ARCHAEOLOGICAL DATA RECOVERY AT 38BU833, A ST. CATHERINES AND SAVANNAH SHELL MIDDEN SITE, HILTON HEAD ISLAND, BEAUFORT COUNTY, SOUTH CAROLINA

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RESEARCH SERIES 27

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Men are not machines . . . . They are men - a tautology which is sometimes worth remembering.

-- Gilbert Ryle

ABSTRACT

This study presents the results of archaeological data recovery at a prehistoric shell midden site on Hilton Head Island (38BU833) by Chicora Foundation in January 1992. Excavation of 900 square feet revealed the presence of intact shell midden deposits, features, and an artifact assemblage incorporating the Deptford, St. Catherines, and Savannah phases. Also present is an eighteenth century low status occupation perhaps reflecting some of the earliest settlement on Hilton Head Island.

The Early Woodland Deptford component was found situated approximately 250 to 300 feet inland from Skull Creek. Although thoroughly disturbed by agricultural activities, the midden appears generally similar to that of the later St. Catherines/Savannah phase.

The Late Woodland St. Catherines and Savannah occupation was found adjacent to the marsh, overlooking Skull Creek. Excavations reveal a focal subsistence base, oriented almost exclusively to the collection of oysters. Other shellfish were rare, as were vertebrate fauna and ethnobotanical remains. Ceramics, while present, were not abundant. Other cultural remains were limited to a very small lithic assemblage. The co-occurrence of St. Catherines and Savannah ceramics at 38BU833 supports previous investigations in the region which have found the Late Woodland phases blending into one another, with no clear distinctions.

The historic remains identified at the site appears to represent an isolated structure, probably constructed of wattle and mortar daub. The artifacts are suggestive of a moderately low status household occupied about 1750.

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We also wish to thank the Town of Hilton Head Island, and in particular, Ms. Jill Foster, for assistance in obtaining a permit (Permit Number 92-1) to conduct this research. Assistance in the curation of the collections was provided by Mr. Michael Taylor, Director of the Environmental and Historical Museum of Hilton Head Island. The report has benefitted from the careful and thorough reviews provided by the staff of the South Carolina State Historic Preservation Office, especially Mr. Lee Tippett.

Given the long hours and poor weather, we sincerely wish to thank those who worked with us on this project -- Ms. Mona Grunden and Ms. Liz Pinckney. Obviously, without careful and conscientious excavation, there is nothing worthy of analysis. We would also like to thank Mr. Richard Ellis, Chicora Foundation supporter and volunteer, who not only spend several days with us, but also made us feel welcome in his home.

And finally, we want to thank the numerous individuals who stopped by the site and expressed an interest in the archaeology and history of Hilton Head Island. This concern with the past is, ultimately, the reason that Chicora Foundation and The Melrose Company entered into this partnership. We hope that our efforts have made the past come alive, not only for those who visited us, but also for those who will read this study.

INTRODUCTION

Background

Site 38BU833 was originally reported by Chicora Foundation, based on a reconnaissance level survey conducted for the Town of Hilton Head Island (Trinkley 1987). The site was found to extend along the edge of Skull Creek for at least 800 feet and to extend inland for an undetermined distance. Large portions of the site were damaged by the construction of the Village at Skull Creek project, constructed about 1981. While the boundaries were not well established, it appeared that the site extended at least as far south as the vicinity of the model condominium. Site 38BU833 recommended as potentially eligible, although insufficient information was generated by the study to document significance.

In accordance with the Coastal Zone Management Act of 1977, the South Carolina Coastal Council, in consultation with the South Carolina State Historic Preservation Officer (S.C. SHPO), stipulated in its permitting process that an archaeological survey of the proposed development incorporating Parcel 4 and 38BU833 should be conducted by The Melrose Company. The purpose of the survey was to identify Geographic Areas of Particular Concern (GAPC) listed on, eligible for, or potentially eligible for listing on the National Register of Historic Places.

This additional survey of the very southern portion of the site was conducted by Chicora Foundation in early 1992 (Adams 1991). Site 38BU833 was found situated along the bank of Skull Creek in the northwestern portion of the survey area. Thirty-two shovel tests were placed at 25 foot intervals in the site area. Fifteen (46.9%) evidenced moderate to heavy shell midden or artifacts, while 10 (31.3%) contained light shell. The remaining 21.8% of the shovel tests were negative. Shell was also found eroding from the creek bank.

While the structure and parking lot (representing the 1981 model condominium built by the Village at Skull Creek) on Parcel 4 destroyed portions of the site, the area between the creek and the building, as well as the area east of the parking lot near the large live oaks, evidenced buried intact shell middens. The site was found to continue about 300 feet inland, east of the creek edge. The central UTM coordinates were established as E524140 N3566850 and the soils are classified as excessively drained Wando fine sands. Soil profiles indicated that the top horizon was generally 0.5 feet in depth, the second zone was generally 0.4 feet thick consisting of shell midden and the same brown sands. Subsoil consisted of a tan to yellow sand. Areas immediately around the structure were disturbed, although generally the site was in surprising good condition. Recovered artifacts consisted of two thin curved clear glass fragments, three unidentifiable prehistoric sherds, and one Caraway coastal plain chert projectile point.

The site was recommended eligible for inclusion on the National Register based on the presence of intact midden and probable features. Research questions centered on the continued exploration of Middle and Late Woodland settlement and subsistence systems in the South Carolina low country. This assessment was accepted by the S.C. SHPO. Design considerations revealed that the site could not be green spaced and data recovery excavations were necessary.

Chicora Foundation was requested by the developer's representatives, Mr. Jack Best and Mr. Marty Colleran, to prepare a technical and budget proposal for review and approval by the S.C. SHPO. A proposal for the investigations was

submitted by Chicora on December 20, 1991 and the work was approved by the developer on December 31, 1991. The research design was approved by the S.C. SHPO on January 7, 1992 (memorandum from Mr. Lee Tippett to Dr. Michael Trinkley).

This property is situated on the northwest edge of Hilton Head Island, bordering Skull Creek to the west, the Village at Skull Creek to the north, Hilton Head Plantation parcels to the east, and the Bay Club to the south. Hilton Head is located about 30 miles from Savannah, Georgia, 90 miles from Charleston, South Carolina, and about 20 miles south of Beaufort (Figure 1).

The proposed development plan for the site involves a number of town house lots. This plan will involve the clearing, grubbing, filling, and paving of the road network; the construction of below ground utilities; and the development of individual lots. These development activities will result in considerable land alteration and damage to the archaeological site known to exist on the property.

The historical research was previously conducted at the South Carolina Historical Society, the Charleston RMC, the South Caroliniana Library, and the Beaufort County RMC by Ms. Mona Grunden and Dr. Michael Trinkley during preparation for archaeological research at adjacent Cotton Hope Plantation (38BU96). The background research specific to this project was conducted by Ms. Natalie Adams at the S.C. Institute of Archaeology and Anthropology on November 13, 1991. The field work at 38BU833 was conducted from January 23, 1992 through January 31, 1992 by a crew of four. The principal investigator for this project was Dr. Michael Trinkley. The report preparation (including the necessary laboratory studies) was conducted intermittently from February 3 through February 20, 1992. A management summary was provided on February 4, 1992. A total of 244 person hours were devoted to the field work at 38BU833, while an additional 24 person hours were spent on initial field processing of specimens. All specimens have been examined for conservation needs and are in the process of being transported to the curatorial facility.

Goals

The survey investigations at 38BU833 found clear evidence of intact shell midden and probable features. One lithic specimen was recovered, although otherwise the artifact density appeared low. The site might easily have been discounted as "small" or "typical" and therefore unworthy of additional attention. Yet, it is just the commonness of such sites which gives them importance.

When similar sites have been investigated (see, for example, Trinkley 1981) they traditionally have been subjected to "typical" archaeological analytical techniques. The results of such studies largely demonstrate that "traditional" archaeological techniques and questions which emphasize the recovery of diagnostic cultural remains are largely unsuitable for anthropological reconstructions.

Such sites frequently fail to yield large quantities of pottery, diagnostic lithics, or a large variety of archaeological specimens. The sites may also fail to produce other objects of traditional archaeological investigation and interpretation, such as abundant pits or post holes. While the absence of these features alone can be considered significant clues to the sites' functions, they must be coupled with a more intensive collection and analysis of subsistence remains. Of primary concern should be the collection of reliable subsistence information (including shellfish, ethnobotanical, and faunal remains).

Consequently, the data recovery excavations at 38BU833 attempt to integrate a number of recent recommendations for Woodland Period research developed by Chicora Foundation for the South Carolina Department of Archives and History (see Trinkley 1990:31-37). These include: typological and chronological analyses, subsistence studies, and settlement studies.

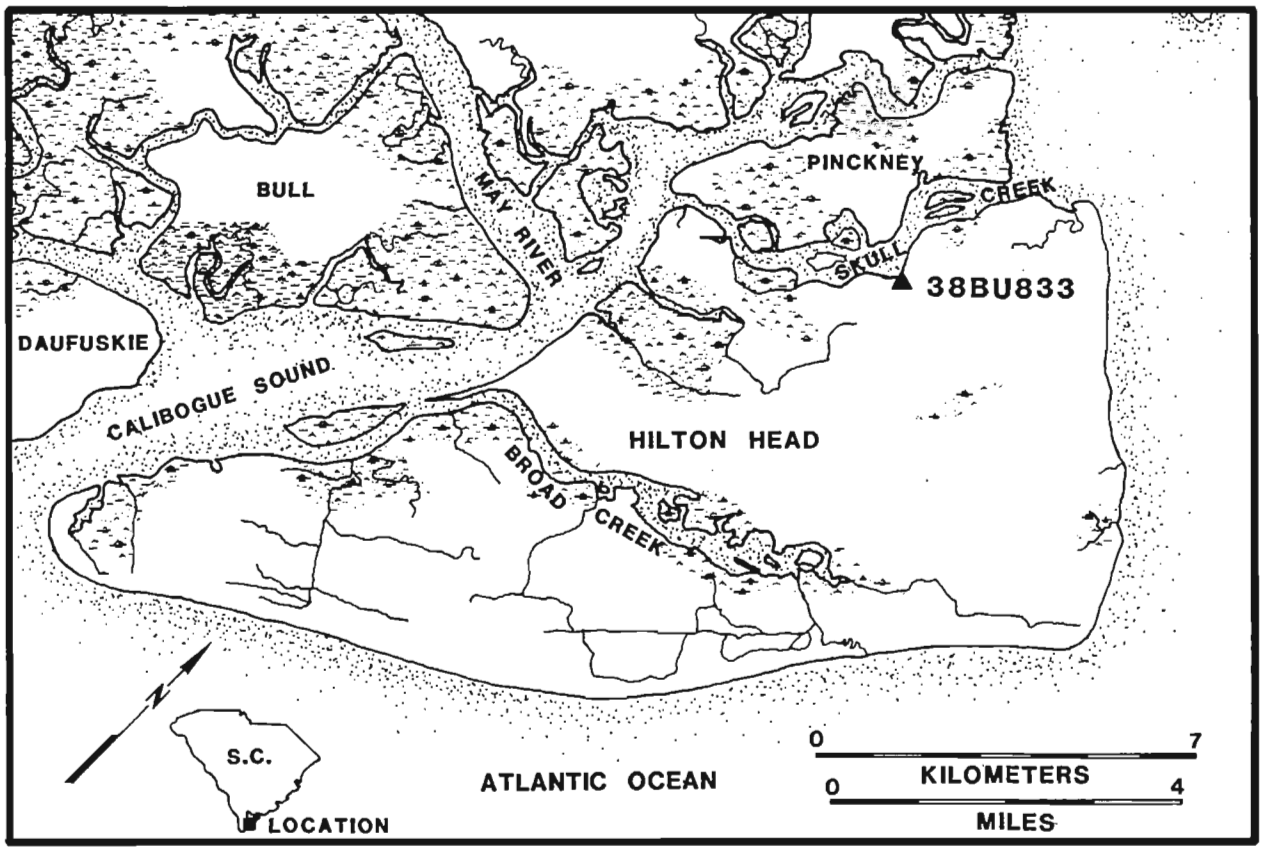

Figure 1. Vicinity of Hilton Head Island, showing the location of 38BU833.

The typological and chronological questions involve primarily the St. Catherines and Savannah phases. Although no features were identified which encouraged radiometric dating and charcoal was exceeding sparse, one date was obtained from shell in the Late Woodland midden. While DePratter (1979) has provided useful and accurate information on the temporal periods along this part of the South Carolina coast, much of his synthesis is based on coastal Georgia with little or no independent verification at South Carolina sites. Relatively little research has been conducted on the Middle to Late Woodland pottery typology or ceramics, and research on the nature of the ubiquitous cord marking used as surface treatment is virtually absent. Consequently, this research was directed at providing a detailed assessment of both paste and cordage. It was hoped that this research, however, tentative, might offer hope for unraveling the confusion surrounding Middle to Late Woodland Period cord marked ceramics. Similar research has been conducted by Chicora Foundation at sites on Spring and Callawassie island (see Trinkley 1991b).

The subsistence questions involved the seasonality of the remains, the evidence they could provide regarding the habitats exploited and the intensity of that exploitation, and the methods of collecting being used. While determining the importance of each resource to the diet was also recognized as an extremely important research goal, it was tempered by the recognition that many analytical techniques, such as biomass, diversity, and equitability determination, while relatively easily determined for faunal remains, are very difficult to apply to ethnobotanical and shellfish materials.

In the past Chicora has routinely used ⅛-inch mesh to screen shell midden soils to improve recovery. At many sites this has been difficult, but well worth the effort, dramatically improving recovery and hence the interpretative potential of the collection. Wing and Quitmyer (1985) have documented the usefulness of small screen size and, more recently, Shaffer (1992) has demonstrated the bias inherent in ¼-inch screening.

During this research an effort was made to qualitatively compare several techniques: ¼-inch dry screening, ⅛-inch dry screening, and ⅛-inch water screening. The goal was not to offer any startling new conclusions, but to determine if further research at future sites might be appropriate.

Excepting some differences in the screening, efforts were made to consistently collect subsistence materials throughout the site. This included the collection of flotation samples and the use of 2.2 foot square shell columns in middens. In addition, all shell was quantified by weight, and the shell columns were used to provide soil:shell ratios.

The primary settlement question explored during this research involved the potential to discover intra-site patterning. To this end, both midden and non-midden areas were excavated. While the site exhibited absolutely no evidence of vertical stratigraphy, some evidence of horizontal patterning was observed.

Although historic materials are found in the excavations, no associated features were encountered and no concentrations could be identified. Consequently, while these remains are briefly discussed in this study, they do not represent a major site component.

Curation

The field notes, photographic materials, and artifacts resulting from Chicora Foundation's investigations have been curated at The Environmental and Historical Museum of Hilton Head Island as Accession Number 1992.3. The artifacts from data recovery excavations at 38BU833 have been cataloged as ARCH 3263 through ARCH 3284 (using a lot provenience system). The artifacts have been cleaned and evaluated for conservation needs. All were found to be stable and no treatments were undertaken. All original records and duplicate copies were provided to the curatorial facility on pH neutral, alkaline buffered paper and the photographic materials were processed to archival permanence.

NATURAL SETTING

Physiographic Province

Beaufort County is located in the lower Atlantic Coastal Plain of South Carolina and is bounded to the south and southeast by the Atlantic Ocean, to the east by St. Helena Sound, to the north and northeast by the Combahee River, to the west by Jasper and Colleton counties and portions of the New and Broad rivers. The mainland primarily consists of nearly level lowlands and low ridges. Elevations range from about sea level to slightly over 100 feet above mean sea level (MSL) (Mathews et al. 1980:134-135). Hilton Head is located between Port Royal Sound to the north and Daufuskie Island to the south. The island is separated from Daufuskie by Calibogue Sound and from the mainland by a narrow band of tidal marsh and Skull Creek. Between Hilton Head and the mainland are several smaller islands, including Pinckney and Jenkins Islands.

Hilton Head is about 11.5 miles in length and has a maximum width of 6.8 miles, incorporating just under 20,000 acres of highland and 2,400 acres of marsh. Elevations range from sea level to 21 feet mean sea level (MSL) at the top of the highest natural beach ridges (Mathews et al. 1980).

Hilton Head is situated in the Sea Island section of South Carolina's Coastal Plain province. The coastal plain consists of the unconsolidated sands, clays, and soft limestones found from the fall line eastward to the Atlantic Ocean, an area of more than 20,000 square miles or about two-thirds of South Carolina (Cooke 1936:1-3). Elevations range from just above sea level on the coast to 600 feet MSL adjacent to the Piedmont province. The coastal plain is drained by three large through-flowing rivers -- the Pee Dee, Santee, and Savannah -- as well as by numerous smaller rivers and streams. On Hilton Head there are two major drainages, Broad Creek which flows almost due west into Calibogue Sound, and Jarvis Creek which empties into Mackay Creek just north of Broad Creek.

From Bull Bay southward, the coast is atypical of the northern coastline. The area is characterized by low-lying, sandy islands bordered by salt marsh. Brown (1975) classes these islands as either Beach Ridge or Transgressive, with the Transgressive barrier islands being straight, thin pockets of sand which are rapidly retreating landward with erosion rates of up to 1600 feet since 1939. The Beach Ridge barrier islands, however, are more common and consist of islands such as Kiawah and Hilton Head. They are characterized by a bulbous updrift (or northern) end.

Kana (1984) discusses the coastal processes which result in the formation of barrier islands, noting that the system includes tidal inlets at each end of the barrier island with the central part of the island tending to be arcuate in shape while the ends tend to be broken. Hilton Head has the typical central bulge caused by sand wrapping around the tidal delta and then depositing midway down the island. Further, the south end has an accreting spit where sand is building out the shoreline. The central part of the island, however, has experienced a 25 year erosion trend averaging 3 to 10 feet a year (Kana 1984:11-12; see also U.S. Army Corps of Engineers 1971). More recent work by Kana et al. (1986) confirms considerable shoreline reorientation.

Hilton Head, however, is also a different shape than most of the other islands since it has a Pleistocene core with a Holocene beach ridge fringe. To understand the significance of this situation, it is important to realize that technically the sea islands and the barrier islands are different from a

historical perspective. The classic sea islands of colonial and antebellum fame (such as James, St. Helena, and Sapelo islands) are erosional remnants of coastal sand bodies deposited during the Pleistocene high sea level stands. They are crudely elongate, parallel to the present day shoreline, and rectangular in outline. Their topography is characterized by gentle slopes, poorly defined ridges and swales, and elevations from 5 to 35 feet MSL. Typical barrier islands include Pawleys, Kiawah, and Hunting islands. Some islands, such as Hilton Head, Daufuskie, and St. Catherines, have an oceanward fringe of beach dune ridges which were constructed during the Holocene high sea level stands (Mathews et al. 1980:65-71; Ziegler 1959). Ziegler (1959:Figure 6) suggests that Hilton Head Island is composed of several sea or erosion remnant islands, joined together by recent Holocene deposits.

Site 38BU833 is situated on the northwestern shore of Hilton Head Island adjacent to Skull Creek (Figure 2). The topography is level, gently sloping inland from a high elevation of about 18 feet MSL overlooking the marsh. Erosion along Skull Creek is complex, associated with both seasonal tides and boat traffic using the Intracoastal Waterway.

Climate

During the eighteenth century the Carolina low country was described as a paradise, but by the middle of the century South Carolinians had begun to reappraise their environment, seeing the connection between malaria and the low-lying swamps (Merrens and Terry 1984:548). A proverb current in England was "They who want to die quickly, go to Carolina", and a German visitor told his readers that "Carolina is in the spring a paradise, in the summer a hell, and in

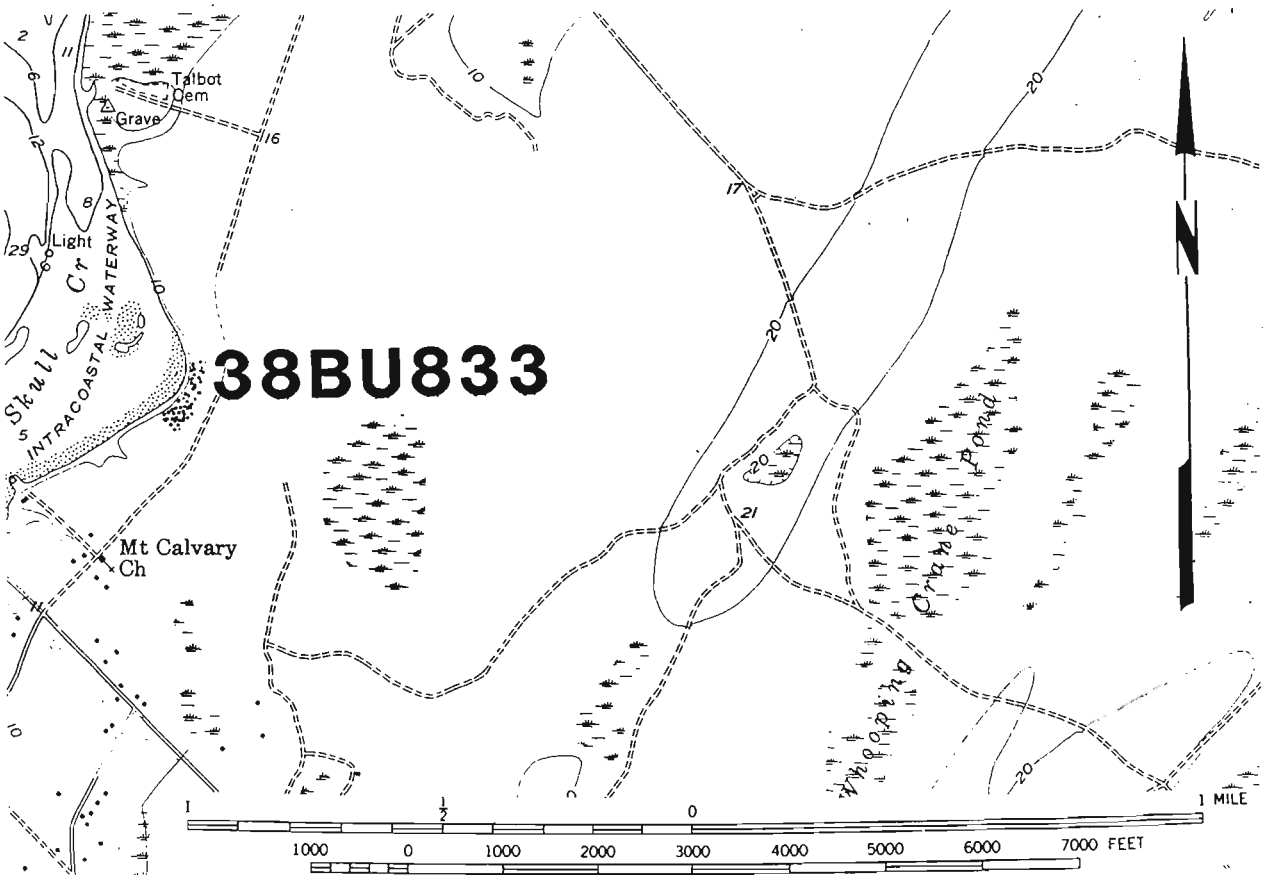

Figure 2. Area of 38BU833 on Hilton Head Island.

the autumn a hospital" (quoted in Merrens and Terry 1984:549). The Beaufort climate in the early nineteenth century was described as "one of the healthiest" (Mills 1826:377), although Thomas Chaplin's antebellum journal describing life at nearby Tombee Plantation on St. Helena Island presents an entirely different picture (Rosengarten 1987).

The major climatic controls of the area are the latitude, elevation, distance from the ocean, and location with respect to the average tracks of migratory cyclones. Hilton Head's latitude of about 32°13'N places it on the edge of the balmy subtropical climate typical of Florida. As a result, there are relatively short, mild winters and long, warm, humid summers. The large amount of nearby warm ocean water surface produces a marine climate, which tends to moderate both the cold and hot weather. The Appalachian Mountains, about 220 miles to the northwest, block shallow cold air masses from the northwest, moderating them before they reach the sea islands (Landers 1970:2-3; Mathews et al. 1980:46).

Maximum daily temperatures in the summer tend to be near or above 90°F and the minimum daily temperatures tend to be about 68°F. The summer water temperatures average 83°F. The abundant supply of warm, moist and relatively unstable air produces frequent scattered showers and thunderstorms in the summer. Winter has average daily maximum and minimum temperatures of 63°F and 38°F respectively. Precipitation is in the forms of rain associated with fronts and cyclones; snow is uncommon (Janiskee and Bell 1980:1-2).

The average yearly precipitation is 49.4 inches, with 34 inches occurring from April through October, the growing season for most sea island crops. Hilton Head Island has approximately 285 frost free days annually (Janiskee and Bell 1980:1; Landers 1970). This mild climate, as Hilliard (1984:13) notes, is largely responsible for the presence of many southern crops, such as cotton.

It is difficult to evaluate the climate in terms of Native American health. Clearly the seasonal weather would have been attractive, although the location on the edge of Skull Creek would subject occupants to extremely bitter winds during a large part of the winter.

Hilliard also points out that "any description of climate in the South, however brief, would be incomplete without reference" to a meteorological event frequently identified with the region -- the tropical hurricane. Hurricanes occur in the late summer and early fall, the period critical to antebellum cane, cotton, and rice growers. These storms, however, are capricious in occurrence:

> [i]n such a case between the dread of pestilence in the city, of common fever in the country, and of an unexpected hurricane on the island, the inhabitants . . . are at the close of every warm season in a painful state of anxiety, not knowing what course to pursue, nor what is best to be done (Ramsay, quoted in Calhoun 1983:2).

The coastal area is a moderately high risk zone for tropical storms, with 169 hurricanes being documented from 1686 to 1972 (0.59 per year) (Mathews et al.1980:56). The last Category 5 hurricane to hit this area was the August 27, 1893 storm which had winds of 120 miles and hour and a storm tide of 17 to 19.5 feet. Over 1000 people in South Carolina were reported killed by this storm (Mathews et al. 1980:55). Other notable historic storms have occurred in 1700, 1752, 1804, 1813, and 1885.

Geology and Soils

The Sea Island coastal region is covered with sands and clays originally derived from the Appalachian Mountains and which are organized into coastal, fluvial, and aeolian deposits. These deposits were transported to the coast during the Quaternary period and were deposited on bedrock of the Mesozoic Era

and Tertiary period. These sedimentary bedrock formations are only occasionally exposed on the coast, although they frequently outcrop along the fall line (Mathews et al. 1980:2). The bedrock in the Beaufort area is below a level of at least 1640 feet (Smith 1933:21).

The Pleistocene sediments are organized into topographically distinct, but lithologically similar terraces parallel to the coast. The terraces have elevations ranging from 215 feet down to sea level. These terraces, representing previous sea floors, were apparently formed at high stands of the fluctuating, although falling, Atlantic Ocean and consist chiefly of sand and clay (Cooke 1936; Smith 1933:29). More recently, research by Colquhoun (1969) has refined the theory of formation processes, suggesting a more complex origin involving both erosional and depositional processes operating during marine transgressions and regression.

Cooke (1936) found that most of Hilton Head is part of the Pamplico terrace and formation, with a sea level about 25 feet above the present sea level. Colquhoun (1969), however, suggests that Hilton Head is more complex, representing the Princess Anne and Silver Bluff Pleistocene terraces with corresponding sea levels of from 20 to 3 feet.

Another aspect of Sea Island geology to be considered in these discussions is the fluctuation of sea level during the late Pleistocene and Holocene epochs. Prior to 15,000 B.C. there is evidence that a warming trend resulted in the gradual increase in Pleistocene sea levels (DePratter and Howard 1980). Work by Brooks et al. (1989) clearly indicates that there were a number of fluctuations during the Holocene. Their data suggest that as the first Stallings phase sites along the South Carolina coast were occupied about 2100 B.C. the sea level was about 3.9 feet lower than present. However, by 1600 B.C., when a number of Thom's Creek shell rings were occupied, the sea level had fallen to a level of about 7.2 feet lower than present levels. By the end of the Thom's Creek phase, about 900 B.C., the sea level had risen to a level 2.6 feet lower than present, but over 4.5 feet higher than when the shell rings were first occupied. Quitmyer (1985a) does not believe that the lower sea levels at 2100 B.C. would have greatly altered the estuarine environment, although drops of 10 feet would have reduced available tidal resources.

Data from the nineteenth and twentieth centuries suggest that the level is continuing to rise. Kurtz and Wagner (1957:8) report a 0.8 foot rise in Charleston, South Carolina sea levels from 1833 to 1903. Between 1940 and 1950 a sea level rise of 0.34 feet was again recorded at Charleston. These data, however, do not distinguish between sea level rise and land surface submergence.

Within the Sea Islands section of South Carolina the soils are Holocene and Pleistocene in age and were formed from materials that were deposited during the various stages of coastal submergence. The formation of soils in the study area is affected by this parent material (primarily sands and clays), the temperate climate, the various soil organisms, topography, and time.

The mainland soils are Pleistocene in age and tend to have more distinct horizon development and diversity than the younger soils of the Sea Islands. Sandy to loamy soils predominate in the level to gently sloping mainland areas. The island soils are less diverse and less well developed, frequently lacking a well-defined B horizon. Organic matter is low and the soils tend to be acidic. The Holocene deposits typical of barrier islands and found as a fringe on some sea islands, consist almost entirely of quartz sand which exhibits little organic matter. Tidal marsh soils are Holocene in age and consist of fine sands, clay, and organic matter deposited over older Pleistocene sands. The soils are frequently covered by up to 2 feet of salt water during high tide. These organic soils usually have two distinct layers. The top few inches are subject to aeration as well as leaching and therefore are a dark brown color. The lower levels, however, consist of reduced compounds resulting from decomposition of

organic compounds and are black. The pH of these marsh soils is neutral to slightly alkaline (Mathews et al. 1980:39-44). Historically, marsh soils have been used as compost or fertilizer for a variety of crops, including cotton (Hammond 1884:510) and Allston mentions that the sandy soil of the coastal region, "bears well the admixture of salt and marsh mud with the compost" (Allston 1854:13).

There are three main soil associations on Hilton Head. The Wando-Seabrook-Seewee association consists of excessively well drained to somewhat poorly drained sands found on the interior. The Fripp-Baratari association consists of excessively drained and poorly drained sands found along the Atlantic shore of the island. The Bohicket-Capers-Handsboro association consists of very poorly drained mineral and organic marsh soils (Stuck 1980).

The soils in the immediate vicinity of 38BU833 consist of excessively drained, rapidly permeable Wando Series soils that formed in thick sandy Coastal Plain sediment (Stuck 1980:Map 93).

Floristics

Hilton Head today exhibits four major ecosystems: the coastal marine ecosystem where land has unobstructed access to the ocean, the maritime ecosystem which consists of the upland forest area of the island, the estuarine ecosystem of deep water tidal habitats, and the palustrine ecosystem which consists of essentially fresh water, non-tidal wetlands (Sandifer et al. 1980:7-9).

Mathews et al. (1980) suggest that the most significant ecosystem on Hilton Head is the maritime forest community. This maritime ecosystem is defined most simply as all upland areas located on barrier islands, limited on the ocean side by tidal marshes. On sea islands the distinction between the maritime forest community and an upland ecosystem (essentially found on the mainland) becomes blurred. Sandifer et al. (1980:108-109) define four subsystems, including the sand spits and bars, dunes, transition shrub, and maritime forest. Of these, only the maritime forest subsystem is likely to have been significant to either the prehistoric or historic occupants and only it will be further discussed. While this subsystem is frequently characterized by the dominance of live oak and the presence of salt spray, these are less noticeable on the sea islands than they are on the narrower barrier islands (Sandifer et al. 1980:120).

The barrier islands may contain communities of oak-pine, oak-palmetto-pine, oak-magnolia, palmetto, or low oak woods. The sea islands, being more mesic or xeric, tend to evidence old field communities, pine-mixed hardwoods communities, pine forest communities, or mixed hardwood communities (Sandifer et al. 1980:120-121, 437).

Several areas of Hilton Head evidence upland mesic hardwood communities, also known as "oak-hickory forests" (Braun 1950). These forests contain significant quantities of mockernut hickories as well as pignut hickory. Other areas are more likely to be classified as Braun's (1950:284-289) pine or pine-oak forest. Wenger (1968) notes that the presence of loblolly and shortleaf pines is common on coastal plain sites where they are a significant sub-climax aspect of the plant succession toward a hardwood climax. Longleaf pine forests were likewise a common sight (Croker 1979).

Along Skull Creek, it is likely that the highland vegetation was dominated by the Oak-Hickory Forest, although land use patterns in the historic period quickly changed the vegetation of the area through settlement and cultivation. A 1981 oblique aerial photograph (Figure 3) shows the site area in early stages of development -- the main Hilton Head Plantation road is paved, the Village at Skull Creek community dock has been built, and the cultivated field have just been converted to pine, but the areas of hardwood vegetation along the edge of Skull Creek are still intact, as are several small "islands" in the cultivated

fields.

The estuarine ecosystem in the Hilton Head vicinity includes those areas of deep-water tidal habitats and adjacent tidal wetlands. Salinity may range from 0.5 ppt at the head of an estuary to 30 ppt where it comes in contact with the ocean. Estuarine systems are influenced by ocean tides, precipitation, fresh water runoff from the upland areas, evaporation, and wind. The tidal range for Hilton Head Island is 6.6 to 7.8 feet, indicative of an area swept by moderately strong tidal currents. The system may be subdivided into two major components: subtidal and intertidal (Sandifer et al. 1980:158-159). These estuarine systems are extremely important to our understanding of both prehistoric and historic occupation because they naturally contain such high biomass (Thompson 1972:9). The estuarine area contributes vascular flora used for basket making, as well as mammals, birds, fish (over 107 species), and shellfish.

The last environment to be briefly discussed is the freshwater palustrine ecosystem, which includes all wetland systems, such as swamps, bays, savannas, pocosins and creeks, where the salinities measure less than 0.5 ppt. The palustrine ecosystem is diverse, although not well studied (Sandifer et al. 1980:295). A number of forest types are found in the palustrine areas which attract a variety of terrestrial mammals. On Hilton Head the typical vegetation consists of red maple, swamp tupelo, sweet gum, red bay, cypress, and various hollies. Also found are wading birds and reptiles. It seems likely that these freshwater environs were of particular importance to the prehistoric occupants, but probably of limited importance to historic occupants (who tended to describe them in the nineteenth century as "impenetrable swamps").

Figure 3. Oblique aerial photograph of the 38BU833 site area, taken in 1981.

HISTORICAL OVERVIEW

Previous Archaeological Studies

Hilton Head's prehistoric resources have received surprising little detailed archaeological attention. The earliest record of archaeological investigations at a prehistoric site on the island was perhaps Antonio Waring's excavations at the Sea Pines Shell Ring (38BU7) in the 1950s. Allen Calmes made modest collections made from Ford's Skull Creek Shell Ring (38BU8) and the Sea Pines Shell Ring sites in the late 1960s (Calmes 1967a, 1967b). Regrettably, no notes, photographs, or other field documentation survive from these investigations and the collections are, consequently, of little interpretative value.

In 1973 Stanley South conducted a four day project at the Indian Springs site (38BU24) on Hilton Head. Work at the site was limited to the excavation of a 2-foot wide trench bisecting the site north-south and east-west, with each axis a total of 100 feet in length. This work revealed 83 features, including both prehistoric pits, post holes, and a possible palisade line, as well as historic pits. The Indian Springs site, however, was destroyed by development activities before any additional research was conducted.

A 1982 study was conducted by Larry Lepionka in the vicinity of the Village at Skull Creek (Lepionka 1982). Although a copy of the report could not be immediately located, it seems that it failed to identify 38BU833.

Work at the Fish Haul site (38BU805) identified a major non-shell Stallings phase site dating from about 1700 to 1300 B.C. was conducted by Chicora Foundation in 1986 (Trinkley 1986). Work identified a Stallings phase structure, pits, a large assemblage of Stallings phase artifacts, and extensive subsistence information. In 1987 Chicora Foundation conducted a reconnaissance level survey of portions of Hilton Head Island for the Town (Trinkley 1987). This work identified a variety of previously unreported prehistoric sites spanning the period from about 2000 B.C. through A.D. 1400.

Work elsewhere in the vicinity, such as that on Pinckney Island (Trinkley 1981) and on Spring and Callawassie islands (Brooks et al. 1982; Trinkley 1991b), provides excellent comparative data.

The Callawassie work explored broad questions of artifactual remains, subsistence, and settlement (Trinkley 1991b). Greater variability in the paste of Deptford wares was found than in any of the following series. There is some evidence, however, that the variation originally seen on an intrasite basis during the Early Woodland, was slowly transformed to variation on an inter-site basis by the Late Woodland. The examination of cordage found that exclusively simple twisted cordage was used. The Z or left twist was consistently more common that the R or right twist and a soft twist was generally more popular than a hard twist. The cordage diameter seems to consistently fall within a range of 0.5 to 4.0 mm.

The radiocarbon dates taken from the sites found considerable overlap between the various typological entities. Deptford materials were found as late as A.D. 930, overlapping with the earliest St. Catherines date of A.D. 750, while the St. Catherines phase may continue to at least A.D. 1385, into the period often associated with Savannah.

Lithics are uncommon throughout these phases. Those identified tend to

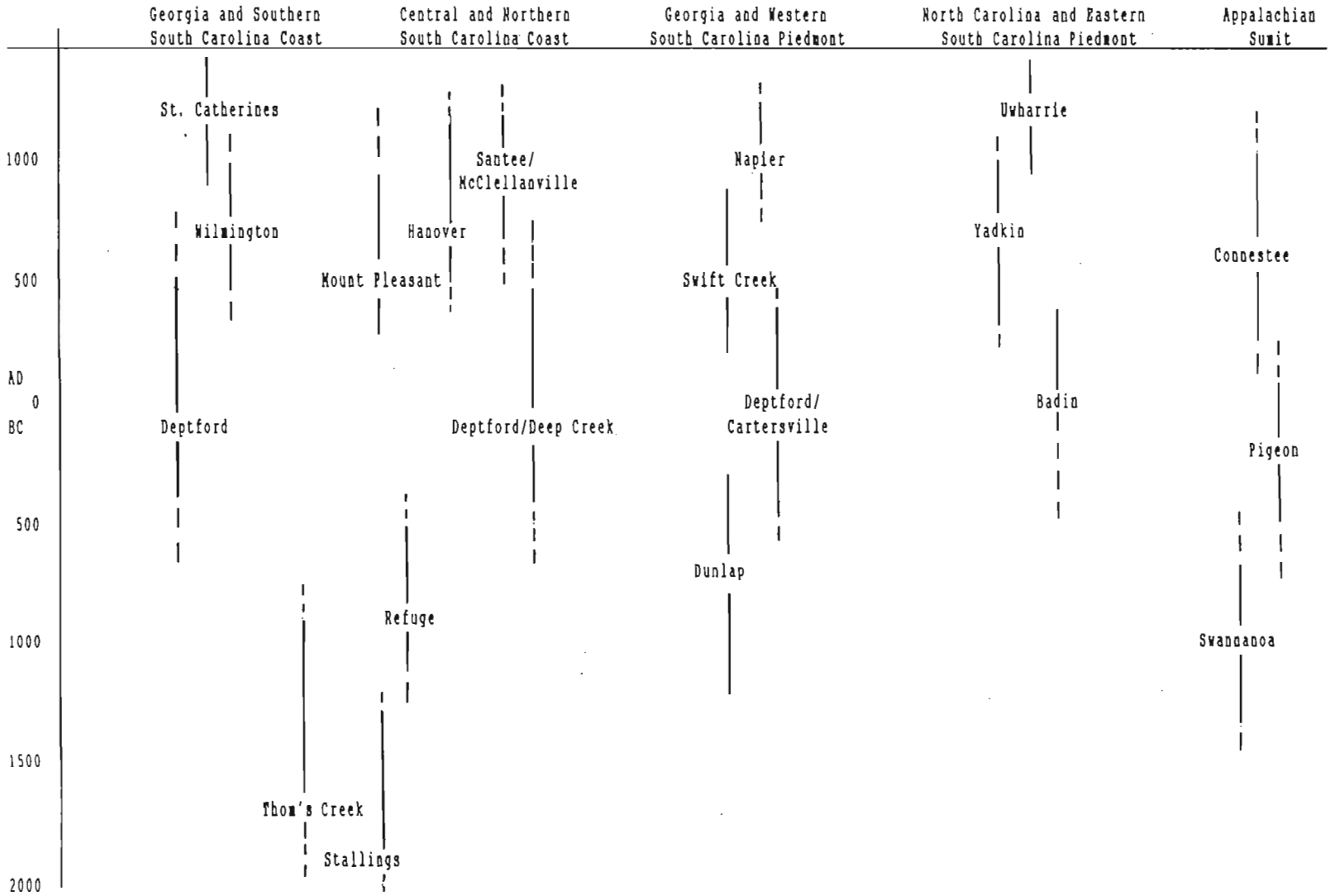

Figure 4. Woodland Period phases in the South Carolina locality.

reflect the use of locally available resources and evidence primarily re-working of existing tools. The Callawassie and Spring Island materials suggested the use of Roanoke Large Triangular points by the St. Catherines and Savannah peoples.

The results of subsistence studies suggested that the sites were occupied during the spring and summer, perhaps extending into the fall. The work revealed a diffuse subsistence base, with some indication of increasing focus on fish resources through time. Plant foods, while probably used, are poorly represented in these collections. Shellfish are not only the most noticeable feature of these sites, but also appear to have made the greatest contribution to the diet in terms of biomass.

Prehistoric Archaeology

The Woodland Period archaeology of the coastal area of South Carolina recently has been summarized and briefly synthesized by Trinkley (1990) and there is no need to provide extensive detail in this study (see Figure 4). DePratter (1979) should also be examined for additional background on the ceramic typology of the region, while Brooks et al. (1982) provides a detailed discussion of the excavations at the Callawassie Island Burial Mound. The work of Wilson (1982) will also assist in placing the Middle Woodland burial mound tradition in a better regional framework. It is necessary, however, to briefly discuss the major Middle and Late Woodland phases which have been identified in the work on Callawassie and Spring islands.

The Deptford culture takes its name from the type site located east of Savannah, Georgia, which was excavated in the mid-1930s (Caldwell 1943:12-16). Deptford phase sites are best recognized by the presence of fine to course sandy paste pottery with a check stamped surface treatment. This pottery is typically in the form of a cylindrical vessel with a conoidal base. The flat bottomed bowl with tetrapodal supports found at Deptford sites along the Florida Gulf coast (Milanich and Fairbanks 1980:79) is very rare in South Carolina. Other Deptford phase pottery styles include cord marking, simple stamping, a complicated stamping which resembles early Swift Creek, and a geometric stamping which consists of a series of carved triangles or diamonds with interior dots (see Anderson et al. 1982:277-293; DePratter 1979).

The Deptford technology is little better known than that of the preceding Refuge phase, which may provide the antecedent (Peterson 1971:328; cf. Milanich 1971). Shell tools are uncommon, bone tools are "extremely rare" (Milanich and Fairbanks 1980:77), and stone tools are uncommon on Coastal Zone sites. All of this indicates to some researchers that "wood must have been worked into a variety of tool types" (Milanich and Fairbanks 1980:75). One type of stone tool associated with South Carolina Deptford sites is a very small, stemmed projectile point tentatively described as "Deptford Stemmed" (Trinkley 1980b:20-23). This point is the culmination of the Savannah River Stemmed reduction seen in the Thom's Creek and Refuge phases. Similar points have been found at a variety of Deptford sites (see Milanich 1971:175-176; Stoltman 1974:115-116, Figure 20i-j, 40h-j). Also found at Deptford sites are "medium-sized triangular points," probably similar to the Yadkin Triangular point (Coe 1964:45, 47, 49; Milanich and Fairbanks 1980:75-76). In the Savannah River area Sassaman et al. (1989:156-157) report that Deptford pottery appears much more strongly associated with triangular projectile points (Badin and Yadkin types) than with the small stemmed points. They note, "small stemmed bifaces are attributed to the Early Woodland period with the recognition that they probably persisted into the subsequent period but were rapidly and thoroughly replaced by triangular forms by 2000 B.P." (Sassaman et al. 1989:157).

Perhaps of even greater interest is the co-occurrence of the larger triangular points (such as Badin and Yadkin) with smaller triangular forms (such as Caraway or Roanoke) traditionally attributed to the Late Woodland and South

Appalachian Mississippian periods. This situation has been reported at Coastal Plain sites (Blanton et al. 1986:107), Savannah River sites (Sassaman et al. 1989:157), and Coastal Zone sites (Trinkley 1990b). Blanton et al. (1986) suggest that these point types were used at the same time, but perhaps for different tasks.

Milanich (1971:Figure 12) illustrates a generalized distribution of this series, which is divided into the Gulf and Atlantic subregions. This distribution, however, should extend to the South Carolina Fall Line and probably as far north as the Neuse River in North Carolina. Anderson (1975:186) has found Deptford wares distributed throughout the South Carolina Coastal Plain, with major sites at the mouths of the Santee and Savannah Rivers. The earliest date for Deptford, 1045±110 B.C. (UGA-3515), has been obtained from 38LX5 in Lexington County (Trinkley 1980b:11). The most recent date comes from St. Simons Island, Georgia, where a date of A.D. 935±70 (UM-673) was obtained. Milanich and Fairbanks (1980:60) suggest a tighter range of about 500 B.C. to A.D. 600, while Anderson et al. (1982:281) suggest a date range of about 800 B.C. to A.D. 500.

Deptford sites on the South Carolina coast are usually small, especially when compared to the earlier Thom's Creek middens, and they are usually multicomponent. Deptford Coastal Zone sites, while containing shell, do not represent massive mounds, but rather thin middens formed as series of small shell heaps which have been deposited adjacent to the marsh and gradually formed continuous masses. These heaps were the result of short periods of site use, perhaps as a base camp for shellfish collecting (see Milanich and Fairbanks 1980:72-73; Trinkley 1981). Results of soil chemical analyses from the Pinckney Island midden (Trinkley 1981:53-54) suggest less than intensive occupation. The chemical studies support Milanich's assessment that occupation was not on the shell piles, but adjacent to them (Milanich and Fairbanks 1980:72-73; Trinkley 1981:53-54).

Milanich (1971:192-198; see also Milanich and Fairbanks 1980:70-73) suggests that the Deptford phase settlement pattern involves both coastal (i.e., Coastal Zone) and inland (i.e., Coastal Plain) sites. The coastal sites, which are always situated adjacent to tidal creek marshes, evidence a diffuse subsistence system. The inland sites are also small, lack shell, and are situated on the edge of swamp terraces. This situation is similar to that found in South Carolina, although there are Deptford middens which exhibit a very focal subsistence emphasis (Trinkley 1990b). Sites such as Pinckney Island (38BU67 and 38BU168; Trinkley 1981) and Minim Island (38GE46; Drucker and Jackson 1984; Espenshade and Brockington 1989) evidence large Coastal Zone Deptford occupations, while sites such as 38BU747 (Trinkley 1990b) evidence only small, focal shell midden occupations. Sites such as 38BK984 (Roberts and Caballero 1988) provide evidence of Coastal Plain non-shell midden Deptford occupation.

At Pinckney Island the bulk of the calories came from shellfish while mammals played a relatively insignificant role (Trinkley 1981:57-60). A similar situation occurs at Minim Island, where late spring and summer occupation is documented with a reliance on fishing, with mammals being a secondary, if not minor food source. In the fall there is evidence of intensive oyster gathering and possible use of nearby hickory masts (Drucker and Jackson 1984; Espenshade and Brockington 1989).

Inland, sites such as 38AK228-W, 38LX5, 38RD60, and 38BM40 indicate the presence of an extensive Deptford occupation on the Fall Line and the Coastal Plain, although sandy, acidic soils preclude statements on the subsistence base (Anderson 1979; Ryan 1972; Trinkley 1978, 1980b). These interior or upland Deptford sites, however, are strongly associated with the swamp terrace edge, and this environment is productive not only in nut masts, but also in large mammals such as deer. Perhaps the best data concerning Deptford "base camps" comes from the Lewis-West site (38AK228-W), where evidence of abundant food remains, storage pit features, elaborate material culture, mortuary behavior, and craft

specialization has been reported (Sassaman et al. 1989:96-98).

Milanich observes that "this dual distribution . . . suggests a transhumant subsistence pattern," with inland sites occupied in the fall for the collection of floral resources and the hunting of deer (Milanich 1971:194; Milanich and Fairbanks 1980:72). While such a subsistence round may have been practiced, it cannot be documented from the available evidence. Some sites, such as Pinckney Island, were clearly occupied in the late winter (Trinkley 1981:60). Minim Island, however, was apparently occupied in the summer (Drucker and Jackson 1984), although a fall or winter occupation cannot be precluded. 38BU747 was likewise occupied during the spring and summer (Trinkley 1990b).

A similar situation is observed along the Savannah drainage, where Stoltman (1974:237) observed both floodplain and upland Deptford sites. This duality, according to Stoltman, is "indicative of a gradually increasing dependence upon upland wild plant food" and eventually horticulture (Stoltman 1974:237), although no archaeological evidence supports this speculation. Hanson (1982:21-23) sees settlement locations becoming more diverse as population pressures require that new food sources be identified and exploited. While this is similar to the explanation offered by Stoltman, Hanson does not imply or suggest that the alternate food source must be horticultural.

This view of an estuarine Deptford adaptation with minor interior occupations must be re-evaluated based on the Savannah River drainage work of Brooks and Hanson (1987) and Sassaman et al. (1989:293-295) who suggest larger residential base camps and foraging zones along the Savannah River, coupled with smaller, household residences and foraging zones in the uplands along small tributaries. While it is not yet clear if these upland sites represent a perennial settlement pattern or a seasonal fissioning typical of the Late Archaic, it seems likely that the pattern was equally affected by demographic pressures and external socio-political influences (see Sassaman et al. 1989:303-304). Of considerable potential significance is evidence of trade between coastal and interior Deptford groups. For example, the Lewis-West site (38AK228-W) has produced evidence of sharks' teeth and whelk shells from the coastal region.

Although the Deptford phase is discussed as part of the Early Woodland, many authors place the phase intermediate between the Early and Middle Woodland (see, for example, Anderson et al. 1982:28, 250). Such an approach is not unreasonable, because Deptford exhibits considerable temporal range and cultural adaptations which are more characteristically Middle Woodland (see also Anderson 1985:53). The Deptford phase, however, is still part of the early carved paddle stamped tradition which is replaced by the posited northern intrusion of wrapped paddle stamping during the Middle Woodland.

The Middle Woodland in South Carolina is characterized by a pattern of settlement mobility and short-term occupation. On the southern coast it is associated with the Wilmington phase, while on the northern coast it is recognized by the presence of Hanover, McClellanville or Santee, and Mount Pleasant assemblages. Wilmington and Hanover may be viewed as regional varieties of the same ceramic tradition. The pottery is characterized almost solely by its crushed sherd temper which makes up 30 to 40% of the paste and which ranges in size from 3 to 10 mm. Wilmington was first described by Caldwell and Waring (Williams 1968:113-116) from coastal Georgia work, while the Hanover description was offered by South (1960), based on a survey of the Southeastern coast of North Carolina (with incursions into South Carolina). The Wilmington phase was seen by Waring (Williams 1968:221) as intrusive from the Carolina coast, but there is considerable evidence for the inclusion of Deptford traits in the Wilmington series. For example, Caldwell and McCann (1940:n.p.) noted that, "the Wilmington complex proper contains all of the main kinds of decoration which occur in the Deptford complex with the probable exception of Deptford Linear Checkstamped" (see also Anderson et al. 1982:275). Consequently, surface treatments of cord marking, check stamping, simple stamping, and fabric impressing may be found with

sherd tempered paste.

Sherd tempered Wilmington and Hanover wares are found from at least the Chowan River in North Carolina southward onto the Georgia coast. Anderson (1975:187) has found the Hanover series evenly distributed over the Coastal Plain of South Carolina, although it appears slightly more abundant north of the Edisto River. The heartland may be along the inner Coastal Plain north of the Cape Fear River in North Carolina. Radiocarbon dates for Wilmington and Hanover range from 135±85 B.C. (UM-1916) from site 38BK134 to A.D. 1120±100 (GX-2284) from a "Wilmington House" at the Charles Towne Landing site, 38CH1. Most dates, however, cluster from A.D. 400 to 900; some researchers prefer a date range of about 200 B.C. to A.D. 500 (Anderson et al. 1982:276).

The best data concerning Middle Woodland Coastal Zone assemblages comes from Phelps' (1983:32-33) work in North Carolina. Associated items include a small variety of the Roanoke Large Triangular points (Coe 1964:110-111), sandstone abraders, shell pendants, polished stone gorgets, celts, and woven marsh mats. Significantly, both primary inhumations and cremations are known from the Mount Pleasant phase. Phelps notes that:

> [a] distinctive cultural feature of Middle Woodland age in the South Coastal region is the rather extensive distribution of low, sand burial mounds . . . . The high frequency of secondary cremation, platform pipes, and other objects in the mounds, and the fact that at least some of them seem to be placed away from their contemporaneous habitation sites, points to southern influence during this period (Phelps 1983:35).

Phelps goes on to note that, "[t]heir known spatial extent is limited . . ., and no comparable structures have been reported from . . . South Carolina. . . . Further research . . . is needed to determine relationships [of North Carolina mounds] with . . . those on the Georgia coast" (Phelps 1983:35).

Sand burial mounds have been known from the Georgia and southern South Carolina Coastal Zone since C.B. Moore's investigations in 1898. Recent studies include those by the American Museum of Natural History on St. Catherines Island, Georgia, which document the Early to Late Woodland use of sand burial mounds (Larsen and Thomas 1982; Thomas and Larsen 1979), as well as the re-investigation of the Callawassie Island burial mound (38BU19) in Beaufort County, South Carolina (Brooks et al. 1982). The presumed burial mound gap between southern coastal South Carolina and southeastern coastal North Carolina has been filled by the 1983 excavations of the Buck Hall site in Charleston County (38CH644) where Trinkley and Zierden were able to determine that the low sand mounds were covering poorly preserved secondary burials (Trinkley 1991a). Rathbun has also identified an ossuary (38HR36) from Horry County, South Carolina (see Conner 1985; Hyman 1983).

Consequently, it appears that both ossuaries and sand mounds are found along the entire South Carolina coast, although precise dating and thorough understanding of their cultural significance has yet to be achieved. As Wilson notes, "the sand burial mounds . . . cannot be associated with any one prehistoric physical type or aboriginal group," for in North Carolina they are found in the context of probable Iroquoian, Siouan, and Algonquin populations (Wilson 1982:172). The available information, however, suggests a relatively egalitarian society was common to all. Anderson suggests that, "these mound/ossuary complexes appear to represent principal burial areas for local lineages or other currently unrecognized social entities" (Anderson 1985:56).

These Middle Woodland Coastal Plain and Coastal Zone phases continue the Early Woodland Deptford pattern of mobility. While sites are found all along the coast and inland to the Fall Line, shell midden sites evidence sparse shell and artifacts. Gone are the abundant shell tools, worked bone items, and clay balls.

Recent investigations at Coastal Zone sites such as 38BU747 and 38BU1214, however, have provided some evidence of worked bone and shell items at Deptford phase middens (see Trinkley 1990b, 1991b).

In terms of settlement patterns, several researchers have offered some conclusions based on localized data. Michie (1980:80), for example, correlates rising sea levels with the extension of Middle Woodland shell middens further up the Port Royal estuary. Scurry and Brooks (1980:75-78) find the Middle Woodland site patterning in the Wando River affected not only by the sea level fluctuations, but also by soil types (see also Trinkley 1980a:445-446). They suggest that the strong soil correlation is the result of upland sites having functioned as extraction areas, principally for exploitation of acorns, hickory nuts, and deer. Shell midden sites, they suggest, also represent seasonal camps and therefore exhibit small size, low artifact density, and infrequent re-occupation.

In many respects the South Carolina Late Woodland may be characterized as a continuation of previous Middle Woodland cultural assemblages. While outside the Carolinas there were major cultural changes, such as the continued development and elaboration of agriculture, the Carolina groups settled into a lifeway not appreciably different from that observed for the previous 500 to 700 years (cf. Sassaman et al. 1989:14-15). This situation would remain unchanged until the development of the South Appalachian Mississippian complex (see Ferguson 1971).

The Late Woodland on the extreme southern South Carolina Coastal Zone is characterized by the St. Catherines phase, first defined by Caldwell (1971) based on his St. Catherines Island, Georgia work. St. Catherines ceramics are characterized by fine clay tempering (obviously finer than the preceding Wilmington sherd temper) and by carefully smoothed or burnished interiors. Surface treatments include fine cord marked, burnished plain, and net impressed (DePratter 1979:119, 131-132), although sparse quantities of fabric impressed pottery are also observed from South Carolina (Trinkley 1981:82) and Georgia (Larsen and Thomas 1982:304-305). Caldwell viewed the St. Catherines pottery as a refinement of the Wilmington tradition of sherd tempering (Caldwell 1971:91), and sand burial mounds continue to be a significant aspect of the assemblage (Brooks et al. 1982; Larsen and Thomas 1982; Trinkley 1981:90-92).

While a number of St. Catherines burial mounds have been studied, only one midden area, Victoria Bluff (38BU347), in Beaufort County, has been even briefly tested (Trinkley 1981:73-78). At this site the economy was based on shellfish collection and there is substantial evidence of a winter-early spring occupation. There is, as yet, no documentation of a seasonal round, although some large St. Catherines sites have been found which suggest at least semi-permanent villages (Trinkley 1990b, 1991b).

The St. Catherines pottery, previously given a terminal date of about A.D. 1150 by DePratter (1979:111), probably dates into the fourteenth century, based on the Victoria Bluff (38BU347) and Pinckney Island (38BU67, 38BU168) work where dates of A.D. 1380±75 (UGA-3516) and A.D. 1535±65 (UGA-3514) were obtained (Trinkley 1981). The tenacity of this simple lifestyle suggests that the effects of the Gaule intrusion was relatively minor in many ways, or they at least co-existed with the native inhabitants whose lives were generally unchanged.

There is only somewhat vague and tantalizing evidence of agriculture or the use of domesticated plants during this period in South Carolina. Investigations at 38AN8 have yielded carbonized gourd rind, as well as a very small sample of squash and corn pollen (see Wood 1986:106). Agriculture, however, cannot be documented in any meaningful way until the rise of the South Appalachian Mississippian period, either in the Piedmont or on the coast.

The Savannah phase is traditionally accepted as the beginning of the South

Appalachian Mississippian along the Georgia and South Carolina coasts. The phase was defined by Caldwell and McCann (1941) from the work at the Irene Mound site in Georgia, although the Savannah ware was earlier described by Caldwell and Waring (1939). Dates of about A.D. 1150 to 1300 have been suggested by DePratter (1979:111), although Anderson et al. (1982:308) would extend the date range to about A.D. 1400.

The diagnostic feature of this phase is the pottery, which is characterized by a fine sand to clay or silt paste with carefully smoothed interiors. Surface treatments include complicated stamped, check stamped, cord marked, and burnished plain. The pottery usually can be distinguished from the later Irene types by the abundant sand or grit in the latter. Although the Savannah pottery tends to be dominated by a variety of concentric circle stamp motifs, filfot, quartered-circle, and split diamond patterns are also found. Anderson et al. (1982:309) correctly note that the Savannah motifs grade into the following Irene/Pee Dee designs.

Both Caldwell and McCann (1941) and Cook (1966) provide some general information on the nature of coastal Savannah sites, although these studies have examined rather large sites with associated mounds and burials. The work by Larsen and Thomas (1982) at Marys Mound and Johns Mound on St. Catherines Island are of considerable interest since they document the presence of both St. Catherines and Savannah wares in the same stratigraphic context.

No Savannah period sites have been excavated in the Beaufort area, although Anderson notes that "classic Savannah Complicated Stamped pottery appears to be progressively uncommon to the northeast of the Savannah" (Anderson et al. 1982:311). The Savannah Check Stamped and Cord Marked types, while occasionally present as minority types, appear to also decline in frequency from Savannah northward to Charleston, South Carolina.

It is within this broad context of archaeological knowledge, speculation, and questions that the investigation of 38BU833 on Hilton Head Island was undertaken. The resulting research has offered some considerably new, and hopefully fresh, interpretations of the Woodland period along the southern South Carolina coast.

RESEARCH STRATEGY AND METHODS

Introduction

The primary goals of the data recovery excavations at site 38BU833 included detailed examination of subsistence, settlement, and the associated cultural materials. Although initial survey data provided evidence only of a "late" occupation, based on the Caraway projectile point, initial excavations found the site to span the Middle and Late Woodland, including the Deptford, St. Catherines, and Savannah phases.

The seasonality of the various remains found at the site was of considerable importance to the overall settlement reconstruction. Likewise, questions concerning the exploitation of different habitats within the coastal zone were significant to an understanding of site settlement choices.

Also of major importance was a better understanding of the pottery produced by each of the identified groups. Previous typological studies have largely concentrated on Georgia assemblages (e.g., DePratter 1979) and have failed to examine variations in paste and cordage as significant elements in the typological descriptions (cf. Trinkley 1991b). There were indications from the work of both Brooks et al. (1982) and Larsen and Thomas (1982) that the relationship between St. Catherines and Savannah wares may be more complex than previously thought.

Excavations

In order to allow comparisons to be valid between 38BU833 and similar sites, it was essential that field techniques, in so far as possible, be uniform. As previously discussed, it was also essential that the excavation techniques be developed to ensure that a wide variety of data, especially relating to subsistence, would be recovered. The data recovery investigations at 38BU833 were therefore designed and executed in a manner comparable to previous work (e.g., Trinkley 1991b).

The site grid was laid out to incorporate the area between the existing building and Skull Creek, as well as that portion of the site north of the structure. Grid north is oriented N20°E and has been tied into the existing structure. In addition, two iron rods were used to temporarily mark the east-west baseline. Units were established using the modified Chicago 10-foot grid, with each square designated by its southeast corner from a 0R0 point off site. Thus, square 800R200 would be located 800 feet north and 200 feet right (or east) of the 0R0 point. Vertical control was maintained through the use of a nearby temporary benchmark (a nail in the base of a pine tree situated at 40R55) with a mean sea level (MSL) elevation of 20.00 feet.

The placement of excavation units at the site was guided by previously excavated close interval shovel tests (see Adams 1991) and the need to explore a variety of site areas. The placement of units, of course, was limited by the location of trees, the Village at Skull Creek model unit, and the paved parking area. Units were placed to ensure that the excavations encountered both dense shell midden, as well as non-shell midden, site areas.

Stratigraphy at the site tended to be uniform and consisted of a dark gray brown loamy or humic sand overlying either yellow brown subsoil or a shell midden (which in turn overlaid the subsoil). Consequently, the upper zone of brown soil was designated Zone 1, while the shell midden was designated Zone 2. Zone 1, typically 0.6 to 1.0 foot in depth, was found to have a Munsell soil color of

10YR4/2. Zone 2 shell midden varied from 0.4 to 1.0 foot and included soil classified as very dark gray brown (10YR3/2).

Non-midden (Zone 1) soils were dry screened through ¼-inch mesh using mechanical sifters. Shell midden soils (Zone 2) were either dry screened through ¼ or ⅛-inch mesh or were water screened through ⅛-inch mesh. The purpose of this work was to examine the differences in both recovery and time required to conduct the work. Regrettably, the excessive rain which occurred during the project made dry screening midden soils through ⅛-inch mesh virtually impossible. It was found that both screening and sorting times increased dramatically and the level of confidence in recovery, given the large amount of soils retained with and on the screenings, was marginal.

Samples of the midden dry screened through ¼-inch were processed very quickly, but failed to yield any evidence of small faunal remains -- only larger mammal remains were occasionally found. The bulk of the midden at the site was water screened through ⅛-inch mesh. This procedure resulted in the recovery of fish bone, increased recovery of charcoal, and a significantly greater confidence in the recovery rate (since the materials were clean). The time spent examining the screenings was found midway between that of the dry screened ¼-inch and ⅛-inch mesh (when the soils are moist).

While this work was not intended to quantify results, but rather to simply determine if additional methodological research might be useful, conclusions can only be offered in terms in generalities and perceptions. The use of 1/8-inch mesh, while somewhat more time consuming, greatly increases the potential for the recovery of small faunal material -- if such small remains are present to be found. These small remains, in turn, can dramatically change the interpretation of the subsistence base of the midden.

It seems clear that further research should be undertaken to quantity person hours of labor involved using different techniques under different conditions, as well as the differing recovery levels. This additional research might appropriately be funded by the SC State Historic Preservation Office since that agency is ultimately responsible, through the compliance review process, for the quality of much of the archaeological research conducted in South Carolina.

The shell from Zone 2 soils was consistently weighted prior to being discarded in the field. Hand picked samples of left oyster valves were collected for additional analysis, as were any other unusual or suspect shell material. In addition, a column sample was collected from each unit which exhibited a shell midden component. These column samples were consistently 2.25 feet square in a 10 foot unit and were designed to provide a 5% sample of the midden.

Each column sample was removed and weighted prior to screening. All shell was then weighted and bagged for detailed analysis. The weight of total column minus the weight of the shell provided the weight of the soil in the column and allowed a shell/soil ratio for each midden to be calculated.

Soil samples were routinely collected from each zone. Several examples of shells filled with soil were retained from the various middens for future pollen analysis. Units were troweled at the top of the subsoil, photographed in black and white and color, and plotted.

Features were plotted and photographed prior to excavation. Typically they were bisected, with the profile photographed and drawn prior to the excavation of the remaining feature. All feature fill, excepting a 5-gallon sample retained for water flotation, was water screened through ⅛-inch mesh. Hand picked shell samples were retained for analysis.

The Melrose Company was notified, at the conclusion of the work, that the site could be backfilled. In preparation of mechanical backfilling, the profiles

were bulked.

Laboratory and Analysis Methods

The cleaning of artifacts was begun on Hilton Head during the field work and completed in Columbia. Cataloging of the specimens was conducted at the Chicora laboratories in Columbia in February 1992. All artifacts were wet cleaned, at which time they were evaluated for conservation needs. All of the prehistoric materials and historic ceramics were stable and no conservation treatments were undertaken.

Faunal materials were too uncommon to permit any detailed analysis and, consequently, have been incorporated into this study as weights with general comments. Likewise, the flotation samples from the middens yielded very limited charcoal and the results of that work are likewise incorporated as only general comments.Shellfish remains are very plentiful at the site and have been examined in some detail by Lawrence, whose study is included in a following section.

Site 38BU833 was recommended eligible for inclusion on the National Register based on the prehistoric remains. The historic materials, while briefly discussed in this report, fail to exhibit clear integrity and have a very limited ability to answer significant research questions.

EXCAVATIONS

Introduction

The work at 38BU833 involved the excavation of nine 10-foot units systematically placed across the site area (Figures 5 and 6) in order to investigate both shell middens and non-midden areas. Two of the nine units (70-80R30) were placed in an area of suspected dense shell midden adjacent to Skull Creek. Two additional units (55R55 and 75R55) were placed just inland to examine adjacent, non-midden areas. This examination of non-midden areas was continued with the excavation of 100R70-80 and 100R110-120, immediately north of the structure on the site. The last unit, 70R280, was excavated at an interior area of the site where the initial survey had identified a probable midden zone.

Units 70-80R30 did reveal midden, although its density varied dramatically through the two units (Figure 7 and 8). The profiles suggest that a significant portion of the midden has eroded into Skull Creek, with only the inland toe still remaining. This finding is consistent with both the amount of shell observed on the beach and the erosion along Skull Creek observed by Michael Taylor (personal communication 1992). The midden was at least a foot thick originally, with the remaining profiles suggesting that the site consisted of piles, rather than a continuous sheet midden. No features or other evidence of occupation was found underlying the midden.

As previously discussed, a 2.25 foot square column sample (representing a 5% sample of each unit) was weighed prior to sifting and the shell, collected for analysis, was weighed after screening. This provided a quantified statement of shell density for each of the middens (with soil:shell ratios of 1:1.3 in 70R30 and 1:0.4 in 80R30 where the midden is much thinner). Total shell weights in these units were 2585 pounds for 70R30 and 1583 pounds for 80R30.

A portion of the 70R30 column sample from the intact midden deposit of 70R30 was sorted by species, revealing that 99.9% of the sample by weight represents oyster, just under 0.1% by weight represents clam, with the remaining amount appears to represent rare examples of ribbed mussel, stout tagelus, whelk, and land snails. Ribbed mussel and stout tagelus may be deceptively infrequent because of their fragile shells. Regardless, the low numbers of these species suggests that they were incidentally collected during oyster gathering.

Unit 55R55 identified a second area of very light shell accumulation, perhaps representing an "incipient" midden. Unit 75R55 was the only excavation which revealed extensive disturbance. No only was Zone 1 extensively displaced, but a series of water lines had been laid through the unit. Artifacts were very sparse in this unit.

Unit 100R70 also revealed a small area of intact shell midden which, like that in 55R55, seemed to be in a formative stage. Underlying the midden were found the only two features identified from the site -- small basin shaped pits perhaps representing steaming pits for oysters. The exposed portion of Feature 1, found bisected by the N100 and R60 walls, measured 2.3 feet in length and 1.4 feet in width. It was 0.1 foot in depth and contained 12 pounds of primarily oyster shell, with several examples of hardshell clam. The exposed portion of Feature 2, which was bisected by the R60 wall, measured 4.0 feet in length and 1.5 feet in width. The pit is basin shaped and 0.2 foot in depth. Seventeen pounds of oyster shell were recovered from its excavation, as well as a small amount of animal bone.

Units 100R80, 100R110, and 100R120 contained no evidence of shell midden,

Figure 5. Site 38BU833.

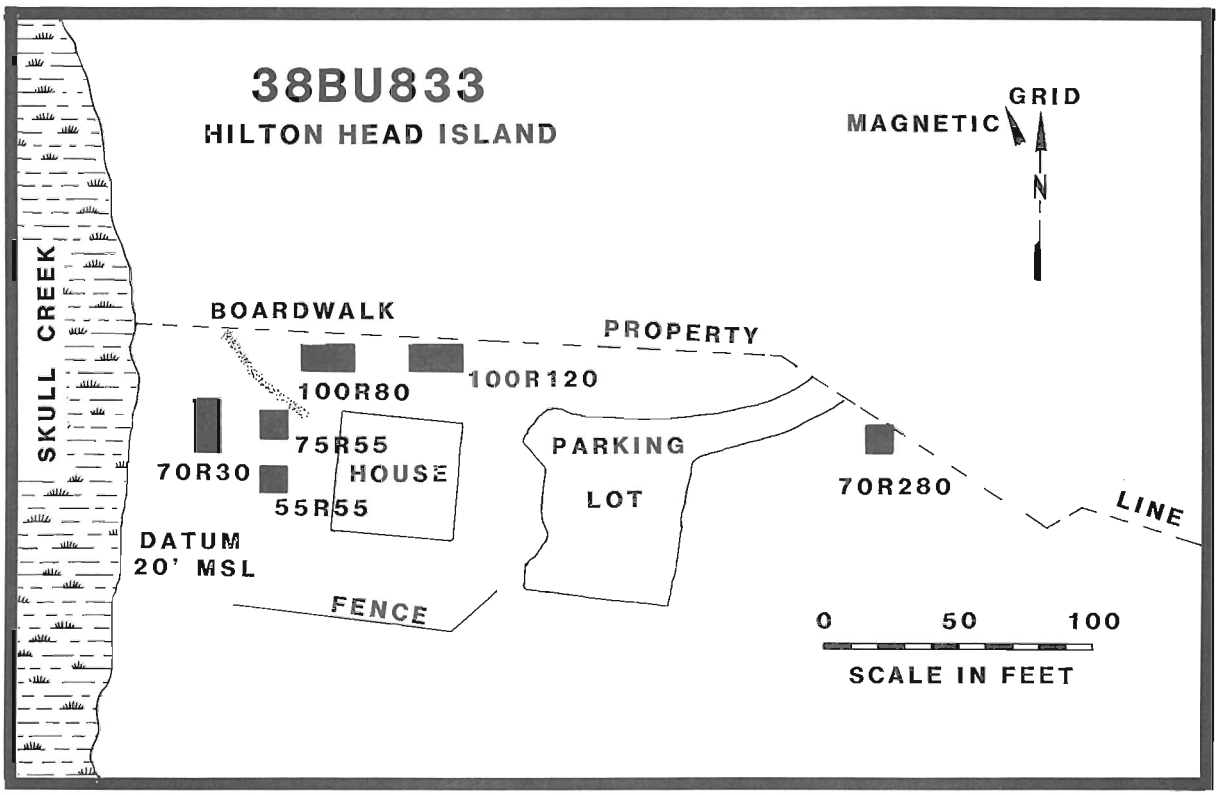

Figure 6. General view of the site, looking toward Skull Creek.

Figure 7. Units 70-80R30, east profile, looking northeast.

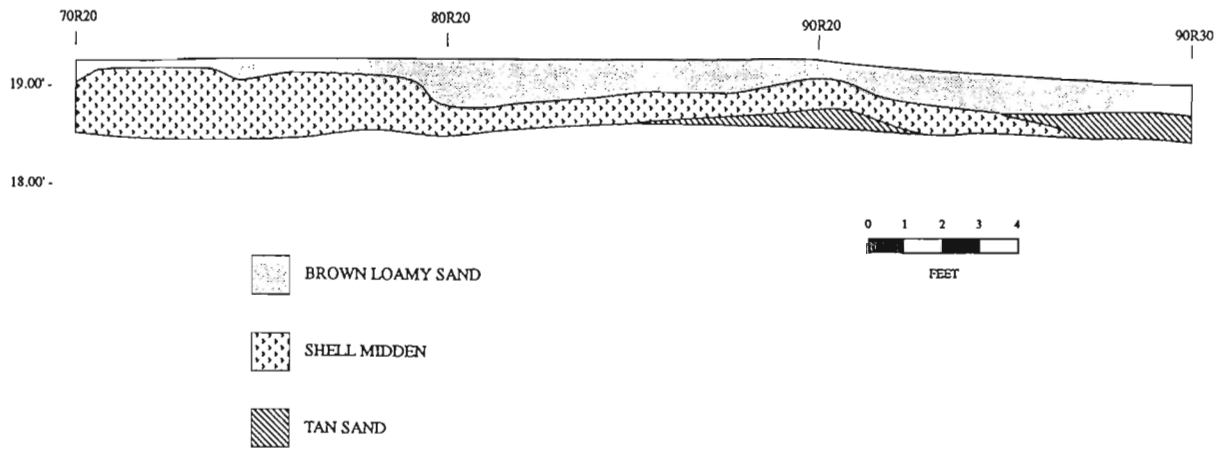

Figure 8. Units 70-80R30 profiles.

although shell, from plowing, was found. At the base of Zone 1, shallow plow scars were observed, suggesting that the plowing was light, perhaps dating from the late nineteenth century.

The last unit, 70R280, was excavated in the interior live oak grove shown in Figure 3. The excavations revealed that the area was under cultivation prior to the development of the live oaks, perhaps 60 to 70 years ago. The midden identified in 70R280 had been extensively impacted by plowing, although the lowest 0.1 to 0.2 foot appeared to be relatively intact. A single post hole was identified at the base of the excavations. Upon excavation is was found to measure 0.8 foot in diameter and to be 0.5 foot in depth. Although the associated midden contained abundant remains, the post hole contained only shell.

Radiocarbon Dating

A single date was obtained on oyster shell collected from Zone 2 in 70R30. The predominant pottery associated with this midden is St. Catherines, although a small number of Savannah sherds were also present. The shell yielded an age of 820 ± 60: A.D. 1130 (Beta-51315).

The St. Catherines phase has usually been given an initial date of about A.D. 1000 and a terminal date of approximately A.D. 1150 (e.g., DePratter 1979:111). This radiocarbon date, from a context which incorporates both St. Catherines and Savannah materials, is appropriately at the terminal end of the projected St. Catherines range. It suggests that the site was occupied during the later stages of the Late Woodland Period and perhaps into the South Appalachian Mississippian period. Although no radiocarbon date was obtained for the earlier Deptford phase, it is likely that occupation at the site began at least as early as 800 B.C.

Artifact Analysis

Prehistoric Remains

The dominant artifact recovered from this site is pottery, with a total of 423 sherds collected from the excavations. Of these 248 (58.6%) are over 1-inch in diameter and have been examined in this study. Essentially three series have been identified from the work at this site: Deptford, St. Catherines, and Savannah (Figure 9).

Type definitions of Deptford are offered by Caldwell and Waring (1939) and more recently by DePratter (1979). The paste of the Deptford series pottery exhibits considerable variation, but tends to be gritty, with varying amounts of small rounded quartz inclusions present. Interior surfaces are only roughly smoothed. Exterior surface treatments include check stamping, cord marking, simple stamping, net impressed, and plain.

The St. Catherines wares are formally described by DePratter (1979) and briefly discussed by Caldwell (1971). The ware is characterized by the inclusion of finely crushed low-fire clay fragments. These investigations have not identified any sherds with exhibit "crushed sherd" tempering, although they may exist in other St. Catherines collections (e.g., DePratter 1979:131). In addition, these studies have failed to identify any pottery which is within the range of Wilmington's large sherd temper inclusions (see DePratter 1979:129). The interior of the St. Catherines pottery is roughly smoothed. Surface treatments include cord marking, net impressing, fabric marking, and plain. Brooks et al. (1982:22) also discuss the presence of fabric impressions on St. Catherines pottery, although this is not a previously defined type.

The Savannah wares are formally described by Caldwell and Waring (1939), and Caldwell and McCann (1941). The ware is characterized by fine grit tempering consisting of small (coarse sand) rounded quartz inclusions. The gravel

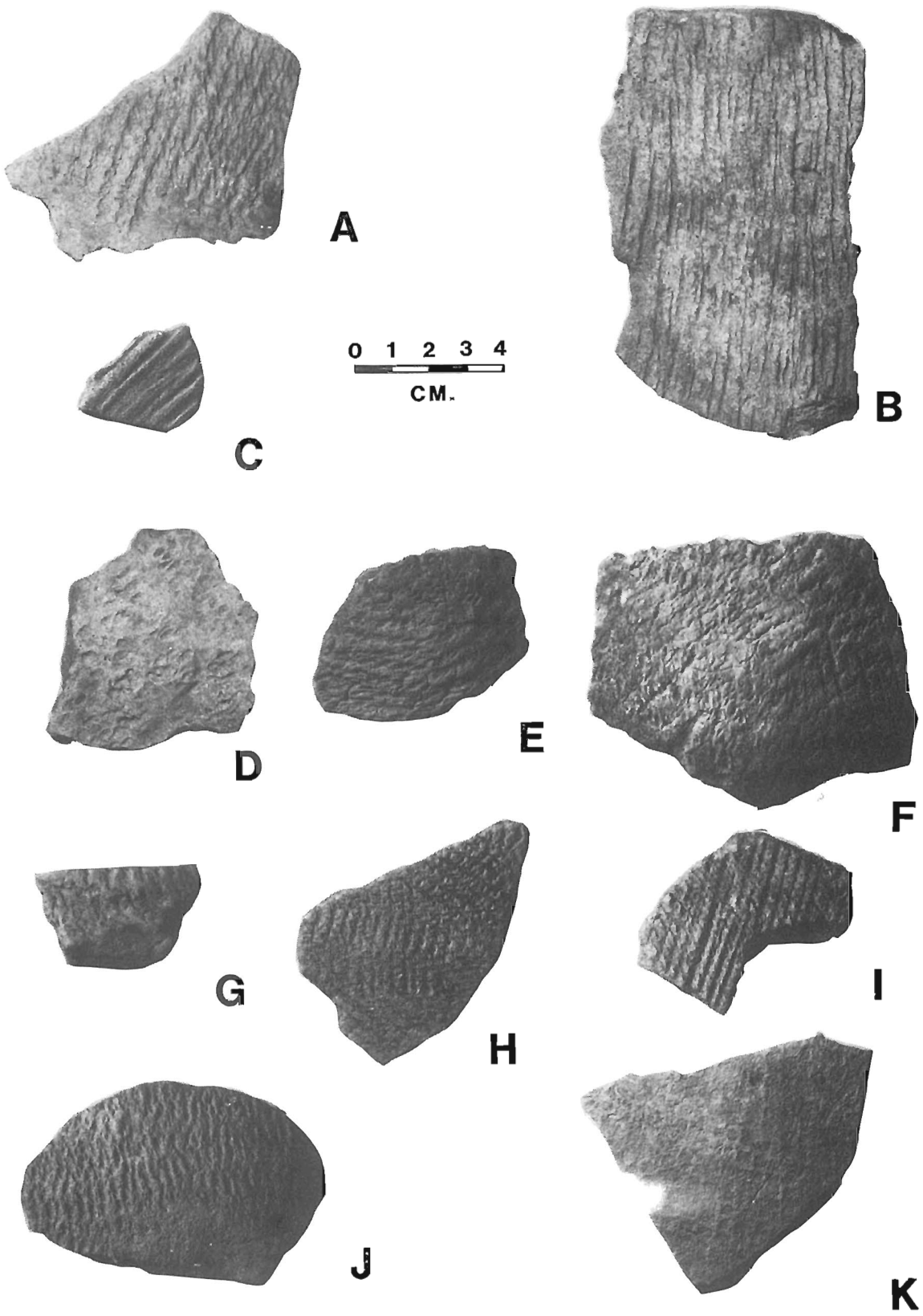

Figure 9. Examples of pottery recovered from 38BU833. A-B, Deptford Cord Marked; C, Deptford Simple Stamped; D, Deptford Dentate Stamped; E-G, St. Catherines Cord Marked; H-I, Savannah Cord Marked; J, Savannah Fabric Impressed; K, Savannah Check Stamped.

inclusions noted in previous type descriptions are not found at 38BU833, although Caldwell and Waring (1939) do note that they found considerable variation, including an admixture of both grit and crushed clay. Interior surfaces are carefully smoothed and frequently burnished. Exterior surface treatments include check stamping, cord marking, complicated stamping, and plain. No vessels were identified from these investigations which exhibited decorations such as notching or tooling.

Deptford pottery (n=103) accounts for 41.5% of the identifiable collection at 38BU833, St. Catherines pottery (n=71) accounts for 28.6% of the collection, and Savannah pottery (n=74) accounts for 29.9%. The St. Catherines and Savannah wares are uniformly mixed within the various units and contexts, with no stratigraphic separation. Some degree of areal separation was noted, with 62% of the Deptford wares found in one unit, 70R280. No Deptford pottery was found in the two midden units adjacent to Skull Creek and the quantity of Deptford wares increases away from the bluff edge (Table 1).

The Deptford wares at 38BU833 include cord marked (n=63, or 61.2% of the collection), simple stamped (n=12, or 11.7%), dentate stamped (n=9, or 8.7%), plain (n=8, or 7.8%), fabric impressed (n=2, or 1.9%), check stamped (n=1, or 0.9%), and sherds with Deptford paste but unidentifiable surface treatments (n=8, or 7.8%). The St. Catherines wares include cord marked (n=65, or 91.6% of the collections), plain (n=2, or 2.8%), net impressed (n=1, or 1.4%), check stamped (n=1, or 1.4%), and unidentifiable St. Catherines sherds (n=2, or 2.8%). The Savannah wares at 38BU833 include plain/burnished (n=35, or 47.3%), cord marked (n=12, or 16.2%), check stamped (n=16, or 21.6%), complicated stamped (n=1, or 1.3%), and fabric impressed (n=1, or 1.4%), with the surface treatment on the remaining nine sherds (12.2%) being unidentifiable.

It is important to realize that there are two ways of describing cordage twists: either as they appear in the impression (which is a negative image) or as they appear in a cast made from the impression (which is a positive image). These, of course, are mirror images of each other. In this work all cordage descriptions are based on a positive image made using plasticine clay.

Examination of the cord marked wares at 38BU833 revealed that the Deptford Cord Marked type consists entirely of a Z or left twist. By measuring the diameter of the cordage and the twists per centimeter, it is possible to establish the tightness of the twist (see Hurley 1979:5-7). In the Deptford collection there is considerable diversity in both the cordage diameter and number of twists. The range in cordage diameter for the Deptford wares is 1.0 to 2.0 mm, with the number of twists ranging from a low of three to a high of eight. As a consequence, soft, medium, hard, and very hard twists were found in the collection. All of the Deptford wares exhibited coarse sand inclusions in the paste.

The preference for Z twisted cordage continues into the St. Catherines and Savannah periods. In the St. Catherines collection the bulk of the cordage was loosely or softly twisted, with the average cordage diameter 2 mm (range of 1.0 to 2.0 mm) and the average number of twists per cm being four. Another characteristic of the St. Catherines pottery from 38BU833 is the very poor condition of the cordage. A very large percentage of the collection evidenced frayed or otherwise damaged cordage. The St. Catherines pottery consistently evidences a highly contorted paste with abundant clay inclusions ranging in size from 1 to 4 mm.

The Savannah cordage ranges in diameter from 1.0 to 1.5, supporting previous terminology of Savannah "Fine Cord Marked." The average number of twists per cm is six, resulting in soft to medium twists. The Savannah pottery consistently very fine to fine micaceous sand paste.

At 38BU833 there is relatively little to distinguish the three wares

Table 1.
Recovered Prehistoric Pottery.

	Deptford							St. Catherines					Savannah					
	CM	FI	SS	CS	DS	PL	UID	CM	CS	NT	PL	UID	FI	PL	CM	CS	CP	UID
55R55, Zone 1	2							5	1									
Zone 2			4					8										
70R30, Zone 1																		
Zone 2								8				2		3				3
70R280, Zone 2	51		1		9	3												2
75R55, Zone 1	1													2				
80R30, Zone 1														1		2		
Zone 2								27		1				4	6	10		
100R70, Zone 1				1		1		2					1	6	3			4
Zone 2								4							2			
100R80, Zone 1	1					1		8			1			10			1	
100R110, Zone 1	3		6			1		2			1			4	1	1		
100R120, Zone 1	5	2	1			2	8	1						5		3		
Totals	63	2	12	1	9	8	8	65	1	1	2	2	1	35	12	16	1	

CM = cord marked, FI = fabric impressed, SS = simple stamped, CS = check stamped, DS = dentate stamped, PL = plain, NT = net impressed, CP = complicated stamped, UID = unidentifiable surface treatment.

based on cordage twist or description. Z twists are consistently the most common. Cordage diameter and the number of twists per cm evidences the greatest variation in the Deptford phase, with the cordage becoming thinner and somewhat softer through time. Based on this rather small sample, there is somewhat greater similarity in the cordage of the St. Catherines and Savannah phases than between either phase and the Deptford pottery. The predominance of simple Z twists has been found at other sites (see Trinkley 1981, 1991b), and soft twists seem to be uniformly more common than hard twists.

The analysis also revealed sherds which may be interpreted as mixing various attributes. For example, several sherds with fine micaceous paste typical of the Savannah series also contained noticeable quantities of crushed clay. The presence of a check stamped motif on a single St. Catherines sherd may also be evidence of this mixing, as the presence of a fabric impressing on a sherd with Savannah paste may represent a St. Catherines' influence.

Only one lithic specimen was recovered from the excavations at 38BU833 -- a Coastal Plain chert non-cortical flake. An example of a chert Caraway projectile point was found during the initial survey (Adams 1991).

This meager lithic assemblage is typical of the Middle to Late Woodland sites examined in the area. The materials are expected to be locally available, although of generally poor quality. The single piece of debitage recovered from the site strongly supports resharpening of existing tools, rather than initial reduction activities.

The only other artifact type present at 38BU833 are two fragments of daub recovered from Zone 1 of 100R70. Not only are these fragments small and evidence no organic inclusions or structural impressions, but they are very uncommon. It seems unlikely that they represent structural remains and it is more likely that they were naturally formed around heaths or other fires.

Historic Remains

The historic assemblage from 38BU833 contains 54 artifacts, 42 of which are ceramics (Tables 2 and 3). While the diversity of artifacts is fairly low, the pattern analysis is nearly identical to that reported from the historic structure at 38BU1214 on Spring Island (Trinkley 1991b:Table 7). Both are similar to the Carolina Artifact Pattern (Wheaton et al. 1983). Ceramics dominate the collection with only a small number of architectural and tobacco specimens.

The mean ceramic date (e.g., South 1977) for the collection (Table 4) is about 1748, with white salt-glazed stonewares the most common ceramic found, followed by lead glazed slipware. These remains, while overall earlier than those associated with 38BU1214, are similar.

Associated with the collection were five fragments of shell lime mortar, several of which bear faint lath impressions and all of which are thick and chunky. These represent the remains of a crude, thickly applied plaster, probably associated with a fireplace. The brick fragments recovered are of a soft, reddish-purple clay.

Table 2.
Historic Remains Recovered From 38BU833.

	CERAMICS					GLASS		NAILS							
	SLIPWARE	WSGSW	DELFT	WESTERWALD	REDWARE	BKL	CLR	HW	MC	B	M	WG	PB	UID	METAL
55R55, Z. 1	1														1
70R30, Z. 1													2		
80R30, Z. 2												1			1
100R70, Z. 1	2	5	4			3									
100R80, Z. 1		3		1		8	2	1			1				
100R110, Z. 1	4	2	1	2	1					2	2				1
100R120, Z. 1		2				1			1		2				

WSGSW = white salt-glazed stoneware, HW = hand wrought, MC = machine cut, B = brick, M = mortar, WG = window glass, PB = kaolin pipebowl

Table 3.
Comparison of Pattern Analysis at 38BU833 to 38BU1214.

	38BU833	38BU1214
Kitchen Group	89.4%	84.6%
Architecture Group	4.3%	9.5%
Arms Group	-	0.8%
Tobacco Group	4.3%	2.7%
Clothing Group	-	0.8%
Activities Group	2.0%	1.6%

Table 4.
Mean Ceramic Date for 38BU833.

Ceramic	Mean Date (xi)	(fi)	fi x xi
Westerwald	1738	3	5214
White salt-glazed stoneware	1758	12	21096
Lead glazed slipware	1733	7	12131
Decorated delft	1750	5	8750
		27	47191

47191 ÷ 27 = 1747.8

While this collection, absent any intact remains, permits little interpretation, its similarity to that recovered from 38BU1214 is strong. Not only are the two pattern analyses nearly identical, but the mean ceramic dates are within 40 years of each other, the recovered architectural remains from both sites suggest an ephemeral structure, and the ceramics at both sites tend to support a relatively low status occupation. It is reasonable to suggest a small, crudely constructed, isolated structure dating from the first half of the eighteenth century. It was probably occupied by an African American slave, although occupation by a white overseer cannot be ruled out. This type of site, which has tended to be overlooked in many archaeological investigations, appears to be a significant component of the plantation settlement pattern. They may represent the initial phase of plantation settlement or special purpose housing (perhaps for crop or cattle tenders).

The eighteenth century historical documentation for Hilton Head Island is regrettably sparse. Previous historical research has suggested that Benjamin Green owned land in this general area of Skull Creek as early as 1768 and that Thomas Henry Barksdale acquired property in the area by the late eighteenth century (Trinkley 1990a:24). It is clear that Skull Creek was a favorite area for settlements, providing a relatively sheltered area with access to deep water.

SHELLFISH ANALYSIS

David Lawrence

Introduction

This report is concerned with archaeological oysters from site 38BU833 on Hilton Head Plantation, Hilton Head Island, South Carolina. In archaeological contexts oysters can yield information about various aspects of the original inhabitants of sites, including the source environments being actively shellfished by them, the use or uses to which the oysters were put, the season or seasons of the year over which the oysters were gathered, and other behavioral facets outlined in Lawrence (1988; 1991b). The oysters have been examined with these perspectives in mind, and the results of this work are summarized herein.

The site was visited on January 31, 1992, near the end of excavation work at the locality. By courtesy of Chicora Foundation personnel, all excavations had been left open and untouched for examination. Thus all proveniences here reported upon have been viewed in their original and field settings.

Samples were submitted by Chicora Foundation in both bulk and presorted natures. Two bulk and column samples (70R30 and 80R30) came from the westerly shell midden at the site. Presorted samples, consisting primarily of oyster left valves, came not only from these two shell midden blocks (70R30 and 80R30) but also from Features 1 and 2 in block 100R70 (interpreted as shellfish steaming pits), Zone 2 in block 100R70, and the midden in block 70R280. This latter midden has been disturbed and has yielded almost exclusively Deptford ceramics, while the midden in blocks 70-80R30 has produced St. Catherines and Savannah wares. Observations on these oysters were supplemented by notes, made during the site visit, on very carefully preserved spoil piles from the excavations by Chicora Foundation.

Samples were sorted and analyzed using techniques which have been described in detail elsewhere (Lawrence 1988, 1990, 1991a). In this study at least 50 larger (height equal to or greater than 3 inches, which is the minimum marketable size for oysters in the State of South Carolina) left valves from the column samples were scrubbed clean for ligament/seasonality analysis; all larger left valves from the other proveniences were prepared and examined for possible indications of the season of death of the oysters. Reconstructions proffered herein follow the arguments of Lawrence (1988) as later modified to incorporate the complementary work of Kent (1988) in the Chesapeake Bay area to the north and to include more recent work by Lawrence with archaeological oysters from South Carolina. A most recent summary of these reconstruction techniques may be found in Lawrence (1991b).

The Oysters

70-80R30: St. Catherines/Savannah midden

Since few differences were found between the two bulk and column samples, they are described here together.

Occupants of this site gathered oysters from both intertidal clusters and from settings, lower in the water column, where oysters were more scattered. Although the more massive, ovate to subtrigonal in outline, scatter oysters predominate in the samples of intact valves (both large and small, left and right valves), debris in the bulk samples contains numerous fragments of the thinner,

more fragile, elongate cluster oysters. Possibly, subequal proportions of oysters from these two settings were present in the original sample. The intertidal cluster oysters do not display relatively large left valve attachment areas; they probably came from within creeks and/or tidal flats, and not from high intertidal creek bank positions. These cluster oysters range up to significant sizes (maximum height of 145 mm in 70R30, 156 mm in 80R30).

Over 50% of the intact, larger, scatter oyster left valves display shell epi/endobionts (clionid sponges and/or polydorid bristleworms). This high percentage hints that these latter oysters came from lowest intertidal or, perhaps, subtidal environments. The intact right valves include fewer preserved oyster associates (especially clionid sponges) but this is to be expected, since the sponge colonies spread by valve-to-valve contact and the left valve is the attached one.

The samples include juvenile oysters and those collected dead. These shellfish were gathered as bulk or "grab" samples and sorting took place at the occupation site. The number of larger left valves exceeds that of larger right valves for both of the column samples (70R30: 52 LV, 20 RV; 80R30: 85 LV, 49 RV) examined. This difference in numbers of more intact valves is related to their largely "scatter" oyster nature. In these overall robust oysters, the ventral and growing margin of the right valve is an organic-rich, thin and flexible "bill" which is rarely preserved; this lack of preservation displaces such oysters toward smaller size classes and must largely account for the predominance of left valves in the samples. Conscious separation or sorting of valves need not be invoked to explain these excesses.

The oysters were used as food by the site inhabitants. Both right and left valves display stabbing notches and ventral valve exfoliation can be observed on left valves. However, the evidence of forceful valve separation is neither striking nor pervasive in the samples. Most likely this last observation is due to the fact that the oysters were heated during food preparation. Valve discoloration and sucrose valve interiors support the notion that these oysters were somehow cooked before ingestion. In both samples, ligaments and external growth "rings" suggest the presence of a Spring to early Summer season of gathering, but a strong inference of seasonality cannot be made from the materials examined.

The 80R30 sample includes four valves (two LV, two RV) which display abraded dorsal or umbonal margins; such oysters elsewhere (e.g. Lawrence 1990, 1991a) have been interpreted to indicate the scraping use of valves, after the oyster meats had been removed. All individuals are robust and small valves.

One stout razor clam valve was found in the 80R30 column sample, and both of the samples contain fragments or nearly intact valves of quahogs. In both samples, intact ventral margins of the quahogs contain stabbing notches, indicating forceful valve separation and food use of these clams. Thus, in addition to the oyster beds, the inhabitants were also visiting nearby sand flats or sand bars and digging up other bivalved molluscs for use as food.

100R70, Zone 2

The hand-picked sample includes four robust right valves of scatter oysters. Three of these display shucking stabs and one is grayed as if "trashed" in a fire (perhaps in the nearby Features 1 or 2, interpreted as steaming pits). Two articulated pairs of oysters are also in the materials. One pair is quite juvenile; the other is of a small but adult scatter oyster and exhibits the non-preservation of the right valve marginal "bill" leading to size changes as mentioned in the discussion of samples 70-80R30, above.

Left valves, both large and small, are predominantly scatter oysters. Incidence of preserved shell epi/endobionts is quite low (4/51 valves infested)

and these individuals came from within the intertidal zone. The presence of one oyster which lived attached to a mussel reinforces the intertidal nature of these shellfish. Pearly lusters, valve discolorations, marginal stabs, and ventral valve exfoliation all point toward heating or cooking of these oysters before food use. Although several valve ligaments suggest Spring to early Summer gathering, no strong inference of seasonality is possible in the materials examined.

Feature 1

The hand-picked sample includes one robust right valve of a scatter oyster which displays a quite prominent stabbing notch. About two-thirds of the 17 left valves, including both smaller and larger individuals, are scatter oysters. Valve discolorations are present but are not striking; ventral margins are rather poorly preserved. Most likely these oysters were cooked and eaten as food but a more comprehensive analysis of their nature is not possible given the materials at hand.

Feature 2

In this hand-picked sample, at least two-thirds of the left valves, both large and small, represent scatter oysters. Preserved oyster associates occur in about 30% of these valves and a lowest intertidal or highest subtidal source may be suggested. The minority and cluster oysters range up to rather large size (maximum valve height of 162 mm). Shucking stabs, valve discolorations, pearly valve interiors, and ventral marginal exfoliation point toward heating or cooking before food use of the oysters. No seasonal use of these oysters can be deciphered. Five chalky left valves display abraded dorsal margins and are here interpreted to indicate scraping use of these valves after the oyster meats were eaten. Another scraper valve was found in the spoil pile from the excavation of Features 1 and 2 in unit 100R70.

70R280: Disturbed Deptford Midden

The hand picked sample includes two right valves of scatter oysters. Aside from four juveniles, the rest (54) of the smaller left valves represent scatter oysters. At least two-thirds of the larger left valves are also scatter oysters. Plowing may be invoked to explain the absence or small numbers of intact and fragile cluster oysters. The scatter valves, both large and small, have a moderately low incidence of preserved oyster associates (less than 20%), suggesting that the oysters did not come from truly subtidal settings. The minority of intertidal cluster oysters includes rather large individuals (maximum valve height of 148 mm). Again, marginal shucking stabs and valve discolorations suggest heating before food use of the oysters. At least four of the valves display the beginning of botryoidal overgrowths on valve interiors. Dissolution of other and aragonitic skeletons and the reprecipitation of the carbonate, as calcite, on the calcitic oyster shells is one very likely explanation for these overgrowths. No seasonality can be read from the materials examined.

Summary

Nearby and largely intertidal oysters were used as a food resource by the occupants of site 38BU833. Throughout the prehistoric occupations oysters, as both clustered and scattered individuals, were collected. Preserved shell features suggest that many, if not all, of the oysters were cooked during food preparation and the discovery of steaming pits at the site lends support to this interpretation. The site contains abraded oyster valves interpreted to indicate scraping use of the valves after the meats were extracted. These scrapers are restricted to blocks 80R30 and 100R70, suggesting the possibility that the activities associated with this oyster use may have taken place in the region to the north of the excavations.

ANALYSIS OF SUBSISTENCE REMAINS

Faunal

Only eight of the 16 proveniences at 38BU833 produced faunal remains, with the majority of these coming from shell midden, or sub-midden contexts (Table 5). A total of 88.1 gm of animal bone was recovered. Although the quantity of remains was too small to permit any detailed analysis, it is clear from a cursory inspection that the bulk of the remains represent mammalian species, such as deer. Only one provenience, 55R55, Zone 2, produced fish remains, although even here mammal remains appear more significant.

Table 5.
Faunal Remains Recovered From 38BU833.

	Weight(gms)	Categories of Remains
55R55, Zone 2	18.4	mammal, fish, bird
70R30, trowel	8.8	mammal
80R30, Zone 2	22.0	mammal
80R30, trowel	0.4	mammal
100R110, Zone 1	3.5	mammal
100R120, Zone 1	34.0	mammal
Feature 1	0.2	bird
Feature 2	0.8	bird

Quitmyer (1985b:40) proposes a series of allometric regression formulae for the calculation of estimated meat weights or biomass for generic mammal, bird, and fish. While clearly not as accurate as species specific allometric analysis, this provides a crude estimate of biomass contribution for the collection. Using the formula, $\log y = \log a + b(\log x)$, where y = meat weight in grams, x = bone weight in grams, a = y intercept, and b = slope, it is possible to calculate the various biomass contributions. The specific formulae are:

$$\log y = 1.41 = 0.81(\log 78.1) \text{ for the mammals}$$

$$\log y = 1.24 = 0.84(\log 1.0) \text{ for the birds}$$

$$\log y = 1.38 + 0.89(\log 9.0) \text{ for the fish.}$$

This technique reveals that the mammals made the greatest contribution to the diet in meat weight, providing 889 grams. Fish provided the second greatest meat weight, at 170 grams. Birds contributed only 17 grams of meat. None of these indicate a particularly significant contribution to the diet.

Ethnobotanical

Ethnobotanical remains are even less common than vertebrate faunal remains. Wood charcoal, primarily pine and oak, with a small quantity of unidentified ring porous wood, represents the bulk of the collection. Given the amount of plowing which has occurred at the site, the integrity of these remains must be cautiously

evaluated. The shell midden and feature flotation samples yielded virtually no ethnobotanical remains. Even wood charcoal consisted of minute flakes too small for even species identification. The only potential food remains consist of two hickory nutshell fragments recovered from the Deptford shell midden at 70R280. While these remains may indicate a fall occupation, hickory nuts can also be stored for considerable periods. Regardless, the small quantity does not strongly suggest that they were a major component of the diet.

Shellfish

Excavations at 38BU833 recovered 6024 pounds (2247 kg) of shell, at least 99% of which was oyster. While appearing the most significant component of the diet, the shear mass of shell can, at times, be deceiving. Quitmyer's (1985b) allometric research previously discussed is also applicable to oyster. Using the specific formula,

$$\log y = -0.77 + 0.97(\log 2{,}2247{,}000)$$

it is possible to determine that the meat weight, or biomass, for these shells is 245 kg. Consequently, oyster contributed nearly 300 times the biomass than mammals at 38BU833.

Continuing the discussion of subsistence beyond these already tenuous suggestions is difficult. It is known that shellfish, when compared to most mammals, supply relatively little protein (per 100 gms oysters provide approximately 66 calories and 8 gms of protein while deer meat provides 126 calories and 21 gms of protein). Shellfish are relatively nutritious when compared, however, to a corn diet (which contains 63 calories and 2 gms of protein per 100 gms) (Hutchinson 1928; Watt and Merrill 1963; White 1953). The abundance and relative healthfulness of shellfish may explain the very late introduction of agriculture on the South Carolina coast.

More importantly, there seems to be no reason why large, permanent groups could not be supported by the subsistence base identified during this and similar (e.g., Trinkley 1991b) investigations. Using the estimated average carrying capacity of 40 deer per square mile (or 0.2 deer per acre) and 522,720 oysters ≥ 2 inches per acre (Shelford 1963:80; Vernberg and Sansbury 1972:275), it is possible to calculate that, on the average, deer provide 9.1 kg of biomass per acre, compared to 533 kg of biomass per acre for oysters. Corn, using simple cultivation techniques, is likely to yield 20 bushels an acre, or about 1.4 kg of biomass per acre.

Shellfish were plentiful, available year-round, easy to gather, and self-replenishing. They offer higher yields, on a per acre basis, than either deer or corn. By allowing division of labor, at whatever level, it would be possible to ensure an adequate food supply with minimal interruption throughout the year. The remains at 38BU833 are suggestive of Spring and Summer gathering -- a period when the new year's agricultural produce would not yet be available and the previous year's surplus would be depleted.

Summary

The remains recovered from these excavations at 38BU833 clearly reveal a focal economy, with efforts concentrated on the collection and processing of a single species -- the oyster. Previous discussion have indicated the dietary strength and weakness of shellfish, suggesting that a shellfish based diet is not inconceivable, especially when compared to a corn diet typical of the Mississippian period.

The evidence of a very specific Spring and Summer seasonal collection episode, however, suggests that 38BU833 was but one aspect of a much broader subsistence system, most of which remains unexplored. Based on the work at

Pinckney Island, Trinkley (1981) suggested a seasonal round which incorporated more interior sites with an agricultural, or at least horticultural, base. Coastal sites such as 38BU19 appear to represent major villages with evidence of permanent architecture (suggestive of year round occupation) and it seems less likely that similar sites will be found further inland. Consequently, whatever seasonal rounds may have existed, it is probable they will be found entirely within the confines of the lower coastal plain, and perhaps even within the coastal zone.

SUMMARY AND SYNTHESIS

Artifacts

Pottery is not only the most abundant prehistoric artifact recovered, it is almost the only artifact present at 38BU833. Lithic remains consist of a single flake, no shell or bone tools were recovered, and the daub found appears to be natural. As the only artifact, the pottery assumes considerable significance and the analysis undertaken attempted to maximize the data return.

The St. Catherines and Savannah wares appear more similar to each other, at least in terms of the cordage used, than either does to the earlier Deptford pottery. Coupled with research at nearby Pinckney and Callawassie islands (Trinkley 1981, 1991b) it seems likely that the Deptford, St. Catherines, and Savannah wares tend to blend into one another, forming a continuum of indigenous pottery technology.

Paste remains the most consistently recognizable means for sorting the three wares. Deptford, in this collection, consistently had coarse to very coarse sand inclusions in the paste. St. Catherines consistently had a contorted, friable paste with abundant 1 to 4 mm clay particle inclusions. The Savannah paste consisted of very fine sand, often with micaceous inclusions, although some sherds were found with a cross-over paste which included clay particles similar to the St. Catherines wares.

The cordage of all three series consistently used a simple Z twist. While the Deptford cords exhibited tremendous variation in the tightness of the twist, the later wares demonstrated much less variability. Detailed examination of the cordage from Deptford, St. Catherines, and Savannah sites on Callawassie Island identified areas of both similarity and difference. Overall the Callawassie sites show greater diversity than 38BU833, but perhaps the greatest difference is the dominance of soft twists at Deptford sites on Callawassie, compared to the range observed at 38BU833. The Savannah wares on Callawassie Island also failed to so consistently use a fine cord diameter. Similarities include the dominance of the Z twist, and the emphasis on soft twists and the range of cordage sizes during the St. Catherines and Savannah phases.

Comparing the two assemblages, the differences appear to be idiosyncratic rather than typological. At 38BU833 it also appears that relatively few vessels are represented. For example, the minimum number of St. Catherines Cord Marked vessels at 38BU833 may be as few as four (based on the cordage diameter, condition, and tightness of twist). This contributes not only to our understanding of ceramic variability, but also to the very short-term nature of the occupation.

The artifact collection at 38BU833 suggests a site at which a very focused or narrow range of cultural activities took place. Lithics appear to be relatively insignificant and, when present, to be highly curated. Other artifacts, such as bone or shell tools, are absent. The artifactual assemblage, in essence, provides no evidence of specialized activities and argues against the occupants intending to process an quantity of mammals, such as deer.

Subsistence

The exceedingly small sample size of faunal material, considered either as total weight or as biomass, further demonstrates the focal subsistence base present at 38BU833. While "other" resources, such as mammals, fish, birds, and perhaps hickory nuts, were collected, they clearly were of secondary importance

to shellfish and may represent opportunistic kills or finds. Even collection of shellfish was exceedingly focused -- nearly 100% of the shellfish collected were oyster. Individual specimens of clam, whelk, ribbed mussel, and stout tagelus were present in the midden, but evidence no real contribution to the diet.

Recently Lawrence (1992) has suggested that sites such as 38BU833 processed fish, rather than shellfish, and are essentially "fishing camps." Ethnohistoric evidence to support such an analysis might include John White's view of the Native Americans cooking or smoking fish (see Lorant 1946:253). Even the absence of fish bones might be explained by the smoking process, which presumably would not leave behind any large quantities of faunal evidence.

This reconstruction leans heavily on the ethnohistoric evidence provided by White's painting (later transformed into an engraving by Theodore de Bry and published to accompany Thomas Hariot's A Brief and True Report of the New Found Land of Virginia) of two Native Americans in Virginia preparing fish over a wooded grill. The caption for this engraving reads, in part, "while the people of Florida dry and cure their fish in the smoke for winter storage, these savages [in Virginia] preserve nothing; they always use up everything at once, and whenever they need more fish, they again roast or boil them fresh."

Turning to other historic accounts, there seems to be little to suggest that the coastal South Carolina tribes smoked or otherwise preserved fish. Mark Catesby (1771), discussing the Native Americans ranging from Virginia, through Carolina, and into Florida does mention curing of fish, as well as roasting and boiling, but fails to specify the groups.

Several factors may argue against the smoking of fish by coastal groups, besides the lack of firm ethnohistoric evidence. South Carolina's coastal groups, at least by the historic period, were small, widely dispersed, and exclusively oriented to the coastal zone. Preservation of seafood might be expected to be more common among large, populous groups, or among groups which only occasionally visited the coastal area. Smoking of fish would also result in large accumulations of fish bones at other, perhaps none coastal, sites -- a situation not identified in the literature. Finally, curing large quantities of fish by smoking would require a substantial number of fire pits, with the associated production of fairly large quantities of charcoal (the by-product of a reducing fire producing smoke, rather than an oxidizing fire which would produce less smoke and totally consume the wood). Neither pits nor charcoal are found in any appreciable quantities at 38BU833.

The site, then, existed primarily for the collection and processing of a single food resource -- oysters -- during the Spring and Summer. Further interpretations are difficult since only a very small portion of the site has been investigated and a considerable portion has apparently been destroyed by gradual erosion.

Settlement

38BU833, while clearly similar to the Callawassie sites (Trinkley 1991b) at many levels, fails to exhibit their somewhat more diffuse subsistence base. However, at both 38BU833 and on Callawassie the shellfish provided the vast majority of the biomass. It also seems likely that shellfish collection was the primary reason for the existence of all the sites.

In isolation, 38BU833 provides limited information on the Late Woodland settlement system. Trinkley has previously stated:

> the currently available data suggest the gradual evolution from a "foraging strategy" during the Deptford phase where people moved from resource to resource with a few, probably temporary, residential base camps to a "collecting strategy," during the St.

> Catherines phase, where the community is organized into smaller task groups which go out to collect resources, returning to large, probably more permanent, residential bases (see Binford 1980:10-12) (Trinkley 1991b:217).

This explanation would suggest that 38BU833 represents the result of a small task-specific groups (encampments for collection activities) that would have returned to the base camp. One such Savannah phase base camp on Hilton Head may be site 38BU880 (Adams and Trinkley 1992).

This illustrates the significance of recovering as much information as possible from the sites remaining on Hilton Head. Few, if any, of the sites can be understood in isolation from the total settlement and subsistence system. While excavations at sites such as 38BU833 are essential, so too are investigations at other "types" of sites. Consequently, extraordinary efforts should be made to ensure either the preservation, or investigation, of a broad range of Native American sites in rapidly developing areas such as Hilton Head Island. Failure to do so will result in a fragmentary and incomplete understanding of our cultural heritage.

The Future of Middle to Late Woodland Shell Midden Archaeology

Some, viewing the sparse recovery of either artifacts or subsistence data, question the usefulness of continued shell midden excavations. One reviewer noted that:

> since . . . the summer of 1990, I have had the opportunity to read several data recovery reports and management summaries generated by shell midden research in Beaufort County. The similarity of the results [is] striking.

The argument is made that the impoverished material culture indicates that continued data recovery efforts are futile and that such sites have little, if anything, to contribute to our understanding of the past. Others cloak such sentiments in the context of a "cost/benefit" analysis.

These arguments raise a variety of specters that the archaeological community may be unwilling, or unable, to address in a meaningful fashion. If that is the case, then clearly no more Middle to Late Woodland ephemeral shell midden sites should be investigated.

There are, however, compelling arguments to counter these contentions. From a philosophical perspective, can we afford to "write off" a vast quantity of our prehistoric past on the basis on some vaguely defined, untested "cost-benefit" ratio? Can we consider the excavation of five, or ten, or even twenty such sites an adequate sample, especially when we do not even know the size of the sampling universe? Further, simply because we are unable to "squeeze" more data from these sites today, should we eliminate the opportunity for future generations to do better?

There is a subtle undercurrent of impatience in the discussions of redundancy. Some argue that Middle Woodland research has been ongoing since 1990 and should have produced grander results. The failure to produce these grand results, coupled with the repetition of similar results, means to some that no more work needs to be done. While we reject the "Baconian urge" (to use Marvin Harris' term), we also recognize the importance of careful, consistent data collection, comparative studies, and the integration of speculation, induction, and deduction. It is unrealistic, considering the number of sites investigated and the available funding levels, to expect grand results after only two years of research. As will also be discussed, the value of at least some research is compromised by either collection techniques or the failure to disseminate results widely in the professional and public communities.

While only limited quantities of data are available for analysis, is there truly redundancy in the results, with nothing new being learned? This is difficult to believe. For example, only this year Lawrence (1992) has proposed a new explanation for these shell midden sites -- suggesting that they are fish camps. While we have argued that this interpretation is flawed, at least in its application to 38BU833, it still deserves rigorous testing at a number of sites. Likewise, when calculating biomass for 38BU833, we were hard pressed to find other sites that could be used for comparative studies. And finally, the work at 38BU833 (as well as from several other Beaufort sites) continues to reveal that our traditional view of Woodland chronology is in error, with many of the phases spanning previously unsuspected lengths of time.

If we are to approach cost/benefits rationally, what price does our nation wish to place on the past? If recent polls are to be believed, Americans place a rather significant emphasis on the preservation of our environment (which by extension includes our cultural environment). A Golin/Harris Group of Chicago poll asked:

> Some people say that the government should reduce its focus on environmental protection, and even perhaps ease up on certain regulations, if it will mean more jobs for Americans. Others say that the government should keep environmental protection as a priority, even if it means slower economic growth. Which of these two broad viewpoints is closest to how you feel?

The results were overwhelming -- 74% of those polled indicated that the environment should be a priority with government. Only 14% wanted less strict and fewer government regulations protecting the environment.

Coupled with these theoretical and philosophical challenges are also questions of methodological importance. For example, how can data from shell midden sites best be collected. Chicora Foundation has urged the adoption of more stringent data collection techniques for the past two years, with little success. There remain those who argue that adequate subsistence samples may be obtained from flotation samples, combining heavy and light fractions. Such an approach, however, dooms the investigation to failure and results in a self-fulling prophesy that the site cannot contribute significant new information.

Both Grayson (1979) and Wing and Brown (1979) convincingly argue that a faunal assemblage which lacks either 200 MNI or 1400 identified bone elements will fail to be truly representative. Column samples rarely account for even 5% of the total excavation area and produce a very small sample of site contents. Flotation samples, largely taken from features, introduce another bias into data recovery, since specific refuse patterns (i.e., pit trash disposal) are being selected for, while others (i.e., sheet midden disposal) are selected against. Consequently, neither flotation or column samples may be trusted to provide an adequate sample for a variety of essential faunal studies, including allometric biomass calculations, diversity, and equitability studies. Rather, flotation and column samples should be used in conjunction with fine screening, each providing data appropriate to a different type of analysis and study.

One of the few studies of screen size applicable to South Carolina's coastal middens is that by Wing and Quitmyer (1985). They found that:

> coarse [i.e., ¼-inch mesh] and fine [i.e., 1/16-inch mesh] sieving resulted in different species compositions, relative abundance of animals, and size classes of some species. As these data must form the basis of the conclusions to be drawn about the relative importance of various hunting, fishing, and gathering techniques used to procure the species represented, the differences demonstrated in the data by using more complete recovery techniques inevitably impacts any conclusions about prehistoric resource use

(Wing and Quitmyer 1985:58).

In fact, in their study the percentage of fish increased from 34% (relative to other organisms) in the ¼-inch mesh sample to 91% in the 1/16-inch mesh.

Even when mammals are considered, Shaffer (1992) has documented the bias inherent in the use of ¼-inch mesh, finding that mammals with live weights of less that 140 gm are almost completely lost by coarse screening and mammals up to 340 gm are poorly represented. The differential recovery of even mammals seriously compromises the reliability of ¼-inch screening, especially if the goal is to build up comparative data and reconstruct subsistence choices.

And while there are those that argue the reduced time and cost of flotation or column sampling, compared to fine screening, there seem to be few, if any data to support the contention that the former is consistently less costly than the latter. For example, the study at 38BU833 reveals that there will be considerable variation in time and costs, dependent on the moisture content of the soil and the precise technique used (dry, mechanical screening compared to water screening).

The future of Middle and Late Woodland shell midden research is dependent not only on developing "new thinking," but also ensuring "straight thinking." Data samples must be consistently collected and processed. Conclusions concerning the data cannot be drawn before they are collected and analyzed. Archaeologists should be seeking to maximize data return, not to limit data collection potential through methodological entrenchment. We must recognize that the synthesis of data and reconstruction of the past will be a relatively slow process. There are a broad range of critical analytical techniques and approaches, all of which should be explored and cross-checked.

If there is, in fact, any "new thinking," it will likely be costly. For example, pollen analysis, detailed faunal studies, ethnobotanical research, geomorphological examinations, shellfish analysis, methodological explorations, ceramic paste and cordage studies, and radiocarbon dating have costs that can be avoided only by failing to incorporate the techniques into studies. If archaeologists continue to view Middle and Late Woodland shell middens as ephemeral sites to be quickly "mitigated" through traditional data recovery techniques, then it should surprise no one that little new is discovered.

One novel approach would be for the State Historic Preservation Office to convene a symposium on Middle and Late Woodland middens, with the primary goal to be the development of long-term research questions and methodological parameters. Periodic follow-up sessions would also be essential to continue to gauge progress and direct research into new areas. Such an approach, utilizing cooperative research, might provide the "new thinking" essential to solve many of the Woodland period riddles that continue to haunt archaeology.

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