

UNDERWATER ARCHAEOLOGY
AT THE MULBERRY SITE (38KE12)
AND ADJACENT PORTIONS OF THE WATEREE RIVER

by

Chester B. DePratter and Christopher Amer
S.C. Institute of Archaeology and Anthropology

November 1988

Research supported by a grant from
the USC Venture Fund
(Account 21310-K110)

INTRODUCTION

The Mulberry archaeological site (38KE12) is a large multiple mound and village complex located on the Wateree River near Camden, South Carolina (Figs. 1 and 2). The Mulberry site is one of eight mound centers within a 30 km-long stretch of the Wateree Valley. Those mound centers are the most visible remains of a large, near state level chiefdom that occupied the central Wateree valley between A.D. 1300 and 1700. Although the earlier portion of that occupation span precedes European presence in the New World, the latter half of that span falls within the period of European exploration of the interior Southeast, and there are numerous references to this Wateree valley chiefdom in historic period exploration journals. Recent research on Spanish documentary sources has identified the Wateree valley chiefdom as the famous "Cofitachequi" which was repeatedly visited by 16th and 17th century Spanish exploration parties (Baker 1974; DePratter, Hudson, and Smith 1983; Hudson, Smith, and DePratter 1984; DePratter 1988).

Two major Spanish expeditions visited Cofitachequi during the 16th century. The first expedition, led by Hernando De Soto, landed in Tampa Bay in May 1539 and spent the next four years travelling throughout what is today the southeastern United States. De Soto and his army of over 600 arrived at Cofitachequi in the Spring of 1540; the chieftainess of the town met De Soto on the banks of the Wateree River and welcomed him to her land (DePratter 1987).

De Soto and his men remained at Cofitachequi for about two weeks during which they explored the surrounding territory and gathered

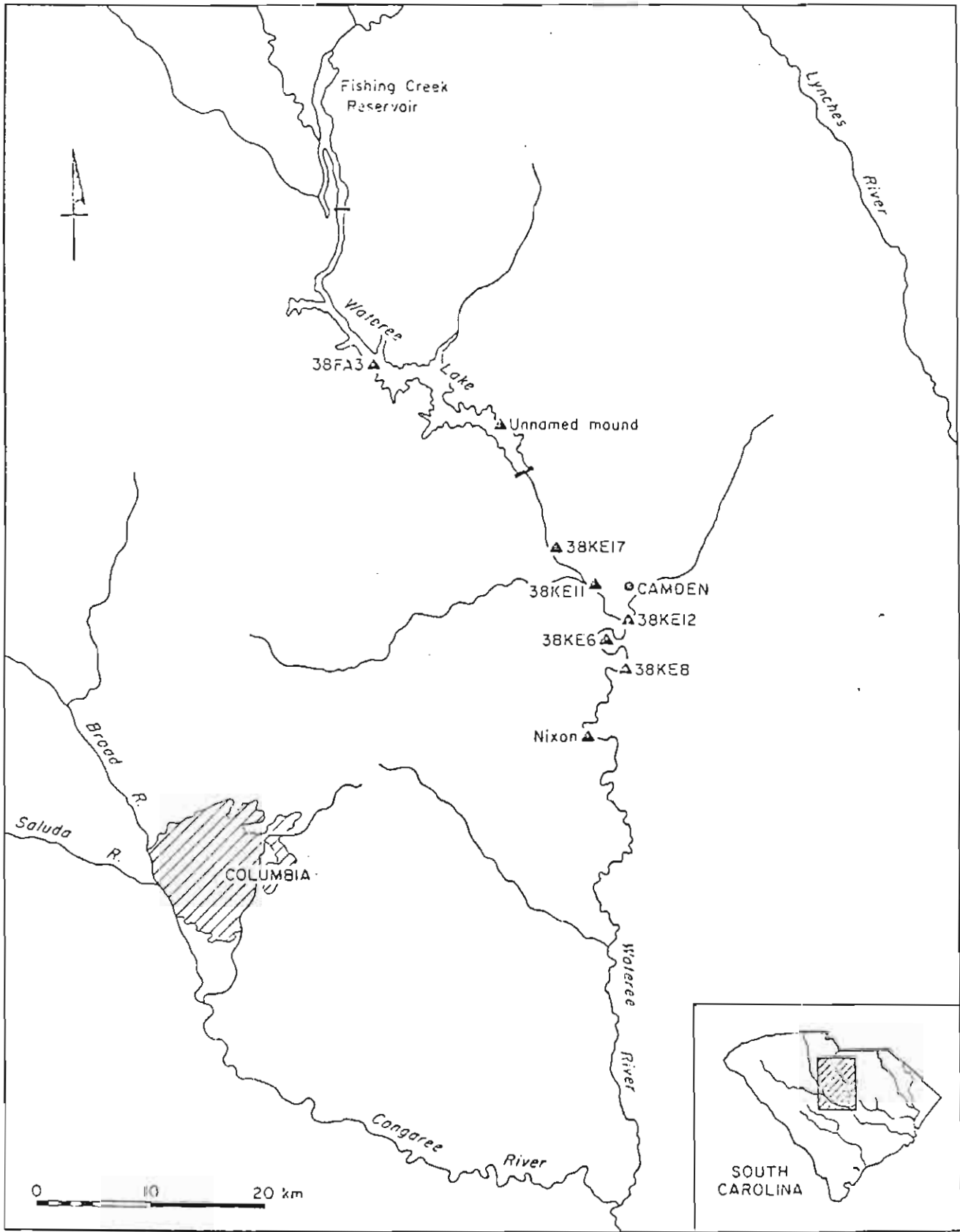
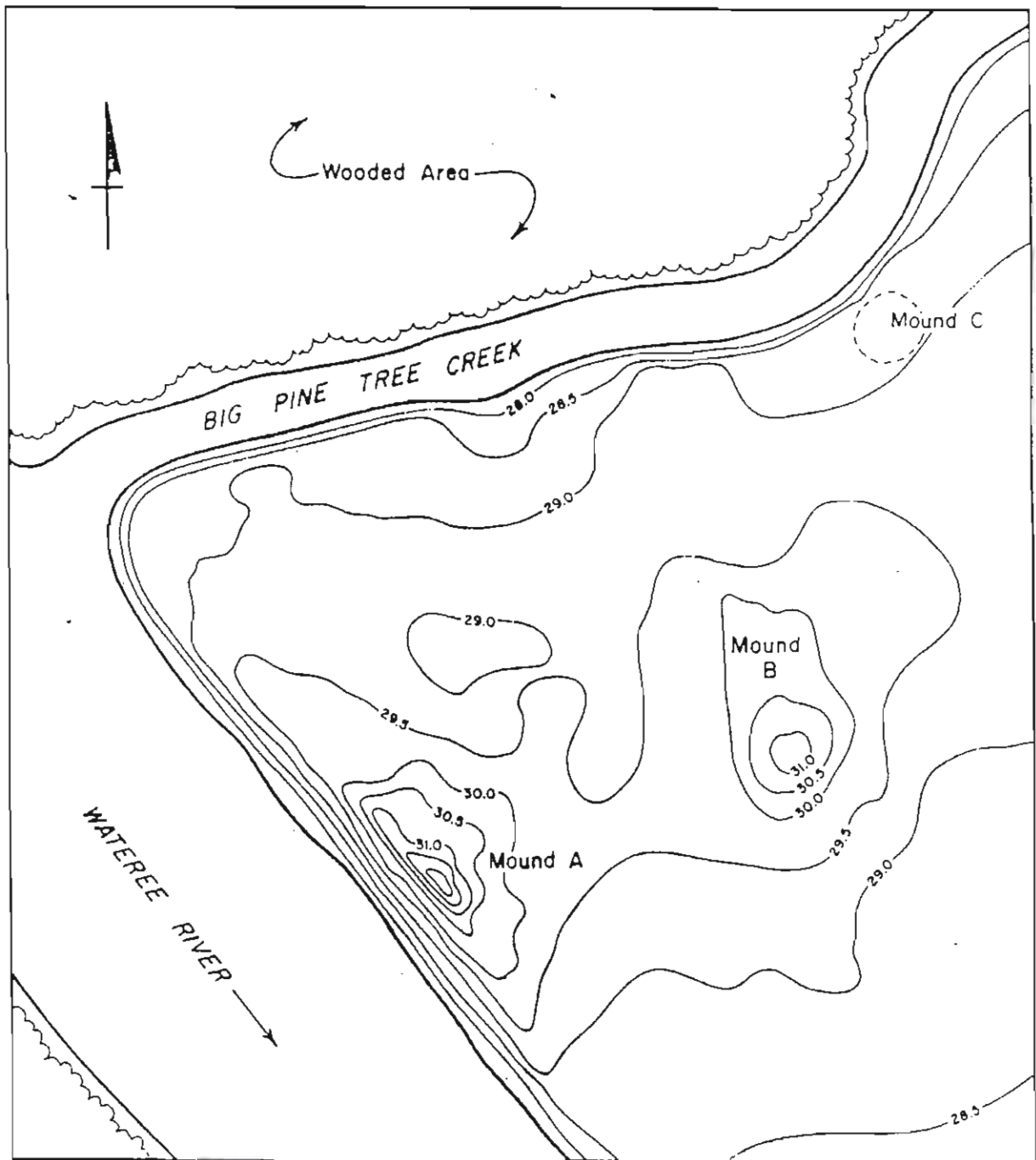


Figure 1. Late prehistoric and early historic period mound sites in the Wateree Valley.



**Mulberry Site
(38KE12)**

0 50 Meters

Contours in meters

Figure 2. Present condition of the Mulberry site.

supplies for the continuation of their journey. In a temple located in a nearby town, De Soto found rosaries and iron axes that he believed were from the 1526 Ayllon expedition which attempted to settle somewhere along the coast of present-day Georgia or South Carolina. Following his brief respite at Cofitachequi, De Soto continued north along the Wateree/Catawba River to near Asheville, North Carolina, and then on through the Appalachians (DePratter 1987).

In 1566-1568, another Spanish commander, Captain Juan Pardo, made two exploratory forays into the interior from Santa Elena on the South Carolina coast (South 1980). Pardo's mission was to pacify the Indians in the interior and to open an overland route to Mexico from the Atlantic coast (DePratter and Smith 1980; DePratter, Hudson, and Smith 1983; DePratter 1988). Although he failed to reach Mexico, Pardo did establish five forts along the main trail leading inland to the Appalachians. One of these forts, with a garrison of thirty soldiers, was at Cofitachequi (Vandera 1569). Within a short time after Pardo's return to Santa Elena, the interior forts were destroyed and their garrisons slaughtered (DePratter 1987).

Cofitachequi continued to be a major center on into the 17th century. In 1627-1628, Pedro de Torres and a squad of soldiers were twice dispatched from St. Augustine to check on reports that mounted Europeans were present in the interior. Torres found no Europeans on either of his forays, but he did reach Cofitachequi, where he encountered a chief who was "highly respected by the rest of the chiefs, who all obey him and acknowledge vassalage to him" (Rojas y Borja 1628).

In 1670 when Henry Woodward traveled into the interior from the newly founded English settlement at Charles Town (modern Charleston), he went to the town of Cofitachequi. There he met with the "Emperor" in an attempt to negotiate for peaceful relations (Cheves 1897:190-192).

Thus, Spanish and English documentary sources clearly demonstrate that Cofitachequi, now known to have been on the Wateree River, was a major center throughout the 16th and 17th centuries. Archaeological research in the Wateree valley indicates that the chiefdom had been established as long as 350 years before the arrival of Europeans in the region (DePratter and Judge 1986). But, by the end of the 17th century, the chiefdom of Cofitachequi was gone and all of its towns abandoned (DePratter 1988). By the time that John Lawson (1709) travelled up the Wateree River in 1701, only a small group of Congaree Indians occupied the territory once inhabited by the "Emperor" and his subjects.

The town of Cofitachequi, now known to archaeologists as the Mulberry site, stands as a very important place in the late prehistory and early history of the region. There is no other interior Indian town or chiefdom so thoroughly visited and described in the available documentary record. Cofitachequi was visited by at least three Spanish expeditions as well as by the first English explorer to travel into interior South Carolina. A Spanish fort existed somewhere nearby for a few months (or possibly years) in the late 1560s.

The Mulberry site attracted the attention of antiquarians early in the 19th century. Dr. William Blanding, a physician based in Camden during the first quarter of the 19th century, compiled a catalog of

Wateree valley sites including several mound sites. His site catalog was published by Squier and Davis (1848) in the first volume of Smithsonian Contributions to Knowledge. At the end of the 19th century the mound sites listed by Blanding attracted the attention of Cyrus Thomas who was investigating the problem of whether the mounds were constructed by Indians. Thomas dispatched Henry Reynolds to excavate "Taylor's Mounds" now know as the Mulberry site, and his report on those excavations was included in Thomas' (1897) monumental research report.

Following Reynolds' excavations, the Mulberry site remained undisturbed until 1952 when another excavation project was initiated. Dr. A.R. Kelly of the University of Georgia directed (in absentia) excavations into the eroding face of Mound A and in an eroding burial area located approximately 75 m downstream from the mound (Ferguson 1974). Following completion of Kelly's work, George Stuart, a local student who served as a member of Kelly's crew, continued working on Wateree valley sites (Stuart 1970, 1975).

In 1973, Dr. Leland Ferguson conducted limited testing at Mulberry, and in 1979 he developed and initiated a long-term research project focused on the Mulberry site. USC Department of Anthropology field schools held at the site in 1979, 1980, 1981, 1982, and 1985 resulted in publication of several M.A. theses and synthetic papers relating to field school excavations (Merry 1982; Merry and Pehrul 1983; Ferguson and Green 1983, 1984; Sassaman 1984; Sutton 1984; DePratter 1985; Grimes 1986; Judge 1987). No field school has been held at the site since 1985.

Due to the large size of the site (c. 3.5 hectares), extensive excavations would be necessary to even begin plotting the occupation history of the site. Systematic surface collections and auger testing conducted during several field seasons (Merry 1982; Sutton 1984; DePratter 1985) provide some information on the occupation span and intensity of site utilization, but most pottery sherds collected from the site surface are small and difficult to identify. Until 1986, there was no ceramic sequence documented for the Wateree valley (DePratter and Judge 1986).

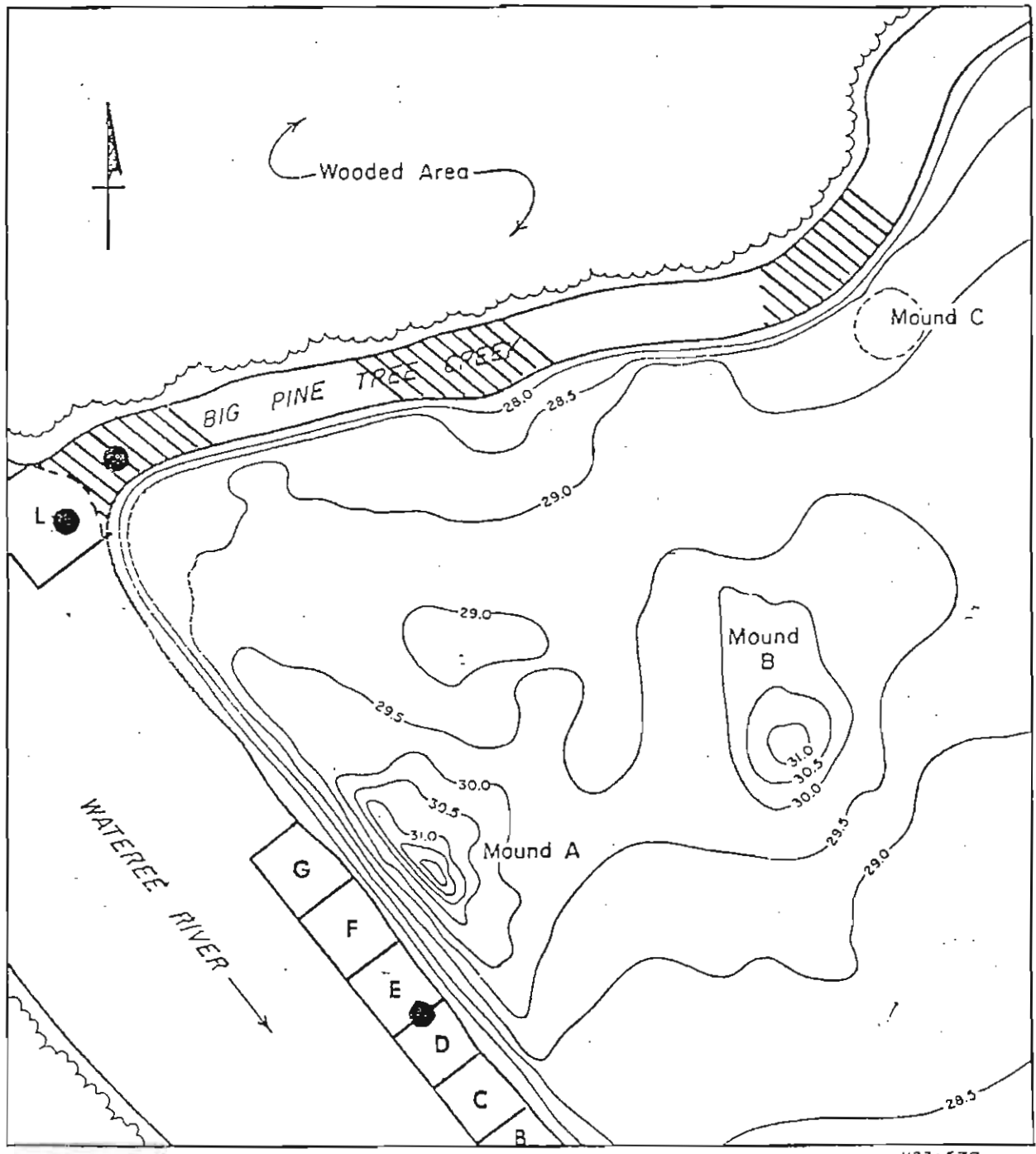
A chance discovery during the summer 1985 field season provided access to large collections of ceramic sherds that would aid in understanding the occupation sequence at Mulberry. One day at lunch time during that summer, members of the field crew were cooling themselves in the waters of Big Pine Tree Creek. One of the students (Chris Judge) noticed that the bottom of the creek was littered with large sherds of pottery. The 1985 field crew made sizeable collections from several areas along the creek, providing information for a master's thesis (Judge 1987) and a preliminary ceramic sequence for the site and adjacent portions of the valley (DePratter and Judge 1986).

In October 1985, C. DePratter and Alan Albright (then Head of the SCIAA Underwater Archaeology Division) returned to the Mulberry site to initiate a systematic underwater project in Big Pine Tree Creek and adjacent portions of the river. It was anticipated that in addition to the vast amounts of material already known to exist in the creek, a similar concentration of materials would be found in the river adjacent

to the face of a mound (Mound A) which had been eroding into the river for more than a century.

During the four days of the October 1985 fieldwork, divers worked in both the creek and the river. Three discrete areas within the creek (Fig. 3) were collected, as well as several collection units in the river along the eroding mound face (Fig. 3). Each of these collections contained large numbers of ceramic sherds, as well as pieces of marine shell, stone and pottery discs, stone axes, fragments of bone, and other cultural materials.

Limited excavations were also conducted in both the creek and river beds. These limited tests indicated that there was limited depth (30 cm or less) to the bottom deposits containing artifacts, but those deposits throughout the area tested were found to be loaded with pottery and other artifacts. The size and quantity of the materials recovered from this brief project far exceeded those of materials recovered during the several previous field seasons of land archaeology. Because of the vast research potential of those materials contained in the creek and river, plus the possibility of finding some evidence of the Spanish presence on the site, funding was sought from the USC Venture Fund to support another underwater project at Mulberry and adjacent parts of the Wateree Valley. Those funds were granted in Winter 1986, and the remainder of this report describes the results of that Venture Fund project.



Mulberry Site
(38KE12)

0 50 Meters
Contours in meters

- A River bottom collection units
- Creek bottom collection units
- Lift locations

Figure 3. Plot of preliminary underwater explorations at Mulberry site.

1988 VENTURE FUND PROJECT

In July 1988, researchers from the South Carolina Institute of Archaeology and Anthropology returned to the Wateree Valley to continue field research. The purpose of this research was to expand on underwater archaeological work begun in 1985 (described above) at the Mulberry site and adjacent portions of the Wateree River. The primary goal was to initiate the systematic collection of prehistoric materials which had been eroded from the village/mound complex into the Wateree River and Big Pine Tree Creek.

An additional goal was set for the 1988 season: to conduct visual survey along a 5.5 km stretch of the Wateree River adjacent to the Mulberry site. The purpose of this river survey was twofold:

- 1) To collect comparative artifact collections from along the Wateree valley;
- 2) To accumulate data which may relate to the distribution of archaeological sites in the valley.

It was felt that this secondary goal was justified because accumulation of the survey data would broaden our knowledge and understanding of the prehistory and early history of the region and help us in interpretation of the Mulberry site occupation.

To accomplish the two main objectives of the project, the work was divided into three phases. Phase I involved the systematic collecting of cultural material in Big Pine Tree Creek. During the previous work conducted on the site, the creek had yielded a rich concentration of prehistoric materials. By conducting surface (i.e. creek bottom)

collections along the areas previously collected during 1985, information could be gathered regarding deposition of artifacts and how the changing creek bed had affected the deposition of artifacts. A number of test holes were excavated into the creek bed using a water induction dredge in an attempt to observe how the bed had changed through time. A visual and collecting survey was conducted upstream in the creek to document the extent of artifact distributions.

During Phase II, divers visually searched the Wateree River in front of Mound A at the Mulberry site and Boykin Mound (38KE8), located downstream from the Mulberry site. Both mounds are located on meanders of the river and have been eroded due to high water flow associated with floods. The objectives of Phase II research were to obtain a comparative collection of artifacts from both sites, to compare the deposition and concentration of artifacts in front of each site, and to develop explanations for observed differences and similarities.

The third phase (Phase III) was undertaken by both divers and land based personnel. The divers conducted swim or drift searches along the river bed and investigated areas where artifacts might accumulate (i.e. in deep holes, under trees and logs, or around bridge footings). The land crew conducted visual surveys of the sand bars and systematically collected artifacts from them. At the same time, careful notes were made concerning the location and composition of each bar and the types of artifacts recovered from them.

During the time that this project was being conducted, near-drought conditions had lowered the levels in South Carolina's lakes to the point

where release of water into rivers was being stringently controlled. The Wateree River was no exception. For the morning hours and into the early afternoon of each day, the river remained low with only a slight current. However, as afternoon temperatures soared and demand for electricity for air conditioning increased, river flow and depth increased dramatically as more water was released into the river through generation of electricity at the Wateree Dam located 19 km upstream from the Mulberry site.

The daily fluctuations of the river had both positive and negative effects on our research project. The morning low water episodes made it difficult, and at times hazardous, for the boat to navigate in the riverchannel. The divers also experienced the problem of too little water for snorkeling, much less diving, except in the deepest parts of the channel and some scour holes. The paucity of water, however, exposed a greater area of sandbars for the land crew to survey. By mid-afternoon, rising water levels facilitated work in the river but restricted exposure of sandbar surfaces.

For work in Big Pine Tree Creek, low water was desirable for work underwater. Because much of the work involved collecting from the creek bottom, shallow water aided this procedure by allowing all personnel, whether divers or not, to search the creek bottom. Lower water levels also provided slightly better visibility underwater than at other water levels. During low water levels in the river, flow in the creek was sufficient to carry away sediments disturbed by divers in collecting or dredging operations. At higher water levels, the river water backed up

into the creek and reduced flow to the point where visibility was reduced.

Because of the daily river fluctuations, shifts in weather conditions, and equipment malfunctions, each phase of the project was not completed as a unit, but instead tasks related to each phase were accomplished as conditions and equipment permitted. However, for purposes of this report, each phase of the project will be presented herein as a unit and the results described as such.

Personnel and Equipment

The regular personnel of the 1988 field season included Dr. Chester DePratter (co-principal investigator) of the SCIAA Research Division, Christopher Amer (co-principal investigator), Head of the SCIAA Underwater Archaeology Division, and Joe Beatty of the Underwater Archaeology Division. Personnel of the SCIAA Underwater Antiquities Management Program who participated in the Mulberry project were Mark Newell, Director of UAMP, Peggy Brooks, and Carl Naylor. Chris Judge cleaned, catalogued, and analyzed the artifacts recovered. A number of volunteers also assisted at various times during all phases of the project.

Equipment used during the project was supplied by the Underwater Archaeology Division and UAMP. That equipment included a 14-foot jon boat, basic scuba equipment for the diving operations and safety equipment in keeping with the SCIAA Dive Safety and Control Board regulations. Underwater excavations were conducted with a water

induction dredge purchased with funds provided for this project by the USC Venture Fund. A SCIAA transit was used to map locations of test excavation units in the creek.

Results of the Fieldwork

Prior to commencing the 1988 fieldwork, the co-principal investigators visited the site to initiate project planning. The purpose of this trip was to assess the condition of the site and to decide how to best approach the objectives set for the field season as described in the original proposal to USC Venture Fund.

Phase I-- On the basis of the pre-project visit mentioned above, the decision was made to expand collecting activities in Big Pine Tree Creek. The first collections were made from the creek during the summer of 1985, with a second visit made to the creek during October 1985. During those first two field projects, four sections of the creek extending approximately 175 m upstream from the mouth were collected. The 1988 fieldwork would extend the portion of the creek collected another 400 m upstream. Individual collection areas are described below (see Fig. 4).

Creek Mouth Area

As in the previous field seasons, a fairly large collection of artifacts was recovered from the mouth of the creek. A large scour hole located at the interface of the creek and the Wateree River had contained abundant Indian ceramics during previous collecting visits,

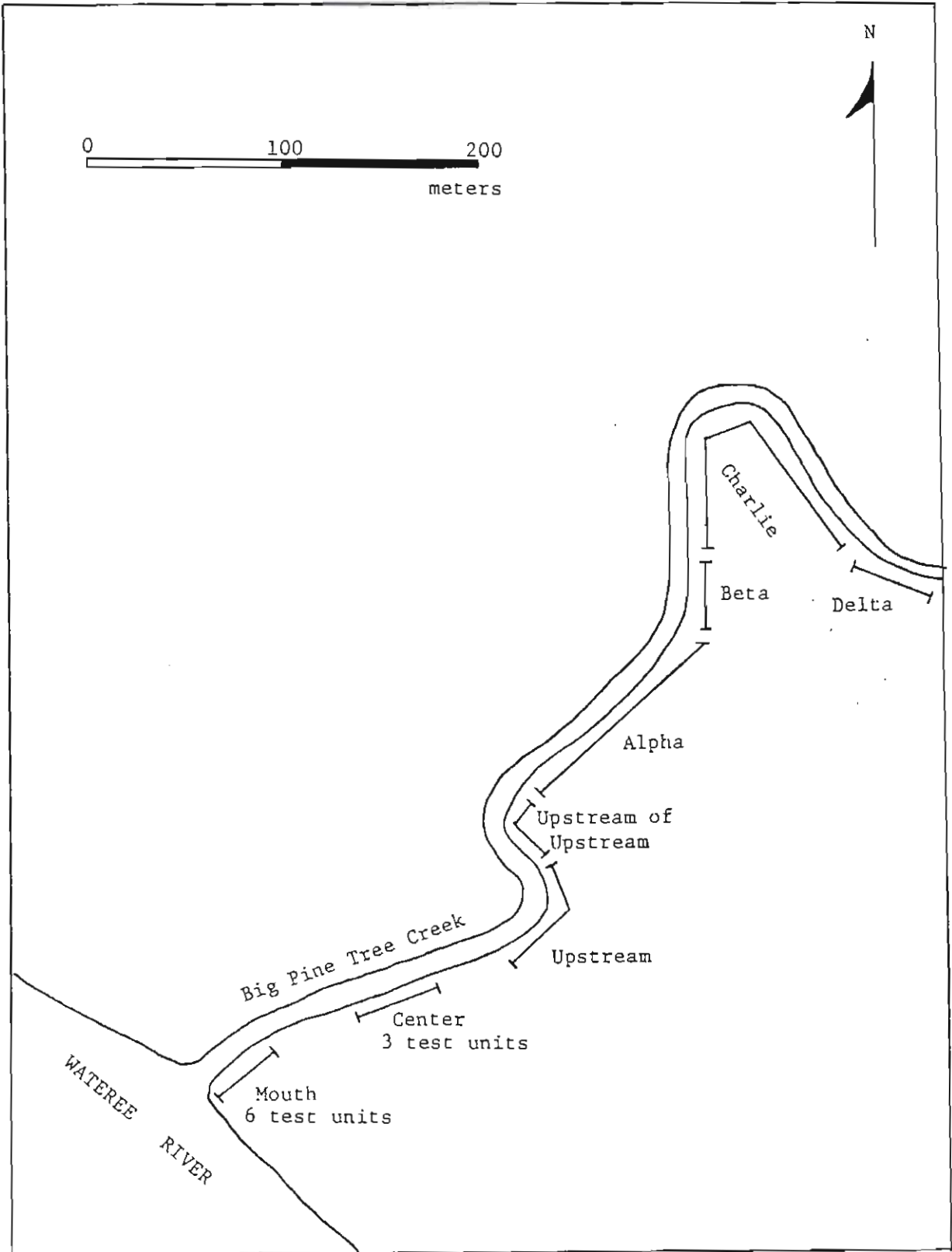


Figure 4. Locations of collection areas and test units along Big Pine Tree Creek.

but during the 1988 project it was found to contain very few sherds. This change in artifact distributions is related to changes in stream flow between 1985 and the present.

In addition to manual surface (actually creek bottom) collecting, five test units (Test Units 2 through 6) were excavated along the present channel of the creek and to either side of that channel (Fig. 4). These excavations, while not providing large quantities of artifacts, did tell us a great deal about the changing dynamics of the creek bed. The present channel, roughly centrally located in the creek bed, contains approximately 30 cm of sand, mud, and gravel above the hard marl sub-bottom. Included in this 30 cm thick stratum are small sherds 2.5 to 5.0 cm in diameter and a small number of stone tools and flakes.

At one time the creek channel appears to have been located closer to the north bank of the creek where more than 35 cm of mud, sand, and gravel now overlays the marl sub-bottom. A layer of soft mud covers the surface of these deposits and contains an abundance of ceramics, including an intact pipe recovered during the 1988 field season.

The creek bottom to the south of the present channel consisted of soft mud overlying alternating layers of compressed leaves and mud/sand with each layer being approximately 10 cm thick to a depth of 60 to 70 cm. No artifacts were found within these layers. The condition of the leaves and the presence of large quantities of methane gas in these layers is indicative of the recent nature of these deposits.

Creek Center Area

The "center" portion of the creek is a fairly straight segment located adjacent to a break in the south bank profile that may have been an access point to the creek for inhabitants of the site. Margins of the creek along this segment consist of deep, soft mud, while the channel contains a mixture of sand, gravel, and mud ranging between 10 and 60 cm in depth. These channel sediments contain numerous ceramic sherds, some of which had surfaces abraded by creek action. The three test units excavated in this portion of the creek indicated that artifacts were restricted to the creek bottom and shallow bottom deposits of sand and gravel.

It was noted that conditions in this part of the creek have changed significantly since 1985 when this area was first collected. There is currently more mud and silt in this part of the creek than there was in 1985, thus restricting exposure of the artifact rich sand and gravel beds. As a result, fewer artifacts were collected from this area in 1988 than were collected in 1985.

Creek Upstream Area

This segment of the creek was defined by a sharp bend in the creek located approximately 175 m upstream from the mouth. This section of the creek, which is near the former location of Mound C (which was bulldozed in 1953), contained a number of large pottery fragments from reconstructable vessels. It is likely that some portion of that mound was pushed into or near the creek at the time of its destruction. Since that time there has been extensive erosion along this part of the creek

(based on the large number of fallen trees encountered here), and fill pushed from Mound C has apparently been eroded into the creek at this location. Most artifacts found along this part of the creek were recovered from beneath trunks of the fallen trees mentioned above.

Upstream of the Upstream Area

This creek segment was defined as the next bend up the creek from the previously described upstream area. This segment of the creek was choked with fallen trees, and most of the artifacts recovered were found in pockets of gravel directly beneath the trunks of these fallen trees. Most pottery sherds recovered from this segment of the creek were small when compared to those recovered from other parts of the creek.

Creek Area Alpha

This collecting unit was defined as a straight stretch of the creek approximately 75-80 m long directly adjacent to the just described portion of the creek. This was the first of the creek segments that had not been previously collected. In this part of the creek, bottom sediments alternated between stretches of sand/gravel and mud. Artifacts were recovered from both types of bottom sediments along this stretch of the creek. Artifact concentrations were present beneath trunks of fallen trees as well as along unobstructed portions of the creek channel in this segment.

Pottery fragments were abundant in this segment of the creek which parallels the inland-most portion of the Mulberry site village. In the segments of the creek farther upstream beyond the limits of the village, fewer artifacts were recovered.

Creek Area Beta

This collection area is defined as the bend located at the upstream end of collection unit alpha. A small sample of pottery fragments was recovered from sand and gravel deposits in this collecting area, but the density of artifacts was much lower than in area alpha.

Creek Area Charlie

This collecting area is defined as a long (approximately 150-160 m), sharp bend in the creek adjacent to unit beta. Despite the length of this segment and the presence of sand/gravel deposits which typically contained pottery sherds in other portions of the creek, only a few sherds were collected in this segment. This drop in the number of sherds recovered is presumably due to the fact that this area is beyond the limits of most, if not all, of the village occupation.

Creek Area Delta

This bend, located at the upstream end of area charlie, was the last segment of the creek collected during the 1988 field season. Only a few small, eroded sherds were found in this collecting area, despite the presence of exposed sand and gravel beds.

Creek Collection Summary

The survey of the length of Big Pine Tree Creek adjacent to the Mulberry site village revealed an impressive collection of ceramics representative of the range of occupation at the site. It also revealed a great deal about the meandering of the creek channel within the restricted creek basin, as well as providing additional insights into

portions of the creek channel more or less likely to contain artifact concentrations.

Artifacts in the creek mouth area were probably deposited as a result of erosion of the extensive village deposits located along the south bank of the creek. Materials recovered in the creek center area may, in part, be the result of direct disposal of refuse in the creek adjacent to an access point that may have been used to obtain water from that part of the creek. The creek upstream area contains artifacts that probably represent redeposited materials that originated in the bulldozed Mound C. Sherds contained in creek segments fartherupstream probably resulted from both direct refuse disposal in the creek during the site's occupation and erosion of village midden deposits.

Phase II--This phase of the 1988 field season involved investigation of the river bottom adjacent to mounds currently eroding into the river. The first of these mounds, Mound A at Mulberry (38KE12), was originally about 50 or 60 m long, 30 or 40 m wide, and 4 m high. Today, there is only a small remnant of this mound remaining, representing perhaps 10 % of the original structure. At least 50 m of the mound and adjacent portions of the village have eroded into the Wateree River during the past 150 years. The second mound site, Boykin Mound (38KE8), is located 10 km downstream from Mulberry. William Blanding (Squier and Davis 1848:108) provides our only description of this mound which has now eroded away. In his brief description, Blanding provided no dimensions for the mound, although he does note that the exposed profile contained

marrked stratification with pottery vessels "arranged in tiers." It is likely that approximately 30 to 40 meters of the village site at Boykin as well as the mound have been eroded away.

Mulberry Mound A

The river bottom adjacent to Mound A at Mulberry was previously surveyed during the 1985 field season at the site. At that time, an abundance of sherds 5 to 10 cm in diameter were collected from along a 150 m stretch of the river bottom. Most of these materials were collected from the clean sand river bottom surface with many sherds concentrated beneath the trunks of waterlogged trees that littered the river bottom. A limited amount of excavation adjacent to the eroded mound face indicated that artifacts were restricted to a thin sand/gravel deposit only 10 to 20 cm thick.

During the 1988 investigations, it became apparent that the river bottom conditions adjacent to Mound A had changed radically since 1985. The clean sand bottom reported by the 1985 field crew had been replaced by deep mud extending out to approximately 12 meters from the bank. Visibility and diver safety were hampered by slow, turbid water and a profusion of large trees in this part of the river.

The cause of this change in river conditions appears to be a small log jam along the east bank of the river just upstream from the mouth of Big Pine Tree Creek. This log jam has apparently deflected the main current of the river away from the eroding mound face, thus reducing the flow of the current and allowing increased deposition of mud along that portion of the river bottom.

During two dives adjacent to Mound A during the 1988 field season, not a single sherd was observed on the river bottom. Beginning approximately 100 m downstream from the mound, however, the current once again sweeps along the east bank exposing the sandy bottom. From that point to an area opposite Sandbar H (Fig. 5), a distance of about 150 m, a large quantity of small sherds were collected from near the bank and extending out into the river channel.

Boykin Mound

The Boykin Mound (38KE8) is located 10 km downstream from the Mulberry site on the east bank of the river. The site was investigated in order to facilitate comparison of shoreline erosion, current flow, and river bottom deposition with similar features at Mulberry. Also, a collection of large, readily identifiable sherds was needed to date the occupation of this site to see if it was occupied at the time of the De Soto and Pardo expeditions.

Two artifact collections were made at the Boykin site. The first collection, made by divers from the river bottom, covered an area approximately 100 m along the margin of the site. The other collection was made by a land crew which covered portions of the village site exposed in the river bank. Pottery sherds recovered by the land crew were small and few in number.

The divers found that, as at Mulberry, the bottom was a mixture of mud and sand that extended out to the river channel near mid-stream. A lacework of trees and branches, combined with very poor visibility, hampered collection of a large sample of artifacts. A small sample of

materials was collected, with most of those sherds coming from just below a surficial mud layer or from beneath the trunks of fallen trees.

Phase III--The survey of a 5.5 km stretch of the Wateree River was conducted during three days of the project. Investigations began at Five and Twenty Creek, about 200 m upriver from the Highway 1/601 bridge, and concluded approximately 300 m downstream from the Boykin site (Fig. 5). Along this stretch of the river, exposed portions of sand bars were collected by a land based crew while divers worked in adjacent portions of the river.

Sand bars were lettered consecutively downstream from the starting point starting with letters AA through DD (at Cutoff Island), and then with letters A through K from there down stream. The sand bars opposite the Mulberry site and directly down stream from the Boykin site were not assigned letter designations. The sand bar across from Mulberry was collected during the 1985 survey, but it was not recollected in 1988. The sand bar downstream from the Boykin site was collected for the first time during the 1988 season.

Divers investigated along the channel, in scour holes, and around obstructions such as bridge footings which would trap cultural material being transported along the river bottom. Most of the 5.5 km Phase III survey area was covered by divers in this manner. No prehistoric artifacts were recovered during these dives upstream from Big Pine Tree Creek. However, in the area downstream from the Mulberry site, divers found concentrations of sherds at various locations.

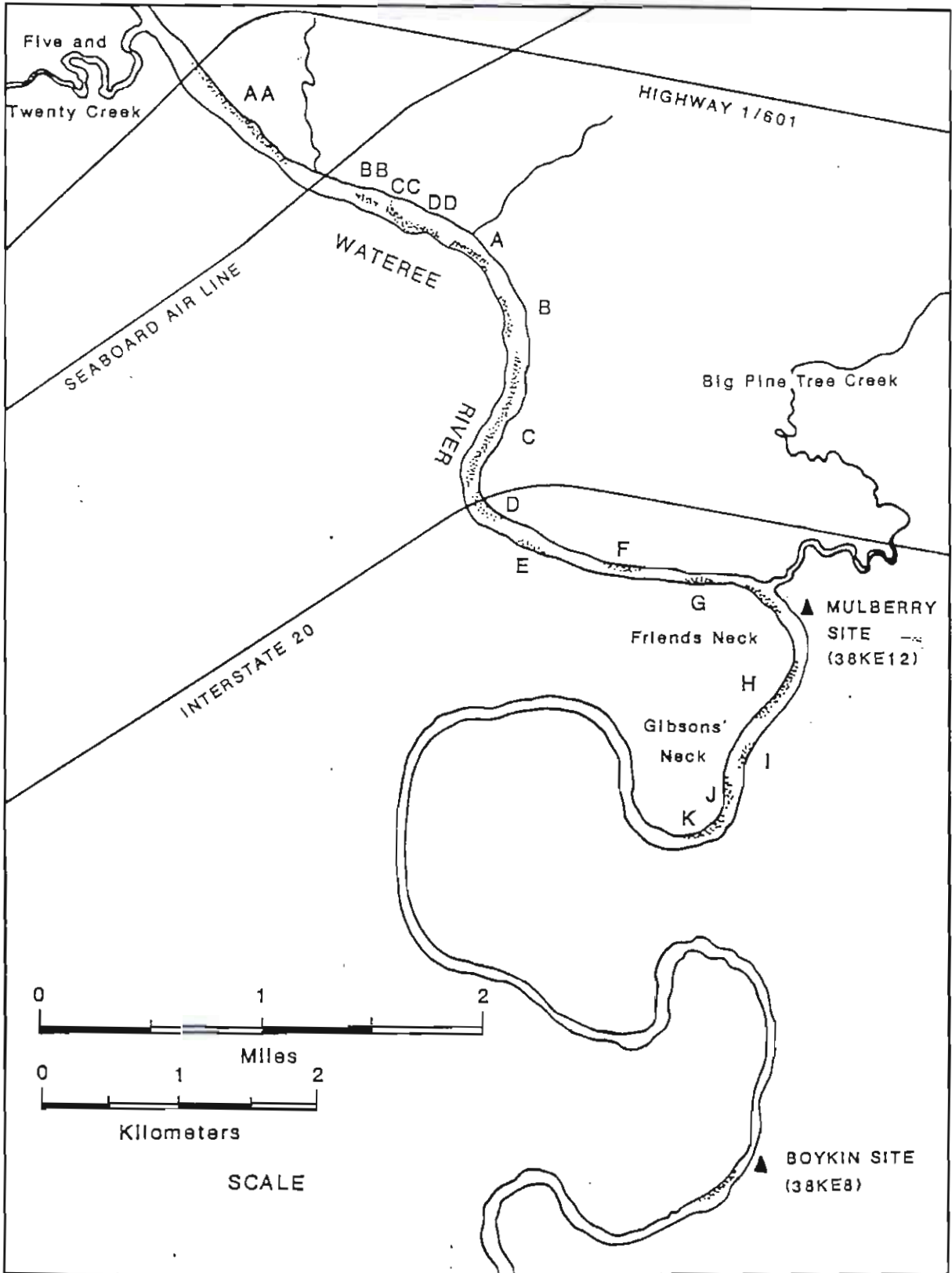


Figure 5. Sand bars surveyed in Phase III.

Additionally, mouths of creeks emptying into the Wateree River were visually inspected and probed for evidence of cultural materials. The results of this work proved fruitless. Probing indicated silt depths of more than two meters at all locations tested with no evidence for artifacts being present. If artifacts are present in these creeks, they are deeply buried by recent siltation.

The survey of sand bars by the land crew produced very different results. Of the 16 sand bars investigated, all but three had some Indian artifacts found on them. Of those three, Bar G, just upstream from the Mulberry site and across the river, contained only historic artifacts, while two other bars, BB and DD, contained no artifacts.

While most sand bars contained Indian ceramics, heavier concentrations of ceramics were found on bars along the lower section of the survey area, i.e. downstream from the I-20 bridge, where the river begins meandering most markedly. Ceramic sherds tended to be found along an entire bar, although in some cases they were concentrated in the northern portions of bars. Most sherds were recovered from parts of bars composed of gravel and rocks rather than from pure sand bars. This distribution reflects the selective sorting out and deposition of heavier materials such as gravel, rocks, and sherds prior to the deposition of the lighter sands. Hence, heavier materials including sherds are deposited at the upstream ends of the bars as the energy of stream flow begins to dissipate.

A brief survey of the composition of bars and the quantitative presence or absence of sherds on these bars tends to support the

distributions described above. Bars BB, CC, and DD are composed entirely of sand and small gravel, and no (or few) artifacts were recovered from them. Both rocks/larger gravel and concentrations of ceramics were found on the upstream ends of bars H, I, and K while their sandier downstream ends contained no artifacts. Seven bars were composed of gravel and rocks, and the land crew found artifacts scattered along the length of each of these bars.

It was observed during dives in the river downstream from Mulberry (Phase II) that ceramic sherds located in the river channel tended not to tumble in the current, but instead remained in place on the bottom once they were in place. This phenomenon was observed for only one current velocity, and further observation and testing will be needed to understand the behavior of pottery sherds in relations to river dynamics.

Generally, two conclusions can be drawn from the results of the Wateree River survey. First, sherds were deposited on sand bars along the river and do not appear to be present in channels, scour holes, or around obstructions. The exception to this generalization occurs along sections of the river just downstream from major sites, i.e. Mulberry and Boykin, where sherds are found all along the adjacent channels.

Secondly, concentrations of sherds in the river have indicated where unidentified sites may be located along the banks of the river. The presence of large quantities of sherds on sand bars downstream from the I-20 bridge and around Gibson's Neck (Fig. 5) suggest the presence of land sites in those areas. A land based survey of these portions of

the river bank should result in identification of the site or sites from which the sherds in the river originated.

Other Cultural Remains--The drought conditions during the project gave the crew an opportunity to investigate other cultural remains exposed by the low river level. The remains of three barges were observed near the upstream end of the Phase III survey area. The first barge, located on the west bank about 150 m upstream of the Highway 1/601 bridge, was almost buried by sand and silt. The hull of this barge appeared to be quite similar to those of two other barges found several hundred meters farther downstream. All three craft apparently date to the same time period and were probably used during the construction of the Wateree Dam. Photographs were taken of all three barges, and basic dimensions and scantlings were recorded on the barge near the 1/601 bridge.

Other remains investigated included some vertically placed timbers (a possible bulkhead) in the west bank of the river opposite sand bar C and the remains of a small motor powered boat sunk at the mouth of Big Pine Tree Creek. This boat was observed during the 1985 field season, and its condition has deteriorated since that time. Both of these remains were photographed, but other recording was not undertaken.

ARTIFACT ANALYSIS

Approximately 5000 artifacts were collected during the 1988 field project at the Mulberry site and adjacent portions of the Wateree River valley. At present, all artifacts have been washed, labeled with an identification code, and subjected to preliminary analysis. Detailed analysis of this extensive collection of materials will be conducted as part of future research in the Wateree valley.

Despite the fact that only preliminary artifact analysis has been completed, there are some interesting patterns emerging from that analysis. Most of the Indian-made sherds recovered date to the Pee Dee period (c. A.D. 1200-1700). Both the Mulberry and Boykin site occupations fall within the Pee Dee Period, and many of the sherds recovered undoubtedly originated from those two sites. The Mulberry site occupation spans the entire 500 year Pee Dee Period; the Boykin occupation dates to A.D. 1350-1450. Pee Dee period sherds recovered upstream from Mulberry must have originated from sites not yet identified by archaeologists; distribution of these sherds, particularly around the I-20 bridge and Gibson's Neck, suggests localities that need surveying by land crews.

The sand bar survey as well as work in Big Pine Tree Creek also resulted in recovery of ceramics that pre-date the Pee Dee period. Future study of these sherds should allow further refinement of the prehistoric ceramic sequence for this part of the Wateree Valley.

Work in the inland portions of Big Pine Tree Creek added immensely to our knowledge of the Mulberry site village occupation. The upstream

collections, particularly from the one from area alpha, date to the 16th and 17th century portion of the site's occupation. Ceramics dating to that era had not previously been collected at Mulberry in numbers sufficient for detailed analysis. Now such a collection is available, and future detailed analysis of these materials will add a great deal to what is known of the latest Indian occupation of the site.

Work in other previously collected portions of the site led to recovery of large numbers of vessel fragments that may match pieces recovered during the summer and fall 1985 projects. Although the cross-mending of sherds from these several collections has not yet begun, it will, when completed, provide significant information on vessel forms made at Mulberry and how those forms may have changed through time. Preliminary work on this topic has been conducted by Chris Judge (1987).

Several sherds found in the creek at the Mulberry site are indicative of the extensive trade contacts that must have been maintained by the inhabitants of that site. About a dozen sherds have been identified as having ground-up fragments of steatite mixed into their paste as a tempering agent. This type of ceramics is manufactured on the upper reaches of the Catawba River drainage, approximately 200 km northwest of the Mulberry site. Several sherds of shell tempered ceramics have also been recovered from Big Pine Tree Creek. These shell tempered sherds are of a type known to occur in eastern Tennessee and Northeast Georgia 250-300 km distant from the Wateree Valley. Both of these imported pottery types are known to be contemporaneous with the Mulberry site occupation.

Other artifact types recovered during the several underwater projects on the site also need further analysis. Stone artifacts included several ground stone celt (or axe) fragments, steatite bowl fragments, Early Archaic and Mississippian projectile points, and lithic flaking debris of several different raw material types. Shell objects included a fragment of marine whelk shell from which a gorget blank had been cut. Two nearly complete ceramic pipes were recovered from Big Pine Tree Creek, and several other fragments were also recovered. Historic artifacts dating to the late 19th or early 20th centuries were found at several locations.

Despite the fact that there were repeated visits to the Mulberry site by Spaniards during the 16th and early 17th centuries, the 1988 project recovered no Spanish artifacts. Such artifacts are undoubtedly present on the site in limited quantities, but our limited project failed to recover any due to their extremely low frequency of occurrence. We know from the De Soto and Pardo expedition chronicles (DePratter and Smith 1980; DePratter 1987) that only small quantities of trade materials were given to the Indians by the Spanish. Most of those items would have been hoarded by the Indians and most would not have been used in everyday tasks that would lead to their loss or disposal. Excavations elsewhere in the Southeast indicate that such items usually ended up as burial accompaniments of high status individuals (Smith 1987). It is likely that similar use of trade materials would have been practiced at the Mulberry site.

SUMMARY AND CONCLUSIONS

The 1988 underwater archaeological expedition to the Mulberry site and adjacent portions of the Wateree River was quite successful, despite the problems with stream flow conditions that forced some modification of the initial research design. Data was collected and observations made in the Wateree River relating to site erosion, stream dynamics, and riverbank deposition patterns. Distribution and frequency of prehistoric and early historic period Indian ceramics provided information on potential locations for previously unidentified archaeological sites.

Collections made from Big Pine Tree Creek will potentially allow refinement of the occupation sequence for mound construction and village occupation at Mulberry. Further evidence of trade contacts was collected in the form of easily recognizable, exotic ceramic types. Collection of ceramics from the river adjacent to the Boykin site allows dating of that site relative to the Mulberry site occupation. Ceramic materials from all localities visited and collected will also allow further refinement of the pre-Pee Dee portion of the occupation sequence for the Wateree valley.

Of course, most of the benefits to be derived from the 1988 field project will have to await further analysis of the collections recovered. Those analyses will be conducted over the next several years as funds to pursue specific research questions are obtained.

ACKNOWLEDGEMENTS

The authors would like to thank Mr. and Mrs C. Heath Manning for providing accomodations on their Lugoff Farms property directly across the river from the Mulberry site. We wold also like to thank Mr. and Mrs. John Daniels for allowing us access to the Mulberry Plantation tract on which the Mulberry site is located.

REFERENCES CITED

- Baker, S.
1974 Cofitachique: Fair Province of Carolina. Unpublished M.A. thesis, University of South Carolina.
- Cheves, L. (ed.)
1897 The Shaftesbury Papers. Collections of the South Carolina Historical Society V. Charleston.
- DePratter, C.B.
1985 1985 Archaeological Field School: Mulberry Site (38KE12). South Carolina Institute of Archaeology and Anthropology, Notebook 17(3-4):31-36. Columbia.
1988 Cofitachequi: Archaeological and Historical Evidence. Paper to be published in South Carolina Institute of Archaeology and Anthropology, Anthropological Studies Series.
- DePratter, C.B. (ed.)
1987 Explorations in Interior South Carolina by Hernando De Soto (1540) and Juan Pardo (1566-1568). South Carolina Institute of Archaeology and Anthropology, Notebook 19. Columbia.
- DePratter, C.B., and C. Judge
1986 A Late Prehistoric/Early Historic Period Ceramic Sequence for the Wateree Valley, South Carolina. Paper presented at the Lamar Conference, Ocmulgee National Monument, Macon, Georgia.
- DePratter, C.B., and M.T. Smith
1980 Sixteenth Century European Trade in the Southeastern United States: Evidence from the Juan Pardo Expeditions (1566-1568). In Spanish Colonial Frontier Research, edited by H.F. Dobyns, pp. 67-77. Center for Anthropological Research, Albuquerque.
- DePratter, C.B., C. Hudson, and M.T. Smith
1983 The Route of Juan Pardo's Explorations in the Interior Southeast, 1566-1568. Florida Historical Quarterly 62:125-158.
- Ferguson, L.
1973 Mulberry Plantation Exploratory Archeology. Institute of Archaeology and Anthropology, Research Manuscript Series 54. Columbia.
- Ferguson, L. (ed.)
1974 Archaeological Investigations at the Mulberry Site. Institute of Archaeology and Anthropology, Notebook VI(3&4).

- Ferguson, L., and S. Green
 1983 Recognizing the American Indian, African, and European in the Archaeological Record of South Carolina. In Forgotten Places and Things, edited by A. E. Ward, pp. 275-281. Center for Anthropological Studies, Albuquerque.
- 1984 South Appalachian Mississippian: Politics and Environment in the Old, Old South. Southeastern Archaeology 3(2):139-143.
- Grimes, K.
 1986 Dietary Choices at the Mulberry Mound Site. Unpublished M.A. thesis, University of South Carolina.
- Hudson, C., M.T. Smith, and C.R. DePratter
 1984 The Hernando De Soto Expedition: From Apalachee to Chiaha. Southeastern Archaeology 3(1):65-77.
- Judge, C.
 1987 Aboriginal Pottery Vessel Function in South Appalachian Mississippian Society: A Case Study from the Mulberry Site (38KE12). Unpublished M.A. thesis, University of South Carolina.
- Lawson, John
 1709 A New Voyage to Carolina. London.
- Merry, C.A.
 1982 An Archaeological Boundary Model for the Mulberry Site. Unpublished M.A. thesis, University of South Carolina.
- Merry, C., and S. Pekrul
 1983 A Summary of the 1981 Ditch Excavations at the Mulberry Site. South Carolina Antiquities 15:61-62.
- Rojas y Borja, Don Luis de
 1628 Letter, June 30, 1628. Original in Archive of the Indies. Copy and translation in State of Georgia Archives, Atlanta.
- Sassaman, K.
 1984 Stratigraphic Description and Interpretation of the Mulberry Mound Site (38KE12), Kershaw County, South Carolina. South Carolina Research in Anthropology 1(1). USC Anthropology Department.
- South, S.
 1980 The Discovery of Santa Elena. South Carolina Institute of Archaeology and Anthropology. Research Manuscript 165.

- Squier, E., and E.H. Davis (eds.)
1848 Ancient Monuments of the Mississippi Valley. Smithsonian Contributions to Knowledge 1. Washington.
- Stuart, G.
1970 Some Archaeological Sites in the Middle Wateree Valley, South Carolina. Unpublished M.A. thesis, George Washington University.

1975 The Post-Archaic Occupation of Central South Carolina. Unpublished Ph.D. dissertation, University of North Carolina.
- Sutton, P.
1984 Soil Coring at the Mulberry Mound Site, South Carolina. Unpublished M.A. thesis, University of South Carolina.
- Thomas, C.
1894 Report on the Mound Explorations of the Bureau of American Ethnology. Bureau of American Ethnology. 12th Annual Report. Washington.
- Vandera, Juan de la
1569 Proceedings of the Account which Captain Juan Pardo gave of the Entrance Which He Made into the Land of the Floridas. Original in Archive of the Indies. Copy in the North Carolina State Archives, Raleigh.