Archaeological Excavations at the Lindsey Site
Morgan County, Georgia

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Preface
Mark Williams

This report is 25 years late and has had a sad and circuitous history to its present publication. The Lindsey site (9MG231) was excavated during the summer of 1987 as a Penn State University Summer Archaeology Field School under the direction of James W. Hatch. Jim unfortunately died in 1999 without having completed this report, although he had been planning it for several years and did complete many parts of it. At his death, the task of completing the report passed to his student Dorothy Humpf, who had been a graduate student field assistant on the 1987 dig. She was teaching at East Tennessee State University from 1999 until she also died in 2002. Dorothy (Dot) made some progress on the Lindsey report before her passing. The data then went to Adam King, another of Hatch’s students. Adam worked on the data from Lindsey sporadically for several years and then the work was passed to the present writer. I am proud to complete this report—in many ways it is similar to what Jim was planning. Prior to receiving the data for the uncompleted report from Adam, I had thought it was almost complete except for the lithic section. Dot had told me this many years ago. Upon receiving the box with all the chapter drafts from Adam, it became clear that it was only about 60–70 percent complete. The problem with the lithic chapter had to do with the fact that the lithics from there predated the ceramic occupation. I wrote all the uncompleted (or unstarted) chapters and edited the entire document again. I have to say, however, that it was a labor of love.

My interest in the Lindsey site is more than just about completing an archaeology report for a lost colleague and friend. I had been working on Mississippian mound sites and others in central Georgia for many years prior to the excavations of the Lindsey site. Jim and I had been undergraduate archaeology students together at the University of Georgia in 1969-1970. In November of 1984 I had talked with him over a beer at the Southeastern Archaeological
Conference in Pensacola, Florida. He was looking for a new research project after conducting many years of research in Pennsylvania. I told him that in the Oconee River valley there were thousands of farmsteads associated with the mound sites I was working on, and that they desperately needed investigation. He was excited by the challenge and committed to this new project then and there. Over the next couple of years he worked to make a Penn State field school in Georgia become a reality. In the meantime, I worked with my father, Marshall Woodson "Woody" Williams to find an appropriate farmstead site, obtain permission of the owners for excavation, and help with local logistics for Jim’s new project. Woody was more important than anyone in finding the Lindsey site and obtaining the permission from the owner’s Paul and Catherine Lindsey for the excavation. Paul Lindsey—known and loved locally in nearby Madison, Georgia, was uniformly known by all as “Doc” Lindsey and was the only Veterinarian in Madison for many decades. Indeed, I grew up only about 400 yards from his home / clinic and spent many hours as a kid playing with his sons Roy and Jack. Woody’s story of the discovery of the site and its background is presented in Chapter 2.
My colleague at the University of Georgia, Steve Kowalewski, also worked closely with Jim Hatch in the 1980s and early 1990s. In discussions with him, we believe the reason Jim never finished the Lindsey report was as follows. Jim had excavated several upland farmstead sites between 1987 through 1990, including Lindsey, Sugar Creek, Sweetgum, Carroll, and Woodlief. Lindsey was the first of these. He apparently had decided to publish a book length study including data from all of them after realizing that the time to write individual reports was eluding him. He did publish short papers on the data from the sites, but his untimely death left the book project also uncompleted.

I have written the Preface and Chapters, 1, 5, 7, and 16 in this report with notes from Hatch. I have put Jim’s name first on Chapter 16, since it in the end was his site. I have edited Chapters 9 and 10 quite heavily and added my name as second author. Finally, I have organized and edited Chapter 2 and added my name as second author (also so I could have another publication with my dad, Woody!). I took the photos of the pottery vessels and projectile points and created all the feature maps using Surfer 11 software. I hope Jim, Dot, Adam, and, most importantly, Woody are satisfied with my final creation of this report. The artifacts and field notes from the Lindsey site are all curated at the University of Georgia Laboratory of Archaeology.
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Jim Hatch never got to write this chapter and thus I am filling in for him here. He did provide a brief outline of its intended content and I am using that as a guide to completing this chapter for him.

Hatch intended his project to be a multi-year one that investigated the nature of and explanations for the thousands of small upland Late Mississippian sites in the Oconee River valley. It was assumed (correctly) that these represented the remains of individual family farms that were likely occupied for only a few years—perhaps 10-15. This project would include the complete excavation of several of the small farmstead sites. The upland sites worked on by Hatch and his Penn State crews included Lindsey and Woodlief in 1987, Sugar Creek in 1988, Carroll in 1989, and Sweet Gum in 1990 (see Figure 2.1)

This was to be part of the then ongoing research by the Lamar Institute under the direction of the present writer on the many Mississippian mound sites in the Oconee Valley. It also was to relate to the massive survey data of the Lake Oconee project conducted in the late 1970s by the University of Georgia. Hatch conceived of his work as an important parallel path to understanding the overall large Mississippian society in the Oconee Valley. Indeed, it could be argued that understanding the thousands of small farms was more important than understanding the mound sites. I am choosing here to not go into all of that data in great detail. My goal is primarily to present the Lindsey site data so that I and others can use the data now finally available. Reports for the Sugar Creek site and the Sweet Gum site have been recently completed and are available (Williams and Williams 2012; Graham 2012). The work at the other
two sites was minimal and ultimately less successful than the work at Lindsey, Sugar Creek, and Sweet Gum and there will no reports at present.

Another goal of Hatch’s and one that was very important relates to the discovery that the Lindsey site was well preserved in spite of having been plowed for over 100 years. Up to the late 1980s, it was generally believed by most archaeologists that small farmstead sites like Lindsey had been essentially destroyed by many years of plowing and no useful information could be obtained from them through excavation other than the recovery of artifacts. Lindsey showed that this is simply not true. This was also shown to be true of the Sugar Creek and Sweet Gum sites. In fact, I am now of the opinion that, at least for the Piedmont of Georgia, no farmstead site is so destroyed by plowing that it has no useful data to be discovered.

The crew for the Lindsey site excavation consisted of Jim Hatch in charge, along with Woody Williams as chief kibitzer and helper. The graduate students were Dorothy Humpf and Wayne Boyko. The undergraduate students were Robin Brumbaugh, Michelle Hudock, Jeff Laubach, Adam King, Ken Kulp, Jen Mummert, Beth Pecht, Sarah Seidensticker, Jim Simon, and Scott Zeleznik. These students, along with Dorothy, Wayne, and Woody are shown in Figure 1.2 on the front porch of an old house in Madison. Jim and Dorothy are shown inside the round house located at the Lindsey site in Figure 1.3.

The excavations at the Lindsey site began on June 4, 1987 and continued, weather permitting, until July 31. Woody and I continued gathering data there until January of 1988 when the site was covered. The crew also performed limited work on the Woodlief site (9PM137) during the summer of 1987.
Figure 1.1. Upland Sites Excavated by Jim Hatch.
Figure 1.2. Lindsey Site Field Crew.
Figure 1.3. Jim Hatch and Dorothy Humpf in Structure 1.
Chapter 2
Site Discovery
Woody Williams and Mark Williams

Introduction

Jim Hatch originally asked Woody Williams to write this chapter. Woody sent several informative letters, but declined Jim’s offer to write the chapter. Jim never wrote the chapter himself, although he did supply an outline of what he thought should go into it. Mark has taken Woody’s letters and edited them moderately into what is presented below. Most of the information presented here was in a letter dated January 12, 1990 from Woody to Jim Hatch. While it is presented in the voice of Woody, Mark has edited it lightly for content and style.

Discovery of the Lindsey Site

In April of 1987 I was driving along the road to Buckhead from Madison and noticed that a new clear cut area had just been recently completed. I was curious if it contained any archaeological sites. I checked the ownership of the property at the Morgan County Court House and saw that it was owned by Doc Lindsey, our local Veterinarian. I then went to see Doc Lindsey and asked his permission to survey the area for archaeological sites. He readily granted me permission. I then walked the entire area, beginning at the road and walking in long zigzags backward away from the road. The area of what became the Lindsey site soon became apparent with sherds scattered in abundance. Later, I retraced my steps back to the road along the ridge and found a second site containing Dyar or Bell phase pottery and quartz points, both stemmed and Morrow Mountain variety. Around the bend from Lindsey site, to the northeast, I found a third site about 0.2 miles away. I seem to recall that it, too, was from the same period, but I did not make a collection.
I later asked Doc Lindsey about the tree cutting history of the site. It was in trees when he bought the land in June of 1963. Doc told me that the site had been thinned of trees three times before that he knew about: in 1948, 1964, and 1973. By thinning he meant removal of some usable pines, and possibly some interfering hardwood growth. It was never been clear cut, however, until I saw it and surveyed it. The earliest aerial photo of the location (1939) shows the site in trees. Lindsey said that the clear cutting removed most hardwood sprouts along with everything else, preparatory to planting pines. I suspect that the whole hillside had been planted in cotton back in the 19th and early 20th centuries.

After the discovery of the site, I first made a surface collection of the bulldozed, clear-cut area in April of 1987. Even though the surface was unplowed, the bulldozing for clear cutting of the trees exposed a great deal of the soil - enough to collect many artifacts. In the process I delineated what appeared to me to be the limits of the site. I then took this collection of material to Mark at the Georgia Archaeological Site File at the University of Georgia for the site to be recorded and a site number assigned. That is when I first learned that Penn State was looking for a site for a field school, and Mark felt that this might be a good candidate. Early in May of 1987, Mark and I had the site plowed with Doc Lindsey’s permission. We then installed a grid of stakes over it using a transit loaned from the University of Georgia’s Laboratory of Archaeology to aid in future controlled surface collections.

The boundary for the area included in the grid was determined based upon the initial uncontrolled surface collection made by Woody in April. A grid of 10 by 10 meter squares was chosen because of the rather small size of the site; 20 meters was obviously too large for good resolution of a collection, and 5 meters would have given an unwieldy 100 or more 5 by 5 meter units. Ten meters seemed just the right size to us. Grid north was chosen to be aligned with the...
orientation of the ridge upon which the site sat, rather than magnetic north. That is, it was aligned with the small stream just downhill to the northeast. This made grid north 41 degrees west of magnetic north. After plowing and installing the grid, the site was rained upon several times, and was dry by collecting time. There it sat until the first week in June, 1987, when the Penn State field school collected it. There was no evidence that anyone visited the site to collect artifacts during the time it was exposed after plowing and before Penn State arrived.

I could not find very much in the records of Morgan County about the site location. The barb wire fence that ran down through the middle of the site is a very important marker for the division of two original land lots, as laid out after the area was obtained from the Indians. To the south of the fence is Land Lot 292, and to the north is Land Lot 291. Doc Lindsey didn't know the significance of that fence, other than he wanted it left in place. The fence was a property boundary from the earliest times. The original lottery winners of this property were as follows. John Miller of Washington County won Land Lot 291 and John N. Allen of Oglethorpe County won Land Lot 292. These were both in the 4th land district. In some cases the land lot winners sold their property without even visiting the county, and in a few cases, the land stayed in that winner’s family for many years. I know that Land Lot 292 was a part of the estate of Asa C. Zachary, who died about 1852. Lot 291 was once property of D. G. Gunn, and was spoken of in early 20th century deeds as "the old Gunn place". The old house near the Lindsey site was therefore on the Gunn side of the fence.

All of this area west of the Oconee River was the recognized property of the Creek Indians prior to the Treaty of Fort Wilkinson, which was signed at that fort on June 16, 1802. This Treaty was ratified by United States on January 11, 1803. Baldwin County, west of the Oconee River, was laid out by the Lottery Act of 1803. The area covered by this act includes
what are now Baldwin, Jones, Jasper, Putnam, and Morgan Counties. On December 10, 1807, an act of the Georgia Legislature created these five counties from the original Baldwin County. The new counties were divided in the 1803 Lottery Act into equal areas of 45 chains to a side, making each land lot 202 1/2 acres in size. The Lindsey site is in the northwestern quadrant of Land Lot 292, adjoining the northeastern quadrant of Land Lot 291, with the fence down the middle of the site marking the boundary between the two.

The Lindsey site is situated on a hill above a small branch of Sugar Creek known by the name of Wilcox Branch (Doc Lindsey did not know this - I found it in the old records at the Court House.) It was named for Mr. J. C. Wilcox, who owned a part of Land Lot 291 in 1916 (I haven't been able to find out when he bought it or when he sold it). The lottery of 1805, (for the eastern part of the county where the Lindsey site is located) and another one held in 1807 in the western part of the county, was both open to all free, white males over 21 years of age. A great many who drew land lots immediately sold them to others, both settlers and speculators.

References for these observations include: Deed Books O, page 138; Y, page 55; 40, page 37; X, page 129; U, page 376; and T, page 422. All of these are in Clerk of Court's Office Morgan County Court House, Madison, Georgia. Also, the will of Asa Zachary is in Book C, page 169. History ref.: "History of Baldwin County", by Anna Green Cook, Keys Hearn Printing Co., Anderson S.C., 1925, pp. 15-17.

The nearby Sugar Creek had been channelized beginning in the second decade of the 20th century and likely continuing into the 1920s. It was no doubt done to prevent flooding of the bottoms by providing a swifter channel for water run-off. Wilcox Branch was no doubt not channelized.
By the way, when Morgan County was initially laid out, a line was drawn vertically down through the middle of it and the area to the east of this line was the first area to be drawn in the lottery. It was surveyed for that purpose into 202 1/2 acre lots. Not every land nook and cranny could be included in a complete 202 1/2 acre lot, so there were "fractions" left over. These fractions were sold to the highest bidder and were not drawn in the lottery. The site where the Joe Bell site, 9MG28, was located has always been known as the "fraction bottom", since it was one of these fractions. When the western half of the county was surveyed and drawn in a second lottery the surveyors goofed, and didn't make the lots in the western half match those in the eastern half, thus there are many lots shaped like triangles, rather than squares!

I am not absolutely certain of the phase identification of those two small archaeological sites I located near Lindsey, but they certainly were either Dyar or Bell phase or both. Clearly there are a great many of these Late Mississippian farmsteads in this area of the larger Sugar Creek Valley. The old Fitzpatrick house site south of the Lindsey site may or may not have belonged to D. G. Gunn, but it certainly was in Land Lot 291. I've found no deeds to tie it in.
Background

Two important facts about the Lindsey site had been established prior to the arrival of the Penn State field school in June, 1987—first, that the site’s principal occupation dated to the Bell phase and second, that 90 percent or more of the site fell within a 50 by 50 meter area. Both observations were based on an initial surface collection, intentionally focused on ceramics, made in April by Marshall Williams of Madison, Georgia. The collection was made shortly after the trees in this area of the Lindsey property had been clear-cut. No attempt was made to record the intra-site provenience of artifacts or to collect intensively any particular area of the site. Even so, the surface distribution of artifacts was seen to coincide roughly with the crest of a linear ridge and extend east, or downslope, toward Wilcox Branch.

Since Lindsey was selected as the first of several upland Lamar sites in the Oconee region to be excavated extensively, a systematic, intensive surface collection here was considered a necessary part of the Pennsylvania State research program. Intensive surface collections had been conducted at very few sites in the Oconee region prior to 1987. Where undertaken, however, they had proven to be valuable predictors of subsurface feature density. At 9MG73, 10 by 10 meter collecting units were successful in delimiting major areas of period-specific occupation as well as concentrations of subsurface features (Walker 1997). At the Cold Springs site (9GE10), Fish and Jefferies found that 5 by 5 meter collecting units yielding high densities of surface artifacts accurately located post mold concentrations and structures under the site’s thin plow zone (Fish and Jefferies 1983). An explicit effort to excavate other areas of the
site resulted in no posts or features being discovered in an area of low surface density, and moderate concentrations of subsurface features in an area of intermediate surface density.

Both Cold Springs (9GE10) and 9MG73 were large, multi-component sites located near the Oconee River. Prior to the work at Lindsey, no intensive, systematic surface collections had been made at any of the heavily eroded, small sites common in the Oconee uplands. If a significant correspondence between surface artifact patterning and subsurface features on these sites was discovered, then two important benefits would result. First, the patterning revealed by surface collections could be useful in developing fieldwork strategies for future excavations at upland sites. Second, if “signatures” of unique feature types or entire site configurations could be recognized, a more meaningful appraisal of the hundreds of known upland sites would be possible.

In addition to their successful application at 9MG73, units 10 meters square were chosen at Lindsey for two reasons.

1. One of the primary goals of the Lindsey project was to expose a large enough percentage of the site to reveal a representative set of features. This would provide a sense of the community structure of a presumably typical upland site. Given logistical constraints, the most effective way of accomplishing this was to mechanically strip away the plow zone and shovel scrape large blocks of the site. It was thought that there might be an interpretive advantage in relating surface artifact densities to subsurface features if the same sized units were employed for both surface collection and excavation.

2. Twenty-five collecting units, corresponding to 5 by 5 units of 10 meter squares, were considered sufficient to provide discriminating results. Program DOT, a dot-density
program written by Mark Williams was used for density maps [Editor Williams notes:  
For this report the newer program Surfer was used to generate the density maps.  
Thanks Jim, but my old software is just too old!]

Methods

One month before the beginning of excavations at Lindsey, Marshall and Mark Williams supervised the shallow plowing of a 50 by 50 meter area corresponding to the distribution of surface ceramics collected earlier. Plowing removed the undergrowth that had begun to reestablish itself on the site since the clear-cutting and exposed artifacts in the upper portion of the old plow zone. After plowing was completed, a site grid consisting of twenty-five 10 by 10 meter squares was established.

The site was carefully avoided for one month after plowing to increase the chances of representativeness and spatial integrity in the upcoming systematic, intensive surface collection. During this time, spring rains made the surface more uniform and exposed large numbers of artifacts.

The entire site was surface collected on June 8, 1987, by the Pennsylvania State crew. The procedure followed in each square involved seven people—six collectors evenly spaced across the 10 meters, and one person serving as recorder and time keeper. On signal, the crew of six slowly walked to the far edge of the square, picking up all lithic and ceramic artifacts as well as bivalve shell fragments and other archaeological materials. Seven and one-half minutes were allotted for this initial pass. The walking pace was intentionally slow to ensure the complete recovery of artifacts. After all the artifacts were recovered in the initial pass were put in a common bag for that square, the crew repositioned itself at 90 degrees to its original line and re-
collected the square. As before, 7.5 minutes were allowed for this second pass. Collecting each square twice, at 90 degree angles, proved to be worthwhile for two reasons. First, it compensated for individual differences in collecting ability, since the strip of ground each person was responsible for on the first pass was examined by all six on the second pass. Second, artifacts obscured by surface debris or clumps of dirt on the first pass were often detected when approached from a different angle. All artifacts collected on the second pass were added to the bag containing those collected on the first pass.

![Figure 3.1. Location of Surface Collection Squares.](image)
Results

A total of 5547 surface artifacts was collected by the Pennsylvania State crew. These consisted of 4447 ceramic artifacts, nearly all of which were pottery sherds, and 1100 lithic artifacts or fragments of lithic raw material. A very small number of bones, shell fragments, and other archaeological material were also collected, but these will not be discussed here. Table 3.1 presents the numbers of ceramic and lithic artifacts collected in each 10 meter by 10 meter square, as well as the total artifact count. These data served as the input for separate density maps of the ceramics and lithics. These results are shown in Figures 3.2 and 3.3.

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Figure 3.2. Ceramic Density Map.
Figure 3.3. Lithic Density Map.
Conclusions

Four important observations can be made based on the patterns exhibited by the density maps.

1. Significant regularity is revealed in the patterns of both maps. Artifact density distributions are characterized by broad concentric configurations with few peaks, as opposed to patterns with numerous, isolated and sharply-defined peaks. Particularly in the cases of ceramics, this implies a rather simple underlying structure to the distribution. It is possible that more irregularity would have been revealed through the use of smaller collecting units. Given our excavation strategies, however, there seemed to be little value in achieving significantly higher pattern resolution. As discussed in the next chapter, 10 by 10 meter block excavations and trenches 1.5 meters or greater in width were practical to excavate and provided adequate exposures of the undisturbed subsurface for convincing arguments about feature distribution to be developed.

2. The post molds and features exposed through excavation exhibited a striking correspondence to areas of high, intermediate, and low surface density in the ceramics category. By superimposing the surface ceramics map on the composite map of excavations, for example, it is immediately clear that the large trash pit—Feature 4—(details in Chapter 7) accounts for the primary concentration of surface ceramics in Squares 18 and 19. The secondary concentration of ceramics in Square 7 is best explained by its proximity to the house in Square 6. Intermediate and low surface ceramic concentrations correspond either to areas of outdoor features and non-structural posts or to areas exhibiting no subsurface remains.
3. The distribution of surface lithics exhibits a rather different pattern from that of ceramics. While a concentration of lithics does occur in Square 18 (along with the ceramics positioned about Feature 4), elsewhere on the site there appears to be a negative relationship between the two artifact classes. One likely explanation of this pattern is that activities associated with lithic and ceramic usage were intentionally segregated. [Editor Williams: *The more likely reason is that the lithics are much earlier in date—likely dating to the Archaic period.*]

4. The dramatic demonstration of the predictive capacity of the intensive, systematic surface collection at Lindsey is particularly impressive considering the site’s small size and the repeated disturbances it has experienced since the 17th century. After a presumed episode of reforestation, Lindsey was again cleared for farming, perhaps in the early 1800s. The combined influences of erosion, downslope wash, 19th-century reforestation, and forest clearance in 1987 have had surprisingly little influence on our ability to discover meaningful patterning in the surface distribution of artifacts at this site.
Introduction

The 10 by 10 meter grid system established on the site for the surface survey was retained for excavation. The southwestern corner stake of this excavation grid was designated N0, E0 and served as the horizontal site datum. A vertical datum was established by driving a nail into the one tree remaining on the site, a walnut tree in Square 7. Its elevation was arbitrarily set at 100 meters. A contour map of the site was prepared prior to excavation (Figure 4.1). The actual elevation data are presented in Appendix 2. [Editor Williams: A modern version created in the program Surfer is included here also as Figure 4.2.]

Excavation at the Lindsey site took place in two stages. Because the site had been plowed for many years, all features and post molds were expected to be plow-truncated. For this reason, it was decided to remove mechanically all the disturbed topsoil from the site. This was the most efficient way to expose large areas in which architectural and other cultural patterns could be detected. First, however, test pits were excavated prior to removal of the plow zone by machine. After the plow zone had been removed, 654 square meters of the site was shovel-scraped. All features and post molds within this area were excavated.
Figure 4.1. Hand Generated Contour Map.
Test Pits

Excavations at the site began with three 2 by 2 meter test pits. These were excavated in order to determine whether stratigraphy and/or midden were present on the site and to look for subsurface features. Coordinate designations of test pits were determined from their
southwestern corner stakes. Seven zones of surface ceramic concentration were identified on the dot-density map of the site. Test pits were placed in two of these zones (Figure 4.2).

Test Pit 1 (N35, E14) was located in Zone 5 and in an area where large sherds and shell had been collected during the surface survey. Test Pit 2 (N18, E18) was placed in Zone 6. Test Pit 3 (N18, E28) was also located in Zone 6, downslope from Test Pit 2. These are shown on Figure 4.2.

All test pits were hand excavated and processed through 1/4 inch hardware cloth. Excavation was terminated when red clay subsoil was encountered. The plow zone varied in thickness in the three test pits (27 centimeters in Test Pit 1, 8 centimeters in Test Pit 2, and 15 centimeters in Test Pit 3). The unusually deep plow zone in Test Pit 1 was the result of its location near the large walnut tree discussed above. At the request of the owner, this area had been avoided by bulldozers during clear-cutting activities at the site. No features or midden were found and there was no stratigraphy (other than the plow zone and sterile red clay) present in any of the test pits. It was concluded that mechanical removal of this stratum would not damage any intact cultural material.

Machine and Shovel Scraping

Mechanical removal of the plow-disturbed topsoil was done with a tractor-mounted front end loader (John Deere Model 2030) between June 24 and June 26, 1987, by David Hanes of Madison, Georgia (Figure 4.3). The topsoil from fifteen of the original twenty five 10 by 10 meter squares (Squares 6-20) was removed during machine scraping. The total area scraped was 1500 square meters.
The amount of topsoil removed varied throughout the site. The plow zone was deepest on the northwestern portion of the site near the crest of the ridge and most shallow in the downslope or southeastern portion of the site. In all areas some plow zone soil was intentionally left above the red clay subsoil. This was later removed by shovel scraping.

Except for selected trenches shovel-scraped later in the season, 10 by 10 meter squares were shovel-scraped as individual units. Five complete 10 by 10 meter squares were excavated, as were one 1.5 by 20 meter trench, three 2 by 10 meter trenches, two 1.5 by 10 meter trenches, one 1.5 by 8 meter trench, and one 3 by 6 meter trench. Figure 4.4 shows all the areas shovel scraped in their various 10 meter Squares by the end of the work at the Lindsey site.
All excavated areas were shovel-scraped and trowelled, and all stains identified as possible post molds and features were marked with flagging tape. These were tested with a 13/16 inch soil corer and discarded if they were extremely shallow or if they were very deep and contained loose, disturbed fill. Eighteen percent of the flagged stains were eliminated in this manner.

All remaining stains were mapped using an alidade and plane table. Base maps were compiled for each square and for each excavated extension trench.

Figure 4.4. Limits of Shovel Scraping.
**Excavation**

All stains not immediately eliminated through coring were excavated. Stains that were highly asymmetrical, extremely shallow (blemishes), extremely deep (tap roots), possessed numerous off-shoot tunnels, or that contained large amounts of modern unburned wood or loose disturbed fill were considered non-cultural and were eliminated from further consideration [See Williams comments in next chapter.]. These were retained on field copies of unit base maps, but are not included on the final map of the site.

The excavation procedure for features was first to photograph them and then draw a plan map of the feature. Then one-half of each feature was excavated and the fill was screened through 1/4 inch hardware cloth. After a profile was drawn and photographed, the remaining half of the feature fill was removed and saved as a flotation sample. All features were processed in this manner except as noted below.

Post molds were excavated by removing one half of the fill, recording the profile, and then removing the remainder. All post mold fill was screened through 1/4 inch hardware cloth except for one liter that was saved as a flotation sample.

Radiocarbon samples were taken from each feature and post mold that contained adequate amounts of charcoal. When stratigraphy was noted in post molds and features, multiple radiocarbon and flotation samples were collected. Carbon and flotation samples were given a Master Sample Number (MSN) in the field. These numbers were consecutively assigned as samples were collected. All are presented in Appendix 1. A total of 94 flotation samples and 36 radiocarbon samples were collected.

Artifacts recovered during the excavation of features and post molds were placed in cloth bags labeled with the feature or post mold number. The only exceptions to this procedure
were artifacts or groups of artifacts that were point provenienced. These artifacts were assigned a Field Number (FN) and bagged separately. Field numbers were assigned at the discretion of individual excavators and were unique to each feature or post mold. Field numbers were given to such objects as large rim sherds, a discoidal found in one of the structural post molds, and clusters of artifacts found in close association. Thirty-six field numbers were recorded.

Feature 4, the largest feature on the site, was excavated differently than the others. This feature was excavated stratigraphically and in quarter sections instead of half-sections. The fill was processed in the same manner as all other features, with 50 percent of the contents saved as a flotation sample and the remainder screened. A smaller mesh size (1/8 inch) was used to screen the fill of Feature 4.

Burial pit fill was also processed differently than other features. Most of the fill in burial pits was water-screened through 1/8 inch mesh hardware cloth. Soil near the bones and soil inside of pottery vessels was saved as a flotation sample.

Feature and post mold data were recorded on feature and level/stratum forms and in field notebooks. Master sample numbers were assigned by field supervisors and recorded in a separate notebook. Photographs were taken of features before excavation, after sectioning, and after excavations were completed. Post molds, with the exception of structural posts, were not photographed.

**Flotation Procedure**

Flotation samples were processed by pouring the sample into a bucket lined with window screen which was then immersed in water and lightly agitated. The light fraction was collected
in 1 millimeter and 1.5 millimeter tea strainers. Light and heavy fractions were dried and bagged separately.

**Results of Excavation**

Two hundred and fifty-one stains classified as possible post molds were identified at the Lindsey site. Forty-six of these (18 percent) were identified as non-cultural during coring and were not excavated or mapped. The remaining 205 possible post molds were excavated and 112 of these (55 percent) were determined to be rodent burrows, trees, or other non-cultural disturbances. Thirteen of the 251 surface stains (5 percent) flagged as post molds were re-classified as features during excavation. Although their surface dimensions suggested they were posts, in profile they were shallow and basin shaped. Conversely, four of the 30 surface stains (13 percent) initially classified as possible features were determined after sectioning to be post molds.

Of the 251 possible post molds flagged, 158 (63 percent) were determined to be non-cultural disturbances during coring and excavation. Eighty four post molds were found at the site. [Editor Williams: *See Chapter 5 for a very different perspective*.] See Figure 4.5 for a map of the surviving posts.

Tree roots accounted for a significant proportion of the discarded stains, reflecting the fact that a mature forest had been clear-cut from the site four months prior to excavation. Only by coring and excavating all stains have we been able to produce an accurate map of the actual cultural disturbances at the site. At small sites like Lindsey these procedures are practical and productive ways of increasing the recognition of non-cultural disturbances.
Thirty five features were identified at the site. These included four which served as the burial pits for the four individuals interred inside the house. Analysis of feature morphology is presented in Chapter 7.

Excavation revealed a striking correlation between areas of high surface artifact density and subsurface distribution of features and post molds. Heavily utilized areas of the site were most directly reflected by high surface densities of ceramics.

The two most important architectural characteristics revealed by excavation of the Lindsey site are the large circular house in Square 6 and the trash pit in Square 18. The house
was located immediately west of the secondary concentration of surface ceramics. This structure, described in more detail in Chapter 6, was the first structure to be completely excavated on an upland Lamar site. Probable upland structures had previously been identified and partially excavated at the Barrow Creek site (Ledbetter 1988), at 9HK64 (Blanton 1985), and at the Candler site (Kowalewski and Hatch n.d.).

The other major feature found at the site was Feature 4, the large trash pit in Square 18. Squares 18 and 19 contained the highest densities of surface ceramics on the site. The general absence of post molds and features in these squares suggests that many of the surface artifacts originated from Feature 4. The fan shaped zone of high ceramic concentration (Zone 7) around this feature probably reflects the effects of downslope wash subsequent to plowing of Feature 4.

Large trash pits like the one at Lindsey have been found at other Lamar sites in the Oconee Valley area. These features occur at a number of upland sites including the Sugar Creek site (9MG4), the Carroll site (Kowalewski and Williams 1989), the King Bee site (Elliott and Boyko 1989), 9HK64 (Blanton 1985), and the Jordan (9PM60) and Barker (9PM77) sites (Petrullo 1954) as well as such non-upland sites as Joe Bell (9MG28) (Williams 1983).

The trash pit and circular structure appear to form the boundaries of the site to the northwest and southeast. The number of post molds and features decreases dramatically away from these features, as shown in the excavated extension trenches. Additional post molds and features are found primarily in the area between the house and trash pit. As a result, the excavated area most likely exposed the majority of post molds and features present at the site.

Despite a long history of plowing and clear cutting, subsurface features were well preserved at the site. The recovery of intact architecture, burials, and large trash pits emphasizes the observations of Ledbetter (1988) and Kowalewski and Williams (1989) that upland sites in
Piedmont Georgia often contain significant settlement information despite long histories of severe erosion and plowing.
Chapter 5
Post Mold Analysis
Mark Williams

This is another chapter that was planned, but never written by Jim. For several reasons this is one of the most difficult for me to write. When Hatch came back to Georgia for this project, Lindsey was the first archaeological site he had excavated in Georgia for which he was completely in charge of the field decisions. As a seasoned and competent archaeologist he decided he needed a very high level of confidence in post molds that he used for his interpretations. The ideal post mold was round, somewhat deep, and often should have a flat or slightly rounded bottom. If a post mold had evidence of roots or animal burrows then the stain was rejected for further use in structure analysis. Humpf’s description of this process in the Chapter 4 clearly was a reflection of Hatch’s perspective. This became most clear to me when studying and writing up the Sugar Creek site excavated by Hatch in 1988 (Williams and Williams 2012). The following paragraph from that report well expresses the perceived problem.

Ultimately all of the numbered post molds were excavated by the Penn State crew. As they were being excavated several of the “post molds” were reassigned as “features” and given new numbers within the feature number sequence. After excavation many of the “post molds” were rejected as being the result of either a tree or an animal burrow. These rejected numbers had already been mapped before they were rejected, however. Hindsight is always 20-20, but we believe that a great many of the stains that were rejected in this step should not have been rejected for possible use in determining the structures on the site. Two bits of information are relevant here. First, there were very few stains of “trees” or “animal burrows” in the stripped parts of the site away from the center area that held the bulk of the structure of the site. Logic says that these should be evenly distributed over the entire area, not concentrated exactly where the buildings were located. Second, following the abandonment of the site by the Indians after ca. A.D. 1600, the soft moist soil in the ground
under a rotten post would have formed a perfect habitat for the growth of new tree seedlings as well as provide the easy beginnings of animal burrows. In short, we believe that many of the rejected “post molds” should not have been rejected and we have not done so in our analysis. (Williams and Williams 2012:24).

At the Lindsey site, the rejection of post molds was even more intense than at the Sugar Creek site. Indeed, at final count, over 60 percent of the stains—most of which I believe were real post molds—were rejected for one reason or another. This process still permitted the discovery of the main circular structure, but forced Hatch to conclude that there were no other structures at the site. My own experience since then has been that virtually all Late Mississippian farmsteads in the Oconee Valley also have two or more small square to rectangular structures east to southeast of the round structure. These were likely storage buildings, cooking sheds, tool sheds, or other purpose structures.

Hatch had prepared a map of the Lindsey site that was based upon his rejection of the vast majority of post molds at the site (Figure 4.5 in previous chapter). I have decided to present a map here that included the rejected post molds and the accepted ones for comparison (Figure 5.1). Without making explicit decisions on possible small rectangular structure with the full data, it is clear to me that there likely were such small rectangular structures at Lindsey, making it conform to what we now know of most of these upland Late Mississippian farmsteads in the valley. There are at least four general locations where I believe small rectangular structures may have been located at Lindsey. These are labeled on Figure 5.1
Figure 5.1. New Map Showing all Post Molds--Accepted and Rejected.
Introduction

The post mold analysis presented in Chapter 5 has demonstrated the existence of one structure at Lindsey [See Williams comments just presented in Chapter 5]. The building was circular, with a diameter of 8.8 meters. The outer wall was defined by 14 cylindrical, flat-bottomed post molds, all of which were tilted slightly toward the center of the structure. Three unusually deep posts near the center apparently served as roof supports.

Structures were built for a variety of reasons by Southeastern Indians. The ethnohistoric record indicates that architectural characteristics (e.g. size, construction material, and design) were fairly consistently related to the function of buildings. Circular structures approximately 10 meters in diameter were used in two mutually exclusive ways in historic times—as domestic residences and as rotundas or ceremonial buildings. The Lindsey structure was undoubtedly used as a residence, given the sites’ small size, remote location, and the domestic nature of its artifact assemblage.

This chapter reviews the ethnohistoric descriptions of circular domestic architecture in the interior Southeast. Similarities between these accounts permit the delineation of characteristics useful for the construction of an analog model. This model will be used to search for commonalities with the archaeological remains, and to develop propositions concerning the use of features on the house floor.
Ethnohistoric Descriptions of Circular Houses

Southeastern Indians, especially those living north of the Fall Line, built two principal types of residential structures—circular houses with plaster walls and conical roofs, and rectangular houses with unplastered walls and gabled roofs (Swanton 1946). In many areas a single family used both types. The circular or “hot house” was occupied primarily in the winter, while the rectangular house was occupied in the summer. Both spatial and temporal variation in the pattern was observed, however. During the 18th century, for example, circular houses were dominant among the Bayogoula of Louisiana, while rectangular structures were used by the Creek. By the 18th century circular buildings in Creek towns were used only as rotundas. Circular house construction persisted among the eastern Cherokee into the 19th century. By this time, however, they were built only by older, traditional families (Schroedl 1986).

In his review of southeastern Indian architecture, Swanton states that circular houses “were used more widely than any others” (1946:388). A number of architectural features were consistently observed. Describing 18th century Cherokee circular houses, DeBrahm observes that “two or more families join together in building a hot-house, about 30 feet in diameter, and 15 feet high, in form of a cone, with poles and thatched, without any air hole, except a small door about 3 feet high and 8 inches wide. In the center of the hot-house they burn fire of well-seasoned dry wood; round the inside are bedsteads fixed to the studs, which support the middle of each post; these houses they resort to with their children in the winter nights…”(DeVorsey 1971:110).

The description of a Choctaw house of the 1770s matches that of DeBrahm in several details. Mease, cited in Swanton (1946:401) states:

This house is nearly of a circular figure and built of clay mixed with haulm [straw or grass]. The top is conical and covered with a kind of thatch
[the nature of] which I could not make out. The inside roof is divided into four parts and there are cane seats raised about two feet from the ground which go round the building (I mean on the inside), broad enough to lie upon, making the wall serve the purpose of a pillow. Underneath these seats or beds they keep their potatoes and pumpkins, covered with earth, but their corn is in a building by itself raised at least eight feet from the ground. The fire place is in the middle of the floor, just as in some parts of the Highlands of Scotland only they have no aperture at top to evacuate the smoke. The door is opposite one side (for the house is round without, yet on the inside it approaches near to the figure of an octagon) and is exceedingly small both in height and breadth.

Adair’s description of an 18th century Chickasaw circular house provides the greatest degree of architectural detail.

The clothing of the Indians being very light, they provide themselves for the winter with hot-houses, whose properties are to retain, and reflect the heat, after the manner of the Dutch stoves. To raise these, they fix deep in the ground, a sufficient number of strong forked posts, at a proportional distance, in a circular form, all of an equal height, about five or six feet above the surface of the ground: above these, they tie very securely large pieces of the heart of white oak, which are of a tough flexible nature, interweaving this orbit, from top to bottom, with pieces of the same, or the like timber. Then, in the middle of the fabric they fix very deep in the ground, four large pine posts in a quadrangular form, notched atop, on which they lay a number of heavy logs, let into each other, and rounding gradually to the top. Above this huge pile, to the very tip, they lay a number of long dry poles, all properly notched, to keep strong hold of the under posts and wall plate. They weave them thick with their split saplings, and daub them all over about six or seven inches thick with tough clay, well mixed with withered grass; when this cement is half dried, they thatch the house with the longest sort of dry grass, that their land produces. They first lay on one round tier, placing a split sapling a-top, well tied to the different parts of the under pieces of timber, about fifteen inches below the eave; and, in this manner, they proceed circularly to the very spire, where commonly a pole is fixed, that displays on the top the figure of a large carved eagle. At a small distance below which, four heavy logs are strongly tied together across, in a quadrangular form, in order to secure the roof from the power of envious blasts. The door of this winter palace, is commonly about four feet high, and so narrow as not to admit two to enter it abreast, with a winding passage for the space of six or seven feet, to secure themselves both from the power of the bleak winds, and of an invading enemy. As they usually build on rising ground, the floor is often a yard lower than the earth, which serves them as a breast work against an enemy; and a small peeping window is level with the
surface of the outside ground, to enable them to rake any lurking invaders in case of attack. As they have no metal to reflect the heat; in the fall of the year, as soon as the sun begins to lose its warming power, some of the women make a large fire of dry wood, with which they chiefly provide themselves, but only from day to day, through their thoughtlessness of tomorrow. When the fire is a little more than half burnt down, they cover it over with ashes, and as heat declines, they strike off some of the top embers, with a long can, wherewith each of the couches, or broad seats, is constantly provided; and this method they pursue from time to time as need requires, till the fire is expended, which is commonly about daylight. While the new fire is burning down, the house, for want of windows and air, is full of hot smoky darkness; and all this time, a number of them lie on their broad bed places, with their heads wrapped up.

The inside of their houses is furnished with genteel couches to sit, and lie upon, raised on four forks of timber of a proper height, to give the swarming fleas some trouble in their attack, as they are not able to reach them at one spring; they tie with fine oak splinters, a sufficient quantity of middle-sized canes of proper dimensions, to three or four bars of the same sort, which they fasten above the frame; and they put their mattresses atop which are made of long cane splinters. Their bedding consists of the skins of wild beasts, such as of buffalo, panthers, bears, elks, and deer, which they dress with the hair on, as soft as velvet (Swanton 1946:387-388).

Winter houses were observed in the southern interior by the De Soto expedition, as is clear from the following description by Elvas. “Throughout the cold lands each of the Indians has his house for the winter plastered inside and out. They shut the very small door at night and build a fire inside the house so that it gets as hot as an oven, and stays so all night long so that there is no need for clothing” (Swanton 1946:386).

The numerous descriptions of 18th and 19th century Creek rotundas provide details of construction that are surprisingly similar to those of circular domestic buildings. Referring to an account by Jackson Lewis, Swanton notes that the…

Creek hot house was made with a circular floor-plan and a roof converging to a point at the top. It was daubed outside and in with clay and made very tight. In the center they dug a hole for the fire, but all the rest of the space inside was floored with a kind of tough clay obtained for that very purpose and patted down so that it never got dusty. They either constructed beds around the inside of the house or else lay down on skins
on the floor around near the walls. For the fire they procured round pieces of wood of kinds that would make the least smoke. What smoke was produced rose to the roof, leaving the air below comparatively clear, and as the fire died down a bed of live coals was left, renewed from time to time by raking, which warmed the house up very well. The door was about 4 feet high and was either on the south or the east. This was a sort of refuge in very severe winter weather. Pumpkins, sweet potatoes, berries, etc., were stored in these houses for fear of frost (Swanton 1946:392).

Swanton notes that rotundas may have been modeled after circular domestic structures, the only notable differences between them being their function and, on occasion, the larger size of community rotundas. Given this observation, Swanton’s comments on the number of posts used as wall and roof supports in rotundas (multiples of the “sacred number 4”) may also apply to circular domestic architecture (Swanton 1946:391).

Additional observations concerning some specific characteristics of circular house construction and use can also be made. According to Adair (1968) pine was the preferred wood for the framework of circular houses. Clay mixed with grass was used as daub over wattle walls constructed of cane, hickory, oak, or poplar. Elevated sleeping benches made of cane extended around the entire interior wall, except near doorways. Roofs were commonly constructed to grass thatch or pine bark (Swanton 1946:421). To conserve heat, circular houses used as winter residences often did not have smoke holes.

Typically, circular houses had only one entrance. Adair describes these as small, often only 18 inches wide and 3-4 feet high, and sometimes protected by short passageways. Doors were usually oriented to the east or southeast.

Burials were commonly placed inside circular residences. According to Bartram, “The Muscologulges bury their deceased in the earth. They dig a four-square deep pit under the cabin or couch which the deceased lay on, in his house…” (Bartram 1955:403). Adair also comments
on the placement of burials under sleeping platforms. Among the Choctaw, “The place of interment is also calculated to wake the widow’s grief, for he is entombed in the house under her bed” (1968:187).

**The Model**

Historic descriptions of the structural characteristics and domestic activities associated with circular houses are remarkably consistent. Although some variability exists, the following attributes can be viewed as typical of circular domestic structures of interior Southeastern Indians. Collectively these attributes can serve as a model against which archaeological remains at Lindsey can be evaluated.

1. Floors were of prepared clay and were sometimes subterranean.
2. Outer walls were vertical, approximately 1.75 meters in height, and were daubed.
3. Wall supports were pine posts, spaced at even intervals, and were set deeply into the ground.
4. The number of posts was sometimes a multiple of the sacred number four.
5. Circular structures were typically about nine meters in diameter.
6. Vertical posts near the center of the building supported the roof.
7. The roof was covered with thatch or bark, possibly underlain with daub.
8. Roofs usually did not have smoke holes.
9. Four tiers of horizontal beams sometimes supported radial roofing elements.
10. Typically there was one door, located on the east or southeast side of the building.
11. An enclosed passageway sometimes led to the door.
12. Doorways were small, often 1.0-1.5 meters high and 46 centimeters wide, and were sometimes covered with a poplar door.

13. Hearths were located near the center of the building.

14. An elevated sleeping platform extended around the entire interior wall, except for the doorway. This platform was often constructed of cane.

15. Food was sometimes stored under the interior platform.

16. Burials were usually placed under the interior platform.

Archaeological Evidence

Besides the concentration of surface ceramics in this area of the site, archaeological evidence for the circular house at Lindsey consists entirely of subterranean features and post molds and their contents. The combined forces of plowing, erosion, and decay have eliminated all traces of the superstructure and the surface of the floor. Nevertheless, several parallels between the model and the archaeological remains can be drawn.

Ethnohistorically, wall posts were described as evenly spaced and set deeply into the ground. Twelve posts, ranging from 41-57 centimeters in depth, comprise a clearly defined circular arrangement in Squares 1 and 6 (Square 1, PM1; Square 6, PMs 19, 14, 75, 7, 8, 13, 50, 67, 72, 36, and 68). It was readily apparent during the excavation of these post molds that they had been carefully dug prehistorically—all were cylindrical in shape, had uniformly parallel sides from op to base, were flat-bottomed, and were slightly slanted toward the center of the building. The angle of tilt from vertical, calculated for seven of the best preserved post molds (Square 1, PM1 and Square 6, PMs 19, 7, 8, 13, 67, and 72), ranged from 5-13.5 degrees. It is not known whether the actual posts were erected parallel to this slant (and therefore leaned
slightly inward prior to the construction of the roof) or whether posts of somewhat smaller
diameter were set vertically in slanted post molds. Regardless, it is apparent that this slant was
intended to help buttress the posts against the outward force created by the weight of the
complete roof.

These twelve post molds are also very evenly spaced. Measurements taken from the
center of each post mold to the center of the next post mold in sequence ranged from 2.00 meters
between PMs 7 and 8, and 2.50 meters between PMs 8 and 13. The average distance between
adjacent post molds was 2.25 meters.

The two most widely separated sets of adjacent wall posts are PMs 8 and 13 (2.52
meters) and PMs 72 and 36 (2.44 meters). Interestingly, two post molds (PMs 10 and 58) are
located precisely along the projected wall line between these sets. Apparently their posts were
also used as architectural elements. Like the 12 primary post molds, both of these post molds
are cylindrical and flat-bottomed. Post Mold 58, located 1.03 meters from PM72 and 1.53
meters from PM36, may have been added after the house was completed to help accommodate
the roof weight along this span of the wall. The depth of this post mold is much shallower than
other wall posts (21 centimeters); also suggesting that it was a later addition. Post Mold 10 is
located 70 centimeters from PM8 and 1.77 meters from PM13. Roof support is one likely
function. However, it is obvious that the primary purpose of this post mold, along with PM8,
was to define the entrance to the house. The opening between the two is oriented 108 degrees
from magnetic north. The doorway therefore was oriented towards the east southeast, as
predicted by the ethnohistoric model. A doorway on this side of the house provided the most
direct path to the trash disposal area near Feature 4 as well as Wilcox Branch, the closest source
of fresh water. The depth of this post mold is 37 centimeters, somewhat shallower than those of the 12 primary wall supports.

Twenty additional posts are located inside the house. As seen in Figure 4.5 (northwestern corner), eight of these are concentrated near the center of the building. Three of the seven central post molds are unusually deep—PM34 (60 centimeters), PM37 (46 centimeters), and PM69 (60 centimeters)—while the remaining five range between 8 and 24 centimeters in depth. The former three post molds, with their triangular floor arrangement, very likely held posts which served as supports for the apical ends of radial roof beams. Posts associated with the five shallower post molds might have served a similar purpose at a later date, or they may have been connected with a central hearth, the remains of which have been destroyed by plowing.

The remaining 11 interior post molds are dispersed in a “C”-shaped zone within approximately two meters of the wall. The best prediction from the ethnohistoric model is that some or all of these provided support for an elevated sleeping platform, said to extend out from the wall everywhere except near the door. These post molds range in depth from 12-17 centimeters. Twelve features are also located on the house floor. Four of these are burial pits—Features 1, 5, 13, and 31. Functional considerations of the remaining features will be considered in the next chapter. At present, however, several observations can be made about all the features in the house. First, although the four burial pits are in close proximity to one another, there is no overlap between them. Graves within a house such as this may well have left slight impressions in the floor, serving to remind occupants of their location. Ethnohistoric observations indicate that graves were dug either in the open floor area or under sleeping benches. At Lindsey both practices seem to have occurred. Burials 2, 3, and 4 were placed end-to-end, forming an arc parallel with the outer wall (and presumably with the front edge of the sleeping bench). Burial 1
is closer to the wall and is at a distinctly different angle. It is possible that a segment of the sleeping bench was temporarily removed so that Burial 1 could be placed beneath it, while Burials 2-4 were placed directly in front of the bench.

Burials are the only features found in the southern one-half of the house floor. Eight non-burial features are found in the northern one-half. One small feature occurs near the center of the floor (Feature 30) while two (Features 26 and 27) are near the wall on the northern side of the building. These two would have been located under the sleeping bench, and as indicated by the model, may have played a role in food storage. The remaining six features (3, 6, 7, 10, 23, and 25) include several that are large, deep, and contain stratified deposits. They are located as far from the outer wall as Burials 2, 3, and 4 and appear to continue the arc believed to correspond to the front of the sleeping bench in this area. While the next chapter will consider all these features in detail, it is hypothesized here that they played a role either in food preparation and storage, or in the generation of light and heat for the building.

A final observation concerning the house floor relates to the absence of post molds in an approximately 2.5 meters wide strip from the doorway to Feature 10. This would have been the only area on the entire floor not covered by the sleeping bench and not containing large, deep features. This area was likely kept free of activities involving deep features to provide access to the entrance and space for socializing.

The patterning observed in the use of domestic floor space at the King site, a 16th-century village in northwestern Georgia, provides an interesting comparison to the circular house at Lindsey. At King the recovery of artifacts, post molds, and features on preserved house floors allowed Hally to conclude that, “The floor area of habitation structures was apparently divided into several distinct activity areas” (Hally 1988:11). An area clear of features and
occupational debris was found in the center of these structures. Beyond this, Hally adds:

“Domestic refuse, in the form of potsherds, stone debitage, animal bone, and charred plant material, was heavily concentrated in the southern half of structures…but was virtually absent in the northern half of the same structures. This situation contrasts markedly with the distribution of subfloor burials, which were found almost exclusively in the northern half of structures” (Hally 1988:13).

Much of the interior floor space of the Lindsey house is believed to have been covered by a sleeping platform, under which a burial and several features related to food storage were placed. The uncovered floor space contained a central area devoted to roof support and possibly a hearth. Surrounding this, floor space was devoted to three distinct activities: burials in the southern area, food preparation/storage or light/heat generation in the northwestern area, food preparation / storage or light/heat generation in the northwestern area, and social space/door access in the northern and eastern areas.
Chapter 7  
Feature Descriptions  
Mark Williams  

Introduction  

There were 35 feature numbers ultimately assigned for the Lindsey site excavation. All of these will be described in this chapter. Before discussing that, however, several points need to be made. First, I am writing this in late 2012, and therefore have the benefit of 25 year 20-20 hindsight. During the course of the excavations many stains were initially labeled as “features” that were eventually converted to post molds and given post mold numbers within the appropriate 10 meter square. Further, some stains were considered to be “trees” and the stain and the number were eliminated. After a Feature number was eliminated for either reason, the number was frequently reused when a new feature was located and a number needed. This was the case several times when it was decided that assigned post molds were converted into features as determined through excavation. The upshot of all this is that the numbering of the features from Lindsey is, unfortunately, quite confusing. The worst case of this is Feature 4, which was assigned four different times—moving from Square 6, to Square 7, to Square 12, and finally Square 18! Most of the earlier ‘features” that were then declared to be “trees” have no preserved excavation notes. I give the original designation for each feature if it had been changed during the course of the excavation.

All this raises some important questions about the definition used for a “feature” at Lindsey. This is all the more significant since, as the reader will see, several of the features are here interpreted as post molds. In general, if a stain was larger than 30 centimeters it was apparently assigned a feature number rather than a post mold number. There seems to have been very little color variation in the fill of the features—almost all were a light brown humic soil that
contrasted markedly with the natural red clay soil of the Lindsey hilltop. In the following
descriptions, the “Square” designations refer to the 10 meter square numbers used for surface
collecting and shovel scraping. All the north arrows on the drawings refer to Grid North, and not
magnetic north. Grid north was 41 degrees west of magnetic north. All depths were obviously
below the shovel scraped surface where the feature was defined. This means that all depths
should have an additional ca. 20 centimeters added from the original ground surface before the
areas were machine scraped to get the total depth from the original ground surface.
Feature 1

This was located in Square 6, in the interior of Structure 1. The measured length of the feature was 82.5 centimeters east–west and 48.75 centimeters north-south. After excavation was completed, the final depth was 29.5 centimeters (Figure 7.1). This was the location of Burial 1, which is discussed in Chapter 8. Three ceramic vessels were also located in Feature 1. These are also discussed later in Chapter 9. Finally, 20 conch columella shell beads were located near the skull of the burial in Feature 1.

Figure 7.1 Feature 1, Plan.
Feature 2

This number was initially assigned to a stain in the southwestern part of Square 12 that was rejected as a tree. The number was then finally assigned to what had originally been assigned as Post Mold 44 in Square 7. This small pit was oval in shaped and only 9 centimeters deep at it maximum. The maximum diameter was 22 centimeters in the northeast-southwest direction and the minimum diameter was 15 centimeters (Figure 7.2). There were no artifacts located in Feature 2 and its function is unknown. It might have been a post mold.

Figure 7.2. Feature 2, Plan and Profile.
Feature 3

Feature 3 was located in Structure 1 in Square 6. It was a medium sized deep pit with two distinct layers. The diameter of this generally round pit was 46 centimeters, while its maximum depth was 32 centimeters. The upper stratum of the feature was a dark brown loam, while the larger lower stratum was of a lighter brown soil. Three fragments of a small ceramic bowl were recovered from the top strata of Feature 3. The function of the feature is unknown—perhaps it was a small storage pit.

Figure 7.3. Feature 3, Plan and Profile.
Feature 4

This was the largest feature on the site. It was located well to the southeast of Structure 1 in Square 18. This number had been assigned to what were eventually called tree stains in Squares 6, 7, and 12. Feature 4 was a crudely shaped oval feature that measured a maximum of 344 centimeters in diameter just west of grid north-south. The width of the feature was 226 centimeters. Its maximum depth was 26 centimeters. The fill of the feature consisted of large amounts of ash, charcoal, ceramic fragments, and food debris. Very large “trash” features of this sort are quite common—even expected—on late prehistoric farmstead sites in the Oconee Valley. The usual interpretation is that they were used initially as a source for red clay used in the daubing of the walls of the main structure or home. Following that use, the remaining hole was quickly filled with available trash of all sorts. This was done to eliminate a yard hazard as quickly as possible. This feature, not surprisingly, produced the best zooarchaeological and ethnobotanical data from the Lindsey site. It also had the preserved remains of a family dog buried in the edge of the pit.
Figure 7.4. Feature 4, Plan.
Figure 7.5. Feature 4, Profile.
Feature 5

This was another burial pit located in the floor of Structure 1. The number was first used for a discarded stain in the northern part of Square 12. Sadly, the original field notes for Feature 5 have been lost. The drawing presented here had already been prepared and was used to estimate the diameters as follows. The long diameter in the grid north-south direction was 104 centimeters and the width at right angles was 79 centimeters. The final depth of the feature is unknown. There were five ceramic vessels in this feature along with a single shell bead. The body was tightly flexed lying on its right side. More detail on the burial is presented in Chapter 8.

Figure 7.6. Feature 5, Plan.
Features 6 and 7

It is not clear why this “feature” was given two numbers, except that when first seen they apparently appeared to be separate. Ultimately it became clear that this was a single large oval feature, 103 centimeters by 51 centimeters in size. The oval feature was oriented with the grid east-west directions. The profile associated with this feature shows two distinct deep areas and some stratigraphic complexity. Frankly, the overall shape appears to be that of a normal human burial, and its location in Structure 1 follows the pattern of the other four burials located in it. One suggestion might be that of a burial pit that was never used. It contained very little in the way of artifacts, and might also be interpreted as a storage feature within the house. Both of these numbers had been previously assigned to discarded stains in the northern part of Square 12.

Figure 7.7. Feature 6 and 7, Plan.
Figure 7.8. Features 6 and 7, Profile.
**Feature 8**

This was a small shallow oval pit located in Square 7 outside Structure 1. It was 39 centimeters in diameter in the long dimension and 28 centimeters in diameters at right angles. The pit was only 10 centimeters deep according to the notes, but the drawings shows it slightly deeper (12 centimeters). It contained very few artifacts and its function is unknown. The number was originally used for a discarded stain in the northwestern corner of Square 12.

![Figure 7.9. Feature 8, Plan and Profile.](image)
Feature 9

Feature 9 was located in Square 7, grid east of Structure 1. The plan for the feature was apparently lost, although the excavation profile was still extant. I have drawn a simple circle below with the profile as crudely representative of the feature. Based upon the profile, the feature was about 60 centimeters in diameter and 47 centimeters deep. Very few artifacts were recovered from the fill of the feature. The function of the feature is unknown. It had originally been labeled as Post Mold 65 in Square 7.

Figure 7.10. Feature 9, Plan and Profile.
Feature 10

The notes for this feature were not available, although a plan and profile had been drafted. It was located inside Structure 1 in Square 6. The very odd shape looks like three post molds crammed together, but they are large than “normal”. Maximum length of the feature from the drawing is 96 centimeters and the maximum width was 50 centimeters. The maximum depth was 27 centimeters. Very few artifacts were present.

Figure 7.11. Feature 10, Plan and Profile.
Feature 11

The notes are a bit ambiguous about this feature. The original feature number 11 had been Post Mold 1 in Square 11, but this was apparently discarded and the number reassigned to this feature located on the junctions of Squares 6 and 12. There are clearly two post molds involved in this feature, maximum diameters are 81 and 60 centimeters. There is ambiguity in the notes about which direction is north also. Finally, the notes imply that this “feature” was likely to be discarded, but apparently never was formally eliminated. There were very few artifacts associated with it.

Figure 7.12. Feature 11, Plan.
Feature 12

Feature 12 had originally been labeled as Post Mold 3 in Square 12. It was a tiny stain, measuring only 15 centimeters in diameter and was only 3 centimeters deep. I believe it was a post mold if it was anything, and there is no indication why it was converted into a feature.

Figure 7.13. Feature 12, Plan.
Feature 13

This was the location of Burial 2. This was located inside Structure 1, in Square 6. The maximum length of the feature was 126 centimeters, while the maximum width of the oval feature was 71 centimeters. The feature was 43 centimeters deep. The body was tightly flexed, lying on its left side. There was a single pottery vessel near the hip area of the burial, as well as stone discoidal—a game stone. Many shell beads were located in the neck region of the burial. More detail on the burial is presented in Chapter 8.

Figure 7.14. Feature 13, Plan.
Feature 14

This small basin shaped feature was located in Square 12. It was only 27 centimeters in diameter and 6 centimeters deep. There were very few artifacts associated with it. The function of this small feature is unknown, and it may just have been a shallow post mold.

Figure 7.15. Feature 14, Plan and Profile.
Feature 15

This had been originally listed as Post Mold 57 in Square 7. The likely reason it was changed to Feature 15 was its apparent size—43 centimeters in diameter. No notes are available for its excavation, and its depth is unknown. It looks as if a smaller post mold intruded into a larger one.

Figure 7.16. Feature 15, Plan.
Feature 16

This was located in a part of Square 8 that had been shovel scraped early in the project. It was a small pit of assumed round shape, 32 centimeters in diameter. The depth was recorded as 36 centimeters. It looks as if it was an isolated fairly large post, although notes for the excavation of this feature are very limited.

Figure 7.17. Feature 16, Plan and Profile.
Feature 17

This feature was located in Square 7 to the east of Structure 1. It was a round pit that was 49 centimeters in diameter and 24 centimeters deep. The bottom was generally flat. There were very few artifacts associated with the feature. Its fill was a light brown soil as almost all of the features at Lindsey were.

Figure 7.18. Feature 17, Plan and Profile.
**Feature 18**

Feature 18 was a deep, medium sized, generally oval shaped pit located in Square 7. It was 59 centimeters in diameter in the long axis and 34 centimeters in diameters at right angles. The maximum depth recorded after excavation was 40 centimeters. It was suggested that it might have been some sort of storage pit, although it contained very few artifacts.

Figure 7.19. Feature 18, Plan and Profile.
Feature 19

This small feature was located in Square 7. It was a shallow basin shaped pit with a maximum diameter of 60 centimeters. The width was 35 centimeters and the maximum depth was only about 5 centimeters. There were a few sherds and shell fragments in the fill. The function of the features is unknown. This feature had originally been assigned the name Feature C.

Figure 7.20. Feature 19, Plan and Profile.
**Feature 20**

This was yet another medium sized, rather deep feature with light brown humic fill. It was located in Square 9 well away from Structure 1. Feature 20 was oval shaped and measured 45 by 24 centimeters. The depth of the feature was about 14 centimeters. Only a very few artifacts were located in the fill of this isolated feature.

Figure 7.21. Feature 20, Plan and Profile.
Feature 21

This medium sized, rather deep feature was located at the junction of Squares 6 and 11. It was oval in shape, and 47 centimeters by 43 centimeters according to the notes, although the drawing seems a bit different from these dimensions. The maximum depth is recorded as 36 centimeters. There were no artifacts in the feature. Its function is unknown—perhaps a storage pit of some sort.

Figure 7.22. Feature 21, Plan and Profile.
**Feature 22**

The shape of Feature 22 is almost a duplicate of Feature 21. It was located in Square 11, was oval in shape, and was rather deep. The maximum length was 49 centimeters, while the minimum diameter was 33 centimeters. The maximum depth was 44 centimeters, and the bottom was not flat. There were almost no artifacts, but there was a good bit of charcoal in this feature. It was located quite close to Structure 1 and may have been some sort of smudge or smoke producing feature.

![Figure 7.23. Feature 22, Plan and Profile.](image)
Feature 23

This small basin shaped feature was located in Square 6, inside Structure 1, near the burials. It was 32 centimeters long, 21 centimeters wide, and only 8 centimeters deep. There were only a few sherds from this shallow pit. Its function associated with the structure is unknown, unless it was a small storage pit. A rejected stain in Square 11 was previously labeled as Feature 23.

Figure 7.24. Feature 23, Plan and Profile.
Feature 24

Feature 24 was located in Square 11. It was essentially a round feature with a flat or almost flat bottom. The diameter was 38 centimeters and the depth was 12 centimeters. There were no artifacts in the feature. Perhaps it was a small storage pit, but its function is truly unknown.

Figure 7.25. Feature 24, Plan and Profile.
**Feature 25**

This was another of the small and deep features from the Lindsey site. It was located in Square 6 inside Structure 1 near the burials pits. It was 32 centimeters by 24 centimeters and measured 15 centimeters deep. A few small sherds were recovered from the fill of the feature. It may be a slightly larger diameter post mold, a small storage pit, or a feature of unknown use. I do not believe that many people would want open “storage” holes on the floor of their house. Such holes could lead to broken ankles and the availability of storage areas in the ceiling / rafter area of a structure should be more than enough without the need for open “storage” holes in the floor. Having said this, I believe features such as Feature 25 more likely represent the bottoms of posts added to support the ageing roof / rafter structure of Structure 1. The first original Feature 25 was a rejected stain in Square 11. A second designation of Feature 25 was also located in Square 11, but was reassigned as Post Mold 37 for that square.

![Feature 25, Plan and Profile](image)

Figure 7.26. Feature 25, Plan and Profile.
Feature 26

Feature 26 was another small basin shaped pit on the floor of Structure 1. It was essentially round and about 26 centimeters in diameter. The maximum depth was only 9 centimeters. A single sherd was recovered from the fill. The function of the features is likely that of a post mold, and I do not know why it was designated as a feature. A rejected stain in Square 11 was originally designated as Feature 26.

Figure 7.27. Feature 26, Plan and Profile.
**Feature 27**

This medium size basin shaped feature was located in line with the defined wall of Structure 1. Indeed, I believe it may have been a wall support post added after the building was becoming weaker with age. The feature was 51 centimeters by 37 centimeters in size with a maximum depth of 14 centimeters. There were almost no artifacts in the fill of Feature 27. Feature 27 was originally named Post Mold 3 in Square 6. I assume that its large diameter was the reason it was redesignated as a feature.

![Figure 7.28. Feature 27, Plan and Profile.](image)
Feature 28

This small feature was located in Square 7. It was originally named Post Mold 63 in that square. The diameters were 36 and 30 centimeters. Its maximum depth was 18 centimeters. There were no artifacts recovered from this small post mold. I assume it was called a feature because it was a bit larger than 30 centimeters, as discussed in the beginning of this chapter.

Figure 7.29. Feature 28, Plan and Profile.
Feature 29

This was originally named Post Mold 19 in Square 12. It was a shallow depression only 15 centimeters in diameter and 5 centimeters deep. A single sherd was recovered from the fill. I do not know why it was redefined as a feature.

Figure 7.30. Feature 29, Plan.
**Feature 30**

This feature was originally defined as two separate post molds, number 56 and 57 in Square 12. The dimensions of the defined feature were 39 centimeters by 24 centimeters. The profile shows two deeper areas, and I believe the first interpretation was likely correct—two separate post molds.

![Figure 7.31. Feature 30, Plan and Profile.](image-url)
Feature 31

This was Burial 4. It was discovered well after the end of the field school by Woody Williams. The feature was recognized only as a very vague light stain adjacent to the other burials inside Structure 1. The pit was relatively small—77 centimeters by 54 centimeters. The maximum depth was only 21 centimeters. There was almost no bone left of the burial, which is discussed further in Chapter 8. A single ceramic vessel was located with the burial. The body was likely flexed, lying on its left side.

Figure 7.32. Feature 31, Plan.
Feature 32

This feature was originally defined as Post Mold 39 in Square 7. It was oval in shape and measured 23 by 14 centimeters in size. The maximum depth was only 10 centimeters. A single sherd was recovered from the fill.

![Figure 7.33. Feature 32, Plan.](image)

Feature 33

Originally called Post Mold 54 in Square 7, this medium sized feature was 35 by 40 centimeters in diameter and the excavated depth was 32 centimeters. No profile was drawn of this feature. A few sherds were recovered from the feature.

![Figure 7.34. Feature 33, Plan.](image)
Feature 34

This feature was originally defined as Post Mold 29 in square 12. The roughly round feature was about 24 centimeters in diameter and had a maximum depth of 15 centimeters. Only two sherds were recovered from the fill. Its function is unknown.

Figure 7.35. Feature 34, Plan and Profile.
Feature 35

The final numbered feature was originally named Post Mold 34 in Square 11. It was 22 centimeters in diameter and only 5 centimeters deep. No artifacts were recovered from the shallow feature. I consider it a small, shallow post mold.

Figure 7.36. Feature 35, Plan and Profile.
Chapter 8
Burial Analyses
Dorothy A. Humpf

Four burials were found in the southern half of the circular Structure 1 at the Lindsey site. These included an adult male, two adult females, and a child. Bone preservation was fair in two cases and very poor in the two. All burials had grave goods. Ten vessels were found in the four burials, as were shell beads, shell discs, and a greenstone discoidal. The age and sex composition of the burials and their proximity to one another suggest that they represent a single polygamous nuclear family interred inside the structure.

Age and Sex Determination

Analyses of age, sex, and health status were performed at The Pennsylvania State University. Sex determination focused on the morphological characteristics of the pelvis (Phenice 1973) and the skull (Bass 1995, Acsadi and Nemeskeri 1970). Additional criteria included the shape of the chin and the gonial angle.

Because pelvic remains were so poorly preserved and no pubic symphyses were recovered, pubic sympheseal aging techniques could not be used. Only 1 adult (Burial 2) could be aged using the auricular surface of the ilium (Lovejoy, et. al. 1985). The other two adult burials were aged on the basis of the degree of endocranial suture closure (Todd and Lyon 1924). The one child ~ burial was aged using dental eruption and development standards (Moorees, et al. 1963, Ubelaker 1978). Health status was assessed through a macroscopic examination of bone lesions, dental caries, and enamel hypoplasia.

Burial 1 was an adult female between 30 and 35 years of age. Sex was determined on the basis of a wide sciatic notch and the presence of a deep pre-auricular sulcus. Age was
determined using the iliac auricular surface. No enamel hypoplasia, dental caries, or skeletal lesions were present.

Burial 2 was an adult male, 40-50 years of age. Sex was assigned on the basis of a narrow sciatic notch, a well-developed nuchal crest, and large mastoid processes and brow ridges. The lambdoid suture was fused, and molar wear was more extensive than that observed in Burial 1. An advanced age was also indicated by arthritic lipping on the posterior distal femora and the right posterior patella. The anterior dentition was extremely worn and prevented the observation of hypoplasia on the anterior teeth. Dentin was exposed on all teeth except the third molars. A dental caries was present on the occlusal surface of the right mandibular second premolar. All mandibular left molars had been lost prior to death.

Healed periostitis was present on the right and left tibia and the right distal radius. Stature was calculated to be 5’5” based on a bicondylar femur length of 44.0 centimeters.

Burial 3 was an adult male between 30 and 35 years of age. Sex was assigned on the basis of a gracile nuchal crest, small mastoid processes, and an obtuse gonial angle. The sagittal suture was fused but the lambdoid suture was not. Molar wear was similar to that observed in Burial 1, a 30-35 year old female.

Both mandibular first molars had been lost prior to death. No dental caries were present in the maxillary dentition. A dental caries was present on the occlusal surface of the mandibular right second molar; the mandibular left second molar was abscessed. Slight hypoplastic lines were present on the gingival third of both mandibular canines. No skeletal lesions were observed. Cranial deformation was present.
Burial 4 was a 4-6 year old child represented only by teeth, cranial fragments, and an unidentified long bone fragment approximately 3 centimeters long. The permanent first molars were unerupted. Small occlusal pit caries were present on all deciduous second molars.

**Burial Characteristics**

All burial pits were difficult to define on the surface and became less distinct and more difficult to follow below the first few centimeters. Pit fill consisted of light brown sandy loam with a high proportion of red clay mottling and, in some areas of the pit, large patches of solid red clay. Pit boundary definition was difficult because of the high red clay content. Grave goods or bones were sometimes found to extend into what had been thought to be sterile soil and pit boundaries were extended. All burial pits were larger than they appeared on the surface.

The pit for Burial 1 was observed on the surface as a kidney-shaped light brown stain (Feature 1). One-half of an incised cazuela bowl (FN1) was found approximately eight centimeters south of this stain. The bowl and feature appeared to be separated by a strip of sterile soil.

Pit fill became more mottled a few centimeters below the surface. Grave boundaries on the basis of the size and quantity of saprolitic rock inclusions, which were larger and more frequent in sterile soil than in pit fill. The cazuela bowl was then recognized to be part of the burial pit. The top few centimeters of light brown soil were interpreted to have been deposited on top of the grave due to slumping.

Burial 1 was flexed on its right side, facing east, with the head to the southeast (Figure 7.1). Grave goods included the incised cazuela bowl described above as well as a small incised
jar (FN2), a complicated stamped bowl with a spout (FN3), 20 columella beads located near the cranium, and two shell discs.

The pit for Burial 2 (Feature 13) appeared on the surface as a light brown and red mottled stain with two darker brown circular areas. These were at first thought to be post molds intrusive into the feature, but both disappeared a few centimeters below the surface. The mottled area could be distinguished from the surrounding sterile matrix by the absence of large saprolitic rock inclusions. Burial 2 was flexed on its left side with the head to the east and face to the south (Figure 7.13). Grave goods included an incised jar, a greenstone discoidal, an unworked mussel shell, and 20 columella beads.

The pit for Burial 3 (Feature 5) first appeared as a light brown circular stain. This was excavated to a depth of 40 centimeters to what was thought to be sterile soil. Continued excavation produced the remains of Burial 3 (Figure 7.6). The burial was flexed on its right side with the head to the southeast and face to the northeast. Grave goods included a small incised oval shaped jar (FN2), a large incised carinated jar (FN1), a large incised narrow-mouthed jar (FN5), an incised cazuela bowl (FN3), a small hemispherical L-rim bowl (FN4), 2 undrilled columella beads, and two shell discs.

Burial 4 was discovered during excavation of what appeared to be a post mold when a stamped bowl (FN1) was found 10 centimeters below the surface (Figure 7.32). The burial was poorly preserved and body orientation could not be precisely determined. The burial appeared, however, to be flexed on its right side with the head to the east facing north. The stamped bowl was the only association found with this burial.
Family Cohorts

The age and sex profile of the four burials excavated at the Lindsey site (one adult male, two adult females, and a child) suggest that these remains represent part of a single nuclear family. The burial pits were very close together and arranged in an arc in the southern half of the structure.

A similar pattern of burials has been found at two other upland Lamar sites, Woodlief and Sugar Creek, in the Oconee area. At the Woodlief site (9PM137), one adult male, two adult females (buried in the same pit), a child and an infant were recovered in a five square meter area. It is unclear whether these burials are inside of a structure because extensive excavations have not been conducted at the site. Limited excavation by the Pennsylvania State University in 1987, however, uncovered several post molds near these burials which likely indicate the presence of a structure. This pattern was also found in the Iron Horse phase burials at the Sugar Creek site (9MG4) where one adult male, an adult female, a probable adult female, and a child were buried in a carefully arranged arc inside of a circular structure (see Williams and Williams 2012).

The analysis of burials recovered from the three sites discussed above supports other archaeological evidence that at least some of the numerous upland sites in the Oconee region represent the permanently occupied farmsteads of single nuclear families. The pattern found in the Bell phase Lindsey site burials, the Iron Horse phase burials at Sugar Creek, and the as yet unphased Lamar burials at the Woodlief site suggest that year-round occupation of upland sites by individual nuclear families is a persistent characteristic of Lamar-period settlement in the Oconee Valley.
Chapter 9
Ceramic Analysis
Barbara J. Gudel and Mark Williams

Introduction

A total of 16,145 ceramic artifacts were recovered from the Lindsey site during the course of archaeological investigations between April, 1987 and January, 1988. These include 10 complete ceramic vessels, 16,044 rim and body sherds from broken ceramic vessels, 7 vessel handles, 68 pipe fragments, 10 pottery disks, and 6 fired coil fragments. The characteristics of this assemblage clearly place it clearly within the Lamar ceramic tradition.

An initial collection of 818 ceramic artifacts was made by Woody Williams and Mark Williams during April of 1987, between the time of the initial discovery of the site and the establishment of the site grid. Intensive surface collections of each 10 by 10 meter unit comprising the site grid were made in June by the crew of the Penn State Archaeological Field School, resulting in an additional 4,447 ceramic artifacts. Subsequent excavations of post molds and features produced an additional 3,640 artifacts. The remaining artifacts were derived from test pits, the shovel scraping of selected 10 by 10 meter squares, and from additional collections made after the mechanical removal of top soil from the site. Appendices 1 and 3 present the provenience and content of each collection forming the ceramic artifact assemblage at the site.

Surface Treatment of the Lindsey Vessel Assemblage

Following the classificatory procedures developed by the Laboratory of Archaeology at the University of Georgia for Mississippian vessel assemblages, fourteen distinctive surface treatments were recognized on the ceramics from this site. A list of these treatments is presented
in Table 9.11, along with the frequency of their occurrence among the ceramic sherds.

Additionally there were five special categories of ceramic artifacts.

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</tr>
<tr>
<td>Cordmarked</td>
<td>6</td>
<td>0.04</td>
</tr>
<tr>
<td>Cobmarked</td>
<td>15</td>
<td>0.09</td>
</tr>
<tr>
<td>Pipe</td>
<td>67</td>
<td>0.42</td>
</tr>
<tr>
<td>Disk</td>
<td>10</td>
<td>0.06</td>
</tr>
<tr>
<td>Handle</td>
<td>7</td>
<td>0.04</td>
</tr>
<tr>
<td>Coil</td>
<td>6</td>
<td>0.04</td>
</tr>
<tr>
<td>Node</td>
<td>5</td>
<td>0.03</td>
</tr>
<tr>
<td>Totals</td>
<td>16086</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Plain sherds show no evidence of the intentional application of design elements. Ridges caused by the smoothing of the coils used during the pot’s manufacture were occasionally observed. These were easily distinguished from intentional designs, and were not considered in the present analysis. The total number of plain sherds from Lindsey was 12,168 and account for 75.64 percent of the sherds recovered on the Lindsey site.

Stamped sherds exhibited designs created by pressing a carved paddle onto the body of the pot while the clay was still pliable. The design elements were of both curvilinear and rectilinear form. Specific stamped designs were difficult to recognize at the Lindsey site, thus all
are here classified as Unidentified. The designs were almost never crisp and clear, as they
sometimes are in other earlier assemblages, probably a result of the intentional smoothing of the
vessel subsequent to paddling, but prior to firing. As a result, no attempt was made in this
analysis to distinguish stamped designs. The total number of stamped sherds from Lindsey was
1,310, and accounted for 8.14 percent of the ceramic artifacts were identified as having stamped
design elements.

Incised lines were applied with a stick or cane splinter prior to the hardening of the clay.
Typically a band of design, consisting of between four to twenty lines, was located either just
below the rim or around the equator of the vessel. Three categories of incised designs were
recognized, based on the width of individual lines comprising each design element. Lines less
than one millimeter in width were classified as fine incised, lines one to two millimeters in width
were classified as medium incised, and lines greater than two millimeters in width were
classified as bold incised. When line width varied within an element, the design was classified
on the basis of the widest lines. This was, however, a rare occurrence. The total number of
incised sherds at Lindsey was 2,466. This was 15.33 percent of all sherds at Lindsey. Of all the
incised sherds, 11.4 percent were fine incised, 58.9 percent were medium incised, and 29.7
percent were bold incised (See Table 9.2).

<table>
<thead>
<tr>
<th></th>
<th>Bold Incised</th>
<th>Medium Incised</th>
<th>Fine Incised</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Body</td>
<td>Rim</td>
<td>Total</td>
</tr>
<tr>
<td>Number</td>
<td>589</td>
<td>143</td>
<td>732</td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td>29.7</td>
</tr>
</tbody>
</table>

Punctation was accomplished by pressing the end of a hollow reed into the clay to form a
circular shape. These were arranged in only one row, usually on the shoulder, forming a band
around the pot. Only 12 sherds bearing such punctuation were recovered at Lindsey, comprising only .07 percent of the total ceramics recovered.

Cord marked sherds were rare. Only six sherds bearing this form of decoration were recovered from Lindsey. Possible corn cob impressed sherds were an unexpected find from this site. There were 15 sherds (still less than 1 percent of the total sherds recovered from the site) that bore marks which looked as if a kernelless corn cob had been pressed into the wet clay. Both cord marked and cob marked sherds are more common at earlier periods in Georgia prehistory and are generally absent from late Lamar sites.

Fourteen sherds were recovered that bore a combination of surface treatments. Two sherds were Punctated and Incised, one sherd was Punctated and Stamped, and 11 sherds were Stamped and Incised. These sherds account for less than one percent of the total ceramics recovered from the site. Interestingly, at least two of the pottery vessels were of Stamped and Incised form. Since a sherd generally has to be a larger one to show both surface treatments, combinations such as these were rare at Lindsey. They would probably be more common in collections from sites that have larger average sherd sizes.

**Special Ceramic Artifacts**

Ceramic artifacts which were not broken body or rim fragments from vessels fell into six categories.

**Pipe Fragments.** Although no unbroken pipes were discovered at Lindsey, 67 stem and bowl fragments were identified. Pipe fragments can be recognized by their distinctive shape and by the fact that they are much thinner, lighter in color, and more finely made than vessel sherds.
They have no apparent temper added. It is interesting that tobacco pipe fragments are quite common at individual small farmsteads. Clearly, the people were doing a lot of smoking.

**Disks.** These are sherds whose edges have been abraded to form a circular or oval shape. Ten pottery disks were recovered at Lindsey. Most were one to two inches in diameter. These have traditionally been described as game pieces, but their true function is not certain.

**Handles.** These were broken off of pots at the point where they had been attached. Of the seven handles found at Lindsey, none were still attached to the body of a vessel.

**Nodes.** Although some of the “nodes” or bumps recovered at Lindsey were identified as pipe fragments, one was recognized as having been broken off of a larger vessel.

**Coils.** Six accidentally fired ceramic coil fragments were recovered from the Lindsey site. These were from longer coils used to make pottery vessels and it is surprising that more of these accidentally fired fragments are not recovered from small farmsteads such as Lindsey.

**Rim Treatments**

Seven different rim treatments on 1,247 rim sherds were discovered at the Lindsey site. These accounted for 7.75 percent of all sherds from the site. The total rim counts and percentages can be found in Table 9.3.

<table>
<thead>
<tr>
<th></th>
<th>Simple</th>
<th>Rolled</th>
<th>Folded Pinched</th>
<th>Folded Punctated</th>
<th>T-Rim</th>
<th>Notched Lip</th>
<th>Punctated</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain</td>
<td>212</td>
<td>3</td>
<td>541</td>
<td>9</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>778</td>
</tr>
<tr>
<td>Fine Incised</td>
<td>45</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>51</td>
</tr>
<tr>
<td>Medium Incised</td>
<td>273</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>282</td>
</tr>
<tr>
<td>Bold Incised</td>
<td>122</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>129</td>
</tr>
<tr>
<td>Stamped</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Stamped / Incised</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Totals</td>
<td>656</td>
<td>6</td>
<td>547</td>
<td>11</td>
<td>21</td>
<td>5</td>
<td>1</td>
<td>1247</td>
</tr>
<tr>
<td>Percent</td>
<td>52.61</td>
<td>0.48</td>
<td>43.87</td>
<td>0.88</td>
<td>1.68</td>
<td>0.40</td>
<td>0.08</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 9.3. Rim Sherds from All Proveniences.
Simple rims exhibited no special treatment. The top of the uppermost coil of the vessel was simply smoothed. Simple rims accounted for 52.61 percent of all the rime sherds from the site.

Folded and Pinched rims were manufactured by folding over the uppermost coil onto the exterior of the pot, or by adding a separate coil to the exterior of the vessel near the rim. Pinching the lower edge with the finger tips resulted in a decoration resembling a pie crust. This was the second most common rim for accounting for 43.87 percent of all rim sherds.

Folded and Punctated rims were similar to folded and pinched rims in that the uppermost coil was folded or another strip of clay was added; however, instead of pinching the coil, a cane reed was punched along its lower edge. Only 11 rims of this type were recovered at Lindsey, each exhibiting a single row of evenly spaced punctations.

Rolled rims were manufactured by rolling the lip out slightly from the center of the vessel. Six rolled rims were found at the Lindsey site.

Simple and notched rims had notched marks along the lip of the vessel, giving the rim a jagged appearance in profile. Only five rims of this type were recovered from Lindsey.

T-rims were “T” or inverted “L” shaped rims manufactured by placing an additional strip of clay to the lip or by folding the uppermost coil at a 90 degree angle. Three different treatments were found on the tops of the T-rims at Lindsey: plain, incised parallel lines encircling the vessel orifice, and a radial pattern of notches. Twenty-one T-rims were recovered at Lindsey.
Complete Vessels

Ten almost complete ceramic vessels were recovered from the four burials on the site. Two of the vessels were unbroken, and one consisted of only half a vessel. The rest were broken in place and reconstructed for analysis and photography. These vessels were generally small, and were of a wide variety of styles. All the data on the vessels are presented in Table 9.4 on the next page. Photos of all ten are presented at the end of this chapter.

The mean lip diameter of all 10 vessels was 16.4 centimeters and the mean height was only 13.2 centimeters. The range of forms of the vessels was wide. Collectively, the vessels likely covered the range of forms used daily by the family living at the site, albeit smaller than the average. Readers interested in comparisons with another Bell phase ceramic collection are referred to the date from the Joe Bell site 10 miles away (Williams 1983). The fact that three are five of the vessels with stamping and none that are fine incised would normally suggest that these were pre dating the Bell phase, but the rest of the sherds from the site clearly indicate otherwise. Perhaps older small vessels were selected for inclusion in the burials.
Table 9.4. Ceramic Vessel Data.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Burial</th>
<th>FN</th>
<th>Lip Diameter</th>
<th>Height</th>
<th>Base Shape</th>
<th>Base Diameter</th>
<th>Body Surface</th>
<th>Form</th>
<th>Rim</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>24.0</td>
<td>13.5</td>
<td>Flat</td>
<td>8.0</td>
<td>Bold Incised</td>
<td>Carinated Bowl</td>
<td>Simple</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>10.9</td>
<td>10.0</td>
<td>Flat</td>
<td>3.0</td>
<td>Bold Incised and Unidentified Complicated Stamped</td>
<td>Jar</td>
<td>Folded Pinched</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>3</td>
<td>22.5</td>
<td>14.0</td>
<td>Flat</td>
<td>9.0</td>
<td>Complicated Stamped</td>
<td>Open Bowl</td>
<td>Folded Cane Punctated</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>1</td>
<td>14.2</td>
<td>12.8</td>
<td>Flat</td>
<td>5.0</td>
<td>Bold Incised</td>
<td>Jar</td>
<td>Folded Pinched</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>1</td>
<td>15.1</td>
<td>15.0</td>
<td>Flat</td>
<td>5.0</td>
<td>Bold Incised and Unidentified Complicated Stamped</td>
<td>Jar</td>
<td>Folded Pinched</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>2</td>
<td>9.8</td>
<td>15.0</td>
<td>Flat</td>
<td>4.5</td>
<td>Bold Incised</td>
<td>Rounded Bowl</td>
<td>Simple</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>3</td>
<td>20.2</td>
<td>14.0</td>
<td>Flat</td>
<td>7.5</td>
<td>Bold Incised</td>
<td>Carinated Bowl</td>
<td>Folded Pinched</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>4</td>
<td>13.0</td>
<td>6.0</td>
<td>Rounded</td>
<td>-</td>
<td>Unidentified Complicated Stamped</td>
<td>Open Bowl</td>
<td>L-Shaped, Incised</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>5</td>
<td>15.9</td>
<td>23.0</td>
<td>Flat</td>
<td>9.0</td>
<td>Bold Incised</td>
<td>Jar</td>
<td>Simple</td>
</tr>
<tr>
<td>31</td>
<td>4</td>
<td>1</td>
<td>18.2</td>
<td>8.5</td>
<td>Flat</td>
<td>6.0</td>
<td>Check Stamped</td>
<td>Open Bowl</td>
<td>Simple</td>
</tr>
</tbody>
</table>
Site Distribution of Ceramics

The proportion of sherds exhibiting the most common surface treatments at the Lindsey site is remarkably consistent among the major proveniences within the site. As can be seen in Table 9.5 the ceramics derived from excavated (post molds and features) versus non-excavated (surface and shovel scraped areas) contexts exhibit almost identical percentages of sherds within each design category. In addition, neither sample deviates significantly from the percentages comprising the total assemblage.

Table 9.5. Ceramics from Excavated Areas vs. Surface Collections.

<table>
<thead>
<tr>
<th>Location</th>
<th>Post Molds and Features</th>
<th>Surface</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Plain</td>
<td>1790</td>
<td>74.37</td>
</tr>
<tr>
<td>Bold Incised</td>
<td>99</td>
<td>4.11</td>
</tr>
<tr>
<td>Medium Incised</td>
<td>223</td>
<td>9.26</td>
</tr>
<tr>
<td>Fine Incised</td>
<td>34</td>
<td>1.41</td>
</tr>
<tr>
<td>Stamped</td>
<td>231</td>
<td>9.60</td>
</tr>
<tr>
<td>Stamped &amp; Incised</td>
<td>8</td>
<td>0.33</td>
</tr>
<tr>
<td>Punctated &amp; Incised</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Punctated &amp; Stamped</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Punctated</td>
<td>4</td>
<td>0.17</td>
</tr>
<tr>
<td>Cordmarked</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Cobmarked</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Pipe</td>
<td>14</td>
<td>0.58</td>
</tr>
<tr>
<td>Disk</td>
<td>3</td>
<td>0.12</td>
</tr>
<tr>
<td>Handle</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Coil</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Node</td>
<td>1</td>
<td>0.04</td>
</tr>
<tr>
<td>Totals</td>
<td>2407</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Subdividing the ceramic assemblage even further, sherds from all excavated post molds and features were placed into three categories: features and post molds found within Structure 1; Feature 4, a large refuse pit; and all other features and post molds from the site. Structure 1 contained 989 sherds, and 1,286 sherds were collected from all of the other features and post molds found on the site. The percentages of surface treatments occurring in each of these three proveniences are again very similar, and none deviate significantly from the overall percentages of design elements on the site.

Next, the surface treatments on sherds recovered from all wall posts, internal posts, and internal features within Structure 1 were examined. Almost none of the posts and features contained sherds that were identified as likely belonging to the same vessel. There was one exception: Square 6, Post Molds 50 and 68 contained sherds that appeared to be from the same vessel, but they could not be cross mended.

Although no spatial clustering of surface treatment was observed within the structure, the size and frequency of sherds throughout the structure provides important corroborative evidence for the model of space utilization described in Chapter 6. In general, the frequency of sherds is greater in post molds forming the outer wall of the structure than in the internal post molds and features. This is probably due to the intentional sweeping of broken pottery out of the living space, and up against the walls. The largest percentage of sherds occurred in the eastern and the southeastern portions of the structure, between Post Molds 75 and 13 in Unit 6. These sherds were generally very small (for example PM75, mean weight = 2.9 grams). Feature 5, which is along the eastern wall, also contained a high frequency of very small sherds (mean weight = 1.6 grams). The door to the structure is believed to have been located in the southeastern wall, so perhaps most of the broken and no longer useable sherds were being swept in this direction.
The western wall of the structure contained relatively few sherds, although their average size was considerably greater (for example PM72, mean weight = 23.6 grams).

Feature 6, within the structure, contained only large sherds (mean weight = 18.2 grams). Features 3, 6, 7, and 10 all contain a relatively high frequency of sherds and are also all deep and stratified pits. Both the morphology of these features and their high sherd counts support the idea of this as the food preparation/heating area of the structure.

**Chronological Implications of the Ceramic Assemblage**

The Lamar period ceramic chronology published by Williams and Shapiro (1990) for the Piedmont Oconee Region has served as the principal reference for the temporal assessment of the Lindsey ceramic assemblage. Summaries of the phase characteristics as defined by Smith and Williams (Williams and Shapiro 1990:60-63) are as follows:

Duvall phase (A.D. 1375-1450).

<table>
<thead>
<tr>
<th>Morgan Incised</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stamped</td>
<td>Present</td>
</tr>
<tr>
<td>Folded and Punctated Rims</td>
<td>Present with punctuation approximately five millimeters in diameter and one, two, or three rows on the fold</td>
</tr>
<tr>
<td>Folded and Pinched Rims</td>
<td>Present, approximately 10 millimeters in height</td>
</tr>
<tr>
<td>Rim Effigy Adornos</td>
<td>Present</td>
</tr>
</tbody>
</table>
Iron Horse phase (A.D. 1450-1520).

<table>
<thead>
<tr>
<th>Decoration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morgan Incised</td>
<td>Present</td>
</tr>
<tr>
<td>Stamped</td>
<td>More common than Duvall</td>
</tr>
<tr>
<td>Bold Incised</td>
<td>Present, motifs have two to four lines</td>
</tr>
<tr>
<td>Folded and Punctated Rims</td>
<td>Present, but rare</td>
</tr>
<tr>
<td>Folded and Pinched Rims</td>
<td>Present, approximately 14-15 millimeters in height</td>
</tr>
</tbody>
</table>

Dyar phase (A.D. 1520-1580).

<table>
<thead>
<tr>
<th>Decoration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stamped</td>
<td>Present (less common than Iron Horse phase?)</td>
</tr>
<tr>
<td>Bold Incised</td>
<td>Present, motifs have four or more lines</td>
</tr>
<tr>
<td>Folded and Pinched Rims</td>
<td>Present, approximately 17-20 millimeters in height</td>
</tr>
</tbody>
</table>

Bell phase (A.D. 1580-1670?)

<table>
<thead>
<tr>
<th>Decoration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stamped</td>
<td>Present, but less than 1 percent</td>
</tr>
<tr>
<td>Fine Incised</td>
<td>Present, motifs have up to thirty or more lines</td>
</tr>
<tr>
<td>Folded and Pinched Rims</td>
<td>Present, approximately 20 millimeters in height</td>
</tr>
<tr>
<td>T-rims</td>
<td>Present</td>
</tr>
</tbody>
</table>

Using this ceramic chronological information, as well as more detailed information on the ceramic context of key collections reported in the Dyar (Smith 1982) and Joe Bell (Williams 1983) site reports, several trends have been noted concerning the occurrence of decorative treatments throughout the Dyar and Bell phases. Plain (undecorated) ceramics became more common, and, therefore, all decorative elements became less common. In particular, the
occurrence of stamping significantly decreases, so that by the end of the Bell phase, it is practically nonexistent. Through time incising incorporates the use of more lines in each decorative element. Pipes are also thought to have become more common through time.

The Lindsey ceramic assemblage exhibits several chronometric characteristics that clearly place it between the Dyar phase component at the Dyar site and the Bell phase component at the Joe Bell site. This conclusion is based on the observation that several important decorative changes occurred in the Oconee Valley during the Lamar period. Here we are concerned with the continuum which existed as the Dyar phase gave way to the Bell phase.

Plain sherds become more common during the Dyar and Bell phases, with Lindsey’s 75 percent of the total assemblage intermediate to that of the Dyar site (58 percent) and the Joe Bell site (87 percent).

Stamping decreases dramatically during the Dyar and Bell phases. Stamping declines from 18 percent of the reported ceramic assemblage at the Dyar site to 8 percent at Lindsey and 1 percent at Joe Bell.

Incising decreases during these phases. The combined percentage of incised sherds (bold, medium, and fine) decreases from 19 percent at Dyar to 15 percent at Lindsey and to 7 percent at Joe Bell.

The number of lines comprising each incised motif increases during the Dyar and Bell phases. At Lindsey, intact design elements were observed on twenty-one sherds from Structure 1 and Feature 4, and on the seven complete incised pots. The average number of lines in decorative elements which contained bold incised lines was 5.33, the average number for medium lines was 10.15 and the average for fine incised lines was 13.00. The average number of lines from all incised sherds at Lindsey was 10.04 lines per decorative element. Smith and
Williams state that during the Dyar phase incised designs occur with four or more lines per motif, and during the Bell phase incised designs occur with up to thirty or more lines per motif. At Lindsey, the range for fine incised was between four and twenty-one lines, with the mean thirteen lines. Once again, this would appear to place the Lindsey site chronologically between the Dyar and the Joe Bell sites.

Width of folded and pinched rims, according to Smith and Williams, averages 17-20 millimeters during the Dyar phase and 20 millimeters for the Bell phase. The mean width of a random sample of 269 of these sherds at the Lindsey site is 20.1 millimeters.

T-rims are believed by Smith (1982) and by Smith and Williams (Williams and Shapiro 1990) to be exclusive to the Bell phase. Twenty-one T-shaped rim sherds and one complete T-rim vessel are included in Lindsey ceramic assemblage.

It is believed that the Bell phase occupation at the Joe Bell site dates to approximately A.D. 1620, placing it late in the Bell phase (Williams 1983). From the ceramic evidence presented here, it is our conclusion that the Lindsey site is likely an early Bell phase site, perhaps about A.D. 1580.

There is little question that Lindsey is a single component ceramic site dating to the early Bell phase (there are earlier Archaic period lithic occupations so by definition it is a multicomponent site). As discussed earlier, the percentages of key ceramic attributes are quite uniform across the site and it is evident that only one residence was ever constructed. Since different phases during the Lamar period are defined by gradual changes in the region’s ceramic assemblage, sites of short duration represent moments along the ceramic continuum defined by Smith and Williams.
Figure 9.1. Burial 1, Vessel 1.
Figure 9.2. Burial 1, Vessel 2.
Figure 9.3  Burial 1, Vessel 3.
Figure 9.4. Burial 2, Vessel 1.
Figure 9.5. Burial 3, Vessel 1.
Figure 9.6. Burial 3, Vessel 2.
Figure 9.7. Burial 3, Vessel 3.
Figure 9.8. Burial 3, Vessel 4.
Figure 9.9. Burial 3, Vessel 5.
Figure 9.10. Burial 4, Vessel 1.
Chapter 10
Lithic Analysis
Laura DeLarche and Mark Williams

Introduction

At the time of the original analysis of the lithic material from Lindsey site presented in this chapter (ca. 1989), it was not clear to Hatch that almost no lithic material was being used by Late Mississippian people in the Oconee River valley. Further, the presence of many Archaic period projectile points in the collection from Lindsey makes it likely that little or none of the lithic material from the site is associated with the Bell phase farmstead that is the heart of the excavation results.

A total of 3,021 lithic artifacts were discovered at the Lindsey site as a result of archaeological efforts in 1987. Two of these were ground stone chunkey stones measuring 8.1 centimeters and 8.7 centimeters diameter. The larger of the two was a grave association with Burial 2, an adult male, and is described further in Chapter 8. The smaller chunkey stone, along with a large portion of a deer skull, was found in Post Mold 13 of Square 6, one of the wall posts of the circular house. Aside from these, and six spherical igneous rocks which may have functioned as pounding tools or hammer stones, all other lithic artifacts from Lindsey consisted of flaked stone material.

As is evident from Table 10.1, the flaked stone industry at Lindsey was formed almost completely of locally available quartz material. Chert accounted for less than 2 percent of the flake stone assemblage, and included white (non-heat treated) and reddish (heat treated) Coastal Plain chert as well as grey and black chert from northwestern Georgia.

The remaining artifacts, consisting of various materials, represent less than .5 percent of the total. Since quartz is the most commonly used material for tool manufacture during most
periods of Piedmont prehistory in Georgia and since it constitutes such a sizable percentage of the Lindsey lithic industry (almost 98 percent), lithic material preference cannot be used to explore temporal variation in this assemblage.

Table 10.2 presents a functional classification of the 3013 objects comprising the flaked stone industry. This is based upon the classification of Hay and Stevenson (Hay and Stevenson 1984:50-51). Reduction-related artifacts, representing the by-products of stone tool manufacture, make up 94.56 percent of the total, while finished tools, tool fragments, and utilized flakes represent 5.44 percent. Figure 10.1 at the end of this chapter illustrates the 17 projectile points recovered from the site. These include everything from late Paleo Indian, Early Archaic, Middle Archaic, Late Archaic, and even Woodland periods. The only points really missing are Mississippian triangular points! A similar absence of Mississippian points from the nearby Joe Bell site lithic assemblage led Williams (1983) to conclude that by the Bell phase, Lamar period Indians used cane and other perishable materials for arrow tips.

The dot-density patterns of surface-collected lithics versus ceramics discussed in Chapter 3 (Figure 3.3) reveals a different spatial pattern for the lithic material from that of the ceramic material (Figure 3.2). The lithic pattern actually represents two intense hot spots on the western part of the site grid, and two lighter concentrations on the eastern side. In light of the knowledge that the site was occupied off and on for perhaps 10,000 years, these different hot spots may represent different base camps from these many different periods of use in the past. The late Mississippian occupation overlaps almost all of the lithic concentrations.

Stone tools and debitage were, not surprisingly, occasionally discovered in the fill of post molds and features dating to the Bell phase occupation. These must be considered as accidental
inclusions that were already in the soil disturbed by the Mississippian period occupants of the site.

**Conclusions**

Despite the absence of Mississippian triangular points on a site with an indisputable Mississippian component, the Lindsey site did have an important stone tool industry—it just is from many earlier periods. Quartz biface production appears to have been a major activity during the earlier periods. Why this particular spot was so popular as a base camp area for many earlier periods is unknown. It is not impossible that access to wild food resources nearby was as important to the earlier hunters and gatherers as it was to the eventual small scale farmers of the Bell phase.

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz</td>
<td>2951</td>
<td>97.94</td>
</tr>
<tr>
<td>Heat Treated Coastal Plain Chert</td>
<td>2</td>
<td>0.07</td>
</tr>
<tr>
<td>Non Heat Treated Coastal Plain Chert</td>
<td>43</td>
<td>1.43</td>
</tr>
<tr>
<td>RV Chert</td>
<td>2</td>
<td>0.07</td>
</tr>
<tr>
<td>Diabase</td>
<td>2</td>
<td>0.07</td>
</tr>
<tr>
<td>Granite</td>
<td>2</td>
<td>0.07</td>
</tr>
<tr>
<td>Unknown</td>
<td>7</td>
<td>0.23</td>
</tr>
<tr>
<td>Shale</td>
<td>1</td>
<td>0.03</td>
</tr>
<tr>
<td>Limestone</td>
<td>3</td>
<td>0.10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3013</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Table 11.2 Flaked Stone Artifacts.

<table>
<thead>
<tr>
<th>All Lithics</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core &amp; Fragments</td>
<td>23</td>
<td>0.76</td>
</tr>
<tr>
<td>Primary Thinning Flake</td>
<td>3</td>
<td>0.1</td>
</tr>
<tr>
<td>Crude Biface Thinning Flake</td>
<td>128</td>
<td>4.25</td>
</tr>
<tr>
<td>Intermediate Biface Thinning Flake</td>
<td>287</td>
<td>9.53</td>
</tr>
<tr>
<td>Fine Biface Thinning Flake</td>
<td>187</td>
<td>6.21</td>
</tr>
<tr>
<td>Shatter</td>
<td>2221</td>
<td>73.71</td>
</tr>
<tr>
<td><strong>Total Debitage</strong></td>
<td>2849</td>
<td>94.56</td>
</tr>
<tr>
<td>Projectile Point</td>
<td>17</td>
<td>0.56</td>
</tr>
<tr>
<td>Drill</td>
<td>1</td>
<td>0.03</td>
</tr>
<tr>
<td>Preform</td>
<td>29</td>
<td>0.96</td>
</tr>
<tr>
<td>Biface</td>
<td>104</td>
<td>3.45</td>
</tr>
<tr>
<td>Uniface</td>
<td>2</td>
<td>0.07</td>
</tr>
<tr>
<td>Utilized Flakes</td>
<td>11</td>
<td>0.37</td>
</tr>
<tr>
<td><strong>Total Tools</strong></td>
<td>164</td>
<td>5.44</td>
</tr>
<tr>
<td><strong>Total Flaked Stone</strong></td>
<td>3013</td>
<td></td>
</tr>
</tbody>
</table>

Debitage Category Definitions (after Hay and Stevenson 1984:50-51):
- **Core:** angular, irregular worked pieces of raw material
- **Primary Trimming Flake:** generally large flakes with cortex covering more than 50 percent of ventral surfaces and few scars from previous flake removal.
- **Crude Biface Thinning Flake:** relatively large and thick flakes that have previous flake removal scars on exterior surfaces, faceted platforms, and relatively small angles between platform surfaces and flake axes.
- **Intermediate Biface Thinning Flake:** thin, regular flakes showing complex patterns of previous flake removal scars on exterior surfaces, faceted platforms showing evidence of "scrubbing" prior to flake removal, and small angles between platform and flake axes.
- **Fine Biface Thinning Flake:** similar to Intermediate Biface Thinning Flakes, but smaller and thinner.
- **Shatter:** irregular, worked pieces of stone so fragmentary that it is not possible to distinguish the reduction stage represented.
Figure 10.1. Projectile Points from the Lindsey Site.
Paleoethnobotanical analysis of 92 flotation and water-screened samples indicates that the Lindsey site represents a potentially self-sufficient agricultural unit. Cultigens include domesticated beans (*Phaseolus vulgaris*), goosefoot (*Chenopodium berlandieri*), marsh elder (*Iva annua* var. *macrocarpa*), and squash or gourds (*Cucurbita* spp.) and corn (*Zea mays*) - the Mississippian staple crop. Peaches (*Prunus persica*), introduced to the region by the DeSoto expedition, indicate at least minimal arboriculture. It is likely that the wild polystachyus bean (*Phaseolus polystachyus*), goosefoot (*Chenopodium* spp.), and maypop (*Passiflora incarnata*) were "encouraged" or cultivated genera (Gremillion 1989; Bonhage-Freund 1997). These interpretations are discussed below in greater detail.

**Sample Population**

The data for this paper includes samples from 25 features and 40 post molds. All post molds integral to the round-house perimeter were evaluated, as well as randomly selected post molds from elsewhere in the site.

The two proveniences containing the highest concentration of macroplant remains were a refilled borrow pit (Feature 4), and Post Mold 36 in Square 6 -- part of the round house pattern. Feature 4, the largest feature recognized, was clearly stratified, and 12 flotation and water-screen samples were collected from distinct proveniences within this feature.
Field Processing

One half of each feature was floated, while the remainder was dry-screened. A one liter sample of each post mold was floated, with the balance of the fill being water-screened through 1/4 inch mesh. A total of 4 features were unable to be sampled due to time constraints. Only floated and water-screened samples are included in this report. Two complete peach stones, several well-preserved common beans, some nut shell and corn cob were removed from samples during excavation. These macroplant remains are included with the appropriate samples in this analysis.

Samples were normally stored for up to several weeks before flotation, but they were not completely dried. No presoaking or deflocculation was employed. Undergraduate and graduate field school students floated the samples using the two-person method described by Pearsall (1989:39-47). A square galvanized steel flotation tub, modified with a 1/16 inch mesh window screen bottom, was used as the water reservoir. Standard kitchen strainers with mesh ranging from 1.0 to 2.0 millimeters were used to skim the light fraction. See Bonhage-Freund (1997:150-152) for a more detailed discussion of field procedures.

Laboratory Processing

With minor exceptions, samples were sorted in their entirety, according to the following protocol. Extremely large lots were subsampled to approximate 3 liter soil samples by successively passing them through a riffle box. A random number generator determined the portion to be examined.

Students extracted shell, bone, stone debitage, daub and some macrobotanical remains prior to archaeobotanical analysis. Next samples were passed through a series of geological
sieves for ease of examination and to insure maximum seed recovery (Pearsall 1989). Fractions above 2 millimeters were completely separated into constituent parts. Minerals and uncarbonized organic matter were set aside and not weighed or counted. Fractions less than 2 millimeters were visually scanned but only those seeds and plant tissues considered to be of archaeological significance were removed. Matrix which was excluded from the subsample was also examined for the presence of macrobotanical remains, but only prehistoric seeds were removed. These were recorded separately from those of the primary sample.

All charred seeds and plant tissue were assumed to be of archaeological significance. Partially mineralized seeds lacking a viable embryo were also considered to be of prehistoric origin (Bonhage-Freund 1997). All macroplant remains were examined under a Wild M3Z microscope using magnification ranging from 6.5 to 40.0 as appropriate. Taxa were identified, counted, weighed and recorded by Master Sample Number (MSN). Wood charcoal taxa were identified as described below.

**Identification Techniques**

Identifications of taxa were made by comparison to: (1) modern charred and uncharred reference seed collections and herbarium voucher specimens, (2) positively identified archaeological specimens, and 3) standard reference volumes (Delorit 1970; Martin and Barkeley 1973; Montgomery 1977). Modern specimens were crushed, peeled, and dissected to determine distinctive characteristics not noted in standard references.

Taxon determination focused on morphological characteristics including size, texture, specialized structures (e.g. bud scars), and overall shape. Internal structures and distinctive embryos were also considered (for example, corn \([\text{Zea mays}]\) embryos and sunflower
Helianthus sp.] kernels vs. achenes). In some cases it was possible to identify specimens only to the family level, but in a few cases characteristics were so distinctive that a species could be designated. Frances B. King, Director of the Cultural Resources Management Program, University of Pittsburgh, independently corroborated the identifications of problematic specimens.

With the aid of a random number generator, groups of 10 wood charcoal fragments were selected from a grid for identification. A minimum of two groups was processed for each post mold and three for each feature. Groups of wood fragments from features were identified until two successive lots lacking new taxa were encountered beyond the initial lot. Only a single set of consistent identifications was required for post mold samples (Bonhage-Freund 1997).

Wood taxa were identified by comparison to charred and natural transverse, tangential, and radial thin sections of modern wood, although the transverse view was emphasized due to magnification limitations and size of specimens. In some cases dichotomous keys proved useful (Panshin and deZeeuw 1980; use described in Bonhage-Freund 1997). For the most part only charcoal greater than 2mm in size was considered because smaller specimens lack visible structural features required for reasonable identification. Despite this precaution, only rarely could wood charcoal be identified beyond the genus level. Most could be classified only as ring porous, diffuse porous, hardwood, or conifer.

**Identified Taxa**

Taxa identified from seeds, fruits and miscellaneous plant tissues are listed in Tables 11.1 and 11.2, while those derived from wood charcoal are found in Table 11.3. Most of the identified taxa can be traced to specific habitats which must have been within the Lindsey
catchment zone. Although many plants can adapt to several habitats, for discussion purposes, taxa are grouped according to the habitat in which they are most likely to appear.

**Open Fields and Edge Zones**

Plants representative of open fields, including agricultural fields, are copperleaf / 3-seeded mercury (*Acalypha* sp.), ragweed (*Ambrosia artemesiafolia*), goosefoot (*Chenopodium* sp.), spurge (*Euphorbia* sp.), crabgrass (*Digitaria* sp.), bush clover (*Lespedeza* sp.), gromwell (*Lithospermum* sp.), knotweed (*Polygonum* spp.), and a variety of grasses. These all prefer or tolerate dry soils and full sun. Some types of gromwell favor thickets. Many of these taxa were employed by Native Americans to cure a wide range of illnesses (Hudson 1976; Erichsen-Brown 1979; Moerman 1986). Historic Cherokee used three-seeded mercury to treat kidney and urinary tract problems and several types of spurge to alleviate a wide range of physical problems. Different types of knotweed were used by both Cherokee and Choctaw as broad spectrum pharmaceuticals, and ragweed was used as a disinfectant and in ceremonies (Moerman 1986).

Fleshy fruits from open fields and edge zones include black haw (*Viburnum* sp. discussed above), hawthorn (*Crataegus* sp.), persimmon (*Diospyros virginiana*), maypop (*Passiflora incarnata*), grapes (*Vitis* sp.), peppervine (*Ampelopsis* sp.), blackberry/raspberry (*Rubus* sp.), serviceberry (*Amelanchier* sp.), and groundcherry (*Physalis virginiana*). In addition to seeds, one-half of a charred persimmon fruit was recovered.

Most of these fruits were used as medicines as well as foods. Cherokee used serviceberry as a vermifuge and antidiarrheal; hawthorn for heart problems; persimmon as an astringent, for gastrointestinal ailments, liver problems, toothaches, and heartburn; and maypop to treat boils, earaches, and to aid in weaning babies (Moerman 1986).
Peach (*Prunus persica*) is listed under cultigens in Table 11.1, because it is an introduced species which was deliberately planted. Both peach and maypop were probably cultivated in or near agricultural fields. The remainder of these fruits grows wild in open fields and/or in the edge zone between fields and forests.

Data presented in Table 11.1 indicate that the most important seasonal wild fleshy fruits were most likely maypop, 77 percent of the total by count, and persimmon, 14 percent. Grape family, including peppervine, constituted 5 percent of total fruits by count. Peppervine is not known to be eaten by humans, but neither is it poisonous. Although maypop seeds dominate the wild fleshy fruit assemblage, the relatively large number of persimmon seeds is particularly significant. A single persimmon fruit contains only 8 seeds, compared to the masses of seeds enveloped within each maypop berry (Strausbaugh and Core 1977). With this in mind, it is likely that persimmon was nearly as important as maypop in the Lindsey diet.

**Wetlands**

Cane (*Arundinaria* sp.), duck potato (*Sagittaria* sp.), sweetflag (*Acorus calamus*), and water pepper (*Polygonum hydropiper*) are wetland genera. Cane was used as tinder, to create smoke, basketry and for matting, especially in wall construction, among other economic uses (Swanton 1946). Duck potato is an aquatic plant which produces an edible tuber. It was more heavily exploited in the Dyar phase than the Bell phase at nearby Oconee sites (Bonhage-Freund 1997).

Sweetflag is thought to be indigenous to India, spreading along trade routes throughout temperate to sub-temperate regions of Eurasia and the Americas (Fernald 1950; Motley 1994). Sweetflag was thoroughly integrated into Native American pharmacopeia. Many North
American Indian tribes ingested sweet flag as a decoction, or chewed raw or smoked it to fight fatigue and hunger (Ott 1975). Medicinally some tribes chewed the rhizome daily as a panacea (Moerman 1981). These two specimens are somewhat smaller than modern specimens, even considering the effects of charring. They may represent immature plants, a native variety of the genus, or both. Considering the early date and the size of these specimens, it is possible that they represent an indigenous variety. Sweetflag and water pepper are used medicinally by historic Cherokee (Moerman 1986).

**Thickets and "Woods"

**Seeds**

Bedstraw (*Galium* sp.), Indian cucumber (*Medeola* sp.), and polystachyus bean (*Phaseolus polystachyus*) are herbaceous species which favor moist woods/thickets (Strausbaugh and Core 1977). Bedstraw was matted for sleeping and was also used medicinally (Moerman 1986), while Indian cucumber and polystachyus bean were eaten (Medsger 1945; Strausbaugh and Core 1977).

The polystachyus bean (*Phaseolus polystachyus*) is a perennial vine native to the woods and thickets of Eastern North America (Medsger 1945:122; Uphof 1959:274; Radford et al 1968; Strausbaugh and Core 1977). It is relatively rare (Medsger 1945; Strausbaugh and Core 1977), but may be locally abundant in the Southeast (Lawrence Kaplan 1994, personal communication). The polystachyus bean was reported by early explorers and settlers (Strachey 1612; Romans 1775; Bartram 1792; Josselyn 1865). Its seeds are said to have been "highly prized by North American Indians" (Medsger 1945:122; Uphof 1959:274). This taxon may have been cultivated
or encouraged in agricultural fields, and was almost certainly eaten in significant quantities (Bonhage-Freund 1997).

**Forests and Woody Edge Zones**

Woody species associated with forest borders or edge zones include tulip tree (*Liriodendron tulipfera*), hop hornbeam (*Ostrya virginiana*), hornbeam (*Carpinus carolineana*), viburnum (*Viburnum* sp.), and serviceberry (*Amelanchier* sp. or, less likely, mountain ash [*Sorbus* sp.]). Historic Native Americans used viburnum for the treatment of many ailments (Ericsen-Brown 1979; Moerman 1986).

At least two members of the cherry (*Prunus* sp.) genus are represented, the shrubby choke cherry (7.5 meters or less high) and the small pin cherry (6-12 meters high). Pin cherry is a pioneer where the original vegetation is destroyed by fire. Small, red, dark purple, or black, slightly bitter to highly astringent drupes are produced in late summer. These bear little resemblance to commercial cherries and were probably more important medicinally than as food. In historic times, roots, bark, inner bark and fruits (rarely) were used in traditional Native medicine to cure ailments ranging from gynecological disorders, to coughs and lung disorders, to diverse inflammations, infections, and gastro-intestinal problems (Moerman 1986).

A pine (*Pinus* sp.) seed and a pine cone scale support the identification of pine in the wood charcoal. This taxon will be discussed below.

**Nutshell**

Nutshell consists of hickory (*Carya* sp.), oak acorn (*Quercus* sp.), and walnut family (Juglandaceae) probably hickory and black walnut. While hickory and oak are typically found in
the dry uplands, black walnut favors moist soils along streams. Hickory dominates the mast, representing 94.3 percent of the total identifiable nutshell and husk by weight.

**Cultigens**

Corn (*Zea mays*), sunflower (*Helianthus* sp.), common bean (*Phaseolus vulgaris*), goosefoot or lambs quarters (*Chenopodium berlandieri*), marsh elder or sump weed (*Iva annua* var. *macrocarpa*) and possible squash or gourds (*Cucurbita* sp.) comprise the assemblage of domesticated seed crops. In addition to these crops, peaches, introduced by the Spanish, were planted near villages, probably on the edge of fields, as discussed above. The peach was both a food and a medicine. Thin slices of dried peach were dissolved in water as a cure for fever (Swanton 1946).

Sunflower, goosefoot, and marsh elder are three parts of a variable cluster of indigenous cultigens, known as the Eastern Agricultural Complex or Eastern Tradition. These taxa were domesticated in Eastern North America during the Late Archaic period, well before the introduction of tropical cultigens. Eastern tradition crops are distinguished from their wild relatives by evaluating a number of characteristics. Seed size is the main determinant of domesticate status in the cases of marsh elder, sunflower, while testa thickness distinguishes domesticated goosefoot.

Marsh elder is an oily-seeded annual thought to be native to the lower Piedmont, where it is "locally abundant" in fields (Radford et al. 1968:1016). Elsewhere, for example in west-central Illinois, it occurs in open, disturbed, wet floodplain habitats (Asch and Asch 1985:159). It was in west-central Illinois that this genus was first domesticated, by at least 2000 B.C. (Asch and Asch 1985; Smith 1992). The now extinct, domesticated variety, *Iva annua* var. *macrocarpa*,
distinguished from the wild form by the size of its achene. A mean achene length of 4.0 to 4.2 millimeters is generally accepted as the baseline value for the domesticated species. Marsh elder achenes undergo considerable shrinkage during charring. Therefore, following Asch and Asch (1985:163), the corrections presented in Table 11.4 were applied to carbonized marsh elder.

Table 11.5 summarizes the available data for *Iva annua* achenes from the Lindsey assemblage. Seven measurable marsh elder kernels were recovered. All of these specimens meet or surpass the minimum baseline length value for the domesticated variety (*Iva annua* var. macrocarpa), even without adjustment for shrinkage. This size places them well within the limit of the domesticated variety.

*Helianthus annuus*, or common sunflower, is the only early North American domesticate derived from the West. A weedy camp-follower, its natural range was extended eastward during the Terminal Archaic period. Consequently, the simple presence of sunflower east of the Mississippi River constitutes insufficient evidence of domestication, although it probably required some degree of cultivation to prosper (Asch and Asch 1985:165). One notable characteristic of the domesticated sunflower, monocephali, cannot be reconstructed from the archaeological record. Achene dimensions are the single remaining trait by which domestication can be assessed. Even this criterion is not guaranteed. None of the sunflower from the Lindsey site was sufficiently complete to measure.

The "natural" habitat of *Chenopodium berlandieri* (goosefoot) is poorly documented (Smith 1992:53). It is occasionally observed growing in mud flats and along eroding river banks, but stands of thin, tall, sparsely-fruited plants may be found as a component of the black willow (*Salix nigra*) understory along the Mississippi river (Smith 1992:53). It is clear, however, that the plant thrives in full sun, and requires only minimal disturbance for successful
reproduction (Smith 1992:54). The dominant paradigm finds goosefoot as coeval with local human communities, with domestication as the logical conclusion to this progression.

In contrast to both sunflower and marsh elder, seed size is not a reliable indicator of domesticated status for goosefoot. Rather, the relative thickness of the testa is considered to be an indication of domestication in that it represents strong selective pressure for reduced germination dormancy (Smith 1992:50). This reduced testa also equates to higher proportionate food reserves in both the perisperm and cotyledon. Margin configuration and seed shape are additional points of morphological distinction between wild and domesticated goosefoot. Wild types tend to be thick and rounded in cross section, while cultivars tend to be rectanguloid with truncated margins (Smith 1992:113-114). Other marks of domestication, invisible in the archaeological record, include increased seed production, increased compaction and terminalization of seed heads, increasing loss of natural shatter mechanisms, and greater uniform maturation of seeds (Smith 1992:57).

Eight modern wild *Chenopodium* (subsection Cellulata) populations in the Eastern United States were found to have mean testa thickness value ranging from 39 to 78 microns (Smith 1992: 50). In contrast, modern populations of the Mexican cultigen *Chenopodium berlandieri* spp. nuttalliae were found to have mean thickness value of 16 microns, and in a second study a sample ranged between 9 and 21 microns (Smith 1992: 50; 123). Prehistoric chenopod assemblages from Newt Kash Shelter, Kentucky (Late Archaic), Russell Cave, Alabama (Early Woodland), Ash Cave, Ohio (Middle Woodland), and Thor’s Hammer Shelter, Kentucky (Late Woodland) measured from 7 to 20.7 microns on average (Smith 1992: 50; 123; Gremillion 1993: 158), comparing favorably to the modern Mexican domesticate.
Table 11.6 summarizes chenopod testa thickness data for goosefoot specimens which were evaluated. Seed coats were assessed using a combination of scanning electron microscopy, and the IMIX system for image collection (described in Bonhage-Freund 1997:161-162). At least one set of testa measurements was taken from each provenience in which it was suspected that the goosefoot was of the domesticated variety. Wherever possible, two measurable portions of the testa from different parts of the seed were assessed. In the case of MSN61, the dorsal section of the fractured testa separated from the surface within the strong vacuum environment of the SEM. This accident more clearly exposed the 90 degree angles of the two previously measured surfaces, and accordingly each was reevaluated. The second measurement for each field is labeled as "a."

Using 40 millimeters as the baseline value for wild type testa, each of these seeds is conditionally assigned domesticate status. An interesting phenomenon is that different points on the same seed may exhibit disparate testa thickness (Gremillion 1993:155). The densest portion of the seed coat is generally closest to the "beak" (protrusion formed by the radicle), however, in the Lindsey specimens seed coat thickness varied considerably between different points on the margin and also on the dorsal surface. Specimen 61a shows a mean of in the first field (38.89) which barely registers within the domesticate range, and its range extends as high as 40 microns. However, the second point of measurement is at the opposite extreme, having a mean of 2.97 microns, and a range of 1.53-4.36 microns. This specimen possesses a more rounded margin configuration - akin to the wild type, in contrast to all the others, which were clearly truncated. It is likely that this specimen, while an outlier, is still an example of a cultivar. If some portion of the seed coat is thin enough to allow water and gasses to permeate then it is likely that this is sufficient to promote the early germination typical of domesticated varieties (Smith 1994,
personal communication). These characteristics may represent back-crosses, recessive traits, individuals that are not fully domesticated, or a common characteristic that has never before been noted or reported.

Although many ruptured fruits had incomplete margins, those that were fairly complete exhibited truncated margins, with only one exception, discussed above. This feature provides additional evidence of their domesticated status. Observations of both margins and testa thickness lead to the conclusion that these chenopods are of the *Chenopodium berlandieri* species, a confirmed domesticate.

Four wild goosefoot seeds were also found at the site. Some types of native and naturalized goosefoot have been used by native peoples in West Virginia as a vermifuge (Erichsen-Brown 1979; Moerman 1986).

**Wood Charcoal**

The wood charcoal represents both canopy and understory genera. The dominant trees of prehistoric eastern Piedmont forests were oak, hickory, and pine. Many types of hickory grew in late prehistoric Oconee forests. All produce a bony nut, containing a sweet or bitter seed, and enclosed in a husk. These trees measure 15-40 meters high, and 3-7.5 centimeters in diameter, depending on the variety. This genus features a high quality, strong wood, yet tends to be self-pruning. Sapwood of some species is, today, prized for the manufacture of tool handles due to its ability to withstand stress (Strausbaugh and Core 1977; Panshin and de Zeeuw 1980). Shagbark hickory boasts a relatively thin-shelled, sweet seed, and grows in rich soil along streams and on hillsides. Other types of hickory grow in rich wet or dry soils of woods, stream
banks, or swamps. Hickory nuts were an important food to the Lindsey inhabitants, as discussed above.

In addition to hickory, unidentifiable members of the walnut were noted, probably black walnut. Black walnut is a straight tree which reaches 20-50 meters height and 6-18 centimeters in diameter. Its timber is valuable, the nuts are edible, but extraction of the seed is labor intensive. The husk contains a dye. Black walnut is found in rich woods at lower elevations (Strausbaugh and Core 1977).

Diverse oak taxa were present in Georgia Piedmont forests during the late prehistoric (Kuchler 1964; Plummer 1975; Whittington 1986). All are self-pruners and a source of good quality firewood, and reach a stature of 15-40 m, depending on the species. White oak prefers moist rich soil, while swamp white oak is found on stream banks, in most flats, and in swamps. Black, post, and red oak can tolerate drier soils (Strausbaugh and Core 1977). All oaks produce acorns which yield a nutritious meal after being ground and leached. The white oak acorns require minimal processing, while some types of red oak require successive leaching treatments. Acorns are also important food for game animals such as turkey, deer, and bear.

Southern yellow, eastern white, and unidentified pines together comprised 58 percent of the wood charcoal by count. Pine also dominates late prehistoric assemblages elsewhere in Georgia and in South Carolina (Wagner 1996; Bonhage-Freund 1997). This may be a result of extensive forest clearing for agriculture (Wagner 1996). Like cherry, pine is a pioneering taxon, but pine can tolerate depleted and dry soils.

Most of the other canopy species identified favor moist soils. It was not possible to determine the species of the archaeological maple (Acer sp.). Most maples are trees 9-40 meters
tall and up to 15 centimeters wide. Maples may inhabit rocky or rich woods but are most abundant in moist soils (Strausbaugh and Core 1977). The wood, however, is ideal for firewood.

Ash trees are characterized by strong, hard, heavy wood. Depending on the species, these trees reach heights of 20 - 40 meters. They favor rich most woods and soils, particularly along streams and rivers (Strausbaugh and Core 1977).

Black Locust (*Robinia*) is of modest proportions, reaching a height of 16-25 meters. The wood is hard and durable (Strausbaugh and Core 1977; Panshin and de Zeeuw 1980).

Sycamore (*Platanus occidentalis*) is a large tree, attaining a height of up to 50 meters and a trunk diameter of 4.2 meters or more. Its preferred habitats are along streams and in wet soils (Strausbaugh 1977).

Willow (*Salix* sp.) favors moist soils, especially along streams. Depending on the species it may appear as a shrub under 4 meters high, or a tree up to 30 meters in height (Strausbaugh and Core 1977). Willow was used by many Native American groups in basketry (Ford 1991).

The presence of so many arboreal taxa which favor damp or wet conditions suggests that the Lindsey site was proximate to a substantial water source, and that there was adequate rainfall during the site's occupation. This does not imply that the uplands were uniformly moist, in fact, it is noted that the dominant oak, hickory and pine which thrive in the drier soils.

Two understory taxa were noted. Flowering dogwood (*Cornus florida*) is a small shrub or tree to 12 m, bearing a bright red ovoid fruit. It is common in dry woods (Strausbaugh and Core 1977). This tree was employed by historic Cherokee in the treatment of diverse illnesses (Moerman 1986). Sassafras (*Sassafras albidium*), another important pharmaceutical, is a shrub or tree up to 37.5 meters high, and 2 meters in diameter. It is common in woods, thickets, and old fields (Strausbaugh and Core 1977). It is highly aromatic, and its roots are used in making
the beverage which doubles as a tonic or medicine (Hudson 1976; Strausbaugh and Core 1977; Erichsen-Brown 1979; Moerman 1986). These woody understory species support the notion of a somewhat dry upland forest in proximity to a corridor of moisture-loving plants along a stream.

**Nutritional and Utilitarian Potential**

The plants identified at Lindsey fulfill a wide variety of human needs (Geller 1985). Table 11.7 summarizes the nutritional value of some important foods in the Lindsey diet. Furthermore, this diet reflects year-round occupation of the site.

During most seasons the combination of husbanded and collected foods would have provided a balanced diet, even without the addition of animal protein. Walnuts, acorns and hickory nuts contribute oil and were a source of protein when crushed into meal or boiled like potatoes (Swanton 1946; Watt and Merrill 1975; Gardner 1992). Ethnographic accounts describe the production of "butter" from these nuts (Erickson-Brown 1979; Swanton 1946) and the nutshells were dried to be used as fuel. Seeds of squash or gourds, ragweed, and goosefoot provided protein.

Maypops, black haw, persimmons, and peaches contributed vitamins and trace elements to the diet (Watt and Merrill 1975). Fresh persimmon is an especially good source of ascorbic acid and vitamin A (U.S.D.A. 1975; Strausbaugh and Core 1977) although these nutrients would be reduced in its dried form (described in Swanton 1946). Fresh persimmons could be harvested over a several month period. Peaches provide significant amounts of vitamin A, as do sunflower, corn, and beans. Most of the plant foods, except black haw and persimmon, also contributed various B complex vitamins.
**Behavioral Implications**

Paleobotanical evidence paints a picture of on-site agricultural activities as well as the multi-seasonal harvesting of domesticated and wild plant foods. Spring-sown crops of corn and beans ripen in early to mid-summer, while sunflower and squash ripen later in the season. Wild, encouraged, and cultivated fruits ripen from mid-summer (peach) through late summer (maypop), autumn (grapes), and even winter (persimmon). Some inedible or medicinal wild species (sticktight, bush clover, copperleaf / 3-seeded mercury, peppervine) come to fruit between June and October. Acorns, hickory, and walnuts also ripen in fall.

On-site agricultural activities are further indicated by presence of cultivated taxa and also bush clover, copperleaf, euphorbia, gromwell, knotweed, ragweed, goosefoot blackberry/raspberry, maypop and possibly persimmon, all of which are associated with disturbed habitats or field edges.

The recovery of corn cobs strengthens this argument, since corn would likely be removed from the cob had it been transported to the site (F. B. King personal communication 1990). As discussed above, many of these taxa were deliberately encouraged to grow in or near fields, but were "managed" to keep them available and convenient. In early historic times, Native Americans were known to induce controlled burns of forest and field to promote the growth and productivity of game, mast-bearing trees, and other useful taxa. The abundance of nuts at the Lindsey site suggests that similar manipulation of local resources was practiced by its inhabitants.

Peaches were introduced by the Spanish and were likely grown on the site. Grapes were eaten fresh between August and October, and were also dried for later consumption (Swanton
Peppervine is considered inedible to humans but is an important source of food for and birds in the early fall (Strausbaugh and Core 1982). Black haw, while edible, is considered to be primarily a food for wild game (Strausbaugh and Core 1982).

A close examination of Table 11.8 suggests that stratigraphic differences exist in the assemblage of botanical remains in Feature 4. While it is recognized that refuse pits are not generally filled in a uniform and orderly manner and that post-depositional bioturbation often redistributes remains, one interpretation of the observed layering is that these levels substantially represent seasonal deposits. Storable cultigens, persimmons and nuts comprise the lowest level (Stratum 2, Level 2) and this assemblage could represent a winter deposit. With the exception of maypop, all of Feature 4’s fruit taxa occur exclusively in the next level up (Stratum 2, Level 1), along with the complete range of nuts found at this site (acorns, black walnuts, and hickory). This stratum and level also holds 6 different types of summer and fall ripening, edible and inedible seeds (bush clover, gromwell, knotweed, polystachyus bean, 3-seeded mercury, stick-tight). Such a suite suggests a mixed summer/fall assemblage. The uppermost level (Stratum 1), Stratum 2, Level 2 contains mostly storable cultigens and nuts, but also features fall ripening 3-seeded mercury, ragweed, and spurge. These species would be expected in a fall / winter deposit. Since there are few taxa which produce seed in spring, a distinct spring deposit would not be expected.

When considering all proveniences at the site, it is found that hickory and other nuts were found in 67 percent of the floated proveniences (Bonhage-Freund 1997). Cultigens, primarily corn, were found in 28 percent of proveniences. The same taxa that are highly ranked on the ubiquity chart are noted by Swanton (1969) and Hudson (1976) as dominant in the diet of protohistoric and historic Indians in the Southeast. Corn was the most important vegetable food
in the region, serving as a year-round staple. The historic Natchez prepared at least 42 named dishes using corn (Hudson 1976). Corn was eaten from its green and milky stage in early summer through its mature stage in late fall. Fresh corn stalks were sucked for their sugar content. Mature and immature corn, roasted in hot ashes or dried over racks, was used in a number of ways. During the winter, it was boiled with dried beans. Dried corn was also ground in a mortar, sifted, winnowed and then boiled to produce a hominy-like dish known historically as sofkee (Hudson 1976:305). Hickory nuts, meat, or bone marrow were sometimes added.

Corn meal wrapped in husks, and sometimes boiled with green or mature chestnuts, was known historically as banana. Cornbread, sometimes containing sunflower seeds, was cooked in ashes according to sixteenth century Spanish accounts. The DeSoto chroniclers report that ground, parched corn was a staple during long-distance travel (Elvas 1933; 1968; Biedma 1968). Beans, peas and other pulses were also parched and boiled and included in a wide variety of dishes.

Hickory and other nuts were the other important component of the Lindsey diet. Swanton (1969) reports that hickory nuts were preserved by being dried over a fire for a month. They were then cracked and eaten, or boiled. Sometimes they were beaten, sifted, and used to thicken venison broth. Acorns were also used to thicken stews. Hickory and acorns were boiled to produce oil used to flavor many foods.

Other wild foods contributed to the diet, as well. Swanton (1969) reports that fruits were often dried. *Amexias* (persimmons) and persimmon bread are mentioned by the De Soto chroniclers. Prior to the introduction of peaches, persimmon was the most useful" fruit. Du Pratz (in Swanton 1946) attributed the use of dried persimmon to a lack of diarrhea and dysentery. Persimmon bread was made by scraping the fruit in open sieves to separate flesh
from skin and seeds. The pulp was shaped into long thin loaves and dried in the sun or over a grill. Peaches were preserved in a similar fashion.

The archaeological record indicates that maypop was also a seasonally important fruit. Maypop is easily collected and may be eaten raw (Beckerman 1986). Historic Cherokee made a beverage from maypop fruit (Hudson 1976).

Paleobotanical work at other Lamar sites in the Oconee region demonstrates the widespread occurrence of plants considered to be dietary staples at Lindsey. From the Bell phase features at the Joe Bell site (9MG28), Williams (1983) reports charred woods and resins, "seeds and nuts," corn, beans, and peach pits as the major macrobotanical remains. A similar assemblage is reported for 9PM260, another late prehistoric site in the Oconee region. Wood charcoal, hickory shells, acorn shells and seeds, a peach pit, pokeweed, maypop, and grass seeds were identified. Except for pokeweed, all of these genera were included among the Lindsey flora. Hickory, corn, and wood charcoal are the only macrobotanical remains reported for the Ogletree site (9GE153) (Smith, et al. 1982). At 9HK33, a small contact-period Lamar homestead, eight varieties of edible plants were recovered: corn, squash, peach, goosefoot, maygrass, maypop, persimmon, hickory nut and acorn (Gardner 1985).

Conclusion

Although a number of species recognized as important at 9MG231 have been found at other Lamar period sites (Williams 1983; Gardner 1985; Smith 1994; Bonhage-Freund 1997), one is struck by the greater diversity of Lindsey plant samples. Occurences of black walnut, grape, black haw, hawthorn, *polystachus* bean, ragweed, persimmon, serviceberry, goosefoot, marsh elder, squash, sunflower and other potential food plants likely reflect an economic strategy
of field agricultural, supplemented by the gathering of wild food plants. Zooarchaeological evidence reveals that a wide range of fauna, many consistent with "garden hunting" (Linares de Sapir 1976) were also included in the diet. A similar pattern is seen at the Bell phase occupation of the nearby Sugar Creek site (9MG4) (Bonhage-Freund 1997). It is probable that the Lindsey economic strategy was a complex balance of agriculture, hunting, and wild plant management.


<table>
<thead>
<tr>
<th>Remains</th>
<th>Taxon</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Field Seeds</td>
<td><em>Acalypha gracilens</em> (coppperleaf)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><em>Ambrosia artemisiafolia</em> (ragweed)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><em>Chenopodium</em> sp. (goosefoot)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><em>Digitaria</em> sp. (crabgrass)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><em>Euphorbia</em> sp. (spurge)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><em>Lespedeza</em> spp. (bush clover)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><em>Lithospermum</em> sp. (gromwell)</td>
<td>not counted - noted in scan</td>
</tr>
<tr>
<td></td>
<td><em>Polygonum</em> sp. (knotweed)</td>
<td>5</td>
</tr>
<tr>
<td>Unknown Seeds</td>
<td>unclassifiable seed</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>unknown seed</td>
<td>noted in scan</td>
</tr>
<tr>
<td></td>
<td>unidentifiable nutlet</td>
<td>7</td>
</tr>
<tr>
<td>Fleshy Fruits - Open Fields and Edge Zones</td>
<td><em>Diospyros virginiana</em> (persimmon)</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>&amp; c.f. <em>Diospyros virginiana</em></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><em>Passiflora incarnata</em> (maypop)</td>
<td>326</td>
</tr>
<tr>
<td></td>
<td><em>Physalis virginiana</em> (groundcherry)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><em>Rubus</em> sp. (blackberry/raspberry)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><em>Amelanchier</em> sp. (serviceberry) (or <em>Sorbus</em> sp. - mountain ash)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><em>Viburnum</em> sp. (arrow wood, among others)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><em>Vitis</em> sp. (grape)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><em>Vitaceae</em> (grape family)</td>
<td>12</td>
</tr>
<tr>
<td>Remains</td>
<td>Taxon</td>
<td>Count</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>c. f. <em>Ampelopsis</em> sp. (pepper vine)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>c. f. <em>Crataegus</em> sp.</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Seeds, Stems, Tubers and Rhizomes Wetlands</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Arundinaria</em> sp. (cane stems)</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td><em>Polygonum hydropiper</em> (water pepper)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>c. f. <em>Acarus calamus</em> (sweetflag - rhizome)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>c. f. <em>Sagittaria</em> sp. (duck potato - tuber)</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td><strong>Seeds - Thickets / Woods</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Desmodium</em> sp. (stick-tight)</td>
<td></td>
<td>not counted</td>
</tr>
<tr>
<td><em>Galium</em> sp. (bedstraw) &amp;</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>c. f. <em>Galium</em> sp.</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>c. f. <em>Galium trifidum</em></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><em>Medeola virginiana</em> (Indian cucumber)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><em>Phaseolus polystachyus</em> (<em>polystachyus</em> bean, &quot;wild kidney bean&quot; [not a genetic precursor of the common kidney bean])</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td><strong>Seeds - Forest</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Carpinus caroliana</em> (American hornbeam)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><em>Liriodendron tulipfera</em> (tuliptree, yellow poplar)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><em>Ostrya virginiana</em> (hop hornbeam)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><em>Pinus</em> sp. (pine)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><em>Prunus</em> sp. (cherry family)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><em>Prunus pensylvanica</em> (pin cherry)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><em>Prunus virginiana</em> (chokecherry)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>pine cone scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Seeds &amp; Rind - Cultigens and Presumed Cultigens</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Chenopodium berlandieri</em> (<em>domesticated goosefoot</em>)</td>
<td></td>
<td>420</td>
</tr>
<tr>
<td><em>Cucurbita</em> sp. (squash/gourd - rind)</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>c. f. <em>Cucurbita</em> sp. rind</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>c. f. <em>Cucurbita</em> sp. seed</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><em>Helianthus</em> sp. (sunflower)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>c. f. <em>Helianthus</em> sp.</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><em>Iva annua</em> var. macrorcarpa (marsh elder, sumpweed)</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Remains</td>
<td>Taxon</td>
<td>Count</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Phaseolus vulgaris (common bean)</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>Prunus persica (peach)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Zea mays kernel (corn),</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Zea mays embryos</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>c.f. Zea mays stem</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Other Plant Tissues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>grass stem</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>grass stem node</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>pedicel</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>resin</td>
<td>5006</td>
<td></td>
</tr>
</tbody>
</table>

Table 11.2. Macroplant Remains - Corn Cob, Nut Shell, and Wood.

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Weight (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultigen</td>
<td></td>
</tr>
<tr>
<td>Zea mays (corn cob)</td>
<td>0.02</td>
</tr>
<tr>
<td>Nut shell</td>
<td></td>
</tr>
<tr>
<td>Carya spp. (hickory)</td>
<td>101.96</td>
</tr>
<tr>
<td>Carya spp. (hickory husk)</td>
<td>0.24</td>
</tr>
<tr>
<td>Juglandaceae (walnut family)</td>
<td>0.003</td>
</tr>
<tr>
<td>Juglans nigra (black walnut)</td>
<td>1.86</td>
</tr>
<tr>
<td>Quercus sp. oak (acorn shell)</td>
<td>2.09</td>
</tr>
<tr>
<td>unidentifiable nut shell</td>
<td>2.24</td>
</tr>
<tr>
<td>Wood</td>
<td></td>
</tr>
<tr>
<td>bark</td>
<td>1.38</td>
</tr>
<tr>
<td>bud</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Pinus sp. pine branch</td>
<td>0.04</td>
</tr>
<tr>
<td>Pinus sp. pine needle bud</td>
<td>0.001</td>
</tr>
<tr>
<td>Pinus sp. pine root</td>
<td>0.01</td>
</tr>
<tr>
<td>stem</td>
<td>0.01</td>
</tr>
<tr>
<td>wood</td>
<td>234.84</td>
</tr>
</tbody>
</table>
### Table 11.3. Wood Taxa.

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acer</em> sp. (maple)</td>
<td>3</td>
</tr>
<tr>
<td>c.f. <em>Acer</em> sp. (maple)</td>
<td>2</td>
</tr>
<tr>
<td><em>Carya</em> sp. (hickory)</td>
<td>3</td>
</tr>
<tr>
<td>c.f. <em>Carya</em> sp.</td>
<td>1</td>
</tr>
<tr>
<td><em>Cornus florida</em> (dogwood)</td>
<td>2</td>
</tr>
<tr>
<td><em>Fraxinus americana</em> (ash)</td>
<td>1</td>
</tr>
<tr>
<td>c.f. <em>Fraxinus</em> sp.</td>
<td>1</td>
</tr>
<tr>
<td>Juglandaceae (walnut family)</td>
<td>4</td>
</tr>
<tr>
<td>c. f. Juglandaceae</td>
<td>1</td>
</tr>
<tr>
<td><em>Platanus occidentalis</em> (sycamore)</td>
<td>1</td>
</tr>
<tr>
<td><em>Pinus</em> sp. (pine)</td>
<td>378</td>
</tr>
<tr>
<td><em>Pinus strobus</em> (eastern white pine)</td>
<td>1</td>
</tr>
<tr>
<td><em>Pinus</em> sp. (Southern yellow pine)</td>
<td>24</td>
</tr>
<tr>
<td><em>Quercus</em> spp. (oak)</td>
<td>10</td>
</tr>
<tr>
<td>c. f. <em>Quercus</em> spp.</td>
<td>8</td>
</tr>
<tr>
<td><em>Quercus alba</em> (white oak)</td>
<td>8</td>
</tr>
<tr>
<td>c.f. <em>Quercus alba</em></td>
<td>1</td>
</tr>
<tr>
<td><em>Quercus rubra</em> (red oak)</td>
<td>8</td>
</tr>
<tr>
<td><em>Salix</em> sp. (willow)</td>
<td>1</td>
</tr>
<tr>
<td>c.f. <em>Salix</em> sp.</td>
<td>1</td>
</tr>
<tr>
<td><em>Sassafras albidium</em> (sassafras)</td>
<td>1</td>
</tr>
<tr>
<td>c.f. <em>Sassafras albidium</em></td>
<td>1</td>
</tr>
<tr>
<td>ring porous</td>
<td>57</td>
</tr>
<tr>
<td>unidentifiable diffuse porous</td>
<td>1</td>
</tr>
<tr>
<td>unidentifiable hardwood</td>
<td>148</td>
</tr>
<tr>
<td>unclassifiable</td>
<td>24</td>
</tr>
<tr>
<td>root</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 11.4. Formulas to Reconstruct Precharred Size of Archaeological Marsh Elder Achenes.

\[
\begin{align*}
L \text{ (achene uncarbonized)} &= 1.36 \times L \text{ (kernel carbonized)} + 0.17 \\
W \text{ (achene uncarbonized)} &= 1.45 \times W \text{ (kernel carbonized)} - 0.06 \text{mm}
\end{align*}
\]

\( L \) = length \\
\( W \) = width

Table 11.5. Measurements of *Iva annua*.

<table>
<thead>
<tr>
<th>Master Sample Number-Sample</th>
<th>Dimensions (mm)</th>
<th>Adjusted Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>061 - 1</td>
<td>5.25 X 4.00</td>
<td>7.31 X 5.74</td>
</tr>
<tr>
<td>061 - 2</td>
<td>4.25 X 3.50 (Broken reconstructed)</td>
<td>5.95 X 5.015</td>
</tr>
<tr>
<td>061 - 3</td>
<td>4.50 X 3.00 (Broken, estimate)</td>
<td>6.29 X 4.29</td>
</tr>
<tr>
<td>061 - 4</td>
<td>5.00 X 4.10</td>
<td>6.97 X 5.885</td>
</tr>
<tr>
<td>061 - 5</td>
<td>4.00 X 3.00 (Broken, estimate)</td>
<td>5.61 X 4.29</td>
</tr>
<tr>
<td>087 - 1</td>
<td>5.50 X 4.00</td>
<td>7.65 X 5.74</td>
</tr>
<tr>
<td>087 - 2</td>
<td>4.50 X 2.80</td>
<td>6.29 X 4.00</td>
</tr>
</tbody>
</table>

Table 11.6. Measurements of *Chenopodium berlandieri*.

<table>
<thead>
<tr>
<th>Diameter of Seed</th>
<th>ID</th>
<th>Field</th>
<th>N</th>
<th>Mean Testa Diameter</th>
<th>Testa Diameter S.D.</th>
<th>Testa Diameter Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1455.5 microns</td>
<td>61a</td>
<td>1</td>
<td>3</td>
<td>38.89</td>
<td>1.92</td>
<td>36.67-40.00</td>
</tr>
<tr>
<td></td>
<td>61a</td>
<td>2</td>
<td>19</td>
<td>2.97</td>
<td>0.77</td>
<td>1.53-4.36</td>
</tr>
<tr>
<td></td>
<td>61b</td>
<td>1</td>
<td>11</td>
<td>6.60</td>
<td>1.44</td>
<td>6.19-8.07</td>
</tr>
<tr>
<td></td>
<td>61b</td>
<td>1a</td>
<td>8</td>
<td>4.10</td>
<td>0.37</td>
<td>3.10-4.60</td>
</tr>
<tr>
<td></td>
<td>61b</td>
<td>2</td>
<td>8</td>
<td>4.70</td>
<td>0.44</td>
<td>4.04-5.32</td>
</tr>
<tr>
<td></td>
<td>61b</td>
<td>2a</td>
<td>7</td>
<td>4.37</td>
<td>0.52</td>
<td>3.33-4.79</td>
</tr>
<tr>
<td>1280.13 microns</td>
<td>61c</td>
<td>1</td>
<td>8</td>
<td>10.46</td>
<td>0.96</td>
<td>9.48-12.16</td>
</tr>
<tr>
<td></td>
<td>61c</td>
<td>2</td>
<td>4</td>
<td>10.02</td>
<td>0.45</td>
<td>9.41-10.38</td>
</tr>
<tr>
<td></td>
<td>77a</td>
<td>1</td>
<td>5</td>
<td>4.63</td>
<td>0.19</td>
<td>4.45-4.94</td>
</tr>
<tr>
<td></td>
<td>77a</td>
<td>2</td>
<td>9</td>
<td>6.36</td>
<td>0.40</td>
<td>5.69-6.94</td>
</tr>
<tr>
<td></td>
<td>77a</td>
<td>3</td>
<td>7</td>
<td>11.57</td>
<td>0.25</td>
<td>9.17-14.72</td>
</tr>
<tr>
<td>Food</td>
<td>Kilocalories</td>
<td>Protein (g)</td>
<td>Fat (g)</td>
<td>Calcium (mg)</td>
<td>Phosphorus (mg)</td>
<td>Iron (mg)</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------</td>
<td>-------------</td>
<td>---------</td>
<td>--------------</td>
<td>----------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Hickory Nuts</td>
<td>673</td>
<td>13.2</td>
<td>68.7</td>
<td>trace</td>
<td>360</td>
<td>2.4</td>
</tr>
<tr>
<td>Hazel Nuts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pecan</td>
<td>687</td>
<td>9.2</td>
<td>71.2</td>
<td>73.0</td>
<td>289</td>
<td>2.4</td>
</tr>
<tr>
<td>Pecans, Black</td>
<td>628</td>
<td>20.5</td>
<td>59.3</td>
<td>trace</td>
<td>570</td>
<td>6.0</td>
</tr>
<tr>
<td>Haw</td>
<td>87</td>
<td>2.0</td>
<td>0.7</td>
<td>0.8</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Persimmons</td>
<td>127</td>
<td>0.8</td>
<td>0.4</td>
<td>27.0</td>
<td>26</td>
<td>2.5</td>
</tr>
<tr>
<td>Peaches (fresh)</td>
<td>38</td>
<td>0.6</td>
<td>0.1</td>
<td>9.0</td>
<td>19</td>
<td>0.5</td>
</tr>
<tr>
<td>Grapes</td>
<td>69</td>
<td>1.3</td>
<td>1.0</td>
<td>16.0</td>
<td>12</td>
<td>4.0</td>
</tr>
<tr>
<td>Sunflower Seeds</td>
<td>560</td>
<td>24.0</td>
<td>47.3</td>
<td>120.0</td>
<td>837</td>
<td>7.1</td>
</tr>
<tr>
<td>Fresh Corn (raw)</td>
<td>96</td>
<td>3.5</td>
<td>1.0</td>
<td>3.0</td>
<td>111</td>
<td>0.7</td>
</tr>
<tr>
<td>Dried Corn (flour)</td>
<td>368</td>
<td>7.8</td>
<td>2.6</td>
<td>6.0</td>
<td>164</td>
<td>1.8</td>
</tr>
<tr>
<td>Dried Beans</td>
<td>340</td>
<td>22.3</td>
<td>1.6</td>
<td>144.0</td>
<td>425</td>
<td>7.8</td>
</tr>
<tr>
<td>Squash Seeds</td>
<td>553</td>
<td>29.0</td>
<td>46.7</td>
<td>51.0</td>
<td>1144</td>
<td>11.2</td>
</tr>
</tbody>
</table>

Table 11.7. Nutrient Values Per 100 Grams of Selected Foods.
<table>
<thead>
<tr>
<th>Feature 4</th>
<th>Stratum 1</th>
<th>Stratum 2 Level 1</th>
<th>Stratum 2 Level 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nuts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Walnut</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hickory husk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hickory shell</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acorn nutmeat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acorn shell</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walnut family</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unidentifiable nut shell</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wild Fruits</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black haw</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cherry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maypop</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persimmon</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cultigens</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common bean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn cob</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn embryo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn kernel</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn stem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goosefoot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marshelder</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squash rind</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squash blossom scar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squash seed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunflower</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grasses, Weeds, Wild Edible Seeds, and Pharmaceuticals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cane</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bush clover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groundcherry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gromwell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knotweed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feature 4</td>
<td>Stratum 1</td>
<td>Stratum 2 Level 1</td>
<td>Stratum 2 Level 2</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Polystachyus bean</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>3-Seeded mercury/copper leaf</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Ragweed</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Spurge</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Tick Clover</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Water pepper</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Unidentifiable seed</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Unknown</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Pine cone scale</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Table 11.8. Plant Taxa, Exclusive of Bark and Wood from Feature 4.
Chapter 12
Faunal Analysis
Wayne C. J. Boyko

Laboratory Procedures

Laboratory processing of the vertebrate faunal remains from the Lindsey site began with the separation of bone from other archaeological material recovered from excavated, floated, and water screened contexts. Each collection was sorted into animal classes: mammal, bird, reptile, amphibian, and fish. Bone that could not be identified by class was placed in an unidentified category. Within each category, bone that could be identified beyond a class level was separated from bone that could be identified only to class level.

During sorting, fragments were encountered that were identified as smaller pieces of a single bone. These were cross-mended and counted as one specimen.

Identification Techniques

The vertebrate faunal material was identified and analyzed by intra-site provenience. Comparative collections at the Department of Anthropology, Pennsylvania State University and the Zooarchaeology Laboratory, University of Georgia were used during the identification process.

Where possible, identifications based on size were made in the unidentifiable mammal categories. The criteria used when making these distinctions were the overall size and thickness of bone fragments. These criteria could be consistently applied to limb bones or limb bone fragments only.

The size categories recognized in the assemblage are as follows: large mammals are the size of deer or larger, medium sized mammals are the size of wolves or large dogs, and small
mammals are no larger than squirrels. Large birds are the size of turkeys or geese, medium sized birds are the size of ducks, and small birds are no larger than quails.

Whenever possible, the observations made for each bone or bone fragment included provenience, taxon, number of pieces, element, side (right or left), portion (proximal, distal, shaft), degree of fusion, sex, disease, modifications, weathering, age, tooth wear, and weight.

Modern intrusive bone deposits were distinguished from those resulting from human activity on the bases of skeletal completeness and cultural modifications (Thomas 1971). Some animals appear to have burrowed into the softer soil of features and post molds, denned, and eventually died there. With few exceptions (discussed in a later section), however, the vertebrate faunal assemblage from Lindsey could be confidently attributed to human activity.

Three different measures were used to quantify these data (Table 12.1). The first, NISP, is the number of specimens or elements identified for a particular taxon. The second measure, MNI, is the minimum number of individuals necessary to account for the quantity of bone fragments identified in each taxon. MNI is one of the most widely reported measures of faunal quantity, even though it is affected by sample size (Grayson 1984). Paired elements were used to estimate MNI for the Lindsey assemblage. MNI was estimated on a provenience by provenience basis. Grayson (1984) has demonstrated that MNI values become inflated as one moves from an entire site assemblage to an assemblage that is partitioned into several proveniences. This does not appear to be a problem with the Lindsey material because very few proveniences on the site produced faunal remains (Appendix 1) and the MNI count for the site in low (Table 12.1).

The final measure used to quantify the faunal assemblage at Lindsey is weight in grams. Together, NISP and weight values are accurate indicators of the size of bone fragments in each taxon.
Identified Species

Thirty-nine different taxa were identified in the faunal assemblage at Lindsey (Table 12.1). These included 23 taxa identified to the generic level or beyond: 10 mammal taxa, three avian taxa, five reptile taxa, three amphibian taxa, and two fish taxa.

One taxon, toads (Bufo spp.), consisted only of modern animals that intruded into the fill of Feature 4. The completeness of their skeletons indicates that these animals burrowed into the feature and died. Some of the mice (Peromyscus spp.) are also considered to be intrusive. The incomplete remains of others, however, indicate that some mice were utilized as food by the site’s inhabitants.

By far the largest category in the assemblage is that of unidentified bone. This category contains a high proportion of minute bone fragments, much too small to identify, recovered from the many water screen and flotation samples collected at Lindsey. A less intensive sampling scheme would have significantly underrepresented this category.

Although the recovery techniques inflated the count of unidentified bone fragments, their use also led to the recovery of a substantial amount of identifiable bone refuse, especially that of small or very small animals.

The faunal assemblage from the Lindsey site does not emphasize the “terrestrial triad” so often found on late prehistoric archaeological sites in the eastern United States, this triad, comprised of the white-tailed deer, raccoon, and wild turkey, is represented in the Lindsey faunal assemblage; however, these three taxa occur with many others, and their importance in the subsistence economy at Lindsey is correspondingly diminished.
The taxa recovered from Lindsey are primarily terrestrial. Although the site was very close to a stream from which fresh water mollusks were harvested, the remains of very few fish, aquatic turtles, ducks or geese were found.

**Intra-site Distribution**

The majority of the faunal remains from the Lindsey site were recovered from Feature 4. Small amounts of faunal material were also obtained from Features 3, 6, 7, 17 and 19 as well as from Post Molds 8, 13, 16, 36, 48, 72, and 75 in Square 6, and post mold 71 in Square 7. One unidentified bone fragment was recovered from Test Pit N35 E14 and four bone fragments were recovered from the surface of the site. The contexts of these bones are not secure, and they may even be of modern origin.

Two patterns are evident in the spatial distribution of faunal remains on the site. The first is that, except for Feature 4 and the isolated surface recoveries, the remaining bones were associated with the structure in Square 6. Specifically they derived from structural post molds, features inside the structure, or features in Square 7 just outside the structure.

The second pattern is that most of the larger bone fragments were recovered from these non-Feature 4 contexts. The majority of the Feature 4 faunal assemblage consisted of small calcined fragments. This pattern suggests that the larger portions of animal protein—those still attached to bone—were first processed in and around the house in Square 6. Smaller bone fragments were later taken to Feature 4 for disposal.

Because faunal remains were recovered from so few contexts within the site, it is almost certain that Feature 4 was the main repository of processed bone debris and miscellaneous trash resulting from day to day activities.
Recovered Taxa: Habits and Habitat

This section will discuss the various fauna in terms of their habitat and dietary preferences, as well as the seasonality of behavior associated with spawning, breeding, and aggregation. Typically these are periods when animals can be harvested with the least effort. Where available, information is also provided on harvesting techniques as well as the seasons during which the taxon provides the best nutritional value.

Deer (*Odocoileus virginianus*) - The average weight of bucks in northern Georgia is between 103 and 119 pounds (Thomas 1957). Since deer are so widely distributed throughout the eastern United States, and because they represent large packages of both edible meat and useful raw materials (bone, sinew, hides, and antlers), it is not surprising to find deer as the best represented large mammal in the faunal assemblage.

The optimum habitat for deer is the brushy stage of deciduous forest succession, where young trees and shrubs provide food and cover. Deer are primarily browse feeders (they bite off the leaves and tips of twigs, shrubs, and trees) as well as grazers of grass and forbs. They also eat mushrooms, fruit, and berries (Golley 1962). The highest deer densities occur where small patches of varied vegetation produce maximum edge areas between habitat zones.

The breeding season for deer in Georgia is from November to February, with a peak in December. The gestation period ranges from 196 to 203 days. Fawns may thus be produced well into the summer (Golley 1962).

Deer are not herd animals, but are often found in family (doe-fawn-yearling) or all male groups. Deer groupings are temporary, however, and group size and composition varies with seasonal activities such as rutting, fawning, and antler secretion. Deer are more readily available and in near-optimum physical condition in late fall/early winter. At this time they are less
secretive or wary, and the fall mast crops contribute to their good physical condition (Tibbs 1967:15).

Swanton (1946) cites nine ethnographic accounts of the stalking of individual white-tailed deer by Indians in the southeastern United States. This technique best accounts for the low incidence of deer at the Lindsey site. Deer are most successfully stalked in the fall—from the time a buck’s antlers drop their velvet (the first week in September) through the beginning of the rutting season (the last week in September) and continuing until the end of the rutting season (the last week in November). During this time bucks undergo a behavioral change—becoming more belligerent and curious (Smith 1975).

Mass capture techniques—such as surrounds or drives to water, surrounds or drives using fire, and drives into traps—were also common throughout the eastern United States (Cleland 1966; Swanton 1946; Waselkov 1978). However, such mass capture techniques would likely have resulted in a greater number of deer elements at the Lindsey site.

Squirrel (*Sciurus carolinensis*) - Only gray squirrels were identified to the species level in the faunal assemblage. Gray squirrels are large tree squirrels, with an average weight of 512 grams. They are found primarily in oak and hickory forests (Golley 1962). Gray squirrels breed twice a year, in mid-January and in early June. The average litter size is two to three young (Uhlig 1955). The preferred food item is hickory nuts, but acorns, pecans, beechnuts, buds, roots, fruit, leaves and insects are also consumed. Population densities vary considerably, from a low of 21 per one hundred acres to 150 per one hundred acres (Golley 1962). Although squirrels represent a small package as a food item, their high densities probably resulted in their being an important food item in the Lindsey subsistence economy. Indians in the eastern United States harvested squirrels with bows, snares, traps, nets, and removed them directly from nests. The
most active season for hunting squirrels was in the fall, when visibility was enhanced by the loss of foliage, but they could be taken throughout the year (Smith 1975; Swanton 1946).

   Cottontail (Sylvilagus floridanus) – The cottontail is a medium-sized rabbit with an average weight of 1,037 grams (Golley 1962). Cottontails are found in the uplands of Georgia, both in wooded and open areas. Their optimum habitat is an old-field community, with abundant green forbs for food, adjacent to honeysuckle or blackberry thickets, which provide cover (Golley 1962). The breeding season for cottontails lasts most of the year, although it peaks between February and August and is somewhat depressed in the fall. Three litters (averaging four to six young per litter), may be produced each year (Ecke 1955). As with squirrels, cottontails would be plentiful and easily harvested year round. Rabbits were probably caught using snares or traps placed along their paths and tunnels. Since rabbits do not flush unless approached very closely, communal rabbit drives and individual stalking methods were likely to be unsuccessful (Smith 1975). Swanton (1946:330) describes the use of snares by historic southeastern Indians for capturing rabbits.

   Black Bear (ursus americanus) – Given the paucity of bear remains in the faunal assemblage, a discussion of the seasonality of bears would seem to be moot. The recovered bear element could have come from a single kill. This could have occurred at any time of the year, although bears are at their optimum nutritionally in the late fall. The average weight of black bears harvested in Georgia is 200 to 300 pounds (Golley 1962). Ethnocentric accounts from the southeast indicate that bears were hunted in the late fall or winter while hibernating. Bears are difficult to take when in full control of their senses (Trippensee 1948 vol.1).

   The presence of bear remains at Lindsey may be unrelated to subsistence activities. Scott (1985) argues that the small number of bear bones recovered from a Mississippian site on the
Savannah River may reflect ritual rather than subsistence use. Indeed, many native North American cultures regarded the bear as an important and powerful figure. Taboos and rituals were observed when consuming their flesh or disposing of their remains (Hudson 1976).

Mice (*Peromyscus spp.*) – Many of the recovered mouse remains are probably intrusive, considering the completeness of skeletons and the absence of modification to the skeletal elements. Some of the mouse bones are calcined, however, and do not belong to any of the complete mouse skeletons. This indicates that mice may indeed have been used as an occasional food item. Mice are quite common throughout Georgia today. Before the introduction of the rat into the southeastern United States, they would have been the most common type of vermin. Given the food storage techniques used by Mississippian populations, mice would have been numerous near settlements. Harvesting them would have required little effort.

Lawson (in Swanton 1946:329) describes the taking of small vermin, such as mice, by fire hunting. Fire hunting was carried out during the periodic burning of old fields, when fleeing animals could be easily taken along the field’s edges. Swanton (1946:331) also mentions that Florida Indians took small animals in snares and traps.

Raccoon (*Procyon lotor*) – Although raccoons were heavily utilized by late prehistoric populations of the eastern U.S., they were not utilized to the degree expected at Lindsey. Raccoons live in many different habitats in Georgia. In farmland and mixed woodlands they prefer bottomlands, where den trees are plentiful and they can range over nearby uplands for food. Where den trees do not occur, raccoons use rock cliffs, caves, or ground burrows for dens (Golley 1962). Raccoons usually den alone, but during the breeding season males and females are found together. In the southeast the breeding season extends from February to August. The average litter size is three, with one litter being produced per year.
Food habits of the raccoon vary, but about 75 percent of their food is vegetable and 25 percent is animal matter. Important foods are persimmon, pecans, grapes, pokeweed, corn, crayfish, insects, birds, snails, fish, and small mammals. Adult raccoons can weigh up to 8000 grams. Raccoon density estimates range from 15 (Jackson 1961:324) to 54 per square mile (Butterfield 1944). Hunting techniques include setting snare or traps along margins of streams as well as searching for denning areas (Smith 1975).

Chipmunk (*Tamias striatus*) - The chipmunk is a common mammal in the northern section of Georgia, reaching its highest density in open woodland. It is unclear whether the chipmunk bones in the Lindsey faunal sample represent intrusive modern taxa. The bones were not culturally modified in any way, and all the recovered elements occurred in a small area. However, the absence of complete skeletons suggests that the few remains recovered may have been from a consumed animal. If chipmunks were actually a food item, the most reasonable means of capture would be that described for other small vermin (Lawson in Swanton 1946) – through the use of fire hunting, snares, or traps.

Voles (*Microtus spp.*) – Voles are medium-sized mice with an average weight of about 44 grams. Voles are most common in the northern United States. In Georgia their habitat is either wet meadows or dry upland fields (Golley 1962). Voles are primarily herbivores, with grass the most important dietary item. They would have been captured using the same techniques described above for other small animals.

Skunk (*Mephitis mephitis*) – The striped skunk is a medium-sized mustelid. It is found throughout Georgia, but is most abundant in agricultural land or in open wasteland. Several skunks may congregate in one nest. The striped skunk is omnivorous and eats small mammals, insects, and fruit. Its summer diet consists primarily of fruit and insects, while its winter diet
consists mainly of small mammals and carrion. Skunks breed in early spring, and 4 to 7 young are born in late May (Golley 1962). Ethnohistoric data on the hunting of skunks is lacking. Given its size and habit of spraying, it too was probably taken with snares and traps, rather than being directly hunted.

Opossum (*Didelphis marsupialis*) – This animal is about the size of a house cat. The average weight varies from 3 to 6 kilograms, with males slightly larger than females (Barbour and Davis 1974). Opossums occur in high densities throughout Georgia (Golley 1962). In most regions of the state two breeding periods occur per year, from mid-January to early March and from early April to mid-June (McKeever 1958). The average litter size is about seven, but may range up to 20 (Golley 1962). The opossum is omnivorous and will eat almost any available vegetable or animal food. In the southern states, insects are the preferred food item (Golley 1962).

Opossums are often found in the bottomlands or stream margins of deciduous forests. They are nocturnal animals that require hollow trees, fallen logs, or ground burrows for nest sites and for protective cover during the day. Because of their nocturnal nature, opossums were probably caught either in traps or snares placed along the margins of small streams or by hunting out their dens by day. Ethnohistorical descriptions of opossum exploitation in the southeast mention that they were hunted but do not specify the methods used (Smith 1975).

Box Turtle (*Terrapene carolina*) – Box turtles are small, terrestrial turtles. Although primarily herbivorous, they sometimes eat fruit, carrion, vegetables, flowers, insects, worms, and small vertebrates (Smith and Brodie 1982). They have a broad range throughout the eastern United States, preferring thin woodland or brushy areas. Box turtles produce clutches of 3 to 8 eggs. Eggs are often buried in the soft earth of cultivated fields during June and July (Babcock
From about mid-May to mid-June box turtles are extremely mobile. The inhabitants of the Lindsey site would have been able to take them relatively easily during daily activities.

**Mud Turtle (Kinosternon spp.)** – Mud turtles are small aquatic turtles. Few grow to be five inches in length. They frequent slow-running streams or muddy rivers. They are often seen walking along the bottom in shallow waters and may have been harvested by simply being picked up (Shapiro 1981).

**Watersnake (Natrix spp.)** – This is a nonpoisonous snake that frequents the borders of rivers, streams, ponds, or lakes. It is also found in swampy areas. Its diet consists of cold-blooded creatures such as frogs, toads, and fishes (Ditmars 1946).

**Black Racer (Coluber constrictor)** – The black racer is commonly found throughout the eastern United States. Specimens may reach six feet in length. The black racer prefers dry and open situations, such as the edges of meadows that are fringed with brush. It is in these border areas that the black racer finds its principal food- young birds, eggs, mice, and frogs (Ditmars 1946). Black racers may have been taken during the periodic burning of fields, when a wide variety of animals could be harvested at one time as they fled the flames.

**Skinks (Eumeces spp.)** – Skinks are small reptiles, growing up to ten inches in length (Ditmars 1946). They are mainly diurnal, with a diet consisting of insects. Larger specimens will also feed on bird eggs and newborn mice. They are mainly terrestrial (Ditmars 1946). It is likely that skinks were included in the diet, since burned cranial elements of two individuals were the only bones recovered.

**Toads (Bufo spp.)** – The individuals represented by the toad remains are believed to be modern intrusions into Feature 4, based on skeletal completeness data.
Frogs (*Rana spp.*) – Skeletal completeness indicates that frogs were not modern intrusions into Feature 4. The frog remains are indicative of only one individual. It may have been taken at the stream along with other animals by means of a mass non-selective harvest.

Salamanders (*Ambystoma spp.*) – Only one salamander element was recovered on the site. Hence, skeletal completeness data suggests that this is not an intrusive animal. Salamanders may have been taken as a dietary item during mass non-selective harvesting. It is too small and difficult to capture to have been intentionally sought out.

Bobwhite (*Colinus virginianus*) – Bobwhites are common permanent birds found throughout Georgia. Population densities depend on the amount of open country with adequate food and shelter (Burleigh 1958). The bobwhite diet consists primarily of weed seeds and insects. Only one brood is reared each year, usually during the summer. Today, bobwhites are commonly found in pastures and at the edges of cultivated fields. During the fall and winter they are found in small conveyas, and it is during these seasons that they are hunted (Burleigh 1958). With the approach of spring the conveys break up and the birds become less timid. Bobwhites could have been hunted with bows and arrows, but were more likely taken with traps and snares (Swanton 1946:330-331).

Turkey (*Meleagris gallopavo*) – This bird was originally found throughout Georgia, but is much less common today. Where the wild turkey is consistently hunted, it becomes wary and more persistence is needed for hunting success. During the fall and winter males and females are found in separate flocks, but these break up in the spring (Burleigh 1958). Nests are usually built in dense thickets and roosting often occurs in the upper branches of tall trees. The ethnohistoric literature is full of references to turkey hunting in eastern North America (Smith 1975; Swanton
1946). Turkeys were baited with corn (Schorger 1966), called (Swanton 1946), and taken in traps and snares (Schorger 1966).

Mourning Dove (*Zenaidura macroura*) – This bird is a common resident throughout the state, especially in the winter months when flocks from the north come south (Burleigh 1958). Mourning doves prefer evergreens as nesting sites. Their diet consists of waste grain and seeds that can be secured from the ground. This habit of feeding from the ground would have enabled the inhabitants of the Lindsey site to take them in a number of ways—bows and arrows, snares, traps, and even nets.

Gar (*Lepisosteus spp.*) – Gars are predaceous fish with a completely ossified skeleton and a body covering made up of heavy, ganoid scales (Scott and Crossman 1973). The usual habitat for gars is weedy shallows. Spawning takes place in the warm, shallow water of lakes and streams in late spring or early summer. Fish form most of its diet (Scott and Crossman 1973).

Catfish (*Ictalurus spp.*) – Most varieties of catfish in Georgia weigh between 2-4 pounds. Catfish spawn in late spring or summer when water temperatures reach between 75 and 85 degrees Fahrenheit. Spawning takes place in secluded nests built by the males in holes, undercut banks, log jams, or rocks (Scott and Crossman 1973). Shallow, turbid, vegetated areas are frequented by most types of catfish. Catfish feed on a wide variety of plant and animal material. Today they are considered to be an excellent food fish (Scott and Crossman 1973).

Minnows (*Cyprinidae*) – As the name suggests, these fish are small. The most efficient technique for collecting minnows would be mass capture. Such a technique would likely result in a harvest of several different aquatic taxa at one time.

In the southeastern United States, several methods of fishing have been documented ethnohistorically (Swanton 1946:332-333). These include mass capture techniques using weirs,
fire, nets, and seines, and poison to stupefy the fishes. More selective techniques included shooting with bows and arrows, using hooks and lines, spearing, snaring, and grabbing with bare hands.

Unidentified bone- when unidentified bone is taken in conjunction with the corresponding categories of identified animal bone, some additional insights into the subsistence behavior of the Lindsey site inhabitants are evident.

The unidentified mammal category is interesting in that it contains a large number of unidentified rodent and small mammal bones. This increases the importance of these small animals (squirrels, rabbits, mice, voles, and chipmunks) in the subsistence economy. Unidentified large mammals (probably deer) are also present in the assemblage but not to the degree of unidentified rodentia and small mammals. While it is clear that mammals played the most important role in the subsistence economy, these were, for the most part, small terrestrial species.

Almost all of the bird remains on the site were unidentifiable. The large number of bones in the category (n=127) underscores the importance of birds in the subsistence economy. The remains of turkeys and other large birds are comparatively scarce. Instead it appears that the smaller birds, such as bobwhites and mourning doves, played the more significant role.

The unidentified fish category is comprised of 25 elements from Feature 4. Taken with the identified remains, fish still do not represent a significant portion of the faunal assemblage.

The one unidentified reptile bone may belong to a lizard, a snake, or a turtle. The addition of this bone does not alter the proportion of reptile bones in the assemblage. The unidentified lizard category includes only four bone fragments. The absence of a fairly complete
skeleton along with evidence for burning likely indicates the inclusion of lizards in the diet at Lindsey.

The fifty-five unidentified amphibian bones probably belong to individuals already identified as intrusive.

As can be seen from the above taxa synopses, the majority of the Lindsey faunal material comes from terrestrial animals. Furthermore, most of the terrestrial animals preferred either open areas, old field/pastures, or brushy/bushy areas. The small animals were all capable of reproducing rapidly, and nesting sites were very likely plentiful in close proximity to the site. The aquatic species found in the faunal assemblage preferred slow moving, turbid creeks or rivers.

If one assumes that Lindsey’s inhabitants were harvesting animals from a small catchment area surrounding the site (Vita-Finzi 1978), then a significant proportion of the site’s environs may be postulated to have been in an old field, bushy stage of deciduous forest succession.

**Conclusions and Implications**

It is difficult to say anything definite about the seasonality of harvesting demonstrated by the Lindsey site faunal assemblage. Most of the identified species are represented by only a few individuals. Today these animals are permanent residents of the state and could have been harvested at any time of the year.

Deer are the most likely animals to have been captured as part of a planned, seasonal harvest. If so, they were probably taken in the late fall/winter. During these seasons deer lose their wariness and are in peak physical condition (Tibbs 1967:15).
Preparation, processing, and discard- An examination of skeletal completeness was undertaken for rodents (including squirrels), deer and rabbits. Other taxa were not considered because they were represented by too few elements.

The results indicate that some rodents can be considered intrusive into Feature 4, but that others were used as food items.

Deer remains were not numerous, but represented all parts of the body (crania, vertebral column, ribs, and upper and lower limbs). This indicates that entire deer carcasses, rather than selected parts, were brought to the site.

Rabbit and squirrel skeletal remains also derived from all sections of the body. Again, entire animals appear to have been introduced to the site.

As discussed earlier, most of the large bone fragments were found in structural post molds, interior features, or features just outside the structure. Small, calcined bone fragments were predominately found in Feature 4. This indicates that the animal protein attached to bone, as well as the bones themselves, were processed in and around the structure. The large bone fragments were broken into smaller ones that became leached and bleached. Only the smaller fragments were deposited in Feature 4. Calcined elements of rodents and a relatively complete toad were also found in Feature 4, but are thought to be intrusive.

One ethnohistorically documented method of processing animal protein is the boiling of meat and bone in a stew-type dish (Swanton 1946). However, this would not require smashing the bone into small fragments.

A second method is the making of bone grease or “butter” (Leechman 1951; Vehik 1977). In this type of processing, bones are pulverized to increase surface area and then placed in boiling water. Grease is periodically skimmed from the surface of the water and stored. This
process is repeated until the bones are leached of nutrients and become bleached in appearance. The resulting bone mass is then discarded. Of the two methods, the description of bone grease manufacture better matches the appearance and size of bone fragments recovered from Feature 4.

Cut marks are almost completely absent in the faunal assemblage. Only three elements were noted as having cut marks—two mammal bone fragments and one reptile bone fragment. Most of the animals utilized at the site were small and, after being skinned, were probably cooked whole rather than dismembered.

Another cultural modification of bones in the assemblage is the manufacture of ornamental objects. Specifically, two small bone beads were recovered from Feature 4. Both beads are small, calcined and unidentifiable as to animal class.

Carnivore modification of the faunal material was minimal (Table 12.2). Only 13 elements exhibited signs of carnivore gnawing. Rodent modification was also rare, being limited to one fragment of mammalian bone. This was clearly not due to a lack of carnivores and rodents in the area. Instead a combination of thorough processing, in which the nutritional substances in bone were consumed by humans, and rapid burial in Feature 4 probably resulted in few bones being available for scavengers.

The rapid burial of bone refuse is also indicated by the low frequency of weathering patterns. Less than one-half of the assemblage (44 percent) exhibited any sign of weathering (Table 12.2). Behrensmeyer (1978) has shown that the severity of weathering on bone fragments depends on the length of time they are exposed to the elements on the ground surface. Although different classes of animal bones weather differentially (Tappen and Peske 1970), all bones weather to some degree. The relatively low incidence of weathering at Lindsey demonstrates that the assemblage underwent fairly rapid burial.
Seventy percent of the animal bone from Lindsey was burned (Table 12.2). It is unlikely that this resulted from cooking, given the tendency for historic south-eastern Indians to boil their food (Swanton 1946). Evidence for burning was even found on intrusive animals (toads and mice) and the intentional dog burial in Feature 4. This indicates that the contents of Feature 4 were ignited at least one, and perhaps several times, during the history of its use. Such burning was no doubt intended to eliminate odor as well as to keep vermin away from the pit and habitation area.

**Harvesting / Hunting Practices**

Although the species identified in the Lindsey faunal assemblage are found on other late prehistoric - protohistoric sites in the southeast, their proportions at Lindsey are unusual. Differences in site location (e.g. upland versus riverine) account for some of the observed variability. However, even sites with catchments containing exclusively upland habitat have faunal assemblages distinct from that of Lindsey.

The faunal assemblages at such Mississippian sites as King Bee (9PM815) (Elliott and Boyko 1989), 9HK64 (Blanton 1985), and Chucalissa (40SY1) (Smith 1975) all emphasize terrestrial species. The terrestrial fauna exploited at these sites is disproportionately comprised of deer raccoon, turkey, and box turtle. In contrast, the faunal assemblage from Lindsey contains a high proportion of very small animals (e.g. squirrels, rabbits, mice, terrestrial birds). Small game in these numbers is typically obtained through a harvesting strategy referred to as “garden hunting” (Linares 1976). Garden hunting concentrates on those animals whose optimal habitats (and by extension, numbers) were enlarged by horticultural activities.
The preferred habitats of most of the terrestrial fauna in the Lindsey site assemblage are the bushy/brushy stage of deciduous forest succession, old field/pastures, or clearing/forest edge areas. Since the Lindsey site’s inhabitants were practicing maize horticulture adjacent to the site (see Chapter 11) these optimum habitats would have been in close proximity.

Harvesting these animals could have been accomplished within a small catchment during the daily round of activities, perhaps on the way to fields and back. Organized hunts for the utilized taxa would not have been efficient. The size and habits of the terrestrial fauna also suggests that trapping rather than hunting was the preferred acquisition technique. The harvesting of these animals could have been done by women and children as well as men.

The aquatic and amphibious species could have been obtained from the stream near the site. A non-selective harvesting technique that involved building dams or weirs across the stream and then “driving” aquatic and amphibious animals into nets or baskets best explains the diversity in size and species recovered at the site. Such techniques would enable the capture of fish (from the size of minnows to the size of gars) along with frogs, salamanders and water-snakes. Shellfish and aquatic univalves could have been taken at the same time.

**Diversity and Equitability**

Diversity and equitability indices measure the degree of variability and specialization in a faunal assemblage (Shannon and Weaver 1949; Sheldon 1969). The diversity index measures the number of different utilized species while equitability measures the evenness of use of each species. Diversity indices range from 0-5, with low diversity indicating specialized exploitive strategies (i.e. few utilized taxa), while high diversity indices indicate a wider range of utilized taxa. Equitability indices range from 0-1. Low equitability indices reflect strategies that
emphasize few species while high indices reflect an evenness of species utilization. Both indices are dependent upon sample size.

Table 12.3 lists diversity and equitability indices for Lindsey and several other Lamar sites in the Oconee Valley, Joe Bell (9MG28) is a large site with both Duvall and Bell phase occupations. It is situated at the confluence of the Oconee and Apalachee Rivers (Williams 1983). The Kingbee site (9PM815) is a small Dyar phase upland site (Elliott and Boyko 1989). Site 9HK64 is a Dyar / Bell phase upland site (Blanton 1985).

As seen from this table, Lindsey has the highest diversity index. This is due to the large number of taxa recovered and the high equitability evident among the taxa. Among other Bell phase sites, Joe Bell has the next highest diversity but a lower equitability. Because Joe Bell is situated at the confluence of two rivers, aquatic resources were readily available. The heavy reliance on these resources (mostly fish and turtle) lowered diversity and equitability.

The Kingbee site and 9HK64 have the lowest diversity and equitability scores. This is probably a function of data recovery methods rather than a reflection of faunal resource utilization. At the Kingbee site only a fraction of one refuse pit was excavated. Only a small portion of the excavated matrix was fine screened to recover smaller taxa, resulting in an overrepresentation of large taxa and limiting diversity and equitability. At 9HK64 only a small portion of the site was excavated and only a fraction of the faunal remains were recovered by fine screening. Again, this may have limited the range of taxa recovered.

The Duvall phase occupation at Joe Bell had a high diversity and equitability, but neither was as high as the Lindsey values. Diversity is high because of the presence of both aquatic and terrestrial resources. Equitability is also high, which indicates that both aquatic and terrestrial resources were fairly evenly used. Almost the entire faunal assemblage from the Duvall
occupation was water screened through fine mesh. It is therefore a more accurate reflection of the subsistence economy.

The diversity and equitability measures discussed above seem to vary due to two factors—sampling strategy and ecological setting. At Joe Bell, the sampling strategy was similar to Lindsey, but the setting is quite different. At Kingbee and 9HK64, the ecological setting is similar but the sampling strategy was different. Further excavations of upland Lamar sites by the Pennsylvania State University should provide comparable sets of data with which to explore the effects of population expansion on the upland environment.

The faunal assemblage from the Lindsey site reflects the use of a diverse array of animal taxa. This use appears to have been non-specialized; that is, few taxa were singled out for heavy utilization. The harvesting of such a variety of fauna may have been connected with an increase in upland population density during late Lamar times. Settlement expansion into the uplands would likely have curtailed organized hunting expeditions in this area as more of the uplands were used for maize horticulture. Upland populations apparently placed less reliance on traditional animal resources as they began harvesting animals more accessible to their immediate habitations.
Table 12.1. Faunal Assemblage from Lindsey Site.

<table>
<thead>
<tr>
<th>Taxon</th>
<th>NISP</th>
<th>MNI</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odocoileus virginianus (White tailed deer)</td>
<td>41</td>
<td>4</td>
<td>170.31</td>
</tr>
<tr>
<td>Sciurus carolinensis (Gray squirrel)</td>
<td>14</td>
<td>2</td>
<td>3.20</td>
</tr>
<tr>
<td>Sciurus carolinensis (Squirrel)</td>
<td>13</td>
<td>2</td>
<td>2.18</td>
</tr>
<tr>
<td>Sylvilagus floridanus (Cottontail)</td>
<td>30</td>
<td>2</td>
<td>10.50</td>
</tr>
<tr>
<td>Sylvilagus spp. (Rabbit)</td>
<td>7</td>
<td>1</td>
<td>3.00</td>
</tr>
<tr>
<td>Ursus americanus (Black bear)</td>
<td>1</td>
<td>1</td>
<td>0.60</td>
</tr>
<tr>
<td>Peromyscus spp. (Mouse)</td>
<td>24</td>
<td>2</td>
<td>2.06</td>
</tr>
<tr>
<td>Procyon lotor (Raccoon)</td>
<td>6</td>
<td>2</td>
<td>1.83</td>
</tr>
<tr>
<td>Tamia striatus (Chipmunk)</td>
<td>8</td>
<td>1</td>
<td>1.14</td>
</tr>
<tr>
<td>Microtus spp. (Vole)</td>
<td>1</td>
<td>1</td>
<td>0.12</td>
</tr>
<tr>
<td>Mephitis mephitis (Striped skunk)</td>
<td>1</td>
<td>1</td>
<td>0.20</td>
</tr>
<tr>
<td>Didelphis marsupialis (Opossum)</td>
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<td>1</td>
<td>0.20</td>
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<tr>
<td>Unidentified mammal</td>
<td>1290</td>
<td>-</td>
<td>71.20</td>
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<tr>
<td>Unidentified small mammal</td>
<td>292</td>
<td>-</td>
<td>10.29</td>
</tr>
<tr>
<td>Unidentified medium-sized mammal</td>
<td>151</td>
<td>-</td>
<td>31.87</td>
</tr>
<tr>
<td>Unidentified large mammal</td>
<td>200</td>
<td>-</td>
<td>121.87</td>
</tr>
<tr>
<td>Unidentified Rodentia</td>
<td>178</td>
<td>-</td>
<td>7.18</td>
</tr>
<tr>
<td>Terrapene carolina (Box turtle)</td>
<td>14</td>
<td>2</td>
<td>6.50</td>
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<tr>
<td>Emydidae (Box/Pond turtle)</td>
<td>30</td>
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<td>5.30</td>
</tr>
<tr>
<td>Kinosternon spp. (Mud turtle)</td>
<td>3</td>
<td>1</td>
<td>0.60</td>
</tr>
<tr>
<td>Unidentified turtle</td>
<td>47</td>
<td>-</td>
<td>11.60</td>
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<tr>
<td>Natrix spp. (Watersnake)</td>
<td>5</td>
<td>1</td>
<td>0.86</td>
</tr>
<tr>
<td>Coluber constrictor (Black racer)</td>
<td>3</td>
<td>1</td>
<td>0.70</td>
</tr>
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<td>Eumeces spp. (Skink)</td>
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<td>0.41</td>
</tr>
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<td>Iguanidae (Lizard)</td>
<td>4</td>
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<td>1.00</td>
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<td>Unidentified Reptile</td>
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<td>-</td>
<td>0.40</td>
</tr>
<tr>
<td>Bufo spp. (Toad)</td>
<td>26</td>
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<td>3.25</td>
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<tr>
<td>Rana spp. (Frog)</td>
<td>2</td>
<td>1</td>
<td>0.30</td>
</tr>
<tr>
<td>Ambystoma spp. (Salamander)</td>
<td>1</td>
<td>1</td>
<td>0.10</td>
</tr>
<tr>
<td>Unidentified Amphibia</td>
<td>55</td>
<td>-</td>
<td>4.09</td>
</tr>
<tr>
<td>Colinus virginianus (Bobwhite)</td>
<td>1</td>
<td>1</td>
<td>0.10</td>
</tr>
<tr>
<td>Meleagris gallopavo (Turkey)</td>
<td>3</td>
<td>1</td>
<td>1.74</td>
</tr>
<tr>
<td>Zenaidura macroura (Mourning dove)</td>
<td>1</td>
<td>1</td>
<td>0.30</td>
</tr>
<tr>
<td>Unidentified bird</td>
<td>72</td>
<td>-</td>
<td>2.86</td>
</tr>
<tr>
<td>Unidentified small bird</td>
<td>41</td>
<td>-</td>
<td>1.96</td>
</tr>
<tr>
<td>Unidentified medium-sized bird</td>
<td>11</td>
<td>-</td>
<td>1.05</td>
</tr>
<tr>
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<td>3</td>
<td>-</td>
<td>0.80</td>
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### Table 12.2. Data on Modified Faunal Specimens.

<table>
<thead>
<tr>
<th>Class</th>
<th>Site Total</th>
<th>Weathered</th>
<th>Burned</th>
<th>Cut</th>
<th>Carnivore Gnawed</th>
<th>Rodent Gnawed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Amphibia</td>
<td>84</td>
<td>11</td>
<td>13.1</td>
<td>54</td>
<td>64.3</td>
<td>0</td>
</tr>
<tr>
<td>Reptilia</td>
<td>110</td>
<td>48</td>
<td>43.6</td>
<td>76</td>
<td>69.1</td>
<td>1</td>
</tr>
<tr>
<td>Aves</td>
<td>129</td>
<td>24</td>
<td>18.6</td>
<td>77</td>
<td>59.7</td>
<td>0</td>
</tr>
<tr>
<td>Pisces</td>
<td>40</td>
<td>7</td>
<td>17.5</td>
<td>11</td>
<td>27.5</td>
<td>0</td>
</tr>
<tr>
<td>Mammalia</td>
<td>2279</td>
<td>1321</td>
<td>58.0</td>
<td>1474</td>
<td>64.7</td>
<td>2</td>
</tr>
<tr>
<td>Unidentified</td>
<td>2756</td>
<td>979</td>
<td>35.5</td>
<td>2071</td>
<td>75.1</td>
<td>0</td>
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<tr>
<td>Totals</td>
<td>5398</td>
<td>2390</td>
<td>44.3</td>
<td>3763</td>
<td>69.7</td>
<td>3</td>
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</table>

### Table 12.3. Diversity and Equitability Indices.

<table>
<thead>
<tr>
<th>Site</th>
<th>Diversity</th>
<th>Equitability</th>
<th>Phase</th>
<th>Setting</th>
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</thead>
<tbody>
<tr>
<td>9Mg231</td>
<td>2.845064952</td>
<td>0.836489222</td>
<td>Bell</td>
<td>Upland</td>
</tr>
<tr>
<td>9Mg28</td>
<td>2.380675674</td>
<td>0.770185370</td>
<td>Duvall</td>
<td>Riverine</td>
</tr>
<tr>
<td>Kingbee</td>
<td>1.047554630</td>
<td>0.503767290</td>
<td>Dyar</td>
<td>Upland</td>
</tr>
<tr>
<td>9Hk64</td>
<td>1.164081337</td>
<td>0.505554184</td>
<td>Dyar-Bell</td>
<td>Upland</td>
</tr>
<tr>
<td>9Mg28</td>
<td>2.093047279</td>
<td>0.621581050</td>
<td>Bell</td>
<td>Riverine</td>
</tr>
</tbody>
</table>

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The Lindsey Site (9MG231) is located along a branch of Sugar Creek, a small tributary to the Oconee River in the Altamaha River Basin, Morgan County, Georgia. The modern molluscan fauna of Georgia are poorly known and published information is limited. Johnson (1970) reported 18 species of freshwater bivalves from the Altamaha River Basin, a smaller subset occurring in the Oconee River Basin. Goodrich (1928, 1942) discussed the pleurocerid gastropod fauna of the Atlantic Slope and reported only a single subspecies from the Altamaha River Basin. Pilsbry (1939-148) listed approximately 85 land snail taxa from Georgia. Hubricht (1985) lists 142 species from Georgia. Much of the land snail species diversity occurs in the northwest corner of the state in the Blue Ridge Province with a small subset occurring out on the Coastal Plain.

The important role of terrestrial gastropods in archaeology has been succinctly summarized by Bobrowksy (1984). Parmalee and Klippel (1974) have suggested that the aboriginal consumption of freshwater bivalves, although producing prodigious amounts of residue, were a poor source of protein and were probably only a dietary supplement. Klippel and Morey (1986) have illustrated examples where the freshwater operculate gastropods (Pleuroceridae) were used in great quantities by prehistoric Native Americans.

Athearn (in Rudolph and Hally 1982; Rudolph 1983) has provided the only published identification of archaeological molluscan materials in the Oconee River Basin. He identified four aquatic gastropod species, four unionid and three sphaerid species from shell middens in the Wallace Reservoir on the Oconee River, Georgia. Athearn identified a single specimen of
Lasigona subviridis from the Oconee River which is outside of its known historic range (Johnson 1970; Clarke 1985).

A total of two crustacean and 661 molluscan pieces were recovered from the excavations at the Lindsey site by dry screening and from flotation samples (Tables 13.1-13.7). The flotation samples yielded the bulk of the small terrestrial gastropods. Many of the archaeological molluscan samples contained "clam flakes" and could not be identified beyond being "probable freshwater bivalves". When this was all that was recovered from a provenience, the presence of this material is indicated in the tables with a "+" under Indeterminate Unionidae.

The taxonomy used in this paper follows Turgeon et al. (1998). Supplemental texts used in the identification of the molluscan remains were: terrestrial gastropods - Burch (1962), Emberton (1988, 1991), Hubricht (1985), and Pilsbry (1939-1948); freshwater gastropods - Burch - (1989); freshwater bivalves - Burch (1975), Clarke (1981, 1985). Final determinations of identifications were confirmed by comparison of the archaeological specimens with identified specimens housed in the collections of the Department of Malacology, Academy of Natural Sciences of Philadelphia. Table 13.1 presents all of the taxa identified from this excavation with the author and date of each taxon (which will not be repeated throughout the text and tables). Identifications were taken to the lowest taxonomic level possible (e.g. family, genus or species) and where there was uncertainty, the level of identification reflected this uncertainty (e.g. indeterminate terrestrial gastropod, indeterminate Zonitidae).
CRUSTACEA

Two burned fragments of the chelae of a freshwater crayfish (Cambaridae) were recovered (Tables 13.3, 13.4). These small fragments could have been either from an individual collected as a food item or represented stomach contents of an animal taken for food.

MOLLUSCA

Marine gastropods

A single broken specimen of *Prunum cf. apicina* was identified from Stratum 1 of Feature 4. This marine marginellid would have been traded in from the Coast. These shells were used extensively throughout the Southeast as beads during Mississippian times.

Freshwater Gastropods

Hydrobiid gastropods were identified from the northern half of Feature 4, Stratum 2, Level 1 (Table 13.3). Identification of these small aquatic gastropods is based on anatomical characters and their identification was not taken beyond the family level. These small snails are found on the bottom and banks of streams and were incidentally introduced into Feature 4 on something thrown into the pit or possibly as stomach contents of some aquatic animal (e.g. fish).

The larger aquatic snails such as *Campeloma* and *Elimia* are large enough to have been incidentally collected when seen, serving as a supplemental food item (see Klippel and Morey 1986). *Campeloma* would have been found living in the sandy/silty bottom of the adjacent creek. Two species of *Elimia* have been identified from the excavations. The shells identified as *Elimia* sp. are distinguished by carina on the upper whorls and a smooth body whorl. A species name for these specimens was not readily found in the literature (see Burch 1989, Goodrich...
1928, 1942). This may be what Athearn (Rudolph 1983, Rudolph and Hally 1982) identified as *Goniobasis symetrica* (Haldeman 1841) [=Elimia]. However Burch (1989) lists the range for *Elimia symetrica* as southern Virginia and North Carolina. The figured shell morphology corresponds to the archaeological specimens from the Lindsey site but the site location is outside of the known modern range of *E. symetrica*. The large aquatic gastropods are identified only from the top two levels of Feature 4 and from Area 7 (Tables 13.2, 13.4, and 13.7).

**Terrestrial Gastropods**

Seventeen species of terrestrial gastropods were identified from the excavated molluscan materials. The ecology of these taxa is presented as extracted from Hubricht (1985) in Table 13.8. These animals are almost all too small to be considered as potential food items and are most likely incidental to the human occupation of the site. The bulk of the terrestrial gastropods identified from the site are from Feature 4 (Tables 13.2, 13.3, 13.4, and 13.7) except for those from the surface collection which would represent more recent individuals-possibly modern.

Terrestrial gastropods found within Feature 4 (Tables 13.2, 13.3, 13.4) are not evenly distributed. Snails from Stratum 1 are concentrated in the western half of the feature and the southeast quarter (Table 13.2). The greatest species diversity is found in Stratum 2 Level 1 (Tables 13.3, 13.4). Abundance of individuals in Stratum 2 Level 1 was concentrated in the northwestern and the southeastern quarters of the feature. Based on the ecology of the snails (see Table 13.8) it would appear that southeastern quarter offered more protection and cover such as leaves, wood and debris while the northwestern quarter may have been more open (based on the high numbers of *Hawaiia* identified in this quadrant). The other two quarters of the feature have a significantly lower number of individuals recovered. Species richness and abundance of
Stratum 2 Level 2 (Table 13.4) is considerably lower than Stratum 2 Level 1 and is comparable to Stratum 1.

Very few specimens of terrestrial gastropods were recovered from the other three areas of the site (Tables 13.5, 13.6, 13.7). This might be interpreted as the areas around the structure were kept quite bare and opportunities for preservation were limited or the length of time the postholes and features in these three areas were open to receive introduced materials was very limited.

**Freshwater bivalves (Unionidae)**

Seven freshwater bivalve species in the family Unionidae have been identified in the archaeological specimens recovered from the excavations at the Lindsey Site (Tables 13.2, 13.3, 13.4, 13.5, 13.6, and 13.7). This is a greater diversity than reported by Athearn from sites along the Oconee River. No specimens of fingernail clams (Sphaeriidae) were identified in the archaeological assemblage as were reported by Athearn. The species identified in the Lindsey sample could be collected from a shallow stream in the Oconee River Basin with a sand / sand-silt bottom with exposed tree roots forming the stream banks. The specimen of *Alasmidonta arcula* in this sample is the first record for this species from the Oconee River Basin, either archaeological or recent. Clarke (1981) reviewed the known distribution of this taxon and did not list any records for *Alasmidonta arcula* from the Oconee River Basin but reported the species restricted to the Altamaha River Basin proper. Clarke (1981) reported the ecology of this species as occurring on sandy bottoms on the down-river end of a sand bar in 0.2 up to 1.5 meters of water. Two anomalous valves have been tentatively identified as *Lasmigona subviridis*. This is also outside of the known historic range of this species (Clarke 1985). However, Athearn
(Rudolph 1983, Rudolph and Hally 1982) reported finding a modern specimen of *Lasmigona subviridis* and also identifying this species in the archaeological record from along the Oconee River. The occasional occurrence of freshwater bivalves in late prehistoric aboriginal middens can be interpreted as evidence for exploitation of diversified aquatic resources. If these animals were collected as food items, temper for pottery, or for use as pottery tools cannot be definitely settled. Stem (1951) described the historic Pamunkey using elongate unionid shells as pottery tools similar in shape to some species identified from the Lindsey site. Parmalee and Klippel (1974) argue that freshwater bivalves provide a poor source of protein and were probably only a food supplement. If these animals were being used as a food resource, they should be present in much greater quantities in the archaeological assemblage at the Lindsey site. Freshwater bivalves are present in late prehistoric sites along the Little Tennessee River in eastern Tennessee and even in the historic Overhill Cherokee archaeological sites but only in small numbers (Bogan 1980, 1982).

The occupants of this small farmstead were not obviously relying upon maize agriculture but were harvesting a wide variety of wild and domestic plant resources. The archaeological botanical materials are interpreted as indicating fall, summer, and fall components in Feature 4 fill. The rapid filling of Feature 4 with the middle stratum being interpreted as a summer deposit would account for the greater diversity of land snails in this stratum (Bonhage-Freund this volume). The aquatic gastropods, bivalves and the crayfish fit very nicely into the concept of a broad resource based economy suggested by the archaeological vertebrate remains (Boyko, this volume) for this time period. This broad spectrum economy may not have been one of choice but one forced on the farmer because of the population pressure on what have been considered...
the mainstays of aboriginal diet: white-tailed deer, bear, and turkey (e.g. Kowalewski and Hatch 1991).

Acknowledgments

Gary Rosenberg is thanked for making the collections and the Library of the Department of Malacology, Academy of Natural Sciences of Philadelphia available for research and verifying the identification of the single specimen of *Prunum*. 
Table 13.1. Taxonomic List of Invertebrates from the Lindsey Site.

**CRUSTACEA**
Cambaridae (Freshwater crayfish)

**MOLLUSCA**

**Marine Gastropods**
Marginellidae
- Prunum cf. apicina Menke, 1828

**Freshwater Gastropods**
Viviparidae
- Campeloma limum (Anthony, 1860)
Hydrobiidae
Pleuroceridae
- Elimia catenaria postelli (Lea, 1858)
- Elimia spp.

**Terrestrial Gastropods**
Strobilopsidae
- Strobilops ct. texianus Pilsbry and Ferriss, 1906
- Strobilops spp.
- Chondrinidae Columella simplex (Gould, 1841)
- Gastrocopta contracta (Say, 1822)
- Pupoides albilabris (Adams, 1821)
Helicodiscidae
- Helicodiscus parallelus (Say, 1817)
Discidae
- Anguipira alaternata (Say, 1816)
Helicarionidae
- Euconulus cf. chersinus (Say, 1821)
Zonitidae
- Glyphyalinia cf. solida (Baker, 1930)
- Glyphyalinia cf. indentata (Say, 1823)
- Glyphyalinia spp. Hawaiia minuscula (Binney, 1840)
- Mesomphix cf. vulgatus (Baker, 1933)
- Ventrinids cf. cerinoideus (Anthony, 1865)
- Ventrindens gularis (Say, 1822)
- Ventrindens spp. Zonitoides arboreus (Say, 1816)

**Polygyridae**
- Euchemotrema aliciae (Pilsbry, 1893)
- Stenotrema stenotrema (Pfeiffer, 1842)
- Stenotrema cf. stenotrema (Pfeiffer, 1842)
- Stenotrema spp.
- Triodopsis fallax (Say, 1825)

**Freshwater Bivalves**
Unionidae
- Alasmidonta arcula (Lea, 1836)
Elliptio complanata (Lightfoot, 1786)
Elliptio hopetonensis (Lea, 1838)
Elliptio cf. hopetonensis (Lea, 1838)
Elliptio spp.
Lampsilis cf. dolabraeformis (Lea, 1838)
Lampsilis cf. splendida (Lea, 1838)
Lampsilis spp.
Lasmigona cf. subviridis (Conrad, 1835)
Villosa vibex (Conrad, 1834)
Villosa cf. vibex (Conrad, 1834)
Villosa spp.
## Table 13.2. Mollusks from Feature 4, Stratum 1.

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<thead>
<tr>
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<th>NE</th>
<th>SE</th>
<th>Total</th>
</tr>
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<td></td>
<td></td>
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<td></td>
</tr>
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<td>3</td>
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Table 13.3 Mollusks from Feature 4, Stratum 2, Level 1.

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**MOLLUSCA**

**Freshwater Gastropods**

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<th>NE</th>
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<th>Total</th>
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<tr>
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**Terrestrial Gastropods**

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**Indeterminate Terrestrial Gastropods**

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**Total Terrestrial Gastropods**

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<th>SE</th>
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<td>112</td>
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**Total Gastropods**

<table>
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<th>NE</th>
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**Freshwater Bivalves**

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<th>NE</th>
<th>SE</th>
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</tr>
</thead>
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<td>Alasmidonta arcula</td>
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<td>0</td>
<td>0</td>
<td>1L</td>
</tr>
<tr>
<td>Elliptio complanata</td>
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<td>2R,2L</td>
<td>2R,1L</td>
<td>5R,4L</td>
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<tr>
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<td>1R</td>
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Table 13.4. Mollusks from Feature 4, Summary

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Table 13.5. Mollusks from Square 6.

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<td>+</td>
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+ indeterminate unionid fragments present
Table 13.6. Mollusks by Excavation Area.

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<td>-</td>
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<td>-</td>
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### Table 13.7. Mollusks Summary by Area.

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<th>Square 6</th>
<th>Square 7</th>
<th>Square 11</th>
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<td>0</td>
<td>2</td>
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</table>

**MOLLUSCA**

**Marine Gastropods**

- *Prunum cf. apicina* | 0 | 1 | 0 | 0 | 0 | 1 |

**Freshwater Gastropods**

- *Campeloma limum* | 0 | 11 | 0 | 0 | 0 | 11 |
- *Hydrobiidae* | 0 | 6 | 0 | 0 | 0 | 6 |
- *Elimia catenaria postelli* | 0 | 14 | 0 | 2 | 0 | 16 |
- *Elimia spP.* | 0 | 5 | 0 | 0 | 0 | 6 |

**Indeterminate Aquatic gastropods**

- 0 | 0 | 1 | 1 | 2 |

**Total Aquatic gastropods**

- 0 | 37 | 0 | 3 | 0 | 40 |

**Terrestrial Gastropods**

- 0 | 0 | 0 | 0 | 0 | 0 |

- *Strobilops cf. texianus* | 0 | 13 | 0 | 0 | 0 | 14 |
- *Strobilops spp.* | 0 | 1 | 0 | 0 | 0 | 1 |
- *Columella simplex* | 0 | 1 | 0 | 0 | 0 | 1 |
- *Gastrocopta contracta* | 0 | 5 | 0 | 0 | 0 | 5 |
- *Pupoides albilabris* | 0 | 1 | 0 | 0 | 0 | 1 |
- *Helicodiscus parallelus* | 0 | 71 | 0 | 0 | 0 | 71 |
- *Anguipira alaternata* | 0 | 1 | 0 | 0 | 0 | 1 |
- *Euconulus cf. chersinus* | 0 | 1 | 0 | 0 | 0 | 1 |
- *Glyphyalinia cf. solida* | 0 | 7 | 0 | 0 | 0 | 7 |
- *Glyphyalinia cf. indentata* | 0 | 38 | 0 | 0 | 0 | 38 |
- *Glyphyalinia spp.* | 0 | 0 | 0 | 1 | 0 | 1 |
- *Hawaiia minuscula* | 0 | 49 | 0 | 1 | 0 | 50 |
- *Mesomphix cf. vulgatus* | 0 | 2 | 0 | 0 | 0 | 2 |
- *Ventridens cf. cerinoideus* | 5 | 26 | 0 | 0 | 0 | 31 |
- *Ventridens gularis* | 0 | 2 | 0 | 0 | 0 | 2 |
- *Ventridens spp.* | 6 | 0 | 0 | 0 | 0 | 6 |
- *Zonitoides arboreus* | 0 | 14 | 0 | 0 | 0 | 14 |

**Indeterminate Zonitidae**

- 0 | 22 | 0 | 0 | 0 | 22 |

- *Euchemotrema aliciae* | 0 | 1 | 0 | 0 | 0 | 1 |
- *Stenotrema stenotrema* | 0 | 2 | 0 | 0 | 0 | 2 |
- *Stenotrema cf. stenotrema* | 0 | 1 | 0 | 0 | 0 | 1 |
- *Stenotrema spp.* | 0 | 1 | 0 | 0 | 0 | 1 |
- *Triodopsis fallax* | 19 | 34 | 0 | 0 | 0 | 53 |

General | Feature | Square 6 | Square 7 | Square 11 | Total
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<td>19R,15L</td>
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<td>1L</td>
<td>0</td>
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<td>3R,4L</td>
<td>0</td>
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<td>3R,4L</td>
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<tr>
<td><em>Villosa cf. vibex</em></td>
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<td>Indeterminate Unionidae</td>
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<td>46R,45L</td>
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<td>611</td>
<td>2</td>
<td>11</td>
<td>+</td>
<td>661</td>
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Table 13.8. Ecology of Identified Terrestrial Gastropod Species

*Pupoides albilabris* "A species of bare ground, roadside, old quarries, glades, and waste ground, usually in calcareous areas." (Hubricht 1985:8)

*Gastrocopta contracta* "It is found in low, wet places, as well as places which are quite dry. It is also found in sunny roadsides and along railroads and in leaf litter in deep wood." (Hubricht 1985:8)

*Columella simplex* "Found in leaf litter in moist woods, talus slopes, and ravines." (Hubricht 1985: 12)

*Strobilops texasiana* "Often found in wetter habitats than those of S. labyrinthica." (Hubricht 1985:12)

*Strobilops labyrinthica* "Found crawling on logs in wet weather and in leaf litter in dry weather." (Hubricht 1985:12)

*Anguispira altemata* "A species with a wide habitat tolerance. Found in woods about logs, hollow trees, and rock; in weedy roadsides and along railroads; in urban areas in vacant lots and gardens." (Hubricht 1985;18)

*Helicodiscus parallelus* "Found on floodplains, as well a upland woods, in leaf litter, under trash on roadsides, under old ties along railroads, and on vacant lots in urban areas." (Hubricht 1985:21)

*Glyphyalina indentata* "Found in a variety of habitats, most commonly in leaf litter in woods, but also along roadsides and railroads, meadows, and urban areas." (Hubricht 1985:24)

*Glyphyalina cryptomphala salida* "Usually found in moist leaf litter on wooded hillsides and ravines." (Hubricht 1985:24)

*Mesomphix vulgatus* "Found under leaf litter on wooded hillsides, ravines, and sinks." (Hubricht 1985:26)

*Mesomphix pilsbryi* "Found on floodplains, as well as in upland woods, under leaf litter. Also found in waste ground and gardens in urban areas." (Hubricht 1985:26)

*Mesomphix globosus* "Usually found in leaf litter on low ground, floodplains, an swamps." (Hubricht 1985:26)

*Ventridens gularis* "Found in leaf litter on wooded hillsides and in ravines; also on floodplains and on roadsides." (Hubricht 1985:30)
**Ventridens cerinoideus** "A species of the Atlantic Coastal Plain. Found under litter in swamps and marshes, floodplains, and on roadsides." (Hubricht 1985:31)

**Zonitoides arboreus** "Usually found on rotting logs and in floodplains, as well as upland woods. It is also found on roadsides and along railroads and is a common urban snail." (Hubricht 1985:32)

**Hawaiia miniscula** "A species of bare ground. I have never found it in leaf litter. Found crawling on the bare ground on floodplains, meadow, roadsides, along railroads, and on waste ground in urban areas." (Hubricht 1985:29)

**Stenotrema stenotrema** "Found in a variety of habitats. Usually found in leaf litter on wooded hillsides-and in ravines, but may be found along roadsides, in old pastures, and in clearings." (Hubricht 1985:40)

**Euchemotrema leai aliciae** "Usually found in meadows, along roadsides, and near springs, but also found in floodplain woods." (Hubricht 1985:41)

**Triodopsis Jallax** "A species of open ground. I have never found it in the woods. Found in clearings, along roadsides, and railroads, and on waste ground in urban areas." (Hubricht 1985:47)
The recovery of a glass trade bead and two peach pits at Lindsey provides clear evidence that the site’s principal occupation dates to the post-contact era.

**The Glass Bead**

A single glass bead was discovered in the southwestern quadrant of Feature 4, the large trash pit (Figure 15.1). It is highly improbable that the bead was intrusive, since a) the flotation sample in which it was found was taken from the second stratigraphic level of the feature (MSM 61 from Stratum 2, Level 1), located well below the base of the plow zone, and b) there is little other evidence of post-depositional disturbance of the feature.

![Figure 15.1. Glass Bead](image)

Following Smith and Good’s typology of Spanish trade beads, this donut-shaped specimen corresponds to Type 17 (1982:25). Measuring 2.5 millimeters in diameter, 1.6 millimeters in thickness and weighing .016 grams, it falls within a size category commonly known as “seed beads.” The bead is dark blue under incident light, although it is medium blue
when light is transmitted through it. Since the perforation is visible when viewed on edge, the glass is considered to be “transparent” (Smith and Good 1982:21). Marvin Smith (personal communication) believes that this type was not introduced to the interior Southeast until late in the 16th century. However, it became commonplace on sites throughout the 17th century. As is typical of most 16th and 17th century beads traded by the Spanish, this type was constructed from an elongated tube of blown glass which, once cool, was cut and tumbled into its present shape.

Glass trade beads have been found at several other sites in the Oconee region including Joe Bell (9MG28), 9GE948, and 9HK64. At Joe Bell, two small glass beads associated with an adult skeleton were the only grave goods found at the site (Williams 1983). At 9GE948, 20 distinct types were identified in Smith’s analysis of 281 beads from two of the site’s burials (Smith 1978:290). Two of these types, representing 110 beads, were medium and dark blue translucent, donut-shaped beads. Over 350 glass beads were found in one burial at 9HK64, although all were of a distinctly different type from that found at Lindsey.

The chronologic association of glass trade beads with the Bell phase (A.D. 1580-1650) in the Oconee region is secure. Bell phase pottery is heavily represented in the ceramic assemblage at all four of the sites discussed above, and it occurs in the same features as glass beads at Lindsey, 9GE948 and 9HK64. Radiocarbon dates from Lindsey and Joe Bell indicate occupations within two or three decades of A.D. 1600.

Peaches

Two peach pits were discovered in the fill of Post Mold 36 in Square 6 (Figure 15.2). This post served as one of the wall supports for the circular house. The one intact specimen is
2.15 centimeters x 1.7 centimeters x 1.25 centimeters and weighs 1.66 grams. Both pits are completely carbonized.

Figure 15.2. Peach Pits.

Initially of Asiatic origin, peaches spread into the Mediterranean region during the second century BC and into Spanish-influenced regions of the New World at the end of the 15th century. Peaches were probably being grown in colonial gardens in Florida by the mid-1500s, although their earliest documented use in this area is 1602 (Sheldon 1978). Their rapid spread through the interior Southeast is supported by discoveries of peach pits at the late 16th and early 17th century sites in Georgia, eastern Tennessee and northern Alabama. In the Oconee Valley region peach pits have been identified at Joe Bell (9MG28), 9HK64, 9GE237, 9GE958, and 9MG185. All of these sites have Bell phase components.

Conclusions

The discovery of glass beads and peach pits at Lindsey, a small site located far from the nearest contemporary Spanish settlement and deep in the interior of the Oconee uplands, underscores the pervasiveness of the spread of selected European artifacts in the early 17th
A second mechanism involves direct Spanish-to-Indian trade after the DeSoto entrada. According to Smith, “The 1596 expedition of Gaspar de Salas and two Franciscans, Fathers Pedro Fernandez de Chosas and Francisco de Veras, visited Tama and Ocute, but they returned almost immediately when they were warned of hostile Indians. In 1606 the chief of Tama traveled to Sapelo Island to meet with Governor Ibarra (Swanton 1922: 181-82). These two documented occurrences of contact suggest that the Indians on the Oconee drainage may have been in close contact with the Spaniards (missionaries) on the coast (Smith 1987:127). Both documented contacts were brief, however, and few artifacts would have been involved in the presumed exchanges occurring at these times. In combination, these occasions do not seem sufficient to account for the frequency with which peaches and beads are found on Bell phase sites in the area.

A third mechanism for the introduction of Spanish artifacts into the Oconee involves the exchange of goods between Indians living near Spanish missions along the Georgia coast and Indians in the interior. According to Smith, aboriginal traders from the Guale missions near the
mouth of the Oconee-Altamaha river system may have periodically visited interior Indian towns (Smith 1987:125). Alternatively, a pre-existing pattern of down-the-line native exchanges of coastal and interior goods has been suggested for this area, based in part on ceramic affinities between the Oconee region and the coast.

Regardless of the means of acquisition, nothing in the archaeological record of the Oconee region indicated that peaches and glass trade beads played particularly special roles in the economic and ideological systems operative during the Bell phase. If these items were of special significance, their distribution would probably have been restricted to important towns and their discard would have been carefully controlled. However, regional surveys indicate that small upland farmsteads like Lindsey and 9HK64 are quite common and their occupants likely played minor roles in the region’s social and political affairs. Glass beads in the Oconee region are found in a variety of depositional contexts (as sole grave associations at Joe Bell, co-occurring with shell beads in burials at 9GE948 and 9HK64, and in the trash pit at Lindsey), while peach pits typically occur with deposits of unsegregated household trash.

Southeastern Indians doubtless considered glass beads and peaches novel and useful items. During the Bell phase, however, they represented nothing more than additions to the native cultural inventory. Bone and shell beads, including columella varieties procured through traditional trading mechanisms, continued to be used as grave associations at most sites. Peaches may well represent southeastern Indians’ first attempt at arboriculture, but their rapid acceptance was clearly based on a considerable extant knowledge of trees and tree products, as well as the continuation of pre-existing strategies of native food harvesting.
Chapter 15  
Radiocarbon Dates  
James W. Hatch

Three radiocarbon dates have been obtained from samples of wood charcoal collected at the Lindsey site. Two of these (Beta-25038 and Beta-25039) were processed by Beta Analytic Incorporated of Coral Gables, Florida, while the third (UGA-5736) was dated by the Center for Applied Isotope Studies at the University of Georgia, Athens.

Sample Preparation and Dating Procedures

Prior to submission, the samples were washed with distilled water and obvious roots, stones and other unwanted materials were removed.

Both laboratories followed similar procedures in the handling and analysis of the samples. Rootlets and residual clay were eliminated manually or with a distilled water bath. The samples were then given a hot acid wash to eliminate carbonates, followed by repeated rinses to neutrality. A hot alkali solution was then applied to remove humic and fulvic acids produced by the decay of recent organic matter. As needed, a second acid was followed by another rinsing to neutrality. High pressure combustion systems were used to reduce the samples to CO$_2$ and water. The resulting CO$_2$ was subjected to benzene synthesis and normal counting procedures.

Results

Sample 1 consisted of approximately 50 grams of wood charcoal from Post Mold 68 in Square 6 (MSN 84), one of the exterior wall posts of the circular house. It was analyzed as UGA-5736. The radiocarbon age of 288$\pm$ 54 YBP (Years Before Present, A.D. 1950) is equivalent to A.D. 1662 in uncorrected calendar years. The dendrochronologic calibration of this date, following Stuiver and Pearson (1986), yields two age ranges for both the one and two
Sigma confidence levels. At the one sigma confidence level, the age ranges are A.D. 1512-1602 and A.D. 1618-1656. The age ranges at two sigma confidence level are A.D. 1464-1672 and A.D. 1754-1796.

Subsequent analysis of these data by Stan De Filippis of the Center for Applied Isotope Studies (letter dated January 31, 1990) allows for an evaluation of the statistical significance of age of this sample. At two sigma, the probability that the sample dates to between A.D. 1464 and 1672 is approximately 90 percent, while the likelihood of it dating between A.D. 1754 and 1796 is only 8 percent. At one sigma, the probability that the sample’s age falls between A.D. 1512 and 1602 is 40 percent, and between A.D. 1618 and 1656 is 22 percent. Interpreting these results, De Filippis concludes that “It is most probable that… an occupation in the early 1600s corresponds with the radiocarbon age date and dendrochronology.”

Sample 2 (Beta-25039) represents a combined sample of 15 grams of wood charcoal from three adjacent structural posts in Square 6 – Post Molds 50 (MSN71), 67 (MSN76), and 72 (MSN112). Its radiocarbon age of 300 +/-60 yields three dendrochronologically corrected ages – A.D. 1521, 1590, and 1623 (Stuiver and Becker 1986). One sigma confidence intervals indicate an age range of A.D. 1455-1645, while the two sigma interval ranges from A.D. 1440-1660. No further statistical assessment of these data was provided by Beta Analytic Inc. One immediately notices, however, that two of the calibrated ages fall very close to A.D. 1600, and that a significant overlap exists between the one sigma ranges of Samples 1 and 2.

Sample 3 comes from Stratum 2, Level 1 of Feature 4 – the trash pit. Wood charcoal from MSNs 90, 91, and 65, collected in the NE, SE, and SW quadrants of the feature, was combined to produce this 40 gram sample (Beta-25038). A radiocarbon age of 650 +/-40 YBP yielded two dendrochronologically calibrated dates of A.D. 1296 and 1375. The one sigma
range associated with these dates is A.D. 1281-1388, while the two sigma age range is A.D. 1277-1399.

**Interpretations**

The chronometric implications of these three samples provide some very important insights into both the timing and nature of the Lindsey site occupation.

1. Samples 1 and 2 consist of the charred remains of posts used as exterior wall supports for the circular house located in Square 6. Since it is likely that all of these trees used to construct this house were of approximately the same age and were cut on the same day, it is not surprising to find a significant overlap in the age ranges of Samples 1 and 2. Since two different laboratories provided these results, the overlap is all the more convincing. The dates obtained for Samples 1 and 2 point to the site’s likely occupation in the late 1500s to early 1600s. This corresponds very well with Kowalewski and Williams’ A.D. 1580-1650 estimate for the Bell phase, a component which is highly visible in the Lindsey ceramic assemblage (1989:59). The Bell phase has also been equated with the era of post-De Soto Spanish contact, as evidenced by the discovery of European glass beads and peach pits at several Bell phase sites in the Oconee drainage (Williams 1983; Smith 1987). The discovery of both a single blue glass European bead and two peach pits at Lindsey clearly puts the site’s occupation in the post-A.D. 1580 era. The fact that the peach pits were found in the fill surrounding one of the house posts in Square 6 (PM36) adds additional weight to the argument that this structure, as well as the site’s principal occupation, dates to the early portion of the Bell phase.
2. The early age range of Sample 3, consisting of wood charcoal from the site’s trash pit, is not compatible with archaeological discoveries in this feature or elsewhere on the site. Numerous pieces of Bell phase pottery were recovered from all levels of Features 4, while the European glass bead was found in Stratum 2, level 1 – the same level that produced the charcoal for Sample 3. Savannah period pottery, contemporary with the age range of Sample 3, is conspicuously absent in the Lindsey ceramic assemblage.

The most reasonable explanation for the early date of Sample 3 is the “Old Wood Effect.” Assuming that Feature 4 was a focal point for trash disposal, and the charcoal it contains represents fuel consumed in hearths elsewhere on the site, the antiquity of this wood may be considerably greater than the actual age of the site. The harvesting of deadfall for fuel could have resulted in the occasional burning of wood in excess of 200 years old. Alternatively, land clearance associated with the establishment of the Lindsey site and attendant, nearby agricultural fields could have produced a significant number of cut mature trees which became sources of firewood once the site was operational.
Hatch left a few notes on how he thought the final two chapters should be structured, but none of these notes were converted into actual text. The two chapters were closely related and thus I (Williams) have combined them and am taking his notes and my own observations to guide me in actually writing this final brief chapter. Hatch wanted to use this chapter for a broader look at upland Late Lamar farmstead adaptation in the Oconee Valley, but I am restricting this more to the story just from Lindsey, since the broader view has now been discussed in many other places.

The Lindsey site had a single round structure that likely was the main home for a small family that lived at the site. There were four burials inside the structure, likely placed under the raised beds inside the house. There likely were several smaller rectangular structures to the east and southeast of the round house. The functions of these structures are likely varied and include storage of food (corn cribs), shelters for cooking, and general storage buildings. There are many small isolated posts and/or features of unknown usage in the yard area to the east and southeast of the main house. It is very difficult to impossible to assign specific activity areas in the yard due to the plowing and the nature of the site excavations through stripping.

A large open pit (Feature 4) was created away from the structure area, probably at the beginning of the construction of the farmstead. This was likely a source for good red subsoil clay used in the creation of daub placed on the outside of the main house, and/or the smaller structures. This pit quickly began to be filled in with whatever trash was generated and available—including the family dog that presumably died from natural causes. The majority of the additional trash (food debris and broken ceramic vessels) generated by the family was
scattered to the east and southeast near and beyond the trash-filled daub pit. All this was
downhill from the main living area, which was at the crest of a small ridge.

The distance from the tiny creek to the northeast is about 100 meters. It was assumed by
Hatch and all other archaeologists in the 1980s that the food gardens for this family were very
close by the house, likely adjacent to the house on the ridge top. It now considered much more
likely that the garden was in the tiny stream bottom to the northeast in a small abandoned beaver
meadow. It is also likely that an active beaver pond was down stream or upstream from the
beaver meadow (Williams and Jones 2006).

The diet included a wide variety of domestic and wild plants. There were also a wide
variety of animals in the diet. The people were clearly was taking advantage of the many plants
growing in the beaver meadows and the upland woods nearby the farm. They also were
capturing many the small animals that came to the beaver pond to drink and fish. The shellfish
recovered at the site likely would have come directly from the beaver pond also.

The main house does not seem to have had extensive rebuilding, but was occupied long
enough for four family members to die. The life expectancy of upright posts in this climate is
probably not over 10-15 years before rotting in the soil. It seems likely that the family would
simply move to another (nearby?) location when the house needed extensive work. The presence
of remembered family members buried in the floor might have altered the house abandonment
pattern or timing.

The family at the site had some contact with the outside world as indicated by the
presence of European trade beads and peaches. Whether they were growing peach trees at the
site (in a beaver meadow or on the ridge top?) is unknown. The family likely had other families
living nearby that were perhaps related to them. The family also likely visited large group
gatherings at different places perhaps several miles away at least annually. This calls to mind the famous Creek Busk ceremonial gatherings.

The vast majority of the lithic artifacts recovered from the site probably dated to the Archaic period, thousands of years earlier than the Lamar farmstead. Cutting tools for the Lamar family may have included a wide variety of perishable material including cane and shell.

The Lindsey site is now famous as the first Late Lamar farmstead recognized and excavated systematically in the Georgia Piedmont. We have many others excavated now, and all seem to show much similarity to the pattern first defined there.
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