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An Archeological Investigation of the Cultural Resources of Callawassie Island, Beaufort County, South Carolina

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AN ARCHEOLOGICAL INVESTIGATION OF THE CULTURAL RESOURCES OF CALLAWASSIE ISLAND, BEAUFORT COUNTY, SOUTH CAROLINA

By

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ACKNOWLEDGMENTS

With a concern for the protection and enhancement of the cultural resources on Callawassie Island, Three Fountainview Corporation of Hilton Head Island contracted with the Institute of Archeology and Anthropology, University of South Carolina, to locate and record archeological sites and to provide a statement of significance regarding those resources. We are deeply grateful for their concern and thoughtfulness in taking steps to preserve portions of the archeological heritage of South Carolina. Through such avenues of concern, substantial contributions can be made toward understanding the lifeways of the past and preserving this information for the benefit of future generations.

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THE ENVIRONMENTAL SETTING OF CALLAWASSIE ISLAND

Physical Environment

Location

Callawassie Island, composed of 850 acres, lies in the coastal province of South Carolina within an environment of tidal creeks, flatlands of marsh, and areas of low topography (Fig. 1). The relatively low-lying, sandy island is associated with the drainage systems of Port Royal Sound and the Colleton River. Located several miles west of Port Royal Sound and north of the Colleton River, Callawassie Island is bordered on the west by the Okatie River, on the east by Callawassie Creek, and on the north by Chechessee Creek (Fig. 2). These creeks are small and shallow compared to the deep channels of the Colleton River. Except for the recent construction of an earthen causeway, Callawassie is remotely located and highly inaccessible.

Geology, Geomorphology, and Soils

The Coastal Plain of South Carolina is composed of a wedge of sediments which range in thickness from a thin layer at the Fall Line to a depth of about 3,500 feet at the coast. The basal zone of this formation is composed of crystalline and metamorphic rocks that were formed prior to the pre-Cretaceous period. The sediments that overlie this basal unit are soils deposited during transgressions and regressions of the sea, which probably began in this area during the late Cretaceous period and continued through the Pleistocene. During the Holocene period, the barrier islands and estuaries changed significantly because of erosion and deposition (Cooke 1936; Colquhoun 1969; Hayes et al. 1975; Michie 1980).

Within the area of Port Royal Sound, environmental change is obvious in the conspicuous land forms of the Pleistocene that have been modified by erosional and depositional episodes of the Holocene. In the estuary, silts and clays relative to Holocene inundation overlie Pleistocene dune formations and sometimes form hummocks. Beneath this thin mantle of recent deposits are formations of micaceous clays and sandstones, bioclastic lime muds, and a thick deposit of limestone, all of which are associated with Miocene and Eocene deposits (Colquhoun 1972). Presumably, Callawassie Island was formed during the late-Pleistocene period as a result of falling sea level and subsequent terrace formation (Colquhoun 1965, 1969).

The soils of Callawassie are diversified in terms of drainage and permeability, although they are all composed of fine sands. Most soil types are of the Coosaw and Bladen series, and they tend to occupy most of the interior higher elevations and peripheral zones near the marsh. The Eulonia soils

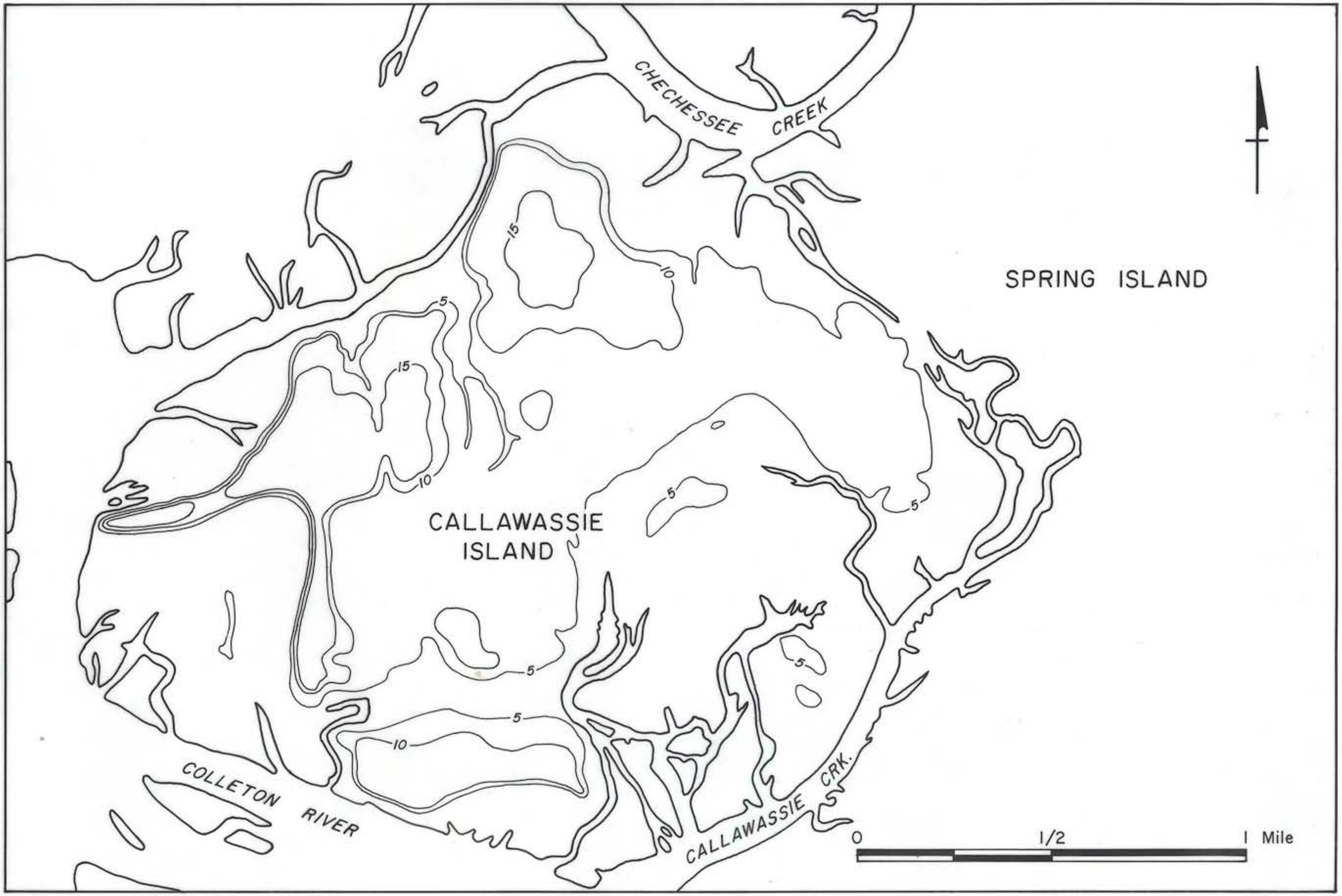

FIGURE 2: Callawassie Island and its immediate environment

are also numerous, and they tend to occur in low areas on the eastern edge of the island, juxtaposed to the marsh and tidal creeks. Tomotley soils are also associated with low topography, mainly in the interior although there is some peripheral exposure. The highest elevation occurs on the western peninsula and is composed entirely of Chisolm soils. Other high elevations consist of Wando and Deloss soils. Nemours, which is the least frequent, forms a small marsh hummock in the eastern marsh (Stuck 1980).

Callawassie Island is surrounded by Bohicket and Capers soils. Bohicket is the predominant type, occurring on the broad tidal flats flooded with each tide. The Capers are elevated slightly above Bohicket, and subsequently, flooding is less frequent (Stuck 1980; Table 1).

Hydrology

The marsh that encircles Callawassie is heavily dissected by numerous tidal drainages representing narrow streams, creeks, and a river. During high tide, the island may be circumnavigated with a small craft, but during low tide, the northeastern marsh becomes inaccessible. The channels of both Chechessee and Callawassie Creeks are relatively deep and join with the deeper channels of the Colleton River. Access to the island is possible during high tide at any number of vantage points along creek channels. The small and numerous channels dissecting the marshes also provide access to portions of the island, but passage is dependent on high tide.

The tide and salinity of the Colleton River and its tributaries are controlled by the hydrological system of Port Royal Sound. For the most part, Port Royal Sound is more of an embayment than a true estuary, and by this fact, the area is considered a homogeneous estuary. Salinities in the upper reaches of the estuary range from about 23 to 25 percent (parts per thousand) and increase to 30 to 35 percent at the mouth of the estuary. This slight difference, monitored at points about twenty-five miles apart, demonstrates that salt water penetrates deeply into the region of the Lower Coastal Plain. While salinity is slightly lower in the upper portions, water quality is sufficient to support communities of oyster and other shellfish and crustaceans. The Colleton River, then, has a high saline content, and the amount of fresh water generated from watersheds and aquifers is negligible (Thompson 1972: 9; Baltzer 1972: 27).

Within the estuarine system, the mean tidal range averages about seven and a half feet. In the upper regions, tidal fluctuation increases to about eight feet, and near the mouth of the estuary, the range is reduced to about seven feet. These ranges change with varying climatic conditions. Tidal duration is approximately 6.2 hours for each rise and fall, thereby providing a tidal day of 24.8 hours (Kilpatrick and Cummings 1972: 51-55; Baltzer 1972: 27).

TABLE 1

SOIL TYPES OF CALLAWASSIE ISLAND

Soil Type	Texture				Drainage					Permeability				
	Fine Sand	Fine Sandy Loam	Loamy fine sand	Silty clay loam	Very poorly drained	Poorly drained	Moderately well drained	Well Drained	Excessively well drained	Very slowly permeable	Slowly permeable	Moderately slowly permeable	Moderately permeable	Rapidly permeable
Coosaw			X			X							X	
Bladen		X				X					X			
Eulonia		X					X				X			
Tomotley			X			X						X		
Wando	X								X					X
Chisolm			X					X					X	
Wahee		X				X					X			
DeLoss		X			X								X	
Nemours		X					X				X			
Bohicket				X	X					X				
Capers				X	X					X				

Biophysical Environment

Introduction

The floral and faunal communities of Callawassie Island parallel the environmental setting of Port Royal Sound. Plant and animal species and other organisms are adapted for life in the estuary. The diversity of these species and their associated habitats are too numerous for discussion in this report; however, an overview of the environment is set forth to establish the biophysical setting.

Flora

The forests of Callawassie Island include oak, pine, palmetto, and sweetgum. Near the island's edges there is a composite of pine, oak, and palmetto, and a mixed variety of grass, bush, and shrub. The marsh is composed of salt meadow cordgrass (*Spartina alterniflora*), which has a preference for the Bohicket soils and areas inundated by daily tidal fluctuation. The higher areas of the marsh adjacent to the mainland support communities of short salt meadow cordgrass (*Spartina patens*), glasswort (*Salicornia virginica*), sea ox-eye (*Borrichia frutescens*), and needlerush (*Juncus roemerianus*). At the edge of the ecotone and with the beginning of the forest, red cedar (*Juniperus virginiana*) is present and coexists with Spanish bayonet (*Yucca sp*) and wax myrtle (*Myrica cerifera*). Palmetto (*Sabal palmetto*), yaupon holly (*Ilex vomitoria*), sea myrtle (*Baccharis halimifolia*), and saw palmetto (*Serenoa repens*) occur with the other ecotone species (Fig. 3).

The interior of the island appears to form at least three distinct forests: pine, live oak, and mixed oak and pine. Some pine forests, such as those existing on the eastern portion of the island, are large in diameter, existing alongside oak (*Quercus virginiana, Q. nigra,* and *Q. laurifolia*), hickory (*Carya sp.*), magnolia (*Magnolia grandiflora*), sweetgum (*Liquidambar styraciflua*), and palmetto (Fig. 4). Pine forms the canopy while other species such as wax myrtle and greenbriar (*Smilax sp.*) form the sub-canopy.

On the north edge of the island near the causeway, live oak dominates. The undergrowth and seedling layer is a mixture of wax myrtle, yaupon holly, palmetto, sweetgum, French mulberry (*Callicarpa americana*), summer grape (*Vitis aestivalis*), and other bushes and shrubs overlying a ground cover of Virginia creeper (*Parthenocissus quinquefolia*), nut grass (*Cyperus sp.*), partridgeberry (*Mitchella repens*), and other grasses and fungi. Sassafras (*Sassafras albidum*) is present in seedling layers throughout the island. However, there is a relatively large stand located in the eastern forest that tends to dominate at least an acre. These trees are similar in size and range from about 2 to 3 inches in diameter and reach a height of about 20 to 25 feet. Wax myrtle occurs heavily alongside the roads.

Several relict pines (*Pinus taeda*) and live oaks (*Quercus virginiana*) were noted in areas of old house sites and in isolated existence. Along the main road that traverses the island in a north/south direction, several pines exhibit diameters in the range of four feet, while live oaks at other loca-

FIGURE 3: East side of Callawassie Island showing marsh and mainland environments

FIGURE 4: Interior of Callawassie Island illustrating relict live oak and associated environment

tions have diameters of five and six feet and enormous canopies (Fig. 5).

Flowing streams of fresh water are nonexistent on the island. However, several small depressions collect water from rainfall, creating ponds. The ponds are shallow, perhaps no more than two feet deep, and are oval in shape with a diameter of 30 to 50 feet. The soils contiguous with these ponds are moist and boggy and support a hydric community of trees and plants, such as *Aneilema sp.* and *Polygonum sp.* Red maple (*Acer rubrum*) and swamp tupelo (*Nyssa aquatica*) form a canopy with an understory of wax myrtle, buttonbush, palmetto, and occasional sweetgum on the moist adjacent soils.

The ponds occur more frequently on the eastern part of the island and in areas of low elevation associated with Eulonia and Tomotley soils (Fig. 6). The origins of many of these small ponds are questionable. By the virtue of their location, one would suspect that natural conditions induced their formation, but the indirect effects of agriculture may have been a contributing factor. The adjacent soils located on slightly higher elevations are frequently poorly drained and slowly permeable and must be altered for successful cultivation. This is evidenced by the construction of shallow drainage ditches that flow into areas of depression which accumulate water. Such drainage would create an environment dependent on the drainage from ditches. If the drainage systems have encouraged ponding, then many of these ponds may have been smaller during the aboriginal occupation of the island. Nevertheless, the depressions are not artificial and probably served as reservoirs during periods of extended rainfall and high water tables prior to European occupation.

Fauna

Callawassie Island, for the most part, does not have many mammalian species, and avifauna is not abundant. There are few reptiles, such as snakes and turtles. This relatively low population was monitored not only through our observations, but also the survey parties who continuously traversed the island reported seeing a low density of animals and other faunal species. The caretaker, who has been intimately acquainted with the island for about twenty-five years, also presented a similar observation.

Extensive cultivation on a relatively small island probably has a significant effect on faunal populations by reducing resources. Furthermore, an uncontrollable fire in 1970 destroyed natural habitats and ground cover.

White-tailed deer (*Odocoileus virginianus*), raccoons (*Procyon lotor*), squirrels (*Sciurus carolinensis*), wildcats (*Lynx rufus*), and rats and mice (*Cricetidae*) have been sighted on the island. Domestic pigs (*Sus scrofa*) range throughout the island, and their ownership is claimed by the caretaker.

The predominant reptiles are snakes, and they, too, are somewhat infrequent. Most frequently encountered were the eastern black racers (*Coluber constrictor*), while various species of water snakes (*Natrix sp.*) were seen in the vicinity of ponds. At least one cottonmouth (*Agkistrodon piscivorus*) was seen near a pond, and three copperheads (*Agkistrodon contortrix*) were encountered in the upland areas. Rattlesnakes (*Crotalus sp.*) are rare and were never observed during our reconnaissance or by the activities of the

FIGURE 5: Pine forest within the interior of the island

FIGURE 6: Large pond located in the eastern portion of the island

survey parties; the caretaker, however, reports occasional sightings. Although ponds appear suitable for alligators (*Alligator mississippiensis*), they are apparently low in number. Turtles are also rare, but there were several species of toads and frogs in both upland and lowland habitats.

Various species of birds were seen daily, especially doves (*Zenaidura carolinensis*), quail (*Colinus virginianus*), crows (*Corvus sp.*), and vultures (*Carthes aura*). Osprey (*Pandion halioetus*) were seen frequently soaring overhead, and their nest is on the extreme southern end of the island. The marshes provide a habitat for marine oriented species. Terns (*Sterniae*), gulls (*Larinae*), sandpipers (*Scolopacidae*), herons (*Ardeidae*), loons (*Gaviidae*), and ibis (*Ciconiidae*) were spotted. The marsh hummocks surrounding Callawassie Island often provide a rookery for the white ibis (*Guara alba*).

Shellfish are represented by extensive communities of oyster (*Crassostrea virginica*), while gauhog (*Mercenaria mercenaria*), razor clam (*Ensis directus*), periwinkle (*Littorina irrorata*), and knobbed whelk (*Busycon carica*) represent additional species. The blue crab (*Callinectes sapidus*) is conspicuously present, and fiddler crabs (*Uca pugnax*) occur throughout the fringes of the marsh.

The floral and faunal environment of Callawassie Island has been modified by the activity of people for at least two hundred years. Although agriculture has certainly had the greatest impact on the physical environment, timbering operations have contributed to alterations and modifications of the island. Pristine areas are rare, and those that exist are associated with old home sites and areas with low-lying topography insufficient for cultivation. The faunal community is of relatively low density. Marshes may have been capable of supplying greater biomass in the form of shellfish and other related species.

Considerations of a Paleoenvironment

During the last forty millennia, the environment of South Carolina has been subjected to continuous change generated by fluctuating climatic conditions. These changing climates, accompanied with various stands of sea level, were ultimately under the control of vacillating glaciation. Unfortunately, the effects of these oscillations on the physical environment are not thoroughly understood. As W. A. Watts has stated, the "vegetational history . . . of the southeastern United States is poorly known" (Watts 1971: 676). Donald Whitehead agrees that "comparatively little is known concerning Pleistocene vegetational and climatic changes in unglaciated eastern North America" (Whitehead 1965: 416). Local paleobotanical information is also poorly known in South Carolina.

The paleobotanical studies by Watts and Whitehead deal with sediments accumulated in ponds and lakes, and in many instances, these depositional events have marked hiatuses in the sequences of stratification. These geologic data were gathered from areas of Virginia, North Carolina, South Carolina, Georgia, and Florida, yielding a general picture of climatic and vegetational history of the Southeast when combined. Although many other studies are required for specific and localized environments, the research does provide a format of vegetational change through time (Table 2).

TABLE 2

VEGETATIONAL HISTORY OF SOUTH CAROLINA
(After Watts 1970, 1971; Whitehead 1965, 1973)

TIME (B.P.)	AGE	VEGEGETATION	CLIMATE
40,000	Sangamon	Oak/hickory forests, abundance of pine, presence of cypress, sweetgum, etc.	warm trend
35,000			
30,000		Climate and forest changing	
25,000		Northern forests begin to appear	cooling
20,000	Wisconsin full-glacial	Semi-boreal, open forest with jack pine and spruce, oak/hickory percentages low and occurring in alluvial flood plains. Cypress disappearing.	maximum glaciation
15,000		Appearance of beech, alder and hemlock forests	
10,000	Holocene	Climate and forests changing	warming
		Oak and hickory appear	
5,000		Oak and hickory reappear in high percentages. Pine abundant, also cypress and sweetgum. Emergence of present-day forests.	warm trend

While there are problems inherent in palynological and sea level studies, some conclusions can be drawn from the literature. During the height of maximum glaciation, some 17,000 years ago, sea level dropped more than 100 meters, exposing vast areas of the continental shelf and extending river channels across a newly developed Coastal Plain some 240 km wide. The Wisconsin glaciers began to retreat northward, and subsequently, sea level rose with the water released from glacial melting. During the first several thousand years, sea level rise was rapid, an average of about 80 cm per one hundred years. By 8,000 to 9,000 years ago, the rate of continental submergence decreased to about 3 cm every hundred years. Sea level rise was not a steady, uninterrupted inundation of the Coastal Plain, but rather a fluctuating rise which yielded eustatic curves (Fairbridge 1961: 556) (see Fig. 7).

Research conducted in South Carolina and Georgia has indicated that significant environmental change and sea level fluctuations have occurred during the last four millennia and have affected the estuaries. Michie (1973) reported a shell midden that was flooded daily with nearly five feet of sea water. DePratter (1977) demonstrated that a significant fluctuation occurred from about 3,000 to 2,500 years ago. This information is also based on buried archeological sites located on the leeward edge of barrier islands on the Georgia coast. Specific aboriginal pottery of known age were discovered beneath late Holocene marsh peats, silts, and clays, and radiometric dating of tree stumps provided the parameters of time. The buried sites indicated that sea level had peaked and remained constant at an elevation of about one to two meters below present sea level. For several hundred years, the elevation remained stable, but by 3,050 years B.P., the sea level was dropping, and by 2,750 B.P., the receding waters had reached an elevation three to four meters below the present elevation. For a short period of time, the sea remained relatively stable, but by 2,550 years B.P., it was rising again. It attained an elevation not very different from the present by about 2,300 years B.P. (DePratter 1977).

Evidence for multiple fluctuations during the last 4,500 years is based on geological data obtained from marsh facies and the micro flora and fauna that exist in the stratified marsh sediments (Brooks, et al. 1979; Colquhoun 1981). These combined data indicate changes in sea level elevation (Fig. 8).

These successive fluctuations, with their influence on the marine ecosystem had a subsequent effect on the coastal populations of indigenous Americans in terms of settlement and subsistence patterns. At different periods of time and with various stands of sea level, the location of resources changed in regard to spatial position, and these changes demanded human adaptation.

Prior to 10,000 years ago, the areas of Port Royal Sound and the Broad River comprised an active river valley. Drainage systems, such as the Colleton and Beaufort Rivers may have been smaller fresh water streams. The upland areas supported a mixed forest of jack pine and spruce with a few hardwoods. In the alluvial floodplains, oak and hickory grew as forests. With changing climates, the conifers were replaced with varieties of northern hardwoods, while mast bearing trees increased in number. During this time, some 8,000 years ago, the area probably remained a river valley, but with the emergence of present-day forests approximately 5,000 years ago, salt water penetrated

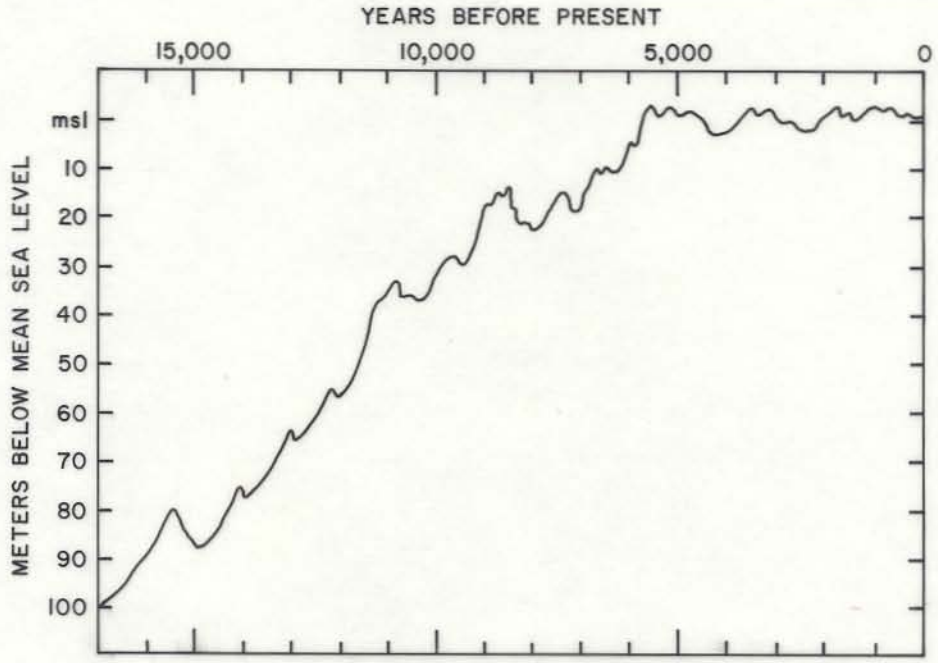

FIGURE 7: Eustatic sea level curve based on submarine and glacial morphology, including radiocarbon dating

FIGURE 8: Proposed sea level fluctuations based on geological and archeological information, and radiocarbon dates

into the area of Port Royal Sound. By at least 4,500 B.P., the estuary had formed, and the old river valley was inundated. With this temporary stabilization of sea level rise, Indians began utilizing the marine oriented resources, especially the oyster. Throughout the next four millennia these coastal populations depended heavily upon shellfish, and their patterns of exploitation are found throughout estuaries and marshes in the form of shell refuse.

AN ARCHEOLOGICAL REVIEW OF SOUTH CAROLINA'S PREHISTORY WITH AN EMPHASIS ON THE LOWER COASTAL PLAIN

Paleo-Indian Period

During some period of time prior to the tenth millennium B.C., nomadic hunters lived in what is now South Carolina and other areas of the Southeastern United States with an economy oriented towards the exploitation of now extinct mega-fauna. In all probabilities, the hunters were also exploiting other species that have survived until the present. In South Carolina these people heavily utilized the resources inherent to the Coastal Plain, the Fall Line, and the lower fringes of the Piedmont. Settlement patterns suggest that these people were living along major river valleys and certain large creeks and that they were avoiding physiographic regions of high relief and rugged terrain (Michie 1977). Areas near the present day coastline are no exception, evidenced by the discovery of several Clovis points in the vicinity of Charleston and Beaufort Counties and within the project area of Port Royal Sound and Broad River.

Although no positive evidence of subsistence patterns pertaining to specific mega-fauna exploitation has been produced, a site located near Myrtle Beach yielded the remains of a juvenile mastodon and a tenuous association with stone tools (Michie 1976; Wright 1976). The site, located near the coastline, is buried under eight feet of Holocene sediments. Near the base of these sediments and within a matrix of peat, the animal bones were discovered while a creek was being dredged. Geologic interpretations suggest the young mastodon died in the shallow waters of a pond. A similar situation in central Florida has also yielded the remains of proboscedia, two juvenile mammoths, in direct association with a Paleo-Indian projectile point and chert debitage (Hoffman n.d.).

The exploitation of proboscedia is recorded in the Southwest at several localities, and the general pattern suggests that the animals were dispatched in moist, wet environments such as ponds and creek valleys. Not only were the mammoths apparent victims of hunters, but other mammalian species such as camel, horse, tapir, sloth, and bison were also hunted in the late Pleistocene era (Wormington 1957).

The Paleo-Indian period occurred during the final phases of the Pleistocene (10000-8500 B.C.) when much of the state was cooler and supported a forest changing from open communities of spruce and jack pine to one of northern hardwoods. With the climatic and environmental change during the last of the Pleistocene, the mega-faunal population became extinct. As a result, the behavioral patterns and lithic industries of the Paleo-Indian began to change with the environment, and as the Holocene emerged, a new cultural tradition appeared.

Archaic Period

With the beginning of the Holocene, the Pleistocene glaciers had retreated into Canada, and environmental conditions were significantly different. The semi-boreal forests had disappeared, and the northern hardwoods became replacements. Within several millennia, the present-day forests began emerging. During these environmental changes, the Archaic Period also witnessed a change in settlement, subsistence, and technology.

The Archaic had at least three cultural and technological stages: the Early, Middle, and Late. The Early Archaic is basically a technological expression of the earlier Paleo-Indian, but with a change in subsistence strategies. Characterized by Dalton, Palmer, and Kirk series of projectile points (Coe 1964) and specialized tool assemblages of endscrapers, burins, pieces esquillees, and blades, this segment of the Archaic lasted from about 8500-6000 B.C. Subsistence apparently depended on the specialized hunting of white-tailed deer, as indicated by the high number of deer bones in the lower level of Stanfield-Worley Bluff Shelter (DeJarnette 1962) and Russell Cave (Weigel et al. 1974). By the end of the Early Archaic, technologies were changing and new projectile point types and tools emerged. The Stanly, Morrow Mountain, and Guilford points (Coe 1964), serve as temporal indicators for the Middle Archaic, which lasted from approximately 6000-3000 B.C. During this period of time people were utilizing more forest resources while maintaining a primary dependence on white-tailed deer. Instead of congregating along the edge of major river valleys, people began to exploit the resources of the inter-riverine forests in addition to the riverine areas. By at least 3000 B.C., technologies had changed, and these changes are reflected in the material culture of the Late Archaic. Evidence for increased sedentism by 2000 B.C. is found in the large shell mounds and middens of the coast and within the valley of the Savannah River. Several large middens in the Savannah River, such as Stalling's Island (Claflin 1931), Groton Plantation (Stoltman 1974), and the Bilbo site (Williams 1968), demonstrate a heavy dependence on mullusks, while the coasts of South Carolina and Georgia display large rings of oyster shell and smaller middens, which continue into the later Woodland Period (DePratter 1976; Marrinan 1975; Crusoe 1974). Lithic technologies include the Savannah River Archaic point (Coe 1964), the utilization of steatite, and ground stone tools. A further expansion of technologies includes the alteration and modification of bone and antler for the production of tools, especially socketed antler projectile points and bone pins. Quite possibly, these items were rooted in the earlier periods of the Archaic, but unfortunately, the acidic soils and non-shell midden sites do not preserve such perishable material. Another cultural innovation associated with shell middens of the Late Archaic was the development of fiber tempered and sand tempered pottery, which seem to have co-existed. Even though subsistence appears to have been directed toward shellfish collecting in specific areas, the indigenous Americans continued to exploit the white-tailed deer and other resources available in forests and streams. The traditions of the Late Archaic began diminishing by 1500 B.C. as a rising production and development of ceramics and the cultivation of specific plant foods introduced another cultural tradition (Table 3).

TABLE 3

A CULTURAL SEQUENCE FOR HUMAN OCCUPATION
IN THE LOWER COASTAL PLAIN OF SOUTH CAROLINA

Chronology	Cultural Sequence	Subsistence	Trends
9000 B.C.	Paleo-Indian	Specialized hunting and gathering	
	Early Archaic		
6000			
	Middle Archaic	Hunting and gathering	
3000			
2000	Late Archaic	Shellfish extraction Hunting and gathering	
1000	Early Woodland	Hunting and gathering, beginning of horticulture	
500			
0			
	Middle Woodland	Hunting and gathering with horticulture	
A.D. 500			
1000	South Applachain Mississippian	Cultivation of specific crops with continued hunting and gathering	
1700	Historic	Agriculture	
1980	Present	Industrial	

Increase in sedentism, population, and technology

Woodland Period

The Woodland Period, which began about 1500 B.C., was rooted in the traditions of the Archaic. With the development of new technologies such as pottery production, smaller triangular projectile points began to appear and probably represent the introduction of the bow and arrow. Hunting and gathering probably continued as a subsistence base, but the development of specific cultigens provided a back-up system for the failure of other resources while it encouraged sedentism (Willey 1966).

In time, ceramics developed various sizes, shapes, and tempers, such as sand tempering, sherd tempering, and shell tempering. Decorative motifs are characterized by cordmarking, fabric impressions, net impressions, check stamping, carved paddle stamping, simple stamping, and occasional burnishing. Concomitant with ceramics, burial mounds appear during the Woodland, and the presence of architectural features suggests an increasing trend towards sedentism. Occupational sites are often larger than the earlier Archaic sites, and many small sites are also noted that suggest a diversity of cultural activities.

Mississippian Period

The Mississippian Period, also known as the South Appalachian Mississippian as a regional complex, began approximately A.D. 800 and terminated with the European immigration to the New World during the 17th and 18th centuries (Willey 1966). This period is characterized by large, truncated temple mounds frequently associated with smaller burial mounds, with subsistence strategies oriented toward the cultivation of specific food crops, such as corn, and exploitation of the white-tailed deer. Although these food commodities represent a bulk of the diet, other flora and fauna of the forests and rivers were utilized. Settlement systems were generally associated with the floodplains of large river valleys in order to take advantage of the nutrient rich soils for cultivation. With temple mounds and a large scale shift toward cultivation, the Mississippian Period represents a more sophisticated social/religious system with marked sedentism (Willey 1966; Ferguson 1971).

Ceramic vessels became larger, and decorations were applied with carved paddles of complicated curvilinear and rectilinear designs. Large urns were frequently made for storing grain and interring human remains. Although these ceramic vessels were usually complicated stamped, other decorative motifs included corncob impressions, incising, simple stamping, and burnishing. Additionally, several varieties were plain in design. Tempering was accomplished by shell, sand, and occasionally fiber, while others were non-tempered (South 1976).

Population appears to have increased during this period. The villages were much larger, and the increased production of food supplies provided sufficient biomass for the population.

The Mississippian Period, with roots in the Woodland Period and with close cultural ties with traditions in the Mississippi Valley, collapsed soon after European contact. Within a few decades the aboriginal populations suffered extensively from disease and exploitation from the immigrants. By the mid-18th century, the Indians and their cultural systems almost disappeared.

Historic Period

Prior to the English settlement at Charles Towne in 1670, the Spanish and French explored and attempted colonization of coastal and inland areas. These sporadic and unsuccessful attempts to become rich and gain a foothold on Carolina soil lasted for more than a century.

As early as 1520, the Spanish were sailing the Carolina coast in search of land suitable for settlement. The first effort to colonize the area was made by Lucas Vasquez de Allyón in 1526. The small colony was located in the vicinity of latitude 33 degrees. Although the exact location is not known, the settlement was aborted because of summer fevers and a severe winter. De Allyón died of malaria, and the colonists, nearly starved, returned to Hispaniola (Savage 1956: 32-35; Wright 1976: 30).

The interior of Carolina was later traversed in 1540 by Hernandes de Soto, who was driven by illusions of wealth. Crossing the Savannah River near Silver Bluff and moving eastward, he arrived at one of the major tributaries of the Santee River, if not the Santee itself, where he encountered a Mississippian village and a chieftainess. Having taken the lady hostage, de Soto turned north towards the Blue Ridge Mountains and entered what is now Tennessee (Savage 1956: 36).

By 1565, the Spanish began to establish control in Florida, and they immediately pushed up the coast attempting to establish and maintain additional colonies. As a result, Pedro Menéndez de Avílés built a town and Fort San Felipe on Parris Island at Port Royal Sound in 1566. Attending the fortification was the town of Santa Elena. The settlement lasted for 10 years, and in 1576, the town and fort were burned by Indians. However, the Spanish returned within a year and erected new fortifications and rebuilt portions of the town that lasted until 1587. The Spanish withdrew and abandoned the town because of English raids in the Carribean Sea and contentions with the French who were competing for the area. Too few in number to defend the territories, the Spanish retreated to Florida (Wright 1976; South 1979). Although the Spanish continued to claim territories from Florida through portions of South Carolina, the Spanish were losing their stronghold (Rogers 1973: 5).

Concurrent with the 16th century ambitions for settlement, the French also made attempts at colonization in the coastal areas. Jean Ribaut and a group of Huguenots attempted a small settlement at Port Royal Sound in 1562, but after several months of poor management, the colony disbanded. There is evidence to suggest that a French fortification was constructed near the

mouth of the Edisto River in the 1570s, but it too fell into abandonment (Wright 1976: 31-35). Nearly a century after the unsuccessful attempts at colonization by the French and Spanish, a small English colony under a charter granted to the Lords Proprietor established a settlement at Albermarle Point near the present city of Charleston. The initial year of settlement paralleled the earlier attempts of Europeans, especially in terms of subsistence. These settlers were inexperienced in methods of agriculture and subsequently depended upon the indigenous American for major food supplies. Subsistence farming, however, was later incorporated into a growing economy, steadily expanding to include deerskins, furs, and timber (Wright 1976: 46). During the earlier years, deerskins were shipped to England in addition to pitch, tar, resin, and turpentine, materials necessary for the construction and maintenance of English ships.

The utility of the growing colony was quickly realized by the mother country, and trade with the Indians and colonists flourished. In the latter part of the 17th century, rice production became an important crop, and by the 1700s, the coastal area of South Carolina was shipping 300 tons per year to England (Wright 1976: 73). Because rice production required considerable acreage of specific soils and certain environmental conditions, some people left Charles Towne to acquire large tracts of bottomlands. The inland swamps near the coast were ideal for growing rice because these lowlands provided fertile soils and an abundance of water and required a minimal amount of human labor for clearing. Although some rice cultivation occurred in the interior along major river systems, such as the Santee, the coastal areas were largely preferred.

As a competing crop, indigo was shipped to England in large quantities in the mid-1700s. Unlike rice, indigo adapted to various environments, which included upland areas of the Coastal Plain. With an overproduction of rice during England's war with Spain and France and with a reluctance to export the product, indigo gained a firm hold on the Carolina economy. The demand for this product for clothing dye remained economically sound until the invention of the cotton gin in 1791 (Wright 1976: 79-80).

Plantation owners represented a minority of the population. Although some planters may have received large acreage through arbitrary means of Royal grants, "it is said that generally only families with influence, who could get grants from the Royal governor of the province, came into possession of these (valuable rice) lands; some of the grants contained thousands of acres" (Cook 1926: 80). The great landowners of the mid-18th century had become prosperous, especially in terms of rice, indigo, and forest products. This prosperity required slave labor, which small farmers, without large tracts of land, could not maintain. As a result, the small farmers moved inland away from Charleston (Wright 1976: 80).

People moved north and south along the coastal areas seeking rich and fertile soils for cultivation shortly after the establishment of Charles Towne in 1670. The development of several coastal towns, one of which was Beaufort, was encouraged by free land under the land grant system. People acquired properties in the vicinity of the Combahee and Broad Rivers, in addition to Port Royal, St. Helena, and Lady's Island, all situated near the town of Beaufort. By 1710 many enterprising families had begun to settle

the area. Foreseeing the potential for capital return, they requested the Charles Towne government and the Lords Proprietor to fortify, protect, and establish a town. Furthermore, they requested a seaport, utilizing Port Royal Sound and the Beaufort River. By 1715, the area was established as a town and the British shipped naval stores such as pitch, turpentine, and tar to England. A small fortification was also constructed to protect against the Spanish and Indians, but the area failed to develop as a large trade center because Beaufort was not strategically located.

An Archeological Overview of the Project Area

Previous archeological investigations concerning Port Royal Sound and the Broad River have been oriented toward site description and especially ceramic indentification within large shell middens. Recent explorations have been substantive and problem-oriented, but the majority of work has centered around the particularistic and normative frameworks.

The first published account of archeological investigations begins with C. B. Moore (1898). Although Moore investigated several sand and/or shell mounds in the vicinity of the project area, his reports are sketchy and incomplete. The only relatively well documented report deals with a temple mound and its associated burial mound located in the upper reaches of the Broad River on Barnwell Island. The mound, which is actually contiguous with Whale Branch, represents a multi-layered structure composed of sand, clay, and shell. The initial occupation indicates the erection of a walled structure at the base of the mound and on the original soil surface. This structure was later filled with oyster shell and other midden debris and apparently capped with sand and clays. Continued construction with soil raised the mound to a height of about fourteen feet. Post molds found within successive layers indicate that some form of house structures existed, suggesting the presence of temple enclosures. Accompanying the large mound is a smaller burial mound located about 35 yards to the south. This mound was also excavated, exposing human remains, pottery discs, shell beads, and other artifacts.

The mounds investigated by Moore (1898) indicate various time periods, ranging from the Late Archaic through the Mississippian Period. He also excavated a portion of a low-lying sand mound in the northeastern section of Callawassie Island. Accordingly, "the northern half was dug through by us, including considerable adjacent level territory, this last being done in a fruitless search for outlying pits or graves, which are so numerous near some mounds of the Georgia coast" (Moore 1898: 148). This mound is about 3 to 4 feet in elevation and 48 feet across the base. The interior is composed of dark sand with small inclusions of clay and scattered amounts of oyster shell. The excavation yielded 11 burials--9 humans and 2 dogs. The burials were not associated with artifacts, and the only artifact found within the mound was a small pottery disc with a cordmarked decoration. The disc was discovered near the surface of the mound and was probably associated with the plow zone.

The human burials were composed of males and females of different ages. Several of the burials were incomplete, and those complete were noted to be

flexed. At least one pathology was noted: a healed fracture of a left radius.

Except for the large mound on Barnwell Island, Moore was disenchanted with the area of Port Royal Sound and the Broad River estuary because he failed to find any burial urns or other spectacular discoveries within the local mounds: "On the whole, it would seem probable that the coast of South Carolina has little to offer from an archeological viewpoint" (Moore 1898: 166).

After Moore's departure, little archeological research was conducted in the area until the early 1900s when interest was generated in discovering what was thought to be the remains of the 16th century Charles Fort, built under the direction of Jean Ribaut. Major George H. Osterhout made a serious effort to find the fortification (Stephenson 1979). With the discovery of a moat and associated ceramics and other cultural materials, Osterhout felt assured that he had found the French fort of 1562. Unfortunately, his knowledge of ceramics was limited, and he failed to realize he had discovered the Spanish settlement of Santa Elena.

About a decade later, two amateur archeologists had been sampling several sites within the area that attracted the attention of Warren K. Moorehead. In 1933, Moorehead assisted Woldemar H. Ritter and Hughes H. Lake in excavating a portion of the Chester Field shell ring (38BU29) located on Port Royal Island. For unknown reasons Moorehead failed to publish the results of this investigation, but one of his field assistants later published a brief account (Flannery 1943). Samples of the ceramics from Chester Field, in addition to ceramics from other localities, were sent to the Ceramic Repository and were analyzed (Griffin 1943). Although the shell ring pottery is fiber tempered, the remaining types range through the later Savannah series (Griffin 1943), however, did not recognize any Mississippian sherds.

Moorehead, assisted by Ritter and Lake, investigated a shell mound containing fiber tempered pottery, food bones, decorated bone, and pieces of antler. The site is located on the eastern edge of the Beaufort River and in the marsh contiguous with Jones Island (now known an Bermuda Bluff). Presently, the site has been severely eroded, and the contents have been scattered across the beach. North of the Jones Island site at the confluence of the Beaufort River and Chowan Creek, another site was investigated that contained shellfish remains and later ceramic types. This site was also investigated during our recent survey, but we failed to find the midden that Flannery (1943) mentioned. There are, however, shell midden contents scattered across the beach, including oyster shell and ceramics associated with the Savannah and Deptford Periods. Perhaps the midden debris seen on the beaches of Cat Island and Jones Island represent the effects of an expanding estuary and the dynamics of change since the original investigations of 1933.

Outside of the project area, Moorehead and others excavated portions of a sandy burial mound located opposite Beaufort on Lady's Island. The investigators discovered a mass of human bone and several cremations within the mound's center, but there were no cultural materials to provide indications of a specific time period (Flannery 1943). Because faunal material deteriorates rapidly in the acidic sandy soils, the human burials may represent one

of the later time periods, perhaps Savannah or Mississippian.

Although Moorehead investigated several archeological sites, the excavations at the Chester Field shell ring yielded a considerable amount of data. It was the first attempt to excavate a shell ring within the area of Beaufort. The second attempt occurred on Skull Creek, immediately south of Port Royal Sound on the northwest portion of Hilton Head Island. Test excavations at the Large and Small Ford Shell Rings disclosed fiber tempered pottery, engraved bone pins, several Savannah River Archaic bifaces, and baked clay objects. Additionally, there were sand tempered varieties of ceramics with linear punctations. Calmes (1968) obtained radiocarbon dates from each site.

Perhaps the best information regarding the project area was obtained by the continued efforts of this writer, Mr. Eric Croen of Murrells Inlet, and Mr. Bill Fischer of Charleston. From 1968 through 1972, these people surveyed a great portion of Port Royal Sound and the Broad River and became familiar with sites and models of site location. These surveys eventually led to a series of articles regarding Daw's Island and an inundated shell midden (Michie 1970, 1973, 1974, 1976; Hemmings 1969; Brockington 1971; Rathbun, Sexton, and Michie 1980). These reports discuss certain aspects of sea level rise and fluctuation, human osteology, site function, and general descriptions of the site.

In the latter part of the 1970s and with the probable construction of a Chicago Bridge and Iron Company facility on the edge of Victoria Bluff, Ferguson (n.d.) and Widmer (1976) surveyed large portions of the tract located adjacent to the Colleton River, finding numerous small shell middens associated with the later phases of the Woodland Period.

The earlier discovery by Major George H. Osterhout of an earthen fortification on the southern tip of Parris Island remained dormant for a number of decades. Shortly after the excavation the determination of the French settlement was seriously challenged on the basis of the ceramic data and subsequently was confirmed that the site represented the Spanish settlement of Santa Elena and Fort San Marcos. The National Geographic Society and the Institute of Archeology and Anthropology coordinated a brief field investigation in the summer of 1979 and produced substantial information supporting a Spanish occupation. In the fall of the same year, the Institute launched an extensive field project which defined portions of the town and identified three fortifications (South 1980).

During the summer of 1979, the South Carolina Department of Archives and History funded an intensive reconnaissance survey of Port Royal Sound and the Broad River. The survey was designed to identify sites along the shoreline and the adjacent marsh hummocks. One hundred historic and prehistoric occupations were located, which included the shoreline and the Colleton and Beaufort Rivers, revealing information on settlement patterns along the coast.

Additional research was conducted in the vicinity of Pinckney Island and the Colleton River (Trinkley 1981). Several Woodland Period shell middens were excavated, providing additional information on ceramic typology and intrasite patterns of occupation.

History of Callawassie Island

Introduction

The ownership of Callawassie Island began shortly after the end of the 17th century. However, the ownership is sketchy because of a hiatus created by the absence or loss of records during the early Historic Period and the later destruction of records by the northern armies during the Civil War. The complexity of archival research demands more time than was allowed for the reconnaissance survey. The following information is based on three sources: a cursory search of documents within the South Carolina Department of Archives and History; a search through the probate records of Beaufort County; a manuscript prepared by Agnes L. Baldwin concerning the ownership of Spring Island. With these sources, there are indications of utilization and ownership for the last 275 years.

Early History

With the beginning of European settlement, the indigenous Americans suffered from many maladies beyond disease. Constant fighting and mistreatment had a severe effect on the Indian populations. By the year 1700, many tribes had vacated the coastal area around Beaufort and St. Helena. Shortly after the European colonization of Charles Towne in 1670, the Witcheaugh tribes had ceded all of their lands between the Savannah and Broad Rivers. Concomitantly, the Edisto, Hoya, Escamacu, Touppa, and Mayon Indians, who lived in the vicinity of the Broad River south of Port Royal Sound, moved out of the area and relocated north of the region (Waddell 1980: 3-6).

Following this exodus, the Yemassee Indians moved into the area of Beaufort and Port Royal Sound to trade with the Europeans. In 1706, John Cochran, an Indian trader, acquired Spring Island, which is located west of Port Royal Sound and the Chechessee River immediately across the marsh from Callawassie Island. The acquisition of Spring Island was apparently a strategic maneuver by Cochran to locate his trading post in the midst of local Indians. According to Baldwin (1966), there were several Indian towns on the opposite side of Chechessee Creek: Chechessie, Alatomahau, and Oketty. Although their locations are uncertain, Baldwin (1966) states that one town was located at Fripp Landing on Manigault Neck. The other towns are probably associated with Manigault Neck, or possibly Callawassie Island.

Cochran mistreated the Indians and he was frequently brought before the Commons House of Assembly and the Indian Trade Commission on charges of stealing, beating, and selling Indian slaves. Although acquitted on many of these charges, he was later killed in 1715 with the advent of the Yemassee Indian War.

The heir to John Cockran's properties was James Cochran, his brother. Several years prior to the Yemassee War, James Cochran was granted all of Callawassie Island by Governor Gibbs on June 16, 1711 (Baldwin 1966: 7). With these acquisitions, James Cochran owned all of the land between the Colleton and Chechessee Rivers and south of Chechessee Creek (Fig. 9).

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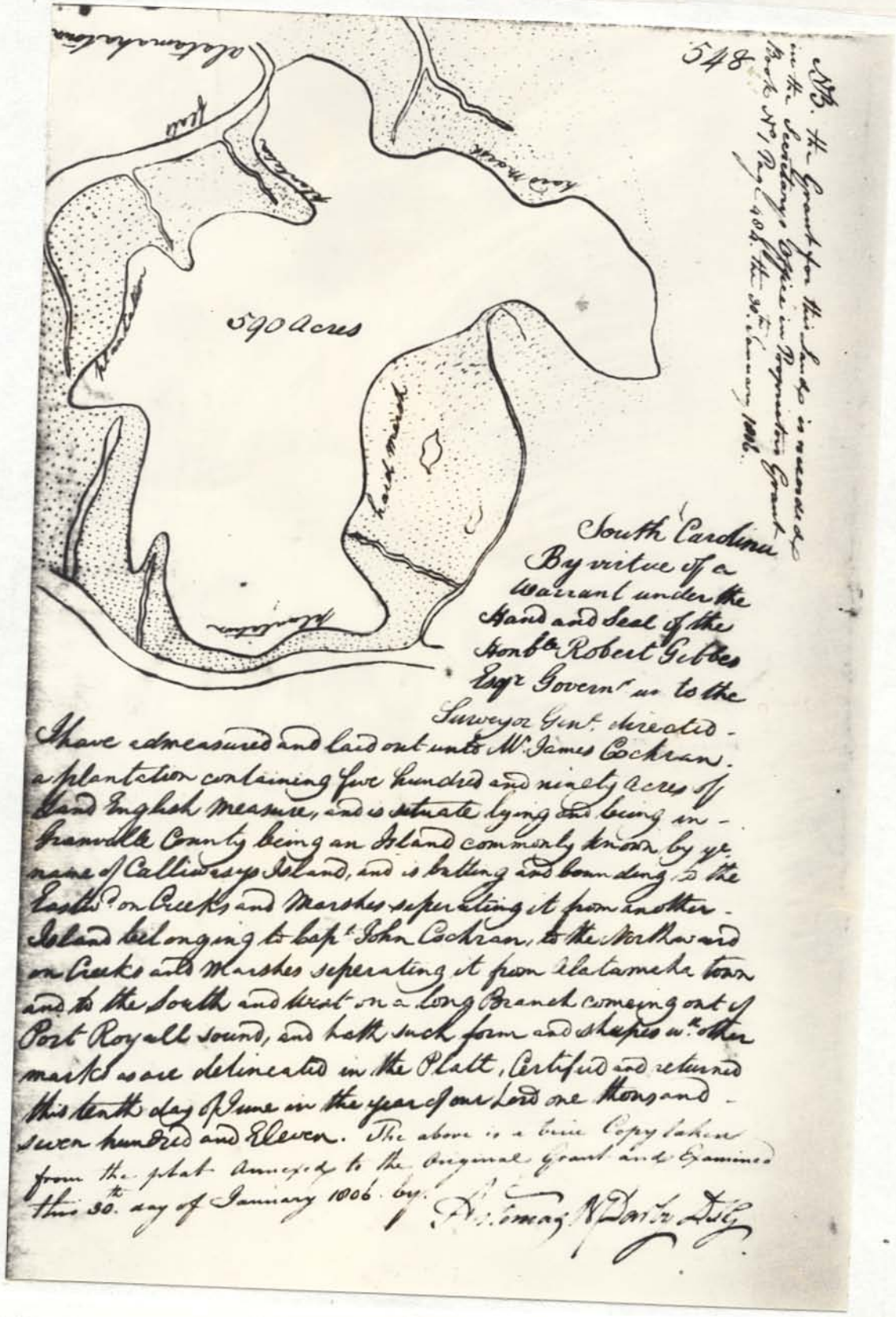

FIGURE 9: Earliest known land plat of Callawassie Island indicating grant of 1711 for James Cochran

James was elected to the Commons House of Assembly and served on several committees relating to government affairs. As such he was delegated authority to investigate Indian affairs and to monitor Spanish activities by establishing coastal patrols and lookouts. During his lifetime, James apparently never lived on either Callawassie or Spring Island, but resided near Charles Towne for the convenience of political affairs.

James Cochran died intestate sometime between 1719 and 1724, leaving his wife the power of administration. However, she died shortly thereafter, and the estate was administered by friends. James Cochran Jr. received all of the estate, totaling about 11,000 acres scattered from Charles Towne to the Savannah River, including Callawassie and Spring Islands. According to Baldwin (1966: 12), he had constructed a dwelling on Spring Island in 1738. The house was constructed from tabby mortar, and a year later a kitchen was added. James enjoyed his new home for only a short time, dying in 1740. His niece, Mary Ash, became the heir of all the property, which included Callawassie Island because there was no mention of James selling any of his property (Baldwin 1966: 13).

Late Historic

From 1740 until 1872, Spring Island remained in the hands of various Cochran descendants, but then, the island was sold to someone outside of the family, thus severing nearly 165 years of possession. At some unknown time between the above dates, Callawassie also was relinquished to another ownership.

Although there are few indications of specific dates, Callawassie may have been acquired prior to 1800. A notice concerning an 1809 death appears in the *South Carolina Historical and Genealogical Magazine*:

> "Died, in Callawassi Island, in St. Lukes Parish, on the 5th inst. Captain Thomas Rhodes, nephew of Mr. John Rhodes; much lamented by all his friends and acquaintences" (Jervey 1932: 68).

This does not necessarily indicate that Thomas Rhodes had possession of Calawassie, but it does indicate that the newspaper considered the event important enough to mention Rhodes' association with Callawassie Island. The 1800 census lists Thomas Rhodes as being a resident of St. Lukes Parish, as well as other information: 1 male between ages of 26-45, 1 female between ages of 16-26, 1 female less than 10, and 20 slaves (See South Carolina 1800 Census 1973: 446).*

By the very fact that Rhodes' death was associated with Callawassie Island and with the knowledge of his slave holdings, there is a suggestion that he may have owned Callawassie or a portion of the island.

The next indication of ownership appears in the Beaufort County probate records. The island was sold in 1867 by Clarence B. Kirk to William W. Burns for the sum of $10,000. Burns remained the owner until his death in 1917

*The above census does not indicate slaves, but the original document on microfilm indicates 20 slaves).

when his two daughters, Mary A. Burns and Belle Magruder, became the heirs. Apparently uninterested in maintaining a coastal island, the daughters sold the land to Benedict Kuser during the same year. In 1928, Kuser sold the island to his son, John Kuser, for the sum of $1.00, and for 10 years, John retained the ownership. In 1937, the island was seemingly sold twice, first to Tennessee C. Williams, and then to Marjorie Drexel. She kept the property for about a decade and then sold it to the International Paper Company. Ownership then passed to the West Virginia Pulp and Paper Company in 1955, and then to W. W. Fick in 1962. With the thought of developing the island and converting it into home sites, Energy Subsidiary Corporation purchased it in 1970, but it was later sold to Callawassie Associates in 1979. After a brief ownership, the island was sold to Three Fountainview Corporation in 1981.

Land Utilization

From its earliest historic times, Callawassie Island was probably used for the cultivation of specific crops and for cattle grazing. When James Cochran acquired the land in 1711, his plat indicated that at least three areas on the island were cultivated. The southern, western, and northern portions of the plat contained the word "plantation," and it is therefore presumed that these areas were cultivated. There are no direct indications of specific crops, but it would be reasonable to assume that Indian corn, indigo, and perhaps rice were principal crops during the early 1700s (Wright 1976: 73-81).

Cotton was probably grown on Callawassie Island because its soils were well adapted. Baldwin (1966: 20-22) mentions that approximately 230 slaves were being used on Spring Island during this time. At least 130 slaves were employed in agriculture. Sea island cotton, rice, Indian corn, peas, beans, and sweet potatoes were produced in quantity. Approximately during this period, Thomas Rhodes resided on Callawassie Island, and if agriculture was an economic consideration, then similar crops may have been grown.

The probate records in Beaufort indicate that Clarence B. Kirk was forced to sell his property because of failing crops and an inability to make payments on his debts. Thus, Callawassie was being cultivated shortly after the Civil War. There are no indications concerning land utilization during the Burn's ownership in the early 1900s, but early aerial photographs prepared for soil conservation show a relatively large portion of Callawassie under cultivation. Additional maps from later times continuously demonstrate the presence of large cultivated areas until 1970. Other forms of utilization are apparent with various ownerships oriented towards the pulp and paper industries.

RESEARCH OBJECTIVES

The reconnaissance survey of Callawassie Island was conducted in an attempt to advance the knowledge of historic and prehistoric systems of human behavior and to provide the sponsor, Three Fountainview Corporation, with specific information about the early stages of planning.

Archeological research, like other scientific disciplines, is multi-faceted and requires various levels of investigation. During the past several years a great deal has been written about contractural archeology and the various sequences of progressive investigation. These procedures are specifically set forth by King, Berg, and Hickman (1977), and Schiffer and Gumerman (1977). In summary, the investigative sequence usually begins with a literature search about the project area, followed by a reconnaissance survey, an intensive survey, a test to determine significance, and finally mitigation of adverse affects, if necessary. The preliminary survey is necessary for acquainting the archeologist with specific literature about the project area. The reconnaissance phase allows identification of sites mentioned in literature, while providing a general impression of the type and location of cultural resources. The intensive survey provides for a detailed field inspection and subsurface testing to determine the presence of sites that are not visible. Concomitant with this phase, the investigator should arrive at some understanding of the significance of the resources.

These phases of research establish an understanding of the data base and prepare the archeologist for potential mitigation of adverse effects. This phase may involve the total excavation of an endangered site, or perhaps a partial excavation, but it should be sufficient to answer specific questions about the occupation. However, mitigation does not necessarily indicate that excavation is the only avenue for mollifying the effects of destruction. Another form of mitigation is simply the relocation of structures, roads, etc., in the early stages of planning. If no other alternative exists other than destroying the site, then some form of excavation is required to preserve the archeological information.

These procedures help determine the importance and significance of cultural resources. The survey of Callawassie Island was designed to incorporate the first phases of research and thereby yield a substantial amount of information. An intimate knowledge of Port Royal Sound and other associated areas precluded a general reconnaissance and incorporated aspects of an intensive survey.

Research Design

An areal survey of a large tract of property contiguous with coastal marshes lends itself to questions concerning patterns of settlement and site location. The survey of Port Royal Sound and the Broad River (Michie 1980)

shows patterns of site location, many related to sea level fluctuations and environmental change. During the earlier periods of human occupation, when the sea level was lower and when the estuary was a fresh water river and bottomland, habitation was apparently associated with the periphery of the riverine environment. Early sites (11,500-5,000 B.P.) appear on what would have been elevated ridges immediately adjacent to the old river valley and at intersections of tributaries at similar elevations. Lithic material from this period was not found in the attending tributaries. As the river valley became flooded with sea water and with the formation of the estuary, early ceramics and associated shell middens appeared at the seaward portion of the estuary, suggesting a somewhat lower sea level. With increased elevation through time, shell middens and later ceramic assemblages are situated further up the estuary, penetrating the smaller tributaries, and indicating an increasingly higher sea level and more plentiful estuarine resources, such as shellfish. Presently, sea level has risen sufficiently to have shellfish 25 miles inland in the Broad River and at considerable distance up various tributaries. This model of sea level rise is substantiated by numerous studies (Michie 1973; DePratter 1977; Brooks et al. 1979; and Colquhoun et al. 1981), establishing a model to predict site location within estuarial areas. Using this model, archeologists should be able to predict the location of sites on Callawassie Island and in surrounding areas.

During periods of low sea level, the Colleton River was probably a fresh water stream with a contiguous floodplain, and Callawassie Island would have been a strategic location overlooking a riverine environment. Conditions would have been favorable for hunters and gatherers to exploit riverine and upland environments throughout most of the Holocene and during the Paleo-Indian and Archaic Periods. With the development of Port Royal Sound and the penetration of salt water prior to 4,000 years ago, the riverine system of the Colleton River environmentally changed with the introduction of salinity. With increased inundation, salt water and its aquatic resources would eventually penetrate into the upper regions of the Colleton River, thereby establishing an environment sufficient for shellfish communities. Attending this inundation would be the development of tidal creeks as water flowed into areas of low topography.

Based on the knowledge of sea level rise and its subsequent effects, certain propositions concerning site location can be set forth in general statements: 1) Habitation during the early time periods should be located on the extreme southern portion of the island contiguous with the Colleton River; 2) Shell middens related to the early ceramic periods, i.e., fiber-tempered, Thom's Creek, and Refuge, should not exist. However, this would not preclude the existence of these ceramics in non-midden sites; 3) Shell middens and associated ceramics of the later Woodland Periods should be present.

The survey of Port Royal Sound and the Broad River (Michie 1980) indicated that shell middens are strategically situated on elevated land forms immediately adjacent to navigable streams, open bodies of water, and small tidal creeks offering passage during tidal inundation. The majority of site locations include the edges of marsh hummocks and the peripheral zones of larger islands and the mainland. Areas and land forms that are generally inaccessible failed to yield evidence of shell middens.

Similar observations were made on the Georgia coast concerning site location on barrier islands and were later set forth quantitatively through random sampling (Simpkins and McMichael 1976; McMichael 1977). The qualitative assessment determined that sites were strategically located with respect to natural features rather than existing in a scattered pattern across the island. Additional observations indicated that the majority of sites are on the island peripheries, especially in higher elevations. The low-lying interior of the island, however, yielded a low number of occupations.

Conclusions regarding patterns of site location establish additional predictions: Shell midden sites will be distributed in areas yielding biotic resources, and these sites will have specific topographic features, such as a) a large number of sites will exist along the peripheral zone of the island contiguous with the marsh; b) site location on the peripheral zone will occur on the highest elevations; c) sites will be more abundant at locations where tidal creeks, streams, and navigable bodies of water are closest to the island.

While shell midden sites are expected to exist mainly on the peripheral zones of the island, such occupations may also occur in the interior. Widmer (1976) mentions several shell middens near Victoria Bluff on the Colleton River. The middens are near a fresh water pond on relatively high ground. Since there are several fresh water ponds on Callawassie Island, the survey should expect inland shell middens juxtaposed to the ponds on elevated soils. Beyond these expectations of site location, the literature search indicates tabby structures and an Indian burial mound in the island's interior. Another facet of the research design was to locate the structures and the sand mound described by Moore (1898). Additionally, an attempt would be made to establish a parameter of time for construction and use of the tabby dwellings.

Survey Methodology

With the predictions outlined above and with the survey oriented towards an intensive phase of investigation, the following strategy was implemented: 1) an intensive on-the-ground inspection of the island's periphery, 2) a testing program in the interior to determine the location of sites, 3) a testing program to recover cultural materials associated with the historical components (tabby structures).

Excavation along the peripheral zone was not required because storms, tides, and rising sea level eroded the land exposing habitation sites. In case of questionable delineation of site boundaries, a probe rod was used to determine horizontal and vertical extents (Fig. 10). Notes were taken at each site, and sites of unusual size or quality were photographed. Additionally, each site, regardless of size or significance, was flagged with red and white surveyor's tape for future reference and identification.

The natural features in the island's interior were surveyed including elevated ground near ponds and elevated ground overlooking marshy areas. This was accomplished by inspecting exposed soils and by testing forested environ-

FIGURE 10: Testing with a probe rod to determine the extent of a shell midden site

FIGURE 11: Testing the island's interior with the use of a post-hole digger

ments. The testing phase first involved a study of a topographic map (one foot interval) to locate features. After these areas were plotted with reference to roads, ponds, and the marsh, they were tested with a post-hole digger. The test consisted of establishing a base line across the chosen area with a Brunton Compass; then a 6 inch hole was dug to a depth of 12 inches to 15 inches, depending on the depth of white, sterile sand (Fig. 11). The soil was sifted through 1/4-inch hardware cloth, and any cultural materials were bagged with appropriate designations. The test pits were not arbitrarily spaced, but rather they were placed at 25 foot intervals. In order to cover relatively large areas, several linear lines were required. If cultural materials were discovered along any base line, four additional test units were placed at 90 degree intervals radiating five feet from the point of discovery to determine site density. Flagging tape was tied to trees and bushes for future identification of each site. Each site was referenced to surveyors' datum points, if such points existed within the immediate area.

Finally, linear series of post hole tests were placed parallel to the tabby structures to determine whether or not cultural materials were present. These test units were also carried to a depth of 12 to 15 inches and materials were bagged accordingly. The linear lines were spaced at intervals of five feet, and the units were spaced at five-foot intervals. In addition to testing, the immediate area was visually inspected for other structural features and cultural materials. Each tabby structure was also photographed and drawn.

At the beginning of the reconnaissance survey, surveyors were transecting the island to establish control lines for future construction. Their project also included a boundary survey of the peripheral zone and portions of the marsh. The survey stakes provided datum points for archeological sites. The survey crews were also informants about additional archeological sites. Others who had an intimate knowledge of the island, such as former owners, the caretaker, and former residents, were also informants. Through this network of information, we were able to record additional sites.

SITE DESCRIPTION AND EVALUATION

Introduction

The reconnaissance survey of Callawassie Island yielded a relatively high number of archeological sites representing historic and prehistoric occupations (Fig. 12). A total of 88 sites was discovered--83 prehistoric and 5 historic. Their size and structure varied: some had continuity, others represented a single component in terms of habitation.

The majority of the sites were small and characterized by scattered shellfish deposits (Figs. 13 and 14) that were eroded. In higher elevations on the peripheral zones, the basal portion of bluffs eroded quickly, causing the flat terrain to slump slowly into the marsh, thereby displacing shell middens (Fig. 14). Other middens in areas of low relief became scattered across the beaches with remnants of roots (Fig. 13). Although many of these sites were small, they were portions of preexisting cultural systems representing human activity.

Frequently, many of these sites failed to yield cultural materials, or they yielded small, eroded pottery sherds. Excepting a single deer tooth and a few scattered human bones, faunal remains were virtually absent. Floral remains were never observed at any shell midden, and lithic debris was exceptionally scarce. In fact, only one chert flake was recovered during the survey.

Historic materials were also scarce, and even though a testing program was implemented at the tabby structures, few cultural materials were found.

All of the prehistoric sites represented Woodland occupations, especially the Late Woodland Period. There was absolutely no indication of earlier Paleo-Indian or Archaic habitations. Several non-middle sites were found in the interior, but they were small and within old plow zones. At least six of the total sites discovered were significant and worthy of protection and future research.

Site Data

The following list describes the site locations and what artifacts were found at each site. If no artifacts are mentioned, none were found at that site.

38BU19 This burial mound was partially excavated by C. B. Moore (1898). Approximately half of the northern extent was investigated, but the remaining portion was intact and with no evidence of vandalism. This portion was

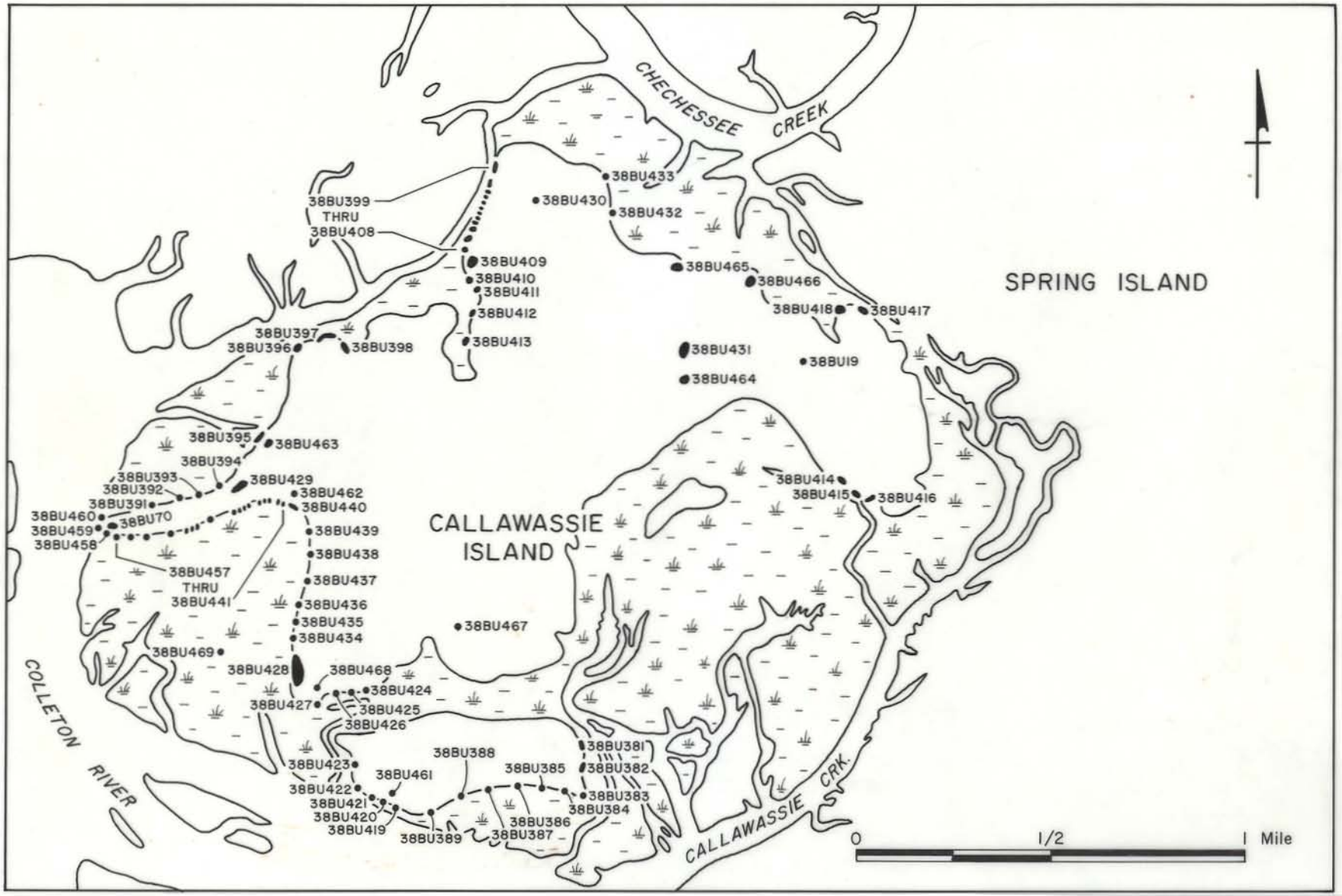

FIGURE 12: Location of archeological sites discovered on Callawassie Island

FIGURE 13: Small shell midden contained in the root system of an eroded palmetto tree

FIGURE 14: Small shell midden displaced by erosion and slumped soils

cresent-shaped, 45 feet long, 20 feet wide, and 3 feet high. Moore (1898) found 11 burials: nine humans and two dogs. The site, composed of dark sand with inclusions of oyster shell, was overgrown with a dense cover of grasses, briars, and bushes (Fig. 15). The northern edge of the island was shovel tested, exposing mottled, dark sand with inclusions of oyster shell, all of which parallel Moore's description.

38BU70 This site is a tabby structure on the extreme western edge of the island. The rectangular structure is incomplete (Fig. 16). Two of the interior walls have collapsed, and various sections of the outer walls are missing. Other portions have eroded severely. A testing program on the north and south of the structure did not provide any artifacts from the original occupation. The following artifacts were found: 3 eroded pottery sherds, unidentifiable; 1 chert scraper affected by fire; 1 brown bottle fragment; 3 clear glass bottle fragments.

38BU381 This site is a highly eroded and scattered shell midden on the southeastern portion of the island.

38BU382 This is a highly eroded and scattered shell midden on the southeastern portion of the island, which yielded no artifacts.

38BU383 This is a highly eroded and scattered shell midden on the southeastern portion of the island. Some portions of the site on the island's periphery are intact. They extend inland for about 15 feet while depth of the midden is about four to six inches. One Deptford cordmarked sherd was found.

38BU384 This is a small, scattered shell midden on an eroding slope.

38BU385 This site is a highly eroded shell midden on an eroding slope.

38BU386 This is a small shell midden eroding from the slope's edge.

38BU387 This site is a small shell midden eroding from the slope's edge.

38BU388 This shell midden extends about 80 feet along the periphery. Elevated about 10 feet from the marshy beach, the midden is eroding and slumping down the bluff. Portions of it are intact, extending about 15 feet into the island's interior. The midden's depth is variable, ranging from one to two inches at certain areas to about six inches at other portions.

38BU389 This site is a clump of oyster shells in the roots of a palmetto tree.

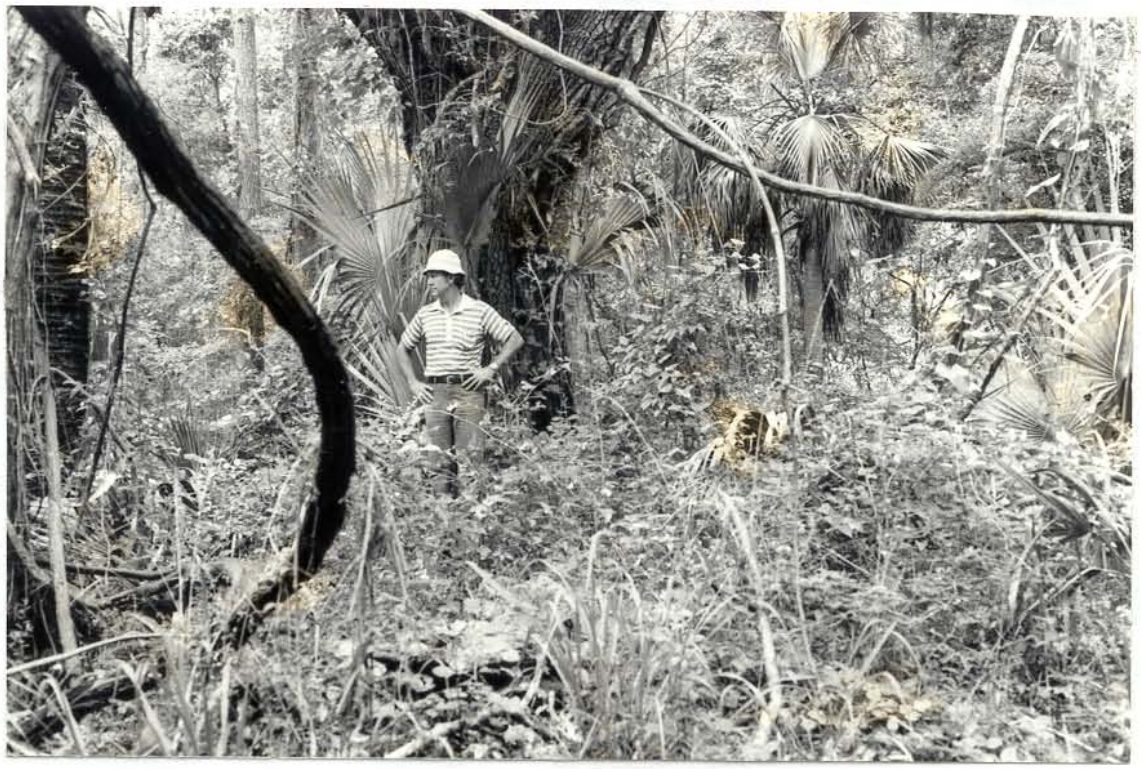

FIGURE 15: Callawassie burial mound (38BU19), partially excavated by C. B. Moore in the late 1800s

FIGURE 16: West Point tabby structure (38BU70), viewed from the west

38BU419 This is a thin lens of oyster shell extending about 30 feet. The majority of midden has fallen on the beach. It contained one plain Thom's Creek sherd.

38BU461 South Point Tabby Ruins is characterized by several tabby footings, each about 18 inches square and elevated 12 inches above ground. Testing around these footings revealed large fragments of charcoal, charred roofing felt, and a hinge fragment with wire nails. The overall dimensions indicate the structure is 18 feet, 9 inches long and 12 feet, 7 inches wide. Since there are no nails and window glass, the structure may have functioned as a barn or storage shed, possibly constructed of logs.

38BU420 This site is an oyster shell refuse scattered across the beach and exposed in sandy profile. Thickness varies from six to eight inches intermittently.

38BU421 This is a shell midden composed of oyster shell. It is highly eroded. A pottery sherd was recovered from among displaced shells. It contained one Deptford checkstamped sherd.

38BU422 This is a small shell midden composed of oyster remains eroding from island's edge.

38BU423 This is a scattered and slumped oyster shell midden extending for about 30 feet along the periphery.

38BU424 This highly eroded shell midden lies at the edge of the marsh.

38BU425 This is a small displaced shell midden seen in the roots of a fallen pine tree.

38BU426 This site is a thin scatter of eroded oyster shell midden near the peripheral zone and marsh.

38BU427 This is an oyster shell midden eroding out of a sandy bank, scattering shells across the marshy beach. The middens extend into the interior and may be associated with site 38BU468.

38BU468 This is a large intact shell midden on the southwestern tip of the larger portion of the island. A probe rod was used in the thick ground cover to trace the lateral extent of the midden and to determine its depth. This midden, which lies on a distinct knoll, is oval shaped and covers an area approximately 120 feet long and 80 feet wide. The depth varies from about 6 inches to 14 inches. The forest cover prevented detection of artifacts.

38BU428 This is a magnolia shell midden, the largest shell midden on Callawassie Island. It extends along the exposed peripheral zone about 800 feet and continues inland about 220 feet at its maximum width. Probing at several localities indicates that the midden varies from 6 inches to a maximum depth of about 36 inches. Mounding of oyster shell is seen at several places, suggesting that shell refuse was dumped into discrete units by the aboriginal inhabitants. This, along with large trees such as magnolia and oak, indicates that the area may not have been cultivated. Oyster shell from eroded portions of the midden is scattered all over the beach, and in many places, the shell extends more than 20 feet into the marsh (see Fig. 17). The midden is also easily discernible for its entire peripheral extent (Fig. 18). Artifacts, although scarce, were collected from the beach. Occupational continuity is suggested. The following artifacts were found: 3 Deptford cordmarked sherds; 1 Savannah checkstamped; 2 Mt. Pleasant sherds (Michael Trinkley: personal communication).

38BU469 This is a highly eroded shell midden situated on the southwest of a marsh hummock. Oyster shell is scattered about 25 feet in an east/west direction.

38BU434 This site is a small scattered oyster shell midden at the base of a slumped profile.

38BU435 This is an eroding oyster shell midden. There is a small scatter of shell at the base of a low-lying bluff.

38BU436 This is a small scattered oyster shell midden.

38BU437 This is a small oyster shell midden eroding beneath a live oak tree at the edge of the marsh.

38BU438 This site is a thin oyster shell scatter at the edge of a low bank against the marsh.

38BU439 This is a small shell midden eroding from a bank.

38BU440 This is a historic trash dump at the base of the peripheral zone, extending into the marsh. This garbage dump is probably associated with the Kuser house and occupation during the early part of the 20th century. Brick fragments, glass and broken bottles, terracotta pipe fragments, mortar fragments, and old boards were scattered about 100 feet.

38BU441 This small scatter of oyster shell from an eroding midden was found on a slump slightly above high tide on the periphery.

FIGURE 17: Eroded portions of the magnolia shell midden (38BU428) scattered across the marshy beach

FIGURE 18: Eroding profile of the magnolia shell midden (38BU428) seen at the island's periphery

38BU442 Typical of other small eroding shell middens, this one was located slightly above high tide with shell scattered about 6 feet.

38BU443 This thin scatter of oyster shell stretched about 20 feet along the island's periphery.

38BU444 Located immediately west of the above midden, this scatter of oyster shell with occasional whelk is seen intermittently for 75 feet along the island's edge.

38BU445 This is a thin scatter of oyster shell midden seen about 50 feet along the peripheral zone. The scatter is an eroding midden.

38BU446 This small scattered oyster shell midden is on the slope of the periphery.

38BU447 This small scatter of oyster shell is clumped around the base of a live oak tree near the edge of the marsh.

38BU448 This oyster shell midden is eroding from an exposed bank about 30 feet along the peripheral zone. Portions of the midden have eroded from the bank. The midden appears to be about six to eight inches thick.

38BU449 This very small scatter of oyster shell midden is highly eroded and spread about 15 feet along the periphery.

38BU450 This is a small, thin scatter of oyster shell midden situated on top of a low slope on the island's edge.

38BU451 This site is a small eroded shell midden of oyster on top of a low bank at the marsh's edge.

38BU452 This eroding oyster shell midden is at the top of a bank on the peripheral zone. Elevated about five feet above marshy area, the midden is about 8 inches thick and extends about 15 feet.

38BU453 This is a small amount of oyster shell midden exposed along the top of a bank on the peripheral zone.

38BU454 This small clump of oyster shell is exposed in the root system of a palmetto tree.

38BU455 This is a very small scatter of oyster shell midden along the peripheral zone.

38BU456 This is a very small scatter of oyster shell midden along the peripheral zone.

38BU457 This is a small amount of oyster shell midden contained in the root system of a fallen pine tree.

38BU458 This is an eroding midden composed of oyster shell in the profile of an elevated bank. Portions of midden have fallen onto the marshy beach.

38BU459 This is an eroding shell midden composed of oyster shell in the profile of an elevated bank. Portions of midden have fallen onto the marshy beach.

38BU460 This eroding shell midden is composed of oyster shell in the edge of an eroding bank.

38BU391 This site is a small amount of oyster shell scattered down an eroding bank.

38BU392 This site consists of scattered oyster shells on the eroding slope of a bank.

38BU393 These oyster shells are scattered across an eroding bank with a small amount of shell midden exposed in the root system of a large hickory tree.

38BU394 This site has portions of an eroded oyster shell midden falling down the slope of the peripheral zone. There is no indication of existing midden, but there is shell scattered intermittently about 50 feet. Although no cultural materials were observed in the displaced midden or on the adjacent marshy beach, several fragments of human bone were recovered at the edge of the profile and on the beach. These included three fragments of parietal and one fragment of a humerus. The bones appeared to be charred.

38BU395 This site has oyster shells and 20th century garbage scattered along the edge of the marsh and extending into the marsh. Items included tin cans, broken bottles, brick fragments, and a large tractor wheel. The site is immediately behind the historic structure, 38BU463.

38BU463 This site has brick foundations, tin roof, and rotting lumber remaining from a collapsed house (20th century).

38BU462 This is the Kuser house, probably constructed shortly after the Kusers purchased the island in 1917. The remaining structures are a large basement, foundation walls, and a concrete-covered brick entrance. An old wire fence surrounds most of the yard.

38BU429 This site is characterized by a thin 75-foot-long lens of oyster shell spread 75 feet in the road bed. Cultivation has thoroughly displaced the midden.

38BU396 This small portion of an oyster shell midden is in the root system of an eroded palmetto tree (Fig. 11).

38BU397 This relatively large shell midden is eroding onto the marshy beach. Shells, primarily oyster, are scattered about 150 feet across the beach and extend about 25 feet into the marsh. The eroding profile on the peripheral zone indicates that the midden varies in thickness from about 8 to 20 inches. The midden extends inland about 50 feet. Ceramic artifacts were found within the eroded shell midden, a mixture extending about 150 feet. However, artifacts appear to cluster in two separate localities, which have been termed Locus 1 and Locus 2. The artifacts include the following: Locus 1, 1 deer tooth, 4 Irene complicated stamped sherds, 14 Irene plain sherds, 7 eroded and unidentifiable sherds; Locus 2, 8 Irene complicated stamped sherds; 26 Irene plain sherds; 1 Irene incised sherd; 1 Irene with rim applique (reed punctates on applique); 2 eroded and unidentifiable; 1 cordmarked(?).

38BU398 This relatively large shell midden may be a part of 38BU397, but it is separated by about 75 feet of a sterile profile. It is located on the western edge of a small cove and is eroding into the marsh, subsequently scattering midden debris about 75 feet across the beach. Shells extend about 25 feet from the periphery into the marsh. The eroded profile indicates that a great deal of the midden is intact and that it varies from about 8 to 15 inches thick. It extends inland about 25 feet. The following artifacts were found: 12 Irene complicated stamped sherds; 11 Irene plain sherds; 1 Irene incised sherd; 1 Irene applique (node at rim); 1 Irene pottery disc; 3 eroded and unidentifiable.

38BU413 This site has brick rubble extending 25 feet into the marsh. The rubble is fractured and whole bricks. The bricks, which appear old, are in an oval cluster measuring about 8 by 12 feet.

38BU412 This small oyster shell deposit begins at the peripheral zone and erodes into the marsh. It is only about two feet long.

38BU411 This site is a highly eroded deposit of oyster shell with brick fragments and other artifacts along the edge of the island and marsh beach. This historic garbage dump is about 75 feet long and extends about 10 feet into the marsh. The artifacts, although few in number, suggest an early to late 18th century occupation. This site may be associated with the tabby structure complex located north of this site. Artifacts on the site included the following: 2 brick fragments (sample); 1 mortar fragment (sample); 2 hand-blown black glass bottle bases; 2 black glass bottle fragments; 1 green glass case bottle fragment; 1 British brown stoneware fragment; 1 blue shell-edged pearlware fragment.

38BU410 This site is a small historic shell midden that has collapsed and fallen in the marsh immediately adjacent to the island's edge. This redeposited midden is about four feet in diameter and approximately two inches thick. One historic ceramic, a British brown stoneware fragment, was discovered in the center of the midden.

38BU409 This site is a complex of three tabby structures that are potentially related to the historic shell middens located on the southern edge of the marsh (38BU410 and 38BU411). The presence of British brown stoneware and Blue shell-edged pearlware indicate an 18th/19th century occupation. The first ceramic has a time range from 1690 to 1775, and the latter from 1780 to 1830. The median dates are 1733 and 1805, respectively. The ceramics, unfortunately, are too few in number to provide a substantive date, and additionally, there is no indication that the tabby structures are associated with the middens, except for close proximity. The ages of the structures are not known.

The first structure, and the largest, is presumably a residence as indicated by 10-foot-high walls (Fig. 19-A) with a related window and door opening. The tabby walls are 14 inches thick, and aboriginal ceramics are included within this mixture of oyster shell and mortar, suggesting that the shell was acquired from Indian shell middens. A testing operation within the outside of the structure failed to reveal any ceramics or bottle fragments. However, several fragments of old, light green window pane glass were discovered adjacent to an opening in the east wall of the structure (Fig. 20).

The second structure, east of the residence, is also rectangular and is similar in size. This structure with 16-inch-thick walls appears to have been a foundation without above grade walls. The southern wall and portions of the western wall are exposed slightly above grade, and the remaining portions are buried several inches below grade. Since this foundation structure is only a short distance from the residence (Fig. 20) and has an exceptionally similar overall dimension, it may have been an earlier abortive attempt oriented to establish a residence.

The third and remaining structure is a massively constructed foundation elevated five to six feet above grade with 22-inch-thick walls. Its unusual construction with opposing buttresses and large load bearing walls suggests that it once supported a great deal of weight (Fig. 19-B). Although the soil was tested at several locations on each side of the structure, there were no artifacts for a functional interpretation of this foundation.

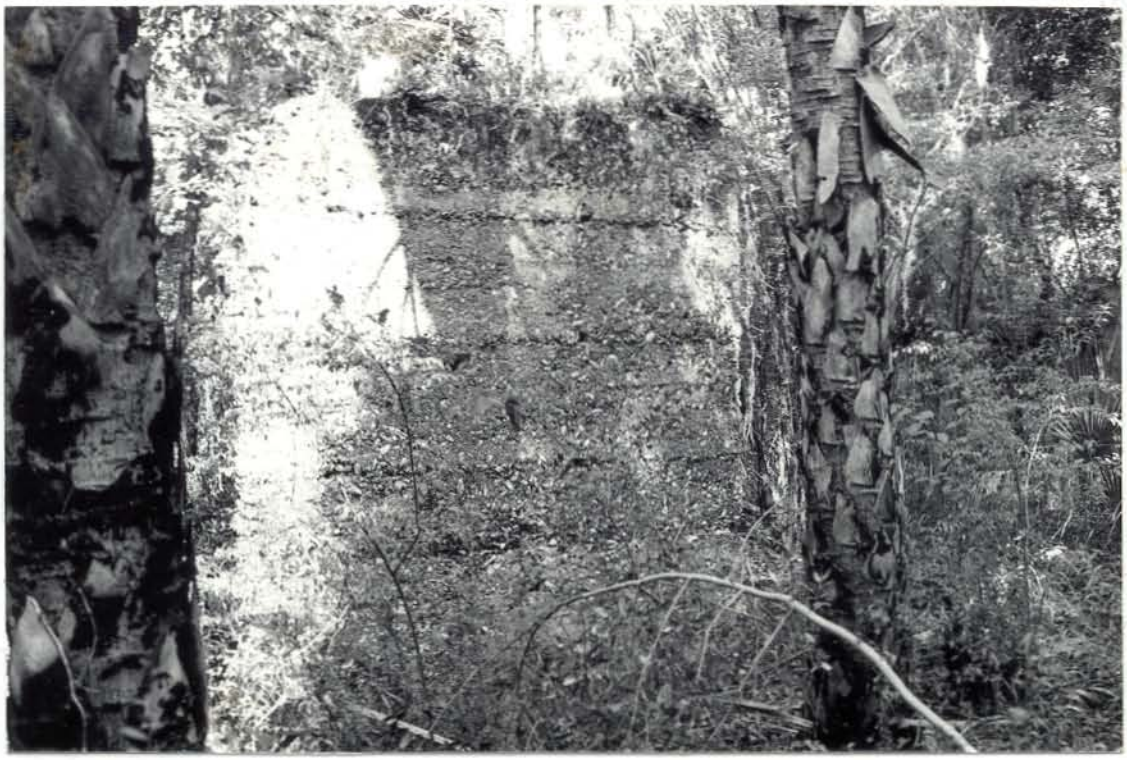

FIGURE 19A: High wall section of main dwelling at 38BU409

FIGURE 19B: Unidentified structure at 38BU409

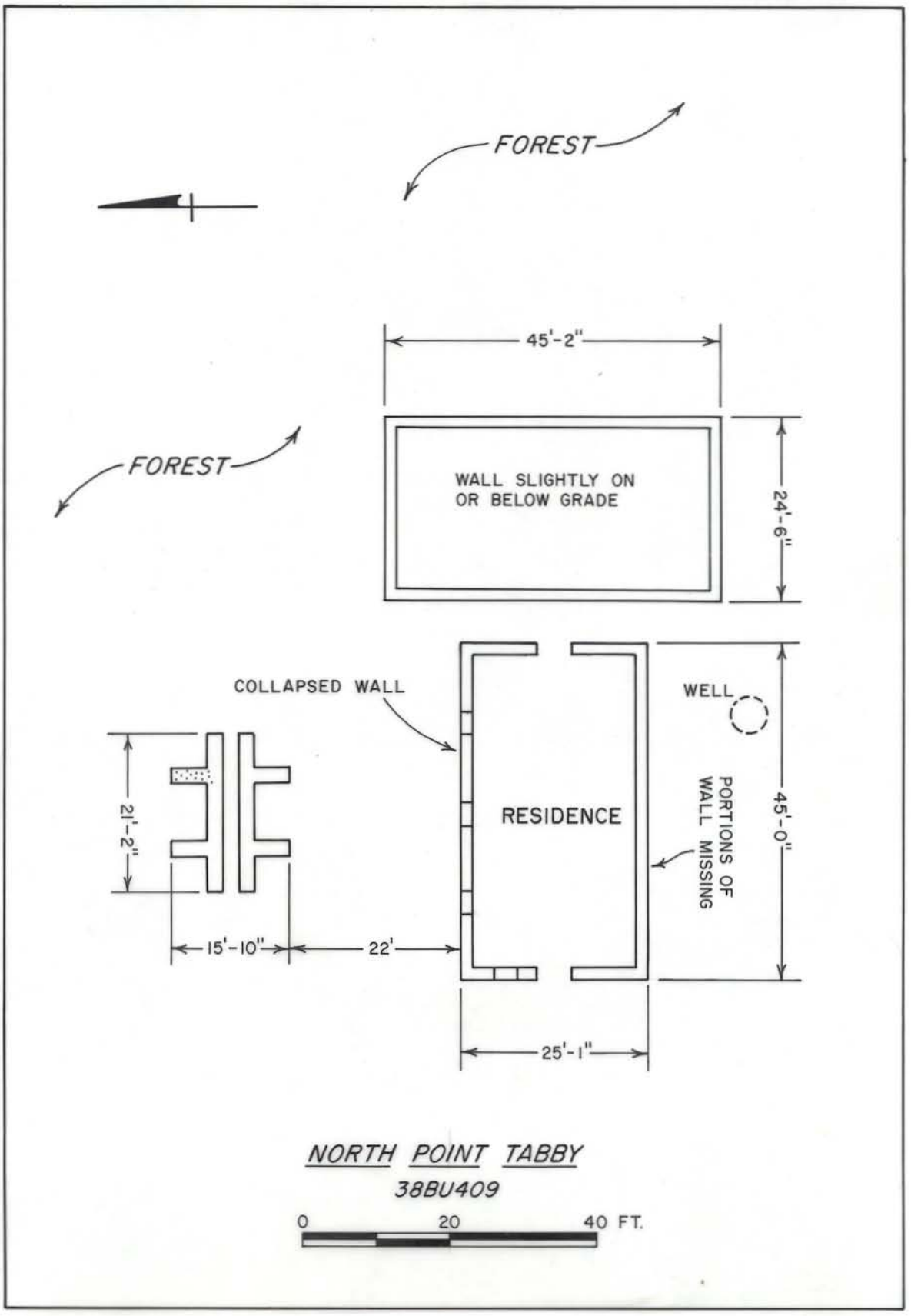

FIGURE 20: North Point Tabby Complex, 38BU409

A depression about 15 feet from the south wall resembles an old well (Fig. 20). It is about five feet in diameter and approximately 18 inches deep. An investigation with a post-hole digger revealed that the hole was filled with tabby fragments, pieces of brick, and fragments of mortar. Since it was filled, testing could only be taken to a depth of four feet, but probing determined that fill continued to a depth of five feet. There were still artifacts at this depth, but no immediate means of determining the extent of materials. Presumably, the fill continues past a depth of five feet.

A large portion of the southern wall has been removed for unknown reasons. Possibly the well was filled with remnants of the wall. The well may have been filled when the structure was abandoned, or it may have happened later. If there are artifacts such as ceramics and bottles in the bottom of this potential well, they would provide temporal indicators for occupation. Artifacts included the following: 25 green window pane fragments (eastern edge of residence); 1 fragment of animal bone (eastern edge of residence).

38BU408 This is a small oyster shell midden exposed intermittently for a distance of about 25 feet in the profile of the peripheral zone. The midden is collapsing onto the marshy beach and subsequently scattering shell across the marsh.

38BU407 This is a very small, eroded oyster shell midden in the root system of a palmetto tree and partially scattered in the marsh. One pottery sherd, a Deptford simple stamped sherd, was recovered.

38BU406 This site is represented by a pile of old bricks in the bottom of a small cove. These bricks, which appear hand-made, are exposed during low tide.

38BU405 Slightly north of the brick deposit is an oyster shell midden eroding from an elevated profile on the peripheral zone of the island. The midden is about four to six inches thick and extends about 15 feet in the profile. Its inland extent, based on the mounding of shell, is approximately 10 feet. Shell has collapsed from the profile and is subsequently scattered across the marshy beach. Ceramic materials recovered from the beach include the following: 1 fractured clay pipe with brushed exterior (Middle Woodland Period); 1 Savannah checkstamped sherd; 3 eroded and unidentifiable sherds.

38BU404 The midden is composed of oyster and is partially exposed in the profile of the peripheral zone. It varies from one to three inches in thickness. It extends 25 feet intermittently, and portions of the midden are scattered on the marshy beach.

38BU403 This is a small shell midden eroding on the marshy beach. Composed mainly of oyster, the midden extends about six feet in the profile with a thickness of about three inches.

38BU402 Represented by a thin mantle of oyster shell, this site extends intermittently for 40 feet. Throughout this distance, oyster shell is occasionally seen in the profile and on portions of the beach.

38BU401 This site is situated on opposing sides of a small tidal swale at the island's periphery. Erosion has enlarged the swale, scattering the major portion of the oyster shell midden across the beach.

38BU400 This site is represented by oyster shells in the root system of a fallen live oak. Shells have also fallen onto a marshy ledge below the profile and adjacent to the Okatie River.

38BU399 The peripheral zone at this point is highly eroded because of the Okatie River. A relatively thick oyster shell midden is collapsing from the bank and is falling onto the ledge below the midden. Portions of the midden indicate a size from 6 to 8 feet in diamter, and about 12 inches thick.

38BU430 This site is represented by an inland shell midden observed in a road bed. The few shells are thoroughly dispersed in the road bed and the old plow zone.

38BU433 This is a very small oyster shell midden that has eroded down the slope of the peripheral zone.

38BU432 This is a very small oyster shell midden that has eroded onto the marsh.

38BU431 This site is another inland shell midden that has suffered extensive damage from cultivation, road construction, and vehicles. The number of shells is exceptionally low.

38BU465 On the northern edge of the island and adjacent to a small marshy cove, we discovered evidence of a non-midden site. The site lies on a high bluff overlooking a series of tidal creeks flowing into the Chechessee Creek. Using a Brunton compass, we established two linear lines each about 100 feet long, that transected the bluff in an east/west direction. Testing with a post-hole digger and screening the soil disclosed a few eroded pottery sherds. The site is apparently confined to an old plow zone since the soil is mottled and disturbed. At a depth of eight inches we encountered white, sterile sand. Cultural materials included the following: 2 highly eroded pottery sherds; 1 refuge dentate stamped sherd.

38BU466 Approximately 1,000 feet east of the previous site (38BU465) and situated on a promontory overlooking the marsh and tidal creeks, there is another non-shell midden site with a low density of pottery sherds. The

promontory rises about 10 feet above the surrounding marsh and is dissected by a small dirt road that follows the topography. A series of posthole tests were placed at intervals in the center of the road for about 125 feet. Additionally, several more tests were placed on a ridge 75 feet south of the road. These tests only yielded three small pottery sherds which were highly eroded and unidentifiable.

38BU464 This site is represented by a relatively large inland shell midden. It was discovered by walking a north/south line with a Brunton compass and by testing with a post-hole digger. The site is located about 25 feet south of the S89degree-49minuteE survey line that transects the island in an east/west direction. Its point on the line is approximately 350 feet east of a small concrete monument with a stake marked, C.P. #9. About 100 feet east of the point is another stake marked, C.P. #11. The site is well marked with red and white survey tape.

The shell midden is conspicuous with oyster shells on the surface. A game trail also dissects the site and exposes additional oyster shells. The east/west dimension of the site is approximately 80 feet, but probing indicates that scattered shell occurs at least 20 feet beyond the dense portion of the midden. The north/south dimension measures about 50 feet, and thin scatters occur at least 20 feet beyond the dense area. The center ranges from about 8 to 12 inches deep with portions lying undisturbed beneath an old plow zone. Cultivation has disturbed and scattered the upper portion of the midden. Testing at several areas disclosed only a few artifacts, such as the following, several that indicate a Late Woodland occupation: 2 small, eroded, unidentifiable sherds; 1 St. Catherine sherd; 1 fabric impressed (Deep Creek ?).

38BU418 An exposed profile of the peripheral zone on the northern edge of the island is eroding and falling onto the marshy beach. In the upper portion of the profile is a thin lens of oyster shell that extends about 20 feet. This lens is about one inch thick and occurs sporadically.

38BU417 This is a very small lens of exposed oyster shell about one foot in diameter and one inch thick.

38BU416 This is an oyster shell occurring in the root system of an eroding palmetto tree.

38BU415 Occasional occurrence of oyster shell was observed in this eroding profile which is about 6 to 8 feet wide. It is a thin mantle of shell about one inch thick.

38BU414 This site has a small amount of oyster shell in the root system of a eroding live oak tree. Portions of the midden have collapsed on the marshy beach and have been scattered by tidal fluctuation.

38BU390 This site is located at the southern edge of the island and is exposed in an eroding sandy bluff about 6 feet high. Represented by a thin mantle of oyster shell about two inches thick and extending about five feet, the midden is severely eroded and portions are scattered across the basal edge of the bluff.

38BU467 This non-midden site is located in the interior of the island and about 150 feet west of the north/south road. The site lies on a wooded ridge. It was discovered by establishing a base line with a Brunton compass and then digging a hole at predetermined intervals with a post-hole digger. This base line, which extended for about 150 feet, and the investigation demonstrated that the area had been cultivated. Although each test unit was taken to a depth of 12 inches, there was no evidence of human occupation below a depth of about eight inches, thereby indicating a plow zone site. Only one area yielded some small pottery sherds as evidence of human habitation. When sherds were discovered at this specific unit, the test was extended five feet in four directions. This investigation yielded an additional sherd. Artifacts included the following: 1 plain fiber tempered sherd; 2 eroded sand tempered sherds.

Discussion

The reconnaissance of Callawassie Island yielded a total of 88 new archeological sites. Combined with two previously recorded sites, these bring the total to 90 sites. This is an exceptionally large number of separate occupations in time and space. Additional habitations certainly exist that we were unable to monitor because of time restraints and the area that had to be surveyed. However, the large number of sites discovered support the basic propositions set forth in the research design.

Unfortunately, there was no evidence of human occupations prior to the Woodland Period. Excepting a single plain Thom's Creek sherd found in the redeposited shells of an eroding midden, there were no other indications of Early Woodland associations with shell middens. Although artifacts were relatively scarce in many of the middens, this is a pattern previously observed throughout much of the Port Royal Sound drainage. Those middens with temporal indicators suggest that most of the habitations are from the Middle and Late Woodland Periods.

The testing program on the interior failed to disclose many pottery sherds, and those discovered are highly eroded by past cultivation. The majority of these sherds are sand tempered, and while many are unidentifiable, they are certainly not fiber tempered. Only one sherd of this type was discovered, and it was in the interior, unassociated with a shell midden. Identifiable sherds of relative contemporaneity were exceptionally low in the interior. Only one Refuge sherd was found.

Based on the low representation of Early Woodland materials, it seems that this specific time period was inconsequential compared to other occupations. A much higher incidence of later Woodland materials and shell middens

substantially supports the proposition about sea level fluctuation, i.e., shellfish communities were available only during later periods of time.

The other set of propositions involved site location, and for the most part, the predictions are steadfast. There are an exceptionally large number of shell midden sites on the peripheral zone of the island adjacent to the marsh. Most of the shell midden sites are in elevated areas, while fewer are on the eastern edges in areas of low elevation. Sites also are more abundant where tidal creeks, streams, and other navigable bodies of water are closest to the island.

CULTURAL RESOURCES OF POTENTIAL SIGNIFICANCE

Introduction

To set forth criteria for evaluating the significance of cultural resources, the National Register of Historic Places has developed standards, which appear under 36CFR PART 60.6: National Register Criteria for Evaluation. The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects of State and importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and (a) that are associated with events that have made a significant contribution to the broad patterns of our history; (b) that are associated with the lives of persons significant to our past; (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; (d) that have yielded, or may be likely to yield, information important in prehistory or history.

These criteria are limited, and such inadequacy is pointed out by several authors concerned with cultural resource management (Moratto and Kelly 1978; King, Hickman, and Berg 1977) in an attempt to generate better criteria. Moratto and Kelly (1978) have developed a list of specific typologies to improve meanings of significance: (a) historical significance--a cultural resource is historically significant if it can be associated with a specific individual event or aspect of history, or, more broadly, if it can provide information about cultural patterns during the historic era; (b) scientific significance--scientific significance involves the potential for using cultural resources to establish reliable facts and generalizations about the past; (c) ethnic significance--a cultural resource that holds religious, mythological, spiritual, or other symbolic importance for a discrete group of people is said to be ethnically significant; (d) public significance--the term public significance refers to those benefits that accrue to a society through the wise stewardship of its archeological resources; (e) monetary significance--estimating the potential worth of cultural resources is one way to evaluate their significance for cultural resource management purposes." This list needs little explanation, but the typology concerning scientific significance is relatively broad and should be discussed further. Moratto and Kelly (1978) separate this significance into two separate categories: values to the social sciences, and values to other sciences. The former category deals specifically with contributions to "major theoretical and specific issue," especially in regard to questions involving patterns of settlement and location, the development of agriculture and its origins, populations, and other questions relevant to cultural processes. In their outline of social science values, the authors draw heavily on additional criteria set forth by Schiffer and House (1977), who place significance in

a realm of research oriented questions such as: "substantive significance--...describe and explain the events and processes that occurred in the past. The questions that orient those inquiries are substantive questions; they relate to particular times and places and they are known as idiographic; anthropological significance--here investigators must discern the extent to which study of specific resources might be able to contribute to testing general anthropological principles, especially those relating to processes of long-term culture change and ecological adaptation; social scientific significance--closely related to, and perhaps not distinct from, anthropological significance is social scientific significance. The latter category of nomothetic questions is found in the context of social science generally and thus may also include specifically anthropological questions; technical methodological, and theoretical significance--in an abstract form, this category begs for technical, methodological, and theoretical advancements in archeology when other research values are relatively low. Sites, therefore, have significance although substantive, anthropological, and social scientific significances are lacking."

The value of archeological resources to other sciences is evident in contributions through various avenues of interdisciplinary research. In this frame of reference, archeology contributes to a variety of sciences, such as botany, physics, geology, and others.

Considerations of Significant Sites

The archeological resources of Callawassie Island are numerous, and in terms of integrity, they range from being totally eroded and destroyed to relatively intact and capable of yielding substantive historic and prehistoric occupational data. The sites most likely to yield considerable information for understanding past cultural systems are West Point Tabby, 38BU70; Callawassie Burial Mound, 38BU19; Magnolia Shell Midden, 38BU428; North Point Tabby Complex, 38BU409; Okatie River Shell Midden, 38BU398; Large Pond Shell Midden, 38BU464.

The remaining sites appear less significant because of the adverse affects of erosion and cultivation. The majority of shell middens are exceptionally small and highly eroded. The contents of the middens in many cases have eroded profiles with scattered shells across the marshy beaches. Other shell midden sites have been partially eroded, and the remaining portions are insignificant in size and structure and have no cultural materials. The significant portion of these small, eroded middens lies in the virtue of their location along elevated areas of the peripheral zone and their juxtaposition to the marsh and tidal creeks. These locations have been recorded for the future understanding of settlement location on coastal islands.

Most of the interior has been cultivated during various episodes of farming. As the testing program indicated, the sites are relatively shallow with few artifacts. Only one of the interior sites, 38BU464, was stable enough to yield substantive information.

One of the most important sites discovered during the survey is the

Magnolia Shell Midden. This unusually large midden is approximately 800 feet long and 220 wide and varies from about 6 to 36 inches in depth. Among the eroded, scattered oyster shells along the marshy beach, pottery sherds indicate that the midden was used throughout most of the Middle and Late Woodland Periods. The enormous deposit of oyster shells covering about four acres also attests to cultural continuity. This midden refuse and its artifacts may potentially contribute to several avenues of research. Since the shell deposits are relatively deep, the site has an apparent abeyant quality that can facilitate recognition of specific time periods, contributing to the knowledge of cultural history. In this vein of research, archeology has an opportunity to corrobrate the cultural sequence of recognized pottery types and to establish new cultural/temporal indicators in addition to radiocarbon dates.

Calcium, which shellfish remains contain, inherently preserves many organic materials. Floral and faunal remains should be abundant in this large midden, contributing valuable information about subsistence patterns and intrasite activities throughout time. These remains may also answer questions about seasonality. When organic materials are preserved, pollen may be concomitantly preserved, also. Microscopic study of these small spores reveals much information about microenvironments and floral communities immediately prior to and during habitation. This midden is potentially significant and may aid the comprehension of past cultural systems. In terms of the National Register criteria for evaluation, the site is likely to yield important, prehistorical information. With standards set forth by Moratto and Kelly (1978), the site certainly has a scientific significance, and it has an anthropological importance regarding long-term culture change and ecological adaptations (Schiffer and House 1977: 253).

The Large Pond Shell Midden (38BU464) and the Okatie River Shell Midden (38BU398) possess integrity and research capabilities. These single component sites could yield information about human occupation in terms of subsistence patterns, seasonality, intrasite activities, and ceramic technologies.

The Callawassie Burial Mound (38BU19) is an extremely important site for many reasons. Although a portion of it is damaged by previous investigations, at least half of the low-lying structure is intact and available for future research. This mound has contained well preserved human burials in the past. They have pathologies that can greatly enhance our understanding of human diet and disease. Furthermore, the human skeletons and the associated pathologies can provide metric and non-metric indices for specific populations in time and space. Such demographic information is badly needed for South Carolina and for comparative studies in the Southeast.

Besides skeletal information, additional data may be obtained from burial practices and the internal structure of the mound. Organic materials, such as oyster shell and charcoal, can provide time parameters through radiometric dating.

The tabby structures (38BU70 and 38BU409) are specially significant because they are associated with specific state and local historical aspects, providing information about cultural patterns. Additionally, these structures represent a phenomenon unique to the South Carolina coast and embody distinctive characteristics of a time period and construction methods.

The use of tabby originated in the Old World, and the Spanish brought it to the New World before A.D. 1700. The European colonists acquired the technology for economic reasons. As a feasible building material, it was subsequently used for about a century (ca. 1700-1820). During the 17th and 18th centuries, brick was not obtained easily and was expensive. Building homes with lumber was a laborious task, not just during construction, but also while producing lumber and other materials. Furthermore, constructing wooden homes and buildings required the talents of skilled laborers, particularly carpenters and brick masons. Building with tabby alleviated many of the problems associated with other structural forms. Shellfish remains were available from aboriginal shell middens and from the oysters proliferating in the coastal islands' marshes. The shellfish remains were an inexpensive basis for tabby buildings. Oyster shell was collected and burned to obtain lime, which was mixed with sand and water to produce cement. The cement was then mixed with additional oyster shells and poured in wooden molds to form walls. This technology provided buildings or at least foundations that were inexpensive, durable, and simple to construct. When production of lumber, bricks, nails, and other building materials increased in the 19th century, tabby construction became obsolete.

This early technology is indigenous only to the Southeast coast of the United States, occurring in Florida, Georgia, and South Carolina, with increased frequency in areas of early colonization such as Beaufort and Charleston. It is indeed a distinctive technology portraying the early historic period of this state, and it reflects an adaptation pattern on the marshy coasts.

Recommendations

The prehistoric and historic sites discussed above are potentially valuable and should be protected for scientific research and future generations of South Carolinians. These sites have a potential for contributing to archeological knowledge and to the broader field of anthropology. Similarly, other disciplines such as geology, biology, history, and other fields of parallel interests can contribute to comprehension of past cultural systems with respective interests in their own sciences.

Intensive testing of these sites is appropriate. In the next phase of investigation, the archeologist will excavate a portion of each site, usually with random sampling, to obtain artifacts and other by-products of human activities to determine a site's significance and to determine its eligibility for the National Register of Historic Places.

In following the suggested guidelines set forth earlier in this report, we recommend that Three Fountainview Corporation initiate a program of intensive testing at the following six sites: 1) 38BU70, 2) 38BU409, 3) 38BU19, 4) 38BU464, 5) 38BU428, and 6) 38BU398.

SUMMARY

The archeological investigations on Callawassie Island were initiated for two principal reasons: to test specific models of site location and settlement patterns, and to provide Three Fountainview Corporation with an assessment of the cultural resources for future planning.

The archeological research concerning predictions of site location demonstrated that shell midden sites are not associated with the Early Woodland Period, but rather with the later phases of the Woodland Period. The absence of Early Woodland middens is probably related to the affects of low sea level and the subsequent lack of shellfish communities. When sea levels rose, communities developed in the upper portion of the Colleton River, providing the indigenous American with an exploitable resource base. As predicted, the later Woodland shell middens are located mainly on the peripheral zone of the island juxtaposed to biotic communities of shellfish and navigable bodies of water. With increased terrestrial elevations at the peripheral zone, shell middens become more numerous.

The survey yielded a total of 90 archeological sites, six of which are considered important enough to request additional testing with intensive investigations to corroborate significance.

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