# THE HISTORIC OCCANEECHI: AN ARCHAEOLOGICAL INVESTIGATION OF CULTURE CHANGE

## FINAL REPORT OF 1985 INVESTIGATIONS

Edited by
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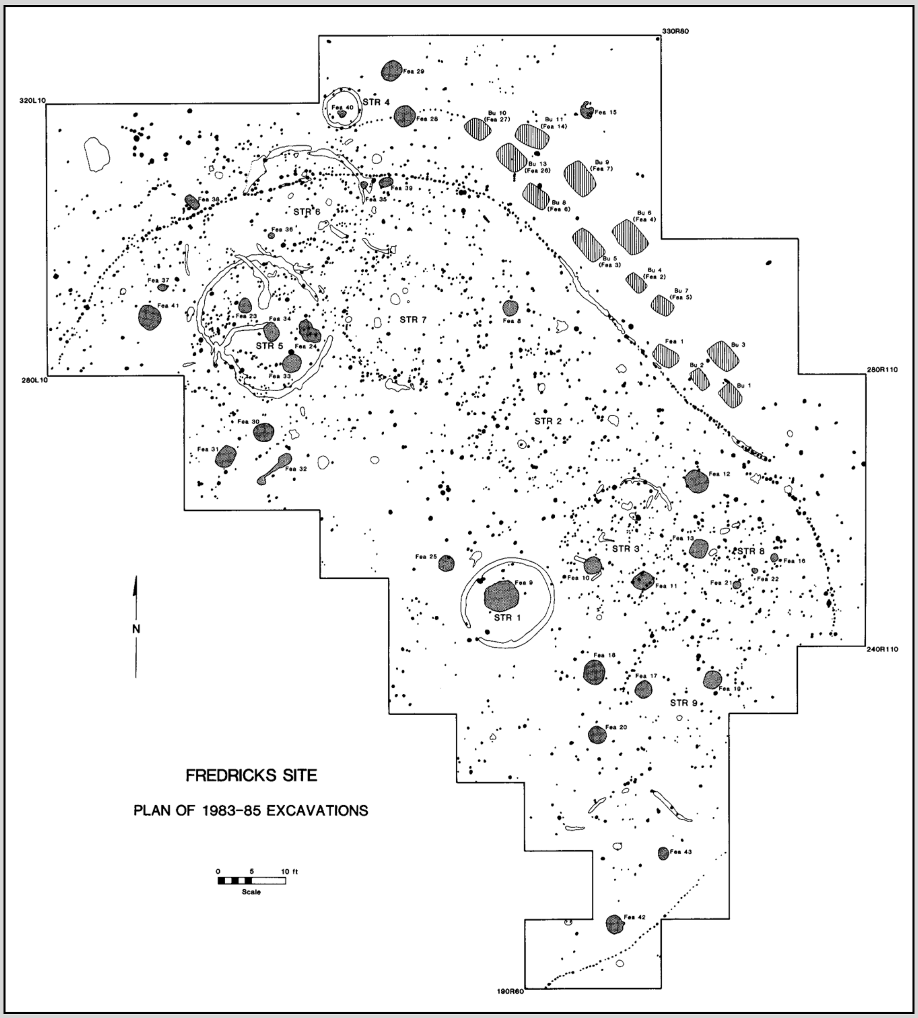
R. P. Stephen Davis, Jr.




Research Report No. 4
Research Laboratories of Anthropology
The University of North Carolina at Chapel Hill

May 15, 1986

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# I

## INTRODUCTION

**Roy S. Dickens, Jr., H. Trawick Ward,
and R. P. Stephen Davis, Jr.**

During the summer of 1985, under a grant from the National Geographic Society, archaeological investigations were conducted at the Fredricks site in Orange County, North Carolina. This report details the results of eight weeks of fieldwork and ten months of laboratory work, analyses, and report compilation.

The Fredricks site (31Or231), located on the Eno River near Hillsborough, North Carolina (Figure 1), contains the remains of a village of the Occaneechi Indians that was occupied between about 1690 and 1710. Archaeological investigations at the Fredricks site began in 1983 as part of a larger research project, undertaken by the Research Laboratories of Anthropology, University of North Carolina, Chapel Hill, to study culture change among the Siouan tribes of the North Carolina Piedmont during Historic period (ca. A.D. 1525-1740). This site represents one of the last-occupied and best-preserved Indian village sites yet discovered in piedmont North Carolina. Given its proximity to the Wall site (31Or11), an earlier protohistoric (ca. A.D. 1500-1550) site that also has been investigated by the Research Laboratories, the Fredricks site has provided significant comparative data for investigating specific aspects of culture change within a single locality (see Dickens et al. 1985). Work at the Fredricks site has also provided substantial information on aboriginal lifeways on the Piedmont following the initial influx of English traders.

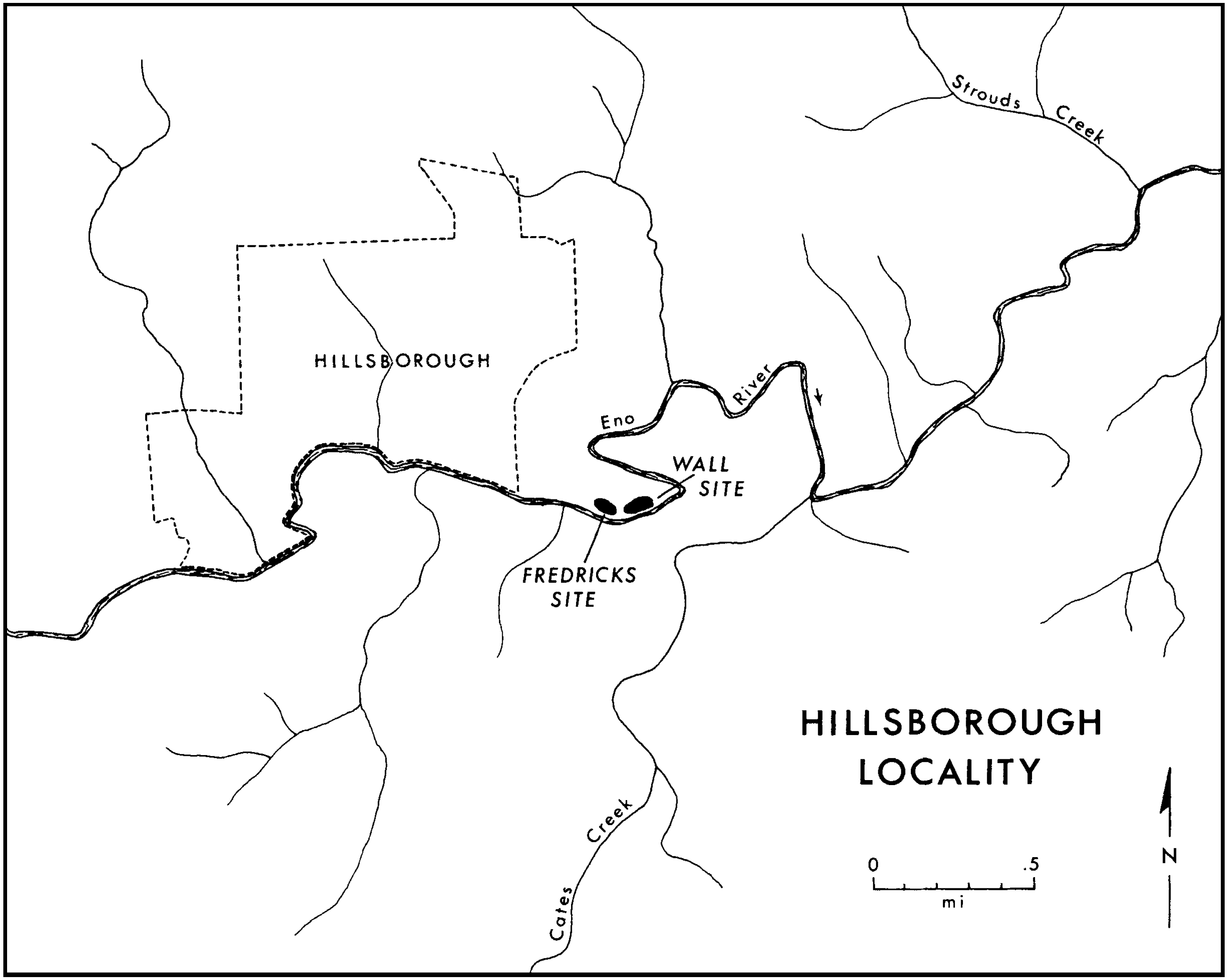


Figure 1. Location of the Fredricks site near Hillsborough, North Carolina.

## HISTORY OF INVESTIGATIONS

The Fredricks site was discovered by Research Laboratories archaeologists in 1983 while conducting excavations at the nearby Wall site. Limited test excavations of 800 $ft^2$ revealed a portion of a cemetery lying just outside the village and a segment of the village palisade. Three human burials within the cemetery were excavated. All three burial pits were rectangular with sharp corners (indicating that they probably were excavated with metal tools), and they contained numerous artifacts of Euroamerican manufacture. A fourth pit excavated within the cemetery, although containing neither human remains nor grave associations, probably was intended to be a burial receptacle.

A second field season at the Fredricks site, conducted during the summer of 1984 and sponsored by the National Geographic Society, uncovered a much larger area of the cemetery and adjacent village (Dickens et al. 1984, 1985). These investigations were designed to obtain additional data on mortuary behavior and to begin sampling domestic areas. In addition, systematic subsurface testing was undertaken on unexcavated portions of the site to delimit probable site boundaries and to make a preliminary assessment of internal site structure.

In 1984, 27 new 10x10-ft units (2,700 $ft^2$) were excavated, and six 10x10-ft units excavated in 1983 were re-exposed. These excavations uncovered six additional burials within the cemetery, a 90-ft palisade segment, and approximately 2,250 $ft^2$ of the village area inside the palisade. Mapping of postholes revealed two complete domestic structures. In addition, an oval, wall-trench sweat lodge with an interior fire pit was exposed in the southwesternmost corner of the excavation. Subsurface testing of unexcavated areas consisted of auger sampling at 2.5-ft intervals to identify archaeological features. This procedure proved to be highly reliable and was successful both in delimiting the remainder of the cemetery and in identifying areas of intensive domestic activity within the village. It was somewhat less effective, however, in providing a precise definition of site boundaries.

## RESEARCH PROBLEMS

The exploratory work conducted at the Fredricks site during 1983-84 provided information sufficient to answer some general questions about the period of occupation, and overall configuration of the material-culture inventory, mortuary behavior, and subsistence activities; however, the work did not produce a firm basis for addressing larger problems pertaining to overall settlement structure and composition. In order to address these latter problems, fieldwork was again undertaken at the Fredricks site in 1985. Specific research questions considered by this work included: 1) Is the existing cemetery the only one on the site, and was it the result of one episode of warfare; 2) What were the habitation structures like and how were they arranged in the settlement; 3) Did more than one tribe reside in the village; and 4) What was the size and overall pattern of the settlement? Fieldwork undertaken to answer these questions consisted of excavating the remaining burials in the cemetery, isolating domestic structures in the northwestern and southeastern parts of the village, and uncovering a large portion of the village palisade.

Figure 2. Removing plowzone.

Figure 3. Trowelling the top of subsoil to expose and map archaeological features.

## FIELD METHODS

The 1985 field season at the Fredricks site lasted eight weeks, from May 21 to July 17. The field crew consisted of 17 undergraduate students enrolled for six course credits in Anthropology 151 (Archaeological Field School) at the University of North Carolina, Chapel Hill, and 10 undergraduate and graduate field assistants. Excavations were supervised by Roy S. Dickens, Jr., H. Trawick Ward, and R. P. Stephen Davis, Jr. of the Research Laboratories. Dr. Dickens provided overall direction for the project.

Field methods employed during the 1985 excavations were similar to those of the two previous field seasons (see Dickens et al. 1984). Site preparation consisted of bushhogging the work area (ca. 150x150 ft) and re-establishing the site grid and reference point for elevations. All plowzone (0.5-1.0 ft thick) was excavated in 10x10-ft units, with soil being dry screened through 1/2-inch wire mesh using hand sifters (Figure 2). A 20-liter soil sample from the plowzone of each unit was water-screened through 1/16-inch mesh to assess small artifact content. A few of the squares in the vicinity of Structures 5 and 6 also contained a thin zone (0.1-0.5 ft thick) of midden and old humus at the base of plowzone. When encountered, this zone was removed separately and the soil was processed in a manner similar to that described for the plowzone.

Following the removal of plowzone, the bottom of each excavation unit (top of subsoil) was carefully trowelled in order to identify and record pits and postholes (Figure 3). All trowelled surfaces were documented by black-and-white and color photographs and were mapped at a scale of 1 in=2 ft. The drawings of each excavation unit were subsequently combined to produce an overall plot of the excavations.

Photographs were also made of all procedures and of the general progress of work. Horizontal and vertical control was maintained through reference to the site grid and by using a transit and rod to determine elevations (Figure 4). Sixty-two 10x10-ft units forming a single block were excavated in this manner (Figure 5). In addition to these excavations, two 10x10-ft units excavated in 1984 were re-exposed.

The 1985 excavations at the Fredricks site exposed 30 archaeological features, including three human burials, another possible burial (not excavated), 13 pits, 10 shallow pits, basins, and depressions, one hearth, and one tree stump. Architectural features exposed during these excavations included approximately 100 ft of the palisade, the remains of three wall-trench structures, and approximately 1,337 additional postholes representing at least three additional structures and other unidentified architectural features (Figure 6). Only one of the wall-trench structures (Structure 5) was excavated. All postholes were systematically recorded but most were not excavated.

Excavation of features, burials, and Structure 5 was accomplished using trowels, grapefruit knives, brushes, and other small tools (Figures 7-8). Sunscreens, constructed of wooden frames and bedsheets, were erected over features during excavation to minimize the damage to feature contents by the summer sun. Feature fill was removed in natural zones, when evident, and all fill was waterscreened through sluice boxes having a sequence of 1/2-inch, 1/4-inch, and 1/16-inch wire mesh (Figures 9-10). This technique permitted the recovery of minute artifacts, including shell and glass beads, lead shot, small animal bones, and carbonized plant remains. Standard 10-liter soil samples from each zone of each feature were simultaneously processed by flotation to retrieve very small, extremely fragile carbonized seeds and

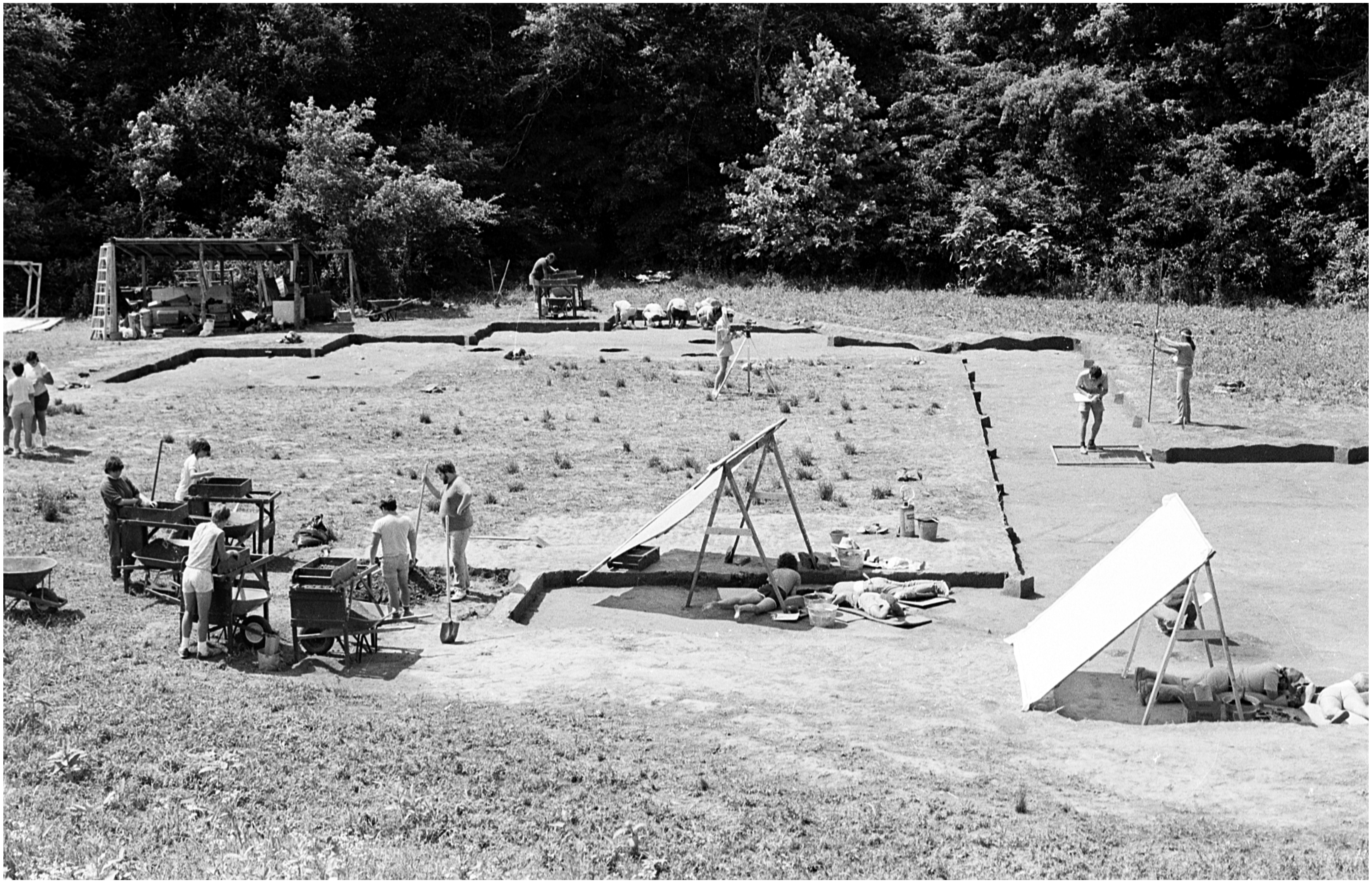

Figure 4. View of excavation showing removal of plowzone (left foreground), feature excavation (center and right foreground), taking elevations and mapping (center), and trowelling top of subsoil (background).

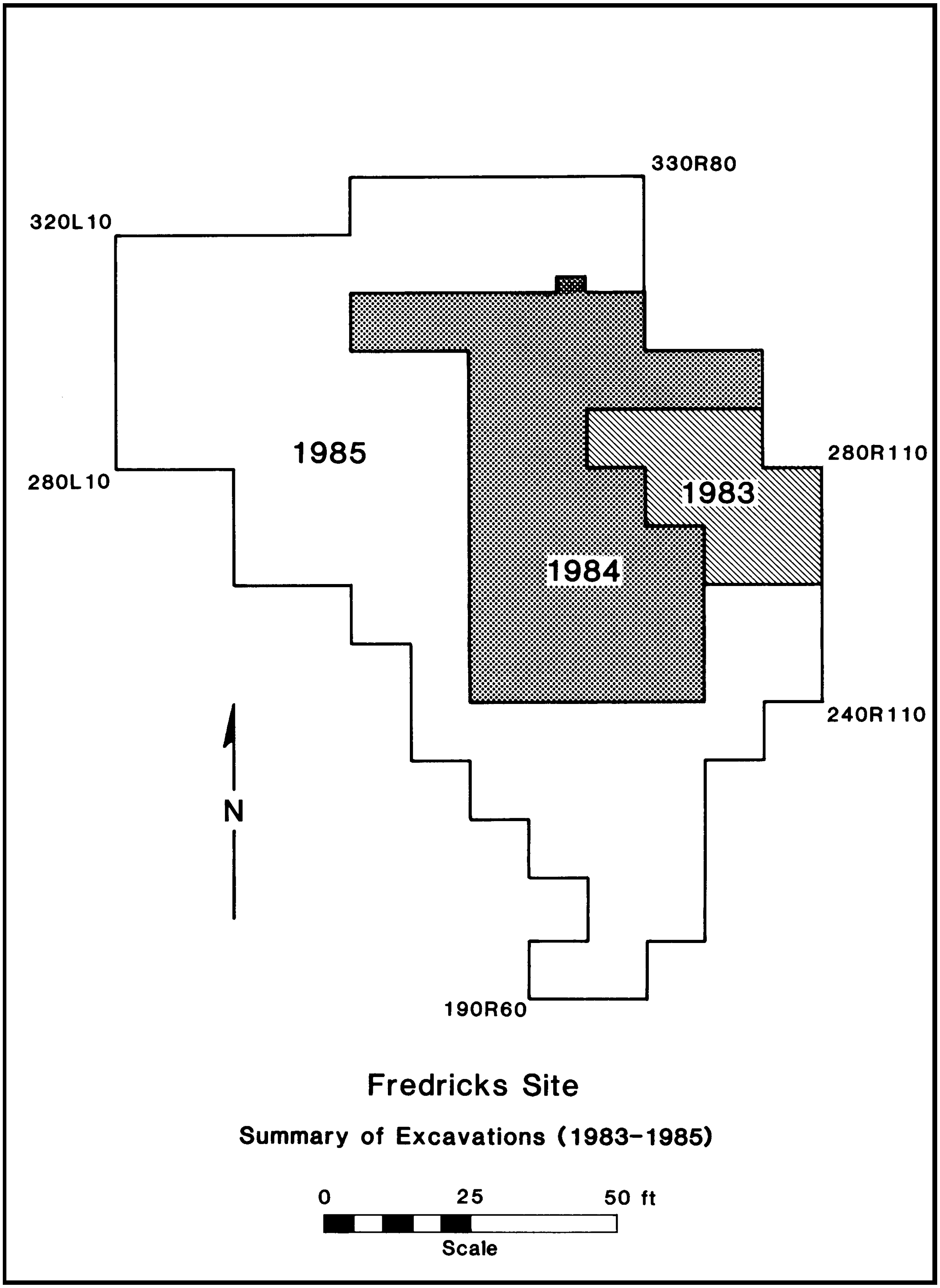


Figure 5. Area covered by 1983, 1984, and 1985 excavations.

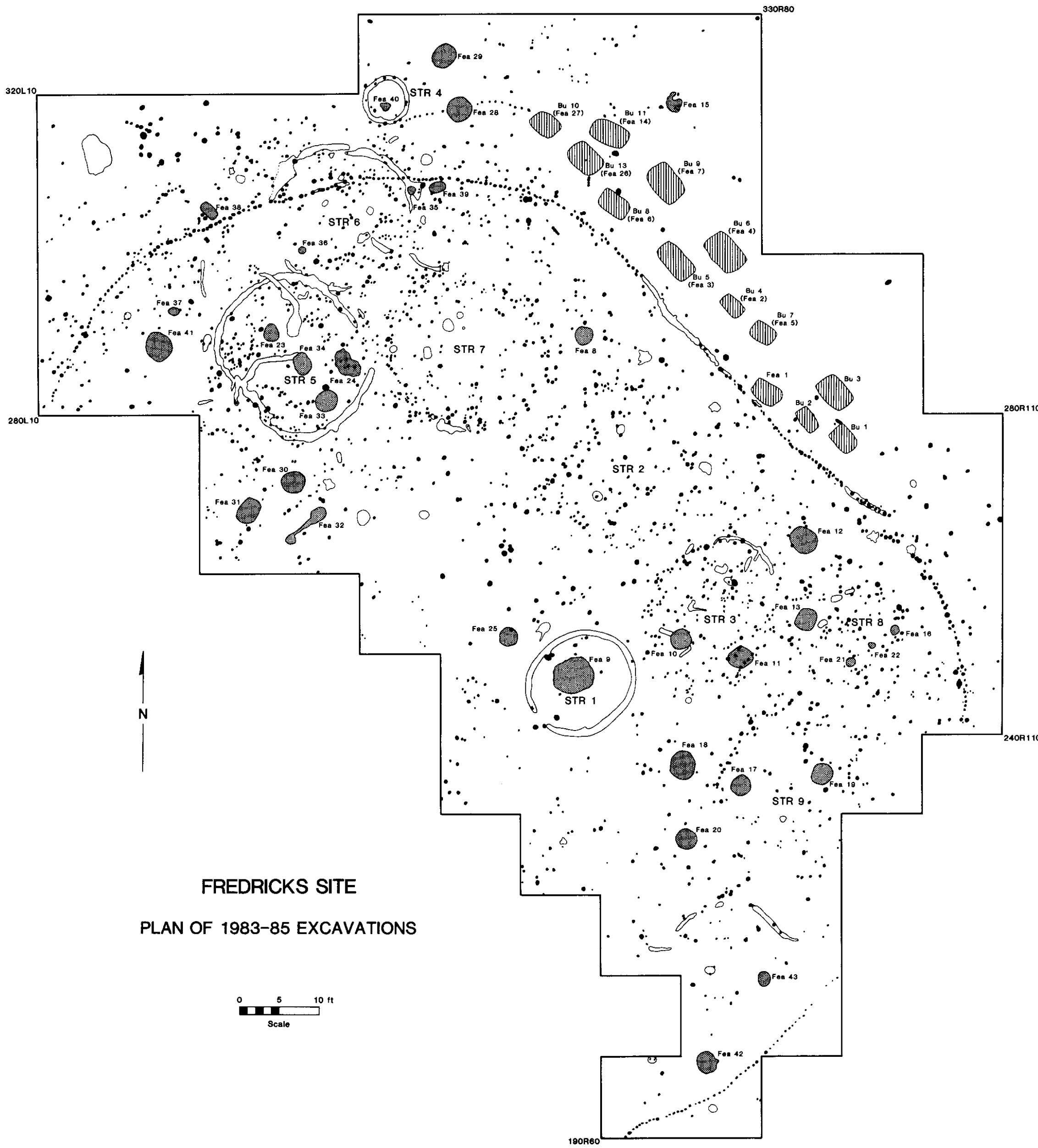


Figure 6. Fredricks Site Plan Showing the Results of 1983, 1984, and 1985 Excavations.

Figure 7. Excavating an archaeological feature.

Figure 8. Close-up of food scraps contained within feature fill.

Figure 9. Waterscreening feature fill.

Figure 10. Feature contents recovered by waterscreening.

plant parts that might otherwise be lost in the waterscreening (Figures 11-12). Elevations were taken following the removal of each soil zone of a feature in order to establish precise provenience for zone contents and to permit the calculation of soil volume.

After excavation, all features and burials were extensively documented by black-and-white and color photographs, and by drawings in profile and plan at a scale of 1 in=1 ft. Also, extensive notes were kept by all excavators in both field journals and on standardized feature and burial data forms.

Special care was taken with human burials to preserve the integrity of contextual relationships among human remains and burial furniture during excavation, and to provide exhaustive documentation of those relationships. In instances where burial remains (e.g., bones, bead clusters, and corroded metal artifacts) were too fragile or too complex to permit thorough cleaning and full documentation in the field, they were pedestaled and removed *in situ* to the conservation laboratory of the Research Laboratories where the remains could be carefully cleaned, documented, and preserved.

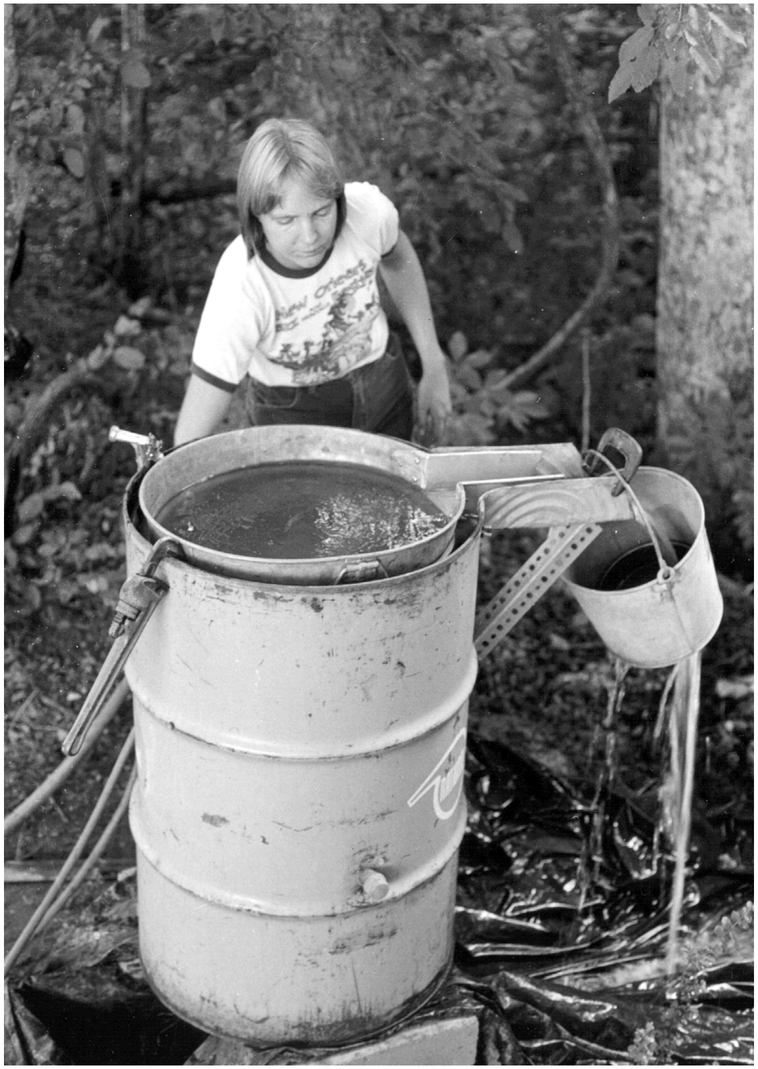

Figure 11. Use of flotation to recover small, fragile ethnobotanical remains.

Figure 12. Close-up of charcoal sample recovered by flotation.

# II

# BURIAL, FEATURES, AND STRUCTURES

**H. Trawick Ward**

## BURIALS

During the summer of 1985, three additional burials were located in the northwest end of the cemetery group uncovered during the 1983-84 field seasons (Table 1). These three burials represent the final interments within this cemetery, making a total of 12 plus one additional probable burial (Feature 1). In general, these burials conformed to the patterns established by those uncovered during the previous excavations. Although preservation was generally poor, all three were loosely flexed with their heads oriented to the southeast. The pits were rectangular in plan and usually had straight sides and flat bottoms.

### Burial 10 (Feature 27)

This burial, located at the northwestern end of the cemetery at 316.5R53.2, was aligned along a northwest-southeast axis like the other graves (Figures 13-14). The rectangular pit measured 3.5 ft x 2.8 ft and was 2.9 ft deep. At the base of the plowzone, the pit appeared as a rectangular stain of dark gray (10YR4/4) soil that contained numerous fragmented animal bones, pottery sherds, and small pebbles. This upper fill zone (Zone 1) was approximately 2 ft deep and covered a mottled orange clay (Zone II) with pockets of dark gray fill at the northeast and southwest ends of the pits. The mottled clay extended 0.9 ft to the floor of the pit where several patches of preserved matting were

Table 1. Summary of archaeological features at the Fredricks site.

| Feature/Burial Number | Excavation Season | Type | Center Location | Dimensions (ft) L | W | D |
|---|---|---|---|---|---|---|
| Bu. 1 | 1983 | Burial | 276.8R90.3 | 3.6 | 2.6 | 2.4 |
| Bu. 2 | 1983 | Burial | 279.3R85.8 | 3.1 | 2.6 | 2.1 |
| Bu. 3 | 1983 | Burial | 282.7R89.1 | 4.4 | 3.2 | 3.0 |
| Fea. 1 | 1983 | Burial? | 282.7R80.7 | 3.9 | 2.9 | 2.8 |
| Fea. 2/Bu. 4 | 1984 | Burial | 293.5R76.5 | 3.2 | 2.2 | 2.1 |
| Fea. 3/Bu. 5 | 1984 | Burial | 299.2R69.5 | 5.0 | 2.8 | 2.1 |
| Fea. 4/Bu. 6 | 1984 | Burial | 300.6R75.7 | 5.6 | 4.0 | 2.3 |
| Fea. 5/Bu. 7 | 1984 | Burial | 290.0R80.4 | 3.4 | 2.3 | 1.4 |
| Fea. 6/Bu. 8 | 1984 | Burial | 306.5R61.7 | 4.0 | 2.5 | 2.5 |
| Fea. 7/Bu. 9 | 1984 | Burial | 308.7R68.2 | 5.1 | 3.5 | 2.3 |
| Fea. 8 | 1984 | Tree Stump | 290.0R58.0 | 2.4 | 2.2 | 2.3 |
| Fea. 9 | 1984 | Fire Pit | 247.4R56.6 | 5.0 | 4.7 | 2.9 |
| Fea. 10 | 1984 | Storage Pit | 251.6R70.0 | 2.6 | 2.3 | 3.1 |
| Fea. 11 | 1984 | Pit | 249.5R77.4 | 3.0 | 2.4 | 1.5 |
| Fea. 12 | 1984 | Pit | 264.0R85.5 | 3.4 | 3.2 | 1.1 |
| Fea. 13 | 1984 | Pit | 254.0R85.7 | 2.8 | 2.4 | 1.5 |
| Fea. 14/Bu. 11 | 1985 | Burial | 315.2R66.2 | 4.9 | 3.1 | 3.1 |
| Fea. 15 | 1985 | Tree Stump | 318.8R69.3 | 2.6 | 1.5 | 1.4 |
| Fea. 16 | 1985 | Shallow Basin | 253.0R96.6 | 1.3 | 1.1 | 0.2 |
| Fea. 17 | 1985 | Storage Pit | 233.5R77.5 | 2.7 | 2.4 | 2.1 |
| Fea. 18 | 1985 | Pit | 236.3R70.3 | 3.3 | 3.3 | 0.9 |
| Fea. 19 | 1985 | Storage Pit | 234.5R87.6 | 2.7 | 2.6 | 2.4 |
| Fea. 20 | 1985 | Pit | 224.0R71.5 | 3.0 | 2.8 | 1.5 |
| Fea. 21 | 1985 | Shallow Depression | 248.9R91.1 | 1.2 | 1.1 | 0.1 |

Table 1 Continued.

| Feature/Burial Number | Excavation Season | Type | Center Location | Dimensions (ft) L | W | D |
|---|---|---|---|---|---|---|
| Fea. 22 | 1985 | Shallow Depression | 251.1R93.7 | 0.8 | 0.7 | 0.2 |
| Fea. 23 | 1985 | Pit | 291.1R20.0 | 2.2 | 1.9 | 1.5 |
| Fea. 24 | 1985 | Shallow Basin | 286.0R28.5 | 4.3 | 2.2 | 0.5 |
| Fea. 25 | 1985 | Shallow Basin | 252.2R48.5 | 2.3 | 2.3 | 0.6 |
| Fea. 26/Bu. 13 | 1985 | Burial | 312.0R58.0 | 4.6 | 3.2 | 2.3 |
| Fea. 27/Bu. 10 | 1985 | Burial | 316.5R53.2 | 3.5 | 2.8 | 2.9 |
| Fea. 28 | 1985 | Storage Pit | 318.0R42.5 | 3.2 | 3.2 | 3.0 |
| Fea. 29 | 1985 | Storage Pit | 324.7R40.7 | 3.0 | 2.8 | 3.4 |
| Fea. 30 | 1985 | Storage Pit | 271.5R21.5 | 2.9 | 2.8 | 2.2 |
| Fea. 31 | 1985 | Burial? | 267.5R16.0 | --Not Excavated-- | | |
| Fea. 32 | 1985 | Rodent Disturbance? | 266.0R23.0 | --Not Excavated-- | | |
| Fea. 33 | 1985 | Pit | 281.5R25.9 | 3.0 | 2.6 | 1.7 |
| Fea. 34 | 1985 | Hearth | 286.0R22.3 | --Not Excavated-- | | |
| Fea. 35 | 1985 | Cob-Filled Pit | 307.8R36.6 | 0.9 | 0.8 | 0.6 |
| Fea. 36 | 1985 | Cob-Filled Pit | 300.4R22.3 | 1.8 | 0.9 | 0.3 |
| Fea. 37 | 1985 | Shallow Basin | 292.6R07.0 | 1.8 | 1.0 | 0.5 |
| Fea. 38 | 1985 | Shallow Basin | 305.5R11.5 | 2.5 | 1.3 | 0.3 |
| Fea. 39 | 1985 | Shallow Basin | 308.2R39.8 | 2.1 | 1.6 | 0.7 |
| Fea. 40 | 1985 | Shallow Basin | 318.5R33.5 | 1.3 | 1.0 | 0.2 |
| Fea. 41 | 1985 | Storage Pit | 288.5R05.0 | 3.5 | 3.2 | 1.9 |
| Fea. 42 | 1985 | Pit? | 198.0R73.0 | --Not Excavated-- | | |
| Fea. 43 | 1985 | Pit? | 209.5R80.5 | --Not Excavated-- | | |

Figure 13. Burial 10.

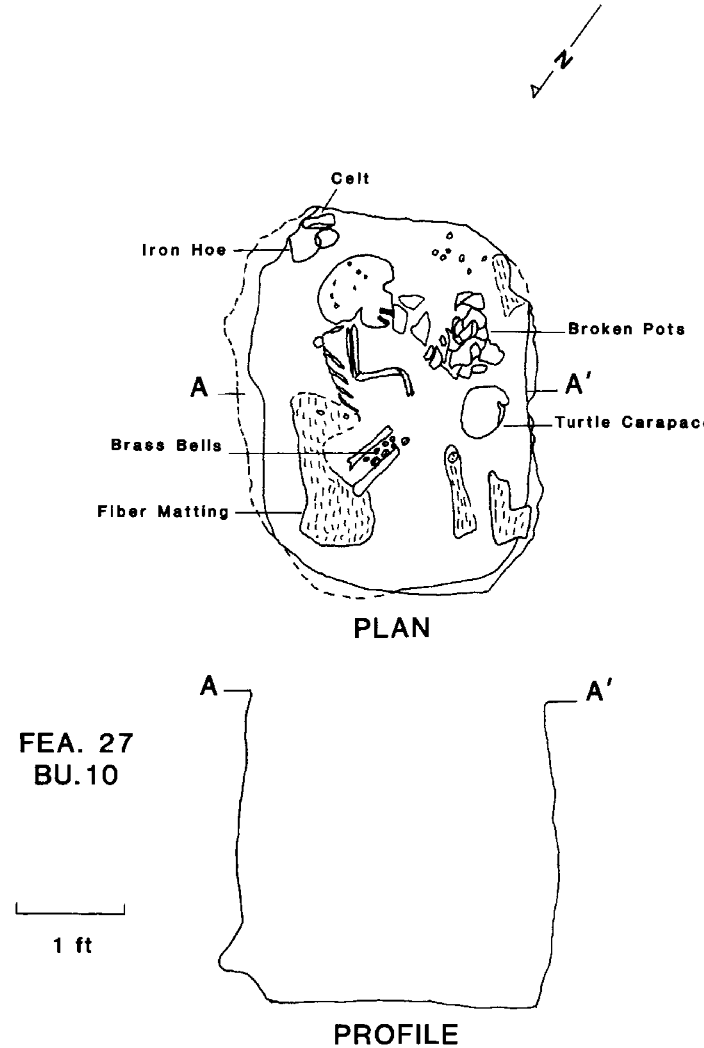


Figure 14. Plan and Profile of Burial 10.

encountered. The walls of the pit were straight and the bottom was flat.

The poorly preserved skeletal remains in Burial 10 were from a sub-adult, 4-5 years of age at the time of death. The body was loosely flexed and lying on its left side. Artifacts accompanying the burial included a cluster of three broken aboriginal ceramic vessels just west of the skull. Three lead shot were found beneath the sherd matrix. A concentration of white, red, and blue trade beads were found near the skull in the area of the pots, and there were white trade beads on the skull itself. Immediately southeast of the skull, lying together, were a greenstone celt and an iron hoe blade. South of the body was a turtle carapace cup, and lying between the legs were nine brass bells. In addition to the artifacts, there were large patches of fiber matting along the bottom of the pit, indicating that the individual was wrapped prior to interment.

Burial 11 (Feature 14)

This burial pit, measuring 4.9 ft x 3.1 ft x 3.1 ft deep, was first observed as a dark brown (10YR3/3) ashy clay loam stain containing numerous animal bones, charcoal, pebbles, and pottery sherds (Figures 15-16). It was located northwest of Burial 9 at 315.2R66.2. The upper fill, labeled Zone I, was 1.1 ft thick. Beneath Zone I was Zone II, a brown mottled orange (7.5YR5/6) clay loam that contained lenses of mottled clay. The northwest two-thirds of Zone II contained a large amount of burned animal bone, charcoal, and other organic matter and was similar to Zone I. The southeast one-third of the zone, however, was comprised of an almost sterile mottle clay fill. The bottom zone, Zone III, was a mottled dark loam with orange clay lenses. It was 0.5 ft

Figure 15. Burial 11.

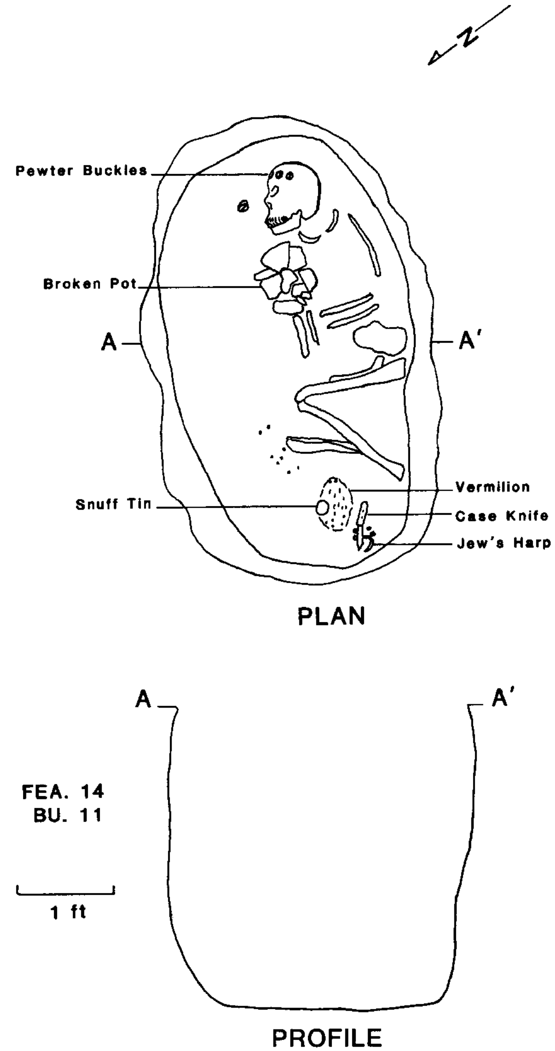


Figure 16. Plan and Profile of Burial 11.

thick and surrounded the body. Three of the pit walls sloped inward to intersect the flat pit bottom, however, the northwest wall was undercut slightly near the floor.

The poorly preserved skeleton was of a young adult of indeterminate sex, between 15 and 17 years old at death. The body was loosely flexed and lay on its right side. Several artifacts associated with the burial were in clusters and appear to represent separate bundles or containers. The first cluster, located near the feet, contained several Cornaline d'Aleppo beads, vermillion and red lead, wire C-bracelets, and a snuff tin. An adjacent cluster contained a case knife, two Jews harps, and lead shot. A cluster of Cornaline d'Aleppo beads was located adjacent to the right knee. In addition to the artifact clusters, four pewter buckle frames were found on and near the skull (possibly part of a head band) and a large cord-marked ceramic bowl lay near the chest.

Burial 13 (Feature 26)

Burial 13 was located adjacent to Burial 11 at 312.0R58.0 (Figures 17-18). As with the other burials in the cemetery, the pit was rectangular in plan; it measured 4.6 ft x 3.2 ft x 2.3 ft deep. At the top of the subsoil, the pit appeared as a stain of mottled gray-brown soil with lenses of orange clay (Zone I). This zone was 0.8 ft thick. In contrast to the upper fill zones in most of the cemetery burials, Burial 13 contained only a few poorly preserved animal bones and not many artifacts. Perhaps the feasting activities (Ward 1985) associated with this interment were not as elaborate or intense as was characteristic of many of the burials. Beneath Zone I was an almost sterile mottled clay layer approximately 1.0 ft thick (Zone II). The final zone, Zone III, averaged 0.5 ft thick, had a clay-like consistency, and

Figure 17. Burial 13.

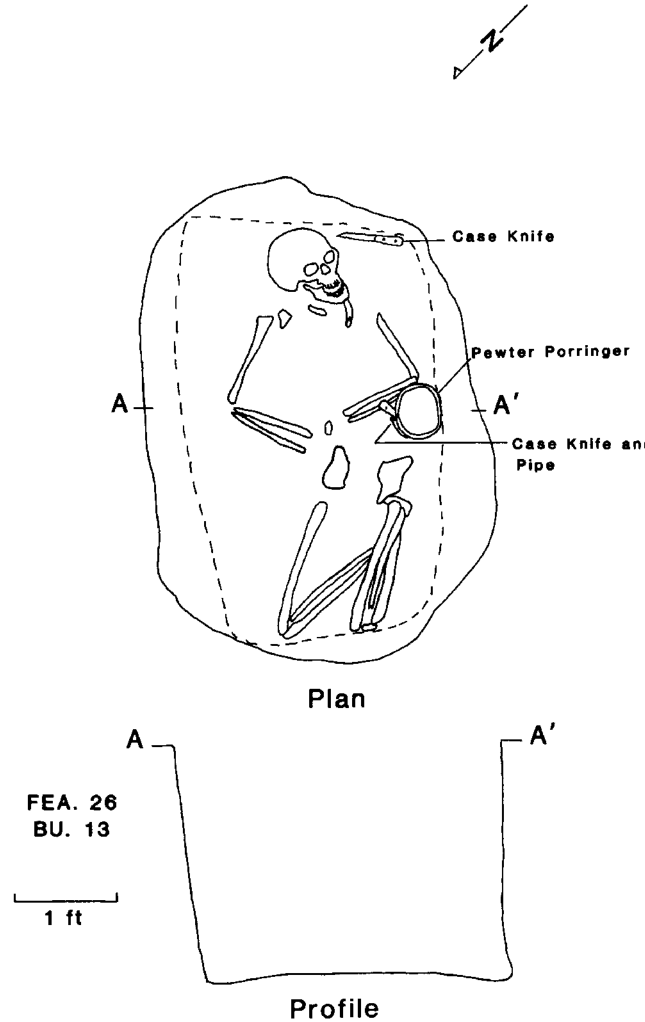


Figure 18. Plan and Profile of Burial 13.

was very similar to Zone II. Although there were few artifacts, all the zones contained a large number of pebbles and rock chips. The pit walls were straight but sloped inward slightly to join the flat bottom.

The skeleton was that of an adult male, 35-40 years old at death. It was loosely flexed and placed on its right side. Bone preservation was generally poor. A small cluster of artifacts, including a bone-handled case knife, pewter porringer, and a kaolin pipe, lay adjacent to the left lower arm. A second bone-handled case knife was located near the skull, in front of the face. These were the only artifacts associated with the burial other than small bits of vermillion in the soil around the skull.

## FEATURES

In 1985, the number of non-burial features increased greatly over 1983-84. A total of 23 were excavated (Table 1). Five additional features were mapped and augered to determine depth but were not excavated. For descriptive purposes, the non-burial features are grouped into five broad categories based primarily on size and shape. Each of the categories are discussed in general, and then individual features within each category are described in detail.

### Storage Pits

Six of the features excavated during l985 (Features 17, 19, 28, 29, 30, and 41) are interpreted as having functioned as storage pits. Features 17 and 19 were located within Structure 9 at the southeastern end of the village. Features 30 and 40 were located just west of Structure 5. Feature 30 does not appear to be associated with the Historic period occupation. In addition to an apparent absence of

Euroamerican artifacts, the pottery from this feature was mostly net impressed, indicating a late prehistoric cultural affiliation. Features 28 and 29 were both located outside the village palisade and just northeast of Structures 4 and 6. The location of these pits and the paucity of Euroamerican artifacts within their fill may indicate that they date to an initial period of Occaneechi settlement, preceding the establishment of the palisaded village.

All of these features contained moderately rich assemblages of artifacts and subsistence remains, and provide substantial new information for studying domestic activities at the site.

Feature 17. This almost circular pit was located at 233.5R77.5. It measured 2.7 ft x 2.4 ft and was 2.1 ft deep (Figure 19). In profile, the pit was barrel-shaped with walls that sloped slightly inward at the top and bottom. The pit fill consisted of three zones. The upper zone (Zone I) was about one foot thick and contained dark brown loam with charcoal. Scattered throughout this zone, there were also pockets of orange-yellow clay. Beneath Zone I was a thick (1.1 ft) layer of gray ashy soil (Zone II) which extended to the bottom of the pit. This soil was loosely packed, damp, and contained a large number of animal bones and artifacts (e.g., glass trade beads, lead shot, charcoal, a pipe bowl, a case knife, an ember tender, stone and pottery disks, numerous potsherds, a hammerstone, a chunkey stone, and flakes and projectile points. This storage pit had been backfilled in at least two episodes of refuse disposal.

Feature 19. This roughly circular pit was centered at 234.5R87.6. It measured 2.7 ft x 2.6 ft and was 2.4 ft deep (Figure 20). At the top of the subsoil, feature edges were diffuse. The fill at the subsoil surface was divided into three zones. Zones I and II consisted of small

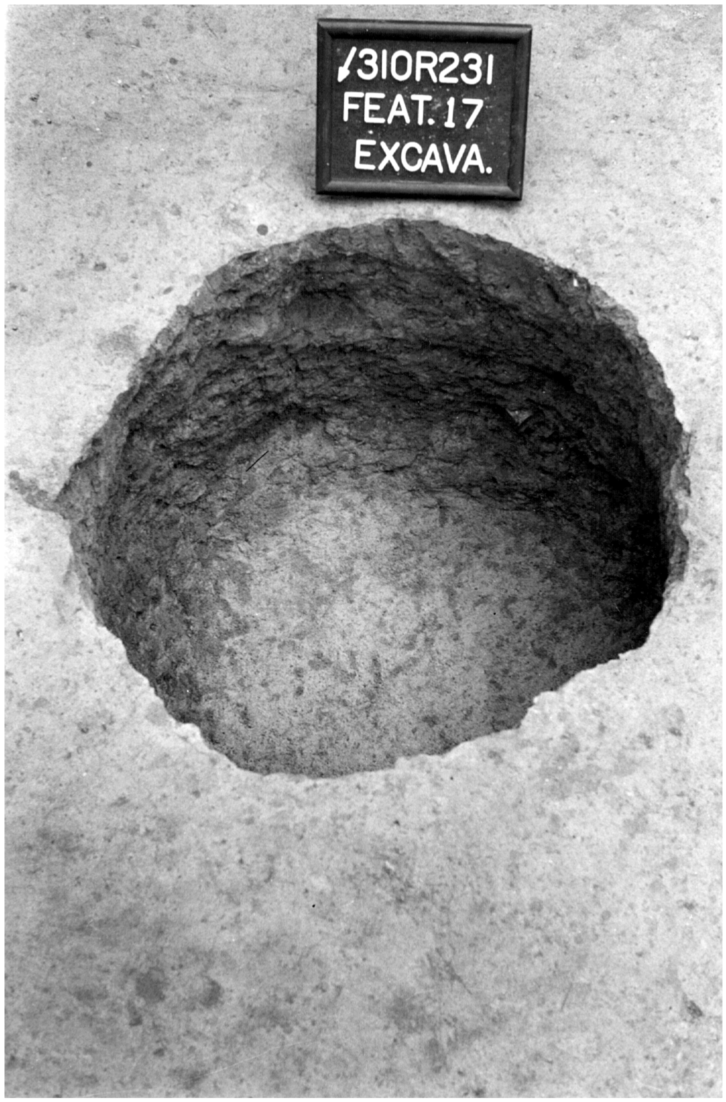


Figure 19. Feature 17.

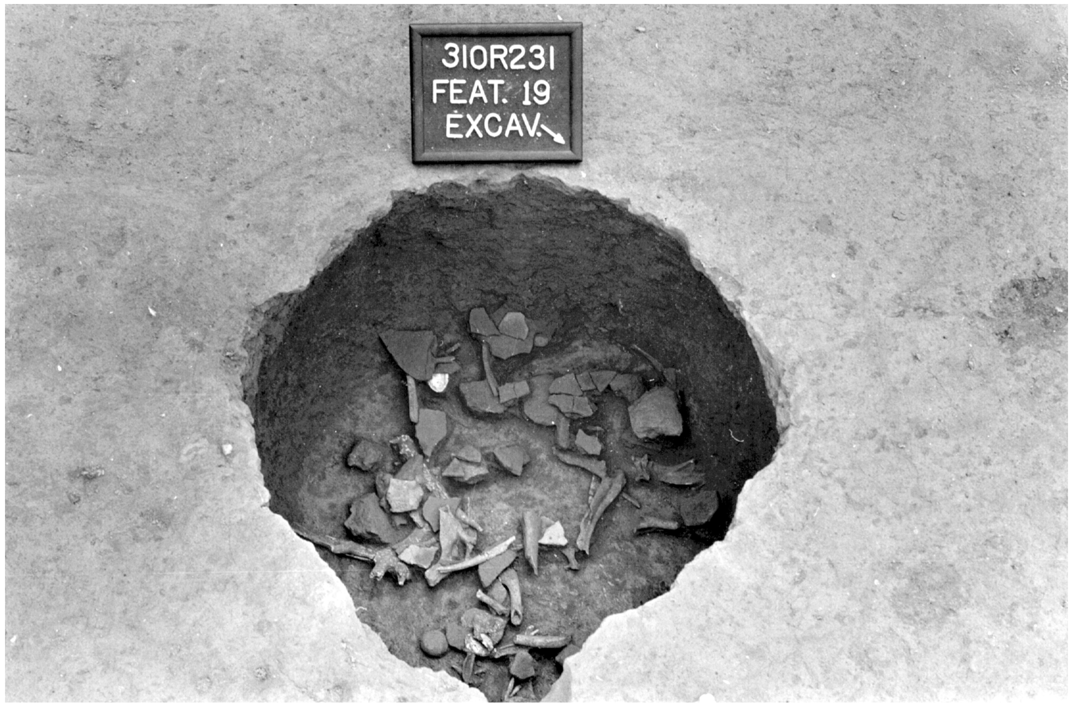


Figure 20. Feature 19.

pockets of yellowish brown mottled clay and brownish yellow mottled clay respectively. The bulk of the surface fill was designated Zone III and was comprised of dark yellowish brown loam. This zone was approximately 0.6 ft thick. It lay over Zone IV which extended to the bottom of the pit. Zone IV contained mixed lenses of orange mottled clay with pockets of gray to dark brown ashy soil. The bottom of the pit was lined with a layer of trash including half a deer rack, a hammerstone, shells, beads, pottery sherds, rocks, and animal bones. The feature was barrel-shaped in profile with walls that expanded toward the middle and sloped inward at the top and bottom.

Feature 28. This feature lay northwest of the row of burials and was originally suspected to be a burial (Figure 21). It was circular with a diameter of 3.2 ft and a depth of almost 3.0 ft. It was located at 318.0R42.5. At the base of the plowzone, the feature appeared as a circle of dark brown (7.5YR3/2) loam (Zone I) with flecks of charcoal and animal bone fragments. The outer edges were not well defined as the soil here was lighter in color and more mottled. In the middle of the feature the soil was very moist and somewhat ashy. Zone I contained burned and unburned animal bones, beads, a pipe stem, and other artifacts. At approximately 1.2 ft, Zone I changed to a lighter brown (10YR3/4) soil with clay. This was labeled Zone II. A large number of bear bones were noted at the intersection of Zones I and II; however, as the depth of Zone II increased, the amount of bone in general decreased and preservation deteriorated. Beneath Zone II was a dome-shaped layer of brown (7.5YR5/6) mottled clay, labeled Zone III. This zone averaged 0.8 ft thick and extended to the bottom of the pit. Zone III contained relatively little cultural material. The floor of

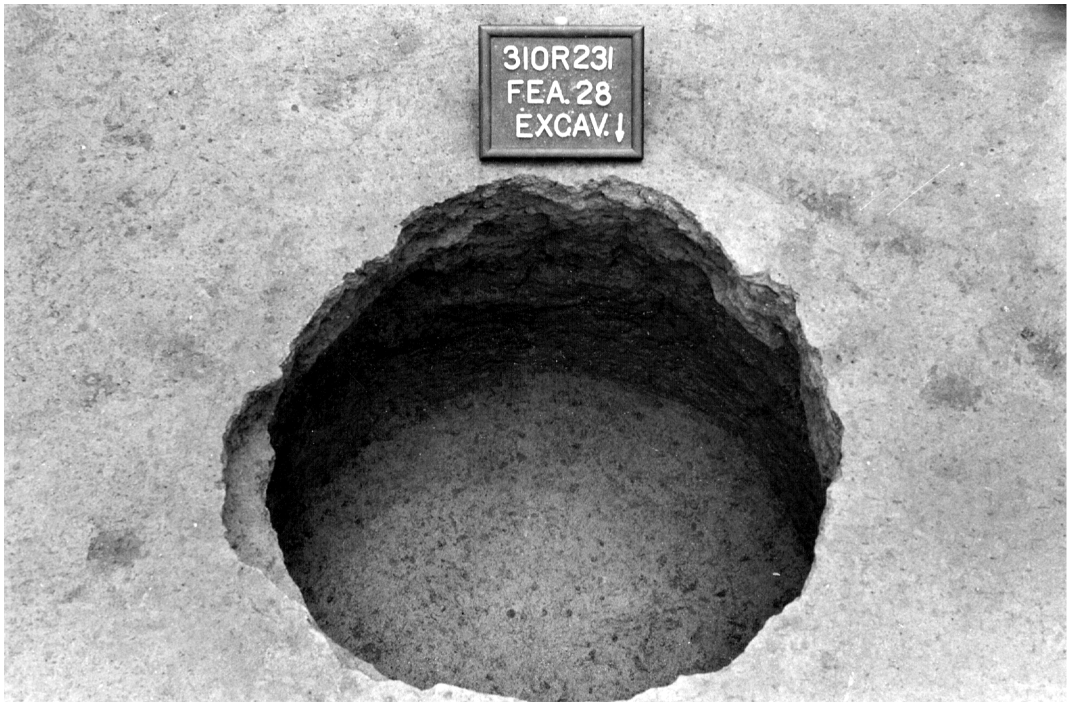


Figure 21. Feature 28.

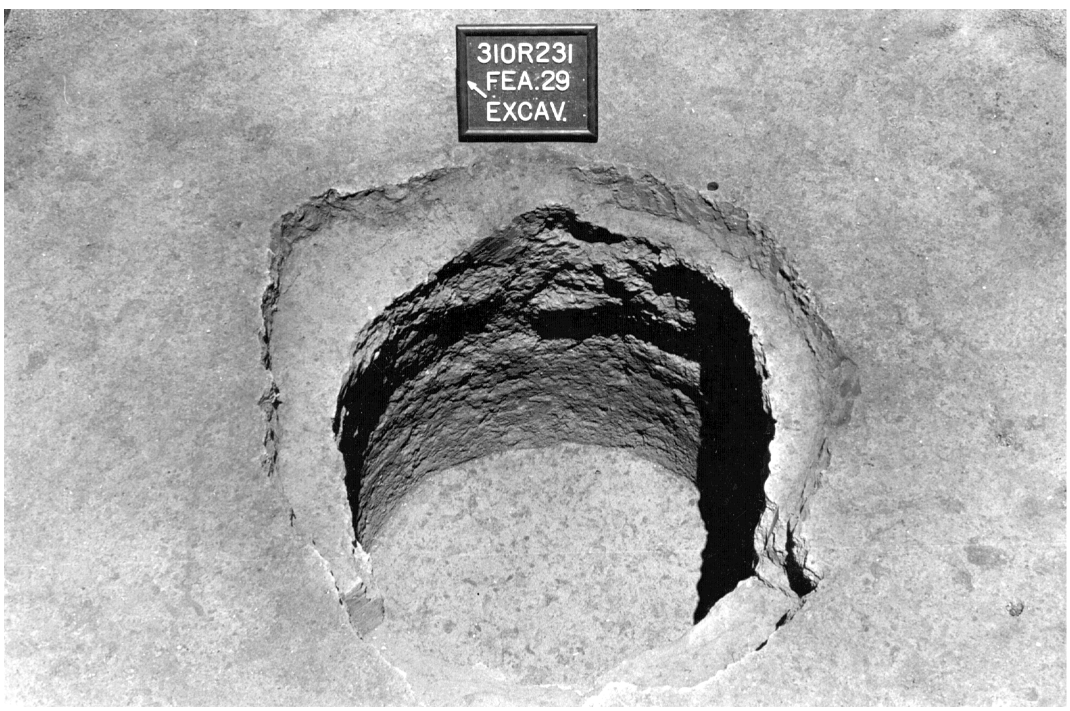


Figure 22. Feature 29.

the pit was flat and the walls flared outward at the bottom to create a bell-shaped profile.

Feature 29. This circular feature lay approximately 5 ft north of Feature 28 and 7 ft northeast of Structure 4 (Figure 22). It was also located northwest of the burial pits and just outside the village palisade. It was centered at 324.7R40.7 and measured 3.0 ft x 2.8 ft x 3.4 ft in depth. The center portion of the pit was defined at subsoil by a circular zone (Zone I) of very dark grayish brown (2.5Y3/2) clay loam with animal bones and charcoal. Surrounding Zone I was a collar of mottled orange brown (7.5YR5/6) clay, Zone II. When this zone was excavated it created a shallow shelf surrounding the perimeter of the pit. Zone II probably represents a transitional soil band that extended beyond the actual, original pit wall. Animal bone was concentrated in the center of Zone I and increased at the interface between Zones I and III, which was differentiated from Zone I by an ashy lens. Zone I averaged 1.3 ft in thickness. Zone III which consisted of a reddish brown (2.5Y3/2) ashy loam with animal bone and charcoal averaged 0.8 ft thick. Zone III lay atop Zone IV, a relatively thin (0.3 ft thick) band of yellowish red-brown (5YR4/6) mottled clay loam containing charcoal and animal bones. Zone IV, in turn, rested on a band (0.6 ft thick) of soil similarly colored (5YR5/6) to Zone IV except that it contained light ash at the northern edge of the pit. The final zone, Zone VI, was defined by a yellowish red (5YR5/8) mottled clay with brown loam. It was 0.4 ft thick. The final four zones were very similar in fill characteristics and probably could be considered together as a single depositional episode. The pit walls bowed out in the center creating a barrel-shaped profile. The pit floor was flat. In general, the amount of animal bone increased with the depth of the pit. Bear and deer bones were noted, and an unusual number of scapulae appeared to be represented.

Feature 30. This almost circular feature measured 2.9 ft x 2.8 ft and was 2.2 ft deep (Figure 23). It was centered at 271.3R21.5, directly south of Structure 5 and northeast of Feature 31. At subsoil, the pit appeared as a circle of dark brown (10YR3/3) loam with sherds, rocks, and animal bone. This fill zone also contained pockets of ash and yellow sandy clay. This zone (Zone I) was approximately 1.5 ft deep and lay atop Zone II which was similar to Zone I except that it had a more reddish hue (7.5YR4/4). Zone II also contained less cultural material than Zone I and was approximately 0.7 ft thick. The pit sides were straight and the bottom flat.

Feature 41. This roughly circular features was located at 288.5R5.0, 5 ft west of Structure 5 and 2.5 ft southwest of Feature 37. It measured 3.5 ft x 3.2 ft and had a maximum depth of 1.9 ft. At subsoil, the feature appeared as a circular stain of dark brown (10Y/R3/4) organic fill (Zone I) with animal bones, pottery, and charcoal. A metal pipe bowl liner, glass beads, and clay pipe fragments also were found. A concentration of burned and unburned animal bones was located near the bottom of this zone. Several large rocks and sherds were also associated with the burned bones. A second zone, Zone II, comprised of mottled yellowish/orange clay, was noted along the pit walls on the northern and southwestern sides of the feature. Underlying Zones I and II, was Zone III, a reddish brown (5YR4/4) ashy loam with charcoal, burned clay, burned bone, and pottery. This zone was particularly rich in botanical and zoological remains. It also contained an iron axhead, several pipe fragments, fire-cracked rocks, glass beads, and an ivory rosary bead. Zone I was 1.2 ft thick, whereas Zone

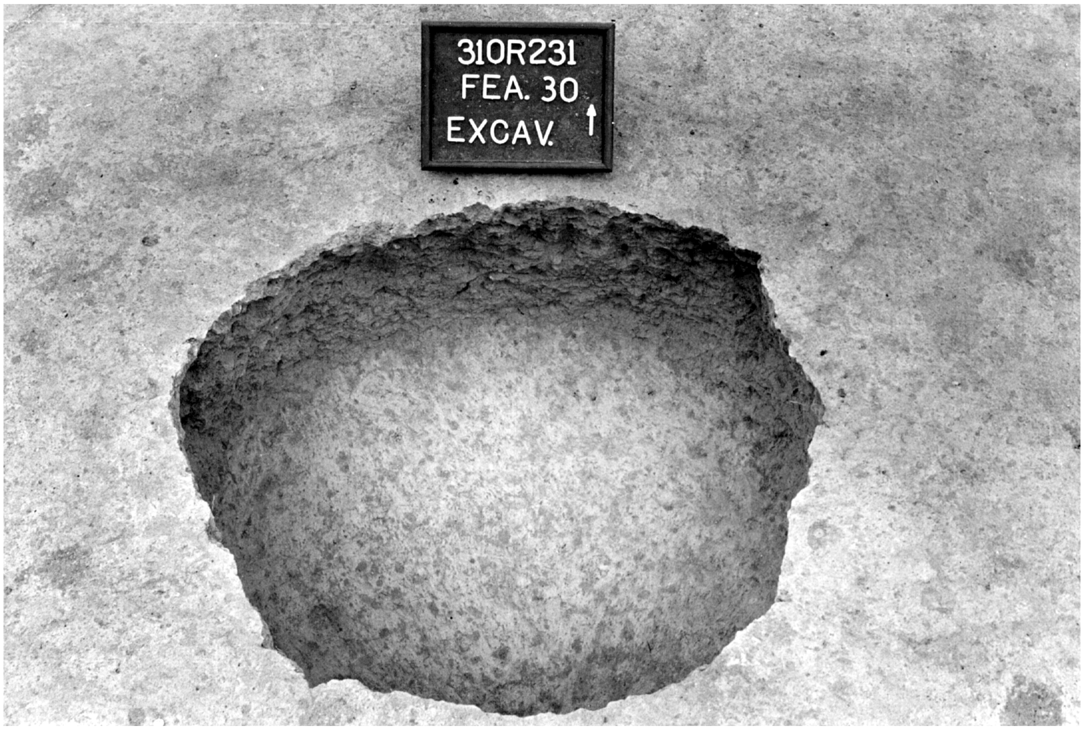


Figure 23. Feature 30.

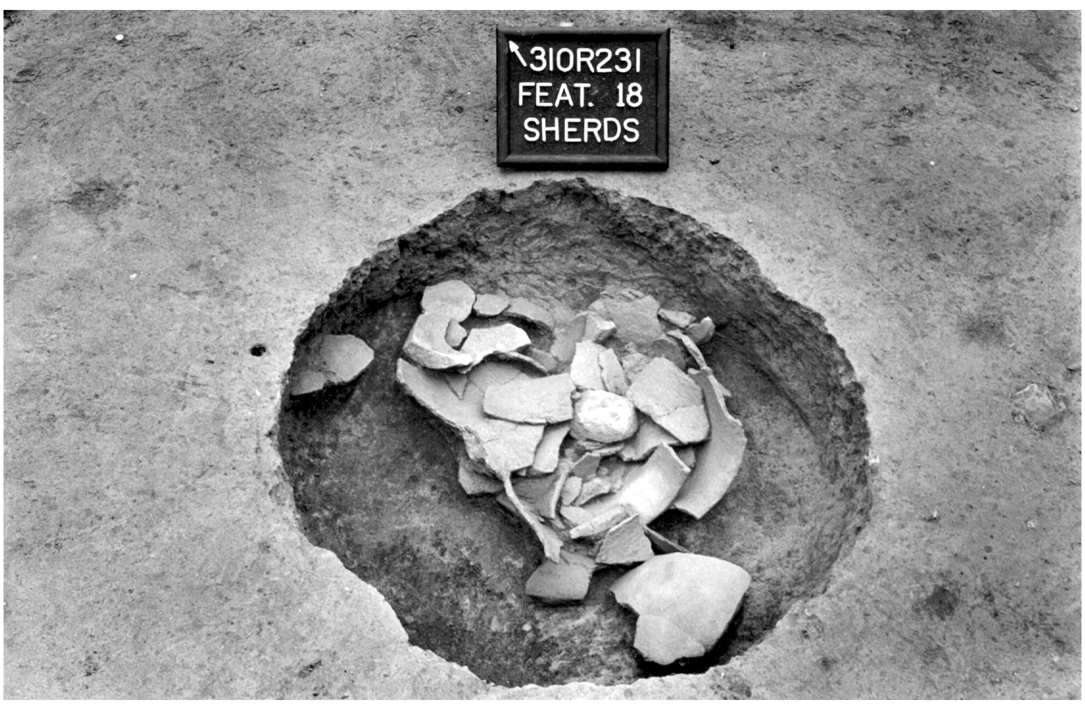


Figure 24. Feature 18.

III averaged 0.7 ft thick. Pit walls were straight and the bottom flat.

Pits

In addition to storage pits, four other pit features (Features 18, 20, 23, and 33) were excavated. These also may have served as storage facilities; however, their shallow depths make functional interpretation less certain. Features 18 and 20 may be associated with Structure 9, and Features 23 and 33 were located inside Structure 5. All of these features contained numerous artifacts. Feature 18 was particularly interesting in that it contained a heavy concentration of potsherds including sections of three large simple-stamped and checked-stamped jars.

Feature 18. This circular pit was centered at 236.5R70, north of Feature 20, northwest of Feature 17, and northwest of Feature 19 (Figure 24). It measured 3.3 ft in diameter and was 0.9 ft deep. The walls curved inward to a flat bottom. The fill at the base of the plowzone was noticeably different from that of neighboring features. The latter were defined by a homogeneous dark brownish black loam at the top of the subsoil, whereas Feature 18 was defined by a heterogeneous brown loam (Zone I) with flecks of orange clay, charcoal, and bits of ash. At the bottom of Zone I was a layer of large potsherds, representing three vessels. These lay on top of a thin band of dark charcoal. Interspersed among the potsherds were numerous fragments of a large grinding or polishing stone. Postholes were noted at the bottom of the pit along with a small depression (0.3 ft in diameter) filled with charcoal.

Feature 20. This circular feature measured 3.0 ft x 2.8 ft and had a maximum depth of 1.5 ft (Figure 25). It was located at 224.0R71.5. At subsoil, the pit appeared as a circular patch of dark gray soil with

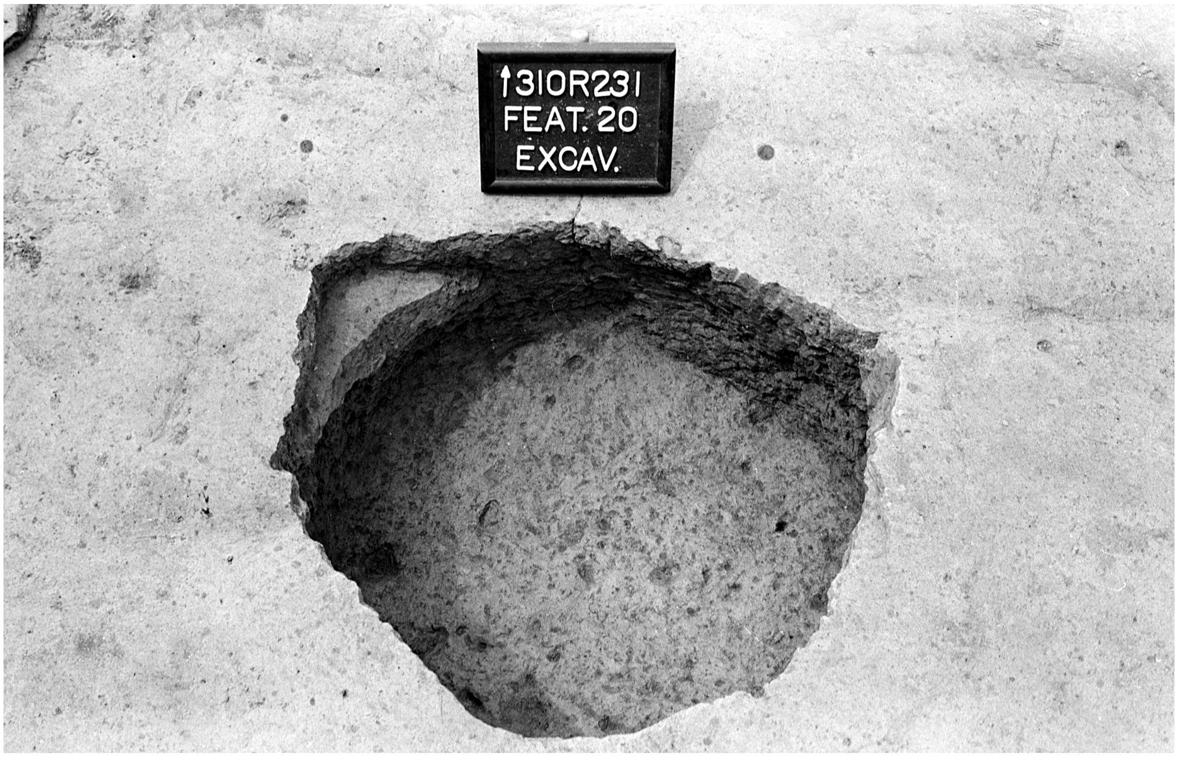


Figure 25. Feature 20.

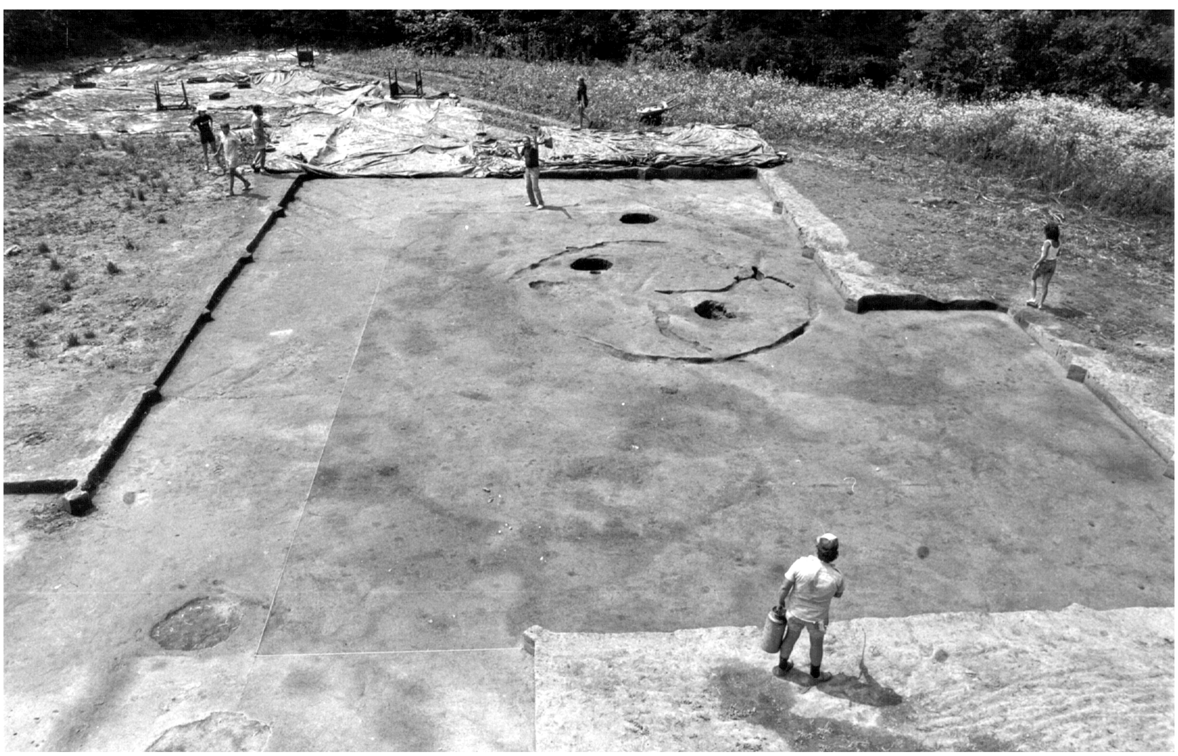

Figure 26. Structure 5 (excavated) and Structure 6 (unexcavated in foreground) at top of subsoil.

flecks of charcoal and a few fragments of burned clay. This soil was designated Zone I. During excavation, two turtle carapaces and a deer mandible were recovered from Zone I, which lay atop a brown sandy loam designated Zone II. The eastern half of this zone was harder, drier, and contained some orange clay mottled soil. Pockets of gray ash also were noted. As Zone II was excavated, the density of animal bones increased, with the greatest concentration occurring near the pit floor. Large sherds, glass beads, and lead shot were also recovered. The pit had a slight bell-shaped profile, with the wall, particularly along the eastern edge, sloping outward at the pit bottom.

Feature 23. This feature was located at 291.1R20.0 and measured 1.9 ft x 2.2 ft and was 1.5 ft deep. At subsoil, the pit displayed an irregular shape due to plow smearing. Fill consisted of a dark brown (75YR4/4) loam that contained charcoal, animal bones, lead shot, and trade beads. There was also a thin lens of sandy soil in the northeast quadrant of the feature.

Feature 33. At subsoil, this feature had a fuzzy outline that appeared somewhat square. It measured 3.0 ft x 2.6 ft x 1.7 ft deep and was located within Structure 5 at 281.5R25.9. A posthole intruded into the northern edge and was included as part of the feature excavation. The posthole fill was designated Zone I and was a reddish brown loam with charcoal and animal bones. The main fill of the feature was a dark reddish brown (5YR3/4) ashy loam (Zone II) with charcoal, daub, and animal bones. This zone averaged 0.7 ft thick and rested upon Zone III which was similar to Zone II but more heterogeneous. In addition to the dark reddish brown loam Zone III also contained lenses of sandy ashy loam, brown yellow (10YR6/6) sand and brown (7.5YR5/8) sandy clay. Zone

III averaged approximately 1.0 ft thick. The pit walls were irregular with some insloping as well as undercutting.

## Shallow Basins

Seven shallow basins (Features 16, 24, 25, 37, 38, 39, and 40) were excavated. These features were mostly oval in plan, shallow, and lacked distinct pit walls. The function of these features is undetermined. Feature 16 was located within Structure 8; Feature 24 lay within Structure 6; and Feature 40 was located inside Structure 4. Associations for the other shallow basins are indeterminate. Most of these features contained only a small number of artifacts.

Feature 16. This was a small, shallow circular pit measuring 1.3 ft x 1.1 ft x 0.2 ft deep and located at 253.0R96.6. At subsoil, the pit appeared as a stain of reddish brown (5YR4/4) sandy loamy soil (Zone I). Animal bones and a lead bale seal were recovered from the top of the feature. Charcoal flecks and potsherds were also present, along with a single trade bead.

Feature 24. This feature was located at 286.0R28.5 and was evident at the top of the subsoil as a large oval stain measuring 4.3 ft x 2.2 ft; it had a maximum depth of only 0.5 ft. An apparent intrusion at the northwest end of the feature was excavated first. The fill in this intrusion was a dark yellowish brown (10YR4/4) soil which contrasted with the grayish tan fill of the remainder of the feature. Flecks of charcoal and small bits of red clay were noted throughout the fill.

Feature 25. This shallow circular basin measured 2.3 ft in diameter and was 0.6 ft deep. It was centered at 252.2R48.5. The fill consisted of a sandy, bright yellow (10YR5/6) soil that was homogeneous and sterile except for small flecks of charcoal. The pit walls sloped inward at the bottom to create a conical profile.

Feature 37. This oval basin-shaped feature was located at 292.6R7.0 and measured 1.8 ft x 1.0 ft x 0.5 ft in depth. It was aligned on a northeast-southwest axis with Features 35 and 36. The fill consisted of an almost sterile brown (10YR3/3) organic soil with some orange mottling.

Feature 38. This feature was a shallow ovoid pit centered at 305.5R11.5. It measured 2.5 ft x 1.3 ft and had a maximum depth of 0.3 ft. It was located immediately outside the palisade. The fill consisted of swirls of mottle clay (10YR4/6) with some charcoal flecks. It contained a glass bead, a few potsherds, and animal bones. The sides sloped inward in all directions, creating a conical profile.

Feature 39. This was an irregularly, shallow oval basin located at 308.2R39.8. It measured 2.1 ft x 1.6 ft and had a maximum depth of 0.7 ft. It appeared at the top of subsoil as a patch of dark yellowish brown (10YR3/4) soil. This soil, which continued to the bottom of the pit, contained a few large potsherds, quartz core material, animal bone, chert flakes, and charcoal. Pit walls sloped slightly inward, giving the feature a basin shape.

Feature 40. This was a small shallow basin measuring 1.3 ft x 1.0 ft x 0.2 ft deep. It was centered at 318.5R33.5. Fill consisted of a slightly mottled orange and brown (10YR5/8) loam with small amounts of charcoal. The sides sloped inward creating a basin-shaped profile. This feature was located inside Structure 4 and appears to be associated with it.

Shallow Depressions

Features 21 and 22 were classified as shallow depressions and consisted of little more than dark stains at the top of subsoil. They were only 0.1-0.2 ft deep and probably represent the bottoms of either large postholes or small basins. Both were situated within Structure 8.

Feature 21. This was a small shallow depression, roughly circular, measuring 1.2 ft x 1.1 ft and only 0.1 ft in depth. It was located at 248.9R91.l. It was intruded by a small posthole at its northeastern edge. Pitfill consisted of a dark yellowish brown (10YR4/4) sandy loam with only a small amount of charcoal.

Feature 22. This small circular feature, very similar to Feature 21, measured 0.8 ft x 0.7 ft and was 0.2 ft deep at its maximum depth. The pitfill was a sterile yellowish red (5YR4/6) sandy loam.

Miscellaneous Features

Other features excavated at the Fredricks site during 1985 include two charred corncob-filled pits (Features 35 and 36) in the vicinity of Structure 6 and a relict (probably burned) tree stump (Feature 15) located just northeast of the cemetery. Features 35 and 36 were aligned with Feature 37 along a northwest-southeast axis paralleling the northern section of the palisade, and running between Structures 5 and 6. All three contained large quantities of charcoal and Features 35 and 36 contained fragments of charred corncobs. All three may have functioned as hide-smoking facilities. Features mapped but not excavated include: a hearth stain (Feature 34) associated with Structure 5; one possible burial (Feature 31); two probable pits (Features 42 and 43); and one probable rodent disturbance (Feature 32).

Feature 15. This tree stump was located at 318.8R69.3. Its maximum dimensions were 2.6 ft x 1.5 ft and a depth of 1.4 ft. The feature was observed at the top of the subsoil as an irregular reddish brown (5YR4/3) loamy stain (Zone I) with small patches of yellowish red (5YR5/6) mottled clay in the southeast corner and along the northeast edge. Flakes of charcoal and small pebbles were noted in the top portion of Zone I. The fill quickly changed into a reddish yellow clay. This zone was devoid of artifacts although flecks of burned clay were encountered near the bottom of the pit. The irregular configuration of the feature continued as it was excavated, and the bottom was uneven with several cone-shaped depressions representing root channels.

Feature 35. This cob-filled pit was located at 307.8R36.6, measured 0.9 ft x 0.8 ft, and was roughly circular in outline. Maximum depth was 0.6 ft. It was the northernmost of three small pits (Features 35, 36, and 37) aligned northeast-southwest. The fill was a mottled orange (10YR5/6) with dense charcoal comprised of wood and corncobs. The pit was conical in profile.

Feature 36. This was a small, irregular, cob-filled pit measuring 1.8 ft x 0.9 ft x 0.3 ft in depth. Fill consisted of a mottled orange-and-brown (10YR5/8) loam with charcoal and charred cob fragments. The profile was that of a shallow basin. Feature 36 was located in a line between Features 35 and 37.

Feature 31. This feature, not excavated, was located at 267.5R16.0. Auger tests indicate that a thin (0.3 ft) zone of brown loam lies over a zone of mottled orange brown clay that extends for approximately 2 ft below the subsoil surface. This latter fill zone is typical of burial fill in the Piedmont; consequently, the feature may represent an interment within the palisade and apart from the cemetery.

Feature 32. This feature number was assigned to a linear stain that probably represents a rodent disturbance. It was not excavated.

Feature 34. This feature represents the remnants of the central hearth associated with Structure 5. It is centered at 286.0R22.3. The main body of the hearth has been destroyed by plowing, and Feature 34 represents only small fragments of burned clay that formed the base of the hearth. It measured 3.1 ft x 2.9 ft on the subsoil surface. A concentration of fired clay particles also was observed in the plowzone directly above Feature 34.

Feature 42. This circular pit that was not excavated measured 2.6 ft x 2.4 ft, and, based on an auger test, was 1.6 ft deep. It is located at 199.0R73.0. The auger core contained brown midden soil with bone and charcoal to a depth of 0.4 ft. Beneath this layer was an 0.8 ft thick zone containing reddish gray ashy loam. This in turn overlay a 0.4 ft thick band of mottled orange and brown clay.

Feature 43. This number was assigned to an ovoid feature that was not excavated. A single auger test placed near the center of the feature revealed that it had a total depth of 1.4 ft below subsoil. The top 0.3 ft of the feature had numerous burned clay fragments, indicating that it may represent a hearth.

## STRUCTURES

Three structures were exposed at the Fredricks site in the 1983 and 1984 excavations. Structure 1 was an oval wall-trench structure located in the center of the village, and is interpreted as a communal sweat lodge. Structures 2 and 3, located adjacent to the palisade and defined by concentrations of postholes and poorly defined wall-post alignments, represent domestic structures. During 1985, six additional structures were exposed.

Structure 4 was a small, circular wall-trench structure located outside the palisade at the north end of the excavation. It was approximately five feet in diameter and contained Feature 40, a small shallow basin. Its proximity to Structure 6 suggests that it probably was associated with that larger structure, possibly a small sweat house or an above-ground storage facility.

Structure 5 was a well-defined wall-trench house located at the northwestern end of the village (Figure 26). It was oval-to-rectangular and measured approximately 16 x 19 ft. In addition to a central hearth (Feature 34), two pits (Features 32 and 33) and a large shallow basin (Feature 24) were also located inside this structure.

Structure 6, a wall-trench house located at the northern end of the village, was intruded by both the village palisade and Structure 5 (Figure 26). As a consequence, it may represent one of the initial houses constructed at the site by the Occaneechi. It was roughly circular and measured about 17 ft in diameter. No features were found within this structure; however, nearby Features 28 and 29 and Structure 4 may be contemporary with it.

Structure 7 lay immediately east of Structure 5 and was defined by a circular alignment of postholes. This house was approximately 18 ft in diameter and was the most clearly defined non-wall-trench structure identified at the Fredricks site. No features were associated with Structure 7.

Structure 8, situated between Structure 3 and the palisade at the eastern edge of the village, was represented by a concentration of postholes measuring about 14 ft in diameter. Features associated with this house included a pit (Feature 13) excavated in 1984, a shallow basin (Feature 16), and two shallow depressions (Features 21 and 22).

Structure 9, situated at the southeastern end of the village, was a poorly defined, rectangular house that measured about 11 x 17 ft. Several of the postholes that comprised this structure pattern probably were eradicated by plowing. Two storage pits (Features 17 and 19) were associated with Structure 9. Two other pits (Features 18 and 20) located west of the structure also may be associated.

# III

# HUMAN SKELETAL REMAINS

**Homes Hogue Wilson**

## INTRODUCTION

Three human burials associated with the village cemetery were recovered during the 1985 season at the Fredricks site. These three individuals, comprising the only remaining burials in this cemetery, bring the total to 13.

Field excavation followed established procedures. Prior to excavation, the top of each burial pit was troweled, photographed in black-and-white and color, and drawn to scale. Burial fill was removed by natural zones and waterscreened through 1/2, 1/4, and 1/16 inch screens. Soil samples were floated for each zone. Elevations were recorded after the removal of each zone to establish zone provenience and volume (cf. Dickens et al. 1985:9). After the human bone was completely exposed and cleaned _in situ_, the burial was again documented through black-and-white and color photographs, and scale drawings.

Following documentation, the bones were removed, wrapped in tissue, and labeled as to bone type, e.g., "right humerus", "left femur." In cases where bones were too fragile to be removed directly from the ground, they were removed in a soil matrix, which allowed the specimens to be carefully cleaned, documented, disassembled, and preserved in the laboratory. All cranial bones from each burial were removed in this manner.

After removal from the ground, the skeletal remains were transported to the osteology section of the Research Laboratories of Anthropology. Here, the remains were cleaned, treated with chemical preservative, and reconstructed when possible. Small samples from ribs, vertebrae, and poorly preserved sections of long bones were not chemically treated so that they might later be used in trace element analyses.

Following laboratory processing, the bone elements present for each burial inventoried, and age at death and the sex of the adult individuals were determined. Measurements were made of the skull and long bones to determine stature and population diversity. Also, any skeletal pathologies and anomalies were recorded for each burial as a prelude to an investigation of the overall health of each individual and of the population as a whole.

## INVENTORY OF THE SKELETAL REMAINS

The condition of the skeletal remains from Burials 10, 11, and 13 ranged from poor (Burials 10 and 11) to fair (Burial 13). An inventory of the cranial and postcranial skeletal remains for each of the three burials is presented in Table 2, and the dentition is listed in Table 3. Only one skull, from Burial 13, was well enough preserved to be reconstructed. Metrical data could only be recorded for the skull, left femur, and left tibia belonging to Burial 13.

## AGE DETERMINATION

To determine the age of an individual at death, it is best to employ as many aging techniques as possible. The overall preservation of Burials 10, 11, and 13 limited the number of techniques that could be employed to determine age. Examination of dental calcification and eruption, suture closure, and dental attrition were used to age the three burials.

Table 2. Inventory of the skeletal remains of Burials 10, 11, and 13.

BURIAL 10 SKELETAL INVENTORY

Cranial Remains
(Extremely fragmented and not reconstructed)

| Bones Recovered* | Single | Right | Left |
|---|---|---|---|
| Frontal | 1 | - | - |
| Parietal | - | 1 | 1 |
| Occipital | 1 | - | - |
| Temporal | - | 2 | 2 |
| Sphenoid | 1 | - | - |
| Ethmoid | 1 | - | - |
| Maxilla | - | 1 | 1 |
| Mandible | 2 | - | - |

Scale: 5 Complete
4 3/4
3 1/2
2 1/4
1 Trace

Postcranial Remains

| Bones Recovered* | Single | Right | Left |
|---|---|---|---|
| Radius | - | - | 4 |
| Ulna | - | - | 3 |
| Femur | - | 4 | 3 |
| Tibia | - | 3 | - |
| Clavicle | - | 3 | - |

Scale: 5 Complete
4 3/4 or diaphysis & 1 epiphysis
3 1/2 or diaphysis only
2 1/4 or part of diaphysis
1 Trace

Table 2 Continued.

BURIAL 11 SKELETAL INVENTORY

Cranial Remains
(Partly reconstructed)

| Bones Recovered* | Single | Right | Left |
|---|---|---|---|
| Frontal | 2 | - | - |
| Parietal | - | 2 | 2 |
| Occipital | 2/3 | - | - |
| Temporal | - | 2 | 3 |
| Sphenoid | 2 | - | - |
| Maxilla | - | 4 | 4 |
| Mandible | 3/4 | - | - |

Scale: 5 Complete
4 3/4
3 1/2
2 1/4
1 Trace

Postcranial Remains

| Bones Recovered* | Single | Right | Left |
|---|---|---|---|
| Humerus | - | - | 2 |
| Radius | - | - | 2 |
| Ulna | - | - | 2 |
| Femur | - | - | 4 |
| Tibia | - | 2/3 | 2/3 |
| Fibula | - | - | 1 |
| Talus | - | 4 | 3 |
| Clavicle | - | 3 | - |
| Scapula | - | - | 2 |
| Ribs | - | 1 | 1 |
| Cervical Vertebrae | 2 | - | - |
| Thoracic Vertebrae | 2 | - | - |
| Lumbar Vertebrae | 2 | - | - |
| Innominates | - | - | 2 |

Scale: 5 Complete
4 3/4 or diaphysis & 1 epiphysis
3 1/2 or diaphysis only
2 1/4 or part of diaphysis
1 Trace

Table 2 Continued.

BURIAL 13 SKELETAL INVENTORY

Cranial Remains
(Partial with some reconstruction)

| Bones Recovered* | Single | Right | Left |
|---|---|---|---|
| Frontal | 4 | - | - |
| Parietal | - | 4 | 3/4 |
| Occipital | 2 | - | - |
| Temporal | - | 5 | 4 |
| Sphenoid | 4 | - | - |
| Ethmoid | 3 | - | - |
| Maxilla | - | 5 | 3/4 |
| Mandible | 3/4 | - | - |

Scale: 5 Complete
4 3/4
3 1/2
2 1/4
1 Trace

Postcranial Remains

| Bones Recovered* | Single | Right | Left |
|---|---|---|---|
| Humerus | - | 1/2 | - |
| Femur | - | 3 | 4 |
| Tibia | - | 2/3 | 4 |
| Fibula | - | 1 | 2/3 |
| Talus | - | 3 | 3/4 |
| Calcaneus | - | 3 | 2 |
| Clavicle | - | - | 2 |
| Ribs | - | 1 | 1 |
| Cervical Vertebrae | 3 | - | - |
| Innominates | - | 2 | 3/4 |

Scale: 5 Complete
4 3/4 or diaphysis & 1 epiphysis
3 1/2 or diaphysis only
2 1/4 or part of diaphysis
1 Trace

*Bone is absent if not listed.

Table 3. Dental inventory and pathologies.

DENTAL INVENTORY AND PATHOLOGIES

BURIAL 10

Deciduous Dentition*

Right — Left

| | M2 | M1 | C | I2 | I1 | I1 | I2 | C | M1 | M2 |
|---|---|---|---|---|---|---|---|---|---|---|
| Max. | b | b | b | z | z | b | z | a | b | b |
| Man. | b | b | a | z | a | z | z | a | b | b |

Unerupted Permanent Dentition*

Right — Left

| | M2 | M1 | PM2 | PM1 | C | I2 | I1 | I1 | I2 | C | PM1 | PM2 | M1 | M2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max. | A | A | Z | A | A | A | A | A | A | A | A | A | A | A |
| Man. | A | A | Z | A | Z | A | A | A | A | Z | A | A | A | A |

Periodontal disease: None
Calculus: None
Hypoplasia: 0-6 months; 1-5 years
Percentage of teeth with caries: 71%

BURIAL 11

Permanent Dentition*

Right — Left

| | M3 | M2 | M1 | PM2 | PM1 | C | I2 | I1 | I1 | I2 | C | PM1 | PM2 | M1 | M2 | M3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max. | A | A | B | A | A | A | A | A | A | A | A | A | A | A | B | A |
| Man. | A | B | A | A | A | A | A | A | A | A | A | A | A | A | A | A |

Periodontal disease: None
Calculus: None
Hypoplasia: 18 months-2 years; 4-6 years
Percentage of teeth with caries: 9%
Mean attrition: Max. 1.5; Man. 1.56

Table 3 Continued.

DENTAL INVENTORY AND PATHOLOGIES

BURIAL 13

Permanent Dentition*

| Right | M3 | M2 | M1 | PM2 | PM1 | C | I2 | I1 | I1 | I2 | C | PM1 | PM2 | M1 | M2 | M3 Left |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max. | A | B | X | B | A | A | A | A | A | A | A | A | A | A | A | B |
| Man. | A | A | A | A | A | A | Z | Z | A | Z | Z | A | Z | A | B | A |

Periodontal disease: Medium to severe
Calculus: Medium
Hypoplasia: 2-4 years; 3-5 years
Percentage of teeth with caries: 15.3%
Mean attrition: Max. 5.57; Man. 4.8

*Scale:

| Deciduous | Permanent | |
|---|---|---|
| a | A | Tooth present |
| b | B | Tooth present with caries |
| x | X | Pre-mortem loss |
| z | Z | Post-mortem loss. |

Max = maxillary
Man = mandible

Burial 10 is a subadult, classed as an individual aged less than 15 years at death. Comparison of this individual's deciduous dental eruption and permanent dental calcification to standard dental development charts (cf. Ubelaker 1978:112-113) indicates that the age at death was 4-5 years ± 12 months.

The degree of dental attrition and development was used to age Burial 11, and dental attrition and suture closure were used to age Burial 13. Although examination of dental attrition and suture closure are not always reliable indicators of an individual's age (Krogman 1978; Ubelaker 1978), the two are the only aging techniques that could be applied in these two cases given the poorly preserved remains.

Dental Attrition

The teeth, because of their solid structure, are the most durable bones of the human body. In fact, teeth often are the only remains recovered if a skeleton has been in the ground for a long time, or if the remains have been subjected to environmental conditions detrimental to preservation, such as highly acidic soils and wet soils or both. Dental attrition, or wear, continues throughout an individual's life, and is affected by environmental and cultural conditions including diet, genetic factors (such as occlusions and morphology), and the use of the teeth as tools. Prehistoric populations generally exhibit more tooth wear than modern populations. Different groups, different individuals within a group, and different teeth of an individual can also have considerable variability in attrition rates (Ubelaker 1978:63-64). For these reasons, it is not possible to establish a very reliable estimate of age at death of an individual using only dental attrition.

Attrition was evaluated for the mandibular and maxillary teeth of the adults of Burials 11 and 13. The degree of wear and alveolar resorption, both related to antemortem tooth loss, of the permanent teeth provides a general estimate of an individual's age. The wear patterns exhibited by the dental remains of Burials 11 and 13 were compared to the stages of wear devised by Murphy (1959a:167-171; 1959b:179) and Graham (1973). The slight wear exhibited by the dental remains from Burial 11, coupled with the open apex of the roots of the erupted third molars, indicate that the individual was between 15 and 20 years at death. Based on attrition criteria, the age of Burial 13 is estimated to be between 35 and 40 years at death.

### Suture Closure

The sutures of the skull undergo a process of closure that commences around age 22 and terminates around age 47. By examining the stage of suture closure, an estimate of the age of an individual can be made. Since the process of suture closure has only a general relationship to the aging process, a minimum error of 10 years should be appended when this technique is used to determine the age at death of an adult (Krogman 1978:87).

The Todd and Lyon (1924) technique for aging an individual based on endocranial suture closure was used to age Burial 13. Todd and Lyon's (1924:383) technique requires that suture closure be observed endocranially (on the interior of the skull) and rated at particular points along the suture. Each point on the suture is ranked on a continuum from 0 (completely open) to 4 (completely closed). Four points of closure are present on the coronal and sagittal sutures, and three points are found on the lambdoid suture (cf. Krogman 1978:82). The poor preservation of the skull of Burial 13 prevented the examination of the closure of the lambdoid suture. However, closure of the sagittal suture indicates an age of 35+ for the individual, and closure of the coronal suture indicates an age of 38+.

### Summary of Ages at Death

Based on dental calcification and eruption, Burial 10 can be aged at 4-5 years ± 12 months at death. Because the third molar of Burial 11 had not yet developed completely even though it had erupted, and because dental attrition was low, this individual is aged at 15 to 20 years at death. The combined results of the study of dental attrition and suture closure indicate that Burial 13 was probably between 35 and 40 years at death.

## SEX DETERMINATION

Morphological and morphometrical techniques to determine sex could be used only for the remains from Burial 13. The age of Burial 10, a subadult 4 to 5 years at death, prevented sexing of this individual, as it is extremely difficult, if not impossible, to accurately sex subadult skeletons (Ubelaker 1978:42). The poor preservation of Burial 11, combined with its relatively young age (15 to 20 years at death) precluded sexing.

### Morphological Data

Male and female skeletons usually exhibit physical traits, such as the shape of the skull and pelvis, that are distinguishable by sex. Morphological characteristics of Burial 13 indicate that it is a male. Cranially, the steep forehead, square low orbits, small eminences, and a square chin are all male characteristics. Maleness is also indicated in the postcranial morphology by an absence of a preauricular sulcus, a narrow sciatic notch, and a large acetabulum.

Morphometrical Data

A number of metrical techniques were employed to substantiate the morphometrical sexing of Burial 13. Metrical techniques employed include measurement of the head diameter of the femur (Krogman 1978) and of the circumference of the mid-shaft of the femur (Black 1978).

The use of femur head diameter to determine the sex is based on sexual dimorphism that exists within most populations, i.e., males are generally larger than females. This technique is best applied to a large population. The sectioning point (the measurement of a bone element at which males and females of a population differ) for the femur head diameter used here is determined by Krogman (1978) for a white study population. The left femur head of Burial 13 measured 47 mm, which is 6 mm above the sectioning point of 41 mm given by Krogman (1978:144). This supports the sexing of Burial 13 as male.

The procedure for sexing individuals using femur mid-shaft circumferences was introduced by Black (1978), who demonstrated that the technique was 85% accurate in sexing adult individuals. Based on an archaeological Indian population from Ohio, Black proposed that a femur shaft circumference greater than 81 mm indicates a male, and a circumference below 81 mm indicates a female. The circumference of both the right and left femurs of Burial 13 were 85 mm, which indicates that the individual is a male.

Summary

Combined results of both the morphological and morphometrical evaluations of sex determination strongly suggest that Burial 13 is a male.

## STATURE

Methods for estimating the stature of modern adult populations are based on the assumption that height is correlated with the length of the long bones. The ratio between long bone length and stature varies considerably between populations, which has resulted in different stature formulae being designed for different populations (cf. Trotter and Gleser 1952, 1958; Genoves 1967).

Stature estimates could only be calculated for Burial 13, given the fragmented nature of the remains of Burial 11. Measurements taken from the left femur and left tibia of Burial 13 and the equations for estimating the stature of Mesoamerican males devised by Genoves (1967) are presented in Table 4. Using the length of the left femur, the calculated stature of Burial 13 is 171.487 ± 3.417 cm (67.51 ± 1.35 inches). The calculated stature for the individual using the left tibia at 165.292 ± 2.815 cm (65.08 ± 1.11 inches) is shorter. Thus, the estimated height for Burial 13 ranges from 5 feet 4 inches to 5 feet 8 inches. A comparison of the stature estimate for Burial 13 with the estimates for the three other males from the Fredricks site (Table 4) indicates that the height of Burial 13 falls within the range calculated for males at that site (cf. Wilson 1985:326).

## MORPHOMETRICAL MEASUREMENTS AND INDICES

### Cranial Measurements and Indices

The poor preservation of the cranium of Burial 13 limited the number of measurements that could be taken. Those measurements taken

Table 4. Femur lengths and stature estimates for the Fredricks Site.

| Burial No. | Age | Sex | Femur Length (in cm) | Stature (in cm) |
|---|---|---|---|---|
| 3 | 25-35 | M | 48.40* | 176.69±3.42 |
| 4 | 25-30 | M | 45.96 | 170.24±3.42 |
| 5 | 50+ | M | 46.85 | 172.26±3.42 |
| 6 | 20-25 | M | 43.50* | 162.41±3.42 |
| 13 | 35-40 | M | 46.50* | 171.49±3.42 |
| Male $\bar{X}$ | 33.50 | | 46.24 | 170.62±3.42 |
| sd | (10.69) | | (1.78) | (5.192) |
| 9 | 35-40 | F | 47.00 | 171.47±3.82 |

* Measurements are estimated.

are presented in Table 5. The calculated cranial indices, which include breadth-height index, fronto-parietal index, fronto-gonial index, orbital index, maxilla-alveolar index, and palatal index, for Burial 13 are listed in Table 6. The cranial breadth-height index, which expresses the ratio of height to breadth of a skull, of 86.84 is lower than the breadth-height indices derived for the other males from the Fredricks site (see Table 6), and is generally low for Southeastern Indians (cf. Neumann 1952:17-20). A fronto-parietal index, which expresses the relationship between the minimum breadth of the frontal bone and the maximum breadth of the vault, of 59.87 indicates that the skull is narrow (cf. Bass 1978:67). The fronto-parietal index, as with the cranial breadth-height index, is somewhat lower than those noted for the other males from the Fredricks site (Table 6). The lower cranial breadth-height index and lower fronto-parietal index indicate that the skull of Burial 13 is not as narrow as the other males in the skeletal sample recovered from the Fredricks site.

<u>Postcranial Measurements and Indices</u>

The postcranial indices calculated for Burial 13 include humerus robusticity, femur platymeric, femur pilastic, femur robusticity, and tibia platycnemic, and are presented in Table 7 along with the indices for the other burials from the Fredricks site population. Notable for Burial 13 is a platymeric index of 111.11, which is stenomeric and usually associated with a pathological condition (Bass 1978:170). However, no serious pathologies that could be the cause of the large platymeric index are exhibited by the femurs of Burial 13. Comparison of the platymeric index of Burial 13 shows that the index is 24.25 cm greater than the average for the other males from the Fredricks site

Table 5. Cranial measurements from the Fredricks Site.

| Burial No. | Sex | Measurement[1] G-OL | MSB | MFB | MNFB | B-BH | UFH | TFH |
|---|---|---|---|---|---|---|---|---|
| 3 | M | - | - | - | 98 | - | 76 | - |
| 4 | M | 190* | 150* | - | - | - | - | - |
| 5 | M | 192 | 145 | 123 | 100 | 138 | 62 | 110 |
| 6 | M | 182 | 150 | 111 | 101 | 133 | - | - |
| 13 | M | - | 152* | 125* | 91 | 130* | 79* | 130* |
| Male $\bar{X}$ | | 188 | 149 | 119.6 | 97.5 | 133.6 | 72.3 | 120 |
| sd | | (5.29) | (2.98) | (7.57) | (4.51) | (4.04) | (9.07) | (14.14) |
| 9 | F | 188 | 140 | - | - | 130 | - | - |

Key to Cranial Measurements:

G-OL Glabello-occipital length
MSB Maximum skull breadth
MFB Maximum frontal breadth
MNFB Minimum frontal breadth
B-BH Basion-bregma height
TFH Total facial height.

Table 6. Cranial indices for the Fredricks Site burials.

| | | Index[1] | | | | | |
|---|---|---|---|---|---|---|---|
| Burial No. | Sex | CI | CM | CLHI | CBH | MHI | FPI |
| 4 | M | 78.98* | - | - | - | - | - |
| 5 | M | 75.52 | 158.33 | 71.87 | 95.17 | 81.90 | 68.96 |
| 6 | M | 82.42 | 155.00 | 73.07 | 88.66 | 80.12 | 67.33 |
| 13 | M | - | - | - | 86.84 | - | 59.87 |
| Male $\overline{X}$ | | 78.97 | 156.66 | 72.47 | 90.22 | 81.01 | 65.57 |
| sd | | (3.45) | (2.35) | (0.84) | (4.38) | (1.26) | (4.96) |
| 9 | F | 74.46 | 152.67 | 69.15 | 92.86 | 79.27 | - |

Key to Cranial Indices:
- CI Cranial index
- CM Cranial module
- CLHI Cranial length-height index
- CBH Cranial breadth-height index
- MHI Mean height index
- FPI Fronto-parietal index.

Table 7. Postcranial indices from the Fredricks Site burials.

| Burial No. | Sex | Humerus Robusticity | Femur Platy-meric | Femur Pilas-tric | Femur Robusticity | Tibia Platy-cnemic |
|---|---|---|---|---|---|---|
| 3 | M | - | 85.51 | 119.23 | 12.40 | - |
| 4 | M | 20.63 | 87.44 | 123.21 | 13.49 | 70.13 |
| 5 | M | 20.79 | 90.63 | 118.52 | 12.69 | 67.50 |
| 6 | M | - | 83.87 | 108.33 | 11.26 | 60.32 |
| 13 | M | - | 111.11 | 92.86 | 11.61 | 55.88 |
| Male $\bar{X}$ | | 20.71 | 91.71 | 112.43 | 12.29 | 63.46 |
| sd | | (0.11) | (11.13) | (12.24) | (0.88) | (6.53) |
| 9 | F | 16.98 | 92.86 | 121.74 | 10.74 | - |

(Table 7). Also, the femur pilastric index for Burial 13 is 24.46 cm less than the average pilastric index calculated for other males in the sample. In contrast to these findings, the femur robusticity and the tibia platycnemic indices for Burial 13 are similar to the averages calculated for other males in the Fredricks site population.

### Summary of Morphometrical Data

In spite of the poor preservation of the skeletal remains recovered in 1985 at the Fredricks site, a number of cranial and postcranial measurements could be taken for Burial 13. A comparison of the measurements and indices derived for Burial 13 with those calculated for other males from the same site shows that there is little similarity between the two sets of figures (Tables 5-7). This is consistent with my previous contention that Contact period populations in the Carolina Piedmont will exhibit greater heterogeneity of skeletal morphological and morphometrical traits than earlier populations due primarily to admixture with other aboriginal populations, possibly those from the Coastal Plain region (Wilson 1985:329).

## PATHOLOGIES AND BONE ANOMALIES

The 1985 skeletal remains were examined for evidence of bone lesions. This investigation provides insight into stress and disease states of the study population. Pathologies identified include those related to general stress (enamel hypoplasia), dietary stress (caries, periodontal disease, and spongy hyperostosis), and general disease (osteitis).

General Stress Pathologies: Enamel Hypoplasia

A prominent dental indicator of stress is enamel hypoplasia. This disease is a marker of physiological stress caused by disease, diet, or both. Enamel hypoplasia is defined as a deficiency in dental enamel thickness that results from the slowing of enamel formation due to stress. Transverse lines or rings are formed when the stress is lessened and normal development resumes. The transverse lines form a record of stress during developmental years and are not altered or otherwise affected by events later in life (Huss-Ashmore et al. 1982:441). Deciduous dentition and the permanent incisors, canines, and first molars from each of the three burials were examined through a 10-power lens, and the severity of enamel hypoplasia scored either as 1 (mild), 2 (moderate), or 3 (severe). Table 3 contains the results of this study of enamel hypoplasia for Burials 10, 11, and 13.

All three burials exhibit some degree of enamel hypoplasia. Burial 10 has transverse lines on both the deciduous and unerupted permanent dentition. The enamel hypoplasia on the deciduous teeth is moderate to severe, indicating stress between birth and 6 months of age. Permanent first molars of Burial 10 exhibit a mild stress period between 1 and 2 years of age, and the incisors and canines indicate an increase in stress between the age of 2 and 4 years. Mild to moderate lines present on the permanent dentition is also indicative of stress between ages 1 and 3.

The permanent dentition of Burial 11 exhibits mild hypoplasia from 18 months to 4 years of age. In contrast, Burial 13 has hypoplasia on the permanent dentition, which indicates severe stress between the age of 2 and 4 years and moderate stress from 4 to 6 years. This finding compares favorably with the data on enamel hypoplasia from the other

Fredricks site burials (Wilson 1985:726-729), and suggests that a stressful period in the life of a member of this population was the years 2 through 5, a time that probably can be associated with weaning. Figure 27 illustrates the transverse lines associated with enamel hypoplasia on the incisors of Burial 11.

Dietary Stress

Pathologies related to diet in Burials 10, 11, and 13 include spongy hyperostosis, periodontal disease, and caries. Spongy hyperostosis lesions are present on both parietals of Burial 13 (Figure 28). Such bone pathologies are usually related to anemia (Steinbock 1976:213-217); however, no cribra orbitalia, which would support a condition of anemia (Steinbock 1976:239), is present. Endocranially, there is some pitting and absorption in the area of the bregma and along the coronal suture.

The two most important diet-related afflictions that cause tooth loss are caries and periodontal disease. Periodontal disease is an infection of the alveolar bone. The bone reacts to the infection by recessing by stages, which results in loosening and eventual loss of teeth. Factors responsible for periodontal disease include poor dental hygiene, irritation by calculus deposits, attrition, and lowered tissue resistance from a poor diet (Brothwell 1981:147-149). Periodontal disease in Burial 13 ranges from moderate to severe, with severe denoting the premortem loss of teeth. No periodontal disease is evident in Burial 10 and 11.

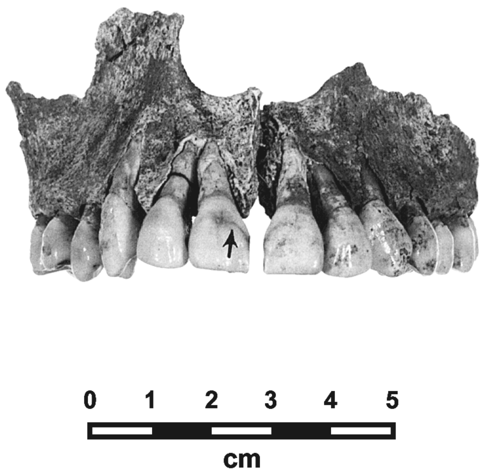


Figure 27. Enamel hypoplasia on the central incisors of Burial 11.


Figure 28. Spongy hyperostosis on the parietal bones of Burial 13.

Caries

Dental caries result from a disease process where acids demineralize the hard tissues (the enamel and dentine) of a tooth. Such acids are produced by bacterial fermentation of carbohydrates and sugars (Larson 1980:193, 196). Caries are present on all three burials. The location (buccal, lingual, medial, distal, occlusal) and size (small, medium, large) of each carious lesion was recorded, and these data are presented in Table 8.

In Burial 10, 71% (10 of 14) of the remaining deciduous dentition exhibit caries. Of the 25 caries present on the deciduous dentition, 52% (n=13) are located on occlusal surfaces, 16% (n=4) on buccal surfaces, 20% (n=5) on medial surfaces, 8% (n=2) on distal surfaces, and 4% (n=1) on lingual surfaces of the teeth.

Only 8% (3 of 32) of the permanent dentition of Burial 11 have caries. All are occlusal, with 66% (n=2) being small and 33% (n=1) medium.

Analysis of the dentition of Burial 13 was hampered by the fact that only 25 of the 32 permanent teeth (77%) were preserved for study. Only 16% (n=4) of these 25 teeth display caries. Of the 4 caries present 50% (n=2) are medial and medium in size, 25% (n=1) buccal and medium in size, and 25% (n=1) occlusal, very large, and the cause of an abscess. Also, the right maxillary first molar had been lost prior to death, and complete alveolar resorption had occurred.

Comparison of the percentage of teeth with caries for Burials 10, 11, and 13 with that for other Burials from the Fredricks site, Table 9, shows that Burials 11 and 13 have fewer teeth affected by carious lesions. One explanation for this pattern is that these two individuals may have had a diet different from the rest of the population. Other

Table 8. Location and size of caries from Burials 10, 11, and 13.

SUMMARY OF DENTAL CARIES

BURIAL 10

Maxillary Caries

| Tooth | Side | No. Caries | Location | Size |
|---|---|---|---|---|
| M2 | R | 1 | occlusal | medium |
| | | 1 | medial | small |
| M1 | R | 1 | medial | small |
| | | 1 | medial | medium |
| | | 1 | distal | medium |
| I1 | R | 1 | medial | medium |
| C | L | 3 | buccal | small |
| | | 1 | medial | medium |
| M1 | L | 1 | distal | medium |
| M2 | L | 1 | occlusal | small |
| | | 1 | lingual | medium |
| Total | | 13 | | |

Mandibular Caries

| Tooth | Side | No. Caries | Location | Size |
|---|---|---|---|---|
| M1 | R | 1 | occlusal | medium |
| M2 | R | 2 | occlusal | small |
| | | 2 | occlusal | medium |
| M2 | L | 2 | occlusal | small |
| | | 1 | occlusal | medium |
| | | 1 | buccal | small |
| M1 | L | 2 | occlusal | small |
| | | 1 | occlusal | medium |
| Total | | 12 | | |

Table 8 Continued.

SUMMARY OF DENTAL CARIES

BURIAL 11

Maxillary Caries

| Tooth | Side | No. Caries | Location | Size |
|---|---|---|---|---|
| M1 | R | 1 | occlusal | small |
| M1 | L | 1 | occlusal | small |
| Total | | 2 | | |

Mandibular Caries

| Tooth | Side | No. Caries | Location | Size |
|---|---|---|---|---|
| M1 | R | 1 | occlusal | medium |
| Total | | 1 | | |

BURIAL 13

Maxillary Caries

| Tooth | Side | No. Caries | Location | Size |
|---|---|---|---|---|
| M2 | R | 1 | medial | medium |
| PM2 | R | 1 | occlusal | abscessed |
| M3 | L | 1 | buccal | medium |
| Total | | 3 | | |

Mandibular Caries

| Tooth | Side | No. Caries | Location | Size |
|---|---|---|---|---|
| M2 | L | 1 | medial | medium |
| Total | | 1 | | |

Side: R-right
L-left.

Table 9. Summary of the percentage of caries in Fredricks population.

| Burial | Age | Sex | % of Dentition with Caries |
|---|---|---|---|
| 1 | 3-5 | - | 45 |
| 2 | 6-8 | - | 29 |
| 3 | 25-35 | M | 27 |
| 4 | 25-30 | M | 52 |
| 4a | 0-.6 | - | - |
| 5 | 50+ | M | 67 |
| 6 | 20-25 | M | 86 |
| 7 | 0-.6 | - | - |
| 8 | 3-5 | - | 53 |
| 9 | 35-40 | F | 40 |
| 10 | 4-5 | - | 71 |
| 11 | 15-20 | - | 9 |
| 13 | 35-40 | M | 15 |
| $\bar{X}$<br>sd | 18.66<br>(16.72) | | |

studies (e.g., Larson 1980) have shown that an increase in maize in the diet usually corresponds with an increase in the presence of dental caries. It may be that Burials 11 and 13 had less maize in their diets, but this cannot be substantiated at this time. Also, the two individuals in Burials 11 and 13 may be from some other population(s), possibly reflecting population diversity and admixture in the Contact period, as noted earlier in this study. Analysis of the levels of such trace elements as strontium and magnesium in all three burials would be useful in considering the implications of these two hypotheses.

## Dental Anomalies

Only one individual, Burial 13, has evidence of a dental anomaly. Both maxillary third molars of Burial 13 are peg-shaped. This anomaly (Figure 29) generally occurs on the genetically unstable third molars and lateral incisors. Pegged molars and incisors are thought to be related to congenital absence (Bass 1978:235).

## General Osteitis

Osteitis is defined as the inflammation of the bone, and is caused by trauma, infection, or disease (Steinbock 1976:60). Mild forms of osteitis are present on the long bones from all three burials. Data on the type of osteitis and the location of the inflammation are presented in Table 10.

## Summary of the Pathologies and Anomalies

All three burials from the 1985 excavations at the Fredricks site exhibit bone pathologies related to general stress, dietary stress, and general osteitis. These pathologies are evidenced by enamel hypoplasia,

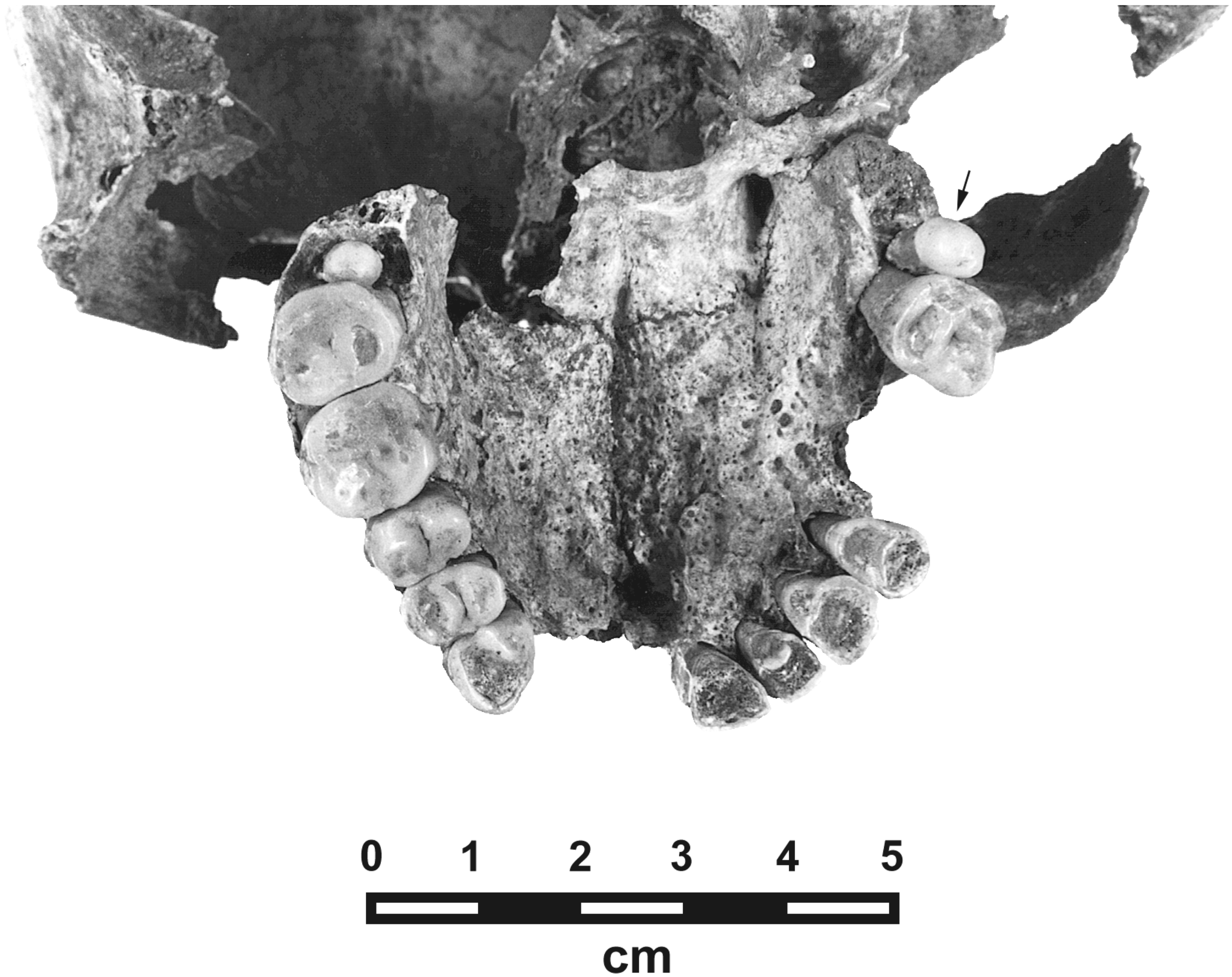


Figure 29. Pegged third molars of Burial 13.

Table 10. Pathologies of Burials 10, 11, and 13.

| SUMMARY OF PATHOLOGIES |
|---|

BURIAL 10

General stress:
- Hypoplasia: 0-6 months; 1-5 years

Dietary pathologies:
- Caries: 71%
- Spongy hyperostosis: none

General osteitis: possible bone reconstruction on the left radius and right tibia

BURIAL 11

General stress:
- Hypoplasia: 18 months-2 years; 4-6 years

Dietary pathologies:
- Caries: 9%
- Spongy hyperostosis: none

General osteitis: possible osteitis on right tibia shaft is slightly pitted and swollen

BURIAL 13

General stress:
- Hypoplasia: 2-4 years; 4-6 years

Dietary pathologies:
- Caries: 15%
- Spongy hyperostosis: lesions on both parietals

General osteitis: possible osteitis along proximal shaft near trochanter and neck of the left femur dental caries, periodontal disease, spongy hyperostosis, and general osteitis. Burial 13 possesses all of these pathologies, with spongy hyperostosis possibly indicating that the individual suffered from anemia. Burial 13 also has the only dental anomaly noted, pegged maxillary third molars.

## DEMOGRAPHIC PROFILES

As noted in the introduction to this report, the 13 burials from the Fredricks site cemetery appear to represent a complete population within the boundaries of the site. Whether there are other similar cemeteries associated with the site is unknown. The continued survey and excavation of the site will prove beneficial in considering this question. The number of individuals that comprise the present burial population is too small to be a meaningful statistical sample.

Nevertheless, the demographic profile of the segment of the Fredricks site population represented by the 13 burials, which includes the three burials described in this report, can be reconstructed. Using the information on the age at death of the individuals in this cemetery population, life tables can be constructed that provide insights on life expectancy. The life expectancy at birth, in turn, serves to establish a crude mortality rate for the population. Then, from the crude mortality rate, population estimates can be derived.

### Life Tables

Table 11 presents the life tables based on the age at death of the 13 individuals in the Fredricks site cemetery with the life tables calculated for a number of other prehistoric and contact sites. One question that can be considered using life tables is whether the life

Table 11. Life tables for the Fredricks site and other Piedmont Siouan sites.

LIFE TABLES[1]

Fredricks Site

| x | Dx | dx | lx | qx | Lx | Tx | $\mathring{e}_x$ |
|---|---|---|---|---|---|---|---|
| 0-10 | 6 | 46.0 | 100.0 | .4600 | 770.0 | 1810.0 | 18.1 |
| 11-20 | 1 | 8.0 | 54.0 | .1481 | 500.0 | 1040.0 | 19.3 |
| 21-30 | 3 | 23.0 | 46.0 | .5000 | 345.0 | 540.0 | 11.7 |
| 31-40 | 2 | 15.0 | 23.0 | .6522 | 155.0 | 195.0 | 7.6 |
| 40+ | 1 | 8.0 | 8.0 | 1.0000 | 40.0 | 40.0 | 5.0 |

Upper Saratown Site

| x | Dx | dx | lx | qx | Lx | Tx | $\mathring{e}_x$ |
|---|---|---|---|---|---|---|---|
| 0-10 | 31 | 41.9 | 100.0 | .4190 | 790.5 | 1958.0 | 19.6 |
| 11-20 | 7 | 9.5 | 58.1 | .1635 | 533.5 | 1167.5 | 20.1 |
| 21-30 | 17 | 23.0 | 48.6 | .4732 | 371.0 | 634.0 | 13.0 |
| 31-40 | 9 | 12.1 | 25.6 | .4726 | 195.5 | 263.0 | 10.3 |
| 40+ | 10 | 13.5 | 13.5 | 1.0000 | 67.5 | 67.5 | 5.0 |

Wall Site

| x | Dx | dx | lx | qx | Lx | Tx | $\mathring{e}_x$ |
|---|---|---|---|---|---|---|---|
| 0-10 | 5 | 62.5 | 100.0 | .6250 | 687.5 | 1625.0 | 16.2 |
| 11-20 | 1 | 12.5 | 37.5 | .3333 | 312.5 | 937.5 | 25.0 |
| 21-30 | 0 | 0.0 | 25.0 | .0000 | 250.0 | 625.0 | 25.0 |
| 31-40 | 0 | 0.0 | 25.0 | .0000 | 250.0 | 375.0 | 15.0 |
| 40+ | 2 | 25.0 | 25.0 | 1.0000 | 125.0 | 125.0 | 5.0 |

Shannon Site

| x | Dx | dx | lx | qx | Lx | Tx | $\mathring{e}_x$ |
|---|---|---|---|---|---|---|---|
| 0-10 | 25 | 28.4 | 100.0 | .2840 | 858.0 | 2581.0 | 25.8 |
| 11-20 | 12 | 13.6 | 71.6 | .1899 | 648.0 | 1723.0 | 24.1 |
| 21-30 | 13 | 14.8 | 58.2 | .2552 | 506.0 | 1075.0 | 18.5 |
| 31-40 | 7 | 7.9 | 43.2 | .5156 | 392.5 | 569.0 | 13.2 |
| 40+ | 31 | 35.3 | 35.3 | 1.0000 | 176.5 | 176.5 | 5.0 |

[1]Key to Life Tables: x = age interval; Dx = number of deaths; dx = percentage of deaths; lx = percentage of survivors; qx = probability of death; Lx = total years lived between x and x + 10; Tx = total years lived after a lifetime; ex = life expectancy.

expectancy of an individual is greater in prehistoric-protohistoric populations than in contact populations (cf. Wilson 1985:286). The life tables presented in Table 11 were calculated using the formulas Ubelaker (1974:62) applied in his analysis of the Nanjemoy ossuaries in Maryland.

Life expectancy at birth for the Fredricks cemetery population is calculated to be 18.1 years, a figure similar to the life expectancy of 19.6 years computed for 74 burials from Upper Saratown, another (and somewhat earlier) historic site in Piedmont North Carolina. Both of these figures are substantially less than the life expectancy of 25.8 years determined for 88 burials from the Shannon site, a prehistoric village in the Virginia Piedmont. This finding supports a pattern of decreasing life expectancy in the Historic period, which I have previously proposed (cf. Wilson 1985:286). However, the life expectancy calculated for the Fredricks site and Upper Saratown populations are noticeably older than the 16.2 years determined for the 8 burials recovered from the early protohistoric (ca. 1500-1550) Wall site, which is located within 200 yards of the Fredricks site. This deviation from the expected pattern may be due to sample bias, as only 8 burials (5 of which are aged less than 10 years) have been recovered from the Wall site. Thus, the life expectancy figure of 18.1 years for the Fredricks site and of 19.6 years for Upper Saratown both conform to the expected pattern in that they are lower than the 25.8 years computed for the more reliable skeletal sample from the Shannon site.

<u>Crude Mortality Rate</u>

The crude mortality rate of a population represents the number of individuals per 1000 population that die in a year. Assuming that the rate of death is constant, the crude mortality rate of a population can be computed by dividing the life expectancy at birth into 1000 (Ubelaker 1978:96). For the Fredricks site, the crude mortality rate is 55.2, which means that about 55 individuals out of 1000 died in the population each year.

Population Size

The crude mortality rate can be used to reconstruct the size of a population if the length of time the site was occupied can be determined (Ubelaker 1978:96), or in this case, the length of time that a cemetery was used. Since it is uncertain if the Fredricks site cemetery is the only cemetery used by the inhabitants of the site, a number of temporal periods are used to reconstruct the population. Table 12 presents the population size that can be reconstructed for the Fredricks site depending on whether the cemetery was used for 1, 2, 3, 4, 5, 10, or 15 years. It should be noted that individuals may have been buried in another cemetery at the site that has yet to be discovered, or that individuals may have died and been buried away from the village proper, either of which would result in a skewed population estimate. However, the data presented in Table 12 can be used in conjunction with other evidence of village duration (e.g., Petherick 1985) to provide an estimate of population size. Presently, it seems probable that the site was occupied for about five years by about 40-60 people.

## CONCLUSIONS

This study provides a description and analysis of skeletal remains from Burials 10, 11, and 13, which were excavated at the Fredricks site in the summer of 1985. Also examined are data on health and demographic attributes of the complete population.

Table 12. Estimated population size of the Fredricks site.

| Number of Years Cemetery Was in Use | Estimated Population Size |
| --- | --- |
| 1 | 232.29 |
| 2 | 117.65 |
| 3 | 78.43 |
| 4 | 58.82 |
| 5 | 47.06 |
| 10 | 23.53 |
| 15 | 15.69 |

From the entire cemetery sample of 13 individuals from the Fredricks site, it appears that this Contact period population is less healthy than pre-contact populations. This conclusion is documented by a number of patterns that emerge when the Fredricks site population is compared to other populations. Pathologies related to general stress, poor nutrition, and general osteitis have a higher occurrence in the Fredricks site population when compared with the early protohistoric population from the Wall site (Wilson 1985:336-338). Also, there are fewer older individuals (aged over 40 years at death) in the Contact period cemetery population from the Fredricks site than the late prehistoric population from the Shannon site.

Although a smaller number of dental caries for Burials 11 and 13 than for other burials from the Fredricks site may be indicative of different diets within the population, another explanation could be that the two individuals represent immigrants from other nearby tribes. The diversity in cranial and postcranial indices by sex of the entire population tends to support the latter explanation. Also, it is known from historic accounts (e.g., Lefler 1967) that previously autonomous tribes consolidated at later contact sites. An alternative explanation is that both factors were operative in the Fredricks site population. This question should be investigated using trace element analysis of the three 1985 burials. Results of the trace element analysis conducted on the first ten burials (1983 and 1984) indicate that adult males in the population generally had greater access to meat resources than the others in the population (Wilson 1985:313-321).

Although the 13 burials from the Fredricks site are not representative of a normal population (one in which both sexes are represented in all adult age groups), they do comprise a unique study sample in that they are a spatially distinct group within the site. Certainly, the discovery, excavation, and analysis of more burials from this site will provide an opportunity to determine if interment in cemeteries is the usual form of burial for the Middle to Late Contact period in the eastern Piedmont. Furthermore, additional information on the health and demography of an historic Indian population, and comparative data with which to study the overall effects of European contact and interaction on the lifeways of the Indians of the Carolina and Virginia Piedmont, will be provided.

## IV

## EUROAMERICAN ARTIFACTS

**Linda F. Carnes**

It has been demonstrated by analysis of the 1983 and 1984 artifacts from the Fredricks site (Dickens et al. 1985) that Euroamerican trade items can offer valuable information for dating and interpreting this site. Of the 4,053 historic artifacts recovered in 1985, 1,467 came from disturbed plowzone context and 2,586 came from undisturbed feature or burial contexts. Ninety-three percent (n=3,804) of the total historic artifacts were subjected to a systematic analysis. The unanalyzed 7% consisted of slag, cinder, brick fragments, and historic ceramics found in the plowzone and probably dating to nineteenth-century activities on or near the site.

For comparative purposes, the same analysis format used for the 1983-84 assemblage (Carnes 1985) was employed for the 1985 materials. As with the previous analysis, separate coding formats were used for glass beads, European kaolin pipes, and a general artifact category. All items were identified, quantified, measured, and dated (where possible). A revised functional format (adopted from South 1977) was employed to organize the Euroamerican artifacts for further comparison (Carnes 1985). On Table 13, the total Euroamerican artifacts are arranged by functional groups and by provenience. Together, three burials, 17 features, and one structure provided Euroamerican trade artifacts from undisturbed contexts, whereas items from disturbed contexts came from the plowzone layer of excavated units, and the surface. In summary, 80% of the analyzed Euroamerican artifacts were found in feature or burial contexts, .08% came from Structure 5, and

Table 13. Analyzed Euroamerican artifacts from the 1985 excavations at the Fredricks site.

| Context | Archit. | Arms | Clothing | Furni-ture | Food Prep. | Personal | Const. Tool | Farm Tool | Misc. Hardware | Other By-Prod. | Metal Resource | Indet. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bu. 10 | - | 9 | - | - | 1 | 1538 | - | 1 | - | - | - | - | 1549 |
| Bu. 11 | 1 | 21 | 10 | - | 1 | 363 | - | - | 1 | 4 | - | 9 | 410 |
| Bu. 13 | - | 2 | 1 | - | 1 | 15 | - | - | 2 | - | - | - | 21 |
| Fea. 16 | - | - | - | - | - | 2 | - | - | - | - | - | - | 2 |
| Fea. 17 | - | 12 | - | - | 1 | 189 | - | - | 1 | - | 1 | - | 204 |
| Fea. 18 | - | 1 | - | - | - | 13 | - | 1 | - | - | - | 7 | 22 |
| Fea. 19 | 1 | 34 | - | - | 1 | 177 | - | - | 2 | - | 1 | 11 | 227 |
| Fea. 20 | - | 5 | - | - | - | 84 | - | - | - | - | - | - | 89 |
| Fea. 21 | - | 1 | - | - | - | 1 | - | - | - | - | - | - | 2 |
| Fea. 22 | - | - | - | - | - | 1 | - | - | - | - | - | - | 1 |
| Fea. 23 | - | 13 | - | - | - | 85 | - | - | - | - | - | 2 | 100 |
| Fea. 24 | - | 1 | - | - | 1 | 5 | - | - | - | - | - | - | 7 |
| Fea. 25 | - | - | - | - | - | 1 | - | - | - | - | - | - | 1 |
| Fea. 28 | - | 3 | 2 | - | - | 59 | - | - | - | - | - | - | 64 |
| Fea. 29 | - | 4 | - | - | - | 32 | - | - | - | - | - | 1 | 37 |
| Fea. 30 | - | - | - | - | - | 2 | - | - | - | - | - | - | 2 |
| Fea. 33 | - | 16 | - | - | - | 144 | - | - | - | - | - | 1 | 161 |
| Fea. 38 | - | - | - | - | 1 | 1 | - | - | - | - | - | - | 2 |
| Fea. 41 | 2 | 13 | 1 | - | 2 | 128 | 1 | - | 3 | - | 1 | 1 | 152 |
| Fea. 42 | - | - | - | - | - | 2 | - | - | - | - | - | - | 2 |
| Fea. (Misc.) | - | - | - | - | - | 8 | - | - | - | - | - | - | 8 |
| Sub-Total | 4 | 135 | 14 | 0 | 9 | 2850 | 1 | 2 | 9 | 4 | 3 | 32 | 3063 |
| Structure 5 | - | 4 | - | - | - | 78 | - | - | - | - | - | 2 | 84 |
| PZ (L. 1) | 76 | 99 | 1 | 2 | 98 | 230 | - | - | 17 | Not | 5 | 88 | 616 |
| PZ (L. 2) | 4 | 2 | - | - | 5 | 13 | - | - | - | Analyzed | - | 7 | 31 |
| Misc. | - | 1 | - | - | - | 9 | - | - | - | | - | - | 10 |
| Sub-Total | 80 | 102 | 1 | 2 | 103 | 252 | 0 | 0 | 17 | 0 | 5 | 95 | 657 |
| Total | 84 | 241 | 15 | 2 | 112 | 3180 | 1 | 2 | 26 | 4 | 8 | 129 | 3804 |

17.2% were from plowzone and surface. More specifically, 52% (or 1,978) of the total historic assemblage came from the three burials excavated during the 1985 season.

A closer look at the assemblage from undisturbed contexts (Table 13) shows that items in the Personal category (i.e., beads, bells, and tobacco pipes) comprise the largest group, 93% of the total. Artifacts in the Arms group (i.e., gun parts and ammunition) comprise the second largest group at 4% of the total. All other categories represent less than 1% of the total artifacts from undisturbed contexts.

For disturbed contexts, the artifact distribution by functional groups shows a slightly different pattern from that of undisturbed contexts. Personal group artifacts still comprise the largest category (at 38%), with Arms group, Food Preparation/Consumption group, and Indeterminate group being almost equal (15%, 16%, and 14%, respectively). This difference is created, in part, by an increase in disturbed contexts of bottle glass fragments (Food Preparation/ Consumption group) and corroded iron fragments, probably nails (Indeterminate group). To what extent the plowzone artifact assemblage represents the same occupation as the assemblage from the undisturbed context will be investigated below.

Previous reports describing the 1983-84 excavations (Dickens et al. 1985) and artifact analyses (Carnes 1985) have pointed out the importance of context in making behavioral interpretations of the Euroamerican artifact assemblage. For example, artifacts found as burial associations constitute grave offerings that were intentionally placed with the deceased individual. Often these items were whole (or nearly whole) when selected out of their "systemic context" for burial inclusion. In contrast to burial associations, most of the objects found in pitfill contexts (burials, features, wall trenches, and postholes), arrived there by having been lost (unintentional deposition), or discarded or abandoned (intentional deposition). Whole "lost" objects usually are small items such as glass beads and lead shot. Discarded or abandoned objects usually are represented by broken or unusable items such as tool parts, glass bottle fragments, or smoking pipe fragments. In addition, the frequency of certain artifacts in various contexts may reflect the prevalence, availability, and/or personal selection of particular trade goods by the people who occupied the site.

With these general considerations in mind, the following observations are offered about the 1985 historic artifact assemblage (including the Euroamerican trade artifacts). These observations, however, are summary statements and should be integrated with analytical observations formulated from other data sets at the site (i.e., mortuary data, intersite patterning, faunal and archaeobotanical information, and analyses of natively manufactured items--especially ceramics and lithics). Comparisons between the 1983-84 assemblage and the 1985 assemblage will be made where relevant.

## BURIALS

The three burials excavated during the 1985 season produced the largest number and variety of historic artifacts of the undisturbed contexts, with the exception of Feature 41. As previously mentioned, the three burials contained 52% (roughly half) of the total trade artifact assemblage recovered from this site in 1985. In fact, the burials contained 1,978 Euroamerican trade items, whereas all other features combined (17 features plus one structure) contained half that amount (1,083). As in the 1983-84 assemblage, glass trade beads were the most abundant trade artifact, with Burial 10 containing 1,523 (roughly 77% of the total trade artifacts from burial contexts). These beads occurred in a bundle-like cluster located near the head of the individual. White and red beads (Cornaline d'Aleppo or red over a gray/green core) were dominant colors (78% and 6%, respectively). Also, black (16%) and white spherical beads were clustered around the head and shoulders of Burial 10, suggesting clothing or headdress decoration. The bead cluster in Burial 11 also was associated with a bundle-like concentration located near the feet. Again, white and red were the dominant colors (23% and 68%, respectively). By contrast, Burial 13 contained only 12 beads, and these were found in the fill of the pit and not as burial associations.

Other Personal artifacts from the three burials were bells, buckle frames, a bracelet, a snuffbox, and two jews harps. Burial 11 contained one iron wire compound C-shaped bracelet which appeared to be in a bundle along with a trinket box or snuffbox of tin-plated iron, vermillion, and two iron jews harp (Figure 30). Twenty pieces of unfired lead buck shot (averaging 7.5 mm in diameter) also were found in this cluster. The C-shaped bracelet is identical in style to the bracelets recovered from Burial 6 (1984) but is made of iron wire instead of copper. The snuffbox, the only one recovered from the site to date, appears to be constructed of a tin-plated (or washed) sheet iron body and is round (approximately two inches in diameter). A bone-handled awl also was found in the bundle association of this burial. Nine cast pewter buckle frames were found in the head area of this individual, obviously adorning some type of head band. These frames are circular, approximately one inch in diameter, and have a

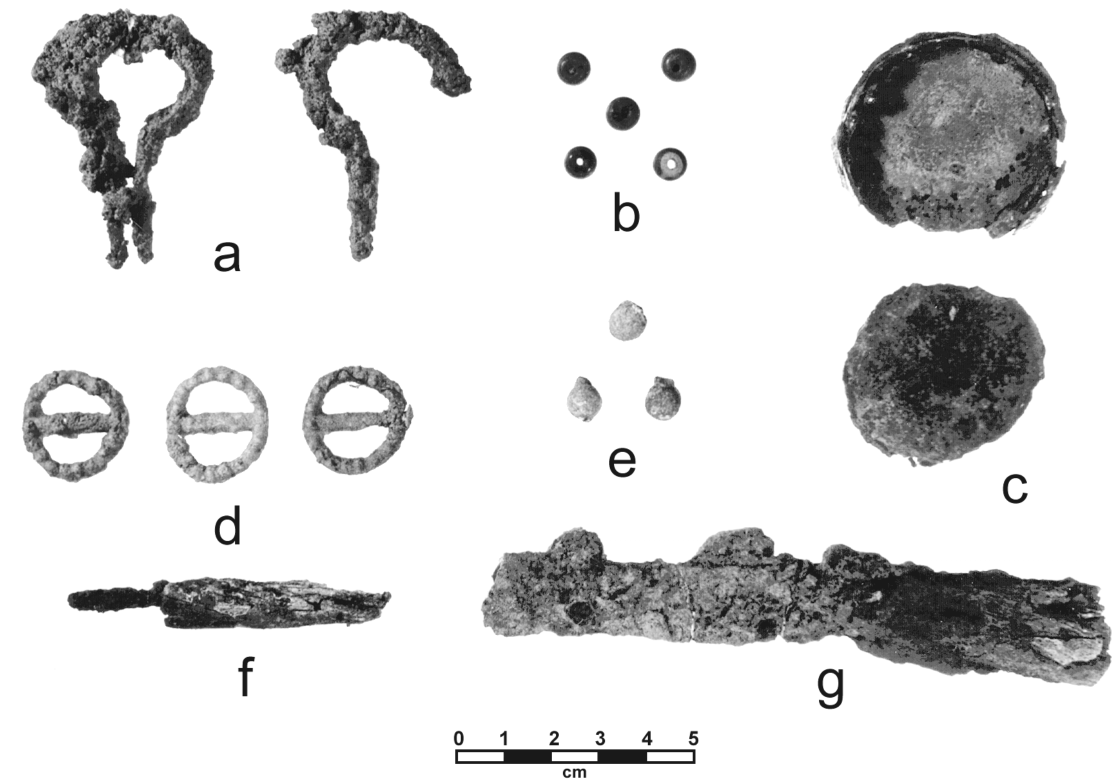


Figure 30. Sample of Euroamerican artifacts associated with Burial 11. a) Jews harps; b) glass beads; c) snuffbox; d) cast pewter buckle frames; e) lead buckshot; f) bone-handled awl; and g) bone-handled case knife.

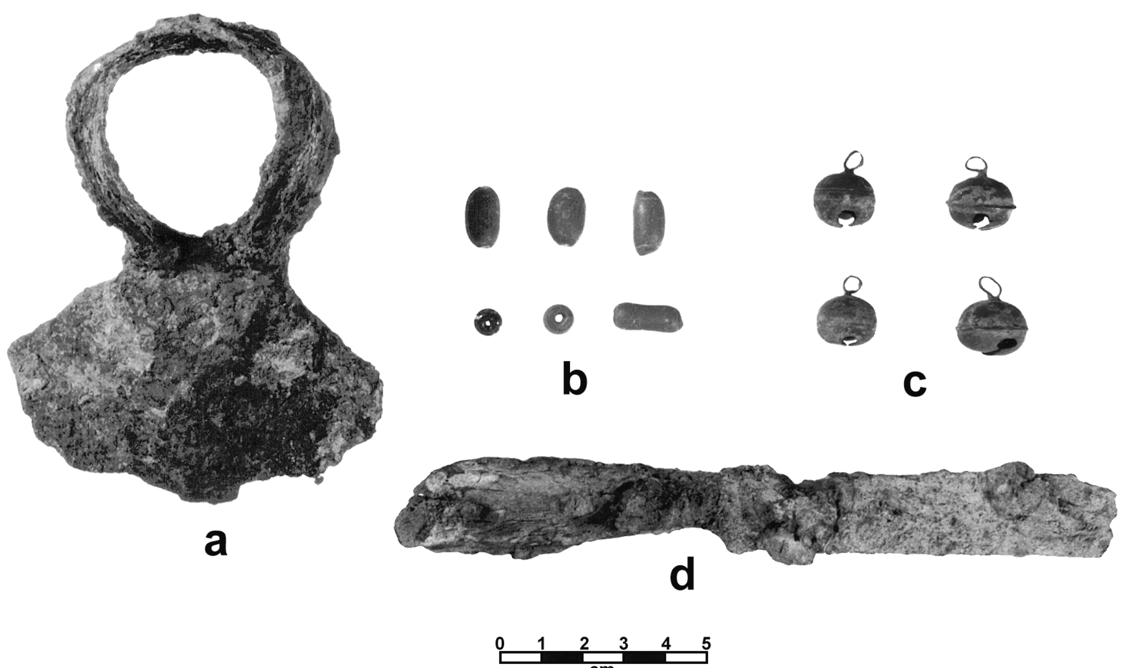


Figure 31. Sample of Euroamerican artifacts from Burial 10. a) iron hoe; b) glass beads; c) brass bells; and d) bone-handled case knife.

leaded (embossed) decoration on one side. No tangs were found with these frames, suggesting they were either sewn or woven onto the head band.

Burial 13 contained a few glass beads and three pipe fragments of the Personal gear category. The kaolin pipe fragments also were found in a bundle cluster. A bone-handled case knife (Miscellaneous Hardware group) and a steel needle or straight pin (of the Clothing group) were other European trade items from this bundle. A badly decomposed pewter porringer (representing the Food Preparation/Consumption group) also was found in this burial. No maker's marks were noted on any of these items.

Euroamerican objects from Burial 10 consisted of seven lead buck shot, two European gunflints, and a green bottle glass fragment, all located within the bead concentration near the head of this child (Figure 31). Eight sheet brass bells were found in the knee area of this burial, a similar placement to those in Burial 7 (1984). The bells also were identical in style to those of the earlier burial; four flush-edged and four flange-edged construction, with flush loop, and iron pebble. A broken iron hoe was found in association with a polished greenstone celt near the skull of this burial. The blade end of the hoe, which shows either damage or reworking, probably was selected out of the everyday toolkit for burial accompaniment.

In summary, it appears that these three burials, when compared to the previously excavated burials at the site, contain a higher number of Personal items (particularly ornamental) than utilitarian items. It has been previously suggested by mortuary analysis of the other burials that subadults (or children) contained, on the whole, more ornamental items than adults (Ward 1985). Burial 10, a subadult, supports this observation. As for artifact types, no unique or unusual items were noted in the 1985 burial assemblage of Euroamerican trade materials. This suggests that the objects selected for burial inclusions were taken from a similar trade good assemblage as those represented by the 1983-84 assemblage.

## FEATURES

As shown in Table 13, historic artifacts were found in 17 features and one structure wall trench. Feature 42, it should be noted, was only exposed at the top of subsoil and not excavated. Since interpretation of these features is the focus of another section of this report, they will only be described here as to their Euroamerican artifact contents. Features 17, 19, 23, 33,and 41 contained the greatest numbers and variety of trade items. All other features contained less than 100 items per feature, and eight of those less than 10 items.

As previously mentioned, artifacts recovered in feature pitfill represent either intentional (discarded or abandoned) or unintentional (lost) items. Therefore, one might expect Euroamerican objects recovered from this context to be predominantly either broken, reworked, or small in size. For interpretative purposes, however, the rate of accumulation of these objects and their association with one another will be important to determine.

Historic artifacts from Feature 17 consisted of 12 pieces of lead ammunition, one glass bottle fragment, one broken ember tong, one case knife, 13 non-specific sheet brass fragments, 175 glass beads, and 12 kaolin pipe fragments. Feature 18 contained one iron hoe fragment and 21 other miscellaneous trade artifacts. Feature 19 had one wrought nail, 24 pieces of ammunition, one gunflint, one glass bottle fragment, one knife bolster, 165 beads, seven kaolin pipe fragments, and other miscellaneous metal pieces. One whole brass straight pin with a coiled head was found in Feature 28. Feature 33 contained 15 pieces of ammunition, one gunflint, and 141 glass beads. Feature 41 was notable because of its variety and quantity of trade artifacts. The fill of this feature contained 12 lead shot, two wrought nails, one coiled brass wire ornament or clothing fastener, two green bottle glass fragments (neck and lip portions), one hand-made pewter pipe bowl liner, one large iron axe, three case knife fragments, 121 glass beads, five kaolin pipe fragments, and three non-specific metal fragments. A sample of these items is shown in Figure 32. The coiled brass wire fastener is referred to as a "frog" and is part of a hook-and-eye set. The green bottle fragments were identified as those of a wine bottle dating 1690-1700 (Dumbrell 1983:30). The hand-made pewter pipe bowl liner is similar in design, but not style, to one found in Feature 13 in 1984. Native manufacture of these liners for wooden pipe bowls is a strong possibility, given other evidence for aboriginal metal working at this site. Although the axe head is larger than other axes recovered from the Fredricks site in previous seasons, like the others, it dates to the late seventeenth century (Cotter and Hudson 1957:54). The poll end of the axe was broken laterally and thus discarded.

The excavation of Structure 5 wall trench produced 85 Euroamerican artifacts including four lead shot, 77 glass beads, one kaolin pipe fragment, and one iron cooper's tool. The cooper's tool, similar to a small curve-bladed adze, was used originally to shave the interior of barrel staves (Sloan 1964:29). Lawson (Lefler 1967:64) also reported that the Tuscarora carved wooden bowls for trade with other Indians, including the Occaneechi. It is possible that this wood-working tool

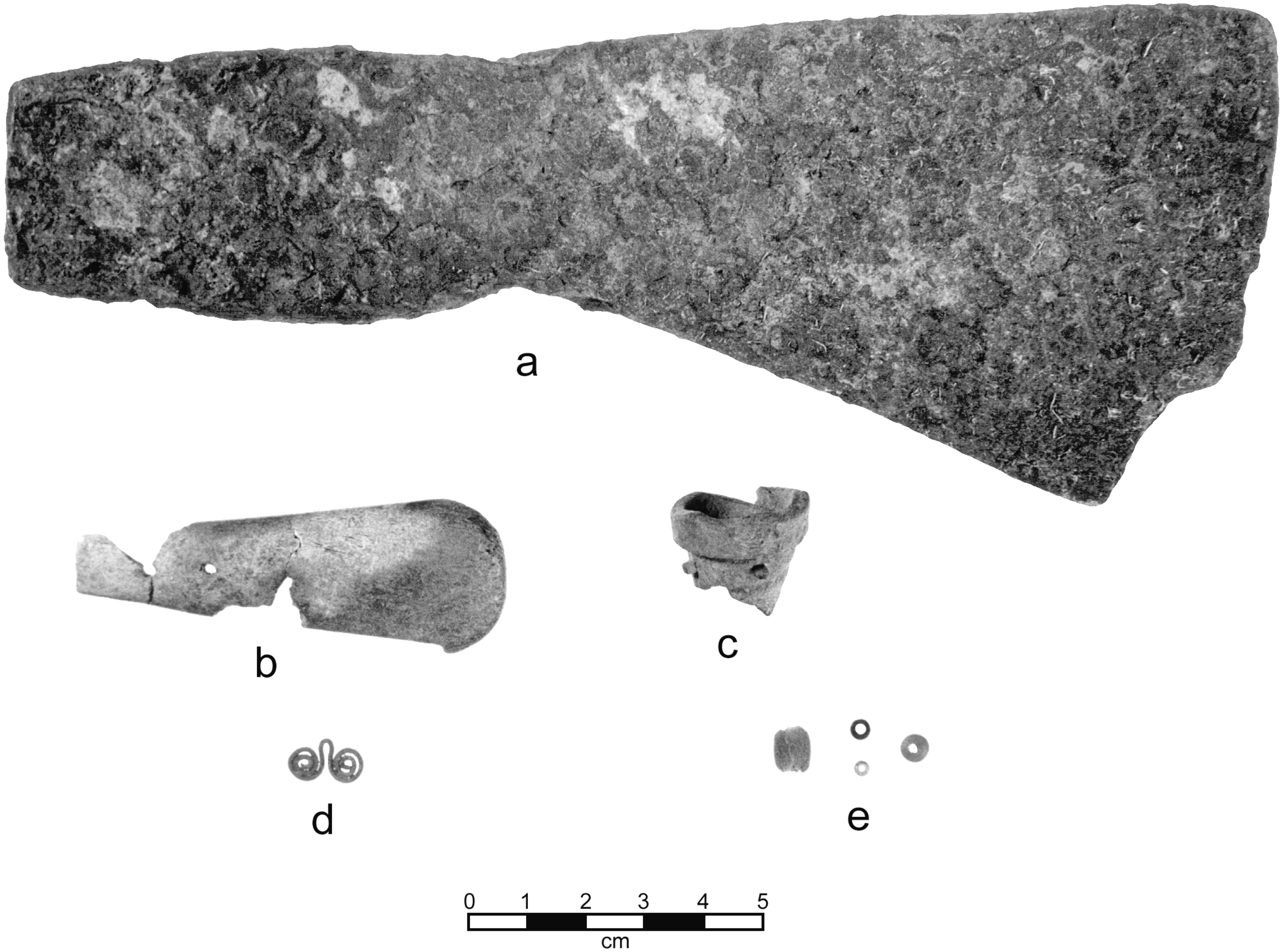


Figure 32. Sample of Euroamerican artifacts from Feature 41. a) iron axe; b) bone handle from knife; c) hand-made pewter pipe bowl liner; d) brass wire "frog"; and e) glass beads.

was used for that purpose. But because of its context in the wall trench, its final function probably was as a digging implement (for tight, hard-to-get-to places).

In summary, Euroamerican artifacts recovered from feature contexts in 1985 represent the same range of variety and style of objects from the 1983-84 seasons at this site. This would suggest that temporal differences between the two assemblages are slight. For chronological information, the datable kaolin pipe fragments from undisturbed contexts (features/burials) were compared to those from disturbed contexts (plowzone and surface) and will be discussed in the following section. Overall, there are fewer utilitarian items for the 1985 assemblage, and an increase in items of the Personal group (namely beads) and Arms group (namely lead shot).

## PLOWZONE

Historic artifacts recovered from plowzone and the surface represent the disturbed context. A total of 1,467 items (or 36% of the analyzed trade artifacts) were examined for functional and chronological information. Once again, artifacts of the Personal category were the most abundant, comprising 38% of the total. Arms, Architecture, Food Preparation/Consumption, and Indeterminate groups had almost equal amounts (15%, 12%, 16%, and 14%, respectively). Artifacts in the Architecture group included 54 iron nails, four construction fasteners, and 18 pieces of flat glass (probably window pane). The latter items may date to the nineteenth century. Arms group artifacts included 29 pieces of lead ammunition (mostly buck shot), 60 gunflints (of aboriginal and European manufacture), and ten iron gunparts. Most of the gunparts (hammers, side plate, and spring) were of the dog-lock style, similar to items recovered form earlier excavations at the Fredricks site. It has been previously documented (Carnes 1985) that this style of weapon dates to the 1620-1640 period of European trade. The frequency of these gunparts to whole guns indicates parts replacement was common. The gunflints and gunparts all appear to date to the Occaneechi occupation of this site.

Clothing group artifacts from the plowzone were represented by one square brass buckle frame. Glass lamp chimney fragments, which comprised the majority of the Furniture group, probably also date to the nineteenth century. Glass bottle fragments (mostly dark green and some clear) comprise the Food Preparation/Consumption group of artifacts. Of special interest, is a clear flint glass, press-molded decanter stopper. The pattern appears to be a "baroque" sun-burst motif dating to the late eighteenth century (McKearin 1948:251). Also included in the glass fragments were nine pieces of drinking tumblers of clear glass. The decanter stopper and tumbler fragments probably also date to post-aboriginal use of the site.

Personal gear artifacts consisted of one iron ember tong, one mirror fragment, 102 glass beads, and 126 kaolin pipe fragments (including 54 datable stems). Miscellaneous Hardware artifacts consisted of knife parts, two lead bale seals, wire, and an iron horseshoe. Knife parts, mostly blade and bolster fragments, were of the case knife style, the only type recovered from this site to date. The two bale seals, the first to be found here, could date to the seventeenth, eighteenth, or nineteenth centuries. No date could be determined from the partial mark visible on one seal.

The Metal Resource category was composed of four cut sheet brass fragments, and one piece of wire. One of the cut brass pieces resembled a triangular arrow point, similar to metal points found at other Contact period sites (e.g., Upper Saratown). In three years of excavation at the Fredricks site, however, this is the only possible metal point recovered. This finding suggests that the natives continued to use traditional stone arrow tips. Other cut brass pieces consisted of two coiled "dangles" and one tubular bead.

All glass beads recovered from the site (plowzone plus feature/ burial contexts) were combined to examine color and style preferences, assuming contemporaneity of beads found in the two contexts. As in the 1983-84 assemblage, white was the predominant color at 67%, followed by red (Cornaline d'Aleppo or red over a gray/green core) at 16%, black (opaque and translucent) at 12%, blue (all shades) at 4%, "other" beads (ivory or other colors) at 0.6%, and "fancy" (Roman beads) at 0.4%. Using Kent's (1984:211-223), Karklins' (1982), Kidd and Kidd's (1970), and Brain's (1979) chronologies, the temporal range for bead types found at the Fredricks site was 1670-1690. Once again, very few cane beads (untumbled straw beads) were found, which suggest a post-1670 period of trade. The only wire-wound beads from the site were "Roman" beads (black with yellow inlay), which date 1699-1799 and are believed to originate in Amsterdam. The general scarcity of wire-wound beads suggests a pre-1690 occupation for this site. In addition, the predominance of small size beads (2-4 mm in diameter) also indicates an "earlier" trade period inventory.

A second comparison of plowzone and feature/burial contexts artifacts was made, again, using items in the Personal group. Kaolin pipe stems were examined to determine chronological placement of the site and to establish contemporaneity of the two contexts. By subjecting 54 mid-section pipe stem fragments to Binford's regression formula (1962), a deposition date of 1680.49 was determined for plowzone/surface context. The same formula, when applied to a sample of 22 pipe stems from feature/burial contexts, produced a date of 1665.95. When compared to the analysis of 1983-84 pipe stems, the plowzone date is slightly later (1678.95; n=18) and the feature/burial context slightly earlier (1683.16; n=24). As a final comparison, I combined the 1983-84 pipe stems with those from 1985 to produce a larger sample. For plowzone combined, a date of 1680.1 was determined, and for features/burials, a combined date of 1675.13 was calculated. With only a five year range variation, contemporaneity of these two contexts is likely.

## CONCLUSIONS

In overview, a preponderance of Personal gear trade artifacts is consistent for all contexts excavated in 1985 at the Fredricks site. Also, a slight decrease in utilitarian items (tools and containers) and a slight increase in arms-related objects (mostly shot and gunparts) was discerned. Trade artifacts found as burial associations do not exhibit any unusual or unexpected patterns of composition or deposition, with most of the whole items again occurring in this context. The few artifacts that could be dated to a manufacturing period or temporal range, again support a late seventeenth century occupation for the native component at this site.

V

## PLANT REMAINS

**Kristen Johnson Gremillion**

A major goal of the Siouan Project is to describe and explain change in aboriginal Piedmont cultures after European contact. Since data on plant remains from the 1985 field season adds to the available body of archaeological evidence of plant use during the Historic period, one purpose of this paper is to assess previous interpretations of subsistence change in light of the newly acquired information. Concentration during the 1985 season on the Middle Contact period Fredricks site (31Or231) has provided a large and carefully sampled quantity of plant remains from a single occupation. Therefore, an opportunity will be taken to outline in a general way the subsistence practices of the Fredricks site population with respect to plant foods. Archaeological evidence from the 1985 season, as well as past seasons, will be used to determine both the range of plant foods used and the relative contributions of various plant foods to the diet. Problems of interpretation will be discussed, including the relationship between preservability and frequency ranking of various types of plant remains.

Responses to spatial variation in the form of vegetational patches and regular temporal variation in the form of seasonality also will be addressed. Although archaeological evidence for the precise composition of the past environmental mosaic is not yet available, informed speculation about the use of different patch types can be offered on the basis of modern vegetational studies and archaeological evidence of plant use. Similarly, seasonality of particular deposits is difficult to determine due to background "noise" resulting from food storage. The fact that most food plants tend to ripen during the same time of year makes occurrence of specifically seasonal deposits of plant remains unlikely for certain times of year. Hypotheses about seasonal plant use patterns can nevertheless be proposed on the basis of existing evidence.

## METHODS

### Sampling

In 1985, plant remains were recovered from a variety of feature contexts, including three burial pits, 13 pits and basins containing mixed fill (including one pit, Feature 30, which is associated with a prehistoric occupation), one tree stump stain, one wall trench and three charcoal-filled pits (one of which contained abundant corn remains). A total of 605 l of fill was processed by flotation to yield the samples analyzed for this report. In Tables 14-17, results are presented by feature with subtotals by feature type (burial pits, mixed fill pits and basins, Structure 5). In the text, percentage and ubiquity values refer to 1985 data only unless otherwise specified. Results from charcoal-filled pits are presented separately, as are those from Feature 30.

### Recovery

All plant remains analyzed were drawn from flotation samples processed in the field using a device similar to the SMAP machine described by Watson (1976). Water was mechanically pumped from the Eno River into a 55-gallon drum, agitating the water into which each soil sample was poured. The resulting light fraction was collected in a U.S. Standard Geological sieve with 0.71 mm mesh; the heavy fraction was collected in a 1/16 in mesh screen. All flotation samples were measured by volume in buckets as they were collected, generally in 10 l quantities. Highly consistent recovery was achieved by limiting processing to a small number of crew members. All samples were dried for about a day before processing to facilitate charcoal recovery.

Analysis

The method of analysis approximates that described by Yarnell (1974). Each sample is sifted through a series of U.S. Standard geological sieves ranging from 6.35 mm to 0.21 mm. Carbonized plant materials greater than 2.00 mm in diameter were sorted completely and quantified by weight. Material passing through the 2.00 mm sieve was searched only for seeds, cultigen remains, and plant materials not found in the largest size category. Quantities of plant remains in the 1.41 mm to 0.71 mm size category were then extrapolated on the basis of their proportional representation in the 6.35 mm to 2.00 mm category. This procedure assumes that proportions of various items in a given sample are similar in all size categories retained in screens of size 0.71 mm and larger. Although this assumption is not always justified, it is useful in offering a more realistic estimate of absolute quantities of plant remains in a sample. For purposes of comparison, relative quantities are most important, and these are ultimately derived from fully sorted material. Plant remains from Feature 36 were sorted completely only through the 2.38 mm screen due to the large size of this sample. These results were not extrapolated.

Extrapolated weights of plant remains are presented in Tables 14-15; percentages of plant food remains by weight appear in Table 16. Seeds are reported as aggregate weights and percentages in Tables 14-16; counts of seeds and fruits appear in Table 17. Corn, common

Table 14. Plant remains from 1985 flotation samples (weights in grams).

| Context | Total Plant Remains | Unknown | Wood/ Stem | Root/ Tuber | Pedicel/ Peduncle | Plant Food Remains |
|---|---|---|---|---|---|---|
| BURIALS | | | | | | |
| Bu. 10 | 5.68 | 0.24 | 4.65 | - | - | 0.79 |
| Bu. 11 | 6.99 | 0.37 | 3.95 | - | - | 2.67 |
| Bu. 13 | 5.77 | 0.20 | 4.63 | - | - | 0.94 |
| Sub-total | 18.44 | 0.81 | 13.23 | - | - | 4.40 |
| FEATURES | | | | | | |
| Fea. 15 | 2.69 | 0.07 | 2.05 | - | - | 0.57 |
| Fea. 16 | 0.60 | 0.03 | 0.49 | - | - | 0.08 |
| Fea. 17 | 46.50 | 1.15 | 41.77 | - | <0.005 | 3.58 |
| Fea. 18 | 1.11 | 0.11 | 0.27 | - | - | 0.73 |
| Fea. 19 | 15.24 | 0.50 | 13.23 | - | - | 1.51 |
| Fea. 20 | 12.45 | 1.17 | 8.55 | - | - | 2.73 |
| Fea. 23 | 6.40 | 0.27 | 5.30 | - | - | 0.83 |
| Fea. 24 | 1.85 | 0.13 | - | - | - | 0.35 |
| Fea. 25 | 2.65 | 0.06 | 2.59 | - | - | 0.00 |
| Fea. 28 | 42.93 | 1.99 | 24.41 | - | - | 16.53 |
| Fea. 29 | 40.75 | 2.88 | 30.10 | 0.04 | - | 7.73 |
| Fea. 33 | 7.67 | 0.24 | 6.90 | - | - | 0.53 |
| Fea. 41 | 54.61 | 3.55 | 40.17 | - | 0.01 | 10.88 |
| Sub-total | 235.45 | 12.15 | 177.20 | 0.04 | 0.01 | 46.05 |
| STRUCTURES | | | | | | |
| Structure 5 | 6.38 | 0.57 | 4.21 | - | - | 1.60 |
| TOTAL | 260.27 | 13.53 | 194.64 | 0.04 | 0.01 | 52.05 |

Table 15. Plant food remains from 1985 flotation samples (weights in grams).

| Context | Plant Food Remains | Hickory Shell | Acorn Shell | Walnut Shell | Peach Pit | Acorn Meat | Common Bean | Cucurbit Rind | Corn | Seeds | Soil Volume (Liters) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BURIALS | | | | | | | | | | | |
| Bu. 10 | 0.79 | 0.36 | <0.005 | - | 0.19 | - | - | - | 0.21 | 0.03 | 20 |
| Bu. 11 | 2.67 | 2.14 | 0.01 | - | 0.06 | - | 0.01 | - | 0.42 | 0.03 | 60 |
| Bu. 13 | 0.94 | 0.48 | 0.02 | - | 0.10 | - | 0.05 | - | 0.28 | 0.01 | 60 |
| Subtotal | 4.40 | 2.98 | 0.03 | - | 0.35 | - | 0.06 | - | 0.91 | 0.07 | 140 |
| FEATURES | | | | | | | | | | | |
| Fea. 15 | 0.57 | 0.48 | - | - | 0.07 | - | - | - | <0.005 | 0.02 | 10 |
| Fea. 16 | 0.08 | 0.08 | - | - | - | - | - | - | - | - | 10 |
| Fea. 17 | 3.58 | 3.31 | 0.06 | 0.08 | - | - | - | <0.005 | 0.12 | 0.01 | 40 |
| Fea. 18 | 0.73 | 0.38 | 0.06 | - | - | - | 0.07 | - | 0.22 | - | 20 |
| Fea. 19 | 1.51 | 1.29 | 0.10 | 0.03 | - | - | - | - | 0.09 | <0.005 | 40 |
| Fea. 20 | 2.73 | 2.04 | 0.21 | - | 0.27 | - | - | - | 0.08 | 0.13 | 20 |
| Fea. 23 | 0.83 | 0.55 | 0.02 | 0.11 | - | - | - | - | 0.05 | 0.10 | 20 |
| Fea. 24 | 0.35 | 0.30 | - | - | - | - | - | - | 0.05 | - | 10 |
| Fea. 25 | 0.00 | - | - | - | - | - | - | - | - | - | - |
| Fea. 28 | 16.53 | 11.00 | 0.02 | 0.94 | 0.04 | - | 0.05 | - | 2.62 | 1.86 | 70 |
| Fea. 29 | 7.73 | 2.96 | 0.16 | 0.01 | 1.26 | - | - | - | 3.26 | 0.08 | 70 |
| Fea. 33 | 0.53 | 0.39 | 0.02 | 0.02 | 0.06 | - | - | - | 0.04 | <0.005 | 20 |
| Fea. 41 | 10.88 | 2.11 | 2.62 | 0.07 | 2.11 | 1.61 | 0.08 | - | 1.99 | 0.29 | 50 |
| Subtotal | 46.05 | 24.89 | 3.27 | 1.26 | 3.81 | 1.61 | 0.20 | - | 8.52 | 2.49 | 380 |
| STRUCTURES | | | | | | | | | | | |
| Struct. 5 | 1.60 | 1.32 | 0.10 | - | 0.13 | - | - | - | 0.04 | 0.01 | 30 |
| TOTAL | 52.05 | 29.19 | 3.40 | 1.26 | 4.29 | 1.61 | 0.26 | <0.005 | 9.47 | 2.57 | 550 |

Table 16. Percentage of plant food remains from 1985 flotation samples.

| Context | Plant Food Remains (grams) | Hickory Shell | Acorn Shell | Walnut Shell | Peach Pit | Acorn Meat | Common Bean | Cucurbit Rind | Corn | Seeds |
|---|---|---|---|---|---|---|---|---|---|---|
| Burial Fill | 4.40 | 67.7 | 0.7 | - | 8.0 | - | 1.4 | - | 20.7 | 1.6 |
| Pit Feature Fill | 46.05 | 54.0 | 7.1 | 2.7 | 8.3 | 3.5 | 0.4 | trace | 18.5 | 5.4 |
| Structure 5 | 1.60 | 82.5 | 6.3 | - | 8.1 | - | - | - | 2.6 | 0.6 |
| Total | 52.05 | 56.1 | 6.5 | 2.4 | 8.2 | 3.1 | 0.5 | trace | 18.2 | 4.9 |

Table 17. Seed/fruit counts by feature.

| Taxon[1] | Burials | | | Features | | | | | | | | | | | Str. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10 | 11 | 13 | 15 | 17 | 18 | 19 | 20 | 23 | 24 | 28 | 29 | 33 | 41 | 5 |
| Cultigens | | | | | | | | | | | | | | | |
| Corn kernels | 1 | 2 | 1 | - | 3 | 5 | 2 | 1 | 1 | 1 | 4 | 13 | 1 | 9 | 1 |
| Corn cupules | 9 | 29 | 22 | - | 1 | - | 6 | 1 | 2 | - | 95 | 161 | 2 | 66 | 1 |
| Cucurbit | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - |
| Common bean | - | 1 | 2 | - | - | 1 | - | - | - | - | 1 | - | - | 1 | - |
| Fleshy Fruits | | | | | | | | | | | | | | | |
| Persimmon | - | 1 | - | - | - | - | - | 1 | 1 | - | 11 | 1 | - | - | - |
| Hawthorn | - | 1 | - | - | - | - | - | 3 | 1 | - | 3 | - | - | 2 | - |
| Groundcherry | - | 1 | - | - | - | - | - | 2 | - | - | 24 | 2 | - | - | - |
| Grape | 3 | - | 1 | 1 | - | - | - | - | - | - | 4 | 6 | - | 13 | 1 |
| Sumac | - | - | - | - | - | - | 1 | - | 1 | - | 1 | - | - | 1 | - |
| Maypops | 1 | - | - | - | - | - | - | - | - | - | 3 | - | - | 4 | - |
| Bramble | 4 | - | - | - | - | - | - | - | - | - | 1 | 1 | - | 1 | - |
| Nightshade | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | 4 | - |
| Grains | | | | | | | | | | | | | | | |
| Knotweed | - | 1 | - | - | - | - | - | 1 | - | - | 2 | 4 | - | - | - |
| Grass family | - | - | - | - | - | - | - | - | - | - | 4 | - | - | 2 | - |
| Legume family | - | - | - | - | 1 | - | - | - | - | - | - | - | - | 3 | - |
| Chenopod | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - |
| Greens | | | | | | | | | | | | | | | |
| Poke | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - |
| Miscellaneous | | | | | | | | | | | | | | | |
| *Lespedeza* | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Wood Sorrel | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - |
| Henbit? | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| Bedstraw | 1 | - | - | - | - | - | - | - | - | - | 2 | 1 | - | 3 | - |
| *Jacquemontia*? | - | - | - | - | - | - | - | - | - | - | 1 | - | - | 2 | - |
| Bearsfoot | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| Beggars lice? | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Unknown | 1 | 1 | - | - | 2 | - | 2 | 2 | 2 | - | 15 | 3 | 1 | 10 | 2 |

[1]Scientific names for each taxon are given in the text.

bean, peach pit, and nut remains are itemized by weight as well as by number.

## Methods of Comparison

Calculation of percentage of plant food remains by weight is a simple method by which to compare items of similar physical composition that have similar food-to-waste ratios (e.g., walnut shell and hickory shell). However, most plant foods differ in how much food they represent and in likelihood of preservation. For this reason, proportions of remains by weight can be misleading. For example, acorn shell usually comprises a smaller proportion of an assemblage by weight than hickory nutshell (which is more durable and more likely to have been preserved through use as fuel) even though acorn probably represents more food per unit of shell weight. In this case, an adjusting factor can be used (discussed below) to provide a more realistic estimate of food represented. Another method of comparison involves calculating the ubiquity of each food type as the percentage of features from which it was recovered. This method does not take account of quantities and is thus more suitable for comparing remains dissimilar in preservability and food-to-waste ratio. Ubiquity values appear in Table 18.

# RESULTS

## Nuts

Hickory (Carya sp.) nutshell is the most abundant plant food remain by weight (56.1%). A high proportion of hickory shell is quite common at aboriginal sites in the eastern United States, which is due in part to the thickness of the shell and its tendency to become carbonized when

Table 18. Plant ubiquity at the Fredricks site as percentage of features.

| Taxon | Ubiquity | Ubiquity Rank |
|---|---|---|
| Corn | 100.0 | 1 |
| Hickory | 94.7 | 2 |
| Acorn | 68.4 | 3 |
| Peach | 52.6 | 4 |
| Walnut | 36.8 | 5 |
| Grape | 36.8 | 5 |
| Common bean | 26.3 | 6 |
| Persimmon | 26.3 | 6 |
| Hawthorn | 26.3 | 6 |
| Groundcherry | 21.1 | 7 |
| Knotweed | 21.1 | 7 |
| Sumac | 21.1 | 7 |
| Bramble | 21.1 | 7 |
| Bedstraw | 21.1 | 7 |
| Nightshade | 15.8 | 8 |
| Maypops | 15.8 | 8 |
| Cucurbit | 10.5 | 9 |
| *Jaquemontia*? | 10.5 | 8 |
| Henbit? | 5.3 | 10 |
| Chenopod | 5.3 | 10 |
| Poke | 5.3 | 10 |
| *Lespedeza* | 5.3 | 10 |
| Bearsfoot | 5.3 | 10 |
| Beggars lice? | 5.3 | 10 |
| Wood sorrel | 5.3 | 10 |

[1]Excluding Feature 25 (which contained no plant food remains) and Feature 30.

fired rather than completely combusted and consequently lost from the archaeological record. There is also some evidence that hickory, as well as other types of nutshell, may have been used as fuel by some aboriginal groups (Yarnell 1982), which further increases the likelihood that it would have become carbonized. These circumstances argue for some caution in equating abundance of hickory nutshell with subsistence importance. In fact, Keene (1981) has gone so far as to suggest that hickory was probably a much less important resource in the Late Archaic of the Saginaw Valley than its abundance suggests, since it does not appear in the set of resources generated by his optimal foraging model.

However, there are other lines of evidence to indicate that hickory was a staple food at the Fredricks site. Its ubiquity based on features sampled is 94.7%, ranking second only to corn (Table 18). To some extent, high preservability may have adjusted the proportion of hickory upward in relation to other plant food types, but it seems unlikely that this factor alone accounts for both high weight proportion and high ubiquity.

In addition, there is ample historic evidence that hickory was a staple food of North Carolina Indians. John Lawson (Lefler 1967) makes a number of references to preparation of hickory "milk" and storage of nuts for winter consumption. Lawson (Lefler 1967:105) says "These nuts are gotten, in great Quantities, by the Savages, and laid up for Stores, of which they make several dishes and Banquets." Lawson's evidence is particularly useful for assessing the Fredricks site plant remains, since he traveled extensively through the Piedmont and Coastal Plain during the period of the occupation with which we are concerned. It does not seem likely that so many types of preparation and effort of storage would be devoted to an unimportant resource. Mature hickory trees were probably abundant in the north central Piedmont in both lowland and floodplain habitats, as they are today (Moore 1973; Moore and Wood 1976). In fact, they were probably more abundant when the Fredricks site was occupied, before disturbance of forest by Euroamericans became extensive (Gleason and Cronquist 1964).

Other nut types are somewhat less well represented. Acorn (Quercus sp.), in contrast to hickory, has a thin shell that is easily fragmented and consequently less likely to survive both pre- and post-depositional disturbance. This factor may partly account for its relatively low percentage by weight (6.5). Acorn shell makes up only 10.0% of total nutshell compared to 86.2% for hickory (Table 19). Comparison of hickory and acorn quantities is further complicated by the fact that a gram of acorn shell may represent from five to 200 times as much nutmeat as a gram of hickory shell, as estimated by Lopinot (1983). To reduce the bias introduced by different food-to-nonfood ratios, acorn shell quantities can be multiplied by 50 and divided by quantity of hickory shell to produce an acorn to hickory ratio (Yarnell and Black 1985). By applying this calculation to site totals, one obtains an acorn-to-hickory ratio of 5.82, indicating that acorn may have in fact contributed more food to the diet than hickory.

In fact, this ratio contrasts strongly with that of 0.42 calculated for data from the 1983 and 1984 seasons. This led the author to suggest that acorn had declined in importance since the time of the Protohistoric occupation of the nearby Wall site (Gremillion 1985). The Wall site acorn-to-hickory ratio was 5.72. The conclusion that acorn was used less frequently than hickory at the Fredricks site must therefore be revised. Fredricks site totals for three seasons yield an acorn-to-hickory ratio of 2.15. From this figure, it can be assumed

Table 19. Percentages of nutshell from 1983-84 and 1985 flotation samples.

| Sample | Nutshell (grams) | Acorn % | Hickory % | Walnut % |
|---|---|---|---|---|
| 1983-1984 Seasons | 52.06 | 0.9 | 97.7 | 1.3 |
| 1985 Season | 33.85 | 10.0 | 86.2 | 3.7 |
| Total | 85.91 | 4.5 | 93.2 | 2.3 |

that acorn was not a less important resource than hickory at Fredricks, although the degree of differential representation of the two nut types is less at the later site.

In spite of its relatively low preservability compared to hickory, acorn has a ubiquity value of 68.4%, ranking third after corn and hickory. Cumulative site totals for three seasons yield a ubiquity value of 74.3% and a rank second only to corn and hickory. Even by assigning rank according to percentage of plant food remains, acorn ranks fourth (after peach, whose remains are as durable as those of hickory). These results argue strongly that acorn and hickory were both staple foods for the Fredricks site population, with acorn probably used to a greater extent. Carbonized acorn meats also were found at Fredricks, although only in one feature.

Lawson also attests to the reliance of Piedmont groups on acorn harvesting when he recounts the processing of acorn oil made from live oak acorns (Lefler 1967:100), and there is a mention of trading of acorns in the account of the "Gentlemen" sent from Barbados to the Cape Fear River area in 1663 (Lefler 1967:77). But perhaps most illuminating is Lawson's inclusion of "Acorns and Acorn Oil" in his enumeration of Indian foods (Lawson, in Lefler 1967:182). We can assume that Lawson is speaking in a general way about subsistence based on his travels through the Coastal Plain as well as the Piedmont, so his account does not provide information about local variations in subsistence practices. However, it may be significant that hickory is not mentioned in this summary of foods, though he seems to have considered it important to the Indians, as evidenced by the comments cited above.

Walnut (*Juglans nigra* L.), in contrast to hickory and acorn, is represented only in small quantities at Fredricks (2.4%). Three-season totals provide a value (1.2%) close to that for acorn (Table 20), but it should be kept in mind that the physical composition of walnut shell (and hence its preservability) is more similar to that of hickory than of acorn. Ubiquity of walnut was 36.8% (37.1% for three-season totals) resulting in a rank of fifth (fourth for three-season totals). As percentage of total nutshell, walnut at 3.7% is much less well represented than hickory (86.2%) and somewhat less abundant than the much more fragile acorn shell (10.0%) (Table 19).

So although walnut was presumably used for food, it was apparently not a staple, as were hickory and acorn. Black walnut is not as abundant today in Piedmont forests as are oak and hickory (Moore 1973; Moore and Steward 1976) and conditions were probably similar in the recent past. Lawson does not mention walnut as a native food, so presumably he did not encounter it in this context, or did not note its use.

## Cultigens

All of the domesticated species present at Fredricks are native to Mesoamerica. Of these, namely corn (*Zea mays* L.), common bean (*Phaseolus* sp.), and "squash" (*Cucurbita* sp.), corn is by far the most well represented. Corn remains comprise 18.2% of plant food remains by weight, and corn kernels make up the largest percentage of identified seeds (Table 21). Corn ranks first in ubiquity, and ranks second only to hickory based on three-season totals. Corncob may, like hickory shell, have been used as fuel and hence frequently preserved. However, corn kernels alone account for 61.6% of total identified seeds. Clearly corn was a staple and probably (considering comments by European observers, including Lawson) was the most important plant food used by

Table 20. Percentages of plant food remains from 1983-85 field seasons.

| | FLOTATION SAMPLE RESULTS[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Plant Food Remains (grams) | Hickory Shell | Acorn Shell | Walnut Shell | Peach Pit | Acorn Meat | Common Bean | Cucurbit Rind | Corn | Seeds |
| 157.14 | 51.0 | 2.5 | 1.2 | 4.8 | 1.1 | 0.5 | <0.1 | 36.6 | 2.3 |

[1]Excluding Features 30, 35, 36, and 37.

Table 21. Seed/fruit counts and proportions from 1985 field season[1].

| Taxon | Total | Percent of Total Identified Seeds[2] | Number/gram of Plant Food Remains |
|---|---|---|---|
| Cultigens | | | |
| Corn kernels | 45 | 23.1 | 0.86 |
| Corn cupules | 395 | NA | 7.59 |
| Cucurbit | 1 | 0.5 | 0.02 |
| Common bean | 6 | 3.1 | 0.12 |
| Fleshy Fruits | | | |
| Persimmon | 15 | 7.7 | 0.29 |
| Hawthorn | 10 | 5.1 | 0.19 |
| Groundcherry | 29 | 14.9 | 0.56 |
| Grape | 29 | 14.9 | 0.56 |
| Sumac | 4 | 2.1 | 0.08 |
| Maypops | 8 | 4.1 | 0.15 |
| Bramble | 7 | 3.6 | 0.13 |
| Nightshade | 6 | 3.1 | 0.12 |
| Grains | | | |
| Knotweed | 8 | 4.1 | 0.15 |
| Grass family | 6 | 3.1 | 0.12 |
| Legume family | 4 | 2.1 | 0.08 |
| Chenopod | 1 | 0.5 | 0.02 |
| Greens | | | |
| Poke | 1 | 0.5 | 0.02 |
| Miscellaneous | | | |
| *Lespedeza* | 1 | 0.5 | 0.02 |
| Wood sorrel | 1 | 0.5 | 0.02 |
| Henbit? | 1 | 0.5 | 0.02 |
| Bedstraw | 7 | 3.6 | 0.13 |
| *Jacqemontia*? | 3 | 1.5 | 0.06 |
| Bearsfoot | 1 | 0.5 | 0.02 |
| Beggars lice? | 1 | 0.5 | 0.02 |

[1]Excluding Features 30, 35, 36, and 37.

[2]Excluding corn cupules.

Fredricks site inhabitants and their neighbors.

Corn percentage by weight does vary somewhat between features and feature types. Of mixed-fill pits, Feature 29 has the highest corn percentage (42.1%); other features of this type have corn percentages ranging from 2.6% to 15.9%. The three burials had for the most part somewhat higher percentages (Table 16) than most of these pit features. The same is true of 1983 and 1984 samples, except for Feature 9, which was particularly rich in plant remains in general and corn in particular. Whether this fact might indicate a different depositional context for plant remains associated with burial fill than for other feature fill cannot be determined, but further quantitative studies might be useful in determining the nature of deposition of upper burial fill in certain of the Fredricks site burial pits. It is suspected that organically rich zones in the upper zones of some of these burials may have been the result of intentional ritual deposition (Ward 1985).

Common bean and cucurbit remains are poorly represented by weight. However, bean has moderately high ubiquity (26.3%), ranking sixth. Beans are likely to have been boiled rather than roasted, which contributes to a rather low likelihood of preservation. Therefore common bean may have been a more important food than its weight percentage indicates. Cucurbit rind is poorly represented at Fredricks, but the inclusion of seeds brings the ubiquity value of cucurbit up to 10.5%. Cucurbit rind is fragile and subject to fragmentation, and although little is known about the processing of edible cucurbits by Piedmont groups, it seems safe to assume that they were neither parched nor smoked, procedures that facilitate preservation through carbonization. Perhaps both cucurbit and bean are under-represented because of processing techniques.

In this connection it is interesting to note that Lawson (Lefler 1967:82-3) considers the many varieties of "Pulse" too "tedious to name," and he enumerates several types of cucurbit grown in the Piedmont, including some Old World varieties. His inclusion of "Gourds; Melons; Cucumbers; Squashes; Pulse of all sorts. . ." (Lefler 1967:182) in his catalogue of the "Indians Food" suggests that both cucurbits and common bean were more important crops than the archaeological evidence indicates.

## Fleshy Fruits

A large variety of fleshy fruits was used by the Fredricks site population, but only a few are represented in relatively large quantities. Grape (*Vitis* sp.) and persimmon (*Diospyros virginiana* L.) are both particularly well represented. Groundcherry (*Physalis* sp.) seeds were found in the same quantities as grape seeds in the 1985 sample. However, three-season totals rank grape higher than groundcherry both as percentage of identified seeds and as number per gram of plant food remains. Maypops (*Passiflora incarnata* L.) also ranks higher than groundcherry based on these totals (Table 22). In the 1985 sample, bramble (*Rubus* sp.) was present but less well represented than most other fleshy fruit taxa. Of the fleshy fruits exclusive of peach, grape also ranks highest by ubiquity, followed by persimmon and hawthorn (Table 18).

Peach (*Prunus persica* L.), however, ranks higher than any of the presumably non-cultivated fleshy fruits mentioned above. Peach was first introduced to North America by the Spanish (Sheldon 1978) and

Table 22. Seed/fruit counts and proportions from 1983-85 field seasons[1].

| Taxon | Total | Percent of Total Identified Seeds[2] | Number/Gram of Plant Food Remains |
|---|---|---|---|
| Cultigens | | | |
| Corn kernels | 480 | 61.6 | 3.05 |
| Corn cupules | 905 | NA | 5.76 |
| Cucurbit | 4 | 0.5 | 0.03 |
| Common Bean | 15 | 1.9 | 0.10 |
| Fleshy Fruits | | | |
| Persimmon | 24 | 3.1 | 0.15 |
| Hawthorn | 13 | 1.7 | 0.08 |
| Groundcherry | 32 | 4.1 | 0.20 |
| Grape | 56 | 7.2 | 0.36 |
| Sumac | 7 | 0.9 | 0.04 |
| Maypops | 38 | 4.9 | 0.24 |
| Bramble | 10 | 1.3 | 0.06 |
| Nightshade | 8 | 1.0 | 0.05 |
| Elderberry | 1 | 0.1 | 0.01 |
| Blueberry | 9 | 1.2 | 0.06 |
| Nightshade fam. | 9 | 1.2 | 0.06 |
| Grains | | | |
| Knotweed | 8 | 1.0 | 0.05 |
| Grass fam. | 9 | 1.2 | 0.06 |
| Legume fam. | 5 | 0.6 | 0.03 |
| Chenopod | 19 | 2.4 | 0.12 |
| Greens | | | |
| Poke | 7 | 0.9 | 0.04 |
| Miscellaneous | | | |
| Lespedeza | 1 | 0.1 | 0.01 |
| Wood sorrel | 1 | 0.1 | 0.01 |
| Henbit? | 1 | 0.1 | 0.01 |
| Bedstraw | 14 | 1.8 | 0.09 |
| Jacquemontia? | 3 | 0.4 | 0.02 |
| Bearsfoot | 1 | 0.1 | 0.01 |
| Beggars lice? | 1 | 0.1 | 0.01 |
| Spurge | 1 | 0.1 | 0.01 |
| Morning glory | 2 | 0.3 | 0.01 |

[1]Excluding Features 30, 35, 36, and 37.

[2]Excluding corn cupules.

spread rapidly to Southeastern Indian groups apparently somewhat independently of direct contact with Europeans (Gremillion 1985). It is represented archaeologically by fragments of the stony endocarp or pyrene, commonly called the "pit", rather than by whole seeds or pits. For these reasons it is given a separate category in weight determinations. As might be expected, representation of peach pit by weight is high (Table 16), as is its ranking by ubiquity (Table 18). Because of the nature of its remains, peach is difficult to compare with smaller-seeded fruits. However, it is safe to say that peach was commonly used, as evidenced by Lawson's observations (Lefler 1967:217) of its use in preparation of "Quiddonies" or cakes, along with other fruits.

Piedmont Indians may have had some familiarity with arboriculture, since they made use of tree fruits like persimmon and hawthorn. These species, like peach, tend to colonize and bear maximum fruit in open rather than thickly forested habitats. Peach trees grow easily with little tending, and produce a large quantity of palatable food relative to the amount of energy invested in their care. Piedmont Indians could probably have grown them quite easily, particularly if they already had experience tending and/or protecting indigenous fruit trees. However, peach does not appear to have replaced native fleshy fruits, but rather was added to the existing diet. There is no reason to suspect that the minimal amount of energy necessary to maintain a peach tree population would have interfered with other activities.

### Miscellaneous Seeds

Some seed types represent weedy species, which were used only incidentally or not at all. These include wood sorrel (*Oxalis stricta*

L.), beggar's lice (Desmodium sp.), Jaquemontia sp., bedstraw (Galium sp.), Lespedeza sp., poke (Phytolacca americana L), henbit (Lamium sp.), chenopod (Chenopodium sp.), knotweed (Polygonum sp.), and nightshade (Solanum sp.). Poke may have been used as cooked greens (as it sometimes still is in the rural south), but is represented by only one seed. Bedstraw is frequently found in archaeological deposits in the East, but its use, if any, is not known. Knotweed and chenopod were both indigenous starchy cultigens in many parts of the prehistoric East and Midwest (Yarnell 1983; Asch and Asch 1985) but as yet only small quantities have been found at Fredricks. There is little convincing evidence that these starchy annuals were used, since small numbers of seeds from these weedy species could easily have entered archaeological deposits independently of human agency. There is certainly no evidence that they were cultivated by Fredricks site inhabitants.

## Charcoal-Filled Pits

These features (35, 36, 37) deserve some separate consideration because the fill they contained was more rich in carbonized plant remains than the fill of burial pits, other pit features, or Structure 5. Features 35 and 37 contained large quantities of wood charcoal, but few plant food remains (Table 23). Feature 36 may be described as a cob-filled pit, although it contained some wood charcoal as well as charred corncob fragments and a single corn kernel fragment (Table 24). These three shallow pits occurred close together in a nearly linear configuration, and all of them probably resulted from smoldering fires (judging by the density of fuel materials) constructed for a particular purpose (such as hide smoking or pot firing).

Table 23. Plant remains from Features 35 and 37 (weight in grams).

| Feature/ Soil Vol. | Fraction | Total Plant Remains | Unknown | Wood/ Stem | Total Plant Food Remains | Hickory Nutshell |
|---|---|---|---|---|---|---|
| Fea. 35 (12 l) | Light | 6.40 | 0.02 | 6.38 | 0.00 | - |
| | Heavy | 3.47 | 0.01 | 3.26 | 0.20 | 0.20 |
| | Total | 9.87 | 0.03 | 9.64 | 0.20 | - |
| Fea. 37 (15 l) | Light | 1.23 | - | 1.23 | 0.00 | - |
| | Heavy | 9.92 | 0.03 | 9.87 | 0.02 | 0.02 |
| | Total | 11.15 | 0.03 | 11.10 | 0.02 | 0.02 |

Table 24. Plant remains from Feature 36 (weight in grams)[1].

| | >2.38 mm in Size | | | | | | <2.38 mm in Size |
|---|---|---|---|---|---|---|---|
| Fraction | Total Plant Remains | Wood/ Bark | Unknown | Total Plant Food Remains | Corn Kernels | Corn Cupules | Residue |
| Light | 56.36 | 45.14 | 0.97 | 10.25 | 0.00 | 10.25 | 44.57 |
| Heavy | 9.26 | 8.16 | 0.03 | 1.07 | 0.03 | 1.04 | 15.18 |
| Total | 65.62 | 53.30 | 1.00 | 11.32 | 0.03 | 11.29 | 99.75 |

[1]Soil volume=8 liters.

Feature 30

Plant remains from Feature 30 have been presented separately (Table 25) and omitted from site calculations of ubiquity and percentage because this feature dates to an earlier occupation of the site based on ceramic types. Of particular interest are the large number of bedstraw seeds (a total of 94) as well as smaller numbers of bearsfoot (Polymnia uvedalia L.) achenes and henbit seeds. Only one corn cupule was recovered from the feature, along with moderate quantities of hickory and acorn shell.

What is especially interesting about the seed assemblage from Feature 30 is that it contains large numbers of seeds from species that are not usually considered food plants by paleoethnobotanists. Bedstraw seeds have a traditional use in northern climates of the Old World as a beverage (Hedrick 1972); it has also been speculated that the vegetative part of the plant was used as bedding (Uphof 1968:236). A use such as the latter might account for bedstraw's fairly regular occurrence in prehistoric archaeological deposits in the East. It is generally dismissed as a non-economic plant, or its use listed as unknown.

Henbit belongs to the mint family (Lamiaceae). Most species were introduced from the Old World and are naturalized widely in eastern North America (Radford et al. 1967:908). This fact casts some doubt on the placement of these seed in the genus Lamium, although the family designation is more likely to be correct. In any case, these seeds are not those of any recognized food plant typically found on archaeological sites.

The identification of bearsfoot is not in doubt. Bearsfoot is in the aster or composite family (Asteraceae) and, like bedstraw, is found

Table 25. Plant remains from Feature 30.

| | Total Plant Remains | Unknown | Wood/ Stem | Total Plant Food Remains | Hickory Shell | Acorn Shell | Common Bean[1] | Corn[2] | Seeds[3] |
|---|---|---|---|---|---|---|---|---|---|
| Grams | 7.38 | 0.29 | 2.85 | 4.69 | 4.05 | 0.41 | 0.01 | <0.005 | 0.22 |
| % of Total Plant Food Remains | - | - | - | 100.0 | 86.4 | 8.7 | 0.2 | trace | 4.7 |

[1]One cotyledon.

[2]One cupule fragment.

[3]94 bedstraw, 23 henbit(?), 6 bearsfoot, 2 unknown.

in archaeological deposits in the Southeast fairly regularly, although its use, if any, is not known.

There are several interpretations of the association of these seeds in Feature 30: 1) one or more of these plants was used as food, and simply has not yet been recognized as a food plant by paleoethnobotanists. This alternative seems unlikely, unless prehistoric Piedmont Indians had a subsistence pattern rather different than that noted for parts of the East for which good paleoethnobotanical sequences have been established; 2) none of these species were utilized, but were incidentally (unintentionally) carbonized and deposited. This alternative also seems unlikely for bedstraw and henbit, for which there were rather large numbers of seeds. Although all of these species might have grown in human-disturbed habitats, none of the seeds or fruits are typically windborne, which would make incidental deposition unlikely; or 3) the species in question had nonfood uses (medicinal, ceremonial, or construction) that resulted in the deposition of seeds or seed-bearing parts either as waste or in some other behavioral context. This latter interpretation seems most likely in light of available evidence.

The possibilities are intriguing, particularly since the plant remains assemblage from Feature 30 is so different from those of the Fredricks site occupation proper. However, any conclusions about the behavioral correlates of deposition of these plant remains must await further information.

Comparison of Ranks by Ubiquity and Weight

Both ubiquity and percentage by weight were used in the above analysis to interpret the relative importance to site inhabitants of various kinds of plant foods. Each of these comparative techniques is useful in different contexts; ubiquity, for instance, ignores mass in favor of frequency of occurrence and can be used for comparing plant remains that have different probabilities of being preserved in large quantities or that vary greatly in mass and food-to-waste ratio. Therefore, it might be expected that the two methods would yield very different rankings of resources. However, this is not the case for the resources categorized separately by weight (e.g., hickory, acorn, walnut, corn, peach, bean, and cucurbit) (Figure 33). For this illustration, ubiquity rankings have been determined with respect only to the taxa used in the figure, and not to seed taxa, which are not itemized by weight. The close correspondence between ranks using these two methods could mean that interpretations based on them are likely to be more secure than if they were widely divergent.

But what if ubiquity and percentage ranks are similar simply because the same biases have affected both cases? It is apparent (Figure 33) that in most cases the most highly ranked species are also ones with remains that have relatively high preservability (e.g., hickory shell, walnut shell, corn). However, there are notable exceptions. Acorn rank is high by both methods, despite its low preservability relative to, say, walnut. Grape ranks as high as walnut shell by ubiquity (Table 18), although seeds are in general less preservable than thick nutshell (although fruit-drying over a fire, if practiced, would make grape seeds more likely to be preserved). Also, most of the highly-ranked and highly preservable plant types are those mentioned as important foods ethnohistorically. Thus, the close correspondence of rankings lends some strength to the interpretations presented above. But if correspondence is this close, what is the utility of using both methods? The biggest advantage of using both

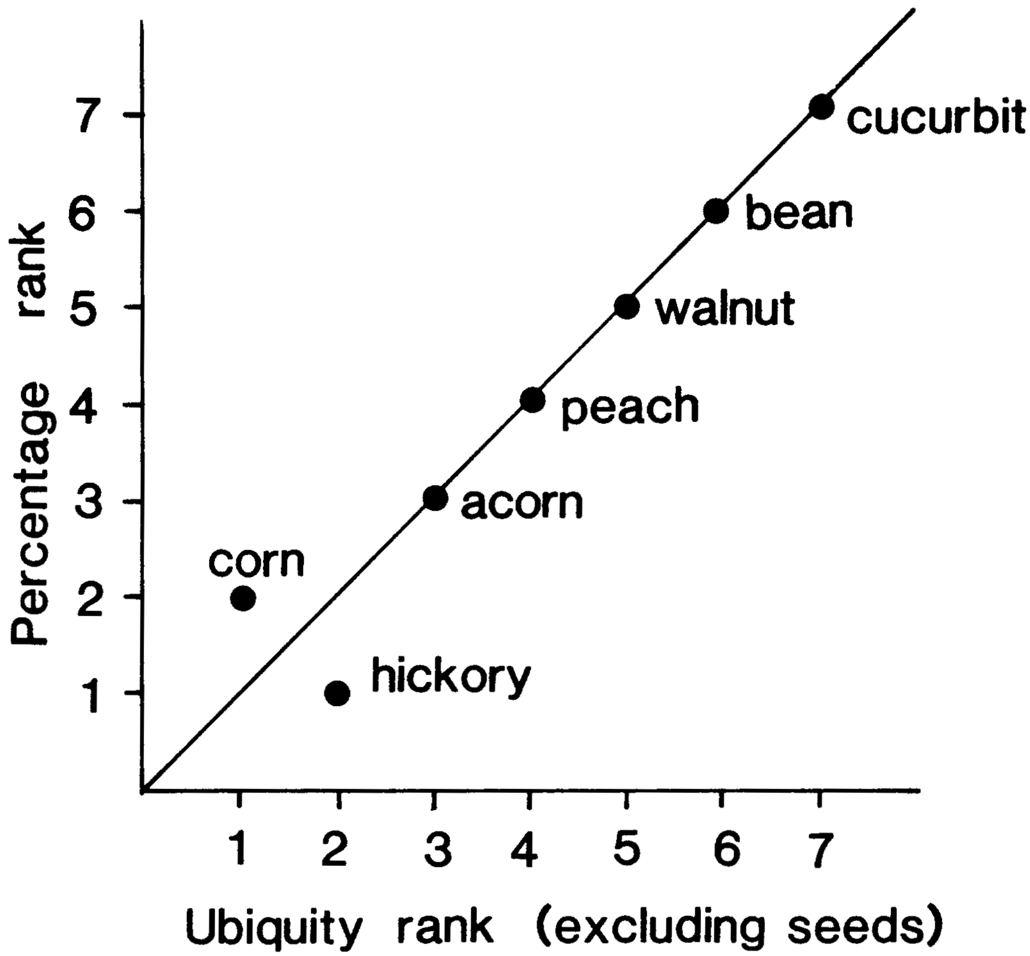


Figure 33. Comparison of ubiquity and percentage rankings for plant remains from the Fredricks site (by weight).

methods is that ubiquity allows for comparison of classes (e.g., seeds and nutshell) that are quantified differently (by count vs. by weight) because of their very different physical characteristics.

## RECONSTRUCTION OF PLANT USE PATTERNS AT THE FREDRICKS SITE

Three seasons of excavation at the Fredricks site have yielded an ample body of paleoethnobotanical data. By using these data as well as information about contemporary vegetation and historical sources, the pattern of plant use and plant management at the Fredricks site in the Middle Contact period can be outlined. Two basic parameters of plant resource use will be used to orient this discussion, namely spatial and temporal variation in resource occurrence and human responses to them.

### Spatial Variation

Even in a mature ecological system, such as the oak-hickory forest that was probably the dominant vegetation pattern in the precontact Piedmont, areas of contrasting vegetation inevitably occur. This is because environment is not simply a stable backdrop for human activity, but rather a dynamic phenomenon subject to historical processes that produce both spatial and temporal variability (Winterhalder 1980:136). If mature hardwood forest is taken as a matrix, areas that contrast in some way with these surroundings can be termed patches (Wiens 1976; White and Pickett 1985). Natural disturbance in the form of fire or fallen trees are likely to create patches of varying sizes. The presence of human populations produces additional agents of disturbance, sometimes intentional (e.g., firing of forested tracts to drive game or encourage browse for herbivores) and sometimes less so (patches of herbaceous or shrub vegetation in fallowed agricultural fields, at various stages of succession). Thus the surroundings of the village represented archaeologically by the Fredricks site should be viewed as a mosaic of vegetational patches in a forested matrix, including anthropogenic (human-generated) patches as well as ones differentiated on the basis of natural factors such as disturbance, slope, elevation, soil substrate, and hydrology. Patch distribution is variable in time as well as space, producing a mosaic of vegetational patches at different stages of development (Wiens 1976:82), each with its own assemblage of species.

A formal survey of existing vegetation in the immediate vicinity of the Fredricks site has not yet been undertaken. Although such a survey would be useful and may be done in the future, its usefulness would be limited because of two important factors. First, because of the shifting nature of patches, especially in the context of considerable human disturbance, the distribution of vegetational patches at the time of occupation would be impossible to reconstruct on the basis of modern distributions. Even during the site occupation (estimated at some 30 years) the dynamics of patch distribution would have become increasingly complex as agricultural fields were abandoned and new patches created through clearance. Second, the present-day composition of early successional habitats (i.e., areas recently disturbed and characterized in forested areas by sun-loving herbaceous species that grow and reproduce rapidly) has been drastically altered through introduction of Old World weeds, which have in many cases out-competed indigenous species usually dominant in such situations. Nineteenth-century land survey records (Delcourt 1976) and charcoal analysis (Chapman et al. 1982) have also been used in the Eastern Woodlands to reconstruct past environments. Pollen analysis, if feasible, would also be a useful tool for this task. However, none of these methods have yet been used at the Fredricks site.

Therefore, only a speculative reconstruction of environmental patches near the Fredricks site can be offered, based on general knowledge of community types common in the Piedmont today (Moore 1973; Moore and Wood 1976; Shelford 1963). Ethnographic information is available from a different cultural and geographical area. Alcorn (1984) has done a careful analysis of anthropogenic vegetation zones and their management for the Teenek of northeast Mexico. Direct extrapolation from modern to prehistoric land use would of course be inappropriate since different cultures and vegetational environments are considered, as well as different time periods. No formal analogies are being drawn between observed and past behavior-to-artifact relationships. However, information about relationships between a farming society and its land can be used to generate ideas about what kinds of patches might have been used by the Fredricks site inhabitants. Although such a reconstruction is admittedly speculative, it is valuable nonetheless as a background for understanding subsistence behavior as it is revealed archaeologically.

One of Alcorn's (1984) important findings was that most vegetation zones used by the Teenek can be classed as anthropogenic, even local forest. This was probably true of the Fredricks site locale as well, since hardwood forest was an important source of food (hickory, acorn, and walnut) and may thus have been managed to some extent (including the most drastic form of management, burning). However, hardwood forest may be considered the naturally occurring matrix vegetation within which anthropogenic patches would have occurred. Hardwood forest was probably the most common ecological community near the village. Except for nut harvests, though, hardwood forest with its thick canopy and sparse understory probably provided little in the way of edible herbaceous plants. Extensive management of hardwood forest was probably minimal, although selective removal of certain trees can provide additional light for nut-bearing species and other food plants. Although oak and hickory trees have too long a generation time to allow for extensive human manipulation through planting and harvesting, limited management of some kind may have been practiced. A close relationship involving some sort of management even seems likely, since acorns and hickory nuts were apparently staple foods, but there is no direct evidence of this.

Within the forest, large patches in various stages of succession may have been present as a consequence of burning. Firing of forest to encourage browse for game or to encircle deer has been documented for Southeastern groups (Hudson 1976; Swanton 1946). Lawson (in Lefler 1967:31, 215) notes extensive burning of forest during game drives. Nut-bearing trees might have been either damaged or temporarily removed from these areas, but the resulting herbaceous vegetation would have produced more edible seed- and fruit-bearing species than closed-canopy forest. Also, trees growing in more open locations, such as forest edges, are more productive. Plant species that dominate in such disturbed areas typically are annuals that produce large numbers of propagules (Horn 1974; Odum 1976). Most of the fleshy fruits used by the Fredricks site inhabitants (including bramble, grape, and elderberry) grow well in such disturbed habitats. Lawson (1967:34) mentions "savannahs" near Congaree full of fruit-bearing bushes.

Closer to the village, anthropogenic patches were probably even more common. Perhaps most obvious would have been agricultural fields in which the dominant crop was corn, beans, cucurbits, and other crops.

The quantities of corn apparently consumed by the site inhabitants, as well as historic references to "fields" (Lefler 1967:56), indicate that separate agricultural fields (as opposed to small mixed gardens) were probably located near the village. Along with crops, weeds would have been present in fields, some of which may have been useful and hence spared. Teenek often spare useful trees when clearing a field in which to plant maize and beans (Alcorn 1984:346). Sun-loving weeds of agricultural fields near the Fredricks site might have included some of the fleshy fruit species mentioned above, as well as less useful ones such as morning-glory (_Ipomoea_ sp.), still a common cornfield weed today. We do not know how extensively cornfields were weeded. However, William Hilton's "A Relation of a Discovery" (1664), speaking of the Carolina coast near the mouth of the Cape Fear River, mentions the high productivity of cornfields, "although the Land be overgrown with weeds through their lazinesse" (Salley 1911:44). It may be that European ethnocentrism mistook sparing of useful weeds for sloppy husbandry.

Abandoned agricultural fields may constitute a distinct type of anthropogenic patch. Among the Teenek, these are used in various ways before being replanted; sometimes they are replanted as mixed gardens, and sometimes simply maintained as habitats for useful wild or weedy species, especially medicinals (Alcorn 1984:367-370). Old fields were potential sources of fleshy fruits and medicinal plants. At Fredricks, old field habitats may have been similar to those of other patches deforested through burning, though perhaps somewhat closer to the village.

Still closer to or within the village, patches of ground maintained in a more or less disturbed state were undoubtedly common. Among the Teenek, dooryard "gardens" constitute an anthropogenic zone near houses.

Some of the plants managed in this zone are conscientiously tended and propagated; others are simply spared. Many are medicinals (Alcorn 1984:331). The existence of dooryard "gardens", or clusters of useful plants, is purely speculative for the Fredricks site. Lawson did not mention such "gardens" in Piedmont villages, but it is possible that an Englishman would not have recognized a confusion of apparent weeds as a garden (in contrast to cornfields, which were apparently similar enough to European agricultural fields to be noted as such).

Another anthropogenic patch is equally speculative for the Fredricks site, and would be analogous to the cafetal, or coffee orchard of the Teenek (Alcorn 1984:372). The cafetal is essentially a managed forest, planted sometimes with coffee, and/or a variety of other fruit-bearing trees. The possible existence of such zones near the Fredricks site is of particular interest because of the importance of fruit-bearing trees like persimmon, hawthorn, and peach. Certainly some amount of management of fruit trees is likely, particularly in the case of peach, which was a domesticate when it was introduced to North America. Lawson's account does not mention stands or orchards of fruit trees. However, he makes the statement that peaches "are the only tame Fruit, or what is Foreign, that these People enjoy. . ." (Lefler 1967:173). Piedmont Indians apparently had a long-standing relationship with native fruit trees before contact, and with the peach thereafter. Certainly the existence of maintained stands of fruit trees analogous to the Teenek cafetal is a possibility.

In sum, a speculative reconstruction of main anthropogenic vegetational zones and patches near the Fredricks site village, with economic plants possibly found in each, can be summarized as follows:

1. Hardwood forest: oak, hickory, walnut; also blueberry, hawthorn (on poorly-drained soils), and grape (in low woods and on stream banks).
2. Large non-forested patches: Lawson's "savannahs"? Patches in various stages of succession after burning. Sumac, bramble; possibly maypops, poke, and hawthorn.
3. Active agricultural fields: corn, common bean, cocurbits; weedy annuals (groundcherry, poke, maypops).
4. Old fields: groundcherry, poke, maypops, hawthorn?, bramble?
5. Dooryard "gardens"?: medicinals and herbs?
6. Fruit tree stands?: persimmon, peach, hawthorn?

Temporal Variability

In addition to spatial variability resulting from vegetational patchiness on the landscape, Fredricks site inhabitants had to cope with temporal variability. For purposes of scheduling subsistence activity, the more-or-less predictable seasonality component of temporal variability was probably of utmost importance. Unfortunately, most archaeological deposits at the Fredricks site contain remains of plants that ripen in the late summer and early fall. The storage of some of these foods (e.g., corn and nuts) complicates any attempt to determine season of deposition for particular deposits. However, a general outline of the Fredricks site "seasonal round" for plant foods can be proposed on the basis of the general plant remains assemblage from the site, botanical evidence of fruiting seasons for the species involved (Radford et al. 1968) and historical information from Lawson's account (Lefler 1967).

Mid-Summer to Early Fall. This was undoubtedly the season during which most crop harvesting took place. Perhaps most importantly, the chief crop, corn, would be ripe in late summer to early fall, as would common bean and cucurbit. If more than one corn crop was sown in a given year, a summer harvest, perhaps of "green corn", might have taken place as well. Fleshy fruits also become ripe during this broad time period, among them grape (August to October), hawthorn (August to October), elderberry (July to August), maypops (July to October), peach (June to July), persimmon (September to October), and blueberry (June to October). Summer and early fall would thus have been busy times for harvesting crops (including tree crops such as the peach) as well as collecting fruits growing mainly in old fields and other disturbed areas. Lawson reports (Lefler 1967:217) that fruits were dried and pounded into cakes for winter storage. Processing and storage of corn was also a fall activity.

Early Fall to Early Winter. The most important nut resources for the Fredricks site population, acorn and hickory, would have been available for collection roughly from September to November. The best time for collecting acorns and hickory nuts may have overlapped somewhat with the time of crop harvesting. After collection, acorns probably were processed to make acorn oil and hickory nuts prepared for storage (Lefler 1967:51, 105).

Mid-Winter to Early Spring. This part of the year is something of a terra incognita for the paleoethnobotanist seeking archaeological evidence of seasonal plant use. Most plants are dormant in the winter, and except for late nut crops, few or no fresh plant foods would have been available. It is during this part of the year that foods stored in the fall would have been consumed. This also may have been a time for hunting forays (possibly to obtain deerskins for trade as well as meat for food), as was reported by Lawson (Lefler 1967:217).

Spring to Late Summer. Spring may well have been the leanest time of year for the Fredricks site people. Most plant species resume growth in the spring, and some flower during this time, but fruiting generally does not occur until later in the year. Fresh greens would, however, have been available. Stores of crops, nuts and fruits from the previous fall would be near-depleted by this time. Perhaps animal foods dominated the diet in the spring; in fact, Lawson (in Lefler 1967:217) notes the use of weirs to take herring coming upstream to spawn in March and April. Even farther inland, the Fredricks site people may have turned to the nearby Eno River in springtime for fish (catfish bones are abundant in Fredricks site deposits, as reported by Holm [1985]). Another important spring activity was planting corn and other crops, which, like the harvest, was probably accompanied by rituals. Perhaps trade with Europeans became more active in the spring.

## DISCUSSION AND CONCLUSIONS

The Fredricks site population can best be described in subsistence terms as diversified agriculturalist/collectors. Although these people devoted a great deal of time and energy to collection and processing of certain species (particularly corn, acorn, and hickory), they used a wide variety of plant foods, most of which would have been abundant in anthropogenic habitats such as old fields. The Fredricks site people had a relationship of husbandry with crops they planted and tended, like corn and common bean. In addition, they made use of fleshy fruit species that grew in areas they had disturbed through farming and burning. Perhaps the relationship between the Fredricks site people and these latter species is best described as one of incidental or specialized domestication (Rindos 1984); that is, a symbiotic, coevolutionary relationship resulting from human feeding on plants, initiated and maintained chiefly through dispersal and protection. These characteristics of incidental and specialized domestication stand in contrast to the seed storage, weeding, and tilling characteristic of agricultural domestication, which would have been the type of domesticatory relationship shared with crop species like corn. Specialized domestication implies a specialized dispersal relationship between humans and plants, and is usually accompanied by storage and planting (Rindos 1984:163). Peach (and perhaps other fruit-bearing species as well) probably had this sort of relationship with the Fredricks site population. Even nut trees, typically considered "wild" resources, may have had at least a relationship of incidental domestication with the Fredricks site population involving some sort of protection.

What evidence do we have that this pattern differs from that typical of populations living in the same area prior to contact? How did trade with Europeans and other contact-related phenomena affect earlier patterns? Evidence is still inconclusive on these points, but so far no drastic differences have been noted between plant remains assemblages from Fredricks and the nearby early protohistoric Wall site (Gremillion 1985). The types of plant foods used were basically the same at both sites; although acorn may have declined somewhat in importance, the difference is not as great as was supposed based on evidence only from the 1983-84 seasons. In fact, acorn may have been collected in greater quantities than hickory at the Fredricks site. Corn remained important, and perhaps became more so after contact; however, there is no evidence for a narrowing of diet breadth. Peach was introduced by Europeans and rapidly incorporated into the subsistence system of the Fredricks site population, but it took its place alongside indigenous fleshy fruits rather than replacing them.

It is therefore difficult at this point to formulate hypotheses about the effects of European contact on subsistence. Presumably depopulation and the introduction of new trade networks and new tools and technologies acted to change decision-making about subsistence activities in most areas. But at the Fredricks site, there is no evidence of adoption of European crops (except peach) or abandonment of native ones, and only slim evidence of adjustments in the proportions of native plant foods contributing to subsistence. Perhaps the presumed position of the Occaneechi village on the Eno as a trading center made it atypical in this respect. For example, if individuals from other depopulated areas aggregated at this village, its precontact population level might have remained stable despite losses through disease. And if Fredricks site men acted as middlemen in the European trade network, they may not have traveled far afield to hunt specifically for trade. It is apparent that explanation of subsistence stability is as important for this project as the explanation or establishment of change. We may find that the apparent stability of subsistence as revealed archaeologically in fact reflects a considerable amount of behavioral change (Winterhalder 1980). Behavioral changes may have been necessary to maintain the traditional diet represented archaeologically in the face of considerable perturbation.

# VI

# FAUNAL REMAINS

**Mary Ann Holm**

## INTRODUCTION

The 1985 excavations at the Fredricks site recovered nearly twice the amount of faunal material as previous excavations. Analysis of this assemblage continues an earlier investigation (Holm 1985) into the patterns of faunal utilization of the inhabitants of this historic Indian site. A goal of the earlier (1983-84) analysis was to determine, through a comparison of the remains from the historic Fredricks site with those from the protohistoric Wall site, the extent to which contact with Europeans affected the utilization of animals by Piedmont Indians. It was determined in this earlier study that the presence of Europeans had little impact on faunal utilization. The overall patterns at both sites were very similar.

Many of the same species were utilized at both sites, and the only differences were in the relative quantities used. Also, the order of importance of the species, in terms of minimum numbers of individuals and meat yield, was very similar at both sites. There is no evidence that participating in trade with the Europeans had a major impact on the utilization of deer or any other species. As one fragment of pig bone and one horse molar were the only remains of domesticated animals recovered from the site, it is unlikely that European-introduced species were of major importance to the inhabitants of the Fredricks site.

## SAMPLING AND ANALYTICAL PROCEDURES

Sampling and analytical procedures utilized for the 1985 assemblage from the Fredricks site were identical to those used on the 1983/84 assemblage. A brief discussion of these procedures follows. A more detailed treatment of this subject can be found in the earlier report (Holm 1985).

The faunal remains from the 1985 excavation of the Fredricks site were recovered from the fill of three burials, 14 pits, and the wall trench of one structure. All the fill from these features was waterscreened through a series of 1/2-inch, 1/4-inch, and 1/16-inch mesh screens. All of the faunal remains recovered in the 1/2-inch (11,028 fragments) and 1/4-inch (20,408 fragments) screens were examined. Only those fragments which appeared to be identifiable were sorted from the material recovered in the 1/16-inch screen (465 fragments). A total of 31,901 bone fragments was examined.

Minimum numbers of individuals (MNI) was calculated on the basis of paired elements. In order to facilitate comparison with the faunal assemblage recovered in the 1983/84 excavations, MNI was calculated from the 1985 assemblage as a whole without taking the excavation units into account.

## ANALYSIS OF 1985 ASSEMBLAGE

A total of 112 individuals representing 21 species was identified from the faunal assemblage from the 1985 excavations of the Fredricks site. A full listing of the faunal remains making up this assemblage is provided in Table 26.

Thirty-two percent of the identified individuals were fish. One of these was gar, one was sucker, and the remaining 34 were catfish.

Table 26. Animal remains from the Fredricks site.

| Species | Frag. | % Frag. | Wt.(g) | % Wt. | MNI | % MNI |
|---|---|---|---|---|---|---|
| Odocoileus virginianus, White-tailed Deer | 2511 | 7.87 | 10680.60 | 42.28 | 24 | 21.43 |
| Didelphus marsupialis, Opossum | 2 | 0.01 | 1.20 | 0.00 | 1 | 0.89 |
| Sciurus caroliensis, Gray Squirrel | 7 | 0.02 | 3.26 | 0.01 | 1 | 0.89 |
| Sciurus niger, Fox Squirrel | 16 | 0.05 | 10.50 | 0.04 | 2 | 1.78 |
| Sciurus sp. | 125 | 0.39 | 23.37 | 0.09 | 6 | 5.36 |
| Procyon lotor, Raccoon | 5 | 0.02 | 7.40 | 0.03 | 1 | 0.89 |
| Peromyscus leucopus, White-footed Deer Mouse | 36 | 0.11 | 0.66 | 0.00 | 4 | 3.57 |
| Blarina brevicauda, Short-tailed Shrew | 4 | 0.01 | 0.38 | 0.00 | 1 | 0.89 |
| Ursus americanus, Black Bear | 471 | 1.48 | 2835.00 | 11.22 | 3 | 2.68 |
| Canidae, Dog, Wolf, Fox | 8 | 0.03 | 4.50 | 0.02 | 1 | 0.89 |
| Rodent (Indeterminate) | 3 | 0.01 | 0.41 | 0.00 | 1 | 0.89 |
| Unidentified Mammal | 22015 | 69.01 | 8755.99 | 34.66 | - | - |
| Meleagris gallapavo, Turkey | 419 | 1.31 | 1125.08 | 4.45 | 15 | 13.39 |
| Ectopistes migratorius, Passenger Pigeon | 21 | 0.07 | 2.16 | 0.01 | 2 | 1.78 |
| Fringillidae, Sparrows | 14 | 0.04 | 0.27 | 0.00 | 2 | 1.78 |

Table 26 Continued.

| Species | Frag. | % Frag. | Wt.(g) | % Wt. | MNI | % MNI |
|---|---|---|---|---|---|---|
| Picidae, Woodpeckers | 1 | 0.00 | 0.08 | 0.00 | 1 | 0.89 |
| Unidentified Bird | 862 | 2.70 | 416.60 | 1.65 | - | - |
| *Terrapene carolina*, Box Turtle | 528 | 1.69 | 495.91 | 1.96 | 8 | 7.14 |
| *Chelydra serpentina*, Snapping Turtle | 1 | 0.00 | 5.70 | 0.02 | 1 | 0.89 |
| *Chrysemys picta*, Painted Turtle | 3 | 0.01 | 4.20 | 0.02 | 1 | 0.89 |
| Unidentified Turtle | 889 | 2.79 | 261.46 | 1.03 | - | - |
| Unidentified Snake | 7 | 0.02 | 0.84 | 0.00 | - | - |
| *Rana* sp., Frog | 1 | 0.00 | 0.02 | 0.00 | 1 | 0.89 |
| Unidentified Amphibian | - | - | - | - | - | - |
| *Ictalurus* sp., Catfish | 39 | 0.12 | 1.06 | 0.00 | 34 | 30.36 |
| *Catastomus* sp., Suckers | 1 | 0.00 | 0.20 | 0.00 | 1 | 0.89 |
| *Lepisosteus* sp., Gar | 38 | 0.12 | 3.18 | 0.01 | 1 | 0.89 |
| Unidentified Fish | 222 | 0.70 | 6.53 | 0.03 | - | - |
| Sub-Total (Identified to Class) | 28259 | 88.58 | 24646.56 | 97.53 | - | - |
| Sub-Total (Unidentified) | 3642 | 11.42 | 616.50 | 2.44 | - | - |
| Total | 31901 | 100.00 | 25263.06 | 99.97 | 112 | 99.95 |

Catfish was the most abundant species in the assemblage.

Only one frog bone was identified in the 1985 assemblage, representing .9% of the individuals. No other amphibian remains were identified.

Reptiles accounted for 10 individuals, or 8.9% of the total number of individuals. The majority of the 1,438 fragments identified as reptile were small pieces of turtle carapace. Because of the highly fragmentary nature of these remains, it is likely that the minimum number of turtles underestimates the actual number of individuals in the assemblage. Box turtle was represented by a minimum of eight individuals, whereas snapping turtle and painted turtle were each represented by one individual. Seven elements were identified as belonging to snake but could not be identified as to species.

Birds accounted for 17.8% of the individuals in the assemblage. Two of these individuals were passenger pigeons, two were members of the family Fringillidae (sparrows), and one was of the family Picidae (woodpeckers). Fifteen of the birds identified were turkeys. A count of spurs indicates that at least three of these individuals were males.

A little over 79% of the bone fragments were identified as mammal. The majority of these fragments appeared to be fragments of the long bones of large mammals such as bear or deer and could not be identified beyond this level. Approximately 40% of the individuals in the assemblage were identified as mammals. Deer, with a minimum of 24 individuals, accounted for over 20% of the individuals identified in the 1985 assemblage. Squirrel, represented by nine individuals, was the second most numerous mammal. Although a minimum of four white-footed deer mice was identified, it is likely that these animals were intrusive in the deposits in which they were found. A minimum of three individuals identified as black bear was represented in the assemblage. All other mammals identified, namely opossum, raccoon, short-tailed shrew, indeterminate rodent, and one individual belonging to the family Canidae (dog, wolf, fox) were represented by only one individual each. No European introduced species were identified in this assemblage.

Although a minimum of 24 deer was identified in the 1985 faunal assemblage, only seven mandibles were complete enough to age using Severinghaus' (1949) method based on tooth development and wear. Using this technique, it was determined that one of the individuals was between the ages of 13 and 17 months and another between 17 and 20 months at the time of death. One individual was approximately 3 1/2 years old, three were approximately 4 1/2 years old, and one was approximately 6 1/2 years old. Using Edward's (1982) criteria for pelvic suture closure, it was also possible to determine that one individual was less than one year old at the time of death.

Ten innominates and innominate fragments were complete enough to permit the use of Edward's (1982) method for determining sex of the deer. Of the seven individuals represented by these innominates, three were females and four were males.

The age of black bears can be determined using Marks and Erickson's (1966) technique based on epiphyseal closure. Using this technique, it is apparent that the three individuals represented in the 1985 assemblage were each at least five years old. Using Carson's (1961) method for determining the age of squirrels (also based on epiphyseal closures) it was determined that at least four of the nine squirrels were a minimum of 33 weeks old. The age of raccoons can be determined using tooth wear criteria (Grau et al. 1970). However, no raccoon mandibles were recovered.

A total of 85 bones and bone fragments exhibited cut marks. The majority of these marks (64) were observed on deer bones. Cut marks were also present on bone fragments identified as bear (5 fragments), turkey (13 fragments), and indeterminate mammal (3 fragments). All of the marks on the deer and bear bones were consistent with the description provided of the cuts produced during the skinning and butchering of the animals at the Eschelman site in Pennsylvania (Guilday et al. 1962). Only four of the 13 turkey bones exhibiting cut marks were consistent with those found at the Eschelman site. It was hypothesized that the absence of cuts on such elements as the femora, innominates dorsal vertebrae, and sternums indicated that the turkey carcasses were probably boiled to remove the meat (Guilday et al. 1962:80). Three femora, four humeri, and two carpometacarpuses from the Fredricks site exhibited cuts, possibly indicating that meat was stripped from the bones rather than boiled off.

Only a very few fragments of worked bone were present in the 1985 faunal assemblage. These consisted of the bone handles of several European knives, one awl of European manufacture, and two pieces of a highly polished deer ulna awl of aboriginal manufacture. Other fragments of worked bone recovered were one small, polished fragment of deer antler; one pointed and slightly polished splinter of long bone from a large bird (probably turkey); and one polished splinter of long bone from an indeterminate mammal.

## DISCUSSION AND COMPARISON WITH THE 1983-84 ASSEMBLAGE

The 1985 faunal assemblage was nearly twice as large as the 1983-84 assemblage from the Fredricks site (31,901 fragments as opposed to 16,393 fragments). In spite of this difference, the number of species and the number of individuals represented in the 1985 assemblage was far smaller than in the earlier assemblage. The following species and families represented in the 1983-84 faunal remains were not present in the 1985 remains: striped skunk, hispid cotton rat, horse, pit, mountain lion, gray fox, Charadriidae (plovers), bobwhite, lesser scaup, musk turtle, mud turtle, Crotalid (poisonous snake), spadefoot toad, Bufo sp. (toads), and sunfish.

Although the 1985 assemblage contained fewer species than the 1983-84 assemblage, the 1985 assemblage exhibited a higher diversity index. A Simpson's diversity index for the 1983-84 assemblage is 0.73 with a maximum of 0.97, and for the 1985 assemblage is 0.83 with a maximum of .95. The fact that the 1985 assemblage has a higher diversity but fewer species identified indicates that it displays greater equitability of representation of species than the assemblage analyzed earlier. The 1983-84 assemblage, however, is richer.

Fish and reptiles both were less important in the 1985 assemblage than in the 1983-84 assemblage. Whereas fish accounted for 50.0% of the individuals in the earlier assemblage, it accounted for only 32.1% of the total in the 1985 assemblage. Reptiles represented 12.0% of the total number of individuals in the earlier assemblage, and 8.9% of the individuals in the later assemblage. Amphibians also decreased in importance from 5.6% to only .9% of the individuals.

Although fewer species of birds were represented in the 1985 assemblage than in the 1983-84 assemblage, their importance in terms of MNI increased. Whereas birds accounted for 11.9% of the individuals in the first assemblage, they accounted for 17.8% in the 1985 assemblage. This increase in importance can largely be attributed to the increase in representation of turkeys from four to 15. Whereas 75.0% of the individuals identified in the first assemblage were males, only 20.0% of the individuals in the second assemblage were males. When data from the two assemblages are combined, the results indicate that 31.6% of the individuals identified as turkeys were males. The proportion of males to females is considerably higher than that found in a study of turkeys harvested in Virginia in which only 18.9% of the 6,000 turkeys captured during a five-year period were adult males (Gwyn 1964). It thus seems likely that the inhabitants of the Fredricks site were selecting males over females, possibly because of the larger size of the males.

Deer represented a significantly higher percentage of the total number of individuals in the 1985 assemblage than in the earlier assemblage (21.4% vs. 6.3% of the total number of individuals). Whereas 50.0% of the individuals that could be aged in the 1983-84 assemblage were 4 1/2 years old or less, 87.5% of the individuals in the 1985 assemblage comprised this age category. When combined, the two assemblages contain individuals ranging in age from less than one year to 8 1/2 - 9 1/2 years. Individuals between 2 1/2 and 4 1/2 years accounted for 50.0% of the individuals identified. It was possible to determine the sex of only 10 of the 33 individuals identified. Five of these were males and five females. Therefore, it is possible that the inhabitants of the Fredricks site were neither selecting male over female deer nor hunting primarily weaker animals (the very young or very old). It is likely, therefore, that the methods used to hunt deer were drives and surrounds rather than stalking (Waselkov 1977:120).

Among some historic tribes of eastern North America "bear bones were often revered or given preferential treatment to propitiate the spirit of the animal, treatment which would eliminate them from the bone refuse ordinarily associated with an Indian village site" (Guilday et al. 1962:65). In the 1985 assemblage from the Fredricks site, a total of 471 fragments identified as bear were found in seven different features. This widespread distribution coupled with the fact that the bear remains were found mixed with the remains of other animals indicates that bear bones may not have been given preferential treatment by the inhabitants of this site. However, 77.1% of the bear bones were burned whereas only 31.5% of the deer bones from the same assemblage were burned. The majority of those bear bones which were burned were foot bones, both fragmented and complete. It is interesting to note that six complete long bones (1 tibia, 3 ulnae, and 2 radii) were found that had not been cracked for their marrow but had been left intact. Of these six elements, three showed evidence of pathology. One radius and one ulna exhibited signs of inflammation with areas of bone deposition and pitting. Evidence of a small tumor was found on the shaft of the other ulna.

No rabbits were identified in either the 1983-84 or 1985 assemblage from the Fredricks site. Guilday et al. (1962:72) have hypothesized that the scarcity of rabbit remains in assemblages from Pennsylvania sites is due to the presence of dogs around Indian villages. At the protohistoric Wall site (located 200 yards from the Fredricks site) dogs were present, yet rabbit was the third most numerous mammal identified in the assemblage. Therefore, it is questionable whether the rabbit population around the Fredricks site would have been severely limited by the presence of dogs. Differential preservation does not seem to be a plausible explanation either, as more fragile bones (such as those from birds) and bones of smaller species (e.g., mice and fish) were found in abundance. Instead, it seems likely that some other factor, such as disease, limited the number of rabbits available at the time the Fredricks site was occupied.

The 1983-84 and 1985 assemblages were compared in terms of the relative importance of the contribution made by each species to the diet of the inhabitants of the site. The calculations of available meat were based on estimations by Smith (1975), White (1953), and Cleland (1966). The results of these calculations for the 1985 assemblage are presented in Table 27. In terms of estimated meat yield, the most important animals in the 1985 assemblage were deer (which provided 70.0% of the available meat), bear (21.6%), turkey (4.4%), and catfish (1.8%). None of the other species represented provided more than 0.5% of the total estimated meat yield. The most important animals in the 1983-84 assemblage were deer (providing 58.2% of the total estimated meat yield), bear (16.0%), catfish (7.9%), pig (5.7%), mountain lion (4.6%), turkey (2.6%), and raccoon (1.1%). The remaining species identified in this assemblage each contributed less than 1.0% of the estimated meat yield.

## CONCLUSIONS

Analysis of the faunal remains from the 1985 excavations of the Fredricks site yielded results that were similar in many ways to those from the analysis of the remains from the 1983 and 1984 field seasons. Deer, bear, turkey, and catfish provided the majority of the meat represented by the two assemblages. Pig, mountain lion, and raccoon were also important in the 1983-84 assemblage. Overall the 1983-84 assemblage contained a much wider variety of species than the 1985 assemblage. It has been suggested (Ward 1984) that the refuse contained in the fill of many of the burial pits from the Fredricks site represent

Table 27. Estimated meat yield in pounds.

| Species | Estimated Meat Yield/Ind. (lbs.) | Total lbs. | Total % |
|---|---|---|---|
| White-tailed Deer | 85.0 | 2040.0 | 70.0 |
| Opossum | 8.5 | 8.5 | 0.3 |
| Gray Squirrel | 1.0 | 1.0 | 0.0 |
| Fox Squirrel | 1.5 | 3.0 | 0.1 |
| Squirrel sp. | 1.2 | 7.2 | 0.2 |
| Raccoon | 15.0 | 15.0 | 0.5 |
| White-footed Deer Mouse | * | - | - |
| Short-tailed Shrew | * | - | - |
| Black Bear | 210.0 | 630.0 | 21.6 |
| Dog/Wolf/Fox | 12.5 | 12.5 | 0.4 |
| Rodent (Indet.) | * | - | - |
| Total Mammal | - | 2710.7 | 93.3 |
| Turkey | 8.5 | 127.5 | 4.4 |
| Passenger Pigeon | 0.7 | 1.4 | 0.0 |
| Sparrow/Finch | * | - | - |
| Woodpecker | * | - | - |
| Total Bird | - | 128.9 | 4.4 |
| Frog | * | - | - |
| Total Amphibian | - | - | - |
| Box Turtle | 0.3 | 2.4 | 0.1 |
| Snapping Turtle | 10.0 | 10.0 | 0.3 |
| Painted Turtle | 0.3 | 0.3 | 0.0 |
| Snakes | 0.2 | 0.2 | 0.0 |
| Total Reptile | - | 12.9 | 0.4 |
| Catfish | 1.5 | 51.0 | 1.8 |
| Sunfish | 1.0 | 1.0 | 0.0 |
| Gar | 1.0 | 1.0 | 0.0 |
| Total Fish | - | 53.0 | 1.8 |
| Total | - | 2912.0 | 99.6 |

the remains from ritual feasts. If so, it is not surprising that more unusual species would be identified in the fill of these pits than in the fill representing refuse from everyday behavior.

Nearly 88% of the faunal remains recovered during the 1983-84 excavations were retrieved from burial fill, whereas only 4.6% of the remains from the 1985 assemblage were from burial fill. This difference in contexts from which the faunal remains were derived may account for the greater variety of species in the 1983-84 assemblage. Except for this difference, analysis of the faunal remains from the 1985 assemblage provided solid confirmation of the patterns of faunal exploitation defined by the 1983-84 analysis. European domesticated animals did not play a major role in the subsistence patterns of the inhabitants of the Fredricks site, and basic patterns of faunal exploitation remained similar to those employed in late prehistoric and protohistoric times.

# VII

# RESULTS

**Roy S. Dickens, Jr., H. Trawick Ward,
and R. P. Stephen Davis, Jr.**

The 1985 excavations at the Fredricks site, which were nearly twice as extensive as those undertaken during the two previous seasons, added enough area to permit a determination of overall village size. Certain questions, however, still remain about the internal structure of the village. Results of the 1985 excavations indicate that the site was substantially smaller than previously thought. It now appears that the community, as delimited by the palisade, covered approximately 10,000 $ft^2$ (about .25 acre). About 60% of this area has been excavated, and an additional 3,000 $ft^2$ has been excavated beyond the palisade in the vicinity of the cemetery and Structure 6.

Part of the fieldwork focused on completing investigation of the cemetery and exploring the potential for additional cemeteries. Auger testing during 1984 indicated that five to seven additional burial pits would be encountered at the north end of the cemetery (Dickens et al. 1984:27). In 1985, five pits were exposed in this area; however, only three of them were burials. The remaining two pits, located about 10 ft beyond the cemetery, were deep storage pits probably associated with Structure 6.

In all, 13 burial pits (including Feature 1) comprised this cemetery and contained the remains of three infants or neonates, four sub-adults, five adult males, one adult female, and one young adult of indeterminate sex. Although the spatial relationships among these burials and the kinds of associated artifacts indicate that all individuals were interred over a relatively short time, it is difficult to determine if the cemetery was the product of a single event. Evidence of violent death observed on Burials 4 and 9 (1984) indicates that warfare may have been responsible for at least some of the deaths.

Whereas a substantial portion of the village and adjacent areas outside the palisade remain unexcavated, enough area has been excavated and auger tested to suggest that there was only one cemetery. With the exception of a single unexcavated pit (Feature 31) within the palisade that may be a burial, no other evidence exists for additional interments. Most of the unexcavated area beyond the palisade lies to the southwest, between the village and Eno River. Although this area has not been auger tested, it seems unlikely that an additional cemetery will be found at this location since it probably would have been reserved for a variety of domestic activities, and thus probably would not have been suited for mortuary activities. Location of the known cemetery at the "back" side of the village afforded it a certain amount of privacy and seclusion. If all or at least most of the burials at the Fredricks site have been identified, then there is a strong suggestion that the Occaneechi resided there for a very short time, possibly less than 10 years. This interpretation is also supported by the general lack of evidence for architectural repairs or rebuilding.

The 1985 excavations also contributed significant new information on village development, domestic architecture, and overall village plan. Present evidence suggests that the site was initially settled by one or a few families. Remains of this initial occupation consist of Structure 6, which is intersected by the palisade and by Structure 5, Structure 4, and Features 28 and 29. Both features contained ceramics that are similar to those from features inside the palisade; however, they contained a significantly smaller number and variety of Euroamerican artifacts. The fact that Structure 6 was intruded by the palisade suggests that it was no longer in use when the larger village was established.

In addition to identifying six more structures (including another possible sweat house), expanded excavations in 1985 also permit a much more secure interpretation of the two poorly defined domestic structures exposed in 1984. These new data indicate that houses were of shallow wall-trench construction as well as single-post construction, and that they were of variable shape ranging from sub-rectangular to circular. Each provided 175-250 $ft^2$ of interior floor space. Hearths were centrally located, and some houses had interior, subterranean storage facilities.

Although much of the southwestern half of the village remains unexcavated, certain inferences can now be drawn about the overall settlement plan (Figure 34). The Occaneechi village was small and compact, encompassing only about .25 acre. It was surrounded by a palisade constructed of small saplings and probably was comprised of 11-12 houses situated in a circle along the inside of the palisade. Assuming approximately five persons per household, this suggests that the community contained approximately 50-75 individuals. Interior to the houses was a common area, or plaza, which contained few architectural features. The central feature within this plaza, as well as within the larger village, was an oval sweat lodge (Structure 1). The relatively large size of this structure (compared to Structure 4) and its location indicate that it was a communal facility. Because of the compact nature of the settlement, it is likely that a variety of

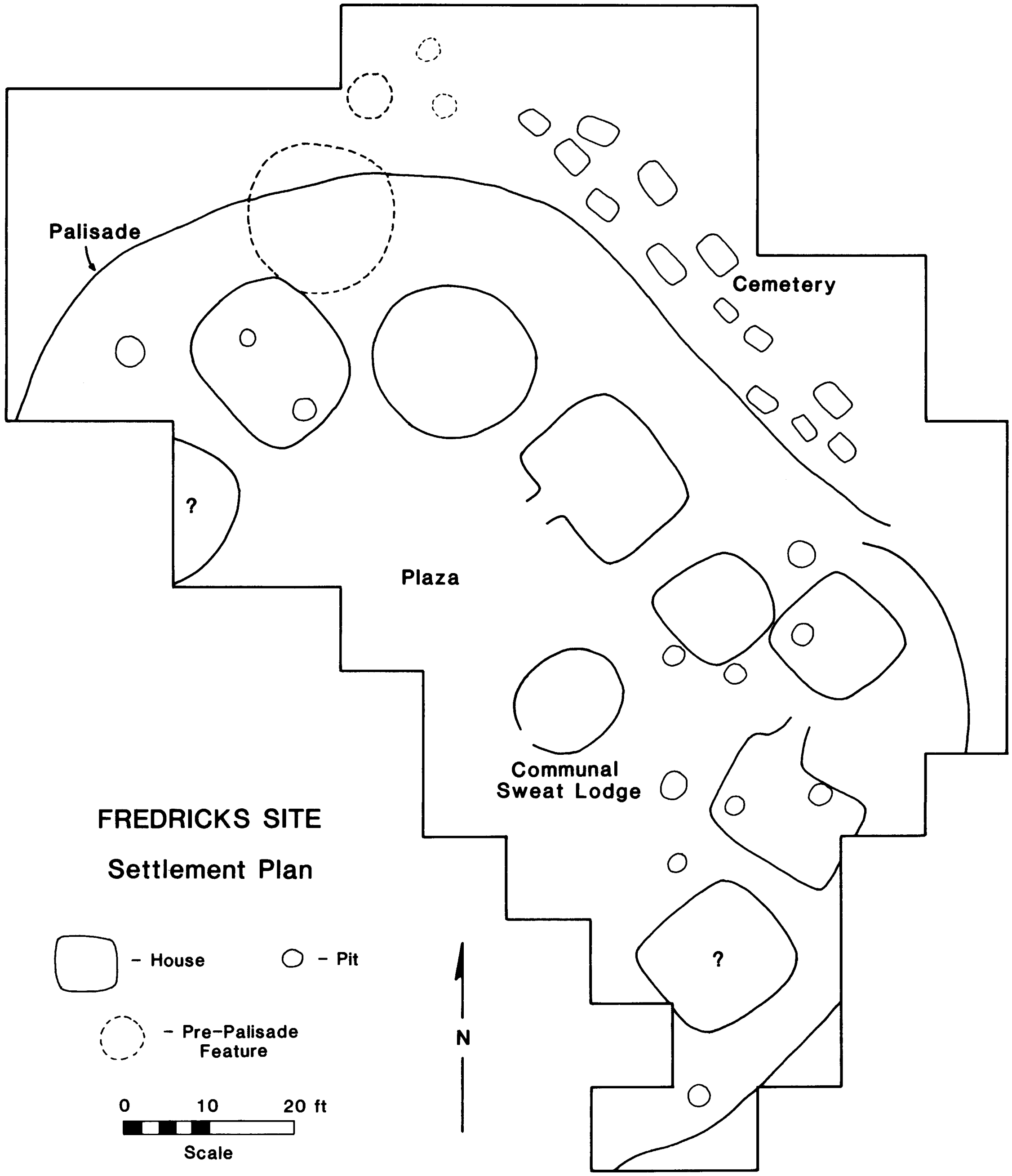


Figure 34. Settlement Plan of the Occaneechi Village.

domestic activities were conducted outside the palisade, probably between the village and the nearby Eno River.

Finally, the 1985 investigations sought to determine if other ethnic groups resided at the site along with the Occaneechi. Although direct ethnohistoric evidence is lacking, John Lawson's accounts (Lefler 1967) of Piedmont Indian societies indicate that many villages had become multi-ethnic communities by the early eighteenth century. Analyses of pottery from the 1983, 1984, and 1985 excavations suggest that most of the variability in the assemblage can be explained by multiple site occupations over time rather than by a single, multi-ethnic occupation. If members of other tribes resided with the Occaneechi, then they probably occupied separate, nearby villages and thereby contributed little to the archaeological remains of the Fredricks site.

In 1986, a final phase of fieldwork at the Fredricks site will be directed at completing excavation of the palisaded area in order to obtain a comprehensive map of structures and features within the enclosure and an overall plot of the distributions of artifacts. Further investigation will also be undertaken in the area along the north side of the palisade where evidence has been found for a possible initial occupation just prior to the establishment of the enclosed settlement. This concluding fieldwork will provide information on the total history and spatial configuration of an historic Indian tribal community.

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