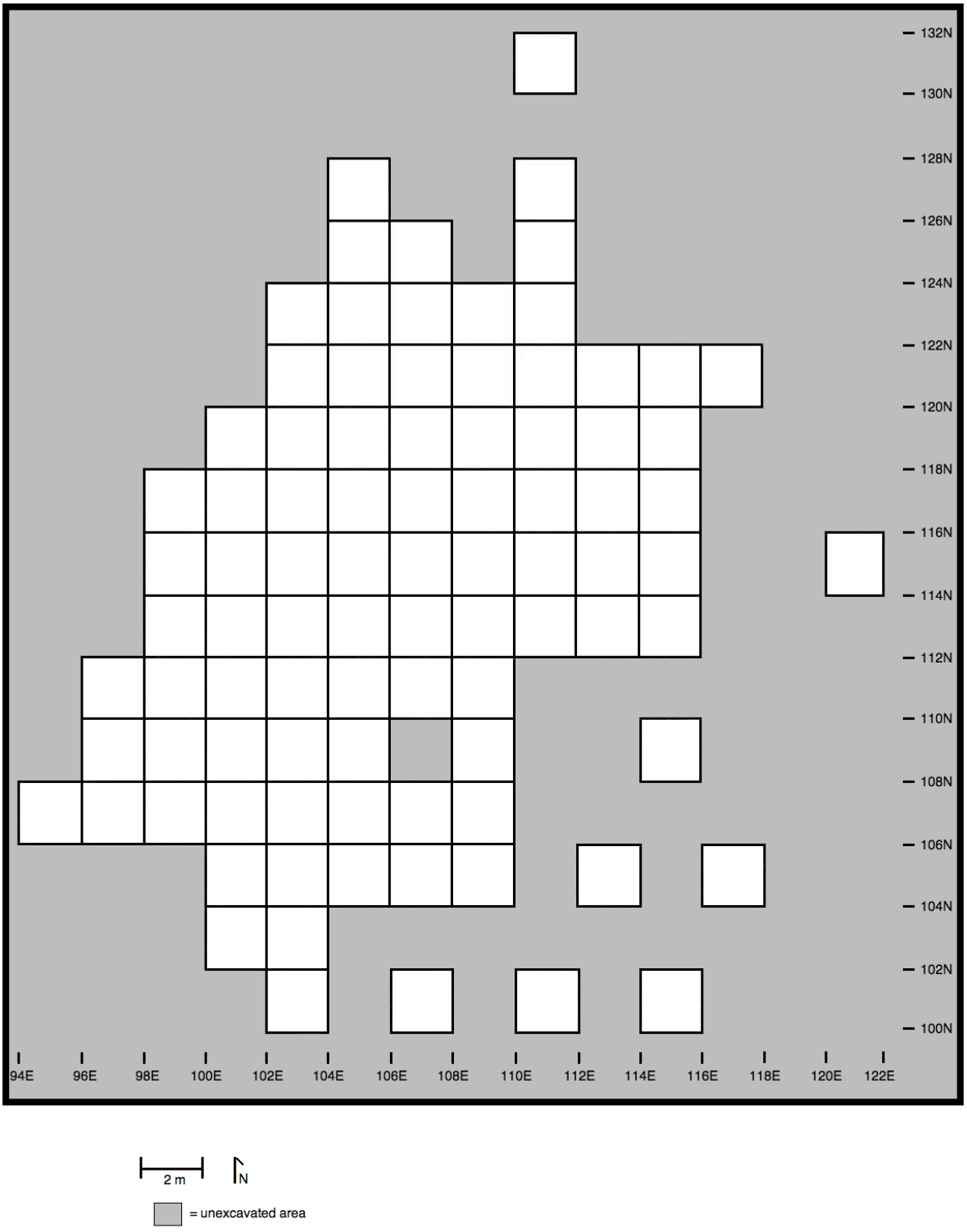


Figure 4. Map of 1996 excavation units of 1WX15.

The excavated features were grouped into five categories: rock hearths, pits, postholes, animal burrows, and "other." The numbers of features in each category were as follows: 15 rock hearths, 21 pits, 4 postholes, 3 animal burrows, and 13 "other." Of the 56 features excavated, 29 were analyzed. These consisted of 5 rock hearths, 15 pits, 1 posthole, 1 animal burrow, and 7 in the "other" category. Of the 29 features that were analyzed, all of the coarse screen material was analyzed. A portion of the fine screen material from the two largest features, Feature 31 and Feature 43, was analyzed; all of the fine screen material from four other features, Features 54, 56, 60, and 61 was analyzed.

All bones were washed and sorted into the most specific category possible, with the assistance of the Zooarchaeological Collection in the Department of Anthropology at the University of Tennessee, Knoxville. Within a FS number, bones were refitted whenever possible, and the portions refitted were counted as one specimen. Once the material was sorted, the bones were weighed, counted, and sided (when appropriate). This information was entered into a Microsoft Excel spreadsheet, along with additional remarks concerning age or post-mortem modification, as needed. During the process of weighing and counting, groups of bone that were either not identified to class level or not identified below class level were sorted again to find any overlooked specimens.

General Assemblage Description

At present, the time-placement of 1WX15 is no more specific than Middle-Late Woodland. A preliminary analysis of the ceramics from the 1968 excavation suggested the site was occupied primarily during the Middle Woodland Period. The ceramic count for Middle Woodland was 153 and included Basin Bayou Incised, Franklin Plain, Dunlap Fabric Marked,

Deptford Check Stamped, Deptford Linear Check Stamped, and Deptford Simple Stamped (Cottier 1968). A total of 11 Late Woodland ceramics were identified; included were Wakulla Check Stamped and Weeden Island Incised. The majority of the 1968 ceramic assemblage was plain sand-tempered, with 420 sherds. Other sherds of undetermined type included 13 check-stamped, 1 cord wrapped dowel impressed sherd, and 9 plain fiber tempered sherds (Cottier 1968).

The NISP for the entire faunal assemblage was 66,843 specimens; the total weight was 23.8587 kg; the total MNI was 200. The entire assemblage is presented in File 2. Unidentified material made up 44 percent of the assemblage NISP and 14 percent of the assemblage weight. Fifteen percent of the assemblage NISP was fine screen material, which accounted for 1 percent of the weight. Ninety-two percent of the fine screen material was from features. By NISP, 29 percent of fragments were burned, 38 percent were calcined, and 33 percent were unburned.

The densest concentration of bone from the 2-x-2-m coarse screen material was located in the northwest portion of the site, specifically units 120N/106E and 120N/108E (Figure 5). Across the whole site, the three densest levels were 10-20 cm, which contained 43 percent of the assemblage; 0-10 cm, which contained 23 percent of the assemblage; and 20-30 cm, which contained 22 percent of the assemblage. The remaining fragments were distributed among the other levels, to a maximum depth of 100 cm for 2-x-2-m units. Below, each class is described in detail.

Mammals. Mammals were the most abundant class, making up 31 percent of NISP and 70 percent of weight of the entire assemblage (Figure 6; Table 1). Thirteen percent by NISP and

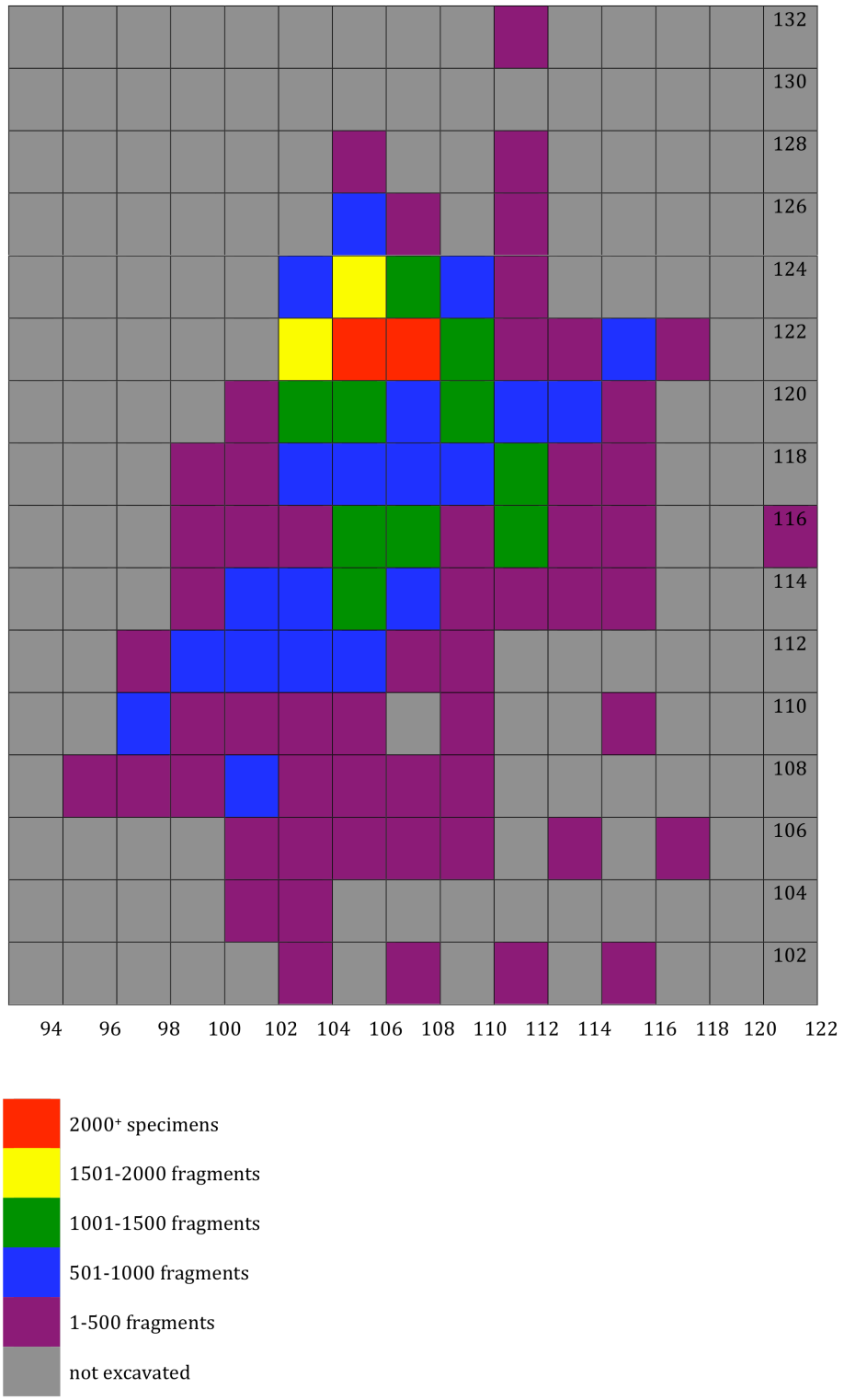


Figure 5. Bone density per unit at 1WX15.

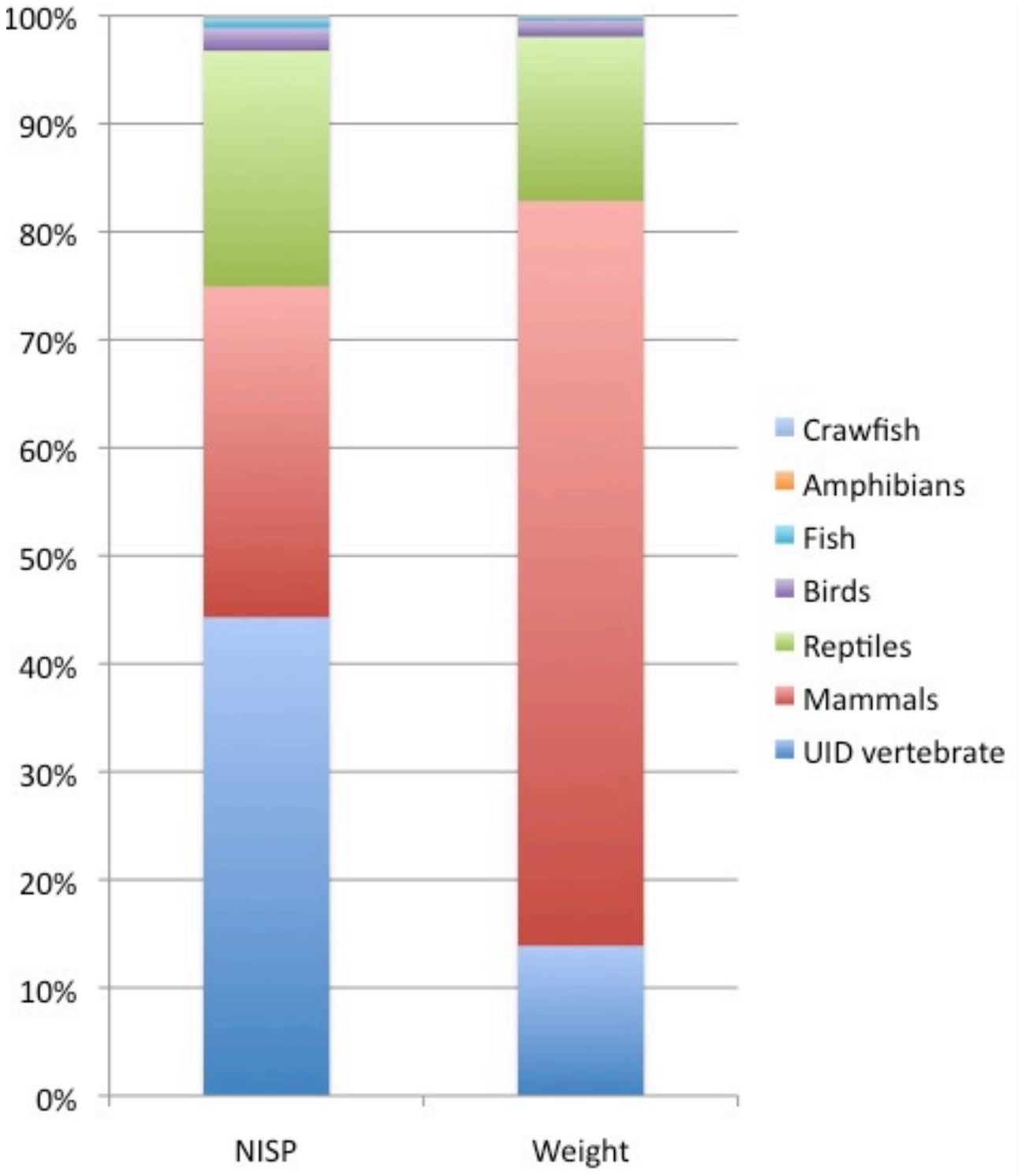


Figure 6. 1WX15 assemblage composition by class, by NISP and weight.

Table 1. Summary of the 1WX15 Assemblage by Class.

Class	NISP	Percent NISP	Weight (grams)	Percent Weight
Mammals	20,479	31	16,459.48	70
Reptiles	14,579	22	3,626.70	15
Birds	1,426	2	353.07	1
Fish	678	1	102.26	<1
Amphibians	58	<1	3.48	<1
Unidentified Vertebrate	29,619	44	3,313.56	14
Crawfish	4	<1	0.15	<1
Grand Total	66,843		23,858.70	

45 percent by weight was identified below the class level. Species identified were opossum, least shrew, eastern mole, raccoon, mink, river otter, spotted skunk, striped skunk, domestic dog, grey fox, bobcat, eastern chipmunk, grey squirrel, fox squirrel, southern flying squirrel, southeast pocket gopher, beaver, eastern woodrat, muskrat, eastern cottontail, swamp rabbit, and deer. These species prefer woodland, woodland edges, semi-open areas, and river or stream banks (Burt 1952).

The four most abundant mammals were deer, rabbits, grey squirrel, and opossum. Although deer remains accounted for only 7 percent of the mammal NISP, they made up 41 percent of the weight. Small (grey squirrel sized) to medium (bobcat sized) mammals accounted

for 6 percent of the mammal NISP, 4 percent by weight. Very small mammals (those smaller than a grey squirrel, such as eastern woodrats and eastern moles) accounted for less than 1 percent of mammal NISP and weight. It is debatable whether very small mammals were part of the diet or were intrusive; however the presence of calcined bones in this group suggested they should not be excluded from considerations of subsistence. Forty percent (NISP) of mammal bone fragments were calcined; the remaining 60 percent included nearly equal amounts of burned and unburned fragments. Nearly 100 percent of the fragments identified as mammal were in the coarse screen material.

Reptiles. Reptiles, the second most abundant class, accounted for 22 percent of the assemblage NISP and 15 percent of the weight. Nearly 100 percent of reptile bones were identified to at least the level of order - either Squamata (lizards and snakes) or Testudinata (turtles). Within the order Squamata, no fragments were identified to species, and non-venomous snake fragments were the most abundant.

Turtles were the most abundant reptile category in the assemblage; 88 percent of NISP and 79 percent by weight of turtle fragments were not identified below order. Specimens from five turtle families were identified - Chelydridae (snapping turtles), Emydidae (pond turtles), Kinosternidae (mud and musk turtles), Testudinidae (tortoises), and Trionychidae (soft-shelled turtles). However, only four turtle species were identified - box turtle, gopher tortoise, diamondback terrapin, and eastern mud turtle. The Indian Hill site is outside the present range of both the gopher tortoise and diamondback terrapin. Fragments from the family Kinosternidae were the most abundant. At 54, Kinosternidae MNI was the largest of the entire assemblage.

Except for the gopher tortoise and box turtle, the turtles identified are aquatic to semi-aquatic; however the box turtle does prefer damp areas. Species of the family Kinosternidae prefer to inhabit the bottoms of slow-moving, shallow waters. Soft-shelled turtles and snapping turtles inhabit a wide range of aquatic environments, including ponds, oxbows, creeks, and rivers (Conant and Collins 1991).

The reptile class had nearly equal amounts of burned, calcined, and unburned bone fragments. Like mammals, the majority of reptile fragments were from the coarse screen material.

Birds. Birds account for a very small portion of the assemblage - only 2 percent by NISP and 1.5 percent by weight. The majority of bird bones were not identified below class level. The only two species identified were turkey and bobwhite. Turkeys prefer woods and wooded swamps, while bobwhites prefer open, brushy areas and wood edges (Peterson 1980). Both species are available throughout the year. Additionally, one fragment was identified as from the order Passeriformes (perching birds), one fragment was identified from the family Anatidae (water fowl), two fragments were identified from the family Accipitridae (hawks)**,** and one fragment could have been from either a hawk or an owl.

Nearly half of all bird fragments were calcined; the remaining 51 percent of bird fragments were nearly equally divided between burned and unburned. Unlike mammals and reptiles, nearly 40 percent of bird fragments were found in the fine screen material.

Fish. Fish accounted for 1 percent of the assemblage NISP and less than 1 percent of the assemblage weight. By NISP, 37 percent of fish were identified below class level; by weight 60 percent were identified below class level. Of the fish identified below class level, freshwater

drum was the most abundant. Catfish, including flathead, channel, and one fragment from the genus *Ameiurus*, were the second most abundant fish, followed by gar, bowfin, family Centrarchidae (basses and sunfishes), family Catostomidae (suckers), family Cyprinidae (minnows), and walleye. Most of the fish identified in the assemblage prefer slow-moving medium to large rivers, backwaters, and pools (Page and Burr 1991). These habitat preferences suggest the fish came from the Alabama River, because prior to inundation Pine Barren Creek was more narrow and somewhat entrenched. It lacked the extensive backwater and pooling it exhibits today.

The majority, 67 percent by NISP, of fish bones were unburned, 22 percent were burned, and 11 percent were calcined. These percentages vary greatly from those of the other classes and of the assemblage. There are two possibilities for this difference - either fish were treated differently, or burned and, especially, calcined fish bones do not preserve as well. Like birds, a significant portion, 36 percent, of the fish was from the fine screen material. Certainly, the number of fish would be higher if all of the fine screen material was sorted.

Amphibians. Amphibians were the least abundant vertebrate class. The amphibian material fell into two taxonomic orders - Anura (frogs and toads) and Caudata (salamanders). Frogs and toads were the most abundant of the amphibian bones. Of the fragments identified to Caudata, two fragments were identified as hellbender and one was possibly from a lesser siren.

Like fish, amphibians differed greatly in the ratio of unburned, to calcined, to burned fragments. Seventy-nine percent were unburned, while 19 percent were burned, and 2 percent (n=1) were calcined. Unlike fish, however, the large number of unburned amphibian fragments

may represent intrusive elements. The single calcined fragment was a toad ilium. Nearly equal numbers of fragments were identified from the coarse screen and fine screen material.

Invertebrates. Although this study focuses primarily on the vertebrate remains from 1WX15, it should be noted that invertebrate remains were quite abundant. No analysis has been completed at present, but anecdotal evidence suggests the vast majority of these included freshwater bivalves and gastropods. The presence of four crawfish fragments is of great interest. The four crawfish fragments were from features, and three of the four were from fine screen material. Two of the fragments were burned and two were calcined. It would be too time consuming to sort through all of the fine screen material in search of more crawfish fragments, but it would be interesting to see how common they were. Although faunal analyses occasionally report crawfish fragments, they are not discussed in detail (Crook and Harris 1958; Kivett 1949; Stafford et al. 2000).

One hundred grams of the edible portion of crawfish yields approximately 77 kilocalories, 16 grams of protein, 1 gram of fat, and a variety of minerals and vitamins (United States Department of Agriculture Nutrient Data Laboratory 2009). This nutritional make up is comparable to bivalves and gastropods, which are already recognized as significant prehistoric food sources (Erlandson 1988; Klippel and Morey 1986).

Seasonality. The number of turtle fragments present in the assemblage suggests this site was occupied during warm weather. The presence of one unerupted 1st or 2nd deer molar indicates a deer of between two and nine months, suggesting a season of death between August and March (Severinghaus 1949). Two unerupted 2nd deer premolars indicates an age at death of 12 to 18 months, suggesting a season of death between June and December. Though a botanical

analysis has not been completed, it is noted that nutshell was encountered during the faunal analysis. Thus, 1WX15 was likely occupied during the warm seasons, though fall and winter occupations cannot be conclusively ruled out.

Intra-site Comparison

To facilitate comparison, the assemblage was divided into six categories: general excavation, all features, Feature 31, Feature 43, medium features, small features; each category is described in detail below. Eight features, Features 16, 17, 28, 42, 50, 52, 66, and 70, were excluded from this portion of the analysis because their coarse screen NISP were too small (less than 20 fragments). Feature 48 was excluded from analysis both because it was identified as an animal burrow and because its NISP was only two. First, the groups are described using notes from the feature forms. Then, the composition of the coarse screen material from the groups is compared. Lastly, all of the fine screen material is discussed and compared to the coarse screen material. All comparisons by class are based on weight.

Coarse screen Material. The group "general excavation" consists of the faunal material from the 2-x-2-m, 10-cm units. The coarse screen material from general excavation consisted of 49,162 bone fragments, weighing 19,194.84 g, which was 73 percent (NISP) of the entire assemblage. Sixty-three percent of this group was identified to class level or below. The "all features" group was a compilation of Feature 31, Feature 43, the six medium features, and the ten small features. The total NISP for this group was 7,591, which was 11 percent of the entire assemblage, and weighed 4,147.59 g. Sixty percent (NISP) of the all features coarse screen material was identified to class or below.

Feature 31 was a pit with “vertical sides sloping into rounded basin” (Grant and Roe 1996). Three distinct strata were noted on the feature form (Figure 7). The upper most stratum extended from the base of the plow zone to approximately 40 cm. The excavator described this stratum as "sandy light midden with shell" (Grant and Roe 1996). The second stratum was dark sand that occurred from approximately 40 cm to 54 cm. The excavator described the third stratum as "clay, silty, humic" with "major concentrations of artifacts." In this stratum shell was densely concentrated along the edges of the pit. A post pre-dating the pit was located below the northern edge of the feature. The coarse screen material from Feature 31 had an NISP of 1,948, which was 3 percent of the entire assemblage, and weighed 1,614.23 g. Sixty-two percent (NISP) was identified to class or below.

Feature 43 was described on the feature form as a “very large pit, circular in shape, with vertical to sloping sides, and a rounded base” (Jones et al. 1996). The excavator described two strata. The upper 60 cm of the pit was homogenous, with a dense humic midden intermixed with a lot of shell. The lower 50 cm was described as “dense humic midden, less shell" (Jones et al. 1996). The excavator noted there was evidence of two episodes in which the sides of the pit caved in. The coarse screen material from Feature 43 consisted of 2,196 fragments, which was 3 percent of the entire assemblage, and weighed 889.36 g. Sixty-five percent (NISP) of this material was identified to class or below.

The medium features group included six features, all of which had a coarse screen NISP between 150 and 1,000. These features were 25, 37, 60, 61, 64, and 65. Feature 37 was described as shell concentration, circular shaped with vertical sides and a flat bottom. The other features in this group were pits of oblong to circular shape with straight to inward-sloping sides.

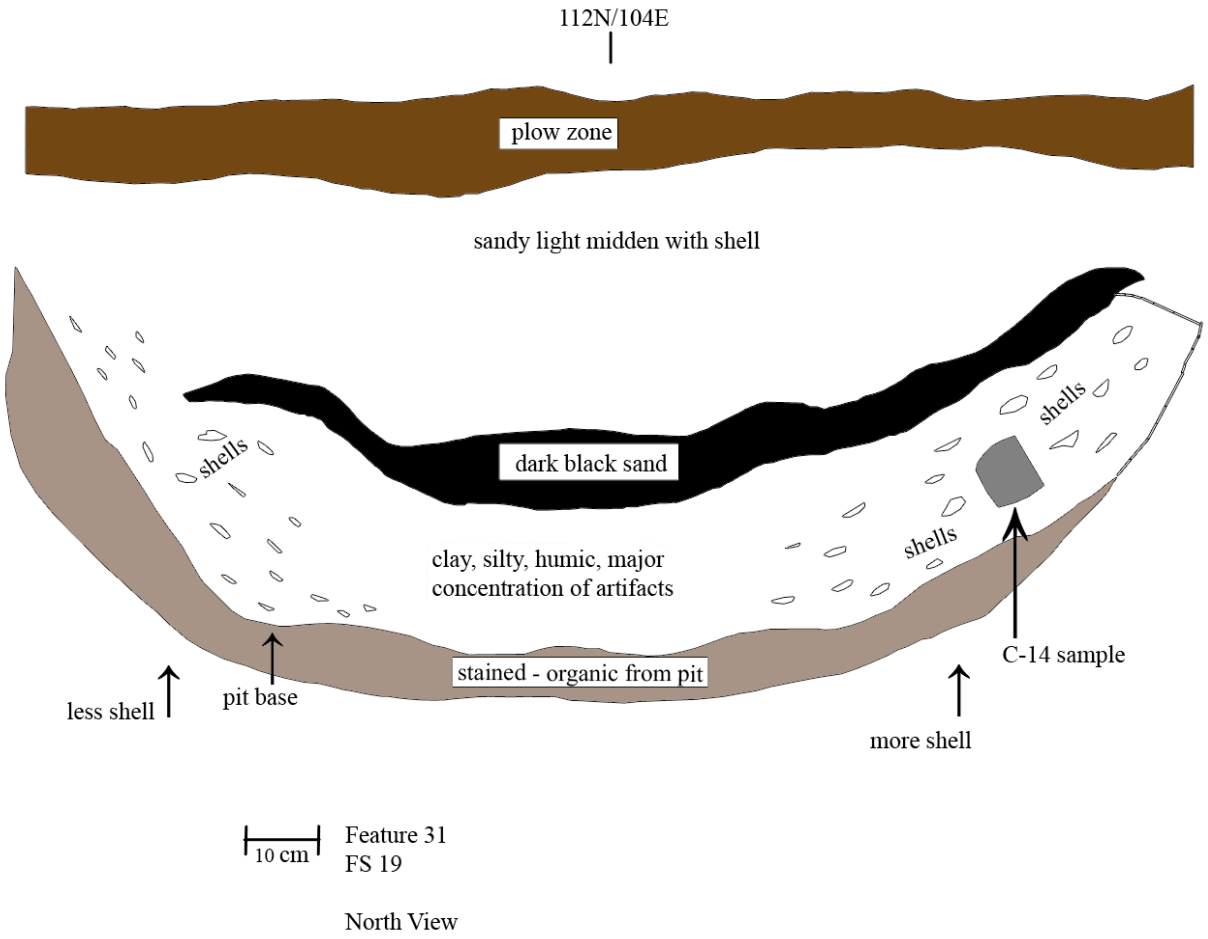


Figure 7. Feature 31 profile.

The total NISP for the medium features coarse screen material was 2,759, which was 4 percent of the entire assemblage. The material from this group weighed 1,357.56 g. Fifty-three percent (NISP) of the coarse screen material from the medium features group was identified to class or below.

The small features group consisted of 10 features, each of which had a coarse screen NISP between 20 and 100. These features were 14, 19, 29, 32, 39, 46, 47, 49, 54, and 63. Five features, 14, 19, 47, 54, and 63, were pits. Three features, 29, 32, and 49, were described as shell concentrations. In the feature log, Feature 39 was listed as a rock hearth and Feature 46 was listed as pit/rock hearth. However, from the descriptions of these two features provided on their feature forms, they would best be described as pits. The total NISP for this group was 531, or 1 percent of the entire assemblage. The material from this group weighed 253.38 g. Sixty-three percent (NISP) of coarse screen material of this group was identified to class or below.

As illustrated in Figure 8, all coarse screen groups had similar composition. In all groups, mammals was the most numerous class, followed by reptiles, birds, fish, and, when present, amphibians and crawfish. In general, the features had higher percentages of birds and fish than the general excavation. Feature 43 had the highest percentage of fish and birds.

The strata of Feature 31 reflected different depositional episodes. The 20-30 cm level of Feature 31 had both the highest percentage of deer and the lowest percentage of reptiles; the other classes were quite low as well (Figure 9). As deer declined from 30-70 cm, the other classes increased, especially reptiles/amphibians and other mammals. It is possible these differences reflect different seasons. However this assumption is made with caution, as several of the 10-cm levels include portions of the three different strata.

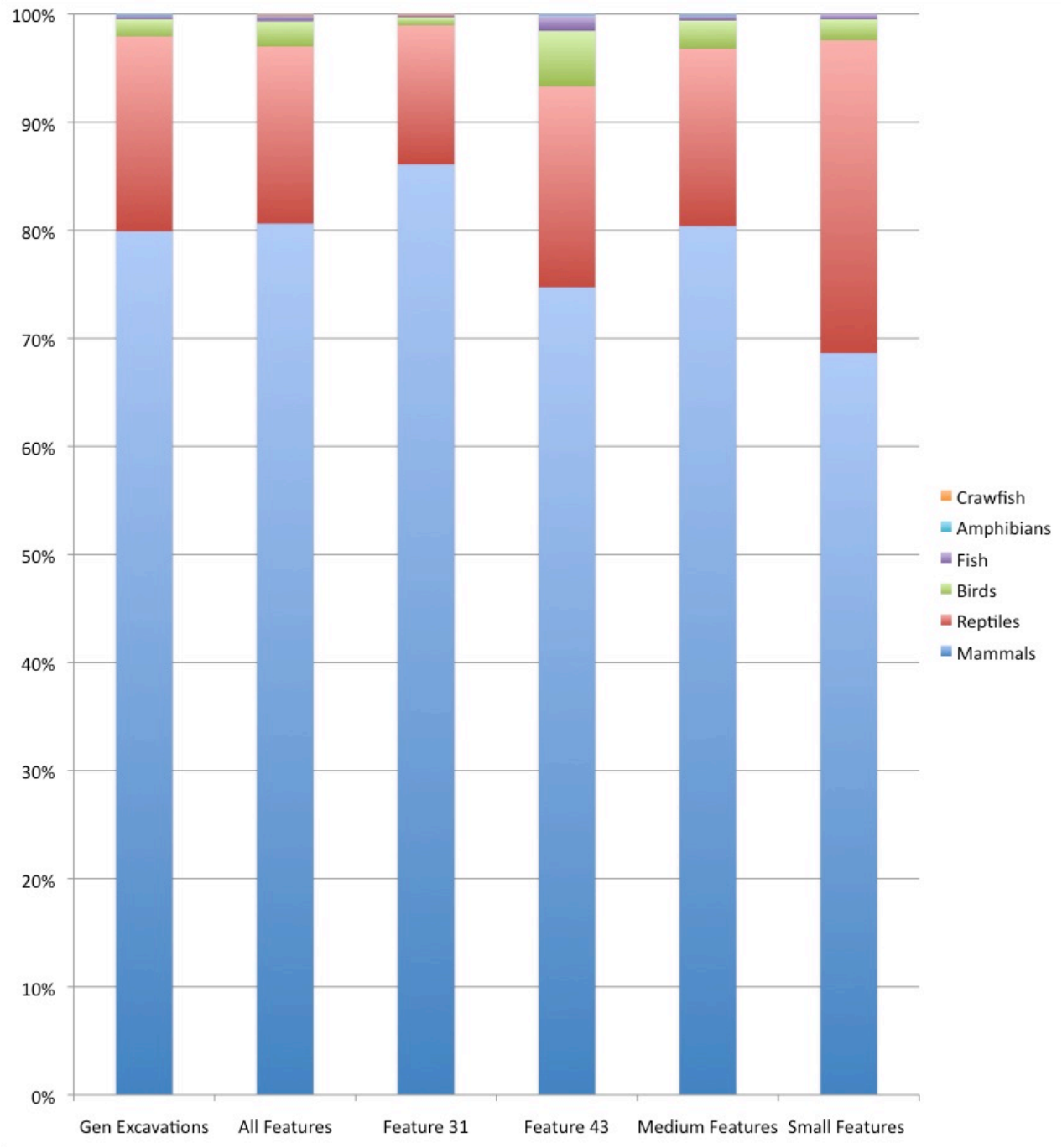


Figure 8. Composition of all coarse screen groups.

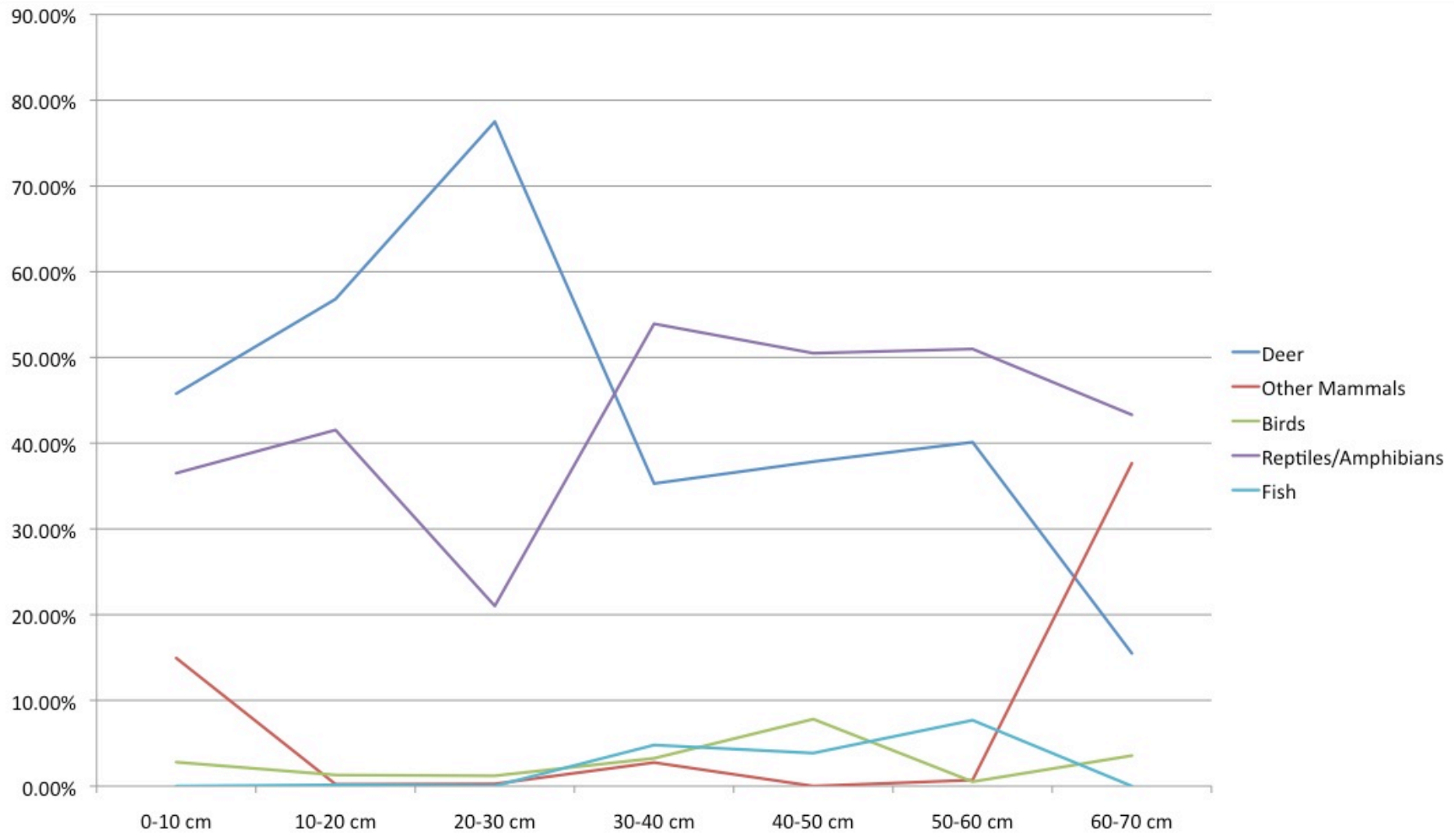


Figure 9. Composition of Feature 31 by 10-cm level.

The two strata of Feature 43 also reflected different disposal episodes (Figure 10). The 30-90 cm strata contained a higher percentage of deer, birds, and other mammals, fewer reptiles/amphibians, and a very small percentage of fish. This trend was reversed in the 90-140 cm section. Deer, birds, and other mammals declined and fish and reptiles/amphibians increased. This suggests different seasons of deposition. The high percentage of fish and reptiles/amphibians in the 90-140 cm stratum suggests this stratum was deposited during the warm months. The higher percentage of deer in the 30-90 cm stratum suggests a cool weather season of deposition.

Within the medium features group, Features 25, 61, and 64 had similar faunal composition (Figure 11). Feature 60 contained an unusually high percentage of birds and low percentages of reptiles/amphibians. Feature 37 also contained an unusually low percentage of reptiles/amphibians, but had the highest percentage of mammals in this group. Feature 65 had an unusually high percentage of reptiles/amphibians. Within the small features group, the composition of each feature varied greatly, undoubtedly due to the small sample sizes (Figure 12).

Figure 13 summarizes the amount of heat exposure by group. The percentage of calcining was similar for all groups. In all groups, except Feature 31 and Feature 43, burning, calcining, and unburned bone were nearly equally distributed. In Feature 31 there was more burned bone and less unburned bone. In Feature 43 there was significantly more unburned and less burned bone.

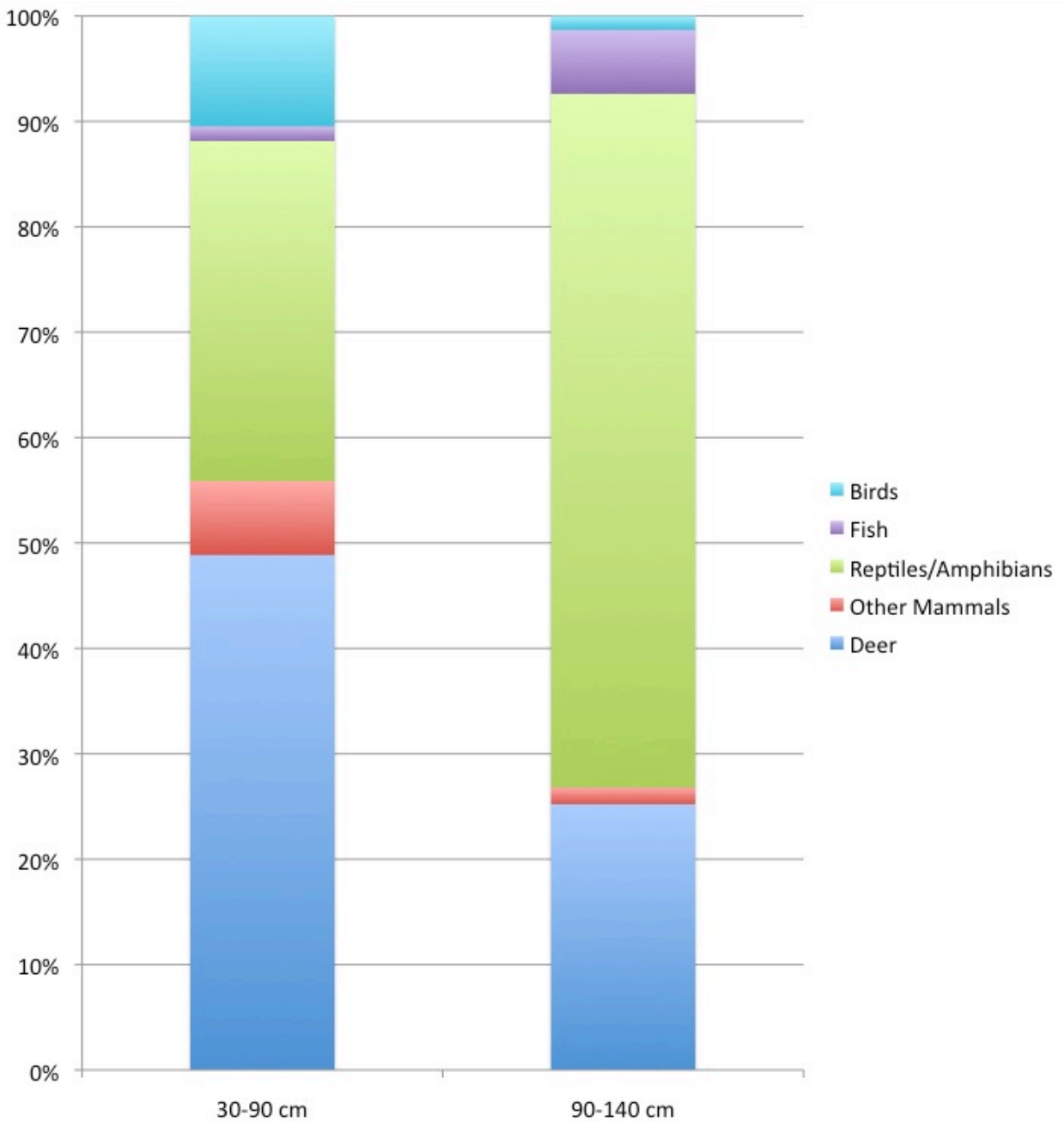


Figure 10. Composition of Feature 43 coarse screen material by stratum.

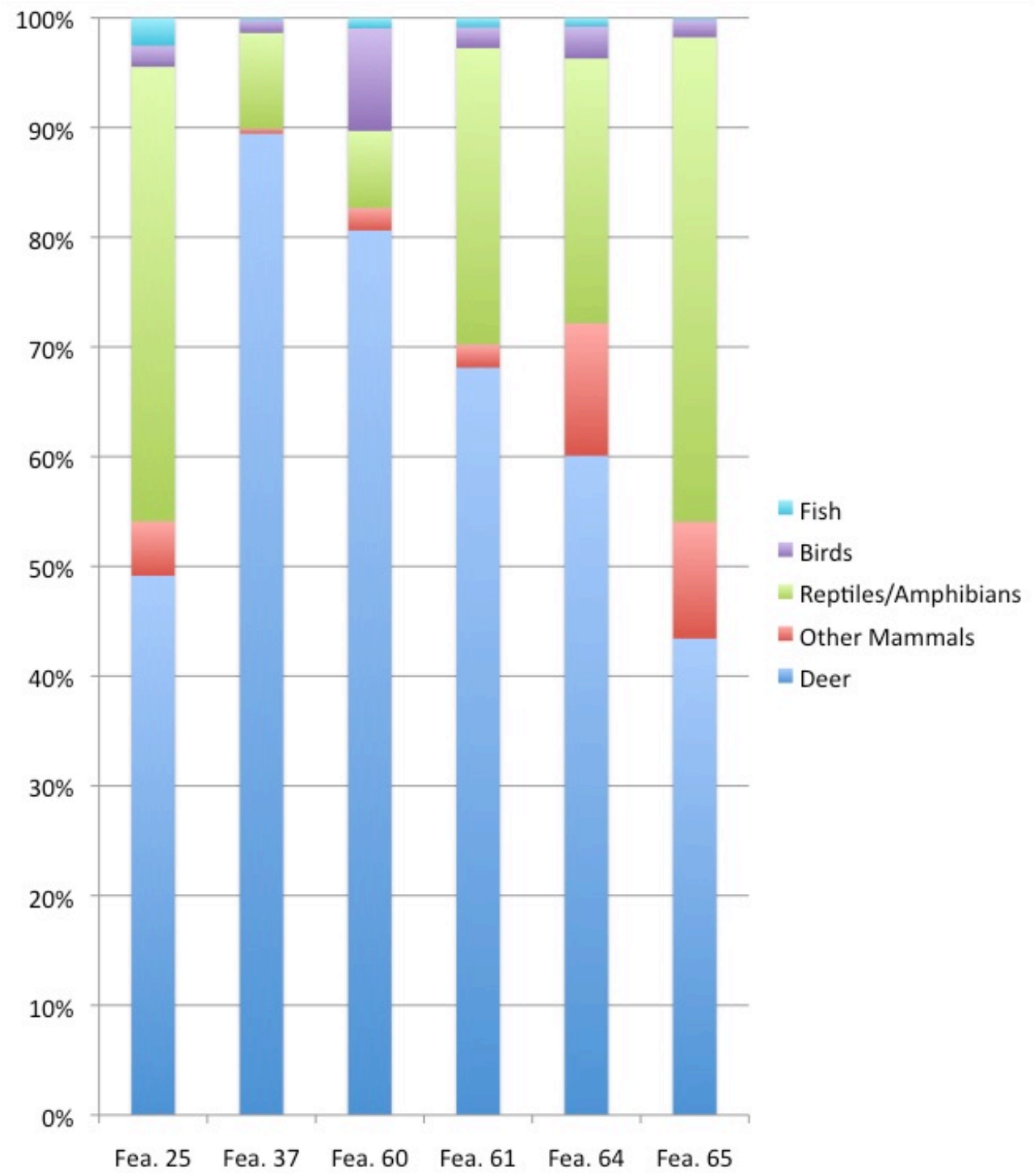


Figure 11. Composition of medium features.

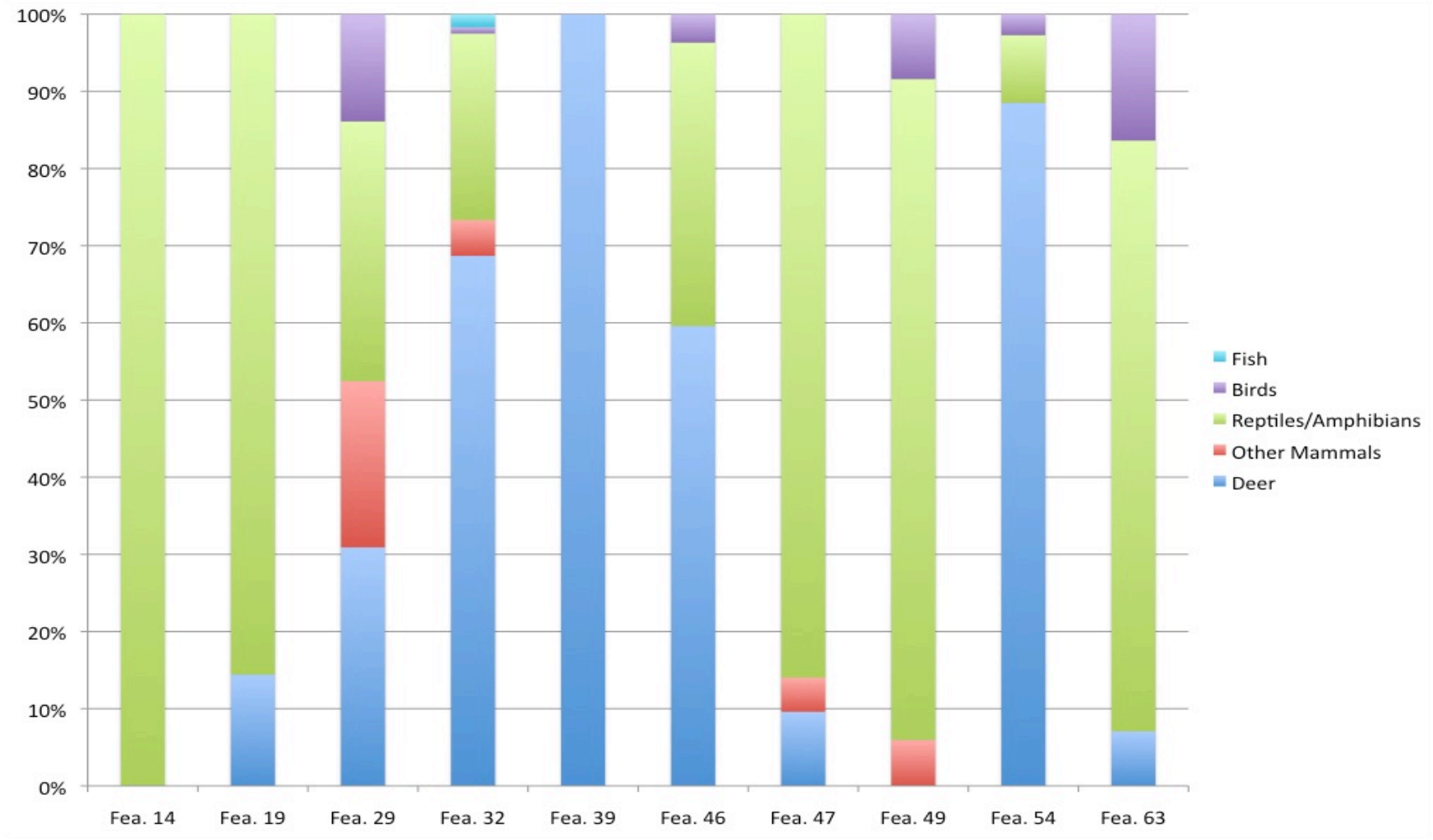


Figure 12. Composition of small features.

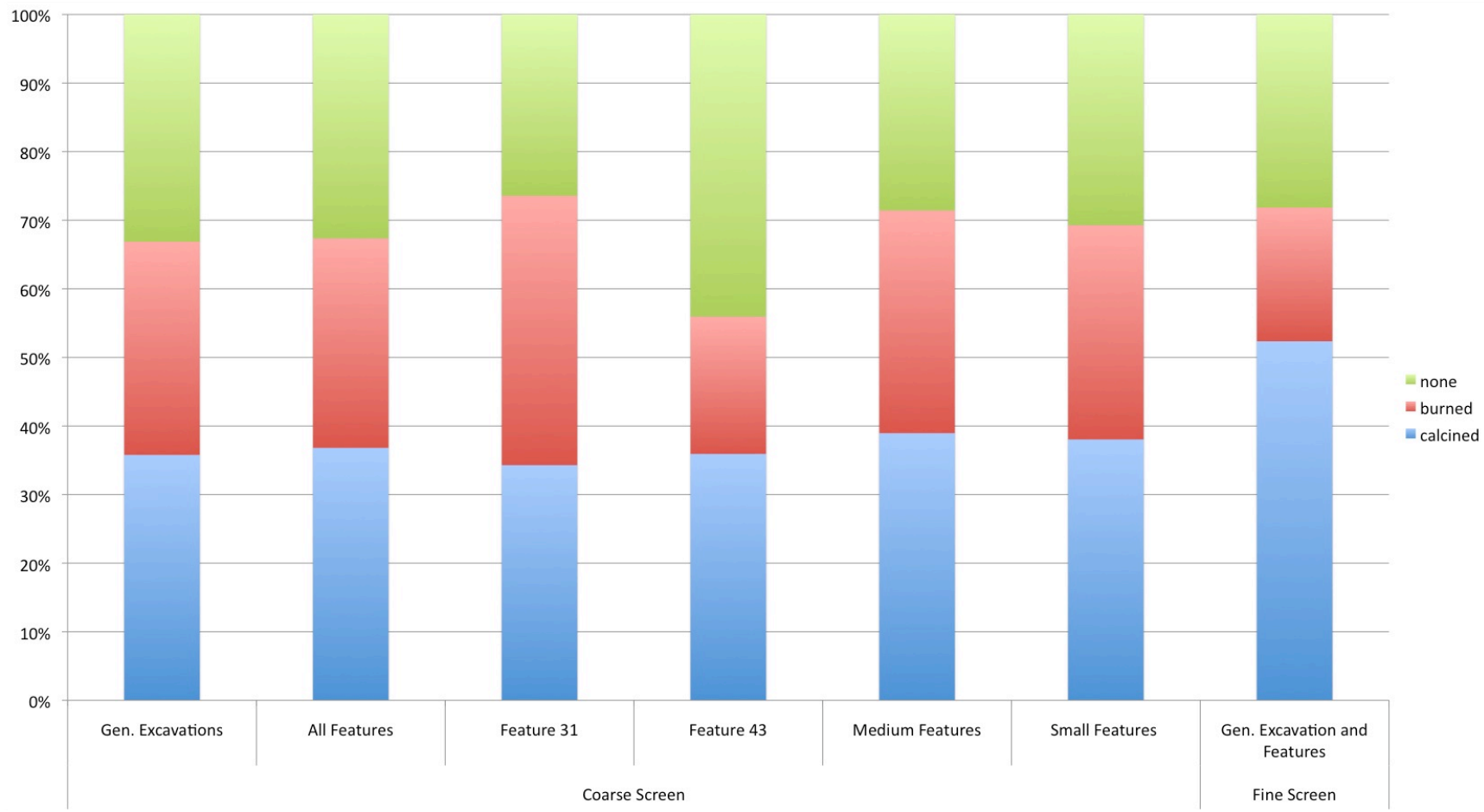


Figure 13. Heat exposure by group.

Fine Screen Material. The analyzed fine screen material came from Features 31, 43, 54, 56, 60, and 61, and seven 2-x-2-m units with levels ranging from 0-10 cm through 50-60 cm. The fine screen material consisted of 9,766 fragments, which was 15 percent of the entire assemblage; this group had a total weight of 264.49 g. Only 16 percent (NISP) of the fine screen material was identified to class level or below.

A summary of the fine screen class distributions is presented in Figure 14. Reptiles were the most numerous class, followed by mammals. Fish and birds constituted unexpectedly low percentages of the total fine screen NISP and weight. However, fish constituted 15 percent (NISP) of the bones identified to class or below, and birds constituted 6 percent (NISP) of bones identified to class or below. These percentages were higher than the coarse screen material. The fish in the fine screen material constituted 36 percent (NISP) of all fish in the assemblage. The percentage of amphibians remained low, 0.3 percent of the total fine screen NISP. By NISP, 52 percent of the fragments were calcined, 28 percent had no evidence of heat exposure, and 20 percent were burned; by weight these percentages were nearly the same. Some differences emerged when the fine screen material from features was compared to that from the 2-x-2-m units. The features had a higher percentage of fish and birds than the 2-x-2-m units, and there was a slightly higher percentage of calcined bone in the 2-x-2-m units. Differences observed in the composition of the coarse screen and fine screen material were typical of such comparisons. As expected, a much higher percentage of the fine screen material remained unidentified, compared to the coarse screen material. The percentages of fish, amphibians, birds and crawfish were greater in the fine screen sample, while the percentage of mammals was much lower.

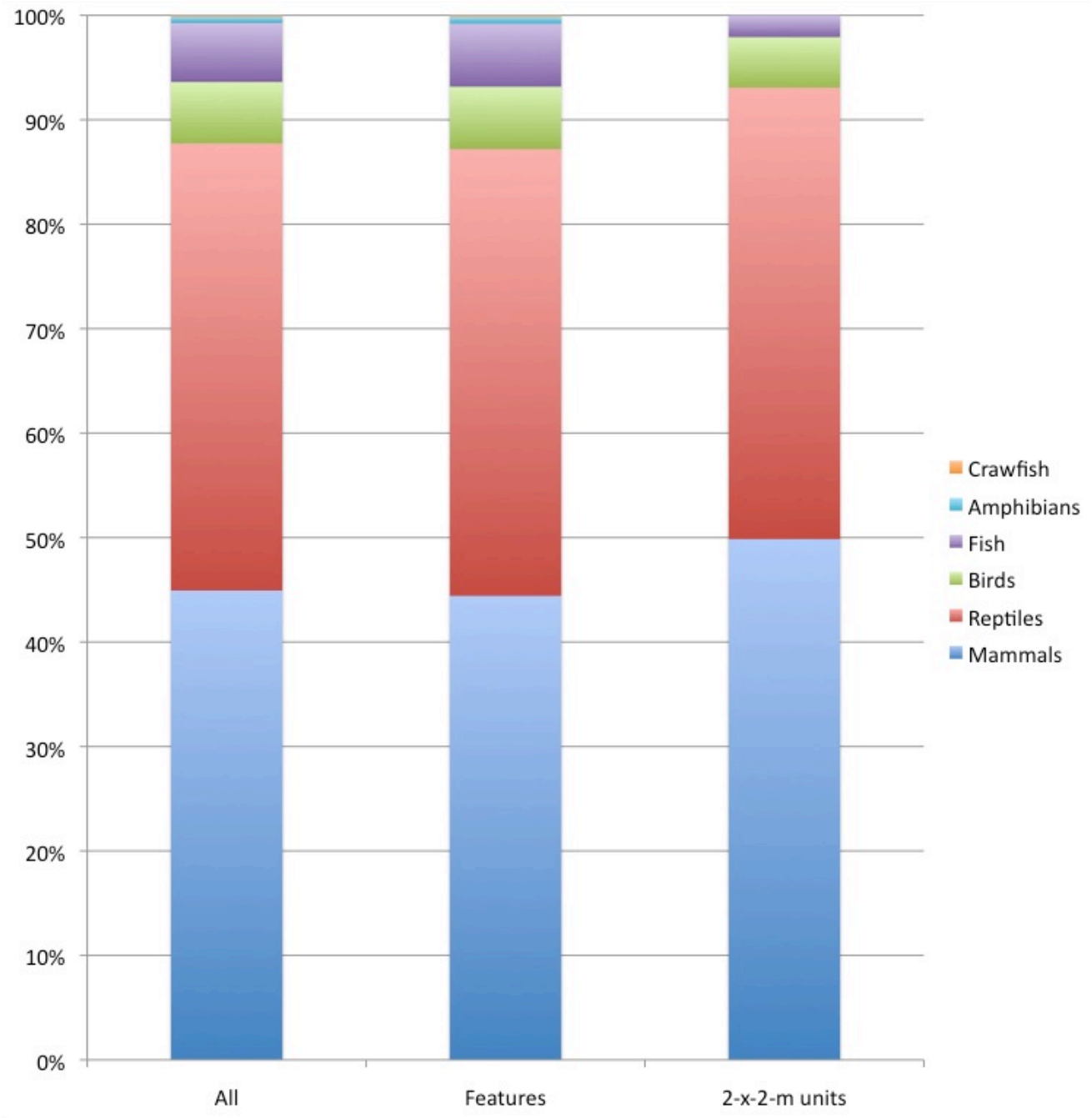


Figure 14. Composition of fine screen material.

Heat exposure of the fine screen material differed greatly from the coarse screen (Figure 13). Calcined fragments made up over half of the material, a significant increase compared to the coarse screen calcined percentage. Like the coarse screen material, lack of burning was the second most common characteristic. The unusually low percentage of burned fragments differed greatly from the entire coarse screen assemblage.

Inter-Site Comparison

The purpose of this section is to describe animal use practices in the Tombigbee, Coosa, and Alabama river drainages, and to compare these practices to the Indian Hill site. Figure 15 shows Middle and Late Woodland assemblages. For ease of comparison, the Early, Middle, and Late Miller III assemblages from Gainesville Lake were consolidated to show a time-averaged picture of Late Woodland Miller III subsistence. All comparisons by class were based on weight. Bone weight was used because it is less susceptible to fragmentation and it more closely resembles the meat contribution of each class. However, the deer skeletal parts frequency comparison was based on weigh because parts frequency, not potential meat contribution, was the goal. Although the Kellogg site and Jones Bluff Reservoir sites do not have bone weights available, they were considered because of the information they provided about species exploited.

There are several potential sources of bias that must be recognized in this analysis. First, the sizes of the assemblages varied widely. The smallest assemblage, the Lubbub Creek Miller I/II, weighed 10.38 g; the largest was the Indian Hill assemblage, which weighed 23.8587 kg. Second, researchers treated unidentified mammal in different ways. Researchers of the Shell Bluff site, Lubbub Creek sites, and the Lightwood Shell Midden Complex sites used unidentified

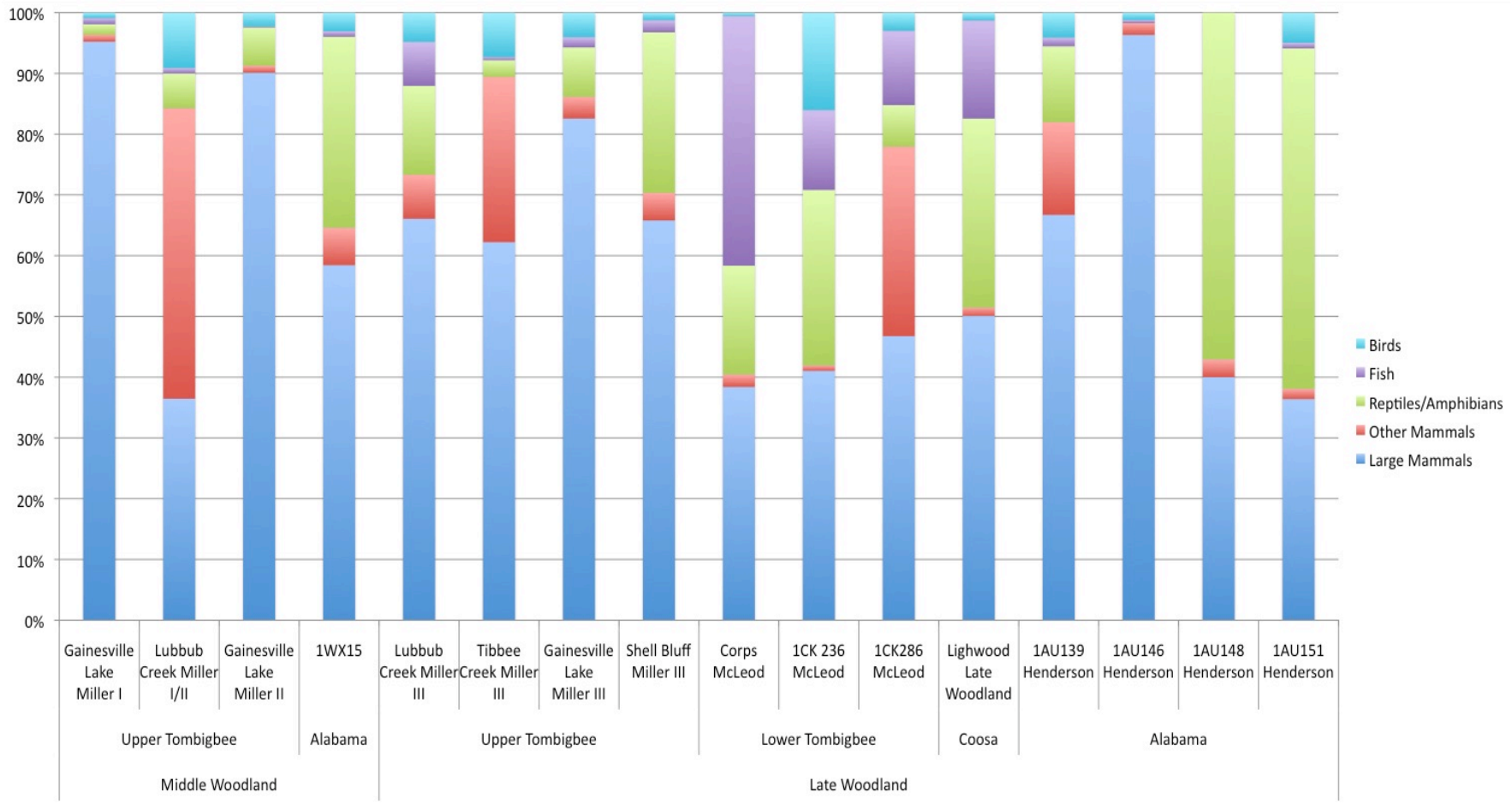


Figure 15. Composition of Middle and Late Woodland assemblages.

large, medium, and small categories while others did not. For the purpose of this study, unidentified large mammal was added to deer to make the large mammal category, and unidentified medium and unidentified small mammal were added to the other mammal category. Furthermore, because the unidentified mammal category could include both large and other mammal fragments, all bones in the unidentified mammal category were excluded from the comparisons. The exclusion of this category underestimated the contribution of mammals and, in general, exaggerated the contributions of the other classes. This was especially true when assemblage sizes were small and most of the mammal bone was unidentified.

Third, more data are needed, especially from Middle Woodland sites and sites with cold weather occupations. There is a distinct lack of Middle Woodland faunal assemblages, especially from the Alabama, Coosa, and lower Tombigbee drainages. Additionally, there is clearly a paucity of winter assemblages in this analysis, and assemblages where fall and winter were indicated were mixed with summer and spring. It is thought that in winter, groups would leave base camps and split into smaller units to forage (Jenkins and Krause 1986). Jenkins and Krause (1986) have identified some sites in the upper Tombigbee basin that they believe to be winter camps. These sites consist primarily of lithic and ceramic scatters, and the lack distinct middens. More analyses of well-stratified features would be useful. Identification and careful excavation of such features could potentially isolate discrete depositional episodes restricted to individual seasons.

Despite important differences in recovery, analysis, and reporting methods, some general patterns emerged in this examination of Middle and Late Woodland vertebrate consumption from the Tombigbee, Alabama, and Coosa river drainages. The Gainesville Lake Miller I, Gainesville

Lake Miller II, and IAU146 assemblages had the highest percentages, 90 percent or more, of large mammals, followed by Gainesville Lake Miller III, at just over 80 percent. For the remaining assemblages, the percentage of large mammals ranged between 35 percent and 70 percent. In these remaining assemblages, the percentages of the other categories varied greatly. For Lubbub Creek Miller I/II, 1CK286, and Tibbee Creek, the percentage of other mammals was relatively high, while in the other assemblages reptiles/amphibians were more abundant. The Corps assemblage had the highest percentage of fish, followed by Lightwood, 1CK236, 1CK286, and Lubbub Creek Miller III. The highest percentage of birds occurred in the 1CK236 assemblage.

Ubiquitous taxa included turkey, opossum, raccoon, grey squirrel, rabbits, deer, catfish, freshwater drum, and turtles, primarily mud/musk, box, and soft shell. Rare taxa (those identified from one or two sites) included black bear, cougar, wolf, weasel, mink, otter, spotted skunk, woodchuck, shad/herring, walleye, sea catfish, requiem shark, alligator, gopher tortoise, diamondback terrapin, birds of prey, and salamanders. The Corps site and Lubbub Creek Miller III had the greatest diversity of fish. The Corps site and the Indian Hill site had the greatest diversity of other mammals.

Three primary variables are interacting to influence the faunal composition: seasonality, geography, and time. Scott (1983) proposed seasonality as the cause of the variation seen in the composition of the Gainesville Lake and Lubbub Creek assemblages. As illustrated in Figure 21.3 in Jackson and Scott (2002:472) and Figure 3 in Scott (1983:304), there were distinct differences in faunal assemblages during the different seasons. Large mammals, primarily deer, dominated winter assemblages. Spring, summer, and fall diets were far more diversified.

Figure 16 shows the seasons of occupation for the sites where identified. All assemblages have fall occupations, and seven assemblages have mixed fall and warm weather. The Gainesville Lake Miller I assemblage was primarily a fall assemblage, and it had the highest percentages of large mammals. The Lightwood, Lubbub Miller III, and Corps sites were all primarily warm weather sites. These three sites had high percentages of fish. The site 1CK236 was occupied nearly year-round; its assemblage was quite diverse, except that it had a very low percentage in the other mammal category. The Gainesville Lake Miller II and III assemblages were occupied in late spring through fall, but had a much less diverse assemblage. The site with the most solid evidence of winter occupation was 1AU139; this site also had the second highest percentage of large mammals of the Alabama River sites.

When examined with regards to the second variable, geography, clear patterns are evident. The upper Tombigbee assemblages tended to have higher percentages of large mammals than the lower Tombigbee, Alabama, and Coosa assemblages. These upper Tombigbee assemblages had extremely low percentages of fish, despite the fact that a sample of the fine screen material was analyzed. The Lubbub Creek assemblages were anomalous compared to the other upper Tombigbee assemblages. Lubbub Creek Miller I/II had the lowest percentage of large mammals and the highest percentage of other mammals of all assemblages. Lubbub Creek Miller III had an unusually high percentage of fish compared to other upper Tombigbee assemblages. The lower Tombigbee and Coosa assemblages had the highest percentage of fish and the lowest percentages of large mammals. The Alabama River assemblages tended to fall between these two clusters.

	Winter	Spring	Summer	Fall
Gainesville Lake Miller I		----------		----------
Gainesville Lake Miller II		----------		
Gainesville Lake Miller III		----------		
Lubbub Creek Miller III		----------		
Lightwood		----------		
Corps			----------	
1CK236	---	----------		
1AU139	----------			----------
1AU146				----------
1AU148				----------
1AU151				----------

Figure 16. Seasons of occupation for selected sites.

Another geographically related pattern is deer skeletal parts frequency. As Figure 17 shows, there are distinct differences in the representation of deer portions. It should be noted that Gainesville Lake, in this figure, includes both Middle and Late Woodland deer. In all groups, lower limb fragments represented the highest percentage and head fragments represented the second highest percentage. The high proportion of lower limb fragments was likely caused by the high frequency of phalanges present in the assemblages. The high representation of head fragments at Gainesville Lake was due to cranial fragments and teeth, while at the Corps and Indian Hill sites it was due to the number of teeth identified. At all sites, upper limb fragments are the third highest, and axial fragments are the fewest. However, the ratio of parts varies with each site. The percentage of axial fragments was extremely low at the Corps site, compared with the other two sites. Furthermore, at the Indian Hill site, there was a great disparity between the most common fragments, lower limb fragments, and the second most common, head fragments. At Gainesville Lake, percentages of the four portions were quite close. This preliminary analysis suggests there is variability in butchering practices on the Eastern Gulf Coastal Plain.

The third variable, time, does not seem to be responsible for the differences seen in subsistence in the Gulf Coastal Plain. Both Jenkins (1982) and Jackson and Scott (2002) demonstrated significant changes in assemblage composition from the Middle Woodland to the Late Woodland in the upper Tombigbee drainage. However, this pattern is not apparent in the Alabama River drainage. The Indian Hill assemblage, proposed here to be a primarily Middle Woodland site, and the Lubbub Creek Miller I/II assemblage do not show the reliance on large mammals as the two Gainesville Lake Middle Woodland assemblages. Furthermore, the Late

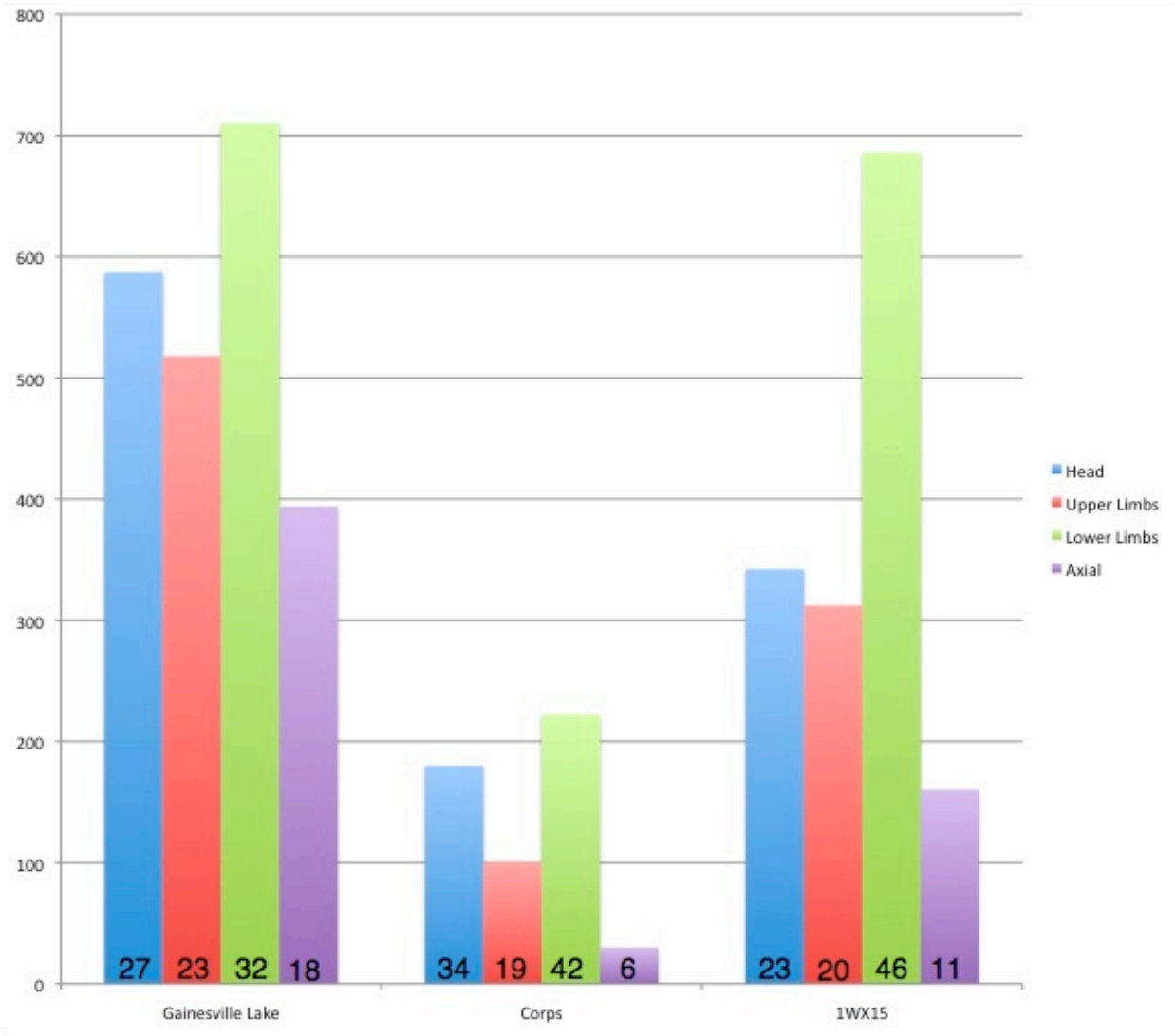


Figure 17. Deer skeletal parts frequency, by NISP. Percentages are listed at the base of each column. Gainesville Lake includes all phases of all sites.

Woodland assemblages from the Alabama River do not show a distinct drop in the percentages of large mammals.

Summary

Intra-site comparisons by class yielded some expected results. In the coarse screen material, mammals were most abundant, followed by reptiles, birds, fish, amphibians, and crawfish. In the fine screen material, the percentage of fish and birds was higher, while the percentage of mammals was lower. The strata of Features 31 and 43, the two largest features, showed evidence of discrete depositional episodes. The individual strata had differing taxonomic compositions, suggesting the diet varied from episode to episode.

A comparison of the Indian Hill site with sites in the upper and lower Tombigbee, Alabama, and Coosa river valleys revealed distinct patterns. The three variables affecting these patterns were seasonality, geography, and time. The sites that were primarily cool weather sites had higher percentages of large mammals than sites with warm weather and a mixture of warm and cool weather occupations.

When examined geographically, percentages of large mammals in upper Tombigbee Middle and Late Woodland assemblages were relatively high, especially those from the Gainesville Lake area. The Alabama and Coosa river assemblages had lower percentages of large mammals. The lower Tombigbee assemblages had the lowest percentages of large mammals. Deer skeletal parts frequency patterns from Gainesville Lake, the Corps site, and Indian Hill site suggested differences in butchering patterns.

When examined by time period, overall, the Late Woodland assemblages from the upper Tombigbee were more diverse, with lower percentages of large mammals, than those of the

Middle Woodland upper Tombigbee. However, this pattern was not observed in the Alabama River valley.

Chapter 5: Feature 38 - Burial or Meal?

Dogs were domesticated sometime between 12,000 and 14,000 years ago, and humans have used them for a variety of purposes ever since (Morey 1994). The most common uses were as hunting companions, guard dogs, pack animals, and as a food source. When the dog skeleton of Feature 38 entered the archaeological record, dogs were well established as both companions and economic resources to humans in the Southeast.

First, a discussion of domestic dogs in burial contexts is presented. Second, a discussion of domestic dogs as a food source is presented. Lastly, the details of Feature 38 are discussed and conclusions drawn about the role of this particular dog in the lives of the people who inhabited 1WX15.

Domestic Dog Burials

The intentional burial of dogs by humans is a worldwide phenomenon. The earliest dog burial known was from Siberia and dated to about 10,650 BP (Morey 2006). In North America, the oldest known dog burials were Early Archaic burials from the Koster site in Illinois, and date to approximately 8500 BP (Morey and Wiant 1992). However, the presence of domestic dogs in North America is a bit older; the earliest definitive domestic dog, a mandible fragment, was found in Danger Cave, Utah, and dates from 9,000-10,000 BP (Schwartz 1997).

In the southeastern United States, most dog burials are from the Archaic Period, and decrease in number through time (Warren 2004). There are several comprehensive reviews of dog burials in the Southeast (e.g. Darwent and Gilliland 2001**;** Morey 2006; Schwartz 1997; Walker et al. 2005; Warren 2004).

The recognition of dog burials is based on the presence of a distinctive pit, the completeness of the skeleton, and the degree to which the remains are in anatomical order. The location of the burial on the site is also indicative. "While some domestic dog skeletons were found in refuse middens, most are distinct burials, buried either singly or with human remains" (Walker et al. 2005:84). An archetypical dog burial in this region consists of a single interment of an adult dog with no accompanying grave goods. The dogs were placed in small pits in a sleeping position, i.e. in a flexed position with legs folded, tail tucked, and head placed near the front legs or folded back onto the side (Warren 2004).

Darwent and Gilliland (2001) estimate that about 30 percent of dog burials in the Southeast are associated with human burials. This practice was most common during the Middle and Late Archaic periods (Morey 2006). For example, at the Perry Site excavators found two human burials that were accompanied by dogs; one in which the dog was placed near the head of the person, and another in which the dog was placed on the chest of the person (Webb and DeJarnette 1948). Such treatment is evidence of the importance of the domestic dog, not just as a resource for humans to use, but also the emotional and spiritual nature of the relationship between people and dogs.

The Domestic Dog as a Food Source

Ethnographic Evidence. The domestic dog has been a convenient source of food for people throughout the world. In North America there is considerable ethnographic evidence for this practice, much of which comes from the Midwest and the Plains area (Bozell 1988; Snyder 1991; Warren 2004). Ethnographic accounts from these regions indicated that a meal of dog was common among some groups for ceremonial purposes, especially ceremonies associated with

greeting guests (Schwartz 1997; Snyder 1991). Father Pierre De Smet, traveling throughout the West in the nineteenth century, was often served dog meat, which he praised for its taste and tenderness (De Smet 1969 [1905]).

Dog was also considered starvation rations, to be eaten when other food sources were scarce (Bozell 1988; Snyder 1991). Snyder (1991) found that dogs, unlike other food sources, such as deer, maintained a higher proportion of fat during the difficult winter and early spring months. This high ratio of fat was attributed to their ability to scavenge scraps from human meals or consume food items considered unfit for human consumption. A Hidatsa informant noted that the village dogs were given meat too lean to eat, leftover bones, and food that had spoiled (Snyder 1991). Additionally, Hogue (2003) found evidence of protohistoric domestic dog diets at the Josey Farm site (22OK793). Carbon and nitrogen isotope levels in these domestic dog remains indicated the dogs either ate maize or ate other animals that ate maize. This is clear evidence that associating with humans enhanced the dogs' diet.

Boiling appears to be the most common method used for cooking dog in the Plains, as it preserves the fat and makes the meat more tender (Snyder 1991, 1995). Preparation of the dog began with killing it, often by strangulation, then singeing off the hair. Historic accounts of dog butchering indicated that large sections of the carcass were left intact. "The portion bestowed on me was large; the two thighs and the paws, with five or six ribs" (De Smet 1969 [1905]:212). Gilmore (1934:37-38) observed:

> The dressed carcass was then divided into portions in accordance with well-established tradition. These portions are the two fore-quarters, the two hind-quarters, the two sets of ribs, the cervical

> and dorsal vertebrae with adjacent bones and muscles between the shoulders, and the lumbar vertebrae with the bones and muscles which form the pelvis. [Gilmore 1934:37-38]

While being "traditional," these portion sizes were also pragmatic in that they represent the minimum amount of dismemberment required for the carcass to fit into cooking pots. Sub-adult dogs were often the preferred choice for ceremonial meals, but when eating for sustenance age was not a factor.

There is scarce ethnographic evidence for dog eating in the Southeast (Warren 2004; Schroedl and Parmalee 1997). European accounts of dog eating among Native Americans in the Southeast began with the chronicles of the march of Hernando De Soto through the southeastern United States, in which Native Americans offered dogs as gifts of food (Bourne 1904; Schwartz 1997). "The Cacique sent him a present, by two thousand Indians, of many conies and partridges, maize bread, many dogs, and two turkeys" (Bourne 1904). Swanton (1946) noted that dogs were occasionally eaten in ritual context in the Southeast, though this does not seem to have occurred to the degree as it did in the Midwest and the Plains.

Archaeological Evidence. The two best indicators of the use of dogs for food are the manner of disposal within the archaeological site and postmortem modifications. Food refuse was frequently scattered throughout the site, sometimes with concentrations where refuse was repeatedly disposed. Webb (1946:157-58) made a clear distinction between dogs found in burials and dog remains that were "scattered in the midden and about fireplaces." The latter was assumed to be food refuse. Bones were almost never articulated and bones of multiple species

were mixed. Furthermore, food refuse had the potential to become highly fragmented during marrow extraction and grease production.

Archaeological evidence for the consumption of dog can be problematical. Domestic dog crania and mandibles can often be distinguished from wild canids, but the same is not so for the post-cranial elements. However, domestic dog bone fragments are occasionally identified in midden context in the Southeast. Excavations at Marco Island Florida yielded dog remains that Wing (1965) interpreted as food refuse. Domestic dog bone fragments were found in Middle Woodland faunal assemblages of the Gainesville Lake area sites, and the Kellogg site (Atkinson 1980b; Woodrick 1981). Domestic dog bone fragments were identified in Late Woodland assemblages from the Gainesville Lake area sites, the Kellogg site, 1CK236, 1CK286 (Atkinson 1980b; Clute 1999; Woodrick 1981). Although there was a dog burial at 1AU139, there was a fragment from a domestic dog found not associated with this burial (Waselkov 1982). No domestic dog remains were found in Woodland context at Lubbub Creek, but two fragments were found in Mississippian context (Scott 1983).

Following Lyman (1987:252), 'butchering' is defined as the "human reduction and modification of an animal carcass into consumable parts" and encompasses a wide range of activities. Skinning an animal leaves a particular pattern of cut marks on the bones, although this pattern can vary depending on the purpose of the skinning (Binford 1981). Generally, cut marks from skinning occur near the lower limbs and around the muzzle.

Disarticulation is the process of breaking a skinned carcass into smaller, bone-in parts. Dismemberment usually occurs at joints, and results in cut marks clustered "on the edges, or articular surfaces, of the ends of long bones" and "on the surfaces of vertebrae or pelvic parts"

(Binford 1981:47). Cut marks for removal of the head cluster around the occipital, atlas, and axis.

Burning can cause a range of effects from slight discoloration of the bone, to carbonization, to fully calcined. David (1990:75) experimented with the burning of bones and concluded, "natural conditions will regularly carbonize bones but will rarely calcine them."

A lack of cut marks or burning does not imply a lack of postmortem modification, as it is possible to skin and butcher an animal without leaving a mark (Guilday et al. 1962). Furthermore, carcasses may be cooked without altering the bone in visible ways. Observations of the presence - and absence - of these attributes must be reviewed for the entire assemblage, in order to define patterns that can be unquestionably attributed to human activities.

Two common non-human, postmortem modifications of bone relevant to this feature are rodent gnawing and carnivore gnawing. Rodent gnawing is readily identifiable; rodent incisors are chisel shaped and produce wide marks with flat bottoms and a ridge through the center of the marks. However, not all rodents produce the same pattern of gnaw marks on bones. Klippel and Synstelien (2007) found that grey squirrels preferred to gnaw on the diaphysis of dry bones while brown rats preferred the still-greasy cancellous portion of bones.

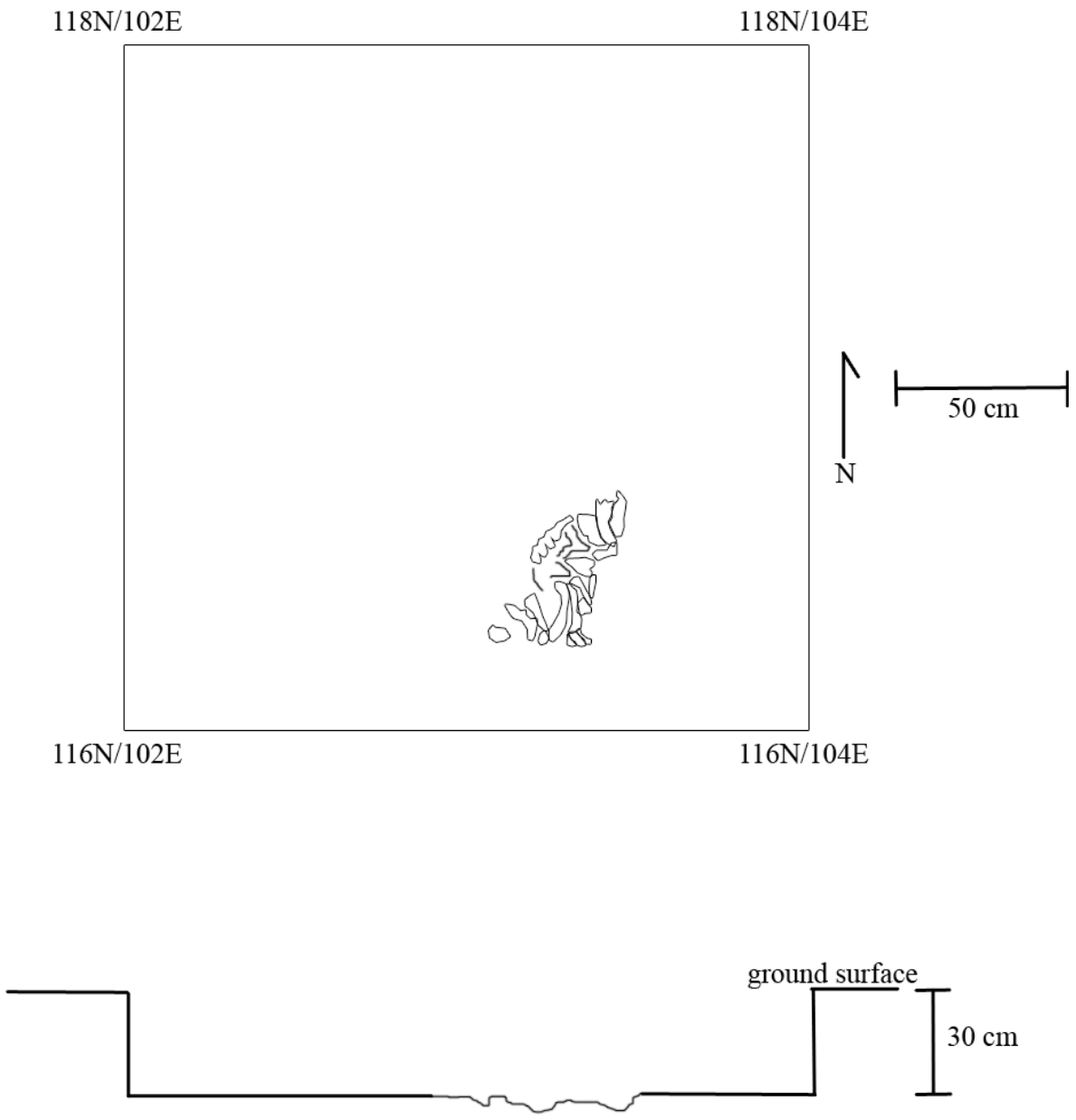
Carnivore gnawing can result in punctures, pitting, scoring and furrowing (Binford 1981). Scoring bears the closest resemblance to cut marks made by stone tools. However, tooth marks tend to follow the contours of the bone, whereas cut marks do not. Cut marks may have striations in the trough of the mark, and the mark tends to taper away, while tooth marks begin and end abruptly, and tend to have smooth bottoms.

Most research on carnivore chewing has focused on canids, hyenas, and felids. While wolves and dogs may chew on any portion of the skeleton, they focus their chewing on the ends of the bones. Morton and Lord (2006) documented the scavenging of pig carcasses by not only red foxes, but also raccoons, opossums, striped skunks, crows, and turkey vultures. The resulting damage to the bones included "gnaw marks, chewed epiphyseal bone ends, teeth marks, and beak marks" (Morton and Lord 2006:479). In all studies, researchers found that bones get scattered during scavenging.

Feature 38

Feature 38 consists of the near-complete skeleton of a canid, identified as a domestic dog (*Canis familiaris*) by the distinctive "hooked" coronoid process of the mandible. Based on epiphsyeal fusion and tooth eruption rates found in Sisson (1921), this dog was approximately five months old. No baculum was present, but completeness of the skeleton suggests that the lack of a baculum was not accidental; it is probable this dog was female. The excavator described this feature as: "dog burial; in anatomical order, backed curved; matrix: light brown sand, with small amounts of shell in sand, and small bone fragments; fill: same as matrix; small amounts of shell and some pot sherds" (Sharer 1996). The maximum length was 32 cm along the north/south axis, and the maximum width was 20 cm along the east/west axis. The maximum depth of the burial was 30 cm below the ground surface.

The plan-view map and profile of the burial (Figure 18) matches the written description: the dog appears to have been in anatomical order with the back curved. No burial pit was mapped because, as stated in the feature form, the matrix and the fill consisted of the same soil. The legs were folded next to the spine, as if the dog was lying on its side, and the head was



Feature 38
FS 26

Figure 18. Feature 38, plan view and profile.

oriented to the northeast. This feature, like all others, was screened using coarse screen underlain with fine-mesh window screen.

Each bone was examined macroscopically and microscopically, using a binocular microscope with magnifying powers that range from 1X to 7X. Postmortem modifications, both human and non-human in origin, were marked on a generalized diagram of a dog skeleton (Figure 19**)** and described in Table 2 and Table 3. The bones exhibited damage consistent with cut marks, animal gnawing, including both carnivore and rodent gnawing, and modern cut marks resulting from excavation.

Discussion and Conclusions

Feature 38 was neither a typical dog burial nor typical food refuse. It differed from the typical Southeastern dog burial in that there was no defined pit, it was a sub-adult animal, and there was significant postmortem damage to the bones. The first difference, the lack of a well-defined pit, was a minor problem because sometimes the difference between matrix and fill dirt is barely discernable or not visible at all. The second difference, the very young age of the dog, while unusual for a burial, is not unheard of. The primary obstacle to interpreting this as a burial was the third difference, the damage to the bones.

The location and morphology of the damage to the bones was assessed to ascertain the origin of each mark. In the case of human-made marks, the marks were compared to known butchery patterns. The cut marks on the premaxilla most likely resulted from skinning. The cut marks on the rib may also have been associated with skinning. The cut marks on the humerus were more consistent with dismemberment, as were the marks on the third cervical vertebra and the femur. The cut marks on the radius and tibia could have been associated with either skinning

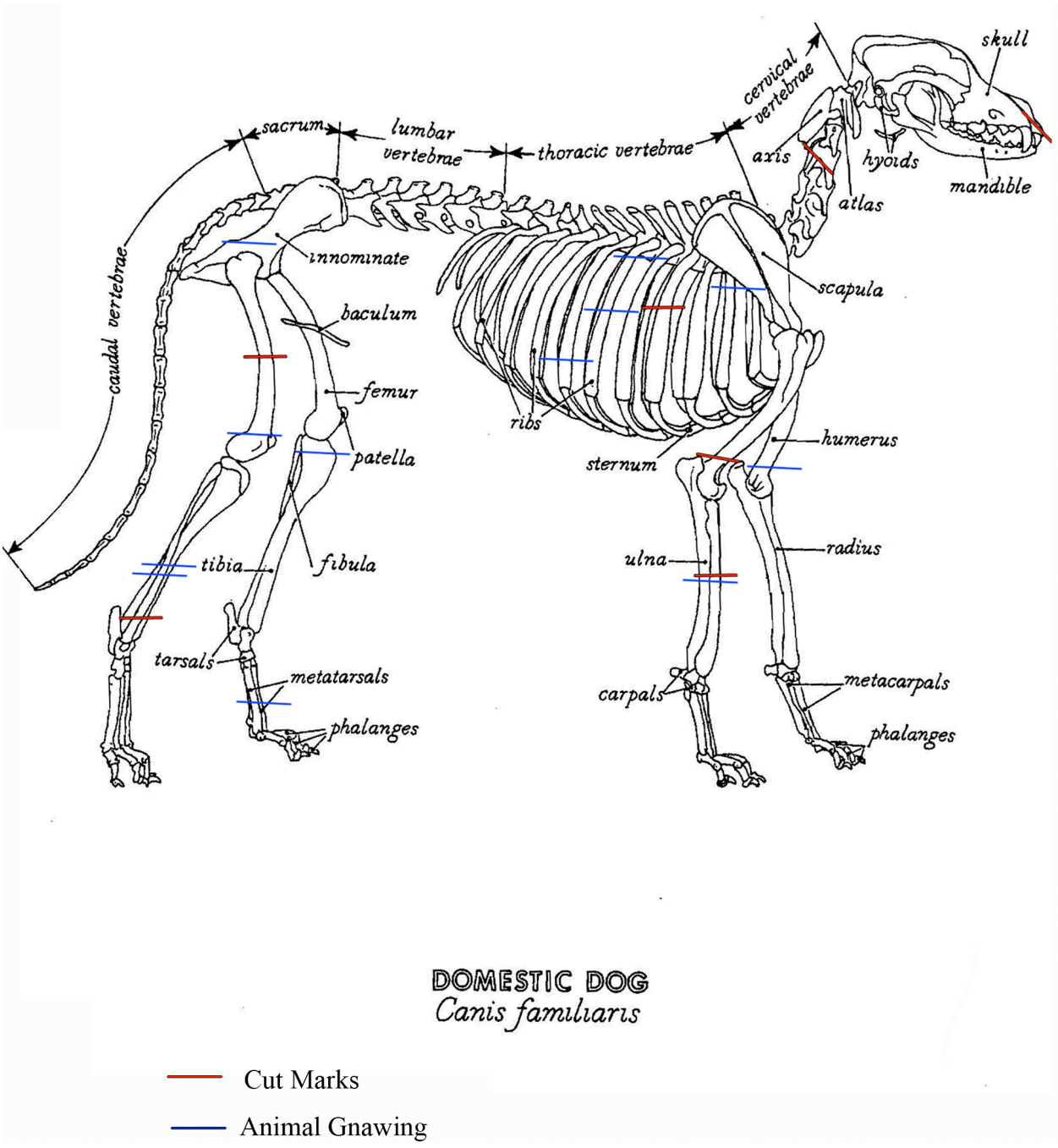


Figure 19. Bone surface modifications from Feature 38.

Table 2. Description of Cut Marks from Feature 38.

Bone	Side	Location	Certainty
Premaxilla	L	lateral, superior/posterior to UI3 alveolus	strong
C3 vertebra	--	dorsal surface	strong
Humerus	R	distal, anterior, above supratrochlear foramen	moderate
Radius	R	mid-shaft, posterior	weak
Femur	R	mid-shaft, lateral	moderate
Tibia	R	distal, lateral	strong
Rib	L	mid-shaft, anterior margin	strong

Table 3. Description of Animal Gnawing from Feature 38.

Bone	Side	Location	Certainty	Origin
Scapula	L	posterior edge, near glenoid cavity	strong	?
Humerus	L	distal, lateral	weak	?
Ulna	R	mid-shaft, posterior	strong	?
Pelvis	L	posterior margin of ilium and superior ischiatic spine (dorsal/medial)	strong	carnivore
Femur	R	distal, lateral	strong	carnivore?
Tibia	L	proximal, anterior; midshaft, lateral	strong	rodent
Tibia	R	mid-shaft, anterior	strong	?
Fibula	R	mid-shaft, posterior	strong	?
3rd metatarsal	L	mid-shaft	strong	?
Rib	L	proximal, anterior	strong	?
Rib	R	distal, anterior and posterior	strong	?
Rib	R	mid-shaft, anterior	moderate	?

or disarticulation. The mid-shaft placement of the marks on the radius, however, was more consistent with skinning,

The animal tooth marks were nearly all inconclusive as to origin. Only two instances were attributed to specific groups. Some tooth marks on the left tibia were consistent with rodent gnawing. The location of the rodent gnaw marks suggests it was done by squirrels, indicating that the bones would have been dried at the time (Klippel and Synstelien 2007). The shape and extent of the damage to the left pelvis was substantial enough to interpret it as carnivore gnawing. Tooth marks on the distal right femur may have been the result of carnivore gnawing, but this assessment was questionable. Tooth marks on the long bones were evenly distributed on the ends and mid-shaft. Damage on the third metatarsal and one rib were located on the mid-shaft, while damage on the other two ribs was located on the ends. Generally, the damage on the long bones was not consistent with canid chewing.

This dog differed from typical food refuse in that it was not scattered across the site, the bones were nearly all intact, and almost all of the bones were present. Postmortem damage, the circumstances of deposition, and location must all be combined into the likeliest scenario in order to understand the origin of Feature 38.

Three questions sum up the conflicts present in interpreting this feature. They are:

1. How could this dog have been butchered and eaten, but remain so complete with even the small tarsals and carpals present?
2. How is it these bones were gnawed, but not scattered?
3. How is it that throughout the above processes, very few of the bones were broken?

If it is assumed the dog was, indeed, butchered and eaten, then the completeness of the skeleton suggests the bones would have been cooked in a manner that would not result in scattering. Pot boiling would have kept all of the bones together. After the meal was eaten, the bones left in the pot would have been dumped in a single episode. Alternatively, the dog could have been skinned and defleshed while articulated; then the articulated skeleton could have been disposed of in one piece. In either scenario, the remains would have to have been covered over quickly, otherwise the bones would probably have been scattered more widely. Meal remnants that were intentionally buried seem to imply a ritual situation. This scenario does not explain how the bones could have been gnawed by animals. Neither does it explain how the bones could possibly have been in anatomical order.

If it is assumed humans intentionally buried the dog, then what have been interpreted as cut marks and animal gnawing may actually be the result of some other taphonomic process. Andrews and Cook (1985) found that trampling bones on the ground surface causes cuts and scrapes that mimic human-induced cut marks and carnivore gnawing. These marks were located primarily on bone shafts and were oriented in random directions. Trampling can also scatter the bones over a large area. Though the effects of trampling were not consistent with the details of Feature 38, it suggests that there could be taphonomic processes in which buried bones may be subjected to damage inflicted by sharp objects, such as rocks, that came into contact with the bones while buried.

One situation that could explain animal tooth marks in either of the above scenarios is that scavengers exhumed the dog after burial and chewed on it. When people discovered this, they could have gathered the remains and reburied them. This action would account for the

completeness of the skeleton, but, again, if the bones were truly in anatomical order, this scenario is not a sufficient explanation.

No single explanation sufficiently accounts for the manner in which this dog entered the archaeological record. An examination of other dog burials for postmortem damage is needed. If these burials exhibit similar damage, an as yet unidentified taphonomic process associated with burial would be an acceptable explanation. If not, then this burial must be considered an anomaly, exhibiting a complex taphonomic history deserving further study.

Chapter 6: Summary and Conclusions

Researchers have proposed a variety of scenarios to account for variation in subsistence practices of the Woodland Period on the Gulf Coastal Plain. One of these is population pressure. One way of detecting population increases is to tease out signs of dietary stress from faunal assemblages. Such signs include increased use of second-line faunal resources, intensification of primary resources, and exploiting previously unused environments and resources.

This study presents a faunal analysis of the Indian Hill site, 1WX15. This site is located on the bank of Pine Barren Creek, a tributary to the Alabama River in southwest Alabama. This location is at the intersection of four physiographic districts - the Alabama alluvial valley, the Chunnennuggee Hills, the Black Prairie, and the Southern Red Hills. Such diversity in environments is reflected in the diversity of exploitable faunal resources.

The Indian Hill site was excavated in 1968 and in 1996. The majority of the ceramic assemblage from the 1968 investigations appeared to be Middle Woodland; however, a Late Woodland occupation is probable, though the intensity of this occupation is unknown. The faunal assemblage analyzed was from the 1996 excavation.

The purpose of this study is not only to expand knowledge of Woodland subsistence in the Alabama River valley, but also to present a broader picture of Gulf Coastal Plain faunal usage patterns and changes thereof. This study reviews Middle and Late Woodland faunal assemblages from sites in the upper and lower Tombigbee, the Alabama, and the Coosa river valleys. Researchers have suggested the general trend appears to be one of increasing diversification of faunal assemblages through time. Middle Woodland assemblages appeared to

be more focused on large mammals, while Late Woodland assemblages had higher percentages of reptiles, birds, and other mammals.

The 1WX15 faunal assemblage was more diverse than the other Middle Woodland assemblages. Large mammals made up about 58 percent (weight) of the fragments identified to class level or below, whereas large mammals constituted 90 percent or more of the Gainesville Lake Middle Woodland assemblages. All of the Late Woodland assemblages were more diverse compared with the Gainesville Lake Middle Woodland assemblages. There was some variation in the percentages of other vertebrates. Tibbee Creek and 1CK286 had very high percentages of other mammals. Others, such as the Lightwood and Corps sites, had high percentages of fish. The percentage of birds varied widely. All Late Woodland sites, except Tibbee Creek, had high percentages of reptiles.

This study identified three primary variables affecting the composition of Woodland faunal assemblages - seasonality, geography, and time. Scott (1983) argued that the differences in subsistence through time seen in Gainesville Lake and Lubbub Creek were the result of seasonality. A comparison of sites by season of occupation demonstrated that seasonality was, indeed, a driving factor in assemblage composition. Most of the Late Woodland assemblages for which season of occupation was suggested were occupied during the warmer seasons; this would greatly contribute to the variety of taxa seen in these assemblages.

When examined geographically an interesting pattern emerged. The upper Tombigbee assemblages tended to have higher percentages of large mammals compared with the other locations. In general, the lower Tombigbee assemblages had low percentages of large mammals and high percentages of fish. The Alabama and Coosa river assemblages varied widely in the

percentages of large mammals; however, all except 1AU146 had high percentages of reptiles. The higher percentage of large mammals in the upper Tombigbee could have been related to differences in butchering patterns.

A comparison of Middle Woodland to Late Woodland assemblages in the upper Tombigbee valley demonstrated decreasing reliance on large mammals, but this was not true of the Alabama River valley. The percentages of large mammals did not show a distinct drop from the Middle to the Late Woodland in the Alabama River valley.

Overall, previously studied Middle and Late Woodland assemblages demonstrate some consistency in the range of activities performed by people of these periods. Sites with completed botanical analyses demonstrate that a variety of plant resources were being exploited (Caddell 1981; Crane 1980; Hollenbach 2007; Leone 2009; Mickelson 1999; Sheldon 1982; Yarnell 1971). Horticulture, when practiced, was limited compared with Woodland groups to the north (Gremillion 2002). Evidence of the hunting and trapping of terrestrial vertebrates, fishing, and the gathering of aquatic invertebrates were ubiquitous activities at all sites. However, the ratio of each activity to the others varies. The varying percentages of different resources could be related to site function, site seasonality, prey density, cultural preference, or all of the above.

The Indian Hill site fits well into this overall picture of Woodland faunal utilization. Exploitation strategies included large and small game hunting, fishing, and collecting shellfish. Future analyses of the lithic and ceramic assemblages should shed light on other aspects of site use and duration.

In order to get a complete picture of Woodland subsistence, faunal and botanical assemblages from many contexts need to be examined. All of the assemblages presented in this

study were from river valleys and most include a mixture of warm and cool weather occupations. There was a distinct lack of faunal assemblages both from winter sites and from upland locations in the Gulf Coastal Plain. Although it is possible that upland sites simply do not have the midden accumulation of these alluvial valley sites, strenuous effort should be made to locate and analyze upland faunal assemblages or document the lack thereof

Other lines of evidence should be examined as well. Feature 38 from the Indian Hill site was reported to be a domestic dog burial. However, postmortem damage identified on the bones indicates this was not a typical Southeastern dog burial. Both human and non-human agents caused this damage. Thus, it would appear that this domestic dog was a meal, but the manner in which it was disposed was not consistent with other refuse disposal patterns at this site. If this domestic dog was indeed the remains of a meal there are two possible indications. It could have been eaten during a time of nutritional stress (Bozell 1988; Snyder 1991) or it could have been a type of ritual meal (De Smet 1969 [1905]; Schwartz 1997; Snyder 1991). More research is needed on this topic, as either explanation has important implications for Woodland subsistence practices.

As with most research projects, attempting to answer one question often creates more questions than answers. It is clear that the complex interplay between seasonality, geography, and time is difficult to observe archaeologically. Such complexity necessitates exposing areas where data is lacking. Although this study has added one more pixel to the snapshot of Woodland subsistence, it has demonstrated the need for more research in the Alabama River valley, especially projects that aim to find and analyze Middle Woodland sites and cold weather sites.

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Appendix

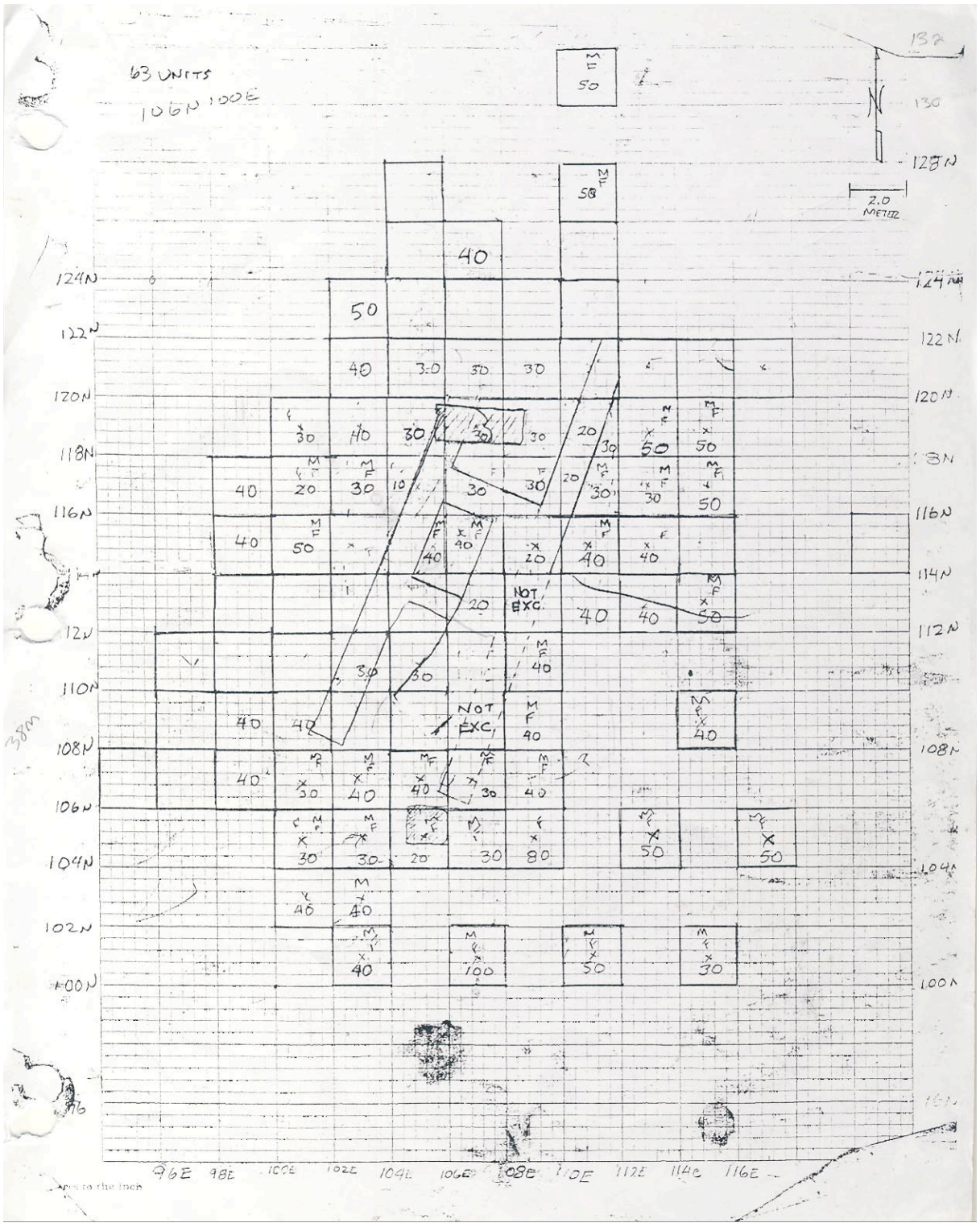


Figure 20. Original site map.

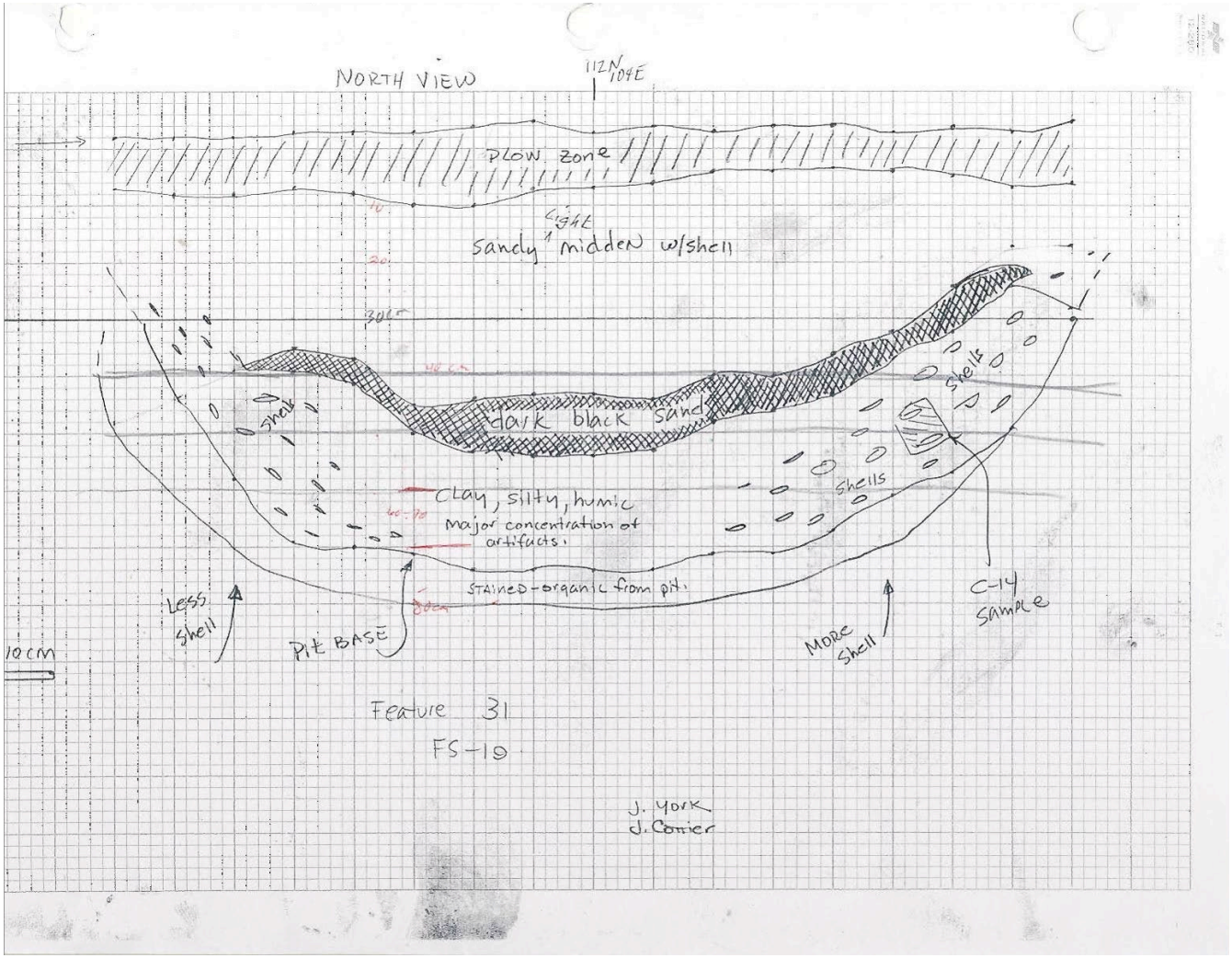


Figure 21. Original profile drawing of Feature 31.

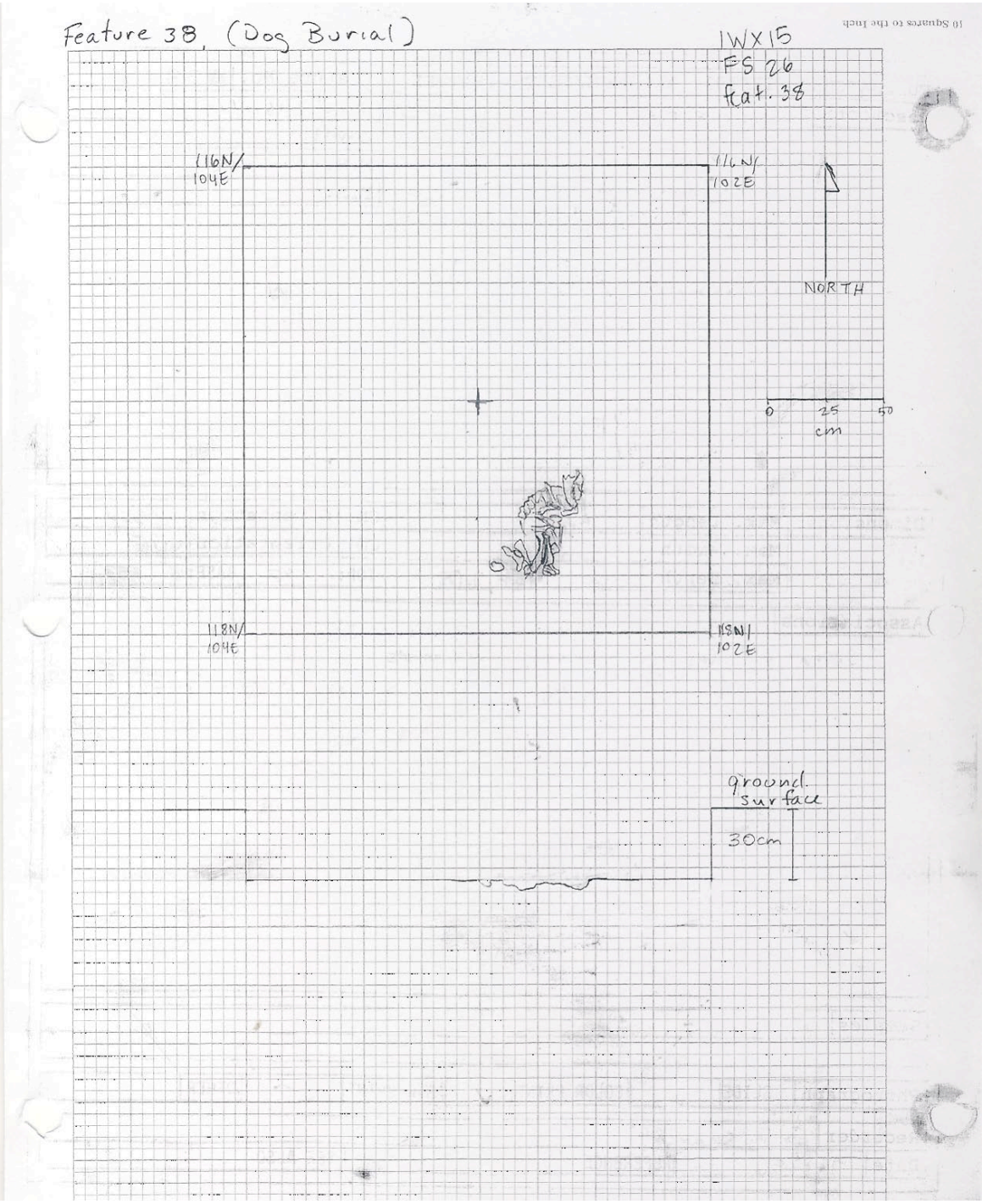


Figure 22. Original plan view and profile drawing of Feature 38. Note: unit coordinates on original plan view appear to be wrong; the feature form, feature log, and field specimen log list the southeast corner as 116N/104E.

Vita

Elizabeth Ellen Lovett, was born Elizabeth Ellen Williamson in Frankfurt, Germany on April 11, 1981. Her father's military career resulted in her residing in numerous places across the United States, as well as Germany. Upon graduating from River Ridge High School in Olympia, Washington in 1999, she entered Auburn University in pursuit of a Bachelor of Arts degree in Anthropology. Receiving this degree in December 2003, she began employment as an archaeological field and laboratory technician for Auburn University. She married her husband, Jason Lovett, in April 2006, and entered the University of Tennessee Department of Anthropology as a master's student in August 2006. She received her Master of Arts in Anthropology degree in August 2010.