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An Intensive Shoreline Survey of Archeological Sites in Port Royal Sound and the Broad River Estuary, Beaufort County, South Carolina

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AN INTENSIVE SHORELINE SURVEY OF ARCHEOLOGICAL SITES IN PORT ROYAL SOUND AND THE BROAD RIVER ESTUARY, BEAUFORT COUNTY, SOUTH CAROLINA

by

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PREFACE

While archeological research was being conducted in other regions of the southeastern United States in the earlier part of the twentieth century, South Carolina was severely neglected, if not practically ignored. This unfortunate situation continued well into the mid-1900s until the Institute of Archeology and Anthropology, established at the University of South Carolina about a decade ago, made substantial progress towards understanding the previously disregarded cultural heritage. The main thrust of archeological research during the past several years has originated from contract archeology, and many large surveys have contributed significantly in areas of historic and prehistoric archeology. Beyond the level of cultural resource management, additional research has resulted from state agencies, private resources, and historic preservation funds administered through the Department of Archives and History.

Although a few of these surveys have approached a level of regional understanding, the majority of investigations have centered around small transects in an attempt to discover potentially impacted human occupations. These narrow surveys, confined to the corridor of right-of-ways, seldom have an opportunity to yield information basic to the realization of settlement pattern or location within specific regions or environmental zones. Additionally, many of these small surveys have occurred in the Piedmont and other areas central to the state. This does not necessarily indicate that surveys have not been conducted in the Coastal Plain, or within other areas of the state, but it does indicate that while research has resulted in the interior, the coastal areas have been neglected. Research has been minimal, and while several investigations have yielded data basic to cultural understanding, these surveys and inquiries have not produced much knowledge concerning regional patterns, of prehistoric settlement on the coast.

Perhaps the area most recognized for its antiquity, historic and prehistoric, is Port Royal Sound and the Broad River located immediately south of Beaufort. The region has yielded considerable evidence for European habitation of French, English, and Spanish during the sixteenth Century, and a great deal of information concerning aboriginal occupations which are known to represent a considerable span of time. Beyond the European settlements which are generally characterized by fortifications, the aboriginal habitations represent shell middens of various time periods, in addition to a diverse inventory of ceramics and lithics, all of which form an unbroken sequence of time.

These cultural remains and their associated sites have been discovered on adjacent terraces overlooking the estuary, and along the edges of eroding beaches. Evidenced by scattered archeological materials, some of the sites have been washed away, while others are eroding at an alarming rate. Those remaining sites, although slightly eroded, seem relatively stable.

The largest known eroded site is located on the eastern side of Daw's Island. The site, scattered for a considerable distance along a sandy beach, has yielded approximately 2,000 chert bifaces and tools, representing a continuous occupation beginning with the Paleo-Indian period and terminating with the Archaic, a span of nearly 6,000 years. Although the site was destroyed by inundating Holocene seas, the impressive amount of material culture indicates an extensive utilization of an ancient river valley prior to a major transgression of the sea. Synonymous with the Daw's Island lithic scatter, Elliott's Beach on Parris Island has also yielded a large number of bifaces and tools, in addition to a continuous ceramic sequence ranging from fiber tempered pottery through the later sand tempered series. Several other sites, although smaller, have been discovered at various other locations in the estuary. The majority of these sites are multi-component, not only in terms of lithics but also with ceramic components.

One of the most important sites on the coast of South Carolina is located immediately south of the large lithic scatter on Daw's Island. This site is associated with the Formative period and is characterized by fiber tempered pottery and a relatively small amorphous shell midden. The midden is covered with nearly five feet of sea water daily, and as a result, human burials, animal bones, chert bifaces, large amounts of fiber tempered pottery, hickory nut fragments, baked clay objects, and decorated bone pins are washing out of the midden and are being scattered across the beach. Another large shell midden located at the southwestern edge of Daw's Island is also eroding. The midden, associated with several ceramic time periods, including fiber tempered pottery, is approximately 1,000 feet long and about 100 feet wide. Although a great deal of the midden is intact and remaining relatively stable, the edge is eroding into Port Royal Sound.

Smaller shell middens associated with the Woodland period are known to occur in the Chechessee, Colleton, and Broad Rivers, and in areas contiguous with small tidal creeks. Many of these middens, although small, represent human utilization of specific resources, especially the oyster.

The estuary, then, demonstrates that a wide variety of archeological sites are present, and that some of these sites have a potential for yielding specific cultural information. Given the fact that the known sites are distributed from the headwaters of the estuary to the Atlantic ocean, logic would predict that many more sites exist within the ecosystem. These sites would also represent occupations of varied time periods, and all suffering some degree of attrition ranging from total destruction to modest erosion. Others, perhaps, exist intact on relict land forms such as marsh hummocks. With this potential for additional archeological sites, a research program was initiated to record and evaluate the sites and their status of preservation through an intense reconnaissance shoreline survey of the estuary and its associated streams and marshes. Such a survey would serve as a model in establishing settlement expectations in other estuaries and as a datum point for future research along the coast.

In an attempt to begin a series of coastal investigations oriented towards substantive research, a proposal was submitted to the Department of Archives and History aimed at Port Royal Sound and the Broad River, and directed towards: 1) a comprehensive archeological survey of a large estuarine ecosystem, 2) a study of prehistoric human adaptation within an environment of dynamic change, 3) establishing a predictive model for site location in other estuaries, 4) contributing to the understanding of sea level rise and fluctuation, 5) a study of site attrition, 6) evaluating the amount and impact of relic collecting and pot-hunting activities, and 7) providing information for future planning within the project area.

In May of 1979, this project was approved and funded, in part, through the National Historic Preservation Act of 1966, with historic preservation funds administered through the Department of Archives and History. Matching funds, personnel, and equipment were provided by the Institute of Archeology and Anthropology, University of South Carolina.

ACKNOWLEDGMENTS

The shoreline survey of Port Royal Sound and the Broad River estuary was made possible by institutions and individuals who are dedicated to the understanding of South Carolina's prehistoric cultural heritage. Without their contributions and labor, this project would never have been possible.

I am deeply indebted to the South Carolina Department of Archives and History for generously providing preservation funds on the basis of a matching grant, co-funded by the Institute of Archeology and Anthropology, University of South Carolina. It was only through this avenue of funding, and contributions on the behalf of the Institute, that I was able to conduct a large regional survey involving an estuarial system on the southern coast of South Carolina.

Within the Institute, Dr. Robert L. Stephenson, Director, provided consultation and administration throughout the entire project. Dr. William H. Marquardt, Associate Director, also contributed consultation and administration, in addition to helpful suggestions concerning the preparation of this manuscript. Mr. Darby Erd, Scientific Illustrator, gave freely of his artistic talents, while Mr. Gordon Brown, Photographer, provided the photographic plates. Mr. Kenn Pinson, Editor, contributed his aptitude and Ms. Susan Moore, Typist, completed the revised manuscript.

In the field, Mr. Robert N. Strickland, Mr. James S. Sexton, Mr. Tommy Charles, Dr. Donald R. Sutherland, Ms. Patty Lovett, Ms. Amanda Joye, and Ms. Pamela Croen provided much appreciated volunteer labor during the weekends. I also appreciate public exposure thoughtfully provided by Ms. Val Palmer of the *Beaufort Gazette*. Through the news media we were able to contact numerous relic collectors in the Beaufort area and thereby record their collections and site locations. The information generated from local contact contributed significantly to understanding prehistoric occupations in the project area. We are certainly indebted to everyone.

Last, and certainly not least, I am grateful to Mr. Eric Croen who served as a friend and a field assistant for the duration of the project.

THE ENVIRONMENTAL SETTING OF PORT ROYAL SOUND AND THE BROAD RIVER

Physical Environment

Location

The Coosawatchie, Pocotaligo, and Tullifinny Rivers flow from the southwest Coastal Plain of South Carolina and merge, forming the headwaters of the Broad River in Beaufort County. The Broad River, some 22 miles long and about 2 miles wide, joins with the Chechessee River near the mouth of the estuary and forms Port Royal Sound. The Broad River and Port Royal Sound are actually the same body of water which form a relatively narrow ecosystem nearly 30 miles long that intrudes well into the Coastal Plain, representing one of the most deeply penetrating estuaries in the state. The estuary is not unlike other estuaries that occur on the coast of the southeastern United States (Fig. 1).

Geomorphology and Geology

The Coastal Plain of South Carolina is comprised of a wedge of sediments that 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 ancient formation is composed of crystalline and metamorphic rocks formed during the pre-Cretaceous period. The sediments which overlie the crystalline base have resulted, primarily, from incessant transgressions and regressions of the sea which probably began as early as the late Cretaceous and continued through the Pleistocene. Even during the Holocene dramatic changes have occurred along the present day shoreline, effected in part by minor fluctuations of the sea and longshore currents, both of which have created extensive erosion and deposition along the barrier islands (Cooke 1936; Colquhoun 1969; Hayes et al. 1975).

Within the project area of Port Royal Sound and the Broad River, environmental change is readily apparent in the conspicuous land forms of the Pleistocene and the more recently deposited silts and clays of the Holocene. Beneath this relatively thin veneer of sands and clays that form the marsh, more ancient formations are represented by Miocene and Eocene with micaceous silty clays, micaceous sandstones, bioclastic lime muds (Hawthorne Formation), and a relatively thick carbonate sequence known as Santee Limestone (Colquhoun 1972)(Fig. 2).

For the most part, the surface soils within the project area are represented by Bohicket-Capers-Handsboro, all of which are very poorly

Figure 1: Location of Port Royal Sound and the Broad River.

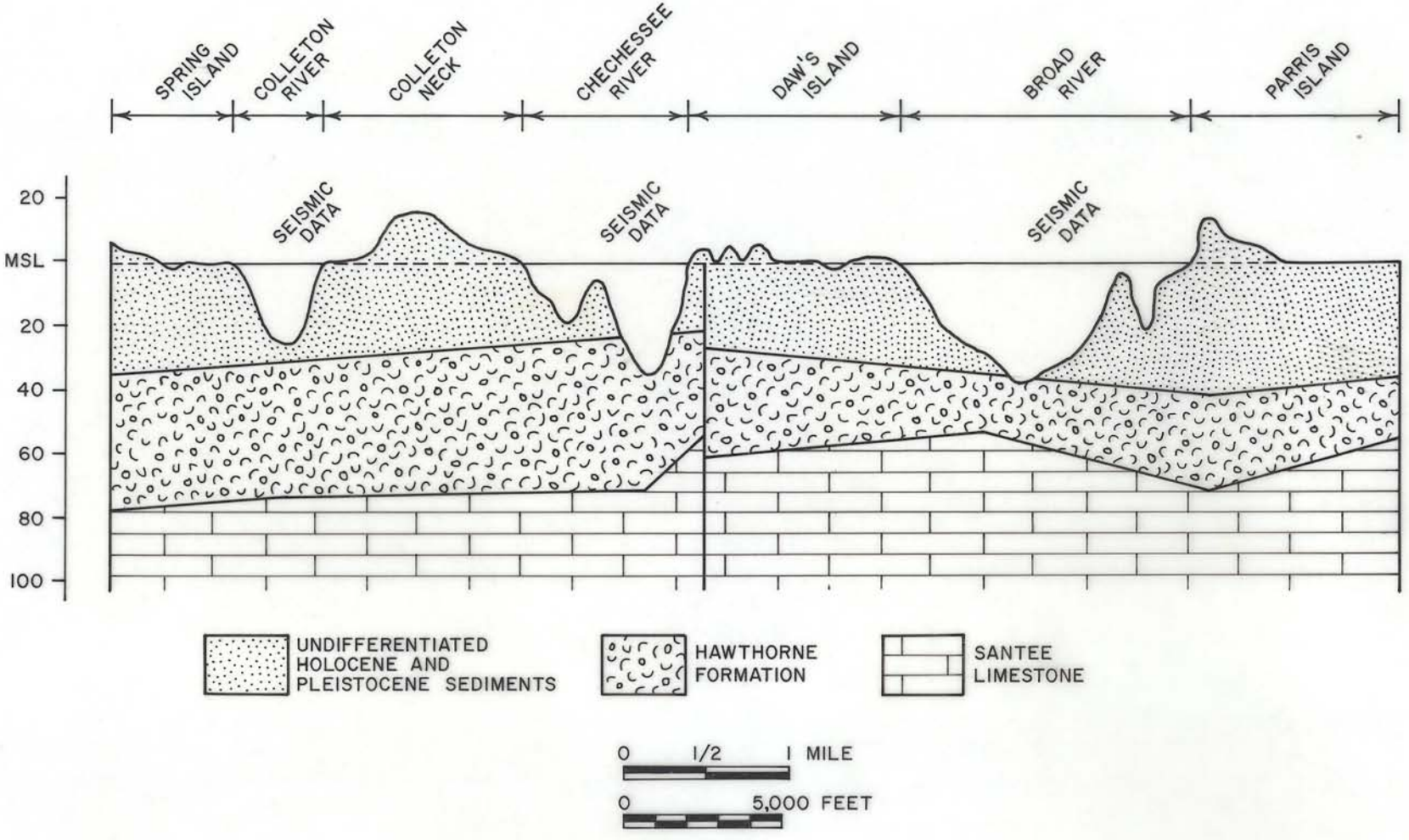

Figure 2: Cross section through the project area indicating geological formations.

drained organic and mineral soils that are flooded daily, or occasionally, by saltwater. The Bohicket soils, which form the predominate series, consist of "deep, very poorly drained, very slowly permeable soils that are formed in silty and clayey marine sediment. These soils are on broad tidal flats less than 3 feet above mean sea level. They are more common on the seaward side of the soil survey but they extend inland for many miles along the larger rivers. These soils are flooded twice daily" (Stuck 1980: 62). These soils also extend from the edge of the marsh at the estuary, across wide flats, dissected by numerous tidal drainages, to the edge of the mainland (Figs. 3, 4). These recently deposited soils rest on earlier Holocene and Pleistocene formations.

While the majority of the marsh sediments are composed of Bohicket soils, the second most frequently occurring series is represented by the Capers. This series is also a "very poorly drained, very slowly permeable soil that formed in a silty and clayey marine sediment. These nearly level soils are on broad, tidal flats and along the lower reaches of larger streams that flow into the tidal flats. Capers soils are flooded by brackish or saltwater at least twice per month, and in some places, twice daily" (Stuck 1980: 62). This soil series is elevated slightly above the Bohicket series, and based on personal observations they represent a thin veneer of silts and clays that rest on Pleistocene formations. In some areas these Pleistocene soils rise above the Capers series and form small and isolated hummocks within the marsh, but occasionally these relict formations will be larger. Along the edge of the estuary where there is considerable erosion, the earlier soils are exposed between the zone of tidal fluctuation, and for the most part they are exceptionally compact and solid (Figs. 5, 6).

In terms of soil types that are readily apparent, the Bohicket and Capers form almost all of the surface soils. The relict portions of Pleistocene land forms, which create the marsh hummocks, are composed of fine and loamy fine sands. These soils are referred to as Murad, Seabrook, Williman, and Yemassee series (Stuck 1980: 28-44). Because of slopes less than one percent, the soils are not well-drained, but with increased slope, drainage can be moderate. The sandy matrix, however, provides moderate to rapid permeability. The smaller marsh hummocks, which are too small for consideration in a large general soil survey, are not indicated in the above series, but based on personal observation, they are definiately associated. The sandy matrix forming the small hummocks supports a wide variety of vegetation similarly seen on the larger hummocks. Both large and small hummocks rise only a few feet above the surrounding silts and clays of the marsh, but the slight change in elevation and soil types significantly changes the flora and fauna.

The soils of the mainland, contiguous with the marsh, are also composed of sands and loamy sands formed during the Pleistocene. Being relatively flat, they are not well-drianed, but moderate and rapid permeability are characteristic features. The majority of these soils are represented by Coosaw, Eddings, Eulonia, Nemours, Wando,

Figure 3: Dissected marsh and Bohicket soils.

Figure 4: Extensive marshland associated with Bohicket soils.

Figure 5: High marsh surface composed of Capers soils, salt meadow Cordgrass, and glasswort. Note palmetto hummocks in the background.

Figure 6: Compact beach with thin veneer of Capers soils covering Pleistocene formation. Note S. alterniflora S. patens, wax myrtle, and red cedar.

and Yonges, in addition to the above mentioned. For a further discussion on these soils, and those within the marsh, see Stuck (1980).

In general terms, then, the landforms of the project area are characterized by recently deposited silts and clays that have accumulated on soils of an earlier geologic episode. In many instances the earlier soils are manifest in relict dune ridges that have suffered varying degrees of attrition and erosion, but retain sufficient elevation and vegetation diversification to create separate and distinct landforms. Other earlier soil horizons are buried under thin veneers of silts and clays, and are occasionally exposed along the shoreline. The deep and poorly drained marsh muds are recent in origin and their intrusion upon older soils clearly demonstrates a significant environmental change induced by rising sea levels.

Hydrology

Characterized by an insignificant amount of freshwater, when compared to an overwhelming abundance of saltwater, Port Royal Sound and the Broad River form a homogeneous estuary. Salinities in the upper reaches of the estuary range from 23% to 25% (parts per thousand), and increase only slightly to 30% - 35% at the mouth of the estuary. This slight difference from one end of the estuary to the other indicates that saltwater penetrates very deeply into the interior of the Lower Coastal Plain. While salinity drops slightly in the northern portion of the estuary, there is sufficient sea water to support communities of oyster and other species of shellfish. The homogeneity of the estuary is strikingly apparent with the appearance of oysters on the pilings of the Seaboard Coastline Railroad, located 23 miles inland. Scattered communities of oysters may even be observed at the confluence of the three small streams that enter the Broad River. Freshwater input into the system is only slight, and the majority originates from the Coosawhatchie River which discharges 300 cubic feet per second. Surface water from watersheds and water provided from underground aquifers is inconsequential. At the mouth of the estuary tidal flow averages about 1.5 to 2.0 million cubic feet per second, thereby creating a dominance of saltwater throughout the entire system (Thompson 1972: 9; Baltzer 1972: 27).

The mean tidal range for the estuary averages about 7.5 feet. In the upper regions fluctuation is approximately 8.0 feet, and near the mouth the range is reduced to about 7.0 feet with appropriate climatic or meteorological conditions, especially with the full moon. Tidal duration is approximately 6.2 hours for each rise and fall, providing a tidal day of 24.8 hours (Kilpatrick and Cummings 1972: 51-55; Baltzer 1972: 27).

Biophysical Environment

Introduction

The floral and faunal environment of Port Royal Sound and the Broad River is diversified and far too complex to be discussed in this report. (For a relatively thorough discussion on the topic, refer to *Port Royal Sound Environmental Study*, conducted by the South Carolina Water Resources Commission.) The biophysical information presented here is to describe the area and to establish environmental facts for archeology.

Flora

The wide expanding salt marshes, composed almost entirely of Bohicket soils, extend for miles throughout the area and provide a support system for the predominant communities of cordgrass (Spartina alteriflora) which range from the edge of the estuary to the mainland. Along the edge of the shoreline, where there is a slight increase in elevation, salt meadow cordgrass (Spartina patens) begins to appear on beaches of mixed soils, and especially with the occurrence of sand. This species also occurs in the areas of the high marsh and around the edges of hummocks, coexisting with glasswort (Salicornia virginica) and sea ox-eye (Borrichia frutescens). Needlerush (Juncus roemerianus) is also adapted to the high marsh surface, and along the fringes of the low marsh. In the upper portion of the estuary, the needlerush appears to grow with more frequency. Although other species inhabit the inundated portion of the marsh, those mentioned certainly constitute the majority.

The marsh hummocks, which occur sporadically throughout the area, support a variety of upland species. The fringe of the hummocks are usually consistent with the presence of needlerush, glasswort, and sea meadow cordgrass, while wax-myrtle (Myrica cerifera) forms on the sandy periphery and mixes with red cedar (Juniperus virginiana). The spanish bayonet (Yucca sp.) will occasionally mix with the peripheral zone, but they also occur within the hummock with equal frequency. The interior of the hummock can vary considerably in regard to vegetation. Dominant communities of palmetto (Sabal palmetto) are seen in some areas, while red cedar will almost dominate other hummocks. In some hummocks there is a wide variety of species, represented by pine (Pinus taeda), oak (Quercus virginiana and Q. nigra), and the above mentioned species.

In the mixed hummocks the understory is also diverse, representing southern magnolia (Magnolia grandiflora), red bay (Persea borbonia), yaupon (Baccharis halimifolia), and saw palmetto (Serenoa repens). Additionally, red cedar and wax myrtle may appear as an interior understory along with palmetto. Greenbriars (Smilax spp.) seem to be

ever present in the higher elevations and within the understory.

The mainland yields a similar inventory of vegetation when compared to the higher hummocks. Along the fringes of the mainland wax myrtle and red cedar form a peripheral zone while pine and hardwoods constitute the forest canopy. The sub-canopy and understory remain virtually the same.

Fauna

The diversified environments of the project area, expressed as subtidal, tidal, supratidal, hummocks, and mainland, support a wide range of vertebrate and invertebrate species. Beyond the periphyton, composed of flagellates, diatons, and other microscopic organisms, the macro-sized animals are considerable in number and represent a great deal of biomass.

The subtidal and tidal species are dominated by extensive communities of oyster (Crassostrea virginica), while quahog (Mercenaria Mercenaria), razor clam (Ensis directus), periwinkle (Littorina irrorata), and the knobbed whelk (Busycon carica) represent additional shellfish. Various species of crabs, especially the blue crab (Callinectes sapidus) and the fiddler crag (Uca pugnax) are seen throughout the marshy area. Although reptiles are few in number, the diamondback terrapin (Malaclemys terrapin) is a frequent resident of the shoreline, while the loggerhead turtle (Caretta caretta) is relatively infrequent and appears only during seasonal periods when eggs are deposited on the sandy beaches. Avifauna are numerous, evidenced not only by the permanent residents, but by winter residents and transients. Readily identifiable are various species of terns (Sterninae), gulls (Larinae), sandpapers (Scolopacidae), plovers (Charadriidae), herons (Ardeidae), loons (Gaviidae), and ibis (Ciconiidae). The brown pelican (Pelecanus occidentalis), black skimmers (Rynchops nigra), and the oystercatcher (Hoematopus palliatus) are frequently seen along the waters, shoreline and marsh. Mammalian populations are relatively scarce in the marshy areas and along shorelines that are far removed from the mainland. The most frequent resident of the marsh is the raccoon (Procyon lotor), who utilizes the shellfish and curstacean resources. Although white-tailed deer (Odocoileus virginianus) are occasionally seen, they are transient, however, since they move from the mainland to the protective environment of the hummocks.

These remote hummocks, surrounded by meadows of cordgrass and other marsh vegetation, fail to provide much of a life support system for shellfish. Local avifauna, however, are perhaps the greatest utilizers of the habitat. The wood ibis (Mycteria americana) and the white ibis (Guara alba) are frequently seen, evidenced by extensive nesting, but other marsh and mainland species often use this environment. Among the mammalian populations, the raccoon and species of mice and rats (Cricetidae) are common residents, but marsh rabbits (Sylvilagus palustris) also make frequent appearances. The white-

tailed deer, common to the upland environments, will make use of the thick peripheral cover in an attempt to escape hunting pressures on the mainland.

While the very edge of the marsh at the mainland may support small and scattered communities of marine organisms, limited numbers of shellfish and crustaceans exist. The diverse ecotone, composed of mixtures of wax myrtle, cedar, pine, and oak, yields a wide range of species. White-tailed deer, raccoon, rabbit, mice and rats, fox (Vulpes fulva), gray squirrel (Sciurus carolinensis), fox squirrel (Sciurus niger), and bobcat (Lynx rufus) represent the mammalian fauna. Among the more conspicuous avifauna are numerous species of ducks (Anatinae), crows and jays (Corvidae), mockingbirds and thrashers (Mimidae), thrushes and robins (Turdidae), owls (Tytonidae and Strigidae), meadowlarks, blackbirds, and orioles (Icteridae), finches, sparrows, and buntings (Fringillidae), kingfishers (Alcedinidae), and woodpeckers (Picidae). Vultures (Cathartidae), eagles (Buteoninae), ospreys (Pandionidae), and turkeys (Meleagrididae) are infrequent. Smaller birds of prey are represented by hawks and falcons (Buteoninae and Falconinae). In addition to these species, birds of the marsh tend to frequent the edge of the mainland.

The land mass, flora, and fauna indicate that the project area is relatively non-polluted, and in fact is considerably unaltered in terms of contemporary standards. Air and water quality is excellent, and for the most part, the area is utilized by seasonal fishermen who commercially extract shellfish, fish, shrimp, and blue crab. Of these various industries, shrimping is probably the most active, but crabbing is also a dynamic enterprise.

Historical Modifications of the Physical Environment

Although the physical environment of Port Royal Sound and the Broad River appears generally unchanged since the publication of Gasciogne's Map in 1776 and Mill's Atlas in 1825 (see Figs. 7, 8), changes in land form and channels have occurred. These changes are certainly related to the everyday factors of wind, waves, tides, longshore currents, and storms.

Longshore currents and other agents or erosion have modified the immediate coastline in the vicinity of Hilton Head Island, St. Phillips Island, and Capers Island. Most conspicuous is the amount of accretion incurred on the southern edge of Capers Island on Bull Point, while the same has occurred on the southern edge of Bay Point Island. Both of these progradations, composed of sands and muds, have been moving steadily towards the entrance of Port Royal Sound. On the opposite side of the channel, Hilton Head Island has been eroding and tidal creeks have been filling. The Gascoigne Map and Mill's Atlas both indicate the presence of small creeks; however, recent maps only indicate remnants of creeks and areas that have been filled.

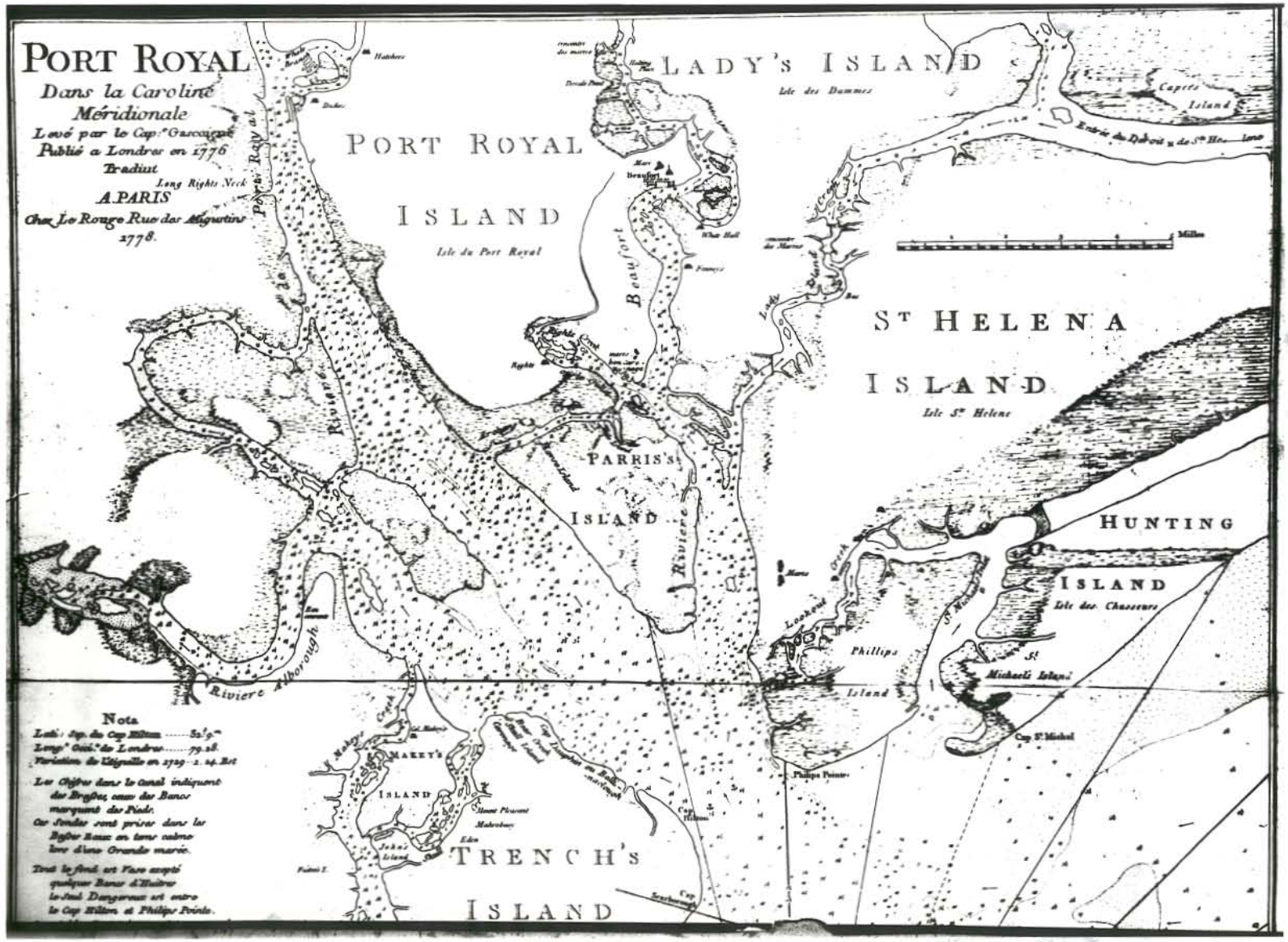

Figure 7: The Gascoigne Map of 1776.

Figure 8: The Mill's Atlas Map of 1825.

Severe erosion has also occurred along the northeastern side of Hilton Head, exemplified not only by map information, but with the appearance of shallow, sandy shoals that exist for several hundred feet out into the sound. During the recent hurricane of 1979, Hurricane David, severe damage occurred along the northeastern side of the island, and attempts are being made to restore and stabilize the elevated sandy beach.

Within the Beaufort River changes are monitored with the appearance and disappearance of small islands and mud banks. Tidal creeks on the west and east shores of the river have changed flow patterns and now meander differently, while other creeks have disappeared. The west edge of St. Helena Island, contiguous with the river, has been continuously eroding and efforts are constantly being made to stabilize the beach. Recent excavations on the eastern portion of Parris Island, concerning the sixteenth century Spanish occupation of Santa Elena and Fort San Felipe II (South 1979), have demonstrated that a significant portion of the fort has washed into the adjacent marsh overlooking the Beaufort River. While the eastern side of Parris Island appears to be eroding rather quickly, the southern tip of the island is prograding progressively into Port Royal Sound.

Daw's Island, located between the Broad and Chechessee Rivers, has prograded southerly for a distance of about 1000 feet since 1776. During that time the southern extent of the island was marked with the occurrence of several large shell middens, and only shallow mud banks extended to the south. By 1825, however, the island had prograded several hundred feet past the shell middens, and during a later time, this accretion of sediments became heavily dissected with a large tidal creek and many smaller tributaries. Presently, extensive mud flats extend for about one mile beyond the edge of the island which attests to continuous southerly accretion.

Shoreline changes are monitored throughout the entire estuarial system in the form of erosion and deposition. The most severe changes are seen in the lower portions of the estuary, but change also occurs in the upper area. Cotton Island, for example, located 18 miles inland at the confluence of the Broad River and Whale Branch, has been altered considerably in 200 years. Gascoigne's Map indicates that the island was once L-shaped with a series of small interspersed islands situated along the northwest shore. By 1825, however, the islands and the contiguous shallow water had apparently filled with sediments and formed an oblong-shaped island. During the next 150 years the marsh continued to expand, and presently, the island is surrounded with extensive marsh and meadows of cordgrass. Cotton Island, then within 200 years, underwent extensive modification which demonstrates that shoreline and land form can change dramatically in a relatively short period of time.

In other portions of the estuary, additional change is reflected in the presence and absence of tidal creeks, mud flats, water depths, shoreline change, and incessant erosion and deposition. While the general shape of the estuary has remained relatively constant through

two centuries, changes in the physical environment demonstrate that the estuary is a mutable system, given easily to modification.

Considerations of a Paleoenvironment

During the last 40 millennia the environment of South Carolina has been subjected to continuous change, but unfortunately paleobotanical studies have been minimal. As W.A. Watts has stated, the "vegetational history...of the southeastern United States is poorly known" (Watts 1971: 676), and Donald Whitehead agrees that, "comparatively little is known concerning Pleistocene vegetational and climatic changes in unglaciated eastern North America" (Whitehead 1965: 416). In addition to the above generalizations, a literature search for local paleobotanical information indicates that such studies in South Carolina are poorly represented, and as a result very little is known about ancient environments.

The palynological studies by Watts and Whitehead have dealt with the accumulative sediments found in ponds and lakes, and in many instances, these depositional records have yielded hiatuses in the sequence of stratification. These geologic data were gathered from areas in Virginia, North Carolina, South Carolina, Georgia, and Florida which presents a general picture of climatic and vegetational history of the region. Although many other studies are needed for specific and localized environments, the research does provide a format of vegetational change (Table 1)(Michie 1979: 12-18).

While there are problems inherent in palynological and sea level studies, some conclusions can be drawn. During the height of maximum glaciation sea level probably dropped more than 100 m approximately 17,000 years ago, thus exposing vast areas of the continental shelf, and extending river channels across a newly developed coastal plain. Following a period of glacial intensity, the Wisconsin glaciers began receding northward, and subsequently sea level rose with the water released from glacial melting. During the first several millennia sea level rise was relatively rapid and rose at an average of about 80 cm per one hundred years. By about 8,000 or 9,000 years ago the rate of continental submergence decreased and transgression was reduced to about 3 cm per one hundred years (Fig. 9). Although the sea level curve may indicate a constant and uninterrupted rise of ocean water, Flint (1971: 315-342) acknowledges minor fluctuations created by oscillating glaciers and climate. Similarly, Fairbridge (1961: 556) has suggested that there were minor transgressive and regressive phases that produced eustatic curves during rise (Fig. 10).

On the local scene, recent investigations have indicated that significant environmental change and sea level fluctuations have occurred during the last four millennia and have affected the estuaries. Michie (1973) reported an inundated shell midden which is flooded daily with nearly five feet of sea water, and DePratter (1977) has demonstrated that a significant fluctuation occurred from about 3,000 to 2,500 years ago. This information is based on buried archeological

TABLE 1

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

TIME (B.P.)	AGE	VEGETATION	CLIMATE
40,000	Sangamon	Oak/hickory forests, abundance of pine, presence of cypress, sweetgum, etc.	
35,000			warm trend
30,000		Climate and forests changing	
25,000		Northern forests begin to appear	cooling
20,000	Wisconsin full-glacial	Semi-boreal, open forests 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	
5,0000		Oak and hickory reappear in high percentages. Pine abundant also cypress and sweetgum. Emergence of present-day forests.	warm trend

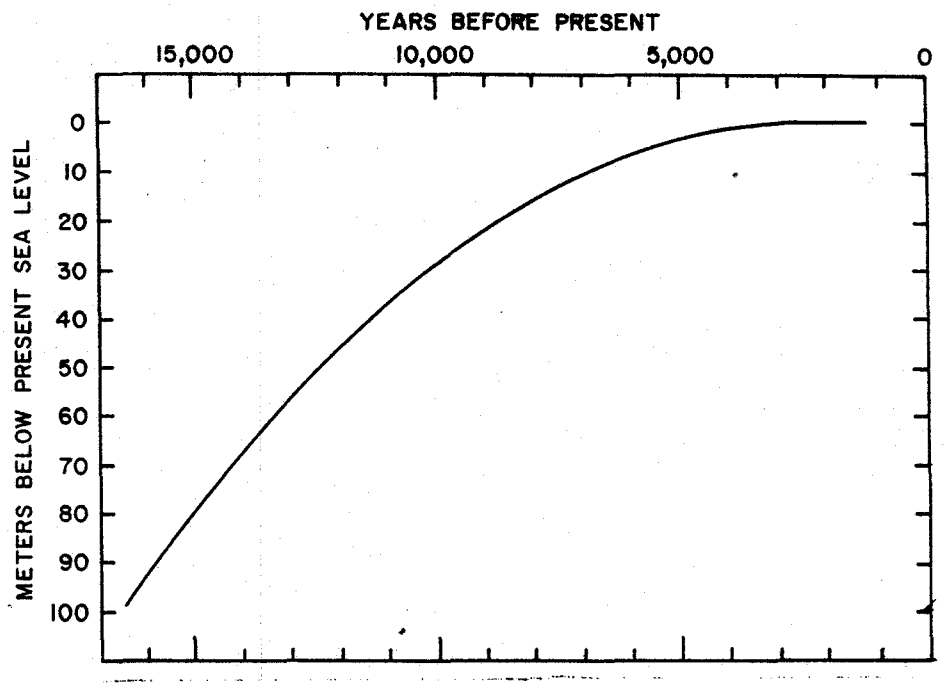

Figure 9: Proposed submergence surve based on radiocarbon dates related to various stands of sea level. (After Flint 1971).

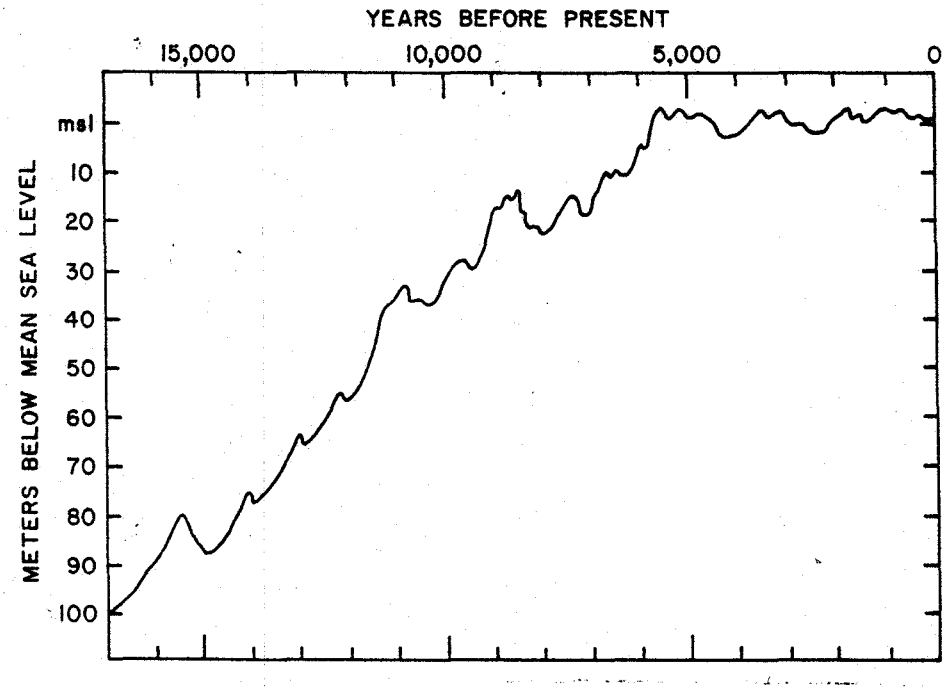

Figure 10: Eustatic sea level curve based on submarine and glacial morphology, including radiocarbon dating. (After Fairbridge 1961)

sites located on the seaward edge of barrier islands on the Georgia coast. The presence of specific aboriginal ceramics of known age were discovered beneath late Holocene marsh peats, silts, and clays, and the radiometric dating of buried and associated tree stumps provided the parameters of time. The buried sites indicate that sea level had peaked and remained relatively constant at an elevation about one to two meters below present sea level. For several centuries the elevation apparently remained stable, but by 3,050 years B.P. the sea was dropping, and by 2,750 years B.P. the receding waters had reached an elevation of about three or four meters below the present elevation. For a relatively short period of time the sea remained lowered, but by 2,550 years ago it was rising and probably attained its present elevation about 2,300 years ago (DePratter 1977).

Evidence of multiple fluctuations during the late Holocene is reported by Brooks et al. (1979) and Colquhoun et al. (in press). Based on geological information obtained from marsh facies, and a study of micro flora and fauna contained within the marsh sediments, these authors were able to establish some indications of fluctuating sea levels during the late Holocene. Further studies involving coastal estuarine shell middens and their specific locations, paired with the locations of interriverine sites, provided additional information that supports transgressive and regressive phases of sea level that occur on the order of one every four or five hundred years. Such fluctuations suggest one to two meters of rise and fall (Fig. 11).

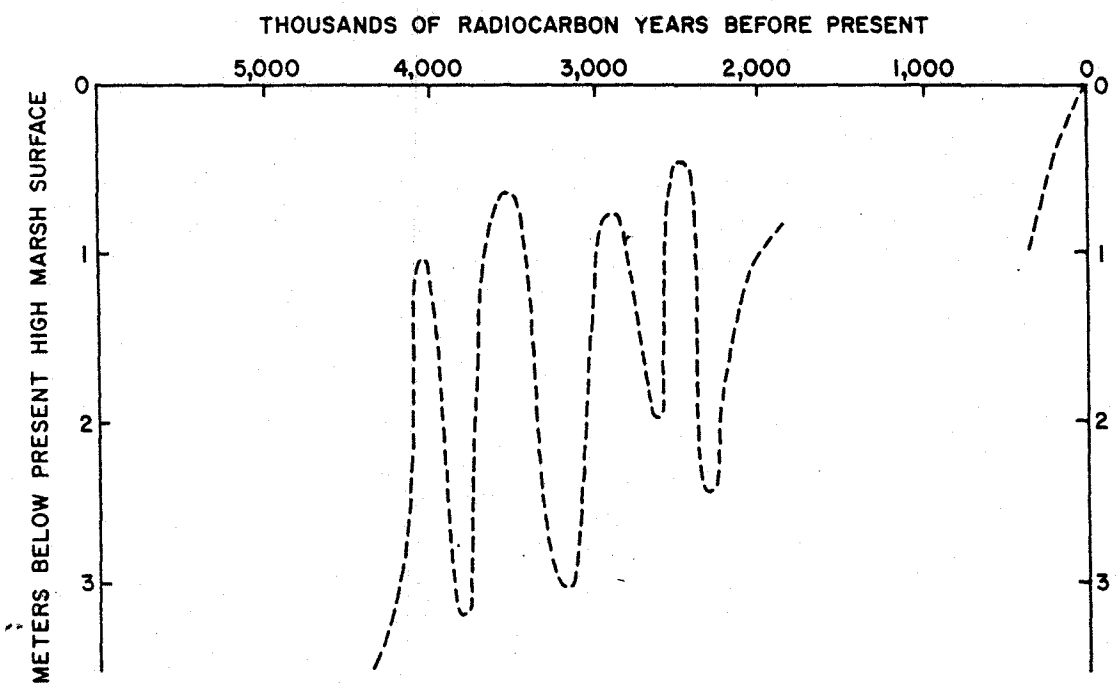

Figure 11: Proposed sea level fluctuations based on geological and archeological information, and radiocarbon dates.

These successive fluctuations and their effect on the ecosystem must have had an effect on the subsistence patterns of the coastal aboriginal populations. Through a relatively rapid environmental change the exploitative potential of the estuary was also changing, which certainly had an effect on the settlement patterns of the coastal populations. Thus, at different periods of time and phases of sea level stand, resources were constantly changing with respect to spatial location, and subsequently human populations had to adapt.

At some early period of time, prior to the tenth millennium B.P., the area of Port Royal Sound and the Broad River represented an ancient river valley, probably the channel of the Coosawhatcie River. The upland areas probably supported a mixed forest of jack pine and spruce with few hardwoods. In the alluvial floodplain, oak and hickory probably grew as galley forests. With changing climates, the conifers were replaced with varieties of northern hardwoods while mast bearing trees were increasing in number. The area probably remained a river valley during this time, but with the emergence of present-day forests some 5,000 years ago, the estuary was probably forming as saltwater was constantly moving inland and drowning the old river valley. By at least 3,800 years B.P. the Indians were utilizing the estuarine resources, as evidenced by large heaps of shellfish remains. Predictably, this changing environment, which ranged from terrestrial to marine, produced significantly different resources. These changing resources would demand various patterns of settlement and subsistence.

AN ARCHEOLOGICAL REVIEW OF SOUTH CAROLINA 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 entered 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 probability, 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 these people were living along major river valleys and 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 South Carolina has failed to produce positive evidence of subsistence patterns pertaining to specific megafauna exploitation, a coastal site located near Myrtle Beach has recently yielded the remains of a juvenile mastodon and the tenuous association with stone tools (Michie 1976a; 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 in the process of dredging a creek. Geologic interpretations suggest a 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 dibitage (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, slough, and bison were also extracted from the late Pleistocene environment (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, which has been previously discussed. With the climatic and environmental change during the last of the

Pleistocene, the megafauna 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, and within several millennia the present-day forests emerged. During these environmental changes the Archaic period was also witnessing a change in settlement, subsistence, and technology in order to meet the environmental variability.

The Archaic is represented by 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 end-scrapers, burins, pieces esquillees, and blades, this segment of the Archaic lasted from about 8500-6000 years B.C. Subsistence was apparently directed towards 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 Dave (Weigel et al. 1974). By the end of the Early Archaic technologies were changing and new projectile point types and tools emerged.

The Stanley and Morrow Mountain points, along with the Guilford, (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 years 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. appears 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 1969) demonstrate a heavy dependence on mollusks, 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 had changed to 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 perishable materials. Another cultural innovation associated with shell middens of the Late Archaic/Formative period was the development of fiber tempered pottery, and sand tempered pottery, which appear to coexist. Even though subsistence appears to have been directed towards shellfish collecting in specific areas, the indigenous Americans continued to exploit the white-tailed deer and other resources available in the forest and stream. The traditions of the Late Archaic diminished by 1500 B.C. as rising production and development of ceramics, and the cultivation of specific plant foods introduced another cultural tradition.

Woodland Period

The Woodland period, which lasted from about 1500 B.C., was probably rooted in the traditions of the Archaic. With the development of new technologies, such as pottery production, small triangular projectile points made of lithic materials 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).

With movement through time, ceramics developed various forms of size, shape, temper, and decorative motifs, while triangular projectile points became smaller and more delicate. Pottery is recognized through time and space with specific tempering such as sand tempering, sherd tempering, and shell tempering, while the decorative motifs are characterized by cordmarking, fabric impressions, net impressions, check stamping, carved paddle stamping, simple stamping, and occasional burnishing and plain. Concomitant with ceramics, burial mounds begin to 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 within varied environments.

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 emigration to the New World during the seventeenth and eighteenth centuries (Willey 1966). This period is characterized by large truncated temple mounds frequently associated with smaller burial mounds, with subsistence strategies oriented towards the cultivation of specific food crops, such as corn, and the continued 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 its temple mounds and a large scale shift towards cultivation, the Mississippian period represents a more sophisticated social and religious system with marked sedentism (Willey 1966; Ferguson 1971).

Ceramic vessels became larger and decorations were applied with carved paddles of complicated curvilinear and retilinear designs. Large urns were frequently made for the storage of grain, while other utilizations included the interment of 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 regard to 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, in addition to forest exploitations, provided sufficient biomass for the population.

The Mississippian period, with close cultural ties with the traditions in the Woodland period and Mississippi valley, collapsed soon after its introduction to the white Europeans who continued to migrate to the Atlantic coastal states. Within a few decades the aboriginal populations had suffered extensively from disease and exploitation from the white traders. By the mid-eighteenth century the Indians and their cultural systems had nearly disappeared.

Historic Period

Prior to the English settlement at Charles Town in 1670, the Spaniards and Frenchmen initially explored and attempted colonization of inland and coastal areas. These sporadic and unsuccessful attempts at gaining a foothold on Carolina soil lasted for more than a century.

As early as 1520, the Spanish were sailing past the Carolina coast in search of potential lands suitable for settlement. The first effort to colonize the area was made by Lucas Vasquez de Allyon in 1526. The small colony was established somewhere in the vicinity of 33° latitude, and in an area contiguous with an estuary. Although the exact location is not known, the settlement was soon aborted because of summer fevers and a severe winter. De Allyon died of malaria, the black slaves revolted, and the colony was thrust into mutiny. The battered colony, 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. 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. DeSoto turned north towards the Blue Ridge Mountains and eventually entered what is now Tennessee (Savage 1956: 36).

By 1565, the Spanish had established considerable influence and control in Florida, and they steadily pushed up the coast in attempts to establish and maintain additional colonies. As a result Pedro Menendez de Aviles built an outpost, Fort San Felipe, on Parris Island at Port Royal Sound in 1566. Surrounding the fort was the town of Santa Elena, which lasted for ten years. In 1576, the town and fort were burned by embittered Indians. However, the Spaniards returned and erected a new fortification and rebuilt portions of the town that lasted until 1587. The Spaniards withdrew and abandoned the town because of increased conflicts and contentions with the French who were competing for the area. Too few in number to defend the outlying and uncertain territories, the Spanish retreated into the relative security of Florida (Wright L. 1976; South 1979). Although the Spanish continued to claim territories from Florida through portions of South Carolina, and while several missions persisted up the coast until as recently as 1686, the Spanish were losing their stronghold (Rogers 1973: 5).

The French also made attempts at colonization in the coastal areas in the sixteenth century. 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 also evidence to suggest that a French fortification was constructed near the mouth of the Edisto River in the 1570s, but it too was abandoned (Wright L. 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 and Proprietors established a settlement at Albermarle Point near the present city of Charleston. The initial years 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 L. 1976: 46). During the earlier years, thousands of deerskins were shipped to England, in addition to pitch, tar, resin, and turpentine, materials that were necessary for the construction and maintenance of English ships.

The utility of the growing colony was quickly realized by the mother country, and trade among Indians, the colonists, and England soon flourished. In the latter part of the seventeenth century rice production became an important crop, and by 1700, the coastal area of South Carolina was shipping 300 tons per year to England (Wright L. 1976: 73). Because rice production required considerable acreage of specific soils and certain environmental conditions, people began radiating out from Charles Town to acquire large tracts of bottomlands. The inland

swamps near the coast were ideal for the growing of rice because these lowlands provided fertile soils and an abundance of water, while the areas only 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. This important money crop lasted for nearly two hundred years, but the increasing occurrence of floods and coastal hurricanes racked havoc on the crop. Subsequently, growers were brought to the edge of ruin (Wright L. 1976: 73-74).

As a competing crop, indigo in the mid-1700s was being shipped to England in large quantities. Developed during the beginning of the 1740s, it had reached a level of enormous production by 1750. Unlike its competitor, rice, the indigo plants could be adapted to many varying environments which included the upland areas of the Coastal Plain. Free from floods the crop continued in popularity. With an overproduction of rice during England's war with Spain and France, and a reluctance to export the product, indigo gained a firm hold on the Carolina economy. The production of this product for clothing dye remained steadfast until the invention of the cotton gin in 1791 (Wright L. 1976: 79-80).

From their inception at the beginning of the eighteenth century, plantations 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-eighteenth century had become prosperous, especially in terms of rice, indigo, and forest products, and this prosperity coincided with slave labor. The small farmers, without large tracts of land, political influence, or slave holdings, failed to compete with their wealthy contemporaries. As a result, the small farmers moved inland and away from the area of Charleston (Wright L. 1976: 80).

Attending this movement out of Charleston, people moved north and south along the coastal areas seeking rich and fertile soils for cultivation. This early migration, which took place shortly after the establishment of Charles Town in 1670, led to the development of several coastal towns, one of which was Beaufort. Encouraged by free land under the land grant system, people began acquiring properties in the vicinity of the Combahee and Broad Rivers, in addition to Port Royal, St. Helena, and Lady's Island, all of which are situated near the town of Beaufort. By 1710, many enterprising families had begun to settle the area, and foreseeing the potential for capital return, requested the Charles Town government and the Lords Proprietors of London to fortify, protect, and establish a town. Furthermore, they requested a feasibility study concerning a seaport, utilizing Port Royal Sound and the Beaufort River. By at least 1715, the area was established as a town and British ships

were taking specific naval stores such as pitch, turpentine, and tar. A small fortification was also constructed to protect against the Spanish and Indians. Its hopes, however, for becoming a large trade center failed to develop. Beaufort was not strategically located, and this more than anything else may have discouraged its growth. By the very fact that the area is given to extensive marshlands, numerous creeks, and rivers, accessibility was difficult. Prior to 1958, only a single bridge and highway connected Beaufort with the lowcountry (Runnette 1978: 1-5).

An Archeological Overview of the Project Area

The majority of research concerning Port Royal Sound and the Broad River has been oriented towards site description, and especially ceramic identification within large shell middens. Although recent explorations have been substantive and problem oriented, the majority of work has centered around the particularistic and normative frameworks.

C.B. Moore (1898) investigated several sand and shell mounds in the vicinity of the project area. His report deals with a temple mound and its associated burial mound which are 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 forms of midden debris and apparently capped with sand and clays. Continued construction with soil raised the mound to a height of about 14 feet. Postmolds found within successive layers indicates that some form of house structures existed on various surfaces, suggesting the presence of temple enclosures. Accompanying the large mound is a smaller burial mound located about 35 yards to the south. This mound disclosed the presence of human remains, pottery discs, shell beads, and other various artifacts (Moore 1898).

The other mounds investigated by Moore (1898) indicate various time periods ranging from Late Archaic through the Mississippian period. Excepting the large mound on Barnwell Island, Moore was somewhat disappointed with the area, and the fact that he failed to find any burial urns or other spectacular discoveries eventually led him to write, "On the whole, it would seem probable the South Carolina coast has little to offer from an archeological viewpoint" (Moore 1898: 166).

In 1923, Major George H. Osterhout excavated what was supposed to be Charles Fort (Stephenson 1979). The excavation led to the recognition of the Spanish occupation of Santa Elena on the southern tip of Parris Island. Without the knowledge of Spanish ceramics

and other pieces of material culture, Osterhout assumed the area to have been occupied by the French under Jean Ribault in 1562. In 1933, Warren K. Moorehead, along with Woldemar H. Ritter and Hughes H. Lake, excavated a portion of the Chester Field shell ring (38BU29) located on Port Royal Island. A sample 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 represent a considerable span of time, ranging from fiber tempered through the later Savannah series.

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 as Bermuda Bluff). Presently, the site has been severely eroded and the contents have scattered across the beach. Slightly north of the Jones Island site at the confluence of the Beaufort River and Chowan Creek, another site was investigated which contained shellfish remains and later ceramic types. This site was also investigated during our recent survey, but the midden Flannery (1943) mentioned was not found. There are, however, shell midden contents scattered across the beach which includes oyster shell and ceramics associated with the Savannah and Deptford periods. Perhaps, then, the midden debris seen on the beaches of Cat Island and Jones Island represents the effects of an expanding estuary and the dynamics of change since the original investigations of 1933.

Outside the project area, Moorehead and the others excavated portions of a sandy burial mound located opposite the town of 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, and it was the first attempt at excavating a shell ring within the area of Beaufort. The second attempt occurred on Skull Creek, immediately south of Port Royal Sound and on the northwest portion of Hilton Head Island. Test excavations at the Large and Small Ford shell rings disclosed the presence of fiber tempered pottery, engraved bone pins, several Savannah River Archaic bifaces, and baked clay objects. Additionally, there were sand tempered varieties of ceramics with similar linear punctations. The investigator, Calmes (1968), also obtained radiocarbon dates from each site.

Surveys and personal inquiries eventually led to a series of published articles regarding Daw's Island and an inundated shell

midden: Michie (1970, 1973, 1974, 1976); Hemmings (1969); Brockington (1971); and Rathbun, Sexton, and Michie (1980). These various 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, the survey yielded the presence of numerous small shell middens associated with the latter 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 various historians agreed that the site represented the Spanish settlement of Santa Elena and Fort San Marcos. In 1978, considerable interest was generated by the National Geographic Society and the Institute of Archeology and Anthropology. A brief field investigation in the summer of 1979, produced substantial information supporting the contention of 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 of the Spanish fortifications.

In summary, the previous investigations within the area of Port Royal Sound and the Broad River were relatively brief, while a few have yielded valuable data. Moore indicates that Mississippian mounds occur within the area, while Moorehead and Calmes have provided shell ring information. Research establishes a Spanish occupation in the 1500s. From the Daw's Island shell midden, environmental changes have been demonstrated in addition to other facets of aboriginal behavior. Such information is basic to the formulation of research designs.

SITE DESCRIPTION AND EVALUATION

Introduction

The recent reconnaissance survey of Port Royal Sound and the Broad River has yielded a considerable number of historic and prehistoric sites (Figs 12-16). These sites are varied in archeological and geological structure. Many of the sites were single component, while many more were multi-component (Tables 2-4) with temporal variability during each phase of occupation.

Historic and prehistoric cultural materials occur throughout the project area, and may be found on the recently deposited Bohicket soils and related oyster shell deposits. The exact nature of these materials, as they relate to deposition, is not clearly understood. Bottle fragments, ranging from early Historic periods through the present, occur with impressive frequency, and probably represent nothing more than discarded bottles that have drifted to a remote beach. The appearance of historic ceramics, however, is not easily explained by drift. Whenever one or two sherds occur on recently deposited soils near a known historic occupation, the sherds probably represent movement during severe storms, but when sherds are discovered many miles from any potential source of donation, explication is difficult. Ceramics are easily transported on sandy soils, but movement across silty/clayey soils and across the bottoms of creeks and streams is unlikely. Therefore, the occurrence of these materials is not understood. Such sites, however, will be noted.

Archeological sites within the estuary appear in every conceivable condition. In all circumstances the sites have suffered some form of erosion which ranges from slightly eroded to completely eroded. Beyond this, cultural materials have been scattered across beaches, for apparently great distances, while other materials are confined to relatively small areas and have suffered little movement. In general terms the northern area of the estuary appears more stable and cultural materials are usually found very near the matrix from which they have washed. In the southern area, and near the mouth of the estuary, sites have suffered a great deal of erosion, especially if they are located near or adjacent to large bodies of water. Sites situated along tidal creeks and marsh hummocks, although eroded, retain intact portions of their original structure and are suitable for future investigations.

The dynamic system of the estuary is continuously altering the physical structure of the environment, and predictably, sites are affected. During the discovery of certain sites, it was difficult to determine the appearance of the site prior to its destruction. Several of the sites that had yielded the remains of fiber tempered vessels probably represented shell middens during earlier times, but with erosion the sites have been significantly altered. As a result,

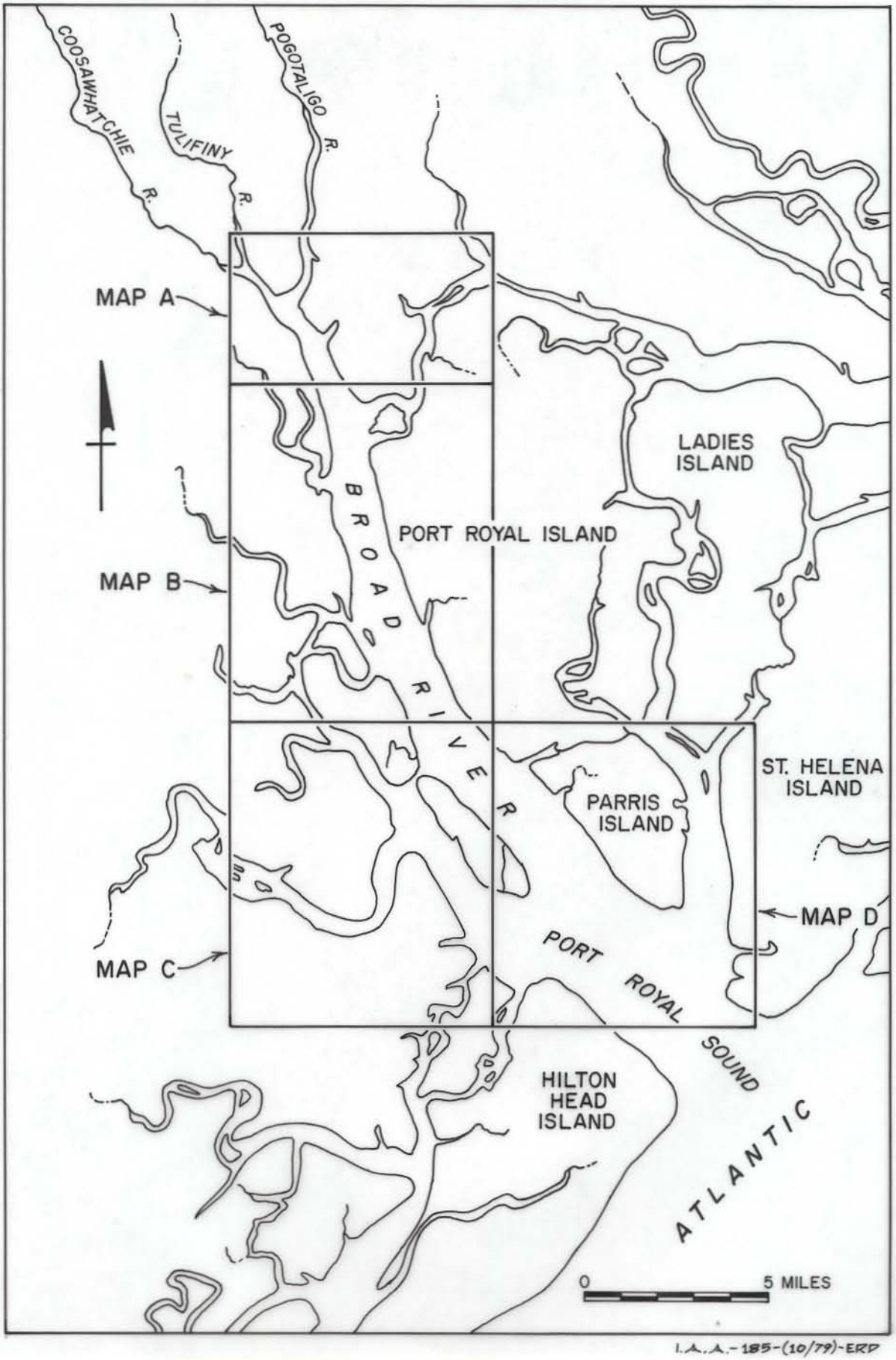

Figure 12: Site locations within Port Royal Sound and Broad River.

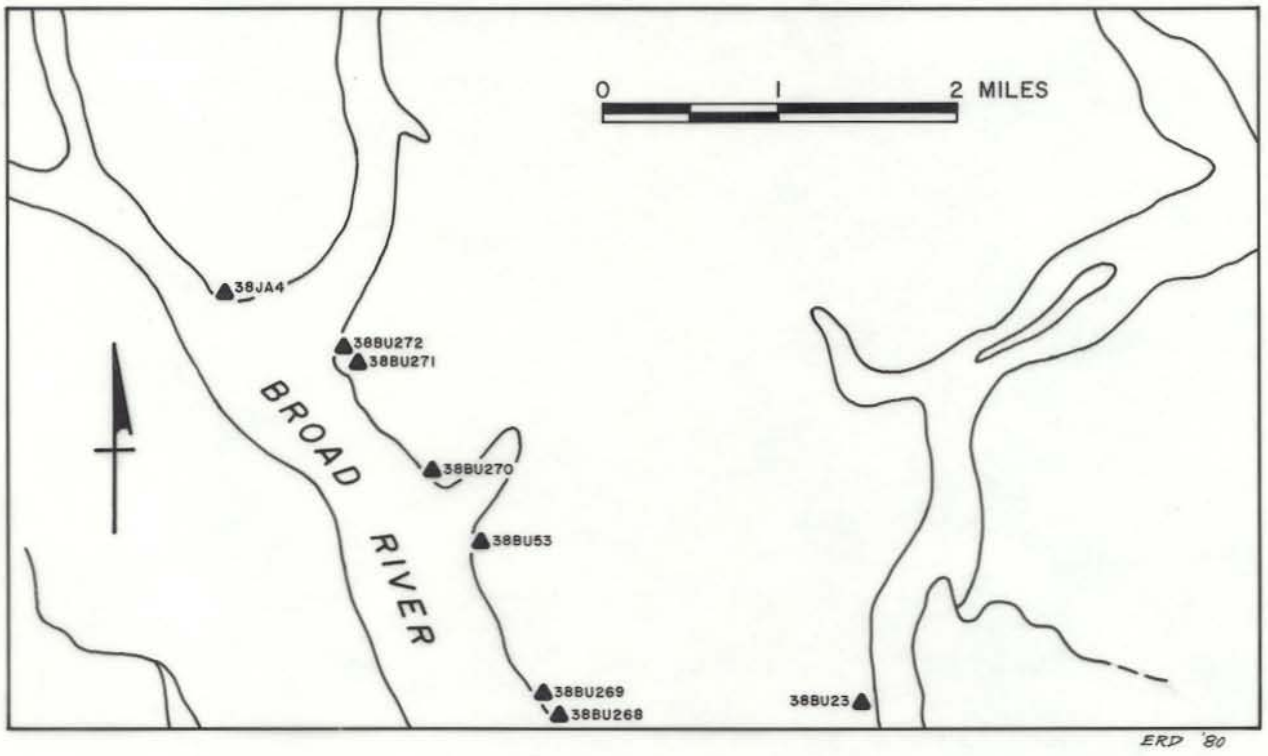

Figure 13: Site location within Port Royal Sound and Broad River (Map A).

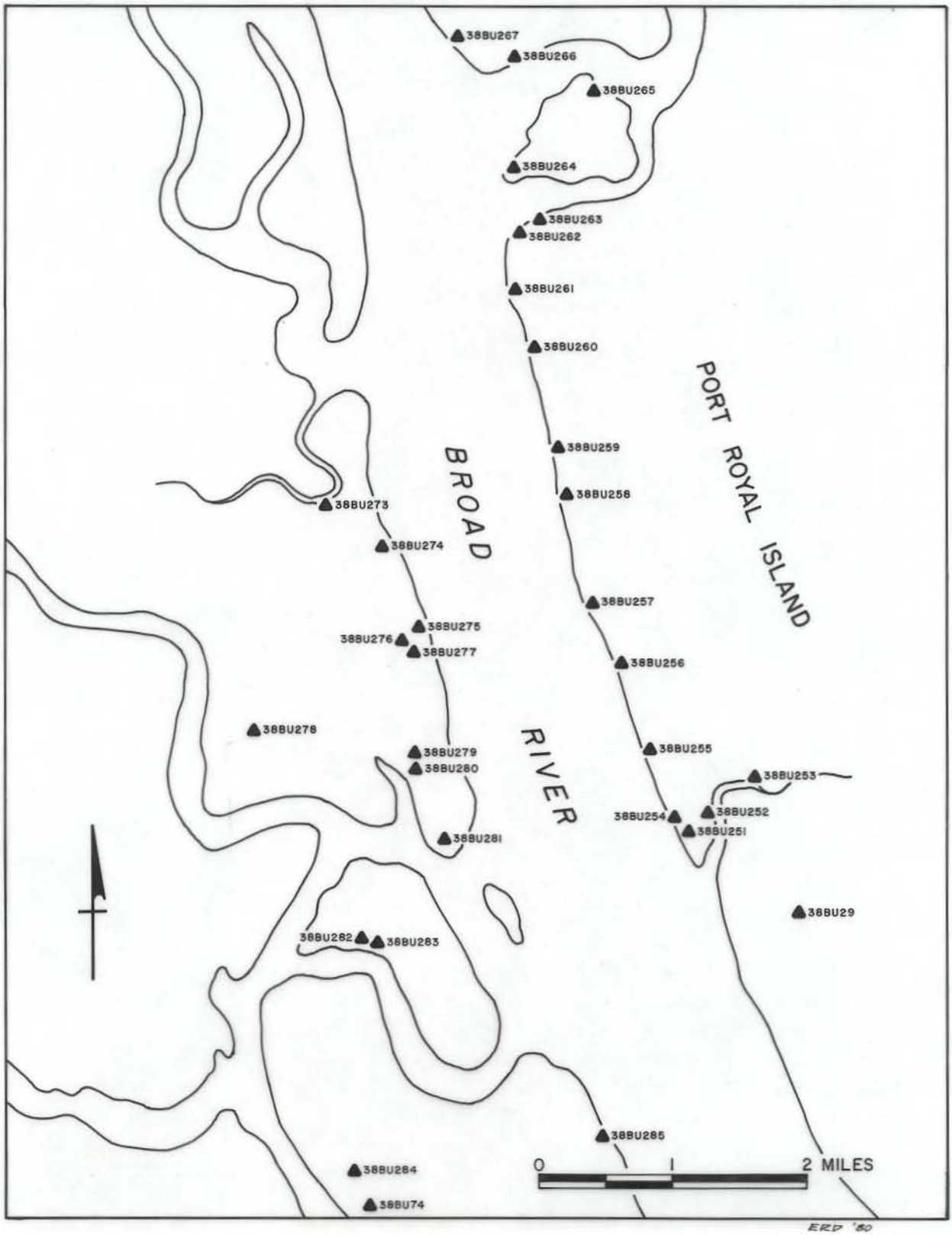

Figure 14: Site location within Port Royal Sound and Broad River (Map B).

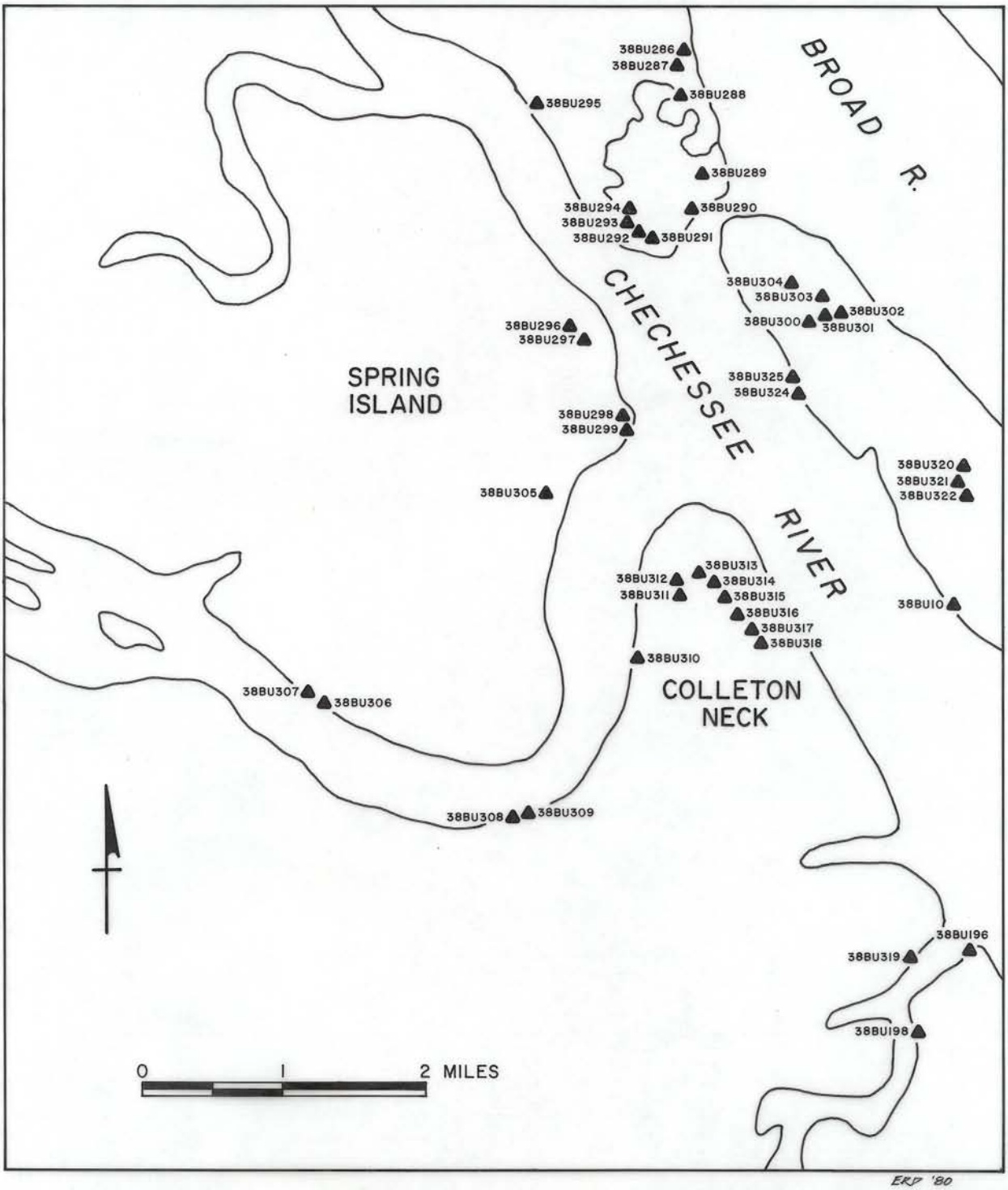

Figure 15: Site location within Port Royal Sound and Broad River (Map C).

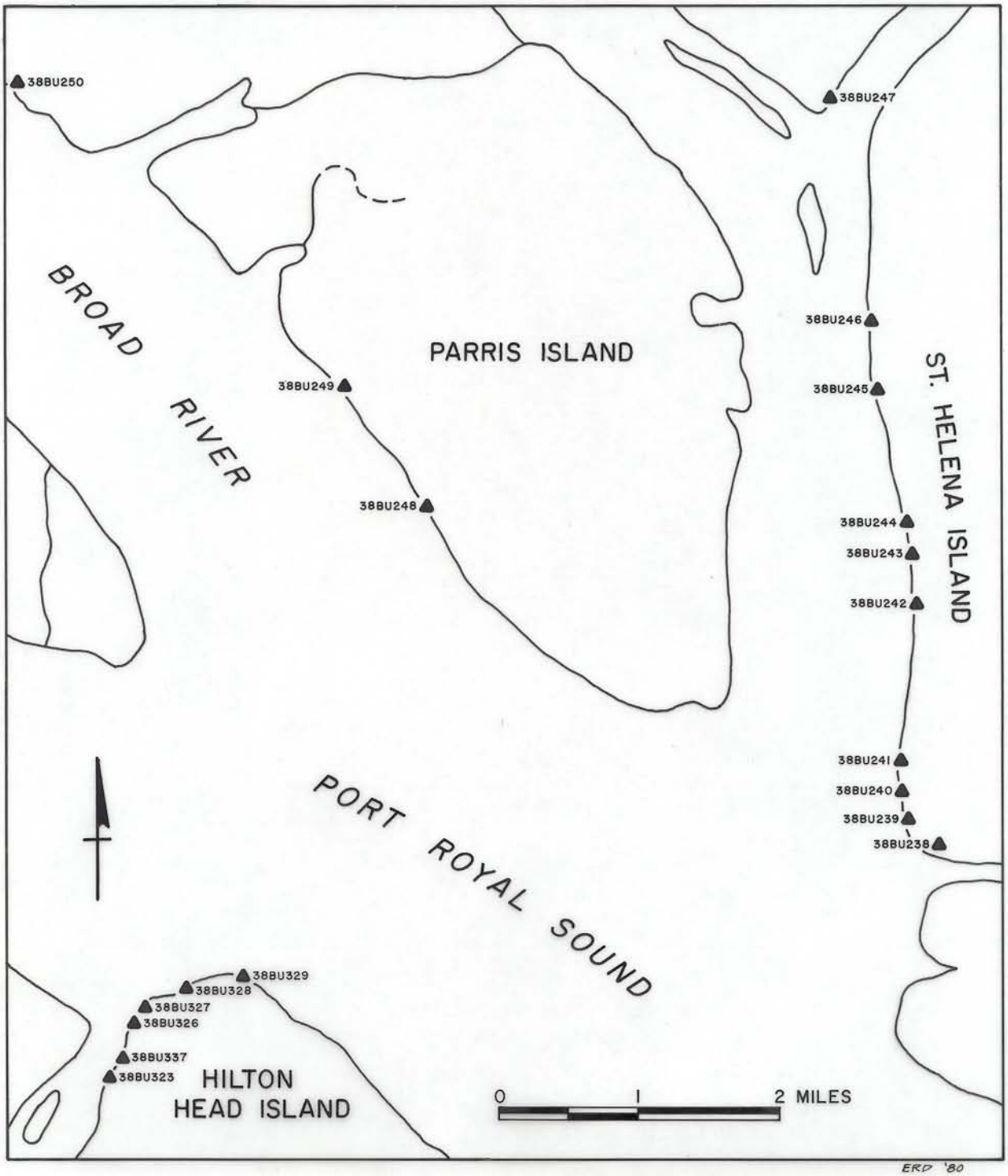

Figure 16: Site location within Port Royal Sound and Broad River (Map D).

TABLE 2

General Information Regarding
Sites and Associated Environments

Site No.	Cul. Aff.		Cul. Mtl.		Type Site		Soil Types						Environs					Condition			
	Historic	Prehistoric	Present	Absent	Shell Midden	Non-Midden	Bohicket	Capers	Wando-Seabrook	Murad	Williman-Coosaw	Yemassee	Mainland Marsh	Riverine Marsh	Island Marsh	Marsh Hummock	Mainland	Slightly Eroded	Moderately Eroded	Severely Eroded	Totally Eroded
38JA4	x	x	x			x		x					x								x
38BU9		x	x		x			x							x					x	
38BU23		x	x			x			x								x	x			
38BU29		x	x		x				x								x		x		
38BU53	x	x	x			x					x		x								x
38BU108		x	x		x			x							x				x		
38BU114	x	x	x			x		x							x						x
38BU196	x	x	x			x									x						x
38BU198		x	x			x						x			x						x
38BU239	x			x		x		x					x					x			
38BU240	x	x	x			x		x					x								x
38BU241	x		x		x				x								x		x		
38BU242	x	x	x			x			x								x				x
38BU243	x	x		x		x			x								x				x
38BU244	x	x	x			x			x								x				x
38BU245	x	x	x			x		x						x							x
38BU246	x	x	x		x			x						x							x
38BU247	x	x	x			x					x						x				x
38BU248	x	x	x			x				x							x				x
38BU249	x	x	x			x			x								x				x
38BU250	x					x	x							x							x
38BU251		x		x						x						x		x			
38BU252	x	x	x		x					x						x			x		
38BU253		x		x	x						x		x							x	
38BU254		x	x			x	x							x							x
38BU255		x	x			x	x							x							x
38BU256		x	x			x		x						x							x
38BU257	x	x	x			x		x					x								x
38BU258		x	x			x		x					x								x
38BU259	x	x	x			x		x					x								x
38BU260	x	x	x			x			x							x					x
38BU261	x	x	x			x		x					x								x
38BU262		x	x			x					x				x						x
38BU263		x	x			x					x				x						x

TABLE 2 Continued

General Information Regarding
Sites and Associated Environments

Site No.	Cul. Aff.		Cul. Mtl.		Type Site		Soil Types					Environs					Condition			
	Historic	Prehistoric	Present	Absent	Shell Midden	Non-Midden	Bohicket	Capers	Wando-Seabrook	Murad	Williman-Coosaw	Yemassee	Mainland Marsh	Riverine Marsh	Island Marsh	Marsh Hummock	Mainland	Slightly Eroded	Moderately Eroded	Severely Eroded	Totally Eroded
38BU264		x		x		x				x					x						x
38BU265		x		x		x				x					x						x
38BU266		x		x		x					x		x								x
38BU267		x		x		x					x			x							x
38BU268		x	x			x		x						x							x
38BU269		x	x			x		x						x							x
38BU270		x	x			x	x							x							x
38BU271	x		x			x	x								x			x			
38BU272		?		?		?	x							x						x	
38BU273	x		x			x		x					x								x
38BU274		x	x			x		x						x							x
38BU275		x	x		x		x									x			x		
38BU276		x		x	x		x									x			x		
38BU277		x	x		x		x									x				x	
38BU278		x	x			x		x								x					x
38BU279		x	x		x			x								x				x	
38BU280		x	x		x			x								x			x		
38BU281		x	x		x			x								x			x		
38BU282		x	x		x		x									x				x	
38BU283		x	x		x		x									x				x	
38BU284		x	x		x		x									x			x		
38BU285	x	x	x			x	x							x							x
38BU286		x	x		x			x								x				x	
38BU287		x	x		x						x				x						x
38BU288		x		x	x			x							x				x		
38BU289		x	x		x				x							x			x		
38BU290		x		x	x			x							x				x		
38BU291		x	x		x				x						x					x	
38BU292		x	x			x		x								x				x	
38BU293		x	x		x				x						x				x		
38BU294		x	x		x		x									x			x		
38BU295		x	x		x			x								x				x	
38BU296		x	x		x		x									x				x	

TABLE 2 Continued

General Information Regarding
Sites and Associated Environments

Site No.	Cul. Aff.		Cul. Mtl.		Type Site		Soil Types							Environs					Condition			
	Historic	Prehistoric	Present	Absent	Shell Midden	Non-Midden	Bohicket	Capers	Wando-Seabrook	Murad	Williman-Coosaw	Yemassee		Mainland Marsh	Riverine Marsh	Island March	Marsh Hummock	Mainland	Slightly Eroded	Moderately Eroded	Severely Eroded	Totally Eroded
38BU297		x	x		x		x										x				x	
38BU298		x	x		x		x										x					x
38BU299		x	x			x	x								x							x
38BU300		x	x		x			x									x		x			
38BU301		x	x		x			x									x		x			
38BU302		x		x	x			x									x			x		
38BU303		x		x	x			x									x				x	
38BU304		x	x			x		x									x				x	
38BU305		x		x	x			x									x				x	
38BU306	x	x	x			x		x								x						x
38BU307		x	x		x			x								x					x	
38BU308		x		x	x				x					x							x	
38BU309	x	x	x			x			x					x								x
38BU310		x		x	x				x					x							x	
38BU311		x	x		x						x			x						x		
38BU312		x		x	x						x			x						x		
37BU313		x		x	x						x			x						x		
38BU314		x		x	x						x			x							x	
38BU315		x		x	x						x			x							x	
38BU316	x		x		x						x			x						x		
38BU317		x		x	x				x					x						x		
38BU318		x	x			x			x									x		?		
38BU319	x	x	x			x	x			x							x			x		
38BU320		x	x		x			x									x			x		
38BU321		x	x		x			x									x				x	
38BU322		x		x		x		x									x				x	
38BU323	x	x	x			x		x						x							?	
38BU324		x		x	x			x								x				x		
38BU325	x	x	x			x		x								x						x
38BU326	x			x		x				?						?					?	
38BU327	x	x	x			x		x						x								x
38BU328	x	x	x			x		x						x								x
38BU329	x	x	x			x		x						x								x
38BU337	x			x		x		x						x							x	

TABLE 3

Specific Information Regarding
Lithic Materials and Associated Sites
(* - indicates materials found prior to this survey)
(** - indicates materials found prior to and during survey)

	Site No.	1				2				3		4		5		6		7	8
		Debitage Present	Debitage Absent	Unrecog. Biface	Unident. Bif. Frag.	Clovis	Suwannee	Dalton	Taylor	Palmer	Kirks	Stanley	Morrow Mountain	Guilford	Gary	Savannah River	Savannah River	Broad River	Small Stemmed	Large Triangular	Small Triangular	Unifacial Tools
**	38JA4	x								x												x
**	38BU9	x															x	x				
	38BU23		x																			
	38BU29	x															x					
	38BU53	x			x			x			x	x		x		x						
	38BU108		x														x					
	38BU114	x		x	x	x	x	x	x	x	x		x	x	x	x		x		x		x
	38BU196	x																				
	38BU198		x																			
	38BU239		x																			
	38BU240		x																			
	38BU241		x																			
	38BU242	x			x																	
	38BU243		x																			
	38BU244		x																			
	38BU245		x																			
	38BU246	x			x										x							
	38BU247		x																			
**	38BU248	x					x			x	x				x	x						x
	38BU249	x																				
	38BU250		x																			
	38BU251		x																			
	38BU252		x																			
	38BU253		x																			
	38BU254	x																				x
	38BU255		x	x											x							
	38BU256	x			x											x						
	38BU257	x		x	x						x				x	x				x		x
	38BU258	x									x											
	38BU259	x																				x
	38BU260		x												x							

Note: 1-Paleo-Indian, 2-Early Archaic, 3-Middle Arch., 4-Late Arch., 5-Formative, 6-Woodland, 7-Mississippian, 8-Other tools.

TABLE 3, Continued

Specific Information Regarding
Lithic Materials and Associated Sites

Site No.	Debitage Present	Debitage Absent	Unrecog. Biface	Unident. Bif. Frag.	1 Clovis	1 Suwannee	2 Dalton	2 Taylor	2 Palmer	2 Kirks	3 Stanley	3 Morrow Mountain	3 Guilford	4 Gary	4 Savannah River	5 Savannah River	5 Broad River	6 Small Stemmed	6 Large Triangular	7 Small Triangular	8 Unifacial Tools
38BU261	x													x						x	
* 38BU262	x						x		x	x											
38BU263		x							x												
* 38BU264		x												x	x						
* 38BU265	x														x						
* 38BU266	x														x						
* 38BU267	x					x															
38BU268	x			x																	
38BU269	x						x											x			
38BU270		x	x																		
38BU271		x																			
38BU272		x																			
38BU273		x																			
38BU274	x																				
38BU275		x																			
38BU276		x																			
38BU277		x		x																	
38BU278		x																			
38BU279		x																			
38BU280		x																			
38BU281		x																			
38BU282		x																			
38BU283		x																			
38BU284		x																			
38BU285	x		x																		
38BU286		x																			
38BU287		x																			
38BU288		x																			
38BU289		x																			
38BU290		x																			
38BU291		x																			
38BU292		x																			
38BU293		x																			
38BU294		x																			
38BU295		x																			
38BU296		x																			

TABLE 3, Continued

Specific Information Regarding
Lithic Materials and Associated Sites

	Site No.	Debitage Present	Debitage Absent	Unrecog. Biface	Unident. Bif. Frag.	1 Clovis Suwanee	2 Dalton Taylor Palmer Kirks	3 Stanley Morrow Mountain Guilford	4 Gary Savannah River	5 Savannah River Broad River	6 Small Stemmed Large Triangular	7 Small Triangular	8 Unifacial Tools
	38BU297		x										
	38BU298		x										
	38BU299	x											
	38BU300				x								
	38BU301		x										
	38BU302		x										
	38BU303		x										
	38BU304		x										
	38BU305		x										
	38BU306		x										
	38BU307		x										
	38BU308		x										
	38BU309		x										
	38BU310		x										
	38BU311		x										
	38BU312		x										
	38BU313		x										
	38BU314		x										
	38BU315		x										
	38BU316		x										
	38BU317		x										
	38BU318		x										
	38BU319		x										
	38BU320		x										
	38BU321		x										
	38BU322		x										
	38BU323		x										
	38BU324		x										
**	38BU325	x			x			x					
	38BU326												
	38BU327		x										
	38BU328		x										
	38BU329		x										
	38BU337		x										
									x x				

TABLE 4

Specific Information Regarding
Ceramic Materials and Associated Sites
(* - indicates materials found prior and during survey)

	Site No.	Site Type				Formative				Woodland					Miss.			Other			
		Shell Ring	Shell Midden	Non-Midden	Earthen Mound	Baked Clay Objects	Plain Fiber-tempered	Decorated Fiber-tem.	Thom's Creek	Refuge	Deptford	Wilmington	Cape Fear	Savannah	Curvilinear	Rectilinear	Other	Plain sand-tempered	Unrecognizable	Unidentifiable	Eroded and Waterworn
	38JA4			x																	
*	38BU9		x				x	x	x	x											
	38BU23				x										x						
*	38BU29	x					x	x													
	38BU53			x																	
*	38BU108		x				x	x													
*	38BU114			x			x	x			x		x								x
	38BU196			x							x										x
	38BU198			x			x														
	38BU239			x																	
	38BU240			x			x														
	38BU241		x																		
	38BU242			x					x												
	38BU243			x																	x
	38BU244			x			x						x	x			x				x
	38BU245			x																	
	38BU246		x				x	x	x												x
	38BU247			x							x			x	x						
	38BU248			x			x				x	x	x	x				x			x
	38BU249			x							x	x						x			
	38BU250			x																	
	38BU251		x																		
	38BU252		x									x	x					x			x
	38BU253		x																		
	38BU254			x																	
	38BU255			x		x	x	x													
	38BU256			x			x	x	x					x							
	38BU257			x			x		x					x				x			
	38BU258			x											x						x
	38BU259			x											x			x			
	38BU260			x																	
	38BU261			x																	
	38BU262			x																	

TABLE 4, Continued

Specific Information Regarding
Ceramic Materials and Associated Sites

Site No.	Site Type				Formative				Woodland					Miss.			Other			
	Shell Ring	Shell Midden	Non-Midden	Earthen Mound	Baked Clay Objects	Plain Fiber-tempered	Decorated Fiber-tem.	Thom's Creek	Refuge	Deptford	Wilmington	Cape Fear	Savannah	Curvilinear	Rectilinear	Other	Plain sand-tempered	Unrecognizable	Unidentifiable	Eroded and waterworn
38BU263			x								x									
38BU264			x																	
38BU265			x																	
38BU266			x																	
38BU267			x																	
38BU268			x																	
38BU269			x																	
38BU270			x																	
38BU271			x																	
38BU272			x																	
38BU273			x																	
38BU274			x								x	x				x				x
38BU275		x				x	x	x												
38BU276		x																		
38BU277		x					x	x		x		x					x			
38BU278			x																	x
38BU279		x										x							x	
38BU280		x										x								
38BU281		x									x	x					x			
38BU282		x									x	x	x				x			
38BU283		x									x	x	x				x			x
38BU284		x										x								
38BU285			x				xx					x					x			x
38BU286		x										x	x							
38BU287		x										x								x
38BU288		x																		
38BU289		x										x	x							x
38BU290		x															x			
38BU291		x																		
38BU292		x				x							x							x
38BU293		x				x		x		x										x
38BU294		x										x								
38BU295		x										x	x				x			x

TABLE 4, Continued

Specific Information Regarding
Ceramic Materials and Associated Sites

Site No.	Site Type				Formative				Woodland					Miss.			Other			
	Shell Ring	Shell Midden	Non-Midden	Earthen Mound	Baked clay objects	Plain Fiber-tempered	Decorated Fiber-temp.	Thom's Creek	Refuge	Deptford	Wilmington	Cape Fear	Savannah	Curvilinear	Rectilinear	Other	Plain sand-tempered	Unrecognizable	Unidentifiable	Eroded and waterworn
38BU296		x								x										x
38BU297		x				x				x										
38BU298		x																		
38BU299			x																	
38BU300	x					x	x													
38BU301	x					x														
38BU302	x																			
38BU303	x																			
38BU304		x									x									
38BU305		x																		
38BU306			x								x	x								x
38BU307		x									x	x							x	
38BU308		x																		
38BU309			x								x						x			x
38BU310		x																		
38BU311		x									x									
38BU312		x																		
38BU313		x																		
38BU314		x																		
38BU315		x																		
38BU316		x																		
38BU317		x																		
38BU318			x								x									
38BU319		x									x									
38BU320		x																		
38BU321		x									x									
38BU322		x									x									
38BU323			x								x									
38BU324		x																		
38BU325			x			x					x						x			x
38BU326			x																	
38BU327			x			x					x									
38BU328			x																	x
38BU329			x							x			x				x			x
38BU337			x																	

cultural materials have been scattered across the beach, and thoroughly mixed with the associated beach soils. Accompanying these materials are scattered oyster shells that have a physical appearance of being bleached, soft, and crumbly. These shells are not the yellowish and hardened shells that are characteristic of recent shellfish remains, but rather express antiquity. Based on the appearance of shells one could easily assume an association with prehistoric ceramics, but one should also exercise caution in such determinations. Without some prior knowledge of the site, or without radiocarbon dates, contemporaneity is only tenuous. In the event of multi-component sites, exemplified by pottery fragments and scattered shellfish remains, associations are even further removed.

Compounding the above problems are the occurrence of shell middens without visible cultural materials. Several of these were discovered during the survey, and based on their physical structure and appearance these middens seem to be related to the Prehistoric periods. Characteristically, the middens are relatively thin and are buried beneath several centimeters of humus. The shellfish remains are composed of oyster which are thoroughly bleached, compact, and consolidated. The matrix between the shells is composed of black soil. Other middens of this type are associated with the Wilmington and Cape Fear time periods, and based on similarity the middens are probably related to the Woodland period.

In addition to damage suffered from storm, tides, and wind, archeological sites have been exposed to constant attrition by relic collectors. Based on a small number of informants, practically every portion of the estuary has been exposed to constant relic collecting for many decades. These activities include extensive surface collecting, and isolated instances of pot hunting. Although the activities of some collectors were recorded (Appendix I), a reliable estimate of cultural materials removed from the project area was not possible to reconstruct with any accuracy. To judge from the information obtained from Moore (1898) and Flannery (1943), relic collecting and pot hunting is well rooted in the area. Estimates concerning the amount of material that has been removed could easily range from conservative to liberal, but in estimates of lithic items along, several thousand bifaces and associated tools could be accounted for from private collections, if time permitted.

This introduction has attempted to set forth, briefly, some of the variables and biases that are inherent in the project area. In doing so, it is difficult to control even some of the changes that occurred during the last millennia. Changes during the present have been severe, especially in regard to relic collecting. Many elderly relic collectors have died without leaving any records, and many of the collections have been dispersed to family members and other people. Present day collectors fail to record the location of materials and they seem to remember only the spectacular and outstanding artifacts. Nevertheless, an attempt has been made at incorporating some of the reliable data into this report and it appears below with the other data in site description and evaluation.

Prehistoric Site Data

38BU9 This site was originally discovered in 1968 by Fischer, Croen, and Michie. It represents an inundated shell midden that has yielded a considerable amount of Formative period data in the form of bifaces, lithic debitage, human burials, bone pins, by-products of bone pin manufacture, steatite vessel fragments, and other varieties of material culture. The site is inundated daily by four or five feet of sea water, and subsequently it is being destroyed. For further information consult the site files at the Institute of Archeology and Anthropology.

38JA4 This site was also discovered by Fischer, Croen, and Michie in 1968. Surface collections were made from the eroded marsh surface in 1968 and again in 1979. These collections are retained at the Institute.

38BU23 This Mississippian mound was partially excavated by C.B. Moore (1898). Presently, the eastern portion is eroding into the marsh of Whale Branch. The small burial mound located to the south appears totally excavated. Both mounds have suffered vandalism.

38BU29 This site was partially excavated by Moorehead and Ritter (Flannery 1943). At least half of this shell ring has collapsed into the marsh because of erosion. Vandalism is also present.

38BU53 Originally discovered in 1968 by Fischer, Croen, and Michie, this site has yielded a significant amount of Early Archaic material. The predominant assemblage is composed of Palmer bifaces and a related uniface industry of scrapers. Several blade-like flakes have also been recovered, including gravers. The site, unfortunately, is completely eroded.

38BU108 This shell midden is inundated by three or four feet of sea water daily. Fortunately, only a small portion of the midden is exposed, as the remainder is covered with silts and clays of the marsh. This site should be investigated at a later date. Organic material such as bone and hickory nut fragments were noted within the thin matrix of the midden.

38BU114 This site was also discovered in 1968 by Michie. Although the site has completely eroded, it has yielded a large number of chert bifaces and associated tool assemblages. Ceramics are also present in large quantities. This inundated and eroded Pleistocene sand ridge has produced a complete cultural sequence of artifacts that range from Clovis through the Woodland period. During the last decade relic collectors have taken a significant amount of material from the site, which would represent thousands of artifacts. In the event of future investigations, someone should make an attempt at quantifying the extant collections.

38BU196 This site contains cultural materials scattered across a sandy beach. Severe erosion has destroyed a sandy bluff that once contained intact historic and prehistoric occupations.

38BU198 This site contains small amounts of fiber tempered pottery scattered around the base of a marsh hummock.

38BU238 This site represents a shell midden located in the interior of a marsh hummock. Additionally, there is an apparent Civil War occupation which has disturbed portions of the midden. The function of the historic occupation is probably related to the smelting of brass, iron, and lead. This will be discussed later. The shell midden is related to the Formative period, as evidenced by the presence of a few sand tempered Thom's Creek sherds. The extent of the prehistoric occupation is not easily determined because of the apparently extensive historic occupation. Additionally, the inhabitants during the war were consuming oysters, which has added considerably to the shell midden. Therefore, it is difficult to separate the occupations. Future research is needed.

38BU239 This is an earthen historic causeway (to be discussed later).

38BU240 This is a small eroded site yielding only two items of material culture. These items may be the result of longshore drift.

38BU241 This is an historic site (to be discussed later).

38BU242 This site has small amounts of historic and prehistoric materials occurring along a sandy beach. These materials are probably the result of erosion and originated from the adjacent sandy bluffs of St. Helena Island.

38BU243 These are small amounts of historic and prehistoric materials occurring along a sandy beach. As noted, above, the materials were probably eroded from the sandy bluffs.

38BU244 Small amounts of historic and prehistoric materials occurring along a sandy beach at the edge of the marsh are found here. These materials probably drifted into the area from the sandy beaches located to the south (probably a pseudo occupation).

38BU245 This site represents two items of material culture that washed into the area (probably a pseudo site).

38BU246 A significant amount of fiber tempered sherds were found for a distance of about 30 meters along the edge of the marsh. Several bifaces, animal bones, and lithic debitage were also recovered. This probably represents the remnants of an eroded shell midden; however, there is no indication of a former midden except for the presence of old bleached oyster shells that are scattered with the cultural materials. This occupation may be the eroded remains of the Jones Island site discussed by Flannery (1943), but

the site description is brief and somewhat incomplete. This site should be investigated at a later date with research oriented towards: demonstrating the existence or non-existence of remnant portion of a shell midden, and resolving the matter concerning the Jones Island site investigated by Flannery and Moorehead.

38BU247 This site represents pottery sherds scattered across a clayey/sandy beach. This area was also mentioned by Flannery (1943), but there were no indications of shell middens.

38BU248 This site has been known by relic collectors for a considerable amount of time, and predictably, a great deal of cultural material has been removed. Although few records exist concerning the identification of specific materials, at least one large collection was seen in 1975 (Appendix I). Presently, cultural materials are scattered for a distance of about 50 meters across a sandy beach. These materials, which range from Paleo-Indian through the Mississippian in a near complete sequence, eroded from the contiguous sandy bluff.

38BU249 Cultural materials were found for a distance of about 75 meters across a sandy/marshy beach. The prehistoric materials are few in number, and all of the historic items are related to the U.S. Marine Corps occupation of Parris Island. Most of the historic items are portions of bullets and brass shell casings.

38BU250 Two historic items were found on a recent oyster shell deposit in the marsh. The presence of these ceramics represent the effects of deposition through longshore drift, not necessarily occupations.

38BU251 This site is represented by a thin mantle of oyster shell buried under a few centimeters of humus. The site extends for a short distance across a sandy promontory overlooking the Broad River. No cultural materials were found, but the site should be investigated at a later date.

38BU252 This site is represented by a relatively thick deposit of oyster shell associated with the Woodland period. The midden, approximately one meter thick, extends for a distance of about 40 meters parallel with Habersham Creek. Its inland extent is unknown because of the thick vegetation of Corn Island. A large portion of the island was probably cultivated, as evidenced by at least three drainage ditches that extend into the interior of the island. The upper portion of the midden has probably been cultivated, but the lower levels appear to be intact and undisturbed. The site has an excellent potential for yielding Woodland period data. A small historic component is also present and it will be discussed later.

38BU253 This is a small, heavily eroded shell midden composed of oyster. No cultural materials were present.

38BU254 A small amount of prehistoric materials was found on the marsh surface and scattered for a distance of about 20 meters. The silty/clayey soils indicate that the archeological remains were probably transported and not inherent to the geological deposit.

38BU255 Although the soil survey map of Beaufort indicates the presence of Bohicket soils, the beach is composed of clay and sand. Across this relatively stable beach cultural materials were scattered for a distance of about 40 meters. While the materials are few in number and scattered, they appear to be contemporary and therefore may represent the remains of a localized site that suffered attrition.

38BU256 Cultural materials representing the Formative period were found scattered for a distance of about 30 meters across the hard packed clayey/sand beach. There is no indication of an intact site, but there is a high incidence of old bleached oyster shells scattered over the area. This site may represent a former shell midden that has been destroyed by erosion.

38BU257 This Middle Archaic site, with other components from the Late Archaic, extends for a distance of approximately 50 meters across a hard-packed sand beach. Apparently this large site has completely eroded away, leaving only lithic and ceramic remains dispersed on the beach. Future investigations in the project area should include this site.

38BU258 There is a small amount of lithic and ceramic cultural materials scattered across the sandy beach.

38BU259 This is a small amount of historic and prehistoric materials dispersed across the beach. These materials have probably eroded from the low sandy bluff adjacent to the beach.

38BU260 Small amounts of historic and prehistoric materials are dispersed across the beach. These materials have probably eroded from the low sandy bluff adjacent to the beach.

38BU261 Small amounts of historic and prehistoric materials are dispersed across the beach. These materials may represent longshore drift from the area immediately south.

38BU262 This site was discovered in 1968 by Michie, Croen, and Fischer. Although a small amount of materials was found, several relic collectors in Beaufort have found considerable amounts during the last several decades (Appendix I). The site, however, is completely eroded and destroyed.

38BU263 This site was also discovered in 1968, by Michie, Croen and Fischer. Similarly, nothing was found of any consequence. This area has also been collected for a long time, and the site represents nothing more than scattered cultural materials on a sandy beach.

38BU264 The recent survey of 1979 failed to find cultural materials on the beach, but several relic collectors of Beaufort and Columbia have found lithic materials. This site is also totally eroded and the contents have been scattered across the sandy beach.

38BU265 This site was discovered by Michie, Croen, and Fisher in 1968. The sandy beach which lies contiguous with a large sandy bluff yielded only a few lithic items. The recent survey failed to locate any materials.

38BU266 This site was also located by Michie, Croen, and Fischer in 1968. The low-lying sandy/clay beach failed to yield any quantity of materials, and this was reflected once again during the recent survey. The site is apparently eroded and small amounts of lithic materials are scattered across the hard-packed beach for a distance of about 50 meters.

38BU267 Also discovered in 1968, this site yielded a chert Suwannee point and small amounts of chert debitage. The recent survey was unable to locate additional cultural material on the eroded beach.

38BU268 A small amount of lithic material was found dispersed across a hard-packed sandy beach. These materials probably eroded from the contiguous low-lying sandy bluff.

38BU269 The sandy beach which extends for about 30 meters yielded a small amount of lithic materials. The material was highly dispersed and represents only the remnant materials from a former site.

38BU270 The Beaufort County soil survey map indicates the presence of Bohicket soils, but the beach is composed of sand and clays. Only one prehistoric cultural item was discovered.

38BU271 This site is represented by an historic occupation located in a marsh hummock. The soil survey map indicates the presence of Bohicket soils, but sandy soil occurs in the site location. (This will be discussed later.)

38BU272 This site represents a geological formation of what appears to be mudstone. The material, which could possibly be used for the manufacture of tools, lies mired in Bohicket soils. Samples of this formation were taken for later identification. There is no indication of aboriginal utilization.

38BU273 This is an historic site (to be discussed later).

38BU274 A small amount of cultural materials was found scattered across a hard-packed beach. These materials represent the eroded remnants of a former site.

38BU275 The site is located on a small hummock and is about 15 meters circular. Its thickness is about one meter, being composed

almost entirely of oyster shells, but periwinkle is also present in fewer numbers. A fragment of a deer femur was also recovered with the large quantity of fiber tempered pottery. This site should be investigated more fully at some later date.

38BU276 A linear and undulating shell midden exists on the eastern edge of a moderate-sized marsh hummock. Although portions of the midden were exposed through erosion, cultural materials could not be located. Much of the thin midden is undamaged by tidal action, and it too should be investigated at a later date. The predominant assemblage of oyster, all of which are bleached and appear old, is probably related to the Prehistoric period.

38BU277 Immediately east of the above site, and separated by 20 meters of marsh, is another shell midden composed primarily of oyster. The midden is approximately 15 meters long and 5 meters wide, but its thickness is uncertain because of continued erosion and displacement of shells. However, it should be included in future investigations.

38BU278 A single prehistoric sherd was found on the western edge of the marsh hummock. The hummock is void of shell middens.

38BU279 This site is represented by a severely eroded shell midden which lies on the surface of a remnant hummock. The site may not warrant future investigations.

38BU280 A relatively thin shell midden occupies portions of the eastern and southern edge of Buzzard Island. Portions of the midden appear intact, and would, therefore, lend itself to future research.

38BU281 Several Woodland sherds were found in eroded portions of a small shell midden. The linear shaped midden is about 20 centimeters thick and occupies an area about 15 meters long and 5 meters wide. While portions of the midden have eroded, other areas remain intact. The intact portions could yield information valuable to research.

38BU282 The site, located on Bird Island, is composed of a highly eroded shell midden with Woodland ceramics. Several areas of the large midden, which is about 30 meters long and 10 meters wide, appear to be intact. The midden appears to be relatively thin.

38BU283 About 75 meters northeast of Bird Island there are a few eroded shell middens in close proximity to each other. The predominant shellfish remain is oyster, and each midden is approximately 10 meters oval and about a half meter thick. Woodland period pottery sherds were found in the eroded areas. Intact portions of the middens exist and could easily lend themselves to research.

38BU284 A small shell midden composed of oyster shell exists on the east side of the hummock. One Woodland sherd was recovered. Portions of the midden are intact.

38BU285 Small amounts of perhistoric and historic cultural materials are dispersed for a considerable distance across the beach. Towards the southern end of the scatter there is a large accumulation of old bleached oyster shells which may indicate the remnants of a Formative period shell midden. Also occurring on the beach are numerous chert cobbles that range in size from about 10 to 20 centimeters. Many of these cobbles have suffered frost fractures, but others exhibit multiple flake scars which suggests aboriginal utilization.

38BU286 This site is represented by a relatively small shell midden situated within a cedar hummock. The midden, which is about 15 meters circular and about 25 centimeters thick, is severely eroded, but portions remain intact and are amenable to research.

38BU287 Lying on the edge of a sandy clay bluff and scattered around its periphery in the marsh are the remnants of a Woodland shell midden. Practically all of the midden is eroded and destroyed.

38BU288 This site is a relatively intact shell midden lying adjacent to a small tidal creek. Its dimensions are approximately 30 meters long and 10 meters wide, with a thickness of about 40 centimeters. Protected by a large hummock, the site offers an excellent opportunity for research. Although cultural materials could not be found, the site is probably aboriginal. Several centimeters of humus overlay a compact, homogeneous midden composed almost entirely of oyster shells.

38BU289 This Woodland period shell midden occupies the eastern edge of a large hummock. The midden, which is linear, is about 150 meters long and about 15 meters wide. The thick vegetation precluded any determination of thickness, but the eroded portions seen along the marsh edge would not suggest any appreciable thickness. Portions of the midden, however, are certainly intact in the interior of the hummock.

38BU290 This site is represented by a badly eroding shell midden which lies on the edge of an eroding bluff. Not only is the midden collapsing into the continguous marsh, but storms have washed and scattered oyster shells across the sandy bluff. Cultural materials were not seen during this survey, but Woodland period pottery was observed several years ago. The site appears to have little value in future research.

38BU291 The remnants of a former shell midden are scattered across the marsh at the edge of a large hummock. No portions of the midden are intact.

38BU292 This Formative period site is represented by an eroding shell midden which was deposited on a small hummock. The hummock, presently, has practically disappeared. The oval shaped midden is about 10 meters long and 8 meters wide, with a thickness of about one half meter. Although erosion has affected the site, portions

remain intact.

38BU293 Located on the southwestern edge of a marsh hummock, the site has suffered extensive erosion from storm damage and the effects of a tidal creek that flows past the midden. The site is approximately 30 centimeters thick and covers an area about 20 meters long and 15 meters wide. Intact portions of the midden should yield additional Formative and Early Woodland materials, in addition to other data.

38BU294 Intact portions of an eroded Woodland period shell midden exist on the western edge of a marsh hummock. Although cultural materials were not seen during this survey, several Wilmington sherds were observed in 1974. The site, which is also affected by the same marsh creek mentioned above, is oval in shape. Judging from the eroded edge, the midden is about 40 centimeters thick and covers an area about 20x15 meters. This site should be included in any future research.

38BU295 This Woodland shell midden is situated on the southern edge of another marsh hummock, and covers the peripheral area for a distance of about 40 meters. Severe erosion has affected the edge, but the midden is intact within the hummock's interior. The eroded profile suggests the midden is about 30 centimeters thick. This too should be included in future research.

38BU296 Along the eastern edge of this marsh hummock, oyster shell is scattered and represents the remnants of a former shell midden. Small portions of the midden may be intact.

38BU297 This shell midden is also severely eroded, and while portions may remain intact, those portions would be small. Oyster shell is scattered along the edge of the marsh and high tides have dispersed the shell into the interior of the hummock. Only a small amount of cultural materials was discovered.

38BU298 Within a remnant portion of a small hummock is an exceptionally small shell midden which is about two meters circular. Rather than being an actual midden, the deposit of oyster shell may well represent recent deposition within the vegetation. The shells are old and bleached, but no cultural materials were seen.

38BU299 One blocky piece of chert was found on the hard, compact beach composed of Capers soils.

38BU300 This site represents a previously unrecognized shell ring. The ring is composed primarily of oyster shell, but other shellfish species were noted, especially periwinkle. Fiber tempered pottery is scattered along the peripheral edges of the base, which has undergone some erosion. Being relatively small in comparison to other shell rings, the ring is oval in shape and is approximately 40 meters long and 30 meters wide. The northern end rises about 4 meters above the marsh, while the southern end is about 2.5 meters in

height. The marshy soils have intruded the basal portions of the ring which attests to environmental changes during the millennia. This site should be included in any research concerning archeology and sea level fluctuations.

38BU301 Located about 50 meters east of the above shell ring is a somewhat larger and eliptical shaped shell ring. The ring, which is approximately 45-50 meters circular, is elevated only about 1 meter above the marsh surface. Oyster represents the predominant shellfish remains, but other species occur such as whelk, periwinkle, and razor clam. The interior of the ring is entirely open and is composed of sandy soils and patches of small cordgrass, but the ring itself supports a great deal of wax myrtle and grasses. Erosion has also affected this site, but only slightly. This, too, should be included in future investigations and research.

38BU302 Located east of the two mentioned shell rings is yet another shell ring. Because of extensive vegetation, in the form of dead wax myrtle and tall grasses, the ring is not easily discernible, but its form becomes apparent during an investigation. The ring is relatively low and rises only about one meter above the surrounding cordgrass and glass wort. Its spatial dimensions approximate the other rings, and portions of the circle appear to be absent. This may have resulted in erosion, but because of the vegetation determinations are not easy. Cultural materials were not seen because of the vegetation. Th is site should also be investigated at a later date.

38BU303 Situated about 30 meters north of 38BU302 are the possible remains of another shell ring. Dense vegetation in the form of grasses and dead wax myrtle presents any easy assessment of site structure. There are several elevated areas of shellfish remains that appear to form the outline of a large circle, but without additional field investigations these determinations of a ring are tenuous. The shell is elevated about 1 meter above the surrounding marsh, but the thick vegetation precluded the detection of cultural materials. All of these shell rings should be surveyed at a later date for the purpose of accurately mapping the area and establishing the actual form and location of each ring. Additionally, test pits should be placed at each ring to determine the depth and extent of the sites, while establishing the amount of environmental change since deposition.

38BU304 This is a small highly eroded shell midden relative to the Woodland period. Oyster shell is scattered across the north edge of a small hummock, and while small portions of the midden may be intact it would not appear to lend itself to a great deal of research. During the survey only one Wilmington pottery sherd was observed, and it was allowed to remain for the purpose of future identification.

38BU305 Along the peripheral zone of a marsh hummock a small oyster shell midden is scattered across the beach and portions of

the hummock. Intact portions were not observed and cultural materials were absent.

38BU306 Cultural materials from the Historic and Prehistoric periods were found scattered across the beach. These materials have all eroded from a former matrix and have suffered a loss of integrity.

38BU307 This site is represented by a small eroded shell midden dispersed across the beach and portions of the mainland. A few Woodland sherds were found in the shell scatter. The midden is severely eroded and would not warrant further investigation.

38BU308 On the edge of a high bluff overlooking the Colleton River, portions of a shell midden are contained in the roots of a large oak tree. Beneath the tree, and scattered across the beach are oyster shells which have fallen from the roots. An investigation of the shell scatter failed to locate any cultural materials. The small midden is about 5 meters circular and only a few centimeters thick.

38BU309 A light scatter of historic and prehistoric materials was recovered from the sandy beach below the bluff at the Colleton River. These materials probably eroded from the bluff.

38BU310 Within a distance of approximately 75 meters, three small shell middens were seen washing from the sandy and eroded bluff at the Colleton River. Each midden represented a very small deposit of oyster shells about 2-3 meters circular. The thickness of each midden is about 5 centimeters. No cultural materials were observed. Because of an excessive rate of erosion, the middens will probably erode completely in a relatively short time.

38BU311 This small Woodland period midden is severely eroded and only portions remain. There is, however, enough left to warrant further investigation.

38BU312 This large shell midden composed almost entirely of oyster shells, is about one meter thick and occupies a triangular-shaped promontory that extends out into the marsh for a distance of about 25 meters. A portion of the midden is dissected by a small marsh creek, and the periphery is badly eroded. Although cultural materials were absent, the site is probably prehistoric and related to the Woodland period. The shells are well-bleached and crumbly and the humus layer that blankets the site is about 5 centimeters thick. This large midden should be investigated later.

38BU313 Located immediately east of the above midden is another shell midden of similar structure. The midden is situated on a low-lying sandy ridge that has suffered moderate erosion, and subsequently oyster shell is scattered across a muddy beach. The site extends for a distance of about 15 meters, but its inland extent is unknown because of thick vegetation. The deposit is about 30 centimeters thick, and

while erosion has occurred across the face of the midden, cultural materials were absent. The site, however, should be investigated later.

38BU314 This site is represented by a small pile of oyster shell without any cultural materials. Spread out in a rough circle about 4 meters in diameter, the shell lens is about 40-50 centimeters thick. Cultural association is uncertain. The site has a potential for yielding data.

38BU315 This is a small shell midden resting on the edge of the mainland and eroding slightly into the marsh. Cultural materials were absent, and cultural association is difficult to determine. The midden is about 3 meters circular and covered with a thin blanket of humus. It should be investigated later.

38BU316 This is similar to the midden mentioned above. Although a few broken bottles (dark green glass) and bricks were in the immediate area of the midden, cultural association is uncertain. The midden is not covered with a great deal of humus and therefore may be historic.

38BU317 This is similar in structure to 38BU315 and 38BU316. Cultural materials were absent, and there is no indication of cultural associations.

38BU318 The site is represented by a light scatter of pottery sherds and chert debitage which occur in a large cultivated field contiguous with the marsh. These materials were not recovered, but notes were made concerning their existence. The artifacts, which represent two sherds and two chert flakes, were seen in an area approximately 50 meters long and 20 meters wide.

38BU319 This site was originally discovered in 1968, by Croen, Michie, and Fischer. During the initial discovery, a single chert biface was recovered from the beach, and the adjacent shell midden was not noted because of vegetation. Presently, the midden is well-exposed and is collapsing into the contiguous marshy beach. Composed almost entirely of oyster shells, the midden is exposed for a distance of about 10-12 meters in the sandy bluff, but its inland extent is unknown because of the vegetation. The site is covered with 4-5 centimeters of humus, while the midden itself is about 60 centimeters thick. Cultural materials were recovered from the profile in addition to the beach. This site should certainly be investigated in the future.

38BU320 Located in the center of Daw's Island and on a promontory of a large hummock, this shell midden occupies an area approximately 10 meters circular. The midden is comprised almost entirely of oyster shell and appears to be about 2 meters thick. On the western portion of the midden is an old geodetic marker which is no longer used by the U.S.G.S. Its cultural identity is probably Woodland, based on the discovery of a single Wilmington pottery sherd. The midden has been little affected by erosion and it appears relatively intact. It should certainly be included in any future research.

38BU321 This small, highly eroded shell midden is situated on the edge of a remnant hummock. Located immediately south of Site 38BU320, this midden is severely eroded and only remnant portions remain. Originally, the site was probably linear and covered a small area perhaps 10 meters long and 3 meters wide, with a thickness of perhaps 5-8 centimeters. In terms of excavation, the site has lost much of its internal integrity and would not yield any appreciable information.

38BU322 This is similar in size, shape, and structure to the previously mentioned midden. There are no recommendations for future research.

38BU323 A light scatter of historic and prehistoric artifacts were recovered from the beach. These items probably eroded from a former matrix and were subsequently scattered across the beach.

38BU324 This is a shell midden of unknown size and extent located in the interior of a marsh hummock. The midden was partially exposed with the construction of a primitive restroom facility associated with a fishing cabin. Although no cultural materials were observed, the midden is covered with 4-5 centimeters of humus which suggests antiquity instead of an association with the cabin and its utilization. Additionally, the oyster shells are well-bleached and crumbly, therefore providing more indication of aboriginal deposition. This site should also be investigated more thoroughly in the future.

38BU325 Represented by a beach scatter of cultural materials, the site represents nothing more than eroded and redeposited artifacts. Old shells are also dispersed across the beach and mixed with the materials which may suggest the remnant components of a shell midden. However, this should be regarded as tenuous.

38BU326 Portions of a tabby structure are exposed along the edge of Bobb Island, and are associated with brick fragments. The tabby structure is not complete, but rather large fragments of a former structure are scattered on areas of the beach and portions of the mainland. Excepting the tabby and brick, no other cultural materials were seen or collected. Future investigations should try to locate other components of the structure and its original site of construction.

38BU327 A light dispersal of historic and prehistoric materials was recovered from the beach. These items, no doubt, have been eroded and redeposited.

38BU328 This is similar to Site 38BU327.

38BU329 This is similar to the above.

38BU337 This site, located adjacent to a small tidal creek and situated on the sandy bluff, is eroding and falling into the marsh creek. Large fragments of tabby and several brick fragments lay in the creek bed, the sandy beach, and on the bluff. The creek has obviously des-

troyed a large portion of the structure, but portions may remain in the thick vegetation on the bluff. Other than the tabby and brick, no cultural materials were discovered. Future investigations should try to locate the original site of construction and other components of the site.

Historic Site Data

As it was mentioned earlier, historic materials occur throughout the estuary and these materials occur with a mixed set of variables. Furthermore, Historic period artifacts may occur singularly, such as an isolated portion of a fractured bottle, or simply an isolated ceramic sherd. In other instances these materials may be scattered for a considerable distance across some sandy beach, or confined to a relatively small area. Given these differences in quality and quantity, it is therefore difficult to deal with the materials in terms of assessment. In order to come to grips with this mixed assortment of data, some of the materials have been omitted from the report. Those materials represent bottle fragments unassociated with other historic items, an extensive dispersal of a minimal amount of materials (i.e. two or three ceramics scattered across 100 meters of beach), and when there is obvious transportation of materials and an absence of site association. This, then, reduces the amount of data and tenuous information while it allows the more substantive data to emerge.

38JA4 In addition to the Early Archaic materials that have been found at this site, historic materials are found scattered in a relatively small area. These cultural materials are represented by several brick fragments, and portions of ceramics and bottles. The area of dispersal is about 10 meters long and 4 meters wide.

Mill's Atlas (1825) indicates that a Jenkins family occupied the immediate area, and perhaps these cultural remains are associated with portions of that occupation, or later residents who occupied the same area.

36 - whiteware
5 - modern porcelain
3 - feldspathic glazed
2 - yellow ware (1 mocha)
2 - blue shell-edged whiteware
1 - alkaline stoneware
1 - Albany slip glazed
1 - engine turned whiteware
1 - case bottle fragment
1 - molded medicine bottle fragment
1 - basal portion of a clear glass molded bottle
3 - dark green bottle fragment

38BU53 This prehistoric multi-component site also yields historic cultural materials that are confined to a relatively small area, perhaps 15 meters long and 5 meters wide. The site has apparently eroded into the adjacent salt marsh and subsequently materials have been scattered for a short distance. There is no indication of habitation on Mill's Atlas, and the occupation probably occurred well after mapping.

27 - whiteware
1 - green-edged whiteware
1 - brown stoneware
1 - white stoneware - Albany slip interior
8 - manganese bottle fragment
2 - brown pharmaceutical bottle fragment
1 - light blue jar fragment
1 - gun flint

38BU196 Scattered across a realtively small area, about 25 meters long and 10 meters wide, historic and prehistoric materials are found on the sandy beach. These cultural materials eroded from the adjacent sandy bluff which has suffered severely during the past few hundred years. The historic materials demonstrate successive historic occupations that range from sixteenth century ceramics through nineteenth century.

2 - red lead glazed earthenware (Spanish - 16th century)
1 - orange micaceous (Spanish 16th century)
1 - underglazed blue porcelain
1 - whiteware
1 - blue shell edged pearlware
1 - undecorated porcelain
1 - yellow ware
1 - blue transfer printed earthenwear
1 - glob of melted light green glass
1 - small molded square bottle base (dark green)
1 - pipe stem fragment (5/64th diameter)

38BU238 This historic occupation is located within a marsh hummock slightly north of the intersection of Station Creek with Port Royal Sound. The habitation is situated on an aboriginal shell midden and apparently occupies only the interior of the hummock. Evidently, the occupation relates to the Civil War and it appears to be an effort oriented towards the smelting of specific metals. Along the northeastern periphery of the hummock and extending into the marsh is a large deposit of coal slag with small inclusions of brass, lead, and iron. Attending this deposit of slag and lying contiguous with it are recently deposited heaps of oyster shells which suggest a form of subsistence during the historic occupation. Research during the reconnaissance survey, which involved Historic period informants, failed to reveal any prior knowledge of the site. This occupation is certainly significant and any additional research in the project area should include further investigations and more thorough documentation. Those materials that were recovered are listed below.

1 - small roll of lead sheeting
1 - fragment of brass slag
2 - pieces of smelted brass
1 - small button-sized object of brass
1 - small circular piece of smelted iron
2 - pieces of thin, flat brass sheeting
1 - whiteware
1 - lead glazed earthenware
2 - base black glass bottles
1 - base clear glass bottle
1 - neck of a black glass bottle
10 - fragments of black glass bottles
6 - fragments of aqua glass bottles
1 - window pane fragment
1 - fragment of an olive-colored bottle
1 - large portion of a graphite crucible (used for smelting)
1 - fragment of cement with adhering iron film

38BU239 This historic site is represented by three separate earthen structures that extend from the southern portion of Land's End on St. Helena Island to the marsh hummock mentioned above. These earthen structures appear to be a single causeway constructed across the marsh. The first causeway begins immediately south of a small marsh creek at Land's End and extends for a distance of about 100 meters until it enters a small marsh hummock and then disappears. The second causeway emerges on the southern edge of the hummock and continues south until it terminates at another small marsh creek. About 50 meters south of the creek, the causeway appears again and continues for about 150 meters until it enters the location of 38BU238. Although the causeways are separated by a hummock and a tidal creek, each one appears similar in design: approximately 7 meters wide, elevated about 50 centimeters above the marsh, and constructed from sand. Erosion from storms and high tides have destroyed portions of the causeways, and as a result, they are difficult to follow. These earthen structures are probably related to the Civil War occupation of 38BU238 and the shell midden at the very end of Land's End. These causeways need more thorough documentation and research in the future.

38BU241 The recent storm activity of Hurricane David exposed a relatively large shell midden on the last portion of high ground at Land's End. The midden extends for a distance of about 30 meters across the edge of eroded sandy bluff and it is buried with about 40 centimeters of sand. The midden itself is about 40-45 centimeters thick and is composed almost entirely of burned oyster shells and charcoal. Lying *in situ* in the face of the midden were several musket balls, historic ceramics, and fragments of black bottle glass. These materials were not removed from the profile, but rather they were allowed to remain intact for later investigations. During the survey and discovery of the midden, the land owner was repairing the damaged bluff by erecting a concrete retaining wall. Further destruction of the midden by erosion is therefore altered and the area is stabilized. The cultural materials seen in the profile are similar to those recovered from the marsh hummock, and in all probability the shell midden,

causeways, and the smelting foundry are interrelated.

38BU242 This site is represented by a scatter of historic materials that were found on the eroded sandy beach of St. Helena Island. Dispersed for a distance of about 150 meters, these materials may be related to Chaplin family whose residence appears on the Mill's Atlas (1825). Extensive erosion of the adjacent sandy bluff and the dispersal of cultural materials may indicate specific components of a single dwelling, but it could also indicate remains from any number of early houses. In any event, the materials are listed below.

4 - brown salt-glazed stonewares
1 - underglazed, blue hand painted whiteware
1 - yellow earthenware
1 - whiteware
1 - transfer printed whiteware
1 - transfer printed pearlware
1 - green shell-edged pearlware
1 - blue shell-edged pearlware
1 - blue hand painted earthenware
1 - gun flint
3 - basal fragments of dark green bottles
3 - fragments of dark green bottles
2 - dark green bottle necks
1 - fragment of an embossed clear glass bottle
1 - clear glass medicine bottle neck

38BU248 This multi-component site representing aboriginal and Historic period materials has eroded from the adjacent sandy bluff and subsequently dispersed the cultural materials across the sandy beach for a distance of about 75 meters. The historic materials occur in a relatively short distance and may indicate remains from a single location. Residences in this specific area were not noted on Mill's Atlas (1825).

1 - red earthenware (Spanish 16th century)
1 - olive jar fragment (Spanish 16th century)
1 - blue banded whiteware
1 - transfer printed whiteware
1 - brown salt-glazed stoneware
1 - basal fragment of a molded dark green bottle
1 - basal fragment of a molded (?) dark green bottle
1 - bottle neck fragment molded (?) green
1 - molded and letter embossed green bottle fragment

38BU252 The occupations on this site represent historic as well as prehistoric, and they apparently co-occur in the same location. The historic component is dispersed over a relatively short distance of about 20 meters on the beach. If components exist on the densely vegetated and elevated bluff they can not be easily detected. The elevated bluff and portions of the aboriginal shell midden exhibit at least distinct drainage ditches that dissect portions of the hummock. Such ditches indicate that portions of the island were cultivated, and

cultivation probably occurred in the nineteenth century. There is no indication of historic settlement on either of the early maps.

3 - alkaline-glazed stoneware with slip decoration
2 - blue transfer printed whiteware
1 - whiteware
1 - green shell-edged pearlware
1 - blue and brown finger painted whiteware
1 - blue shell-edged whitehead
1 - blue underglazed painted whiteware
3 - colono-ware
4 - basal fragments of dark green bottles
3 - fragments of light green bottles
1 - fragment of a dark green bottle
1 - fragment of an aqua green case bottle
1 - fragment of a large dark green case bottle
1 - bottle neck of dark brown glass

38BU271 This historic site is located in the upper portion of the estuary east of the confluence of the Broad and Pocotaligo Rivers, and the site is situated within a small marsh hummock. The site consists of several discrete brick piles that resemble the collapsed footings of a structure; however, there are no other indications of a former structure or evidence of an occupation. The hummock failed to disclose any ceramics, glass, or other cultural materials. In the future this site should be provided with additional research.

38BU273 On the very edge of a large marsh hummock, and overlooking Coles Creek, several historic artifacts were recovered from the eroded peripheral soils. These materials were confined to a relatively small area about 10 meters long and 3 meters wide and certainly represent components of a single historic occupation.

3 - annular wares
2 - alkaline glazed stoneware
1 - underglazed porcelain
3 - fragments of dark green bottles
2 - fragments of light green bottles
1 - fragment of a mint green bottle
1 - section of an iron pipe (not recovered) 3 cm diameter

PREHISTORIC OCCUPATIONS AND UTILIZATION OF PORT ROYAL SOUND AND THE BROAD RIVER

Introduction

During the last several hundred millennia, the sea has fluctuated greatly, and as a result, portions of the lower Coastal Plain have been inundated frequently. These cycles of submergence affect not only the physical environment with incessant erosion and deposition, but the biophysical environment is severely affected. With each cycle of submergence and emergence species of marine and terrestrial organisms are constantly faced with adaptation, survival, and replacement. During periods of submergence, a river valley becomes flooded with sea water and the subsequent effect is the development of an estuary. Specific bottomland species of flora and fauna that once inhabited a riverine floodplain are slowly replaced with marine associated plants and animals, and as submergence continues, those species are replaced by yet another set of organisms as the estuary becomes larger and deeper. Not only are terrestrial organisms affected in the immediate environment, but successive generations of species are forced into the interior of the Coastal Plain.

With the emergence of Coastal Plain soils, the process of change and adaptation continues as organisms constantly move to remain in their ecological habitat. With continued emergence the river reappears and the floodplains provide a habitat for respective species of flora and fauna.

Such changes during the last twelve millennia had a significant effect on biophysical environments, and subsequently, the indigenous human populations were forced to adapt to the changing environment. These biophysical changes, therefore, affected the settlement and subsistence systems of the aboriginal American, and such alterations and modifications are monitored in the archeological record.

Paleo-Indian

Throughout the Coastal Plain of South Carolina, fluted and lanceolate-shaped projectile points are usually discovered in association with major river drainages and stream systems involving large creeks and broad floodplains. Prior investigations in Port Royal Sound and the Broad River have demonstrated the occurrence of Paleo-Indian mater-

ials, and predictably, the survey expected to recover additional evidence of this early habitation. Although large numbers of these point types were not found, the survey was able to discover another Suwannee point in the form of a basal portion. The point was found on Elliot's Beach at Parris Island (Fig. 17).

The distribution of the known cultural materials within the project area indicate that the late Pleistocene hunters were selecting areas of sandy soils that were once elevated above the river valley. Additionally, these materials were found at different localities and there is no indication of spatial preference.

Although early subsistence trends are thought to have been oriented towards the exploitation of now-extinct megafauna, especially proboscedia, the survey did not disclose any evidence of buried fossil remains or other supporting data. However, by the virtue of environmental change, which includes soil deposition in form of silts and clays, it would not be unlikely to expect such discoveries during future investigations. Hay (1923) has previously demonstrated that fossil remains of proboscedia (Mammut americanum) occur in the coastal marsh deposits in the vicinity of Beaufort and Savannah, Georgia. Many of these discoveries were made in the exposed and eroded portions of marshy soils associated with barrier islands. These specific localities, therefore, have a potential for yielding additional fossil remains.

Early Archaic

Lithic materials representing the Early Archaic are distributed throughout most of the project area. Bifacial implements in the form of Dalton, Taylor, Palmer, and Kirks were found at a number of localities and were associated with a wide variety of soil types. These projectile point types are frequently associated with unifacial lithic assemblages such as end-scrapers, blades, burins, and gravers, and during the survey, these associations were apparent. At several localities that yielded Early Archaic bifaces, these specific tools were also found dispersed among the lithic scatters (Fig. 17).

During this time, sea level was considerably lower than at present and the area of Port Royal Sound and the Broad River certainly must have represented a meandering coastal plain river system with adjoining tributaries and contiguous floodplains. The sites were elevated above the floodplains and were situated on sandy ridges that involved various physiographic settings. Although environmental reconstructions are difficult, especially in a system of dynamic change, it would appear that many of these sites were once located near the confluence of tributaries. At least three of the largest sites (38BU53, 38JA4, and 38BU114) are situated at or very near major confluences that probably represented a river and its tributary prior to sea level rise. Other sites representing this time period were found to occur along the edge of the major estuarine channel, or what was formerly elevated

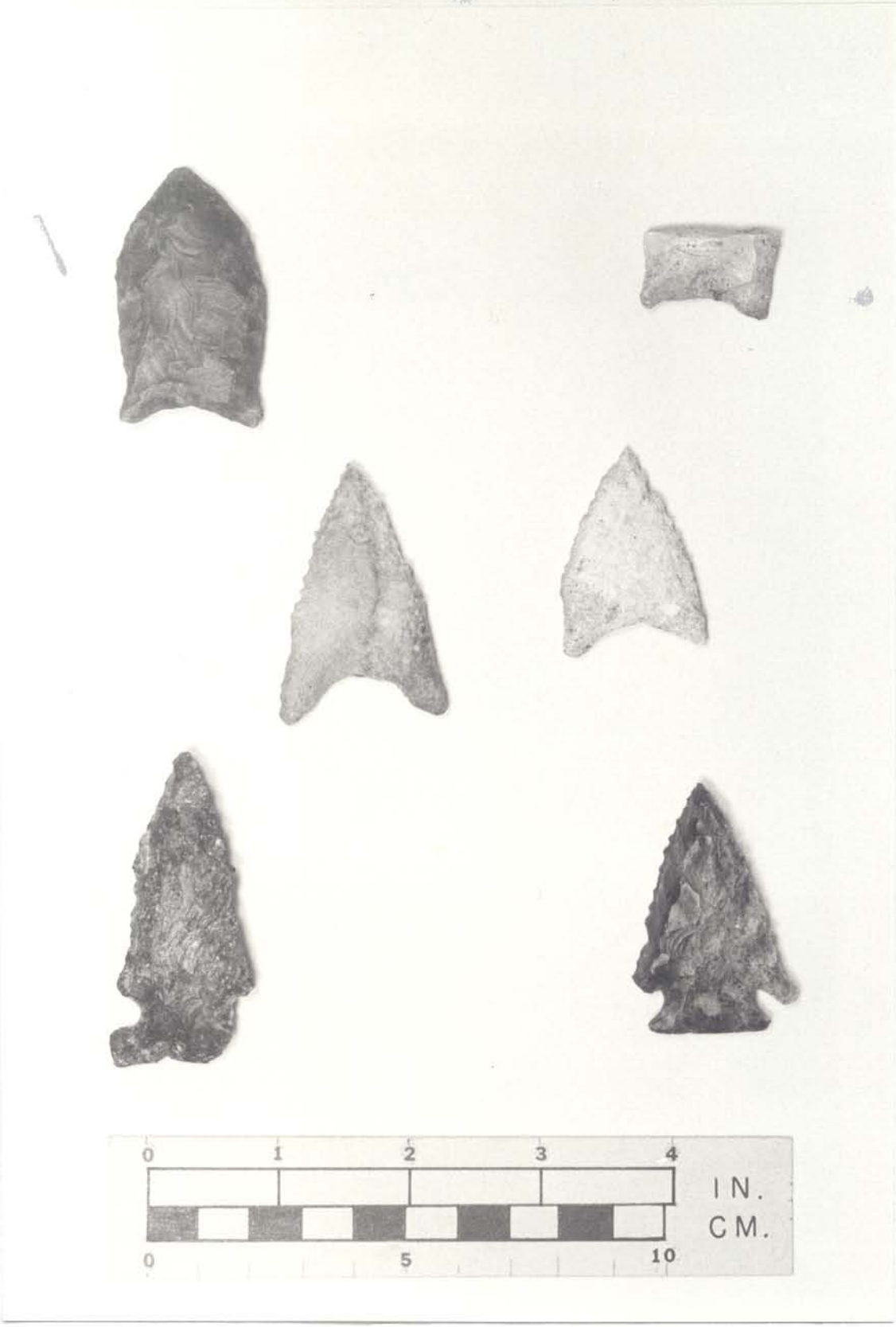

Figure 17: Paleo-Indian and Early Archaic bifaces from the project area (left to right): Suwannee point (38BU267); Suwannee point (38BU248); Dalton point (38BU53); Dalton point (38BU269); Taylor point (38BU114); Taylor point (38JA4).

ridges overlooking a major floodplain. Sites of this time period were not found in the small tributaries. Thus, the Early Archaic populations located along the edge of a major river valley with a tendency towards selecting stream confluences.

Although there is no physical evidence, such as food remains, to suggest subsistence trends, the virtue of site location implies that that human populations were exploiting the resources of a river system environment. With the increase of oak/hickory forests during the seventh millennium B.C., the environment probably afforded sufficient amounts of mast for mammalian communities and the indigenous American. Not only was the floral environment available, but the animals that inhabited and utilized the surroundings, such as deer and turkey, would have provided additional biomass.

Middle Archaic

If lithic depictions of the Middle Archaic are considered to be Stanley, Morrow Mountain, and Guilford, then this specific time period is poorly represented. The problem of the Middle Archaic, however, may not reside in the identification of Piedmont point types, but it may be inherent in the fact that chronologies in the lower Coastal Plain of southern South Carolina are not well understood.

Several point types exist that exhibit Guilford-like and Morrow Mountain-like characteristics, but these types, by definition, represent neither of the above types. One specific type, similar to the Morrow Mountain, is also similar to the Gary point (Bell 1958: 28-29) in that it exhibits a diamond-like appearance. The blade portion is triangular while the basal portion represents a tapering stem with a slightly rounded base (Fig. 18). Occasionally, flake scars will exhibit what appears to be an attempt directed at parallel flaking, but other examples will indicate less control in flake removal. These point types are referred to herein as Gary points for the sake of identification. They may well represent a Middle Archaic or Late Archaic occupation, and without chronological knowledge, they are tenuous in terms of time.

Another unrecognized point type is the Guilford-like biface. Unlike the classic Guilford of the Piedmont, these point types usually display a slight shoulder at the stem (Fig. 18), and occasionally, light lateral smoothing of the basal edges is present. There are also attempts at parallel flaking, and frequently flake scars indicate the removal of long, narrow, ribbon-like flakes that extend into the medial portion of the point. Additionally, these types are sometimes converted into end-scrapers which display excessive polishing on the bit-edge. In terms of thickness, the points are usually thick and several examples indicate an oval appearance in cross-section. The basal portion usually has parallel sides, or nearly parallel, and a slightly

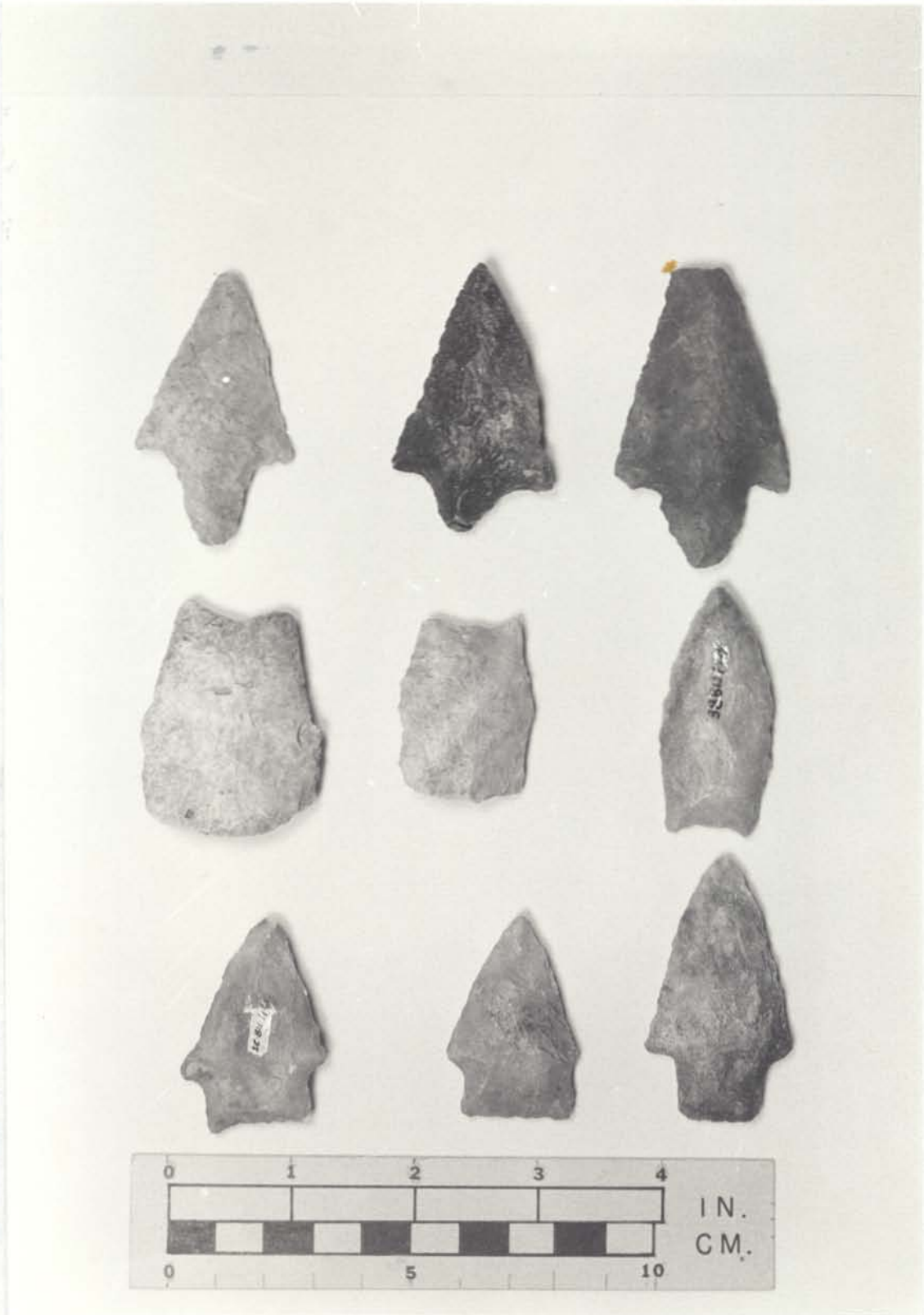

Figure 18: Middle and Late Archaic points from the project area: (Row 1) Gary points; (Row 2) Guilford points; (Row 3) Savannah River Archaic points.

concave base that also exhibits slight smoothing or grinding. Once again, temporal designations are difficult because of the absence of stratigraphic data. Several of the technologies, however, are suggestive of Guilford points.

These lithic materials follow a similar pattern in regard to the earlier Archaic period. They appear to be associated with the main channel of the estuary and do not occur in the smaller tributaries. Additionally, there was no indication of subsistence trends in the form of food remains. The sites simply represent scattered and dispersed lithic assemblages composed of debitage and bifacial implements.

Late Archaic

Because of its coastal association with many different cultural materials and site components, this period of time is difficult to discuss. For example, the stemmed Savannah River Archaic point may occur in varying situations, some of which involve a singular association with an eroded beach, while others may be found in the Formative period shell middens. Other sites within the estuary, such as the north beach of Daw's Island (38BU114) have yielded an appreciable number of these point types, and none of them are associated with middens. These point types apparently span a large range of time and occur in a number of different contexts, and are therefore difficult to deal with temporally.

In addition to the Savannah River points, there are other varieties that are very similar and probably represent portions of the Late Archaic (Fig. 18). But again, these types have not been found in any stratified context and their temporal associations are tenuous. By the virtue of overall outlines and similar technologies, these points are probably Late Archaic (Fig. 18, 19). Similar types are pictured by Waring (Williams 1968) that were excavated from the Bilbo site at Savannah, Georgia.

Late-Archaic-like points occur on the beaches of Port Royal Sound and the Broad River, and these points occur without shell middens. This does not necessarily indicate that shell middens were never present because they could easily have washed away centuries ago leaving only chert bifaces as an indicator of occupation. This possibility is highly suggestive at Sites 38BU245 and 38BU325, whereas bifaces, fiber tempered pottery, and old bleached shells co-existed in beach scatters. Therefore, there are no easy resolutions and interpretations concerning materials that may or may not be related.

In any event, Late Archaic materials do exist in the estuary, and they seem confined to the main channel, although a few point types were found in some of the smaller tributaries.

Figure 19: Formation period materials from the project area (left to right): Broad River point; Savannah River Archaic point; Decorated fiber-tempered pottery; Decorated fiber-tempered pottery; Plain fiber-tempered pottery; Thom's Creek pottery.

number of activities were performed. If plain fiber tempered pottery is an expression of contemporaneity, then it must be a portion of a larger cultural system. The decorated fiber tempered pottery that exists in the shell rings may also be an expression of yet another extension of the cultural system. The presence of fiber tempered pottery in a variety of shell middens, however, does indicate diverse cultural activities whether these activities are separated by time or space.

Non-midden sites exhibiting plain and decorated fiber tempered pottery also exist, but as it was explained earlier, middens may have existed several centuries ago. However, at least one site is a possible candidate for a non-midden. This site is located on the peripheral edge of a small hummock on the edge of Mackay Creek (38BU198). In the absence of old bleached shells, which is a probable indicator of former middens, several plain fiber tempered sherds were found lying in the marshy soils immediately adjacent to the hummock. No other cultural materials were associated with the sherds. This non-midden site may represent another facet of the Formative cultural system.

Another interesting facet of the Formative period is the occasional appearance of Thom's Creek ceramics in shell middens, and apparently co-existing with the fiber tempered. The Daw's Island shell midden has yielded a number of these ceramics and frequently the sherds have been observed lying together in the matrix of the midden. But at other localities, such as 38BU238, Thom's Creek appears as the only ceramic.

The Formative period shell middens are all located on or very near the main channel of the estuary, and their spatial locations involve the lower portions of the estuary. Their seaward location indicates that sea level was lower during a mean date of about 3,500 years ago. This is further confirmed by the fact that the Daw's Island midden is flooded by sea water daily while other middens are being covered by the high marsh surface. This is especially apparent at the shell rings and at the following localities: 38BU275, 38BU238, 38BU292, 38BU293, and 38BU297. These sites are all capable of yielding information relevant to archeological and geological problems.

Woodland

The Woodland period occupations represent the greatest number of archeological sites in the estuary, and for the most part the sites are depicted by shell middens. Although the middens occur in different environmental situations, they are most frequently associated with marsh hummocks.

These shell middens range in size from about 3-4 meters in diameter, with a thin mantle of shell and darkened soil, to long, linear middens that occupy the entire edge of a hummock. However, the majority are

relatively small with an average thickness of about 20-30 centimeters. The middens are composed almost entirely of oyster shell with small inclusions of whelk. Floral remains in the form of hickory nut and acorn fragments were not observed, and additionally, mammalian remains appear to be absent. The only cultural materials that eroded from these middens are pottery sherds with a predominant component of Wilmington cord marked. There is no indication of a permanent occupation, and in all probability, the sites represent transient habitation in the form of extraction camps and shucking stations. Presently, there is no indication of base camps.

In regard to the ceramics, Deptford and Mississippian sherds (Fig. 20) are poorly represented, while refuse is virtually absent. Wilmington and Cape Fear are predominant throughout the estuary, and while the Savannah series types are present at a few sites, their numbers are relatively low (Fig. 20).

These Woodland sites have a spatial distribution similar to the earlier fiber tempered sites, especially in terms of longitudinal distribution, e.g. from the mouth of the estuary towards its beginning. However, there is a greater lateral distribution as the sites occupy small marsh hummocks that are located in tributaries far from the main channel. By virtue of spatial site location, environmental changes have occurred between the Formative period occupations and present day sea level stand. While it is difficult to reconstruct past environmental conditions, one could be relatively certain that sea level was somewhat lower during the Woodland period in comparison with the present. The basic tenant of this argument lies in the fact that: 1) the high marsh surface is beginning to accumulate around the base of several middens, and 2) oyster populations presently extend nearly 25 miles inland while the most northern occurrence of a Woodland midden is only 18 miles. Given that midden represents the nearby extraction of shellfish resources, then sea level was lower about 1,500 to 2,000 years ago. The lateral extent of midden indicates, however, that sea level was probably higher than during Formative times, and this is further supported by the fact that none of the midden is known to be inundated. These field observations indicate that sea level was lower than present-day elevations, but somewhat higher than previous Formative occupations. Furthermore, there appears to have been an overall change in portions of the cultural system in regard to settlement and subsistence trends.

Lithic items are practically non-existent during the Woodland period, and none were recovered from the midden. However, a single large triangular point (Fig. 20) was found on an eroded beach and was associated with a dispersed assemblage of Archaic materials.

Mississippian

The Mississippian period is poorly represented in the area of Port Royal Sound and the Broad River. Excepting the large temple

Formative

Cultural materials relative to the Formative period were found in the lower portion of the estuary, and these materials and sites indicate a diversity of activities while providing evidence for environmental change through sea level fluctuation. At least four different type sites exist: 1) shell rings, 2) amorphous middens with a diversity of cultural materials, 3) amorphous middens with limited cultural materials, and 4) non-midden sites.

The Formative period shell midden is inherently distinct from all other shell middens of different time periods. Its internal structure, in terms of shellfish remains, expresses considerable species diversity. The main component is the oyster shell, but other shellfish remains include large numbers of periwinkle and smaller inclusions of razor clam, moon snail, whelk, and quahog. Mammalian remains are also present, in addition to avifaunal and reptilian remains, all of which frequently co-occur with hickory nut and acorn fragments. While these traits are inherent to Formative middens, there appear to be variations in contents, and such is the case with Site 38BU275. This specific midden is relatively small in comparison to the others, and species diversification is limited. However, periwinkle is scattered in all of the observable portions, and at least one mammalian bone was recovered from the shell matrix. Other shellfish remains mentioned above were not seen in the available sample, and while these remains may be present, there was sufficient exposure to allow detection. Based on the information, it would appear that Formative populations were expoliting a wide variety of shellfish communities and periwinkle appears to represent an accurate indicator of Formative middens. These specific patterns do not emerge in any of the later shell midden sites.

In terms of material culture, fiber tempered pottery is consistently present in these middens. This specific ceramic varies considerably in presence or absence of surface designs as they relate to different middens. The two shell rings on Daw's Island, 38BU300 and 38BU301, exhibit an appreciable number of decorated sherds (Fig. 19), but sites 38BU275 and 38BU9 have yielded only plain fiber tempered sherds. This anomaly may indicate a difference in time and space, but it may also indicate a difference in form and function concerning vessel shapes, and differences in site function among contemporary populations. The amorphous shell midden at Daw's Island (38BU9), for example, has yielded a number of human burials in indisputable association with plain fiber tempered pottery. Additionally, the site has produced a large inventory of bifacial chert implements (Fig. 19), chert debitage, bone pins, byproducts of bone pin manufacture, socketed antler projectile points, baked clay objects, steatite vessel fragments, steatite heating tablets, and a wide variety of floral and faunal remains. Concomitantly, the small midden with plain fiber tempered pottery (38BU275) does not express this wide diversification, but rather it suggests that limited

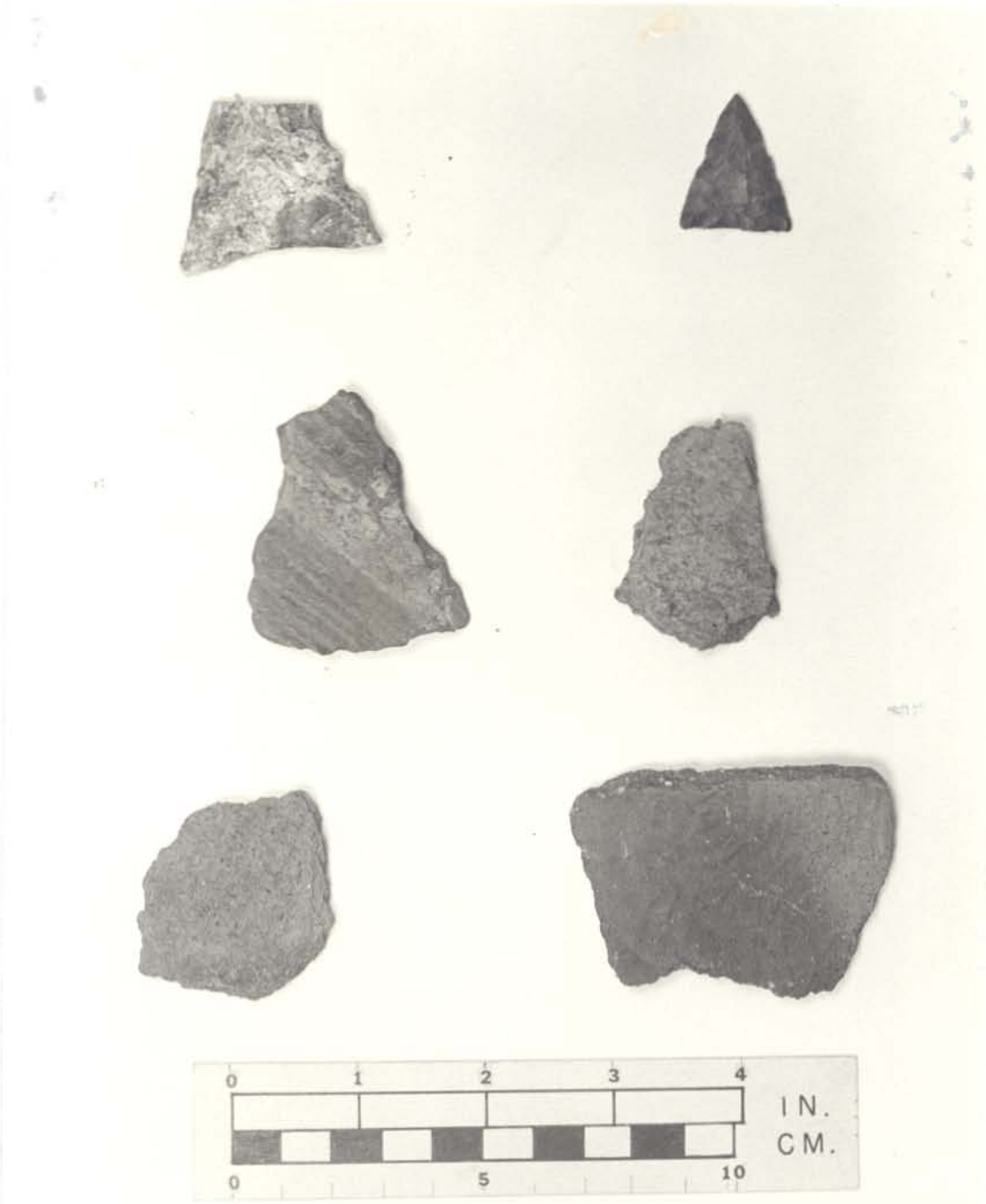

Figure 20: Woodland and Mississippian cultural materials from the project area (left to right): Large Triangular point; Small Triangular point; Wilmington; Cape Fear; Savannah; Mississippian.

mound and its associated burial, which were thoroughly investigated by C.B. Moore (1898), the survey was unable to locate any large Mississippian sites. A few pottery sherds were discovered in the eroding middens and scattered across a few beaches, but their numbers are appreciably low and they co-occur with other time periods in multi-component sites. The small triangular points frequently associated with this time period are also relatively few, and only one point was found during the survey (Fig. 20).

With the association of the sixteenth century Spaniards and the neighboring Indians, several sites demonstrating contemporaneity were located. At Elliott's Beach on the west side of Parris Island, and located about one kilometer west of Santa Elena, two Spanish pottery sherds were found. These sherds appeared in the dispersal of aboriginal ceramics and other prehistoric cultural materials that occurred on the eroded beach. Among the prehistoric ceramics were several complicated stamped sherds associated with the Mississippian.

Opposite Parris Island, and on the northeastern tip of Pinkney Island, two additional Spanish sherds were found. Unfortunately, however, there was no indication of Mississippian ceramics or other evidence of that time period.

The presence of these Spanish sherds may suggest many avenues of explanation which may involve trade networks, the theft of Spanish materials after the burning of Santa Elena, or simply an extension of Spanish occupations. With such little data, however, any explanations are certainly tenuous.

While little can be set forth concerning this specific period of time, the temple mound and its related burial mound do offer some knowledge of sea level elevation about 1,000 years ago. Both of the earthen structures are composed of sand and oyster shell, and C.B. Moore recognized that the shell represented debris from former midden. If these people were exploiting shellfish communities in the immediate vicinity of the village, then sea level must have been higher in comparison with the Woodland period. The shellfish remains in the earthen structures presently represent the most northern occurrence of aboriginal shellfish deposits. During this cultural time period, the oyster had moved at least 22 miles inland; a difference that suggests continued environmental change while it demonstrates the continued exploitation of shellfish populations during the Prehistoric period.

The Mississippian, then, is apparently confined to one specific area of the estuary. While a few representatives in the form of pottery sherds and a single projectile point were found at a few localities involving the edges of the main channel, there is little evidence of extended utilization and occupation.

Historic

Cultural materials representing the Historic period are found throughout the area; however, these materials are all remnant portions of some former occupation. In all examples, the materials were found scattered on beaches and thoroughly mixed with prehistoric materials of various time periods. The only evidence of structures occurred on the northern periphery of Hilton Head Island contiguous with Skull Creek. These tabby structures had suffered considerable attrition from erosion and represent only portions of a former occupation. At each of these locations cultural materials in the form of glass, ceramics, and metals were not observed.

Historic occupation along the edge of the estuary seems to have occurred during the nineteenth century. Although several earlier sherds, such as brown salt-glazed stoneware, were found, their numbers are low in comparison to the other predominant materials such as whitewares and pearlwares. Additionally, the occupations appear to have been small with little indication of continuity.

Shell middens relative to the Historic period are difficult to distinguish from the Prehistoric period, especially in the absence of cultural materials. Along the eastern edge of Colleton Neck, there are several small oyster middens that may be associated with historic occupations, based on the presence of bottle fragments. However, such associations are tenuous because bottles drift and eventually become deposited on various beaches. In the absence of ceramics and other materials that are not given to drift, it would be difficult to make an argument for this specific time period and associations with shell middens.

Historic materials occur dispersed across many of the beaches, and as it was explained earlier, many of these items probably resulted from longshore transportation. In many cases the site of donation is unknown and these materials may have traveled an appreciable distance, especially in regard to bottles and other semi-closed containers. In areas where glass and ceramics occur clustered on eroded beaches and hummocks, there is an excellent indication of former occupations in the immediate vicinity, and future research should provide additional investigations.

At least two sites have a good potential for yielding additional information: 38BU238 and 38BU252. The first site is located in a small hummock immediately north of Station Creek, which has been discussed earlier. Apparently a Civil War occupation and foundry, the site is relatively undisturbed and should yield a considerable amount of data concerning smelting operations during the war. The second site is located on the eastern edge of Corn Island and is eroding into the marsh. Historic components of the mid-nineteenth

century were found in a relatively small area and are apparently eroding from the beach. Perhaps other components of the occupation are contained within the aboriginal shell midden. Because the island was apparently occupied and cultivated during the 1800s, further evidence of structures and cultural materials may be located beneath the extensive vegetation.

Lithic Raw Materials

The overwhelming majority of lithic materials utilized in the manufacture of shipped tools and bifaces resulted in the use of chert. Silicified slates, such as rhyolite, were observed infrequently, and only two bifaces were manufactured from the Piedmont material. Orthograde quartzites and quartz were not present in any of the materials recovered or observed in collections.

The utilized chert appears to originate from at least two different sources: chert quarries in the Coastal Plain, and cobbles that exist on the beaches of the Broad River. The Rice Quarry (38AL14), located in Allendale County and about 55 miles from the project area, was utilized extensively by aboriginal populations and may have served as a possible donor. Other lithic tools were definitely manufactured from chert cobbles that occur occasionally on the sandy beaches of the Broad River, especially at Site 38BU285. Based on several shattered cobbles associated with different sites that yielded bifaces and debitage, it would appear that bi-polar technologies were used to obtain select portions of the cobbles. Such evidence is especially present at Site 38BU114 and 38BU257 (Fig. 21).

Chert materials, in regard to physical appearance, vary considerably in texture, composition, and color. The marsh sediments have a profound affect on coloration as does saltwater and sunlight. If certain cherts are allowed to remain in the marshy silts and clays, the matrix absorbs the dark color of the contiguous soil, but if the materials are removed and allowed to remain exposed to water and sunlight, the subsequent effect is bleaching. Textures vary from fine to coarse, and the internal compositions of silica appear to vary considerably. The highly silicious cherts are translucent and appear to suffer only slightly when exposed to the elements, but other opaque cherts seem to absorb coloration and deteriorate more rapidly. These physical differences should be investigated more fully at a later time in order to determine possible sources of raw materials and their utilization as it relates to various prehistoric cultural periods. For example, cobbles may have been used extensively during the Early and Middle Archaic, or perhaps during the Late Archaic. Perhaps they were used continuously as an alternate source of raw material in the absence of Coastal Plain chert.

SUMMARY AND CONCLUSIONS

The intensive shoreline survey of Port Royal Sound and the Broad River was initiated for several reasons. Primarily, human adaptation within an environment of dynamic change was investigated. These preliminary investigations were oriented towards setting forth basic patterns of settlement and subsistence during the Prehistoric period, while gathering data amenable to future sea level studies. Such a survey would study the amount of site attrition induced by the effects of wind, water, and tidal fluctuation, and the amount of relic collecting which is actually another form of attrition. Such information concerning site location would also have importance in the event of industry or housing.

The survey revealed that human populations were occupying different portions of the estuary during various time periods. The earliest habitations are found adjacent to the main channel and situated on old relict dune ridges that once formed elevated areas overlooking a river and its floodplain. This pattern continued throughout most of the Archaic, but with marine transgression and subsequent inundation about 4,000 years ago settlement took advantage of low-lying sand ridges that were apparently contiguous with marsh systems. During this Formative period, habitation sites were located along the main channel of the estuary and in the lower, more seaward portion. This spatial location strongly suggests that sea level was much lower than at present, and the inundated Daw's Island shell midden provides unquestionable documentation for sea level stand 3,500 years ago. The seaward occurrence of Deptford ceramics about 2,800 years ago indicates lower stands of sea level during the Early Woodland.

With the appearance of Wilmington and Cape Fear ceramics and associated shell middens, there is an indication of increased sea level elevation. These middens extend up the estuary with distances comparable to the Formative period; however, there is a greater lateral displacement which involves the occurrence of middens in small tidal creeks situated on small marsh hummocks. Such spatial distributions would indicate higher sea level, and with the absence of inundated sites, this is further suggested. Additionally, the high marsh surface is encroaching on the edges of the middens, thereby producing further evidence of environmental change and sea level rise.

Unfortunately, the Mississippian occupation only utilized one specific area of the entuary; therefore, there are no indications of dispersed settlement. The Mississippian occupation does, however, provide some indication of sea level elevation about 1,000 years ago.

It represents the northernmost occurrence of aboriginal shell deposits, which suggests that shellfish communities had moved up the estuary. This, then, may be evidence of higher stands of sea level.

In terms of subsistence differentiation, as evidenced in floral and faunal remains contained within middens, the Formative period occupants were selecting a large variety of marine organisms, in addition to terrestrial species. However, during the later Woodland occupations, shell midden fail to express species diversification, but rather, the oyster seems to constitute the overwhelming food remain. The sites are also smaller, and many of them suggest short term occupation in the form of extraction camps. The Mississippian components are not well represented in the form of shell middens or other types of sites, and subsequently, there are few indications of subsistence and settlement.

Settlement within the estuary, when viewed through time and space, appears to have been affected by changing environmental conditions. During periods of lowered sea level, the residents of the area were selecting elevated sandy ridges that lay adjacent to the floodplain of a Coastal Plain river, and often these sites involved the apparent confluence of tributaries. With rising sea level and the eventual flooding of the river valley, human populations began exploiting the emerging shellfish resources in the lower portion of the estuary, and with rising waters settlement began to extend into lateral areas, and finally into the upper portions. Thus, a generally rising sea level affected settlement, and this pattern just outlined can be used as a model for the expectation of site location in estuarine systems.

Site attrition through the effects of wind, water, and tidal fluctuation, all of which are paired with rising sea level, have been severe throughout the millennia and sites continue to be destroyed. In addition, relic collectors have been removing cultural materials from the beaches for a considerable amount of time. Although only a few collectors during the survey were contacted, those that were contacted indicate that a considerable amount of material has been removed. Some future study should be oriented towards documenting the cultural materials.

This intensive survey has located a considerable number of archeological sites that span the entire spectrum of known human occupation in South Carolina. With the knowledge generated from this study, some attempt should be made to continue archeological investigations and to provide for the protection of these sites in the event of industry or urban expansion.

APPENDIX

NOTES AND INFORMATION ON CERTAIN COLLECTORS IN THE BEAUFORT AREA

Mr. Joe Allen Patterson, a Beaufort realtor, has a collection of material from the immediate area of Beaufort which includes Indian artifacts and Civil War artifacts. He collected the upper area of the Broad River in the vicinity of Barnwell, and Shepherd Island. He states that he found a dugout canoe near Barnwell Island several years ago, but he did not elaborate on the discovery. He also mentioned another canoe on Caper's Island in the sand dunes. He tried to recover it, but the canoe was destroyed in the process. He also has a tabby brick which he recovered from Battery Creek, and accordingly, there are several hundred more of the bricks lying scattered about the area. Write to: 604-A Bladen Street, Beaufort, S.C. 29902.

Mr. Steve Patterson, the son of Joe Allen Patterson, also has a moderately sized collection of Indian relics and Civil War artifacts which were all found in the area around and within Beaufort. His material was found in the same areas listed above. Both of the Pattersons are nice people and very helpful in talking about artifacts and site location.

Mr. Mac McLeod, a friend of the Pattersons, is reported to have a collection of Indian relics, but we were unable to get in contact with him.

Mr. Earl Gibson, Sunset Bluff, Ladies Island, Beaufort, has a rather large collection of Indian relics. We were not able to get to see the collection, but Tommy Charles has visited him. Gibson claims to have worked with Tono Waring. Telephone 524-3581.

Mr. Mike Taylor, a resident of Hilton Head Island, reportedly has a large collection of Indian relics from Hilton Head and Daufuskie Island. We, however, did not get to see the collection. Telephone 785-4432.

Mr. Leonard Blackwell, 2603 Depot Rd., Beaufort, S.C., has found several Indian relics in the vicinity of Beaufort, and claims he has a soapstone pendant found near Lemon Island. We did not get to see him. Telephone 524-2376.

Mr. Lepene Rice, address and telephone unknown, was referred to me by Leonard Blackwell. Accordingly, Mr. Rice has an Indian relic collection from the Beaufort area. I believe he lives in Beaufort.

Mr. Charles B. Haley, resident of Beaufort, has a small collection of about 100 points that he found on the Coosa River on Coosa Island. Most of the points are Late Archaic, but a few Palmers and Taylors are present. His site is located adjacent to an eroding cemetery on Coosa Island. Telephone either 524-8627 or 524-5755.

Mr. Jerry Putnam, resident of Ladies Island, has a small collection of fossils and twelve projectile points, all of which were collected from the beach of Ladies Island on the Coosa River. His points include Late Archaic and two Palmers. Telephone 524-1924.

Mr. John Phifer, USC student living at Land's End on St. Helena Island, has a collection of Indian relics and Civil War artifacts, in addition to bottles, that he collected on the beaches of St. Helena Island. Telephone: 838-3571.

Mr. M.A. Phifer III, a resident of Columbia, S.C., has a collection of Indian relics that were also collected from the beaches of St. Helena Island. Phifer is the father of John Phifer, who is mentioned above. I have not seen the collection which is housed in Columbia. Telephone 787=7780.

Mr. Richard Moody has a moderately sized collection of Indian relics and Civil War artifacts. The Indian relics were found in Port Royal Sound, the Broad River, and several of the islands in St. Helena Sound, especially Ladies Island, Coosa Island, and Eddings Point. He also has two human burials that were taken from the shell midden on Daw's Island. Address: Lot #5, Seagull Drive, Beaufort, S.C. 29902.

Mr. Pat Weiland claims to have some knowledge about a Tabby structure on Lemon Island. Accordingly, the former landowners discovered a "cross-shaped" structure which they interpreted as being the original marker left by Jean Ribaut in the 1560s. He also said he had information on a tabby foundation and burial vault which belonged to the Hazzard family. Address: Route 1, Beaufort, S.C.

Messrs. Bert and Leon Smith have a large collection, according to Pat Weiland. No other information is available, however. Address: Tillman Road outside of Ridgeland, S.C.

Mr. George Chappell, a friend of Richard Moody, accordingly, has a moderately sized collection of Indian relics. He is a Beaufort resident.

Mr. Tommy Logan, a Beaufort resident, is reported to have a collection of Civil War artifacts and bottles. No other information is available.

Mr. Riley Bennett, Jr., a Florida resident and the son of Riley Sr., also has a moderately sized collection of Indian relics that were found in the same area as his father's collection. Riley, Jr. visited with his father and brought his collection up from Florida and showed it to me. Address: P.O. Box 4194, Fort Pierce, FL 33450.

Mr. Riley Bennett, Sr. has a moderate collection of Indian relics that were found during the past decades. The relics came from the upper portion of the Broad River, and from several islands in St. Helena Sound. Among his collection were many Early Archaic points and at least one Clovis that was found on one of the islands in the Coosa River. Address: Hermitage Road, Beaufort, S.C.

Mrs. J.K. Hollis reportedly has a collection from her deceased husband; however, we did not contact her. Telephone 524-3966. Address: Ribaut Road, Beaufort. S.C.

Mr. John F. Morrall is reported to have an Indian relic collection from the area of Beaufort, but we were not able to see him. Telephone: 524-5380. Address: Cateret St., Beaufort, S.C.

Mr. Colden Battey, a local attorney at law in Beaufort, reportedly has a large collection of Indian relics. We did not get to see him.

Mr. Tom Henry, a local policeman in Beaufort, has a large collection of Indian relics, but we never had time to visit with him.

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