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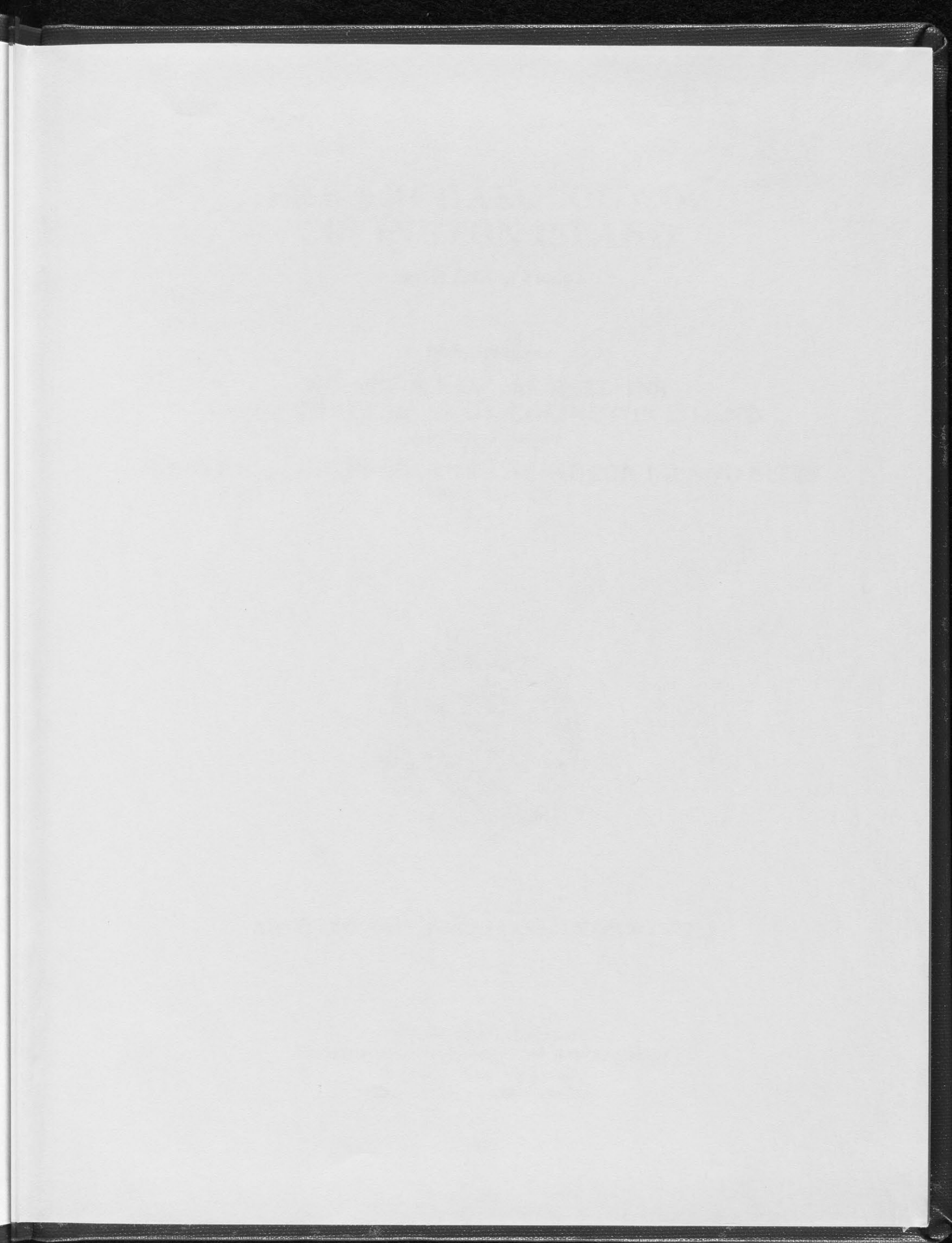
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THE ARCHAEOLOGY OF COLINGTON ISLAND

David Sutton Phelps

with appendices

NON-FISH FAUNAL REMAINS FROM THREE SITES ON COLINGTON ISLAND

Jeannette Runquist

FISH REMAINS FROM THE COLINGTON ISLAND SITES

Camm C. Swift



ARCHAEOLOGICAL RESEARCH REPORT NO. 3

Archaeology Laboratory
Department of Sociology and Anthropology
East Carolina University
Greenville, North Carolina

1981

THE ANCHORAGE OF WASHINGTON ISLAND

First Series

1911

FROM THE SURVEY OF THE
WASHINGTON ISLAND

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FROM THE SURVEY OF THE
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U.S. NAUTICAL RESEARCH REPORT NO. 1

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Students cleaning a square at the White Court site, July, 1972.
(Photo by Henry Applewhite).

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In the summer of 1972, the Colington Harbour resort community was in the final stages of development by the American Central Corporation of Lansing, Michigan, and a relatively small number of lots had been sold to private owners. The author is most grateful for the permission granted to survey and excavate the sites controlled by the American Central Corporation, as well as the interest shown in the project by the local personnel of that corporation. The farewell party they hosted for our staff and students at the conclusion of our research was a memorable occasion and ample testimony to their cordial hospitality.

Appreciation is also expressed to the owners of those already developed private lots in the Colington Harbour community, and in other parts of the island, who readily gave permission for access to, and excavation of, their properties. The Colington Harbour community is now controlled by the Colington Harbour landowners association, whose representatives have been most cooperative in granting permission for access to the sites over the years since 1972. Numerous students in East Carolina University and UNC Sea Grant summer courses have thus visited the sites on field trips, and gained valuable experience from their observations.

The Dare County Board of Commissioners kindly permitted us to occupy three buildings of the former Auxiliary Naval Air Station at the Manteo Airport on Roanoke Island, which served as dormitory and laboratory space during the 1972 field school operation. Following our occupancy, that facility was demolished to provide a building site for the present North Carolina Marine Resources Center.

Numerous citizens of Dare County were most cooperative in providing information about sites and area history on Colington Island and elsewhere in the county. Such information is always welcome since it generally enhances the overall understanding of a locality necessary to successful completion of a project such as this.

Henry Applewhite, photographer, of Manteo, North Carolina, was responsible for the Frontispiece photograph, taken along with many others while he followed our work that summer in conjunction with a publicity assignment.

The line drawings of artifacts in Figure 7 were done by Janice Northcutt, one of the 1972 field school students.

Final analysis and publication of the data from the 1972 Colington Island research was made possible through a Heritage Conservation and Recreation Service survey and planning grant to East Carolina University. The grant was administered through the Archaeology Branch, Division of Archives and History, North Carolina Department of Cultural Resources.

The first of the year was a very dry one, and the crops were much affected. The weather was very hot, and the crops were much affected. The weather was very hot, and the crops were much affected. The weather was very hot, and the crops were much affected.

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INTRODUCTION

Colington Island is one of the chain of barrier islands which form the Outer Banks along the coast of North Carolina, separating the vast sounds of estuarine system from the Atlantic Ocean. It lies on the sound side of Bodie Island in Dare County, and was once a part of that island when sea level was lower than at present. Now it is separated from Bodie Island by the narrow passage of Colington Creek on the east and Kitty Hawk Bay on the north (Figure 1).

The Outer Banks are a fragile barrier constantly changing through time in response to the dynamics of nature, and their form in any synchronic segment along the time continuum is the result of a momentary balance between the dynamics of rising sea level, winds, storms, tides and sedimentary processes. Although never completely stable, the Banks have maintained their current general form for approximately two to three thousand years, according to geological estimates. Archaeological studies also support that conclusion, having found no evidence of human use on the present surface of the islands prior to about 1000 B.C. and frequent use only within the past 2000 years. Colington Island is no exception to this; its initial occupation by native Americans probably occurred sometime between 200 and 300 A.D. and continued at least until the 14th century occupation by Algonkian people of the coastal region.

There is a vast difference in the appearance of the island's surface of 200 A.D. and at the present; the original inhabitants would certainly be amazed, probably appalled, by the modern appearance, and perhaps some of the modern residents would prefer to see Colington as it was eighteen centuries ago. Human culture is, however, as changeable as nature, and the island has changed in response to both nature and culture. This paper describes the earlier inhabitants of Colington Island from about 200 to 1400 A.D., adding another chapter to the continuing history of the island and the coastal area.

COLINGTON ISLAND TODAY AND IN THE PAST

From the air, Colington Island resembles a verdant butterfly with a tattered right wing, resting on the shoals inside the barrier islands (Figure 2). Its current shape is the result of rising sea level, erosion, and other natural processes which continually change the coast. Once connected with Bodie Island, it shares with that and the other barrier islands a surface topography of sand dunes separated by lower, wet areas, marshes and ponds. On the northeast side of the island the dunes trend northwest-southeast in parallel rows, on the south side they are irregularly spaced and oriented north-south, and on the northwest end of the island they follow a general east-west alignment except where they parallel the west shore of Blount Bay on the east and Albemarle Sound on the

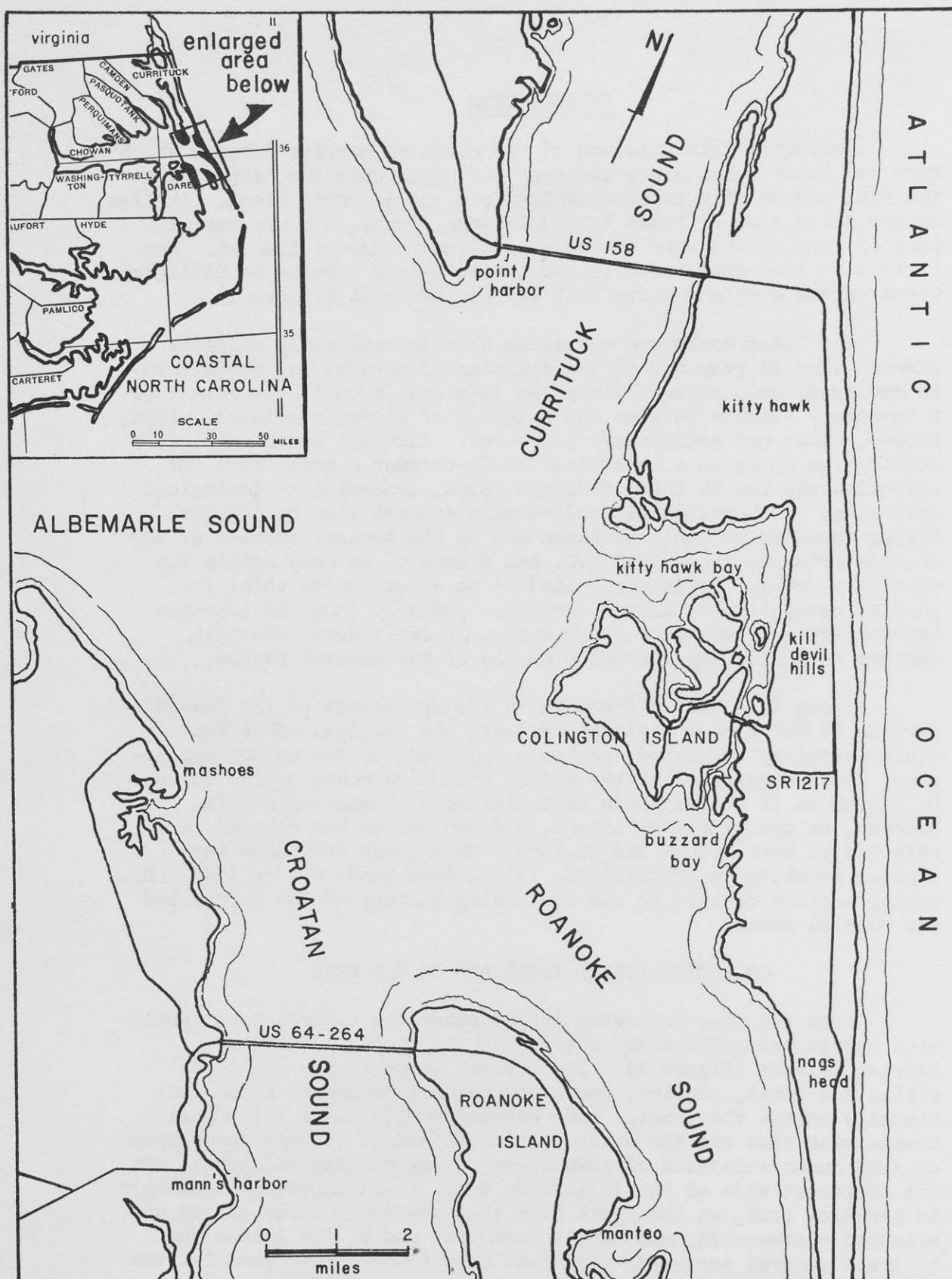


Figure 1. Colington Island in coastal North Carolina.

west. The dunes are not all of the same age, and their orientation reflects different directional forces affecting their formation. Evidence of continuing dune migration was observed during the archaeological research, and there is no reason to doubt that it will continue.

Soils on the island are either the fine sands of the dunes and their slopes or peats in the swales, marshes and ponds. Vast areas of shoreline marsh occur on the southeastern part of the island, and smaller areas are found on the northeastern and western shores. The islands directly north of Colington (Burnt Island and the Southern Islands) are also marsh, dissected by numerous shallow channels between Colington Creek and Blount Bay. A large marsh and pond embayment almost encircled by high dunes originally existed on the center of the north-western part of the island, and smaller interior marshes and ponds were located north and east of the larger one.

The dunes, presently ranging in height from 10 to 60 feet above sea level, originally supported forests of live oak, water oak, hickory, pine, American beech, and other canopy species towering over the yaupon holly and dogwood in the understory. The forest floor supported palmetto, muscadine grapes and other plants. Gum, cypress, maple and wax myrtle on the lower slopes and flats gave way to willow, and finally marsh grasses in the peaty marshes and around ponds. The plant communities supported a varied array of fauna and the waters around the island contained numerous fish and shellfish such as oysters, clams and various gastropods.

Man has modified the island since his first occupation some 1800 years ago, but the earlier inhabitants did little more than cut trees for shelter and firewood, deposit their food refuse in heaps on the dunes, and dig a few pits for cooking and other activities. Even into the early years of this century, much of the island had not been irrevocably changed, but the past three decades have witnessed extreme modification.

The last native American inhabitants of Colington Island were people of the Algonkian-speaking culture whose territory included 6000 square miles of northeastern North Carolina from the Neuse River to the Virginia line, and from the Outer Banks to the heads of Albemarle and Pamlico sounds. Probably, there was no Algonkian settlement occupied on Colington Island at the time of the first English contact between 1584-1587 since the records of the exploratory expeditions make no reference to it, and John White's maps of that period show what is now Colington as a western bulge on Bodie Island. Colington Island emerges into the historic stream as Carlyle Island on 17th century maps, and was the first property in the Carolina Colony to be granted to an individual by the Lords Proprietors in 1663.

David Stick, the noted historian of the Carolina coastal area, has traced the history of the island from that time to the present (Stick 1958: 265-267; 1970). The grant of the island to Sir John Colleton resulted in a change of names from "Carlyle" to "Colleton", and the modern Colington is a derivative of the latter. Peter Carteret, one of Colleton's partners in the venture of establishing a plantation on the island, cleared land and planted corn and vineyards, and stocked the island with cattle and horses by 1665. The venture failed, presumably due to the devastating effects of a series of hurricanes, but is doubtful that extensive agriculture would have proved successful on the island soils even under ideal conditions. Some surviving correspondence of this venture provides interesting details of the endeavors and results of Colleton Plantation (Powell 1958), but no archaeological evidence of the plantation has been found.

Colonial settlement of the island began in the 1670s and by 1750 the island was divided into its two modern parts, Big Colington and Little Colington, by excavating a canal from the head of a small creek at the south end of Blount Bay southward to Buzzard Bay (Figure 2). Nineteenth century settlements were located on the south side of Big Colington, but late in the century the population shifted to the northern shores. In the late 19th and 20th centuries, the communities of Colington and Eagleton grew around the southwestern and northwestern shores, respectively, of Blount Bay. These communities supported themselves by commercial fishing until the decline of this industry (Stick 1958: 267).

Colington Island today has a mixed settlement pattern. A few permanent residents live mostly in the older communities, but seasonal cottages, house trailers, camp grounds and other tourist-related features stretch in an almost unbroken line along the paved road. The entire northwest section of Big Colington has been developed as the Colington Harbour resort community, complete with paved streets, a recreation center, and a guard gate. The lots of that development are on the high dunes and on "made land" adjacent to the canals and basins dredged from the former interior marsh. Regardless of eighteen centuries of culture change, Colington Island is still a place of primarily temporary settlement.

THE ARCHAEOLOGICAL PROJECT

Prior to 1972, only one published archaeological study existed for the entire northern coast and coastal plain of North Carolina. This was the work of William Haag (1958) who surveyed the shorelines of the Albemarle and Pamlico estuaries and parts of the Outer Banks in 1955-56 in a search for Algonkian sites which might correlate with those mentioned in the English exploratory records (Corbitt 1953). In the process, Haag recorded a number of archaeological sites and proposed a cultural-historical sequence

which, although accurate in some respects, was in error in placing the entire sequence much too late in time. This, however, was a common error in American archaeology prior to wide availability of physical-chemical chronometric techniques such as radiocarbon dating. Haag's micro-culture areas of the "Banks" and "Sounds" have not withstood the test of time and additional data, since no major cultural distinction appears to exist within the estuarine zone. While minor differences may be seen in the material culture of socio-political units on the coast and these further inland on the Coastal Plain, the estuarine, or Tidewater, zone has a cultural-spatial integrity through time.

Since 1972, a number of archaeological studies related to environmental impact in the northern coastal area (Phelps 1978) and the Colington Island vicinity (Phelps 1977a; 1976), and basic archaeological research (Phelps 1980b; 1977b) have provided sufficient data for the formulation of a cultural-historical model (Phelps 1980a). The area surveyed by Haag is now designated as the Tidewater subregion of the North Coastal Region of North Carolina, and is approximately the area shown in the small inset map in Figure 1. Haag's "Early" and "Middle" periods were defined on the basis of a mixed assemblage, but can be generally correlated with the Middle Woodland period Mount Pleasant phase (300 B.C. - 800 A.D.) in modern context. This applies particularly to the ceramic assemblage described by Haag, and factors out such artifacts as the Archaic period projectile points. His "Late" period, which he presumed to be almost historic, is the Colington phase (800 - 1650 A.D.) in this report, and is the prehistoric culture of the Carolina Algonkians.

In 1972, a study of the archaeology of the North Coastal region was initiated at East Carolina University. From the beginning of the archaeology program a year earlier, a research design for eastern North Carolina had been developed which drew from the known ethnohistoric data and cultural distributions a synchronic cultural-spatial framework. With this model as a guide, sites in each region or subregion could be investigated and regional sequences developed. This design applied not only to pure research, but to research as a mechanism for student training as well; for that reason, the 1972 field school in archaeology was conducted on the coast, working from a temporary base at Manteo on Roanoke Island. The goals set for 1972 were re-survey of the sites recorded by Haag on the Outer Banks and Roanoke Island in Dare County, location and recording of new sites, and test excavations where feasible in sites with potential for context.

The work on Colington Island began with a re-survey of the previously recorded sites. When the intact condition and imminent danger of destruction through development was determined for the sites within the Colington Harbour community (31DR14, 15, 16, 33, 34), permission was obtained to excavate tests in some of these.

Approximately 12 students, under the direction of the author, worked for three weeks in late June and early July excavating and mapping sites 31DR14, 15 and 33. All specimens, photographs and data from these sites were cataloged during the field school session, and deposited in the permanent collection at East Carolina University at the termination of the session. A preliminary analysis of the ceramic specimens was accomplished in 1975-76, three radiocarbon samples from the sites were processed and dated with some extra funds available in 1975, and these data were included in a summary report (Phelps 1977b). In the meantime, various funded projects took precedent over the Colington Island data and only when funds were made available through the current grant could sufficient time and personnel be budgeted for this study, including analysis of the faunal remains and additional radiocarbon sample dating (Table 5). Non-fish faunal remains were analyzed by Dr. Jeannette Runquist, Assistant Professor of Biology, Winthrop College, Rock Hill, South Carolina (see Appendix A), and fish remains were studied and reported by Dr. Camm C. Swift, Associate Curator of Ichthyology, Natural History Museum of Los Angeles County, Los Angeles, California (see Appendix B).

A comprehensive survey of Colington Island was not part of the project, but most of the dune ridges and slopes in the Colington Harbour property were inspected for archaeological sites. At least one location in the village of Colington was reported to us; in that instance, shell was observed where the slope of a dune had been cut to make room for a mobile home. No artifacts were seen with the shell, but the location on the southwestern side of Blount Bay was recorded. It is possible that some of the other shoreside dunes on the island also cover archaeological sites.

The known sites, which are the subject of this report, provide a basic understanding of culture history and land use, and some speculation on the relationship of Colington Island to the mainland in prehistoric times.

ARCHAEOLOGICAL SITES ON COLINGTON ISLAND

The seven known archaeological sites on Colington Island are located along the northern and northwestern shores of the island (Figure 2). Five of the sites were first recorded and collected by Haag (1958), who performed test excavations in only one of them. In 1972, all of these sites were re-surveyed and surface collected, two additional sites were located and recorded, and excavations were conducted in three of the sites. Other sites in the locality are 31DR39, a secondary deposition (Phelps 1976) north of the Wright Brothers Memorial, and 31DR17, Shellbank Point, first recorded by Haag (1958: 36) and resurveyed by the author in 1977. This site, although disturbed by construction and erosion, has multiple components, including one of few Rangia clam middens known in this area. The latter component has been assigned site number 31DR46 (Phelps 1977a: 82), but the site has been so disturbed by real estate development that only limited research potential remains.

The Colington Island sites span approximately 1,500 years of prehistory during the Middle and Late Woodland period, and throughout their temporal span appear to have had similar functions and intrasite patterns regardless of change in other aspects of the culture of the people who occupied them. Each site is a small, specialized unit of the broader settlement pattern to which it belonged, and, as such, adds a significant dimension to knowledge of coastal cultural systems. The prehistoric sites also conform a pattern of land use and subsistence which has been relatively constant since the first occupation of the island, modified to some extent in modern times by new technology and redistributive systems.

The sites are described in their locational order from the northeast point of Little Colington, to the northwestern shore of Big Colington Island. For convenience, the modern site names and North Carolina Archaeological Survey (NCAS) numbers are correlated with Haag's site numbers in the following list:

<u>NCAS #</u>	<u>Site Name</u>	<u>Haag #</u>	<u>Haag Name</u>
31DR12	Beaseley	C1	Same
31DR13	Eagleton	C2	Haygood
31DR14	Kitty Hawk Bay	C3	Same
31DR15	Rush Point	C4	Same
31DR16	Stick	C5	Same
31DR33	White Court	--	--
31DR34	Colleton Lane	--	--

BEASELEY SITE, 31DR12

The Beaseley site, the only one presently recorded on Little Colington Island, is located 1000 feet (305 meters) north of S.R. 1217 on the shore of Dog Point Creek (Figure 2). The site area is barely 2 feet (.6 meter) above present sea level on the northern end of a ridge of Fripp fine sand. This ridge has the highest general elevation on the northeastern end of the island, and is the easternmost extent of the Fripp soil. Surface morphology on this part of the island is characterized by a series of forested sandy ridges which trend northwest-southeast separated by sloughs or depressions of wet soils, the entire configuration reminiscent of dune topography now being drowned by the rise in sea level.

When Haag visited the Beaseley site it had already been extensively disturbed (Haag 1958: 39), and this situation has been compounded over the years. House construction, fill, debris, and other modern cultural modifications have obliterated or covered much of the site and its original extent could not be determined in 1972. The only area in which a collection of cultural material was possible was a small (30 meter square) area of newly plowed and planted garden adjacent to one of the houses near the shore. The plowed section was a dark organic soil with numerous inclusive oyster

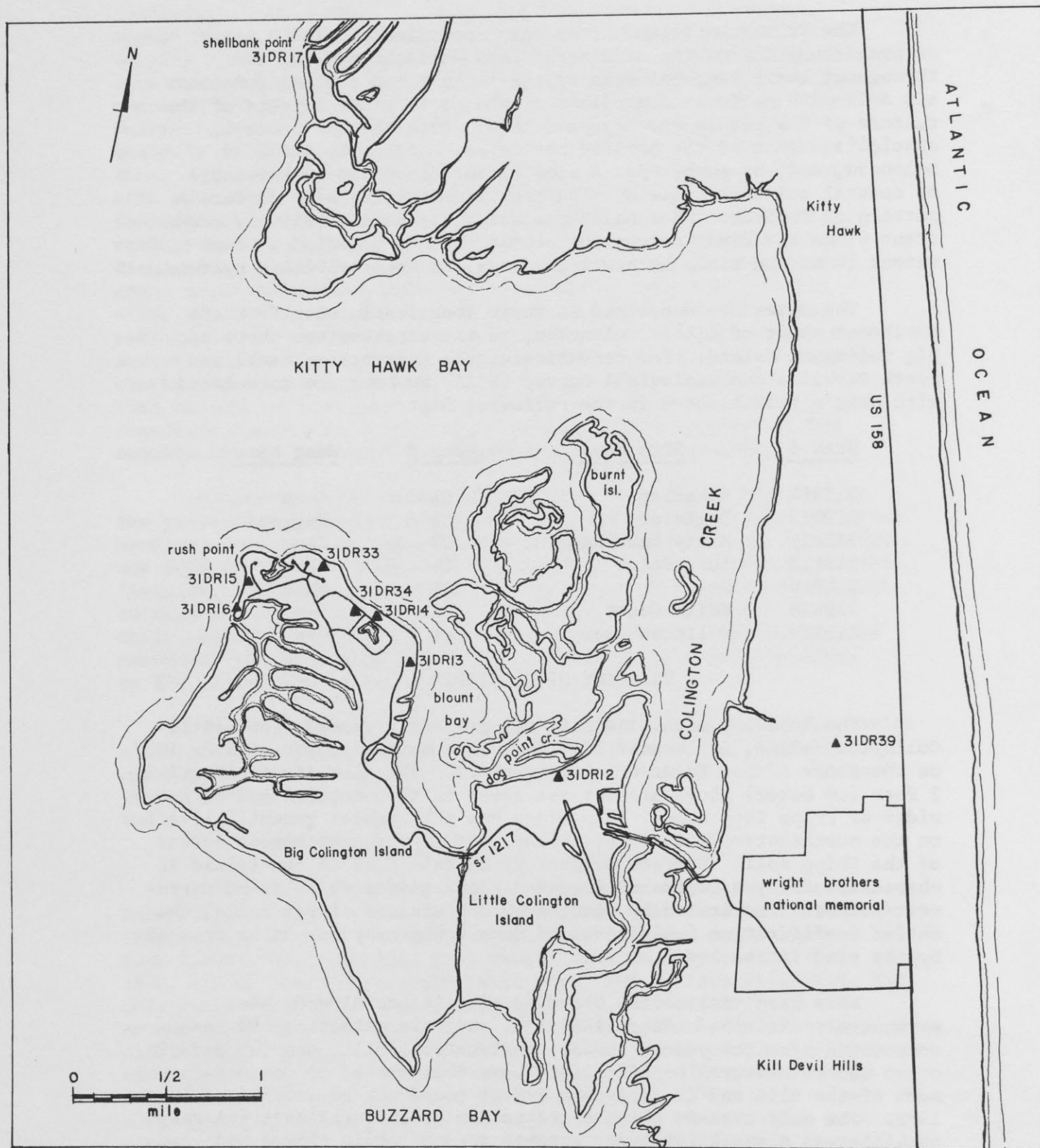


Figure 2. Archaeological site distribution in the Colington Island locality.

shell fragments, evidently a remnant of the original midden, from which a meager sample of 8 ceramic sherds was obtained. All of the sherds belong to the Mount Pleasant series, as did the majority (22) of those collected by Haag in 1955 (Table 1). No Colington series material was found although Haag reported five Colington fabric impressed sherds in his collection.

Table 1. Comparative Ceramic Collections from Unexcavated Sites.

NCAS Site No.*	31DR12		31DR13		31DR16		31DR34
Haag Site No.	C1		C2		C5		--
Series	Types		1972	1955	1972	1955	1972 only
Mt. Pleasant:							
	Cord marked	3	2	1	10	10	2
	Net impressed	2				11	16
	Fabric imp.	1	19	1	37	25	11
	Plain		1		13	2	11
	Residual	2				44	
Colington:							
	Fabric imp.		5	21	8		5
	Plain			1	6		2
	Residual			10			
Collection Totals		8	27	34	74	92	40
Total Sample		35		108		132	
						7	

*North Carolina Archaeology Survey

The combined ceramic sample from the 1955 and 1972 collections totals only 35 sherds (Table 1); 30 of these are various Mt. Pleasant types and 5 are Colington fabric impressed. No other artifacts were observed or collected. While the actual area searched and collected in 1955 is unknown, the 1972 collection from the garden area represents a very low density of cultural material (8 sherds from an approximately 900 square meter area. This low density of specimens compares favorably with other sites on Colington Island and indicates that the Beaseley site was probably a seasonal (temporary) collecting site for shellfish (oysters) and perhaps other food resources. Maximum site use apparently occurred sometime during the Mount Pleasant phase (300 B.C. - 800 A.D.), with possibly an occasional re-occupation during the succeeding Colington phase.

EAGLETON SITE, 31DR13

The modern community of Eagleton, located along Blount Bay on the northeast shore of Big Colington Island at the end of State Road 1217, is situated on the crest and slopes of a remnant dune with maximum elevation slightly above 10 feet (Figures 2, 3). It is obvious that the Fripp fine sand of the dune has been extensively modified to accommodate residences and appurtenant structures, yards, docks, the roadway, and other modern construction. Little change had occurred between Haag's (1958: 39) original survey and description

and the 1972 work. Oyster shell and cultural material was observed and collected along the shoulders of the paved road, in driveways and the bare spots in yards for a distance of approximately 350 meters (1150 feet) along the crest and flanks of the dune ridge, but nowhere were intact deposits observed.

The 1972 collection included 34 ceramic sherds, 1 unretouched tan jasper spall, and 2 fragments of mammalian bones (probably deer). The combined sample from the 1955 and 1972 collections (Table 1) is 108 sherds; 62 of these are assignable to the Mount Pleasant series and 46 belong to the shell tempered Colington series. Although the sample is relatively small, it argues for relatively equal use of the site in both the Middle and Late Woodland periods. Site function appears to have been that of a seasonal shellfish collecting station with hunting and other subsistence activities as secondary functions.

KITTY HAWK BAY SITE, 31DR14

It is obvious from his description of the Kitty Hawk Bay site that Haag incorporated two completely distinct and separate sites (31DR14 and 33) into his site number C3. His statement that "...For a distance of at least one-half mile along the northward facing shore of Big Colington, there are hills about fifteen or more feet in height that are capped with oyster shell midden." (Haag 1958: 40) describes almost exactly the distance between the Kitty Hawk Bay and White Court sites. There is, however, no continuous distribution of oyster shell or cultural material for the distance quoted above, either along the dunes or on the beach. Instead, the separate sites are located where the higher dune elevations are, or were, in close proximity to the immediate shoreline (Figure 3).

The Kitty Hawk Bay site, as defined in the 1972 survey extends for approximately 240 meters along the crest and shoreward flank of a dune ridge of fripp fine sand on the north shore of Big Colington Island (Figure 4a). The dune rises rather steeply from the present shore to a general elevation of 7 meters (20 feet), and attains a maximum height of about 9.1 meters (30 feet) toward its western end. Construction of Kitty Hawk Bay Drive (Figure 2) has modified the southern edge of the dune, and a parking and beach access area (Figure 4b) was cut through the middle section of the ridge. One cottage had been built just east of the site prior to the 1972 work and another has been constructed (Figure 4a) since then; the latter cottage occupies the space where Squares A and F were excavated. Vegetation on the site is a mixed pine and hardwood forest with a relatively dense understory of dogwood, shrubs and other low-growing plants.

Surface inspection of the site area revealed oyster shell spilling down the sides of the parking and access area cut through the dune ridge, and shell midden debris along the shoulders of Kitty

← OPEN TO VIEW FIGURE 5, PAGE 11.

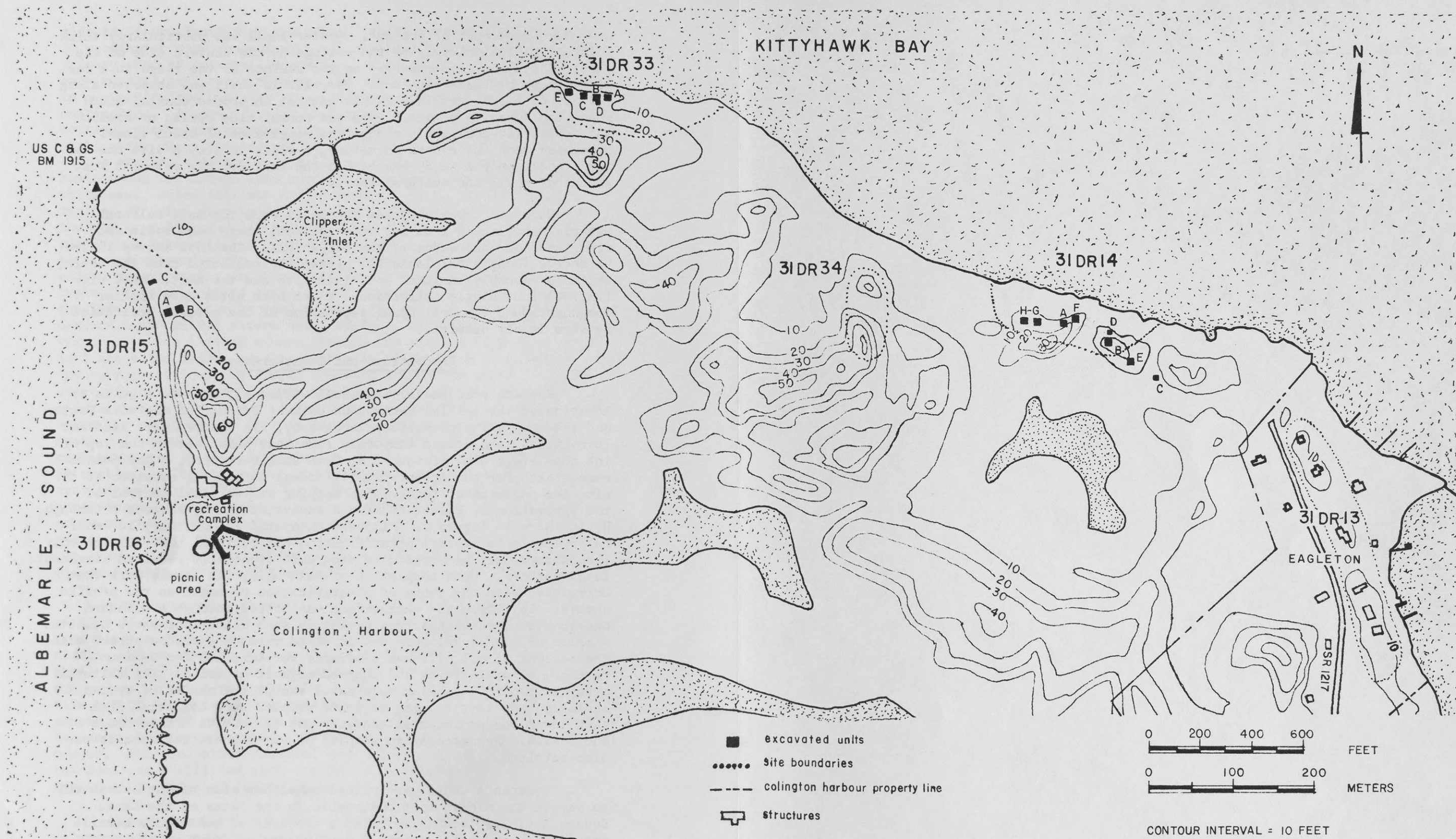


Figure 3. Sites on the north shore of Big Colington island.

Hawk Bay Drive east of the cut. Oyster shell was particularly thick adjacent to the driveway of the cottage on the eastern side of the side. Shell was also observed on the surface of the ridge in a few places west of the access cut. Very little shell was observed along the narrow beach, but this is not unusual in eroded coastal sites where the dynamics of storm wave and normal tide cycles of erosion and deposition constantly change the appearance of beach lines. Depending upon the events of nature, a visit to such a site one day may present only a sandy beach, but the next day may reveal a vast amount of shell and cultural debris.

Eighteen ceramic sherds (Table 2) were the only cultural materials collected from the site surface; these were reclaimed from the floor and sides of the access cut. The 1955 survey listed 95 sherds (Haag 1958: Table 1), presumably collected from the beach, but Haag probably included both this site and the White Court site (31DR33) in a single collection. Since both sites have similar components and temporal span, separation of the earlier collection by site is not possible.

Excavations and Stratigraphy

Surface evidence of the shell midden was used as a guide to location of the initial excavation units. Because of the time factor and the complexity of surface topography, all squares were laid out in relation to a staked temporary reference point set on the top of the dune ridge east of Square B; from this reference, other points were staked for convenient transit access to various sections of the site for purposes of topographic mapping and vertical control of the excavations. Placement of the excavated units, squares A through H, is shown in Figure 3. All were excavated in arbitrary 10 centimeter levels to control stratification and cultural content, but only the culture-bearing stratum in each unit eventually received permanent level numbers. Upon completion of each unit, the levels were then correlated with the zones of stratification recorded on the profile sheets. Soil from the excavations was sifted through a standard one-quarter inch mesh screen except in some situations where selected samples of each level were wet-screened through a window screen mesh. The content of all pits was similarly wet-screened for maximum recovery of small items and charred organic material. All cultural material and food remains were saved except the masses of oyster shell; in the latter case, separate samples were collected from each level for radiocarbon analysis and to provide a size range of the shells. Representative samples of other shellfish species were also retained.

Squares A and B were placed on either side of the access cut to sample the midden zone observable in the faces of the bank. Square A (2 x 2 meters) revealed a top zone of culturally sterile gray humic sand ranging from 2 centimeters in depth on the north

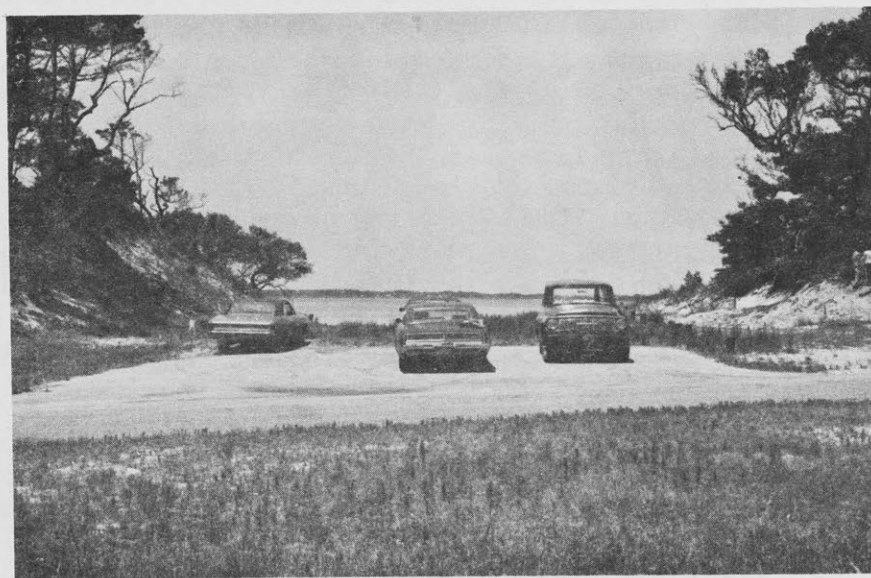
side to 15 centimeters on the south. Below this an approximately 20 centimeter deep deposit of shell and black organic soil was the primary zone of cultural occupation. A 10 to 15 centimeter zone of gray mottled sand below this was the land surface immediately prior to occupation and contained some cultural material in the upper two centimeters. A zone of culturally sterile yellow sand underlay the mottled stratum and extended for an undetermined depth below 70 centimeters where the excavation halted. Square B (2 x 2 meters) on the eastern side of the cut (Figure 5a) had a top zone of gray humic sand, the modern land surface, of approximately 10 centimeters thickness. Below this was a deep zone of white, leached sand, typical of Fripp dune soil, extending to a depth of 1.1 meters on the north profile and 1.9 meters on the south. This sterile deposit represents dune building processes following the occupation of the site, and was underlain by the dark organic soil and shell of the midden zone, ranging in thickness from 10 to 20 centimeters. A typical zone of mottled organic soil underlay the midden, and capped the iron-stained sterile sand below. The excavation extended to a maximum depth of 2.1 meters below surface, necessitating the excavation of a 1 x 1 meter square through the sterile sand to a point just above the midden on the north side of Square B to provide access. The surface of Square B slopes downward toward the shore from the crest of the modern dune some 10 meters south of the unit; the midden zone in the square sloped upward toward the shoreline, indicating the crest of the dune at the time of occupation was further north. A one-meter square, D was opened north of B to confirm this configuration; in its south profile the top of the midden zone lay 30 centimeters below surface and sloped upward to a depth of 15 centimeters on the north. The midden had an average depth of 20 centimeters in this square. The overlying modern dune has formed south of the older dune on which the shell midden was deposited, and the crest of the midden lies nearly at the 10 foot contour over the beach. Obviously, erosion has removed a large amount of the midden in this section of the site.

Stratigraphy in Squares F, G and H (all 2 x 2 meters) was similar to that in A, differing only in the depth of modern dune accumulation over the midden, and in the thickness of the midden itself. These squares also produced evidence of midden lenses, the shell and dark organic soil thinning out and abruptly ending, suggestive of not a comprehensive midden coverage over the entire site but of discrete midden deposits with intervening non-deposition areas. The north profile of Square G is shown in Figure 5b, with the dark stain of a decayed pine tree tap root in the northeast corner. This and other observed tree root stains indicate that the dune was stabilized with vegetation similar to the modern forest at the time of initial occupation.

Square C was a 1 x 1 meter excavation placed beside the driveway of the cottage on the eastern side of the site (shown

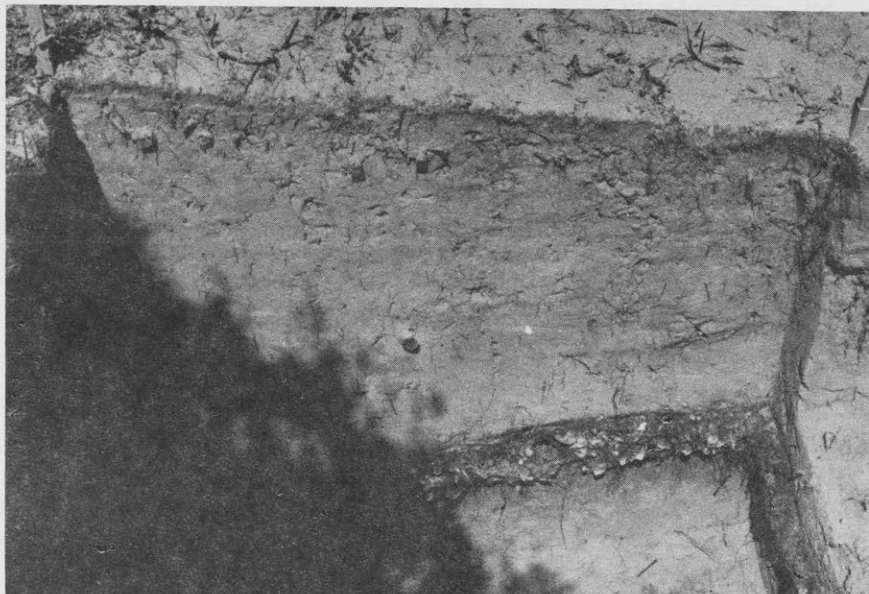


a



b

Figure 4. The Kitty Hawk Bay site, 31DR14. Aerial view (south) of the site showing cottages and dune ridge vegetation (a). The beach access cut through the dune ridge in approximate center of the site (b).



a



b

Figure 5. Stratigraphy at Kitty Hawk Bay. West profile of Square B, showing accumulation of modern sand dune above the midden(a). North profile of Square G showing lens-shaped midden deposit and a tree root intrusion in the northeast corner (b).

in the left side of Figure 4a) where a dense midden deposit was observed. The deposit proved to be secondary, the result of road and driveway construction, as were the other deposits along Kitty Hawk Bay Drive. All of this secondary deposition probably resulted from excavation of the access cut through the dune, the material from which was removed and spread along the roadbed during construction. There was no evidence that midden deposits occurred on the southern flank of the dune ridge. Square E, 2 x 2 meters, opened on the dune slope between Square B and the cottage, produced no evidence of cultural material or occupation zones.

The stratification sequence observed in the excavations consists of five zones:

Zone I. A gray humic sand stratum, ranging between 2 and 15 centimeters in depth, is the modern surface layer of decaying organic material mixed with the leached sand of the modern dune surface. This zone was absent in a few places on the western side of the site, probably due to modern wind erosion.

Zone II. This stratum of leached white sand is the primary wind-deposited soil of the modern dune, classified as Fripp fine sand (U. S. Department of Agriculture 1977: 44-45). Like Zone I, this culturally sterile stratum was absent or very shallow in some areas; it was generally deeper along the highest elevations of the ridge, and attained a maximum depth of 1.9 meters in Square B. The depositional pattern indicates slow southern or south-westward movement of the dune, retarded to some extent where forest cover exists.

Zone III. The oyster shell and dark gray-to-black organic midden soil of this stratum is the primary occupation layer of the site. It ranges in thickness from 10 to 25 centimeters, and had been deposited in lenses on the older land surface, rather than as a comprehensive accumulation. One radiocarbon date was obtained from oyster shell in the third level of this zone in Square B, where it was most deeply buried and protected from modern intrusion and contamination. The date, A.D. 1045 (B.P. 905 $\pm$ 65; UGa-1090), applies to the earlier part of the Colington phase component. A second radiocarbon sample, obtained from oyster shell in the upper level of the midden in Square A, was dated to A.D. 1320 (B.P. 630 $\pm$ 80; UGa-3847).

Zone IV. A gray, humic or organic stained sand, averaging 10 centimeters in thickness, underlay the

midden and probably represents the land surface capping the older dune ridge at the time of the initial Colington phase occupation. A few artifacts occurred in the upper part of this zone. This older dune surface had a crest some distance north of the present dune, and has apparently undergone extensive erosion.

Zone V. The culturally sterile yellow (iron-stained) sand of this zone is the older dune surface prior to occupation, extending downward to an undetermined depth beneath the site.

Cultural stratigraphy of the Kitty Hawk Bay site is quite simplistic; except for a scatter of modern debris on the surface, the only culture-bearing stratum is the Zone III midden and the very top of the older land surface (Zone IV) below it. While a few specimens of Mt. Pleasant series ceramics, indicating an earlier use occupation and deposition of the shell midden lenses occurred during the Colington phase. Cultural material representative of this phase was found in all levels of Zones III and the top of IV.

The Artifacts

From approximately 4.25 cubic meters of excavated midden zone, a total of 287 artifacts were reclaimed. This quantity is relatively low for the amount of midden accumulation and suggests, along with the depositional pattern of the midden, brief and intermittent use and specialized site function.

Classification and distribution of the artifacts is summarized in Table 2. Although Zone III and the top of Zone IV were excavated by levels, subsequent analysis of the artifacts showed no temporal or typological differentiation by level, and all are listed under Zone III in the table with the exception of Square C, a secondary deposition, and the site surface.

Ceramics

Ceramic sherds account for the majority (234) of the artifacts from the site, and are classifiable into the series and types below.

Colington series: Ceramics of this series were recovered from all levels of the occupation zone and are the majority ware with a total of 206 specimens. Three types are represented in the collection (Table 2); Fabric impressed (140), simple stamped (5), and plain (8). The remaining 53 sherds of this series were too small or had surfaces too eroded or poorly impressed to classify into types. Colington series ware is tempered with crushed shell, the particles ranging

from minute to large (5 mm.) laminar flakes, and occasional lumps from the valve ends of shells (Figure 6a-c). Some Colington sherds also have liberal amounts of sand, occasional small pebbles, and lumps of clay included with the shell, probably as accidental inclusions. Surface color ranges from dark gray through tan and brown to light orange, the variations probably resulting from original firing and fire-clouding modified by subsequent use and extent of weathering or oxidation. Vessel wall thickness averages 6.5 mm. for the 31DR14 specimens, with a range from 5.0 to 9.5 mm. Surface finishing techniques of fabric impression (Figure 6a-d), and plain (smoothed surface) (Figure 6e-f) are present in the collection. The sample offered little information on vessel shape, but both straight (Figure 6c-d, f) and everted, or flared, rims (Figure 6a-b) are present. Both flat and rounded lips occur; frequently these were stamped with either the edge of fabric wrapped or simple stamp paddles. The interior rims of fabric impressed sherds often have edge impressions of the paddle applied for a short distance down from the lip. Most such impressions are perpendicular to the lip, but a few had been applied in a chevron design (Figure 6d).

Cashie series: Seven sherds of this series were reclaimed from squares G and H; six are fabric impressed and one is simple stamped (Table 2), representative of two of the four types in the series. The Cashie ware is typical of the inner Coastal Plain during the Late Woodland, and is presumed to be trade ware in many of the Colington sites. The specimens from 31DR14 have the characteristic small pebble tempering, contorted paste, and smoothed over, lumpy interior surface.

Table 2. Distribution of Artifacts at 31DR14

Ceramics	Square Zone	A III	B III	C *	D III	F III	G III	H III	Surface
Colington fabric imp.		94	10	9	1	4	1	10	11
simple st.									5
plain		2				1		5	
residual		40				5	1	7	
Cashie fabric imp.							6	1	
simple st.								1	
Mt. Pleasant cord mk.			4				7	1	
fabric imp.								5	
residual									2
Unident. incised						1			
<u>Lithics</u>									
gorget fragment			1						
abrader			1						
spalls		6	9			6	25	2	
<u>Bone</u>									
awls		1				1			
flaker						1			

*Secondary deposit.

Mount Pleasant series: This Middle Woodland period series is also a minority ware at the site, where it was found mixed with the Colington phase deposits. Represented by only 19 sherds (Table 2) identified by their tempering material of sand and pebbles, the Mount Pleasant ware indicates some use of the site prior to the Colington occupation. Cord marked (12) and fabric impressed (5) surfaces are represented along with 2 residual specimens.

Probably contemporaneous, in part, with the Mount Pleasant series, and here included with them, are a few clay tempered sherds which may be more at home within the Hanover Series (South 1976: 16-18). A few of these sherds have only clay lumps, differing from the "sherd temper" of Hanover ware, as the tempering medium, but in two cases there are liberal amounts of coarse sand along with the clay. Cord marking, fabric impression and incision are present as surface finishing techniques on these specimens. Two fabric impressed sherds are shown in Figure 6j (clay temper only) and 6i (clay and sand), a clay tempered specimen with a crenelated lip and incised parallel lines below the rim is illustrated in Figure 6g, and a clay tempered cord marked sherd in Figure 6h.

Lithics

Only two modified lithic artifacts were found in the excavations. One of these is a large, flat slab of calcareous sandstone (Figure 7d) with a maximum length of 18.6 cm., width of 17 cm. and thickness of 2.1 cm. Numerous long, concave grooves, quite smooth along their inner surfaces from repeated use in sharpening bone tools, occur on one face of the specimen. Calcareous sandstone artifacts of this type have been found in a number of sites on the Outer Banks and on the adjacent mainland, where they appear to be the standard abraders during the Colington phase. This sandstone is known from beach outcrops along the southern North Carolina coast (Moorefield 1978), and recent studies by the East Carolina University Department of Geology indicate that the same formation may underlie the recent sands in the Cape Hatteras locality (S. R. Riggs; personal communication). The other artifact is a fragment of a highly polished, green steatite gorget of the expanded center type (Figure 7e), measuring 2.7 cm. from the central break to the rounded end. Both the abrader and the gorget fragment were found in level 3 of the midden in Square B (Table 2).

The remaining lithic specimens are 48 unretouched spalls, sparsely scattered throughout the excavations (Table 2). Most of the flakes are of a size indicative of initial working of small pebble cores, but a few smaller ones (1-5 mm.) may be the result of final tool production or retouch. Only 3 spalls are green argillite (slate), a material much more common on the mainland and

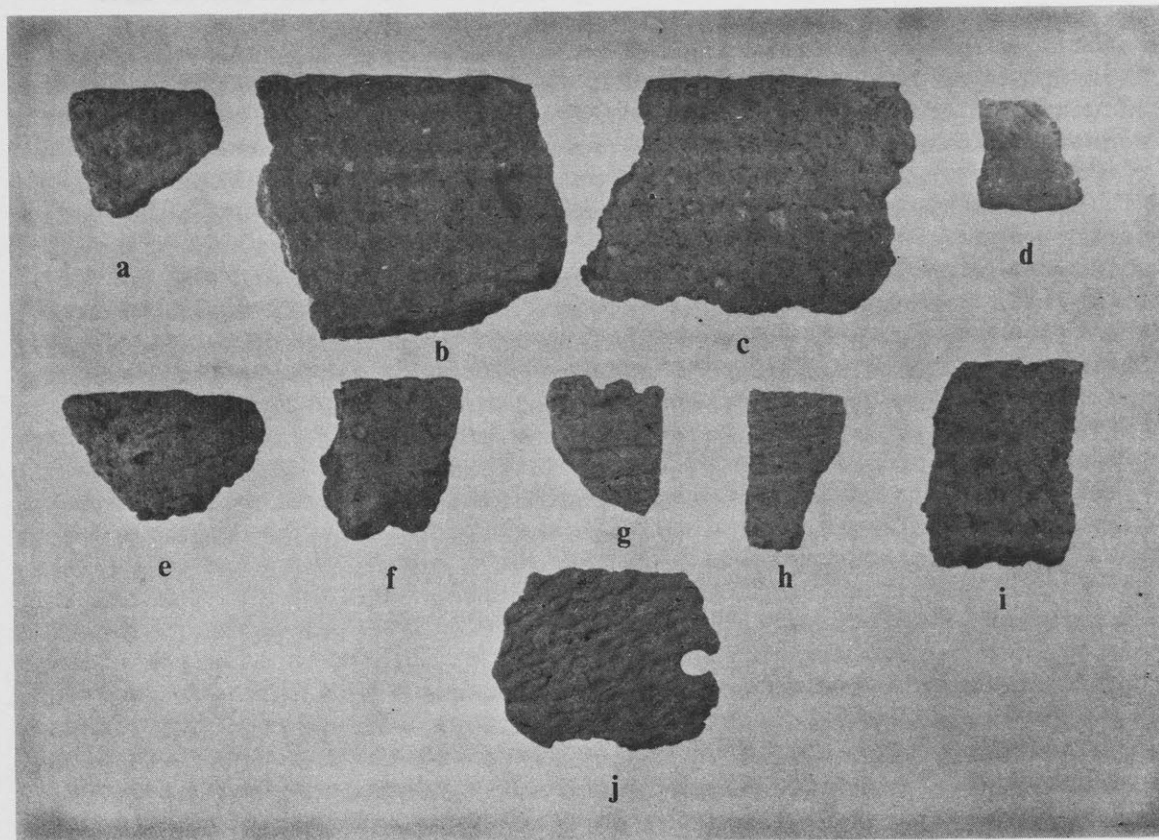


Figure 6. Ceramics from 31DR14. Colington fabric impressed rim sherds (a-c), and a rim interior with fabric paddle impression in chevron design (d); Colington plain rims (e-f). Mount Pleasant series specimens with incised (g), cord marked (h) and fabric impressed (i-j) surfaces. The sherds in g-h, j are clay tempered, and i has typical Mount Pleasant sand and pebble temper with some inclusive clay lumps. (Specimens are half actual size).

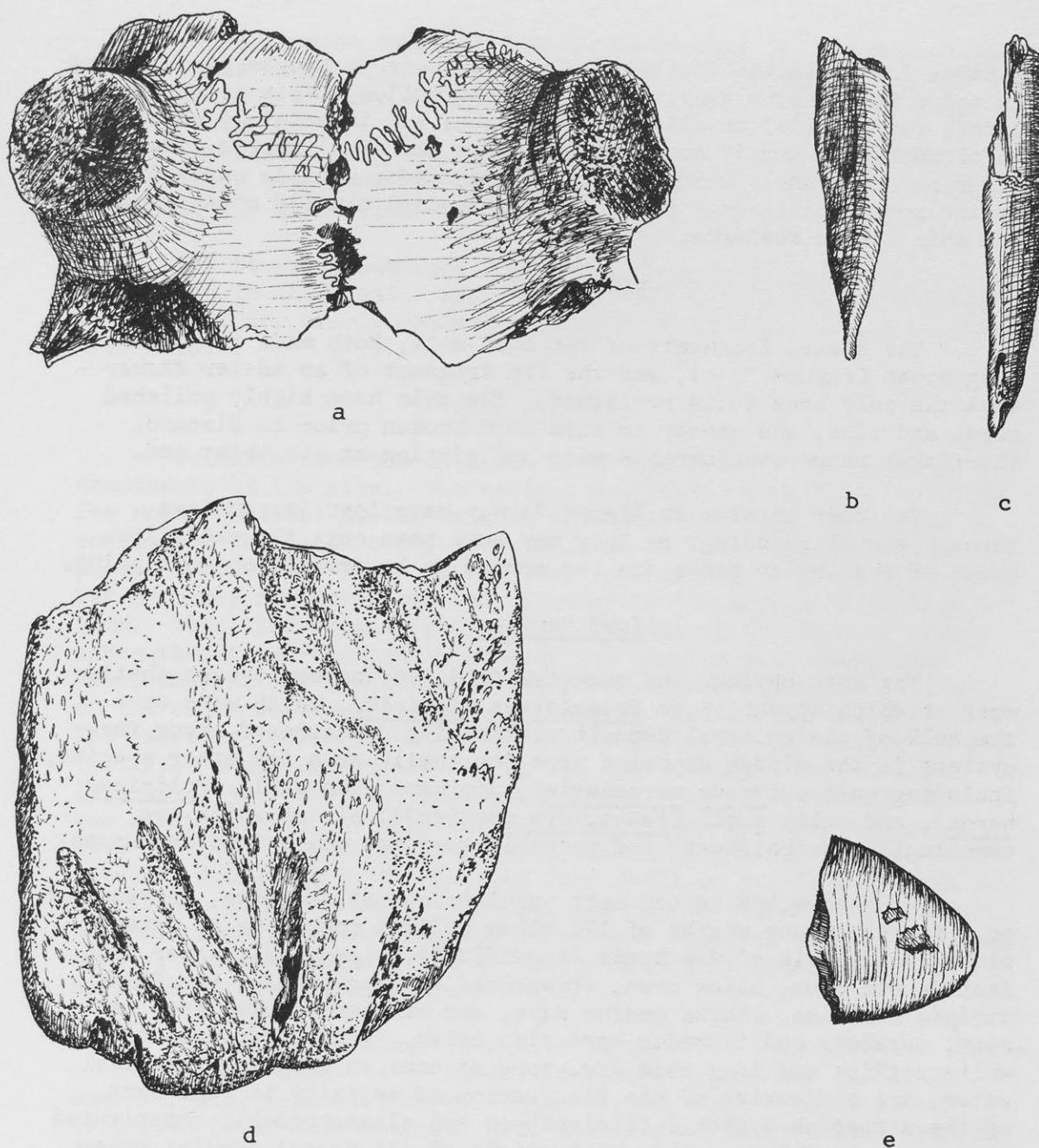


Figure 7. Artifacts from 31DR14. Deer cranial fragment with antlers removed(a), bone awls(b-c), sandstone abrader(d) and a fragment of a polished steatite gorget(e). The abrader is shown one-half size; all others are actual size.

farther inland in the Coastal Plain; the other 45 are jasper, ranging in color from medium gray to red, tan and yellow. This is the typical lithic raw material on all the Outer Banks and immediately adjacent mainland sites, and is obtained in pebble and small cobble sizes from older river channels which lie underneath and generally perpendicular to the present islands. Beach erosion exposes the old channel beds and this lithic resource.

Bone Tools

The distal fragments of two bone awls, both made from mammalian long bones (Figure 7b-c), and the tip fragment of an antler flaker were the only bone tools reclaimed. The awls have highly polished edges and tips, and appear to have been broken prior to discard. The flaker shows considerable wear and pitting at its point end.

The deer cranium in Figure 7a may have lost its antlers through annual shedding, or they may have been cut; the cancellous cores of the antler bases are too eroded to be certain on this point.

Food Remains

The most obvious and numerous food remains are oyster shells, most of which appear to be Crassostrea virginica, which make up the bulk of the cultural deposit at the site. Scattered among the oysters in the midden deposits were the shells of a few other species, including quahog (Venus mercenaria), northern moon shell (Polinices heros), and tulip shell (Fasciolaria species?), all of which are numerically insignificant and probably were not major food resources.

Fish were the second most popular food at the site, represented by a total minimum weight of 121 kilos of live specimens as determined by analysis of the bones (Appendix B). Large salt water fish include red drum, black drum, sheepshead, jack crevalle, kingfish, striped burrfish, sharks and/or rays, and smaller species such as spot, croaker, and flounder were also taken. A few specimens of white catfish and long nose gar, more at home in fresh-to-brackish water, are indicative of the fluctuation of salinity in this part of the estuarine system. Osteichthyes and elasmobranchii constituted 96.4 percent of the useable meat weight of all faunal remains other than shell fish at 31DR14 (Table 9).

White-tailed deer, raccoon, and rabbit were identified among the mammalian fauna (Appendix A). Pig bones (Sus scrofa) of modern origin were surface finds, and domestic dogs, represented in the collection only by teeth, probably accompanied the site occupants and were not a food source. Exploitation of the mammalian fauna was minimal, as evidenced by the presence of only two individual deer, 2 raccoons, and one rabbit.

Avian remains included duck (unidentified as to species) and clapper rail (Appendix A) which accounted for 0.1 percent of the total usable meat from non-shellfish faunal remains at the site.

Reptilian fauna included musk turtle and snapping turtle from a fresh water environment, the brackish water diamond-back terrapin, the terrestrial box turtle, and alligator.

The faunal assemblage from the site indicates a major adaptation to the aquatic and secondary utilization of the terrestrial environment for nearly maximum exploitation of faunal resources in this locale.

Site Summary

Evidence from the excavations at Kitty Hawk Bay confirms two components at the site. The earlier component, identified from the few Mount Pleasant series ceramic specimens scattered among the remains of the later occupation, belongs to the Middle Woodland period (300 BC-800 AD). During that occupation, the main site area was probably further north and adjacent to the shoreline of that time. Shoreline erosion and southward movement of the dune ridge since then have resulted in loss of the earlier main occupation zone, and the few specimens in the present site represent scatter on the older land surface at the southern edge of the original site. The existing shell midden and site boundaries are the result of the Colington phase occupation during the Late Woodland period (800-1650 AD). Approximately half of the site area of that component has also been lost to erosion, and modern dune building processes have resulted in covering most of the remaining site. Radiocarbon dates of A.D. 1045 $\pm$ 65, obtained from shell on the lowest level of the midden and A.D. 1320 $\pm$ 80, from the top of the midden, bracket the Colington phase occupation. The shell tempered Colington ceramic series, found throughout the midden deposits, is the identifying hall-mark of this component.

The Colington phase intrasite pattern at Kitty Hawk Bay is one of lens-shaped deposits of shell midden scattered over the older dune surface, separated by distances varying from a meter to an estimated 10 or more meters. Each midden deposit is a small refuse dump, containing food remains (shell and bones), charred wood, and a few artifacts. Very few artifacts were found outside the shell areas, and no evidence of structures was observed. This pattern suggests recurring temporary use of the site by small groups of people over a relatively long period of time, obviously going there for exploitation of the food resources in close proximity. Two dog teeth among the faunal remains (Appendix A) indicate the presence of family pets or hunting dogs with the family group.

The artifacts represent the minimum equipment, possibly for a family group, of a few cooking and storage vessels brought with them, bone tools for sewing or leather repair work and abraders on which the awls were sharpened, an antler flaker for producing the necessary lithic tools, and a few spalls resulting from the production process. Even though the 1972 excavations are only a sampling of the site area, the total site assemblage probably would not include many other classes and functional types of artifacts, or a higher density of artifacts per level or square.

The temporary camps at the site were certainly located there to collect oysters from nearby beds, probably directly off-shore from the site in Kitty Hawk Bay. This primary subsistence activity was supplemented by fishing as a secondary exploitation of the marine environment. The fish species represented in the faunal assemblage would have required a number of techniques including weirs, nets, and hook and line. Hunting of land mammals and collecting or hunting reptilian fauna and birds appears to have been incidental to shell fish collecting and fishing. All of these resources were available within the immediate environs of the site; oyster beds on shoals in the bay, fish from the bay and sound, deer, rabbit, raccoon and box turtle from the forested dunes and other upland areas, turtles and alligator from the fresh water pond area near the site, diamond-back terrapin from the salt marshes, and ducks and clapper rail from the ponds and off-shore environment. Whether or not all these food resources were immediately consumed or some preserved for later use is difficult to determine. Oysters do not preserve well and presumably were consumed immediately; the degree of fragmentation and scatter of the fish, mammal and other bones also argues for immediate preparation and consumption of these foods.

Maximum abundance of the various species in the faunal assemblage at 31DR14 implies primary occupation between April and September (Figure 16), but prevalence of the larger salt water fish in the fall (Appendix B) seems to suggest late summer-early autumn as the period of maximum site use. Certainly, water salinity in the vicinity of Colington Island was higher during the period of occupation of 31DR14 than it is today, and the size and number of larger salt water fish among the remains argues strongly for an inlet through the Outer Banks in relatively close proximity to Colington Island.

The site catchment area, that zone around the site from which resources were obtained and for which the site location was originally selected, can be defined as the area within a half-mile radius of the site with respect to the observed subsistence pattern. If lithic resources are included, presuming that these were not brought with the occupants, a three-mile trip to the eroded ocean beaches to the east is required.

COLLETON LANE SITE, 31DR34

This small site, first observed and collected in the 1972 project, is located 125 meters southwest of 31DR14 and immediately west of the intersection of Kitty Hawk Bay Drive and Colleton Lane (Figures 2-3), from which its name is derived. At this point, Kitty Hawk Bay Drive had been cut through a north-south trending dune ridge (Figure 8a), exposing an old humus surface at an elevation of approximately 30 feet (9 meters). South of the road, a few Colington sherds were collected where they had eroded from the humus zone, and a small, disturbed oyster shell midden was observed on the north side where it had spilled down the cut bank.

Five Colington fabric impressed and 2 Colington plain sherds (Table 1) constitute the entire collection from the site. The total site area is unknown but is suspected to extend to the dune crest overlooking the Bay, an area which already had cottages constructed on it and for which we had no permission to enter. The observed shell midden and the ceramics suggest general contemporaneity with the Colington phase components of 31DR14 and 33, as well as a similar intrasite pattern. The proximity of the site to 31DR14 also suggests that it may have been an outlying or peripheral occupation area of that site.

WHITE COURT SITE, 31DR33

The White Court site, like 31DR14, faces Kitty Hawk Bay (Figure 3) and is exposed to the full force of prevailing northeasterly storms in the winter months. Unlike 31DR14, where vegetative cover extends down the dune slope to the top of the beach, the White Court site is experiencing extreme high bank erosion which has created a nearly vertical cut bank along its shoreward side (Figure 9a-b). It was probably the shell spilling down the bank from this site, rather than 31DR14, that Haag (1958: 40) observed as a "white scar" from Currituck peninsula across the sound. The amount of site loss from erosion is unknown, but Haag's estimate of 100 feet (30 meters) is probably conservative.

31DR33 lies along the northern slope of the dune ridge on a broad, shelf-like topographic feature created by the gradual incline from the 10 feet (at the edge of the cut bank) to 20 feet contour (Figure 3). While the exact area of the site was not determined, shell and cultural debris extended along the beach for a distance of 250 meters. This measurement probably exceeds the actual site area on the west; observation of intact humic and midden layers in the beach profile confirmed that the main site area lies east of the high point where the 20 feet contour is cut by erosion (Figure 9a). The surface of the modern dune of Fripp fine sand supports a mixed hardwood and pine forest and understory species



a



b

Figure 8. The Colleton Lane and White Court sites. Looking west along Kitty Hawk Bay Drive where it bisects 31DR34; the older humic zone can be seen near the top of the dune on the left (a). Aerial view (southwest) of the White Court site, 31DR33; the site extends from the sand spit at lower left to the cottage on the highest elevation in the center of the photo (b).

typical of all such situations on the island. A cottage was under construction on the high point of the ridge along the shore in 1972 (Figure 9a); since then others have been built in the site area (Figure 8b). The site name is taken from the short street and cul-de-sac, Sir John White Court, which provide access to the area (Figure 2).

Surface collection was limited to the beach area in front of the site since the intact section lies buried below modern soil zones. The collected specimens (Table 3) are nearly equally divided between the earlier Mount Pleasant and the still partially intact Colington component, a percentage frequency more closely approximating Haag's collection from the Kitty Hawk Bay site (his C3) (Haag 1958: Table 1). It is probably that his 28 "grit tempered" and 67 "shell tempered" sherds came from 31DR33 rather than 31DR14, but he made no distinction between the two site areas, collecting the entire half-mile stretch of the north shore between the two sites as one unit.

Excavations and Stratigraphy

Following the beach collection, temporary reference points were set on the beach and the top of the bank. These were used to control mapping of the beach profile, site topography, and a transit run back to 31DR14 in order to measure the exact distance between sites, trace the stratification along the bank, and confirm the negative evidence of sites along the beach between the two. Keying on the exposed stratification in the beach profile, four 2 x 2 meter squares (A-C, E) were laid out in a general east-west line to sample the midden extent observed in the profile. Subsequently, a 1 x 1 meter square, D, was opened on the southeast side of Square B to observe the size and overlapping of the lens-shaped midden deposits (Figure 3). Excavation and reclamation procedures were the same as those employed at 31DR14.

Stratification of the White Court site is the same as that at 31DR14, varying only in the depth of each stratum as a result of the particular processes of accretion and erosion at each site.

Zone I: The gray-stained sand of the modern surface, averaging 10 centimeters in thickness, is the surface exposure of Fripp fine sand.

Zone II: The leached white to light gray Fripp fine sand of the modern dune. This culturally sterile stratum ranged from 10 to 50 centimeters in depth across the site, depending upon undulations in the underlying zone.

Zone III: This stratum of shell midden and dark organic soil was deposited in lens-shaped units rather

than a comprehensive layer over the site. Maximum thickness of the midden was approximately 40 centimeters in Squares A and B, but its average was closer to 20 centimeters. This is the primary cultural deposit at the site.

Zone IV: The light gray humic sand of the former land surface, prior to site occupation ranged in thickness from around 10 to 30 centimeters with an average of 15 centimeters. Cultural material occurred only in the top few centimeters of this zone.

Zone V: The culturally sterile yellow sand of the older dune. Along the beach profile its observed thickness ranged from 2 to 6 meters, but maximum depth was not determined.

Representative examples of site stratification are shown in Figure 9b and Figure 10. A 10-meter-wide exposure of the Zone III shell and organic midden can be seen in the beach profile (Figure 9b), extending from the stake on the left to the pit profile (Feature 2) on the right. Other typical lens-shaped deposits are shown in the north profiles of Square A (Figure 10a), B (Figure 11b), and overlapping midden units in the southern and southwestern profiles of Squares B and D (Figure 10b). Breaks in the midden where it accumulated around tree trunks are seen in the middle of the profile in Figure 10a and to the right in Figure 11b; these features suggest that a forested dune similar to the modern situation existed at the time of initial site occupation. Figure 11a shows the top of Zone III exposed in Square E, and the gray ash and crushed shell fill of a pit (Feature 3) exposed along the north profile.

Features

Three cultural features were excavated at White Court, along with a number of tree root intrusions. The cultural features were observed to originate in or at the bottom of Zone III and intrude into the underlying zones. Some of the tree roots were traceable from the top of the Zone III midden, but others originated in the top of Zone IV.

Feature 1 in Square A was a pit refilled with burned and charred oyster shell, scattered bits of charcoal and numerous very small unidentifiable fragments of bone. No artifacts occurred in this 40 centimeter diameter pit with a depth of 20 centimeters.

Feature 2 was salvaged from the beach profile (Figure 9b) where at least half of the pit had been lost by erosion. The outer fill of this pit, measuring 1 meter in width and 1.25 in

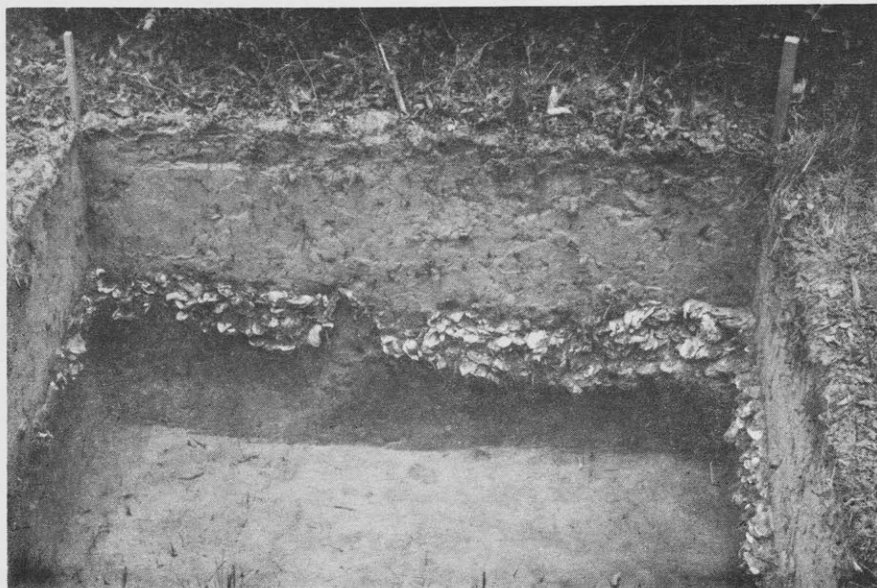


a

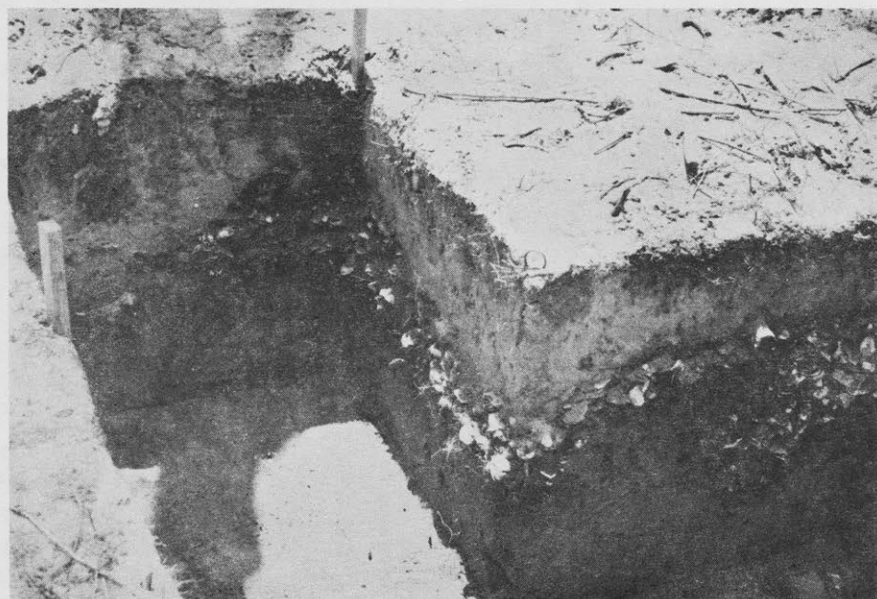


b

Figure 9. Eroded bank profiles at White Court. (a) View southwest showing the highest elevation at the west end of the site and a cottage under construction. Compare the exposed beach width with that in the 1979 aerial view in Figure 8b. (b) A shell midden deposit and Feature 2 in the bank profile.



a



b

Figure 10. Stratification at 31DR33, squares A,B and D. North profile of Square A with tree root intrusion penetrating midden (a). Overlapping midden lenses in the southern and western profiles of squares B (foreground) and D (b).



a



b

Figure 11. Feature and profiles, squares E and B. Top of Feature 3 exposed in Square E (a). Shell midden lens in north profile of Square B (b).

depth was a black organic soil which enclosed an area of oyster shell mixed with organic soil. In this interior deposit were Colington and Mount Pleasant sherds. The feature was classified as a re-filled pit of unknown function.

Feature 3 was an area of charred shell, ash, and bone observed at the top of Zone III in the north side of Square E (Figure 11a). The area measured 1.4 meters along the north profile and extended 80 centimeters into the square in a generally oval shape. The feature extended downward 20 centimeters to the bottom of Zone III, and was apparently a fire pit or hearth. One Colington fabric impressed sherd, 1 jasper spall (Table 3) and numerous fish bone fragments were recovered from the pit. All of the identifiable fish bones were white catfish (see Appendix B). Oyster shell from this feature was radiocarbon dated to A.D. 1230 $\pm$ 65 (UGa-1087; B.P. 720 $\pm$ 65), providing a date during the Colington phase occupation. A second radiocarbon sample, oyster shell from the lower level of Zone III in Square E, was analyzed as "modern"; the sample had apparently been contaminated either by modern intrusion of C¹⁴ on the site, or subsequently while stored in the lab.

Table 3. Distribution of Artifacts at 31DR33.

	Square	A	B	C	D	E			Beach
Ceramics	Zone	III	III	III	III	III	Fea. 2	Fea. 3	Surface
Colington fabric imp.	7			1		26	1	1	6
simple st.							1		2
plain			2	2					2
incised									1
residual			2			10			4
Cashie fabric imp.			4						
Mt. Pleasant cord mk.									9
net imp.									11
fabric imp.	2	1					2		13
residual				1					
Lithics									
spalls, unre-									
touched		2				47		1	
Bone									
awl						1			

The Artifacts

The total number of artifacts from the surface and excavations was 186, distributed as shown in Table 3. As was the case at 31DR14, the frequency of artifacts of any class or type per excavated unit of midden is very low. Since no vertical differentiation of types or components was seen after analysis of the material from each arbitrary level in the midden zone, the specimens are listed only by square and zone or other provenience in Table 3.

Ceramics

Two ceramic series, Mount Pleasant and Colington, are represented in almost equal quantities, and a third, Cashie, by a few sherds. Ceramic sherds account for 135 of the 187 artifacts from the site.

The Mount Pleasant series of sand and small pebble tempered ware was most frequent in the surface collection from the beach, where 57 of the 63 sherds were found. The 6 sherds from the excavated units were randomly scattered throughout the later Colington component deposits (Table 3). Compared with Colington sherds from the beach, the Mount Pleasant specimens are much more eroded and water-polished, showing the typical rounded edges and smoothed surfaces resulting from long exposure in the surf. Mount Pleasant types, classified by surface finish, are: cord marked, 9 (Figure 12g), net impressed, 11; fabric impressed, 18; and residual, 25, the higher number of the latter resulting from surface erosion.

Colington series sherds occurred in reverse proportion to the Mount Pleasant distribution; 53 of the 69 specimens were recovered from their primary context in the Zone III midden, while only 16 specimens were picked up in the beach collection (Table 3). The surface specimens from the beach were less eroded than the earlier ware, although the shell temper had dissolved from most of them (Figure 12c-d). All types of the shell tempered Colington series are represented at the site, including 42 fabric impressed (Figure 12a), 3 simple stamped (Figure 12b), 6 plain (Figure 12c), and 1 incised (Figure 12d). Sixteen other sherds were placed in the residual category because they were too small to permit determination of surface finish.

Four Cashie fabric impressed sherds, one of which is illustrated in Figure 12f, were recovered from Square B (Table 3), where they were associated with material of the Colington component. The low frequency of this ceramic type again suggests trade material from an inland source.

Lithics

Fifty unretouched spalls, 2 of green slate and 48 of red, tan and gray jasper, were the total lithic collection from the site. All of these are small (.2 to 1.0 centimeter) and appear to be the by-product of both primary and secondary chipping procedures. Forty-seven of the spalls were recovered from the midden zone of Square E (Table 3). Jasper is the dominant material here as at 31DR14 and other coastal sites of the Colington phase.

Bone Tool

One awl (Figure 12e), made from a deer ulna, was recovered in Square E. It is 7.6 centimeters in length and has a broken distal end.

Food Remains

Oyster shells (*Crassostrea virginica*) are the dominant food remain, occurring by the thousands and consisting of the bulk of the midden deposits. A sample of 43 shells from Squares A and B, representative of size range in this and the other sites on Colington Island, was measured to get some idea of the size of oyster being harvested. Only the lower valve half of each specimen was measured to obtain total length. The shells had a length range of 6.3 to 14.3 centimeters (2.4 to 5.6 inches) with an average of 9.6 centimeters (3.7 inches).

Quahog (*Venus mercenaria*) shells and miscellaneous fragments of other species were recovered, but their low frequency indicates relative unimportance as a food resource. The quahogs were more evenly distributed throughout the midden at 31DR33 than they were at 31DR14, however, and were sufficient in number to indicate intentional collecting.

Fish accounted for 94.2% of the usable meat (other than shellfish) at 31DR33, a percentage comparable to that at 31DR14. The species represented at White Court are, however, quite different in presence and percentage from those at Kitty Hawk Bay. A few spot, sea trout and Atlantic croaker, along with rays and/or sharks, were the only saltwater species present; the majority of the fish remains belonged to white catfish, a species whose normal habitat is the mouth area of fresh water rivers (Appendix B). Non-fish faunal remains include 2 deer, 1 raccoon and 2 rabbits among the mammalia, a duck and another (unidentified) bird, and snapping turtle, pond turtle, diamond-back terrapin and alligator from the reptile taxon (Table 13; Appendix B).

Seventeen charred fragments of hickory nut shells (*Carya glabra*-pignut hickory) were recovered in squares B and C. The shells had been broken prior to charring and were scattered through the midden in the two squares. Hickory trees probably were present in the forest type on the island contemporary with the Colington occupation, but the nuts could also have been brought as a storable food by the inhabitants from their base sites.

Exploitation of the aquatic environment was paramount at 31DR33 (Table 14), and terrestrial resources are incidental to this pattern. In that respect, White Court is similar to 31DR14, but the evidence suggests a different seasonality for the two

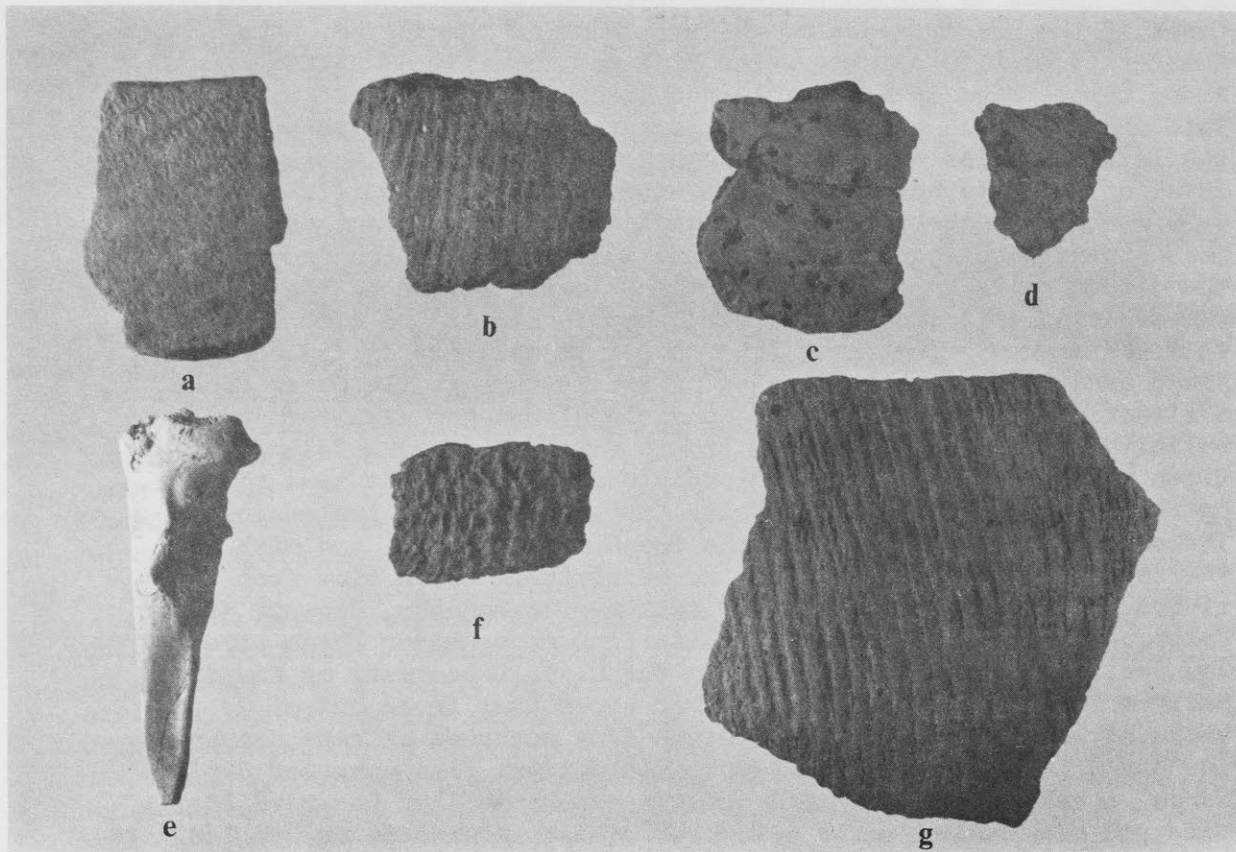


Figure 12. Artifacts from 31DR33. Colington fabric impressed (a), simple stamped (b), plain (c) and incised (d). The shell temper has been leached from the specimens in c and d. A Cashie fabric impressed sherd (f) was probably obtained from inland trade. A typical Mount Pleasant cord marked sherd from the earlier component (g) and a bone awl (e) associated with the Colington component. (Specimens are half actual size).

sites. Spring is the most likely season of occupation at White Court if the predominance of white catfish is considered. The relatively paucity of salt water fish and majority of catfish among the remains is best explained by an influx of fresh water into the Albemarle estuary. The influx was sufficient to support the latter species but brief enough not to seriously impair the level of salinity necessary for oyster beds. Since catfish remains were found throughout the site, Swift's (Appendix B) suggestion that storms were responsible for the influx is probably incorrect; the midden units were deposited over a longer period of time than the duration of a storm. Two other hypotheses can be offered for this phenomenon. The first is a change in salinity of the northern sound area brought on by closing of inlets through the Outer Banks, a situation similar to present conditions when the level of salinity is too low for oyster growth north of Roanoke Island. Since the oyster beds were obviously productive at the same time catfish were being caught at White Court, this seems implausible. The second hypothesis is that the fresh water influx, and with it the catfish, was the result of increased fresh water flow from the rivers contributing to the sound system--the Roanoke, Chowan, Yeopin, North, Alligator, and others. While flow records for these streams are negligible, data obtained from the U. S. Department of Commerce Weather Bureau for the Roanoke River shows that in 15 out of 23 years between 1912 and 1959, maximum flow occurred between January and May. In seven of those years, the maximum flow occurred during March, April or May. If this pattern can be implied backward in time and compared with the season of maximum abundance of species represented in the 31DR33 faunal remains (Figure 17), then a spring occupation when the Albemarle system was being flushed with fresh water is most logical. An inlet open through the banks near Colington Island would tend to direct this flow toward Kitty Hawk Bay and the other waters around the island. Although evidence of hickory nut collection at 31DR33 could be interpreted as a fall activity, it is more likely that the occupants collected nuts still on the ground from the previous fall, or brought them to the island.

Site Summary

The White Court site was first occupied during the Middle Woodland period (300 B.C. - 800 A.D.) by people who produced the Mount Pleasant ceramics. Since 95% of the Mount Pleasant sherds were collected from the beach and exhibited evidence of long-term water polishing, it is apparent that the section of the site occupied by this component has long since eroded away. Erosion has also removed part of the succeeding Late Woodland period (800 - 1650 A.D.) Colington phase component, but a large part of the site occupied during this phase remains intact. One radiocarbon date, A.D. 1230 $\pm$ 65, obtained from oyster shell in Feature 3, falls somewhere within the temporal range of the Colington component. A second sample apparently contaminated, produced a "modern" date.

White Court has the same intrasite pattern as the Kitty Hawk Bay site, shares the same stratigraphic sequence typical of the north end of the island, and has experienced similar erosional processes. In the latter situation, White Court is now being eroded at a rapid rate, perhaps because it occupies the northernmost, exposed point along the north shore, while the erosional processes at Kitty Hawk Bay appear to have abated somewhat.

The Colington component deposits at White Court are lens-shaped areas of shell, mostly oyster, and organic soil separated from each other by varying distances. The largest midden observed was approximately 10 meters across with a maximum central thickness of 25 centimeters. No evidence of structures was found within or between the midden deposits, and only three features, a fire pit and two refilled refuse pits, refer to cultural activities of a general nature. No artifacts were recovered from the old humus zone between the midden deposits, but a relatively small number of sherds and artifacts, faunal and botanical remains were mixed with the midden debris.

The pattern is one of small family groups with a minimum of cultural equipment, occupying the site for brief intervals to pursue subsistence activities in the immediate vicinity. The primary activity was collection of oysters, and perhaps clams (quahog) from beds immediately offshore from the site. Second in importance was fishing, but the main fish being caught is the fresh-to-brackish water white catfish along with a few of the smaller salt water species such as spot, croaker and sea trout. Hunting, collecting, and trapping of mammals (deer, racoon, rabbit), reptiles (turtles, alligator), birds (duck), and forest products (hickory nuts) is a minor part of the subsistence pattern but does indicate a thorough knowledge of available resources in the various microenvironments. A spring occupation is suggested by the predominance of catfish, probably available during the period of maximum fresh water flushing of the Albemarle sound system. The site catchment area for all these resources is within a half-mile radius of the White Court site.

RUSH POINT SITE, 31DR15

The third site excavated in 1972 was Rush Point, named by Haag (1958: 40) for the local reference to the northwest point of Big Colington Island, rather than the official map name of "Eagleton Point". At the point is a U. S. Coast and Geodetic Survey bench mark, a square concrete post with the typical brass plaque (dated 1915) embedded in the top, now over-turned from wave action around its present position 2 meters from the shore (Figure 3). This marker is only one of the indicators of shoreline loss at 31DR15 and along this section of the island.

The Rush Point site extends from just south of the marker for a distance of 225 meters southward along the northwestern shore of the island (Figure 13a). Near the point, oyster shell from the midden is interbedded with peat which apparently developed over the midden but is now submerged and being eroded by the rise in sea level. The midden has been completely destroyed by erosion in the small embayment south of the point, but appears as lens-shaped deposits of shell on top of an old humus layer as it rises along the dune to the south (Figure 13b). At the north end, elevation of the midden is approximately 30 centimeters (1 foot) below sea level; on the south it attains a maximum height of 17 meters (56 feet) above sea level. Between these two points the old humus zone and its occasional overburden of midden deposits undulates to conform to the dune surface of that time. At two spots along the bank, an even older humus level was observed, but that stratum was devoid of cultural material in the exposed sections.

Along the beach and for some distance out into the sound is an extensive secondary deposit of oyster shells and sherds, all derived from erosion of the site. The shoreward slope of the dune from which the cultural material is eroding has an angle of descent ranging from 45 to 60 degrees, and is practically devoid of vegetation (Figures 13b, 14). On the inland (eastern) side of the dune, two areas of shell were observed on the surface where modification of the dune slope by construction had occurred. Figure 14a, a photograph taken in 1977, shows the cottage constructed over the area excavated in 1972, and steps leading to the beach. By 1979, the date of the aerial photo in Figure 13a, a bulkhead had been constructed at the foot of the steps to retard continuing erosion.

Most cultural material collected from the surface of the site was found along the beach, but a few specimens were retrieved from the exposed shell areas on the east side of the dune ridge. Elsewhere the site was buried beneath the modern dune. The 1972 collection included 288 ceramic sherds, 275 of the Mount Pleasant series and 13 of the Colington series, and a flake blade (Table 4). Haag's 1955 surface collection lists 326 sherds (Haag 1958: Table 1); 186 of these fall within the present classification of Mount Pleasant (Haag's sand tempered, grit tempered and clay/grit tempered), and 140 shell tempered specimens fit the Colington series typology. Also collected from the beach in 1955 were a flat slab mortar and a steatite sherd. The much higher number of shell tempered sherds in the earlier collection may result from combining beach collections from 31DR33 and 31DR15 and subsuming them under the latter site; an alternative possibility is that construction and erosion overwash toward the northern end of the site may have obliterated a small Colington component. Whatever the answer may be, the 13 Colington sherds from the 1972 beach collection are the only late material found. The intact portions of the site date to an earlier period.

A human patella, the only evidence of human bone from any of the sites on the island, may indicate occasional human burial at 31DR15.



a



b

Figure 13. Views of the Rush Point and Stick sites. Aerial view (southeast) of the Rush Point site, extending from the point in the left to the dune crest in the center of the photo, and the Stick site, to the right of the photo adjacent to the harbor outlet (a). Erosion exposed roots and peat at Rush Point and the intact section of 31DR15 in the background. Crew at left laying out Square C (b).



Figure 14. Rush Point site in 1977. A winter view of the site taken from Rush Point; cottage and steps built after 1972 work. Note erosion of beach to steps and dark line of the 3rd century humus angling up the dune face to the right.

Excavations and Stratigraphy

Following the surface survey of Rush Point, temporary reference stakes were set along the beach on the intact sections of the site, and their locations mapped in reference to the U.S. Coast and Geodetic Survey marker at the point. From the reference stakes, site topography was mapped, the dune profile over the beach was plotted, and excavation units were laid out. Exposure of a small section of shell midden in the beach profile and similar evidence of midden on the eastern side of the dune ridge dictated the placement of squares A and B (Figure 3) on the northern slope of the ridge. These 2 x 2 meter units were augmented by a third square, C (1 x 2 meters), located at a point in the embayment where it appeared that the old humus layer dipped below beach level (Figure 13b). Upon excavation, however, this area gave evidence of construction disturbance, wave erosion and over-wash, and no intact deposits were observed.

Squares A and B and the beach profile confirmed a stratification similar to the sequences in 31DR14 and 31DR33, with exactly the same five zones. Square A is typical of the excavated units: Zone I,

the modern humus, extended to an average depth of 10 centimeters; Zone II, the modern dune sand (Fripp fine sand) was absent, however, and the Zone III shell and organic midden directly underlay the modern humus. The midden thickness ranged between 25 and 35 centimeters and was underlain by the older humus, 10 to 20 centimeters in thickness, of Zone IV. Below this the sterile yellow sand of Zone V continued downward to an unknown depth. In the beach profile, Zone II was observed to have a thickness ranging from a few centimeters to 5 or more meters, depending upon modern dune development on the ridge. The possibility of remnants of a third, earlier humus zone within Zone V was observed along the profile, but its depth precluded investigation during the project and the exposed section was culturally sterile.

As in the other sites, Zone III was the only cultural deposit in the sequence. This zone was comprehensive in Square A, but in Square B only the edge of a shell deposit was exposed in the north-east quadrant. A sample of oyster shell from the lowest level of Zone III in Square A was radiocarbon dated to A.D. 265 (UGa-1088; B.P. 1685 $\pm$ 65). A second sample of oyster shell from Level 2, Zone III in Square A was dated at A.D. 890 $\pm$ 80 (UGa-3849; 1060 $\pm$ 80 B.P.). This date seems late for the depositional sequence in the square, and it is possible that its proximity to the surface may have resulted in contamination. Seriation of materials from arbitrary 10-centimeter levels excavated within Zone III indicated no temporal or typological differences within the stratum.

One feature (Feature 1) was observed in Square A. This was a shallow basin-shaped pit, measuring 70 centimeters in diameter and 17 centimeters in depth, which intruded from the bottom of Zone III into the upper part of Zone V. No artifacts were found in the mixed fill of sand, charcoal, ash, calcined shell and a few fish bones. The feature is presumed to have been a refilled hearth or cooking pit.

The Artifacts

Of the 378 artifacts recovered in 1972, 377 are ceramic sherds of two series; the remaining artifact is the only lithic specimen (Table 4).

Ceramics

Mount Pleasant series ceramics account for 364 of the 377 total sherds from the site, and was the only ware found in primary context in the excavations. The types represented (Figure 15a-f) are cord marked (25), net impressed (53), fabric impressed (122), plain (11), and incised (6). Incised surface decoration has not previously been included in this series, but the specimens from

31DR15 have technological attributes compatible with series definition. The five incised sherds from Square A (Table 4) appear to belong to the same vessel which had a rectilinear incised design on its smoothed surface (Figure 15f). It is possible that the incised type is trade material, but future work will have to resolve the problem. Variation in the tempering material was noted at 31DR15; the majority of the Mount Pleasant sherds have liberal amounts of sand with frequent small pebble inclusions, but many of these also have clay lumps mixed into the paste. A few sherds have only clay temper, again reminiscent of the Hanover type, such as the fabric impressed specimen in Figure 15g. Residual Mount Pleasant sherds, 147 in number, resulted from a high percentage of eroded and water-polished specimens (130) from the beach collection.

Table 4. Distribution of Artifacts at 31DR15

	Square	A	B	
	Zone	III	III	Surface
Ceramics				
Mt. Pleasant cord mk.		10	3	12
net imp.		7	14	32
fabric imp.		6	16	100
plain		11		
incised		5		1
residual		8	9	130
Colington fabric imp.				2
residual				11
Lithics				
flake blade				1

Colington series ceramics at this site were found only on the beach. The presence of the 13 specimens (Table 4) is thought to result from sporadic visits to the site from 31DR33 or other nearby Colington phase sites, rather than represent a major occupation during the late Woodland period.

Lithics

One tan quartzite flake with an edge retouched for use as a cutting tool was collected from the beach. Haag (1958: 87; 95) reported a steatite sherd and a mortar from his collection along the beach.

Food Remains

The most obvious food remains are the masses of oyster shell which make up the mass of the midden lenses. The site location indicates availability of oysters in Albemarle Sound, in beds fairly close to the western shore of Big Colington Island. Mixed with the oyster shell in the midden were the shells of a few Busycon caricum (knobbed pear conch), whelks and moon shells.

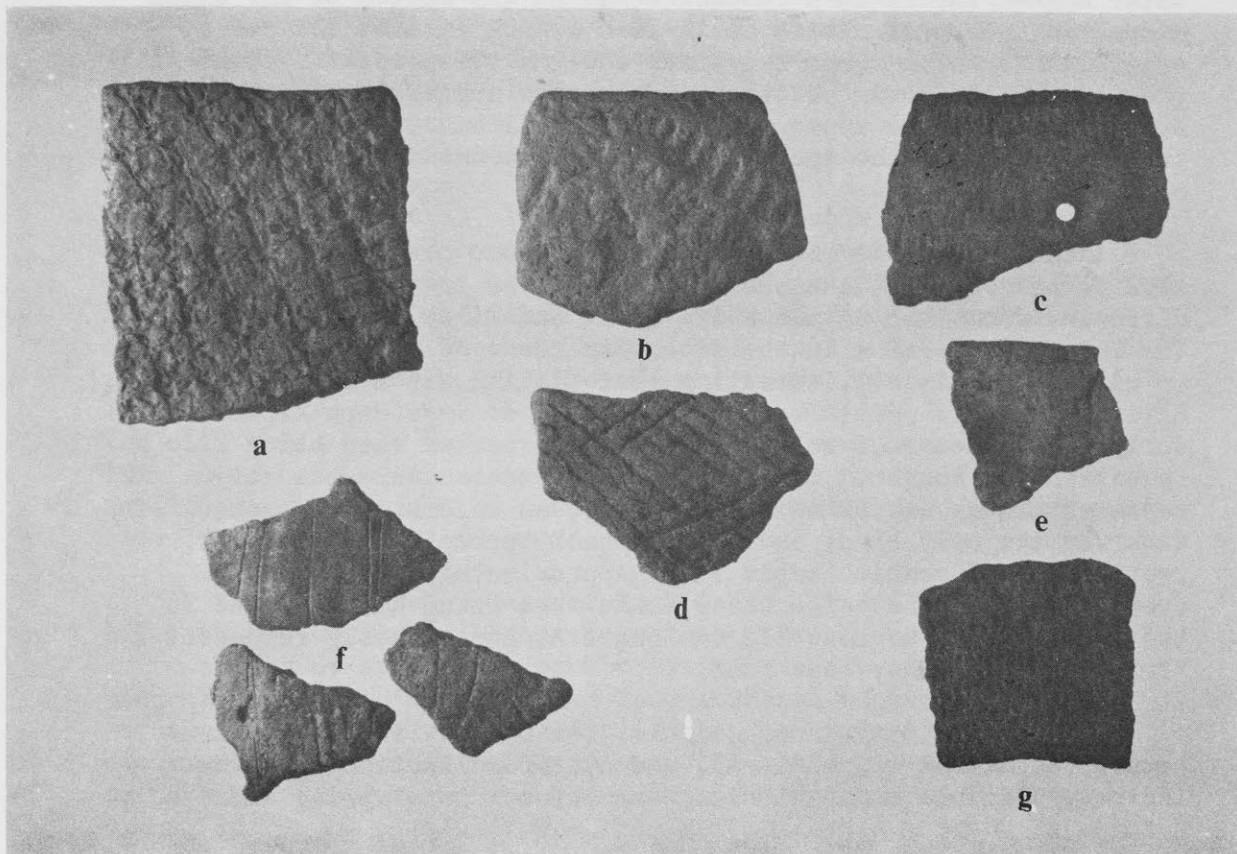


Figure 15. Ceramics from 31DR15. Mount Pleasant net impressed (a), fabric impressed (b-c), cord marked (d) and plain (e). The three incised sherds (f) are from a single vessel and have typical Mount Pleasant series temper. A clay tempered fabric impressed sherd is shown in g. (Specimens are half actual size).

Quite surprising, was the recovery of approximately 50 fresh water mussel shells in a concentration at the bottom of the shell midden in Square B. These shell fish cannot inhabit the saline environments which support oysters and the other species found in the midden, and their presence in the site suggests that they were brought in from the upper reaches of the Albemarle Sound or its tributaries where the species is still numerous in fresh water habitats.

Except for the reliance of oysters and presence of similar land faunal remains, the subsistence pattern at 31DR15 is strikingly different from that at the White Court and Kitty Hawk Bay sites. The only fish remains in the site were those of a few small sharks or rays (Appendix B), indicating that fishing was a very minor activity. It is possible that the sharks or rays were killed during the process of collecting oysters, rather than being intentionally sought. One deer and one raccoon were the only representatives of the mammalian class; an unidentified species of duck was the only bird; and diamond-back terrapin was the only reptilian food remain (Table 10). Approximately 155 bones (vertebrae and ribs) of a water snake were found concentrated in the lowest level of Zone III in Square A, and probably represent a "fright" kill rather than food.

There is little suggestion of seasonality from the faunal remains at 31DR15 (Appendix A), and oyster collection patterns indicate possible occupation anytime between late spring and autumn.

Site Summary

Although the 13 shell tempered sherds from the beach collection at Rush Point suggest occasional visits or brief use of the site during the Colington phase, the major occupation of the site was during the Middle Woodland Mount Pleasant phase (300 B.C. - 800 A.D.). 99.97 percent of the ceramic sample from the site and all ceramics from the midden excavations belong to the Mount Pleasant series. Radiocarbon dates from the lowest level of the midden in Square A indicates a beginning date of the Rush Point occupation around A.D. 265 and an ending date around A.D. 890. This temporal span appears to be excessive for the presumed depositional history, and the latter sample may have contained modern carbon from surface intrusions.

At the time of occupation, the areas of shell midden were deposited over the humic surface then exposed and probably stabilized with a forest cover similar to the present mixed oak and pine community. The northwest point of the site, now 30 centimeters below sea level, was at that time 7 to 8 feet (2.1 to 2.4 meters) above water, if the minimum rate of rise in sea level (0.5 feet/

century) (Bellis, et al, 1975: 13-14) is multiplied by the 17 centuries since initial occupation of the site. From the point, the land surface rose gradually to the south, undulating with the uneven deposits of wind-blown dune sand below. Much of the western side of the site has been lost to erosion, probably most intense in the summer from prevailing southwesterly winds and storms. The rate of shoreline erosion in similar situations is 2 to 5 feet per year (Bellis, et al, 1975; Table 2) but this formula cannot accurately be applied over many centuries because of its direct relationship to current sea level. Other variables which affect the formula such as sea level rise, sedimentation, dune building, and other processes, are not sufficiently well understood in each particular situation. If the erosion formula is applied to the Rush Point site, using the minimum erosion rate of 2 feet per year, the site would have lost approximately 3400 feet since 265 A.D.; this would have placed the original site over one-half mile inland, an illogical location for a settlement established to exploit oyster beds in the sound.

The intrasite pattern at Rush Point is similar to the other sites on Big Colington; lens-shaped deposits of shells, bone, charcoal and other debris, each containing a few artifacts, are randomly scattered over the old land surface. These represent refuse piles remaining after food-gathering, preparation and consumption; few other cultural activities are present in the evidence. The picture is, again, one of temporary subsistence camps, set up by people from a mainland or interior area, located to exploit nearby oyster beds. However, the absence of fish (other than a few sharks and rays), and reptilian fauna from the fresh water ponds and uplands suggests groups of people not yet totally familiar with the estuarine environment, and exploiting only those resources of which they had some knowledge--shellfish and land fauna. A possible indicator of the group's insecurity is the concentration of mussel shells in Square A, which suggests a food supply brought with the inhabitants, perhaps from the upper reaches of Albemarle Sound, on their trip to the site. The resources exploited at Rush Point were available in close proximity to the site, and a catchment area of one-half mile is suggested for the site.

The artifact assemblage is almost totally ceramics, probably containers for cooking and storage, also brought with the people from their home base. The milling stone from the 1955 collection and the blade from the later work are minimal equipment. No evidence of lithic production was recovered, and no evidence that the people of the Mount Pleasant phase who occupied this site were aware of the jasper sources on the outer islands. This, like the mussel shells and absence of fishing, suggests a group from the interior of the estuarine zone rather than people totally familiar with the immediate coastal area.

STICK SITE, 31DR16

The Stick site (Figure 3) was described by Haag (1958: 41) as occupying the dune ridge north of the outlet from a "nearby land-locked embayment", which is now called Colington Harbour. Haag observed the older humus layer on the eroded side of the dune ridge, and recorded pockets of oyster shell in the dips of the layer. He sifted "several hundred cubic feet" of the humus without recovering any artifacts, but did collect "sherds and flints" from the beach.

Since 1955, the south end of the dune ridge on which both 31DR15 and 31DR16 are located has been removed to accommodate the club house, swimming pool, tennis courts, parking lots, dock and picnic area which are the recreation nucleus of the Colington Harbour development (Figure 13a). In 1975, only a few sherds were observed and collected from bare spots in the picnic area, but the beach was literally covered with oyster shells, among which sherds were fairly common.

This concentration along the beach is separate from the debris adjacent to 31DR15, and begins approximately 125 meters south of the latter. From there the distribution of shell and sherds is continuous for 125 meters, nearly to the mouth of the outlet. The eastern extent of the site in Figure 3 is estimated since disturbance of the area by construction has removed all primary context. The original site occupied the southern end of the dune ridge (Fripp fine sand) and was, like 31DR15, probably deposited in separate shell piles on the older humus which is buried to varying depths beneath the modern dune.

Haag's (1958: Table 1) collection from the Stick site was 40 sherds of sand, grit and clay tempered sherds; there is no further reference in his report on the "flints" he collected from the beach, and it is presumed that these were spalls. Haag's ceramic collection fits typologically into the definition of the Mount Pleasant series, and is classified by type in Table 1 along with the 1975 collection of 92 sherds. The 1975 collection included Mount Pleasant cord marked (10), net impressed (11), fabric impressed (25), plain (2) and residual (44), the higher number of the latter resulting from water polishing and erosion in the surf. Most of the specimens are tempered with medium to coarse sand with frequent small pebbles, but a few also have fired clay lumps along with the clastic tempering materials. In all respects, the ceramic sample from the Stick site is a duplicate of that from 31DR15.

The Stick site may, in fact, have been simply an extension of the occupation area represented by intact deposits farther north on the ridge of 31DR15. Even if they were separate, the two sites appear to have been roughly contemporaneous Middle Woodland period occupations. The artifacts and shells observed at the site, and the pre-construction description from the earlier work, both indicate

a temporary subsistence camp oriented toward Albemarle Sound with an intrasite pattern basically the same as that at Rush Point.

SETTLEMENT AND SUBSISTENCE ON COLINGTON
ISLAND: A SUMMARY

One of the most striking characteristics of the sites on Colington Island is the similarity of locational factors, regardless of the age of the sites. Each site is on the immediate shoreline, oriented directly toward a bay or smaller expanse of open, relatively shallow water; each lies on a ridge of Fripp fine sand, the typical soil of forested and stabilized dunes; and each has a number of microenvironments within easy access. The sites also share similar intrasite and primary subsistence patterns indicative of a single site type, although the cultural and intersite systems to which they belonged varied through time.

LOCATIONAL FACTORS

The location, topography, soils, plant and animal communities of Colington Island offer a limited choice, now and in the past, for human subsistence, settlement and other activities. It is not by accident that the more stable communities of the modern period occupy locations on, or similar to, the prehistoric sites.

All communities, past and present, on Colington Island are located on the shore, emphasizing their orientation to maritime transport, communication, subsistence, and in modern times, commerce. Along the shore, all communities occupy the high, forested dunes of Fripp fine sand, although some sections of modern communities have spread onto the gently sloping sands adjacent to or between the higher dunes, and onto "made land" which now fills former marshes and other low areas. The high, forested dunes offer excessive drainage, thus relatively dry conditions for habitation, and protection from storms by virtue of the well developed canopy forest and its understory. The Fripp fine sand of the high dunes has a canopy forest of live oak, loblolly pine, American beech and hickory with an understory of dogwood, American holly, black cherry and yaupon holly. The ground cover includes muscadine grapes, cabbage palmetto and other species (U. S. Department of Agriculture 1977: 46).

On these shoreside dunes, all of the known prehistoric sites are found: 31DR12 on Little Colington is oriented toward Dog Point Creek, a small arm of Blount Bay; 31DR13 in the community of Eagleton parallels the west shore of Blount Bay; 31DR14, 33 and 34 lie along the north shore of Big Colington on Kitty Hawk Bay; and 31DR15 and 16 along Albemarle Sound on the northwest shore. In each case the habitation lies on the higher elevations of the forested shoreside dunes, between 10 to 50 feet (3 to 15 meters) above current sea level (or well above sea level at the time of original occupation). In close proximity to each site there is the

marine environment of the bays, lower slopes with different forest communities, the low, wet flats around fresh water marshes and ponds, and the ponds and marshes themselves. The primary reasons for selection of the site locations probably were (1) elevation, (2) proximity to the bays and their food resources, particularly the oyster beds, and (3) protection from storms offered by the forest cover. Evidence of minor exploitation of the other micro-environments exists in all the sites, but was certainly secondary to dependence on the aquatic environment.

THE TEMPORAL DIMENSION

At least within the time continuum represented by the sites on Colington Island, the environment of the island has remained relatively constant until the very recent period. Forests have been destroyed by storms or cut for timber and have replaced themselves in normal succession, dunes have buried older land surfaces in their southward and westward march, ponds and marshes have been filled and others created, and shorelines have gradually eroded or extended in response to sea level rise, storms and sedimentary deposition. With the exception of 31DR12 and 13, both of which were too disturbed for such observations, all the sites were deposited on older, buried land surfaces, the forest floor humus capping the Fripp fine sand dunes at the time of initial occupation at each site. The gray humus of Zone IV in sites 31DR14, 33, 34, and 15 was that land surface, and in each site there was evidence of tree roots of the former forests extending downward from that zone. Certainly, not all of the older land surface was exposed throughout the temporal span of the sites, and there is ample evidence of a continuous process of dune shifting and building in all of the excavated sites.

The earliest evidence of human occupation on the island occurs during the Mount Pleasant phase, in the first few centuries A.D. The radiocarbon date of A.D. 265 $\pm$ 65 from the lowest level of 31DR15 probably falls near the initial occupation of that site, and may indicate the period of initial use of the others. 31DR15, Rush Point, and 31DR16, Stick, are pure Mount Pleasant sites, and the presence of Mount Pleasant ceramics mixed with the later component in sites 31DR12, 13, 14, and 33 argues for at least some use of these during that phase. The main Mount Pleasant occupation areas of 31DR14 and 31DR33 had been lost to erosional processes long before this research began. A radiocarbon date of A.D. 890 $\pm$ 80 for the upper midden at 31DR15 falls near the temporal boundary between the Middle and Late Woodland periods (Table 5), and seems too late for the depositional sequence at Rush Point. Modern contamination is the apparent explanation for this error, but the date does agree with the end of the Mount Pleasant phase.

Beginning around 800 A.D., the Colington phase is the pre-historic culture of the Algonkian people who inhabited the coastal zone in protohistoric and early historic times. Major Colington

components were found at 31DR13, Eagleton, 31DR14, Kitty Hawk Bay, and 31DR33, White Court, all indicative of a preference for the north shore of Big Colington during this phase. 31DR34, Colleton Lane is a small, but disturbed Colington phase site probably related to 31DR14, and the data from 31DR12, Beaseley, and 31DR15, Rush Point, imply only sporadic, perhaps transient use during this phase. Two radiocarbon dates from 31DR14, A.D. 1045 $\pm$ 65 and A.D. 1320 $\pm$ 80, derived from the lowest and upper levels of the midden deposits, respectively, imply at least a 300-year-long use of the site. A date of A.D. 1230 $\pm$ 65 from 31DR33 reinforces the general contemporaneity of the two sites suggested by their similar artifact assemblages.

The temporal span of the Colington Island sites begins near the mid-point of the Middle Woodland, ca. 250 A.D., and continues until around 1400 A.D. in the Late Woodland period. The radiocarbon dates (Table 5) do not necessarily bracket the site sequences, but do serve as indicators of temporal span at 31DR14 and 15, and provide at least one date within the sequence of 31DR33. The dates derived from Rush Point (31DR15) compare favorably with those obtained from the Mount Pleasant phase components of other sites. These are A.D. 360 $\pm$ 65 from the Baum site (31CK9) in Currituck County (Phelps 1977b: 20), and a recently received date of A.D. 460 $\pm$ 85 (UGa-3435; B.P. 1490 $\pm$ 85) from the Tillett site (31DR35) on Roanoke Island. Dates from the Colington phase components at Kitty Hawk Bay (31DR14) and White Court (31DR33) are comparable with those from the earliest Colington occupation at the Tillett site, A.D. 860 $\pm$ 85 (UGa-3433; B.P. 1090 $\pm$ 85), and the Baum site, A.D. 1315 $\pm$ 70 (Phelps 1980b).

INTRASITE PATTERN

The internal structure and spatial relationship within the Colington Island sites is as standard as the site locational factors, and this similarity in intrasite pattern, like the locational factors, existed throughout the temporal sequence.

The pattern is simplistic; scattered in random, lens-shaped piles on the crests and shoreward flanks of high dunes are oyster shells, other food remains, a few ceramic sherds, artifacts, charcoal and ash. Between these piles of midden debris the older humus is nearly devoid of artifacts, features, or structural evidence, although the absence of such data may be related to the relatively limited excavated areas. Hypothetically, each small midden deposit should have a shelter and activity areas in relatively close association. It is quite possible that some type of temporary shelter was built and used. Only those dune ridges in immediate proximity to the shoreline of the bays were selected as sites, reinforcing the emphasis on marine adaptation.

Within the shell middens, which are obvious refuse heaps, artifacts and other debris are randomly scattered. The few features encountered were either fire pits (hearths) or cooking

Table 5. Chronology and Radiocarbon Dates

<u>Site</u>	<u>Location</u>	<u>Dates</u>	<u>Phase</u>	<u>Dates from other sites</u>	<u>Period</u>
31DR15	Sq. A, Zone III, Lvl. 4	AD 265+65 (UGa-1088)	Mt. Pleasant	AD 360+65 - 31CK9	Middle Woodland
	Sq. A, Zone III, Lvl. 2	AD 890 $\pm$ 80 (UGa-3849)	Mt. Pleasant	AD 460+85 - 31DR35	300 BC-AD 800
31DR14	Sq. B, Zone III, Lvl. 4	AD 1045+65 (UGa-1090)	Colington	AD 860+85 - 31DR35	Late Woodland
	Sq. A, Zone III, Lvl. 1	AD 1320+80 (UGa-3847)	Colington	AD 1315+70 - 31CK9	AD 800-1650
31DR33	Sq. E, Fea. 3	AD 1230+65 (UGa-1087)	Colington		

pits; others were refilled and their function could not be determined. The major portion of the cultural data recovered in these dispersed middens is directly referable to subsistence activities of food procurement, preparation, and discard after consumption. There is no direct evidence of food preservation for future consumption. The one activity other than food procurement present in all the sites is food preparation, cooking and temporary storage, based on the fire areas, cooking pits and the few ceramic sherds representative of a small number of vessels, probably brought with the inhabitants rather than produced on the island. Activities present in only the Colington phase sites are (1) processing of animal parts (antlers, hides) and tools and garments, and possibly clothing production or repair (bone awls and abrader); and (2) production of a few lithic tools, based on the small number of spalls, and, possibly, procurement of lithic resources from the ocean beaches although the raw material may have been brought with the group.

The very low density of cultural material in the middens can be seen in the following list, which gives the average number of sherds, spalls, and faunal remains (bone count) per 10-centimeter level in a 2-meter square for each of the sites.

	<u>31DR14</u>	<u>31DR15</u>	<u>31DR33</u>
Avg. sherds per level	13	12	8
Avg. spalls per level	5	*	13
Avg. bones per level	57	23	62

*No evidence of lithic production at 31DR15.

Compared with densities of approximately 100 to 500 or more sherds per level in comparable excavation units in known permanent villages, these counts are extremely low and reflect brief occupations and a limited number of cultural activities. This is also confirmed by the quite limited range and number of other artifact classes and types in the Colington Island sites. A less significant difference in the number of spalls and faunal remains occurs between these camps and permanent villages, but the counts for the latter site type are generally higher in these categories.

Each of the sites gives the impression of a temporary stay, sufficiently long to satisfy specific subsistence needs or preferences, by a small group of people. While no seasonality can be inferred for the Mount Pleasant phase site (31DR15), the Colington phase sites appear to have been used in the spring (31DR33) and late summer-early fall (31DR14). The group may have been one or more extended families, but their actual number and the type of social unit can only be implied from the data. That family units,

rather than a group of one sex, occupied the sites is hypothesized from the artifact types and range of activities present in the sites and their implications for a normal division of labor. The dispersed nature of the middens also gives the impression of infrequent use over a considerable period of time. This may have resulted from a need to conserve the available oyster population, or a very small population occasionally exploiting these resources. In either case, the middens did not accumulate to the depth and extent of those associated with intensively occupied seasonal villages or permanent mainland villages where acres of shell midden grew to an appreciable height. In a sense, they represent a beginning stage of shell midden development, and were never used frequently enough to produce the overlapping, layered deposition characteristic of larger middens.

The site type is classified here as temporary camp (procurement camp; subsistence camp) with a primary function of habitation while exploiting marine food resources. Secondary subsistence activities included hunting and trapping of some fauna from the uplands, fresh water ponds, and marshes, and collection of forest products (in at least one site).

SUBSISTENCE PATTERN

The primary subsistence activity of all the Colington Island sites was shell fish collecting and consumption. Oysters were evidently the main food resource which led to establishment and continued seasonal use of the sites, and specific location and availability of oyster beds was probably a main factor in site location through time. No oysters live in the northern estuaries today because of the low salinity of the water. The closest living beds are in the vicinity of southern Roanoke Island (Porter 1974: Figure 1), 10 miles south of Colington Island. At the time the Colington Island sites were inhabited, however, and through the early years of the nineteenth century (Stick 1958: 9), there were inlets through the northern Outer Banks which provided an exchange of sea water with the flow of rivers emptying into the Albemarle Sound. Knowledge of the opening and closing of inlets through the north banks extends backward only to the 16th century, but the dynamic forces which create and close these corridors to the sea have been operable for many centuries before the first maps were produced. During the temporal span of the Colington Island sites, inlets were certainly open in close proximity to provide the salinity necessary for oysters and salt water fish species in the waters around the island.

A study of relict shell reefs for purposes of determining the extent and commercial value of the oyster shell in the estuaries reported large areas of shell between Colington and Roanoke Island

and along the channel adjacent to the west side of Colington Island. No large beds were found in Kitty Hawk Bay, at least in the area sounded (N. C. Department of Conservation and Development 1964: 3). A more comprehensive and detailed study (Sampair 1974: Plate 3) mapped the large reef southwest of Colington Island, but did not take cores or soundings in Kitty Hawk Bay. These studies show that oysters have been available in vast quantities in the northern estuarine zone in past times, but the dates of these beds are unknown. Also, because of their emphasis on larger, commercially valuable deposits, many smaller beds were not mapped and more shallow bays were not explored.

The distribution of Mount Pleasant phase sites on Colington Island confirms existence of productive oyster beds along the western shore and in Kitty Hawk Bay and other smaller embayments between 200 and 800 A.D. The Colington phase sites along the north shore were certainly located to exploit beds in Kitty Hawk Bay, and the sites offer ample evidence of availability of oysters in that bay from 800 to 1400 A.D., and perhaps later. Haag (1958: 39) opined that the beds in Kitty Hawk Bay were evidence of an inlet to the ocean at that point, but this is argumentative. Recent geological studies have mapped relict channels and potential inlets just south of Colington (Riggs and O'Connor 1974), but no data have been obtained for Kitty Hawk Bay. Clams and miscellaneous gastropods from all sites were probably harvested along with the oysters but were insignificant as a food resource. The Venus clam shells at 31DR33 may represent intentional gathering of this species during the Colington phase, since these shells are relatively frequent in sites of this phase elsewhere.

The absence of fish remains, except for a few sharks or rays, at 31DR15 is somewhat remarkable, and indicates a coastal adaptive pattern solely oriented toward shell fish. Whether this was the result of specialized cultural preference or lack of knowledge of marine foods cannot be determined, and presents a problem to be studied at other coastal sites of the Mount Pleasant phase. Although land fauna such as deer and racoon were incidentally hunted, the reptilian resources of the freshwater ponds and marshes were ignored even though these animals were certainly known from inland areas.

On the other hand, the Colington phase sites at 31DR14 and 33 represent a thorough knowledge and efficient exploitation of the total coastal environment. Second only to shell fish, the Colington phase population relied on seasonal availability of large and small salt water fish, and on fresh water species when available during periods of sound flushing. The species represented would have required a number of fishing techniques such as hook and line, nets, weirs and other methods. Fish remains in these

sites account for more than 90% of the total meat from non-shell fish sources. The upland forests were also exploited for deer, raccoon, rabbit, box turtles, and hickory nuts (at 31DR33) as a tertiary subsistence pursuit. The fresh water ponds and salt marshes were equally valuable, yielding turtles and alligator as well as ducks and clapper rails. The two Colington phase sites were apparently utilized in different seasons, perhaps by the same group of people, in a pattern of maximum use of the group's territory.

THE INTERSITE PATTERN

Reconstruction of the intersite pattern, the synchronic relationship between the sites in a cultural system, to which the Colington Island sites belonged may only be inferred at present. A recent cultural historical summary of coastal North Carolina (Phelps 1980a) proposed basic regional and sub-regional sequences, but the past history of archaeological research in the area is too brief for specific delineation of territories utilized by single socio-political units.

The Mount Pleasant phase sites on the island are temporary camps occupied periodically for maritime subsistence activities. All of the Colington Island sites were used during this phase, indicative of the island as a popular area for oyster collecting and other supplementary, subsistence activities. The temporary camps on Colington are only one specialized part of the Mount Pleasant phase subsistence system, which is presumed to have been based primarily on agriculture. Larger permanent sites are known on the mainland, particularly on Currituck Sound and its tributaries (Phelps 1980a: 41) but which of these sites are contemporaneous and systematically related to those on Colington Island cannot yet be discerned. The size of the territory exploited by one group may have been relatively large, and if the fresh water mussels from the Rush Point site are correctly interpreted, some of the occupants of that site were from the western reaches of the Albemarle Sound, or its tributaries, a distance of about 50 miles or more. The impression given by the evidence at 31DR15 is one of a culture not yet fully adapted to the coast, using only a select few of the available resources.

The basic settlement pattern of the Colington phase (Phelps 1980a: 47-48) is better known than that of Mount Pleasant. The phase name, Colington, is derived from the island itself and the sites representative of this phase on the north shore. Mainland Colington phase sites are usually located where agriculture, hunting, gathering, fishing and shell fish collecting (both fresh water and marine) could be all accomplished within a relatively small catchment area. The Colington Island sites of this phase may have been supplementary subsistence camps for one of the immediate coastal socio-political units, or places where groups from the inner part of the estuarine system came to obtain marine resources. The

almost exclusive use of jasper as the primary lithic material in the Colington sites suggests a group familiar with coastal resources, but the availability of this material on the coast could easily have been known to more inland groups. Again, further research will be required to formulate specific territories and intersite relationships. Until then, any one of the Algonkian socio-political units in Currituck or the other counties bordering Albemarle Sound can be viewed as likely inhabitants of the Colington sites. The closest groups in the Algonkian distribution would have travelled less than two miles from their mainland villages at Point Harbor, but others were situated 80 miles or more away from the island. Whatever their origin, the seasonal occupants of the Colington phase sites on the island had a thorough knowledge of coastal resources and exploited them efficiently.

Irregardless of the particular cultural system to which the prehistoric visitors belonged, it is obvious that Colington Island has seen similar use since it was first occupied sometime in the 3rd century A.D. The island's natural limitations preclude stable or long-term agriculture, although this was attempted and abandoned, and its inaccessibility was a prohibitive factor for settlement until the technology of the 19th century. The island has seen prehistoric oysters and fishing camps, relatively permanent historic fishing communities sustained by an elaborate redistributive and exchange system, and now is burgeoning with temporary sites again, the summer settlements of an affluent modern society.

Appendix A

NON-FISH FAUNAL REMAINS FROM THREE SITES
ON COLINGTON ISLAND

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MATERIALS AND METHODS

The identification and analysis of non-fish vertebrate remains from three archaeological sites on Colington Island was undertaken at Winthrop College, Rock Hill, South Carolina. The sample consisted of 459 fragments from 31DR14; 236 fragments from 31DR15; and 122 fragments from 31DR33.

The initial step in the faunal analysis was the taxonomic identification of the remains. Specimens from the zooarchaeological collection at Winthrop College were available for comparative purposes. Specimens were identified whenever possible to species; however, many bones were very fragmentary and identification was often limited to class. Following identification to taxonomic level, fragments were identified as to skeletal element, e.g. right distal humerus. Any indicators of age and sex were also noted.

Three methods were used to quantify species remains: determination of the total number of identifiable fragments of each species; calculation of minimum number of individuals; and calculation of bone weights. Calculation of number of individuals of each species at each site was based upon the minimum-number-of-individuals (MNI) method first described by White (1953). This method involves counting the most common skeletal element of each species. This corresponds to at least the minimum number of individuals represented in the sample. Variations in age, sex, and size were also considered. In employing this method, the minimum distinction approach outlined by Grayson (1973) was used. All stratigraphic and horizontal excavation units were ignored and MNI was determined from the faunal assemblage of the site as a whole.

Live weights of the non-fish species were determined using bone weights of the archaeological remains. Linear regression formulae used in this calculation were taken from Fradkin (1979). In these formulae, x = body weight in kilograms and y = skeletal weight in kilograms.

Turtle

$$\log y = 1.03 (\log x) - 0.69897$$

Aves

$$\log y = 1.071 (\log x) - 1.1871$$

Mammalia

$$\log y = 1.09 (\log x) - 1.2147$$

The live weights calculated were then converted to maximum possible edible meat yield using the following percentages: turtles 50%; birds 70%; and mammals 60%. Edible meat yield weights for fish were taken from Swift (Appendix B).

Using the edible meat yield weights, the calories available from these species were determined. Estimated calories/100 grams used in the calculation were taken from Watt and Merrill (1963). They are:

Deer	126 calories/100 gm
Other Mammals	184.25 calories/100 gm
Aves	225 calories/100 gm
Turtle	111 calories/100 gm
Fish	110 calories/100 gm

Finally, a list of the various species identified (including fish) and the environment (aquatic versus terrestrial) in which they are naturally found was made. Three methods were used to determine the importance of the total fauna exploited within the two major ecological habitats. The first procedure consisted of a species check-list indicating those animals identified. The second method involved calculation of the maximum possible edible meat yields of these animals, while the third method compared the caloric yields of these species.

Knowledge of the natural history of the various species and their seasons of maximum abundance was used to make inferences concerning seasonality of the sites.

SPECIES REPRESENTED

In Table 6 are recorded the non-fish species identified at each of the three sites. A total of 11 genera or species of three classes of vertebrates were identified including five species of mammals, two genera of birds, and six genera of reptiles. Four species, raccoon (Procyon lotor), white-tailed deer (Odocoileus virginianus), duck (Anas sp.), and diamond-back terrapin (Malaclemys terrapin) were common to the three sites.

31DR14

From 31DR14 were examined 459 non-fish fragments of 11 species (Table 7). Of these, 91 (19.8%) fragments were not identified beyond class. Mammalian remains were most abundant in terms of the number of bone fragments (235 or 51.2%), number of individuals (7 or 53.8%), and number of species (5 or 45.5%). One species, pig (Sus scrofa), was intrusive.

Table 6. Species identified at the Colington Island sites.

Species	Common Name	31Dr14	31Dr15	31Dr33
MAMMALIA	Mammal	+	+	+
<u>Sylvilagus</u> sp.	Rabbit	+	-	+
<u>Canis familiaris</u>	Dog	+	-	-
<u>Procyon lotor</u>	Raccoon	+	+	+
<u>Sus scrofa</u> *	Pig	+	-	-
<u>Odocoileus virginianus</u>	White-tailed deer	+	+	+
AVES	Bird	+	+	+
<u>Anas</u> sp.	Duck	+	+	+
<u>Rallus longirostris</u>	Clapper Rail	+	-	-
REPTILIA	Reptile	+	+	+
<u>Chelydra serpentina</u>	Snapping turtle	+	-	+
<u>Kinosternon subrubrum</u>	Musk turtle	+	-	-
<u>Terrapene carolina</u>	Box turtle	+	-	-
<u>Chrysemys</u> sp.	Pond turtle	-	-	+
<u>Malaclemys terrapin</u>	Diamond-back terrapin	+	+	+
<u>Natrix</u> sp.	Water snake	-	+	-

*Intrusive

+Present

-Absent

Table 7. Faunal remains from 31Dr14

Species	Fragments	%	MNI	%
TOTAL	459	100.0	13	100.0
Mammalia	235	51.2	7	53.8
<u>Sylvilagus</u> sp.	2	0.4	1	7.7
<u>Canis familiaris</u>	2	0.4	1	7.7
<u>Procyon lotor</u>	2	0.4	2	15.4
<u>Sus scrofa</u> *	3	0.7	1	7.7
<u>Odocoileus virginianus</u>	182	39.7	2	15.4
UD mammals	44	9.6	-	-
Aves	10	2.2	2	15.4
<u>Anas</u> sp.	2	0.4	1	7.7
<u>Rallus longirostris</u>	2	0.4	1	7.7
UD birds	6	1.3	-	-
Reptilia	207	45.1	4	30.8
<u>Chelydra serpentina</u>	8	1.7	1	7.7
<u>Kinosternon subrubrum</u>	5	1.1	1	7.7
<u>Terrapene carolina</u>	141	30.7	1	7.7
<u>Malaclemys terrapin</u>	19	4.1	1	7.7
UD reptiles	34	7.4	-	-
UD vertebrates	7	1.5	-	-

*Intrusive

The white-tailed deer was the largest mammal exploited at the site. A minimum of two individuals represented by 182 bone fragments were identified. All major parts of the skeleton were recovered. At least one animal was male as evidenced by a skull fragment with the antler base intact (Figure 7a). The articular surface of this specimen was badly eroded, and it was not possible to determine with any degree of certainty if the antlers had been cut or shed.

Age determination was based on degree of tooth wear (Sevringhaus 1949) and degree of epiphyseal ossification of selected long bones (Lewall and Cowan 1963). One right mandibular fragment with $PM_3 - M_2$ in situ was aged at 4-5 years. A right distal humerus epiphysis was present indicating an animal less than 14 months of age.

Other mammals present at the site included: two raccoons represented by two right mandibles both with post-mortem tooth loss; one dog (Canis familiaris) represented by two isolated teeth; and one rabbit (Sylvilagus sp.) represented by a right maxilla fragment and a left humerus. The long bone was fully ossified indicative of an animal greater than 9 months of age (Hale 1949). Two species of rabbit, the eastern cottontail (Sylvilagus floridanus) and the marsh rabbit (Sylvilagus palustris), are common residents of the area, and determination of species was not attempted.

Avian remains consisted of ten fragments of which four were identifiable. Two genera, duck (Anas, sp.) and clapper rail (Rallus longirostris) were represented. The clapper rail is a permanent resident of the area, but is more abundant in the winter because of the influx of northern birds.

Seven species of the genus Anas are found in the coastal area of the two Carolinas: the black duck, mallard, gadwall, pintail, green-winged teal, blue-winged teal, and the cinnamon teal. All are common winter residents, and can be found from November through January. Five of the species can be found from October through April, and one species may be found from September through May (Trinkley 1980). The presence of this genus at the site is indicative of winter occupation, although they can be procured from mid-fall through mid-spring.

Reptiles were well-represented in the non-fish faunal assemblage and accounted for 45.1% of the identified fragments, 30.8% of the MNI, and 36.4% of the identified species. Remains included carapace, plastron, and limb elements of two fresh-water species, the musk turtle (Kinosternon subrubrum) and the snapping turtle (Chelydra serpentina); one brackish water species, the diamond-back terrapin (Malaclemys terrapin); and one terrestrial species, the eastern box turtle (Terrapene carolina).

Turtles undergo a period of inactivity from December through February and are most abundant from March through May. Their occurrence at the site suggests spring occupation, although summer and early fall occupation is also possible.

The faunal assemblage recovered from 31DR14 indicates that the aboriginal inhabitants of this site utilized many of the ecological habitats and vertebrate species available. Fish were the most intensively exploited vertebrate group (Appendix B) and remains of these animals comprised 47.8% of the identified species (Table 8), 96.4% of the available meat, and 95.8% of the available calories (Table 9).

Members of the class Mammalia were the most intensively exploited group of non-fish vertebrates. Mammalian remains accounted for 17.4% of the species identified, 3.3% of the meat yield, and 3.8% of the available calories. The white-tailed deer was the most important mammal exploited. All major parts of the animal were recovered suggesting that the entire animal was returned from the kill site to the living area.

The four species of turtle represented in the faunal assemblage provided less than 1% of the total meat yield and calories, although they did comprise 30.8% of the non-fish species identified, 7.1% of the non-fish meat yield, and 6.1% of the non-fish calories yield.

Although a variety of birds are residents of the area, only two species were captured by the Indians and these animals provided 2.6% of the non-fish meat yield and 4.4% of the non-fish calorie yield.

The species present in the faunal assemblage from 31DR14 indicate the extreme importance of the aquatic habitat as a source of food. Aquatic or semi-aquatic species accounted for 77.3% of the identified species, 96.8% of the available meat, and 96.2% of the calories.

31DR15

From 31DR15 were examined 236 bone fragments of non-fish vertebrates of which 50 (21.2%) fragments were not identified beyond class (Table 10). Five species of three classes of vertebrates were identified, although one species, water snake (*Natrix* sp.), probably was not utilized as food. One white-tailed deer, one raccoon, one duck, and one diamond-back terrapin comprised the identifiable food remains. Among the white-tailed deer fragments was a fully ossified proximal femur indicative of an animal greater than 15 months of age. The remains of raccoon consisted of a left

Table 8. Fauna from 31Dr14 by habitat

Species	Terrestrial	Aquatic
<u>Sylvilagus</u> sp.	+	
<u>Canis familiaris</u>	+	
<u>Procyon lotor</u>	+	
<u>Odocoileus virginianus</u>	+	
<u>Anas</u> sp.		+
<u>Rallus longirostris</u>		+
<u>Chelydra serpentina</u>		+
<u>Kinosternon subrubrum</u>		+
<u>Terrapene carolina</u>	+	
<u>Malaclemys terrapin</u>		+
* <u>Alligator mississippiensis</u>		+
* <u>Lepisosteus osseus</u>		+
* <u>Ictalurus cattus</u>		+
* <u>Paralichthys</u> sp.		+
* <u>Cynoscion</u> sp.		+
* <u>Sciaenops ocellata</u>		+
* <u>Micropogon undulatus</u>		+
* <u>Menticirrhus</u> sp.		+
* <u>Pogonias cromis</u>		+
* <u>Archosargus probatocephalus</u>		+
* <u>Caranx hippos</u>		+
* <u>Chilomycterus scopfi</u>		+

*Swift Appendix B.

Table 9. Useable meat weight and caloric yield from 31Dr14

Faunal group	Bone wt. (gm)	Useable meat wt.(gm)	% Useable meat	Caloric yield (cal.)	% Caloric yield
TOTAL	--	87,884.5	100.0	97,285.7	100.0
Mammalia	336.9	2,877.9	3.3	3,682.4	3.8
Deer	324.6	2,781.3	3.1	3,504.4	3.6
Aves	6.5	81.5	0.1	183.4	0.2
Reptilia	87.9	225.1	0.3	249.9	0.2
Osteichthyes Elasmobranchii }	--	84,700.0	96.4	93,170.0	95.8

mandible with post-mortem tooth loss and a limb fragment. No age estimate was possible. All remains of the diamond-back terrapin were carapace fragments.

The faunal remains recovered from 31DR15 suggests minor utilization of the animal species. Very surprising was the total lack of fish remains. Five species/species groups provided the edible animal food (Table 11) and the meat yield and calories available from these animals were very small (4,017.3 gm and 4,564.7 calories respectively).

The bulk of the animal protein and calories were derived from the aquatic habitat (Table 12). These animals (sharks and rays, diamond-back terrapin, and duck) provided 89.4% of the meat yield and 88.3% of the available calories.

31DR33

The non-fish vertebrate assemblage from 31DR33 consisted of 122 bone fragments of seven genera of animals (Table 13). Of these 122 fragments, 18 (14.7%) were not identified beyond class. Mammals were the most abundant non-fish vertebrate class represented and remains of these animals accounted for 62.3% of the bone fragments and 55.6% of the MNI. The white-tailed deer was the most abundant mammal represented. Among the skeletal remains of this animal were two left distal tibiae. One of the fragments exhibited complete epiphyseal ossification characteristic of an animal greater than

Table 10. Faunal remains for 31Dr15.

Species	Fragments	%	MNI	%
TOTAL	236	100.0	5	100.0
Mammalia	16	6.8	2	40.0
<u>Procyon lotor</u>	2	0.8	1	20.0
<u>Odocoileus virginianus</u>	10	4.2	1	20.0
UD mammal	4	1.7	-	-
Aves	14	5.9	1	20.0
<u>Anas</u> sp.	4	1.7	1	20.0
UD bird	10	4.2	-	-
Reptilia	206	87.3	2	40.0
<u>Malaclemys terrapin</u>	10	4.2	1	20.0
<u>Natrix</u> sp.*	160	67.8	1	20.0
UD turtle	36	15.3	-	-

*Probable non-food

Table 11. Fauna from 31Dr15 by habitat.

Species	Terrestrial	Aquatic
<u>Procyon lotor</u>	+	
<u>Odocoileus virginianus</u>	+	
<u>Anas</u> sp.		+
<u>Malaclemys terrapin</u>		+
Elasmobranchii*		+

*Appendix B

Table 13. Faunal remains from 31Dr33.

Species	Fragments	%	MNI	%
TOTAL	122	100.0	9	100.0
Mammalia	76	62.3	5	55.6
<u>Sylvilagus</u> sp.	3	2.5	2	22.2
<u>Procyon</u> <u>lotor</u>	4	3.3	1	11.1
<u>Odocoileus</u> <u>virginianus</u>	62	50.8	2	22.2
UD mammalia	7	5.7	-	--
Aves	8	6.6	1	11.1
<u>Anas</u> sp.	2	1.6	1	11.1
UD bird	6	4.9	-	--
Reptilia	38	31.1	3	33.3
<u>Chelydra</u> <u>serpentina</u>	3	2.5	1	11.1
<u>Chrysemys</u> sp.	27	22.1	1	11.1
<u>Malaclemys</u> <u>terrapin</u>	3	2.5	1	11.1
UD reptilia	5	4.1	-	--

Table 12. Useable meat weight and caloric yield of faunal remains from 31Dr15.

Faunal group	Bone wt. (gm)	Useable meat wt.(gm)	% Useable meat	Caloric yield (cal.)	% Caloric yield
TOTAL	--	4,017.3	100.0	4,564.7	100.0
Mammalia	41.8	424.2	10.6	534.5	11.7
Aves	5.3	67.4	1.7	151.7	3.3
Reptilia	9.4	25.7	0.6	28.5	0.6
Elasmobranchii	--	3,500.0	87.1	3,850.0	84.4

15 months of age. The epiphysis and diaphysis of the other tibia were not fused indicating the presence of an animal less than 15 months of age.

Rabbit was represented by two left mandibles and a long bone shaft fragment. Both mandibles had the dentition of animals greater than one month of age (Dice and Dice 1941).

Raccoon was represented in the faunal remains by two isolated teeth (both heavily worn), a distal humerus, and a proximal radius. Both post-cranial fragments were completely ossified indicating an animal greater than 6 months of age (Grau et al. 1970).

Three aquatic species of reptiles, the snapping turtle, pond turtle (*Chrysemys* sp.), and diamond-back terrapin were represented by carapace, plastron, and limb elements. These animals accounted for 31.1% of the non-fish skeletal fragments and 33.3% of the MNI.

The faunal sample from 31DR33 suggests that the inhabitants of this site like those from 31DR14 intensively exploited the aquatic habitat. Only three of the identified species are terrestrial (Table 14) and these animals provided 5.4% of the meat yield and 7.0% of the available calories. Fish were the most intensively exploited aquatic taxa and these animals provided 94.2% of the usable meat and 92.4% of the available calories (Table 15).

CONCLUSIONS

The faunal assemblages from the three Colington Island sites have provided insight into the subsistence activities of the Indians. A total of 25 probable food species/species groups were identified from the three sites (Table 16). The greatest species diversity was evident at 31DR14 with the occurrence of 23 species. A total of 13 species were identified from 31DR33. Eleven species including three mammals, one bird, three reptiles, three fish, and members of the Elasmobranchii were common to the two sites.

The available data suggest the existence of a similar pattern of subsistence at the two sites. There appears to have been more intensive exploitation of available animals as a source of protein and calories at 31DR14. The number of species recovered at that site was 1.8 times greater, the amount of edible meat 4.5 times greater, and the number of calories 4.4 times greater than that recovered from 31DR33. Despite these differences, the Indians at both sites depended primarily on the aquatic habitat. Aquatic species accounted for 77.3% of the utilized species, 96.8% of the available meat, and 96.2% of the available calories at 31DR14 compared to 76.9% of the utilized species, 94.6% of the available meat yield, and 93.0% of the available calories at 31DR33. Fish

Table 14. Fauna from 31Dr33 based on habitat.

Species	Terrestrial	Aquatic
<u>Sylvilagus</u> sp.	+	
<u>Procyon</u> <u>lotor</u>	+	
<u>Odocoileus</u> <u>virginianus</u>	+	
<u>Anas</u> sp.		+
<u>Chelydra</u> <u>serpentina</u>		+
<u>Chrysemys</u> sp.		+
<u>Malaclemys</u> <u>terrapin</u>		+
* <u>Alligator</u> <u>mississippiensis</u>		+
* <u>Ictalurus</u> <u>cattus</u>		+
* <u>Cynoscion</u> sp.		+
* <u>Micropogon</u> <u>undulatus</u>		+
* <u>Leiostomus</u> <u>xanthurus</u>		+
* <u>Elasmobranchii</u>		+

*Appendix B

Table 15. Useable meat weight and caloric equivalents of faunal remains from 31Dr33.

Faunal group	Bone wt. (gm)	Useable meat wt(gm)	% Useable meat	Caloric yield (cal.)	% Caloric yield
TOTAL	--	19,701.7	100.0	22,091.7	100.0
Mammalia	113.9	1,064.1	5.4	1,538.8	7.0
Aves	3.4	44.5	0.2	100.1	0.4
Reptilia	16.0	43.1	0.2	47.8	0.2
Osteichthyes Elasmobranchii }	--	18,550.0	94.2	20,405.0	92.4

and members of the Elasmobranchii provided the bulk of this yield. These animals accounted for 77.3% of the utilized species, 96.8% of the available meat and 96.2% of the calories at 31DR14 compared to 41.7% of the species, 94.2% of the usable meat, and 92.4% of the calories at 31DR33.

Although no direct evidence of seasonality was available from the faunal remains, some inferences may be drawn from an examination of the life history of the species. Ten species from 31DR14 exhibit periodic peaks of abundance (Zingmark 1978), and when these periods of abundance are plotted (Figure 16), a pattern is evident. Occupation of the site between April and September would have coincided with the maximum availability of these species. Six species from 31DR33 also exhibit seasonal abundance. It is evident from a plotting of these periods (Figure 17) that spring and/or summer occupation is inferred from the presence of these species.

The faunal assemblage from 31DR15 is very dissimilar from those of the other sites. The species diversity present at the site was very limited with five species/species groups providing the animal protein. The data suggest minimal exploitation of the available animal species. Particularly striking is the lack of fish remains in the sample. Like the inhabitants of 31DR14 and 31DR33, the residents of 31DR15 did acquire the bulk of their animal protein from the aquatic habitat. These animals accounted for 60.0% of the identified species, 89.4% of the meat yield, and 88.3% of the available calories.

Evidence of seasonality was lacking. Only three species exhibit periodic abundance peaks. Ducks are available from October through April; reptiles from March through May, and to a lesser extent into September; and rays are most abundant from May through September. Hence there is some slight suggestion of spring occupation of the site.

Table 16. Species represented at the Colington Island sites.

Species	Common name	31Dr14	31Dr15	31Dr33
Mammalia	mammals	+	+	+
<u>Sylvilagus</u> sp.	rabbit	+	-	+
<u>Canis familiaris</u>	dog	+	-	-
<u>Procyon lotor</u>	raccoon	+	+	+
<u>Sus scrofa</u>	pig	+	-	-
<u>Odocoileus virginianus</u>	white-tailed deer	+	+	+
Aves	bird	+	+	+
<u>Anas</u> sp.	duck	+	+	+
<u>Rallus longirostris</u>	clapper rail	+	-	-
Reptilia	reptile	+	+	+
<u>Chelydra serpentina</u>	snapping turtle	+	-	+
<u>Kinosternon subrubrum</u>	musk turtle	+	-	-
<u>Terrapene carolina</u>	box turtle	+	-	-
<u>Chrysemys</u> sp.	pond turtle	-	-	+
<u>Malaclemys terrapin</u>	diamond-back terrapin	+	+	+
<u>Natrix</u> sp.	water snake	-	+	-
<u>Alligator mississippiensis</u> +	alligator	+	-	+
Osteichthyes+	bony fish	+	-	+
<u>Lepisosteus osseus</u> +	long nose gar	+	-	-
<u>Ictalurus catus</u> +	white catfish	+	-	+
<u>Paralichthys</u> sp.+	flounder	+	-	-
<u>Cynoscion</u> sp.+	sea trout	+	-	+
<u>Sciaenops ocellata</u> +	red drum	+	-	-
<u>Micropogon undulatus</u> +	Atlantic croaker	+	-	+
<u>Leiostomus xanthurus</u> +	spot	-	-	+
<u>Menticirrhus</u> sp.+	kingfish	+	-	-
<u>Pogonias cromis</u> +	blackdrum	+	-	-
<u>Archosargus probatocephalus</u> +	sheepshead	+	-	-
<u>Caranx hippos</u> +	Crevalle jack	+	-	-
<u>Chilomycterus scopfi</u> +	striped burfish	+	-	-
Chondrichthyes+	cartilaginous fish	+	+	+
Elasmobranchii+	sharks or rays	+	+	+

+Appendix B

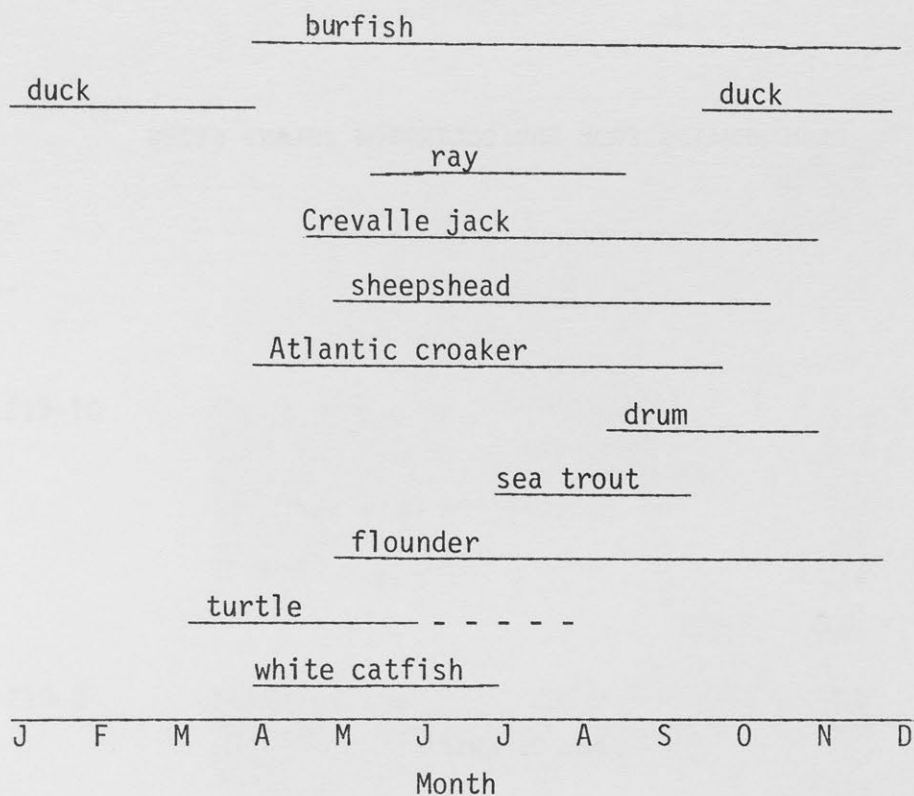


Figure 16. Season(s) of maximum abundance of some animal groups from 31Dr14.

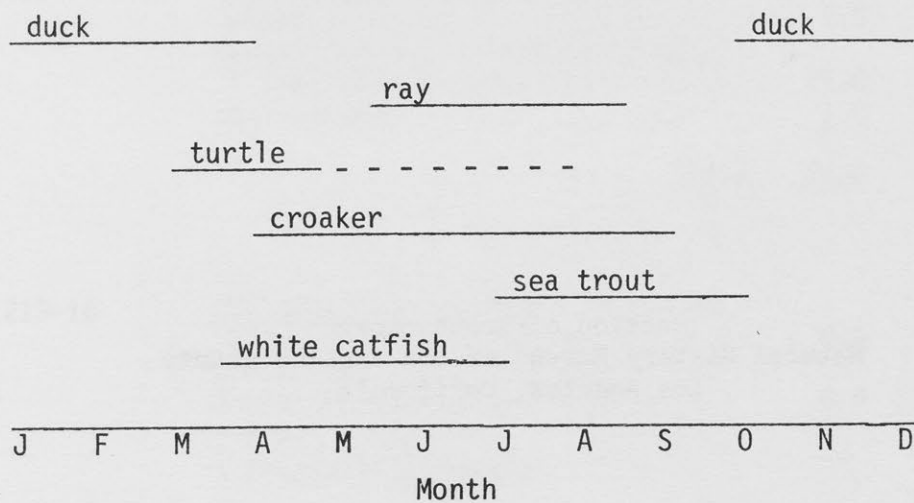


Figure 17. Season(s) of maximum abundance of some animal groups from 31Dr33.

Appendix B

FISH REMAINS FROM THE COLINGTON ISLAND SITES

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FISH REMAINS

<u>SITES</u>	<u>FISHES</u>	<u>MINIMUM WEIGHT (kilos)</u>	<u>MINIMUM EDIBLE WEIGHT (70% of total weight)</u>
31 DR 14			
Square A			
Lvl. 1, 219-10	<u>Paralichthys</u> sp. 1 vertebrae	0.6	0.42
	<u>Menticirrhus</u> sp. 1 vertebrae	0.3	0.21
	<u>Caranx hippos</u> , 1 atlas vertebrae	9.1	6.37
	<u>Chilomycterus schoepfi</u> , 1 jaw	0.3	0.21
	21 fragments	0.5	.35
	2 small vertebrae	0.3	0.21
	TOTAL	11.1	7.77
Lvl. 2, 219-3	<u>Pogonias cromis</u> , 1 right articular	0.6	0.42
	<u>Sciaenops ocellatus</u> , 6 vertebrae	5.0	3.5
	<u>Caranx hippos</u> , 2 premaxillaries,		
	1 right, 1 left	13.0	9.1
	1 hypural vertebrae	6.0	4.2
	16 fragments	--	--
	TOTAL	14.6	17.22
Lvl. 3, 219-7	<u>Archosargus probatocephalus</u> ,		
	right dentary	1.5	1.05
	<u>Caranx hippos</u> , 1 basioccipital,		
	1 left premaxillary	15.0	17.5
	48 fragments	1.0	0.7
	TOTAL	27.5	19.25
Square B			
Lvl. 2, 219-16	<u>Chilomycterus schoepfi</u> , 5 spines,		
	1 jaw	0.6	0.42
	1 fragment	--	--
	3 unknown vertebrae	0.4	0.28
	1 shell fragment	--	--
	1 fragment <u>Alligator</u>	--	--
	TOTAL	1.0	0.70

<u>SITES</u>	<u>FISHES</u>	<u>MINIMUM WEIGHT (kilos)</u>	<u>MINIMUM EDIBLE WEIGHT (70% of total weight)</u>
Lvl. 3, 219-27	<u>Ictalurus catus</u> , 1 supra- occipital	0.7	0.49
	<u>Paralichthys</u> , 1 left articular	1.1	0.7
	<u>Pogonias cromis</u> , 1 basi- occipital	0.4	0.28
	<u>Caranx hippos</u> , 1 premaxillary	8.0	5.6
	<u>Chilomycterus schoepfi</u> , 17 spines, 2 jaws	0.6	0.42
	1 unknown paraphenoid	0.5	0.35
	4 fragmentary vertebrae	0.5	0.35
	38 fragments	0.5	0.35
	TOTAL	12.3	8.54
Lvl. 4, 219-54	<u>Archosargus probatocephalus</u> , 1 supracleithrum	0.8	0.56
	2 unknown vertebrae	0.4	0.28
	4 fragments	0.5	.35
	1 <u>Alligator</u> scute	--	--
	TOTAL	1.7	1.19
Square G			
Lvl. 2, 219-61	<u>Micropogonias undulatus</u> , 1 otolith	0.7	0.49
	<u>Chilomycterus schoepfi</u> , 74 spines, 17 jaws	4.5	3.15
	1 ceratohyal unknown	0.5	0.35
	5 fragmentary spines	0.5	.35
	13 unknown vertebrae	0.5	.35
	12 fragments	0.5	.35
	TOTAL	7.2	5.04
Lvl. 3, 219-65	<u>Lepisosteus</u> cf <u>osseus</u> , 1 scale	1.2	.84
	<u>Paralichthys</u> sp., 1 vertebra	0.4	.28
	<u>Cynoscion</u> sp., 1 otolith	1.3	.91
	<u>Micropogonias undulatus</u> , 1 otolith, 1 right articular	0.5	.35
	<u>Archosargus probatocephalus</u> , 1 posttemporal	0.6	.42
	<u>Chilomycterus schoepfi</u> , 1 spine, 1 jaw	0.5	.35
	11 unknown vertebrae	0.5	.35
	TOTAL	5.0	3.5

<u>SITES</u>	<u>FISHES</u>	<u>MINIMUM WEIGHT (kilos)</u>	<u>MINIMUM EDIBLE WEIGHT (70% of total weight)</u>
Lvl. 4, 219-70	<u>Paralichthys</u> sp., 2 right premaxillaries	1.2	.84
	<u>Micropogonias undulatus</u> , 3 otoliths	1.7	1.19
	10 fragmentary vertebrae	0.5	.35
	3 <u>Alligator</u> fragments	--	--
	TOTAL	3.4	2.38
Square H			
Lvl. 1, 219-74	<u>Ictalurus catus</u> , 3 dorsal spines	2.1	1.47
	<u>Archosargus probatocephalus</u> , 1 right premaxillary, 1 preopercle	0.9	.63
	<u>Pogonias cromis</u> , 1 quadrate	9.0	6.3
	<u>Caranx cf hippos</u> , 1 basi- occipital, 1 parasphenoid, 10 vertebral fragments	8.0	5.6
	50 fragments	0.5	.35
	TOTAL	20.5	14.35
Lvl. 2, 219-78	<u>Ictalurus catus</u> , 1 cleithrum, 1 supraoccipital	0.4	.28
	bothid, 1 small vertebra	0.3	.21
	<u>Archosargus probatocephalus</u> , 2 right maxillaries, 1 pre- opercle, 1 vertebra, 1 atlas vertebra	0.8	.56
	<u>Sciaenops ocellatus</u> , 1 dentary, 1 left maxillary, 16 vertebral fragments	3.2	2.24
	<u>Menticirrhus</u> sp., 4 vertebrae	0.4	.28
	<u>Chilomycterus schoepfi</u> , 1 large spine	0.6	.42
	TOTAL	5.7	3.99
Lvl. 3, 219-82	1 vertebra	0.5	0.35
	10 fragments	0.5	0.35
	TOTAL	1.0	0.70
	31 DR 14 TOTAL	121.0	84.7

<u>SITES</u>	<u>FISHES</u>	<u>MINIMUM WEIGHT (kilos)</u>	<u>MINIMUM EDIBLE WEIGHT (70% of total weight)</u>
31 DR 15			
Surface 218-3	2 snake vertebrae 3 fragments	-- <u>0.5</u>	-- <u>0.35</u>
	TOTAL	0.5	0.35
Square A			
Lvl. 4, 218-10	1 elasmobranch vertebra 1 vertebra 2 fragments	0.5 0.5 <u>0.5</u>	0.35 0.35 <u>0.35</u>
	TOTAL	1.5	1.05
Lvl. 5, 218-15	3 elasmobranch vertebrae 10 vertebral fragments 10 fragments	0.5 0.5 <u>0.5</u>	0.35 0.35 <u>0.35</u>
	TOTAL	1.5	1.05
Lvl. 6, 218-18	1 elasmobranch vertebrae 3 fragments	0.5 <u>0.5</u>	0.35 <u>0.35</u>
	TOTAL	1.0	0.70
Feature 1, 218-19	2 vertebral fragments 1 bird bone	0.5 <u>--</u>	0.35 <u>--</u>
	TOTAL	0.5	0.35
	31 DR 15 TOTAL	5.0	3.5
31 DR 33			
Square A			
Lvl. 3, 217-7	1 elasmobranch vertebra 3 bone fragments	0.5 <u>0.5</u>	0.35 <u>0.35</u>
	TOTAL	1.0	0.70
Square B			
Lvl. 3, 217-17	<u>Ictalurus catus</u> , 1 basioccipital <u>Cynoscion</u> sp., 1 articular <u>Micropogonias undulatus</u> , 1 basioccipital	0.4 1.3 <u>0.5</u>	0.28 .91 <u>.35</u>
	TOTAL	2.2	1.54

<u>SITES</u>	<u>FISHES</u>	<u>MINIMUM WEIGHT (kilos)</u>	<u>MINIMUM EDIBLE WEIGHT (70% of total weight)</u>
Lvl. 4, 217-21	<u>Ictalurus catus</u> , 1 cleithrum	0.8	.56
	2 fragmentary vertebrae	0.5	.35
	1 bone fragment	0.5	.35
	TOTAL	1.8	1.26
Square E			
Lvl. 2, 217-34	<u>Ictalurus catus</u> , 1 hyomandibular, 1 supracleithrum, 4 articulares, 2 quadrates, 1 dorsal spine, 7 pectoral spines (4 left, 3 right), 11 cleithrum fragments, 7 coracoid fragments, 5 vertebrae, 2 Weberian vertebrae, 14 dentary fragments, 2 basioccipitals	4.0	2.8
	4 fragmentary vertebrae	0.5	.35
	TOTAL	4.5	3.15
Lvl. 3, 217-39	<u>Ictalurus catus</u> , 1 hyomandibular, 1 opercular facet, 19 pectoral spines (10 right, 9 left), 5 dorsal spines, 14 dentaries (6 left, 8 right), 4 urohyals, 9 coracoids, 5 quadrates (2 left, 3 right), 5 maxillaries, 11 articulares (4 left, 7 right), 6 basioccipitals, 5 Weberian vertebrae, 13 cleithral fragments, 90 fragments	9.0	6.3
	7 parasphenoids unknown	1.5	1.05
	TOTAL	10.5	7.35
Feature 3, 217-44	<u>Ictalurus catus</u> , 3 basioccipitals, 3 supraoccipitals, 4 cleithrum fragments, 4 pectoral spines (3 left, 1 right), 1 dorsal spine, 6 dentaries (4 left, 2 right)	3.0	2.1
	5 unknown parasphenoids	1.0	.7
	45 fragments	0.5	.35
	TOTAL	4.5	3.15

<u>SITES</u>	<u>FISHES</u>	<u>MINIMUM WEIGHT (kilos)</u>	<u>MINIMUM EDIBLE WEIGHT (70% of total weight)</u>
Feature 2, 217-49	<u>Leiostomus xanthurus</u> , 2 quadrates	.6	0.42
	<u>Micropogonias undulatus</u> ,		
	1 otolith, 1 basioccipital	.9	0.63
	1 Alligator fragment	--	--
	8 fragments	0.5	0.35
	1 fossil (mammal) tooth	--	--
	TOTAL	2.0	1.40
	31 DR 33 TOTAL	26.5	18.55

The following 12 species were identified among the remains from the
Colington Island Sites:

Elasmobranchii
small sharks or rays

Lepisosteidae
Lepisosteus osseus longnose gar

Ictaluridae
Ictalurus catus white catfish

Bothidae
Paralichthys sp. flounder

Sciaenidae
Cynoscion sp. seatrout
Sciaenops ocellatus red drum
Micropogonias undulatus Atlantic croaker
Leiostomus xanthurus spot
Menticirrhus sp. kingfish
Pogonias cromis black drum

Sparidae
Archosargus probatocephalus sheepshead

Carangidae
Caranx hippos jack crevalle

Diodontidae
Chilomycterus schoepfi striped burrfish

Unknown teleosts, 4 species

The relatively small number of specimens from the archaeological sites on Colington Island did not reveal many strong trends. At most localities a mixture of estuarine species was present except 31DR33 in which the fresh and brackish water catfish (Ictalurus catus) predominated.

The sheepshead, Archosargus probatocephalus, and the black drum, Pogonias cromis, have crushing dentition to eat resistant organisms and are found around oyster bars prehistorically, and around pier pilings and jetties in more recent times. All of the species (except catfish and gar) are relatively common in shallow estuarine waters and large individuals would be most abundant inshore in the fall. The catfish (Ictalurus catus) is characteristic of fresh or brackish river mouths and would be common in a place like Colington Island during storm periods when water was fresher than usual. Otherwise these fish are restricted to mainland river mouths.

Many of these fish are large indicating well-developed fishing methods. Entrapping nets, harpoons or spears, or hook and line were necessary to capture the large Caranx hippos, Pogonias cromis, or Archosargus probatocephalus. Finer screening or analysis of column samples would probably disclose use of many of the smaller, more abundant edible shore fish such as Menidia, Fundulus, herrings, and anchovies.

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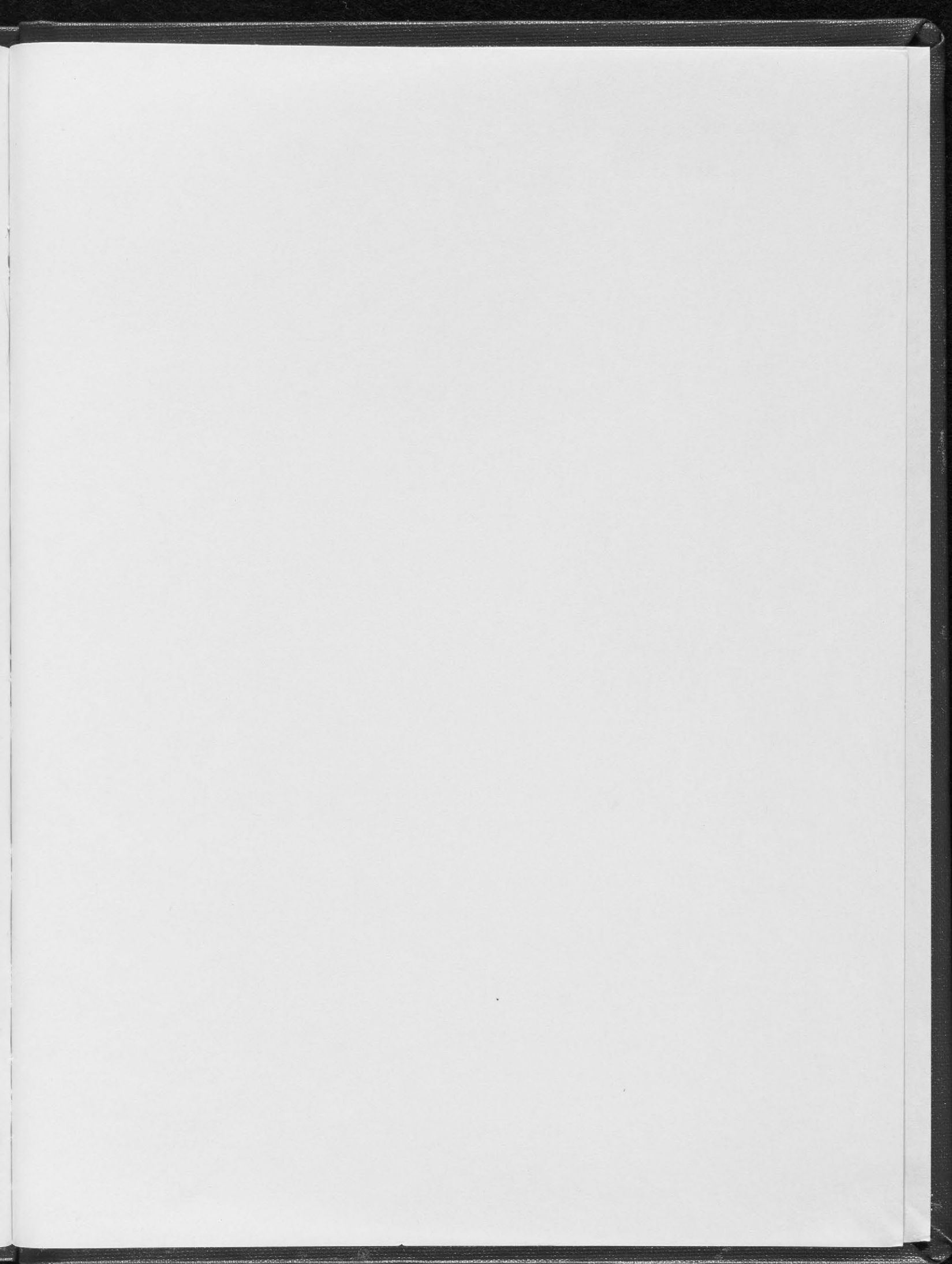
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