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ARCHAIC PERIOD ARCHAEOLOGY OF THE GEORGIA COASTAL PLAIN AND COASTAL ZONE

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CHAPTER I
INTRODUCTION

The longest period of Georgia's prehistory is known as the Archaic. Spanning 7,000 years from the end of the Paleoindian period (ca. 10,000 B.P.) to the beginning of the Woodland period (ca. 3000 B.P.), the Archaic is noted as the time when hunter-gatherer populations of the Eastern Woodlands adapted to the hospitable environments of the post-glacial era. Changes in the organization and material culture of these populations allow archaeologists to subdivide the Archaic into Early (10,000-8000 B.P.), Middle (8000-5000 B.P.) and Late Archaic (5000-3000 B.P.) periods. Current understanding of the chronology and lifeways of these various people—why they changed and how they varied across the region—has been greatly improved in recent years by the volume of archaeological investigations mandated by federal law. Knowledge of Archaic populations was indeed so limited before the 1970s that a summary of archaeology in eastern Georgia and South Carolina published in 1952 included virtually no discussion of human occupations predating the Late Archaic period and treatment of this period was restricted to the conspicuous shell heaps and shell rings that were targets of excavation since the late nineteenth century (Caldwell 1952). Even in 1972, when Chester DePratter had occasion to summarize the Archaic period in Georgia (DePratter 1975a), details of the chronology and lifeways of Early and Middle Archaic populations was not much improved. Writing now in 1995, we are fortunate to have better chronological control over Archaic period sites and artifacts, much better samples of sites from a much wider range of locations and contexts, and a greater variety of interpretive models on which to base our interpretations than did our forebears.

Knowledge about the archaeological record of the Archaic period in Georgia has clearly improved in recent decades. Still, the record of the physiographic provinces that are subjects of this synthesis—the Coastal Plain and Coastal Zone—remain very poorly documented and understood. These zones comprise nearly two-thirds of the state of Georgia, but contain less than one-fourth of the Archaic sites recorded in the state site files (Williams 1994:74). One of the goals of this study is to determine the extent to which the disproportionately low number of Archaic sites in Coastal Plain or coastal settings is a result of archaeological practice or patterns of prehistoric land use. For instance, Georgia archaeologists are well aware of the problems in locating Middle Archaic artifacts in the Coastal Plain, but no one seems to be certain whether this is a matter of poor visibility or a true occupational hiatus. The coastal record is especially problematic. Late Archaic sites abound in the Coastal Zone, but few Early and Middle Archaic sites have been observed. No doubt many early sites have been inundated by rising sea level, and if organic media were used for tools in lieu of stone, the record of early settlement on terrestrial sites may have completely disintegrated.

To date there have been few excavations of Archaic period sites in the Georgia Coastal Plain. The Savannah River valley separating Georgia and South Carolina is the major exception to this general rule, as its shell middens and other rich sites have attracted investigators for well over a century (see review by Elliott 1994). Other rich areas in Georgia, particularly the Ogeechee River valley, have been virtually ignored by researchers and developers alike, though not looters (Sassaman 1993a). The Ocmulgee Big Bend area has been well surveyed (e.g., Snow 1977a), but the subject of only limited excavation. Moving westward into the Gulf-draining watersheds of Georgia, excepting the area occupied by Fort Benning, investigative emphasis on Archaic sites dwindles even further.

The investigative bias in Georgia on the Savannah River valley is ours too. Combined we have nearly thirty years of experience working in and around the Savannah River valley, with particular emphasis on the Stallings Culture of the Augusta area. One of us (Elliott) has a broader range of field experience in locations across Georgia, yet not with the level of intensity seen in the Savannah River valley. This report reflects our shared bias for the eastern portion of the state, although in the course of this research we made considerable effort to review literature and collections from points west. We remain frustrated that so little is really known about the Archaic period over vast portions of the Coastal Plain. The quality of work being conducted across the province varies wildly, and some of this is symptomatic of the confusion surrounding basic issues like typology, chronology, and site types. We do not pretend to have achieved any breakthroughs in the obstacles that hinder progress on Archaic period research, but we hope that the reader will find herein most, if not all, of the information needed to draw his or her own conclusions.

This synthesis has been prepared as part of a comprehensive planning effort for the management and protection of Georgia's archaeological resources. The research plan, as described by Crook (1986), charges investigators with a set of standard questions:

1. What are the cultural resources and their condition?
2. What are the locations and distribution of these resources?
3. What was the approximate original density of the resources and how many have been destroyed or disturbed?
4. What previous investigations have been conducted in the study unit and what are their biases?
5. What are the archaeological phases represented within the study unit and what are their components?
6. What are the distinctive environments represented within the study unit?
7. What is the nature of cultural adaptation within the study unit?
8. What information is required to more fully understand the nature of this adaptation?
9. What type of investigation and what specific research problems are required to gather this needed information?
10. What types of resources in the study unit should be considered significant and why?
11. What kind of sample of the resource base should be physically preserved and why?
12. What are the predicted locations of unidentified cultural resources, based upon locations of known resources, and what degree of confidence can be placed in these predictions?
13. What land-use activities have disturbed and continue to threaten the resource base?
14. What land-use activities are compatible with the resource base?

These are the basic issues that guided the research reported here, although we quickly realized that few of these questions could be answered to our full satisfaction.

We begin our study in Chapter II with a review of the environmental contexts of the Coastal Plain and coastal Archaic. We find little in our review to recommend that the Coastal Plain was the impoverished "pine barrens" incapable of supporting human populations that has been the legacy of historic accounts and early archaeological research.

Typological and chronological matters are the subject of Chapter III. A plethora of lithic and ceramic types are known from the Archaic period in Georgia, but comparatively limited data are available on the distributions and timing of many diagnostic artifacts. Nevertheless, we provide full descriptions of relevant types, and examine a series of cultural sequences that have been published for various areas of the province. A review of radiocarbon dates is also provided.

Chapter IV contains a summary review, by primary river watershed, of previous large surveys and key excavations that yielded Archaic evidence. This summary was based on a review of over 1,000 survey and excavation reports on file at the University of Georgia (UGA) and at other locations. We find that only a minority of the hundreds of reports provide sufficient data on area surveyed and results to draw definitive conclusions about site density and locational patterning.

Sites records on file in the State Site Files at UGA are used in Chapter V to examine the statewide distribution of Archaic sites. Of the 8,029 Coastal Plain/Coastal sites that are presently recorded in the Georgia site files, 243 contain Early Archaic components, 206 contain Middle Archaic components, and 511 contain Late Archaic components (Williams 1994), and more than 1,100 contain unidentified Archaic components. The lack of consistent, computerized information on landform, diagnostic types, and site size prohibits detailed analysis of the site files data. Other statewide records that are lacking in Georgia, such as the collectors survey conducted by Tommy Charles in South Carolina, are sorely needed.

Chapter VI presents a discussion of various interpretive models for Archaic period archaeology. We acknowledge that data are lacking to support many of the inferences made in models, though we insist that modeling efforts are essential to stimulate questions about data and thus guide research efforts. Much of what we do not know about the Archaic period is a symptom of the fact that we do not always ask the right questions, or frame our questions at the appropriate scale. Our hope is that greater attention to *research* design will help to lift Archaic studies from the mire they are currently in. Toward this end we offer in Chapter VII recommendations for future research. We frame our recommendations by returning to the questions listed above to assess what we know and do not know in 1995 about Archaic sites and prehistory in Georgia's Coastal Plain and coast.

CHAPTER II
ENVIRONMENTAL CONTEXT

The Coastal Plain and Coastal Zone, which are the subject of this study, comprise 95 of Georgia's 159 counties, an area of some 93,143 km^2, or 61 percent of the state. There are numerous environmental features that set the Coastal Plain apart from the upland landscapes of Georgia's Piedmont and mountain ranges. However, the province is itself highly diverse in its geological, hydrological, and vegetational composition. What is more, changes in environment throughout the Holocene have been rather marked, as climate varied, sea levels rose and fluctuated, and vegetational communities came and went. We review in this chapter the synchronic and diachronic aspects of environmental variation in the Coastal Plain and Coastal Zone that may have presented constraints and opportunities to Archaic period inhabitants of Georgia.

PHYSIOGRAPHY

The Coastal Plain province of Georgia can be divided into eight physiographic districts based on distinctive geomorphic features: (1) Fall Line Hills; (2) Fort Valley Plateau; (3) Dougherty Plain; (4) Tifton Upland; (5) Vidalia Upland; (6) Bacon Terraces; (7) Okefenokee Basin; and (8) Barrier Island Sequence (Hodler and Schretter 1986:16; Wharton 1979; Williams 1994:66). These districts are illustrated in Figure 1; Table 1 provides data on the absolute and relative area represented by each of the districts.

The Fall Line Hills is the uppermost section of the Coastal Plain which abuts and interdigitates with the Piedmont region to create an area of high rolling hills capped by ancient marine sand deposits and occasional outcrops of piedmont stone. This district includes nearly two million hectares spanning the entire width of the state but becoming significantly wider towards the western half of the state. The Fort Valley Plateau is a small physiographic district located within the Fall Line Hills. As something of a macroecotone, the Fall Line Hills are a part of the transition between hard rock geology of the Piedmont and the unconsolidated deposits of the Coastal Plain. However, the lower Piedmont province, which itself contains pockets of Coastal Plain deposits and associated vegetation, is an aspect of the so-called Fall Zone that is not considered fully in this report. Any archaeologists working the South Atlantic Slope knows that Fall Zone sites are among the largest and richest in the Eastern Woodlands. The topographic, edaphic, geological, and vegetational diversity of this ecotonal area proved attractive to prehistoric and historic populations for millennia. With its numerous shoals, the Fall Zone also afforded passage across major rivers, and hence was a pathway of routine travel.

Table 1. Absolute and Relative Area (in hectares) of Physiographic Districts of the Georgia Coastal Plain Province (after Williams 1994:75).

District	Area (ha)	Percent
Fall Line Hills	1,980,415.1	21.3
Fort Valley Plateau	121;776.2	1.3
Dougherty Plain	671,796.3	7.2
Tifton Upland	1,525,306.6	16.3
Vidalia Upland	2,391,553.8	25.7
Bacon Terraces	699,912.4	7.5
Okefenokee Basin	518,023.8	5.6
Barrier Island Sequence	1,405,533.6	15.1
Total	9,314,317.8	100.0

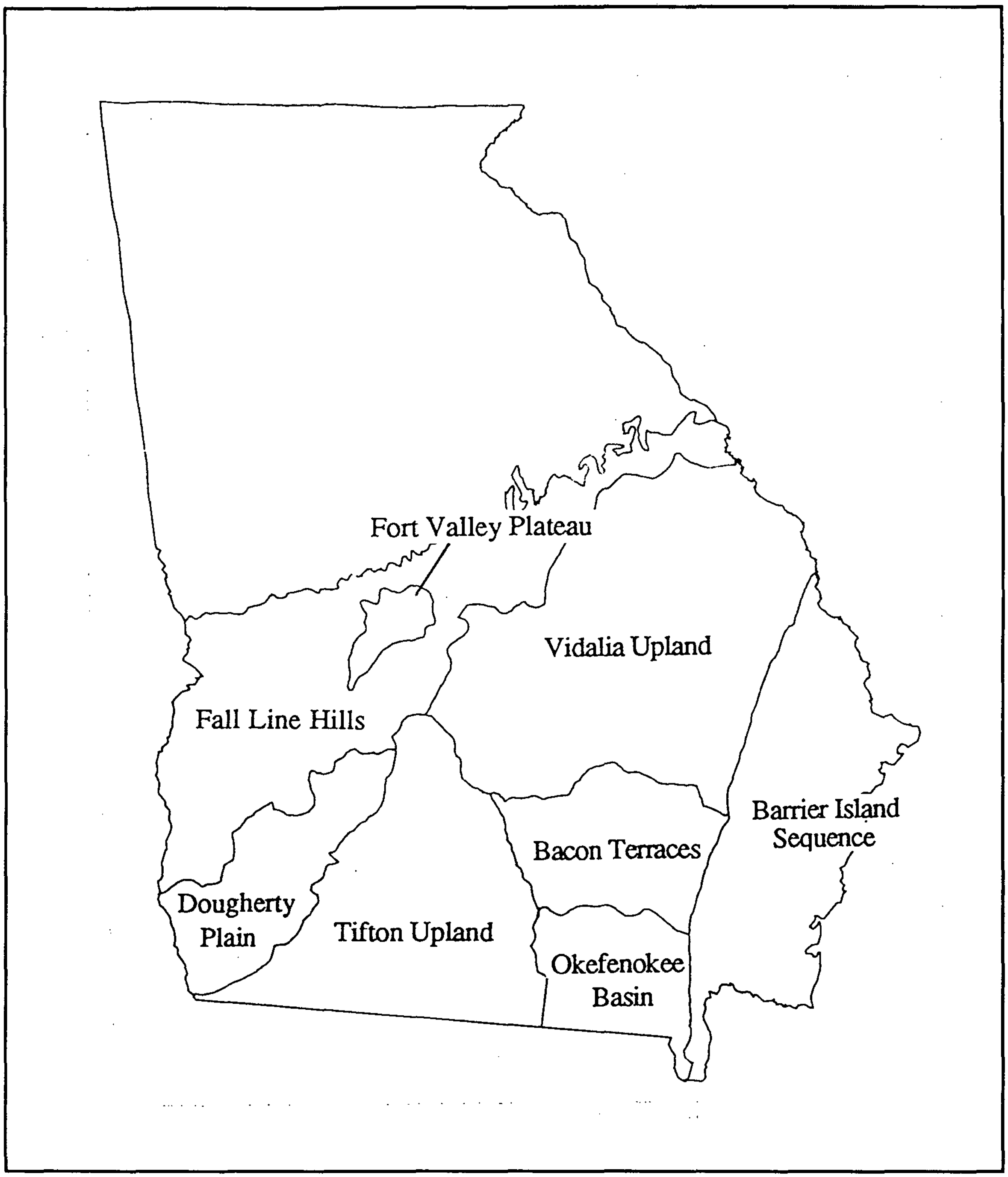


Figure 1. Physiographic districts of the Georgia Coastal Plain province (adapted from Williams 1994:66).

Physiographic districts of the interior Coastal Plain consist of ancient marine formations formed by old shorelines of Tertiary and Quaternary age. Fluvial dissection has created sharp relief in the higher terrace formations, but in lower areas relatively mild terrain abounds. Notable features of the interior Coastal Plain are eolian sand features which include parabolic dunes, transverse dunes, sand sheets, and Carolina bays (Seielstad 1994). Along the eastern edges of Atlantic-draining rivers of the province, dune features are as high as 20-30 meters; sand ridges formed on the rims of Carolina bays are as much as 3 meters high. Besides Carolina bays, other wetlands and ponds in interriverine areas formed from sink holes. Sinks occur along formations of limestone and related deposits of marine origin which parallel the coast in the middle Coastal Plain, and are especially broad in the southern portion of the province, as they are in north Florida. Springs are often found near lime-sinks located close to steams. Such hydric features—springs, sinks, and bays—along with topographic relief provided by dunes, hammocks, and dissected uplands, lend considerable physiographic diversity to the otherwise sandy, rolling to flat interior Coastal Plain.

The Okefenokee Swamp in extreme southeastern Georgia warrants special mention. Covering nearly 2,000 km^2, the Okefenokee is the largest freshwater swamp in the United States. Its origin and change through time is a matter of continuing research, but some evidence suggests its current freshwater configuration did not form until about 6500 years ago in conjunction with rising watertable levels related to sea-level rise and overall moister conditions (Cohen 1974). As we discuss later in this report, evidence for prehistoric occupations of the Okefenokee, which continues to be sought by Chris Trowell (personal communication, 1995), will likely form some of the more definitive data on the paleoecology of this dominant wetland feature.

The Barrier Island Sequence (i.e., Coastal Zone) is defined as the combination of islands, mainland coast, intervening marshes, lagoons and tidal creeks, brackish water marshes of river channels, and the maritime forest communities of the mainland perimeter. Coastal processes that acted to form the present shoreline and island morphology can be attributed to changes in sea level during the Quaternary. The latest Pleistocene episodes of sea-level change led to the successive development of the Talbot, Pamlico, Princess Anne, and Silver Bluff shorelines, each lower and farther east than its predecessor. Remnants of the older two shorelines are preserved as sand ridges on the mainland, while the younger two comprise portions of the present-day coastal islands.

After the Silver Bluff shoreline formed 25,000 to 35,000 years ago, sea level took a dramatic drop due to decreased global temperatures and resultant (Wisconsin) glaciation. After being stranded on the mainland for nearly 20,000 years, the Silver Bluff shoreline was reflooded by sea water during the mid-Holocene. The rate of sea-level rise slowed considerably after 6000 BP (Colquhoun and Brooks 1986). By this time the flooding of the low-lying areas behind the Silver Bluff islands began to form a salt marsh-lagoon system. This system gradually began to fill with sand and clay deposited by interior rivers, eventually leading to brackish water marsh drained by tidal creeks.

HYDROLOGY

The Georgia Coastal Plain is the hydrologic divide between Atlantic-draining and Gulf-draining rivers of the Southeast. The eastern portion of the province drains into the Atlantic Ocean via the Savannah, Ogeechee, Altamaha, Satilla, and St. Marys rivers, as well as minor tidal rivers. Waters from the western half of the province flow into the Gulf of Mexico via the Suwannee, Aucilla, Ochlocknee, and Appalachicola rivers. The Altamaha is the largest watershed in the state (Table 2), and the southernmost major watershed of the South Atlantic Slope. The Savannah, Altamaha, and Appalachicola rivers have their headwaters in the Blue Ridge mountains and Piedmont provinces; the Ogeechee River originates in the lower Piedmont, while the other rivers (Ochlockonee, Aucilla, Satilla, and Suwannee) originate within the Coastal Plain and are blackwater streams (Wharton 1979).

Table 2. Catchment Areas of Major Watersheds in the Georgia (Mark Williams, personal communication 1995).

Watershed	Area (ha)	Watershed	Area (ha)
Altamaha (total)	(3,709,746)	Ogeechee (total)	(1,167,590)
Altamaha	41,3533	Ogeechee	788,779
Ocmulgee	1,571,780	Canoochee	378,811
Oconee	1,377,130		
Ohoopee	347,303	Little Ogeechee	53,741
Attapulgus	43,944	Satilla	925,482
Flint (total)	(2,178,070)	Savannah	1,458,970
Flint	1,886,941		
Ichawaynochaway	291,129	St. Marys	181,734
Ochlockonee	260,648	Suwannee	423,481
		Withlachoochee	565,116

There are no obvious differences between the Atlantic-draining and Gulf-draining rivers of Georgia with respect to resource potential or suitability for habitation. Instead, this physiographic divide appears to have influenced cultural developments from the standpoint of interactions and ethnic differentiation. In later sections of this report we highlight some of the differences between groups that occupied different portions of the Coastal Plain, exploring the possibility that interactions and movements along rivers of divergent course contributed to divergent cultural patterns. Of particular interest is the "pivot point" of the divide—the Big Bend area of south-central Georgia—where the ongoing program of research by Frankie Snow, Chris Trowell and colleagues has revealed a variety of unusual archaeological manifestations.

GEOLOGY

The coastal plain of Georgia is predominantly underlain by sedimentary ocean deposits that date from the Cretaceous to the Holocene epochs (Abrams et al. 1976; Cooke 1943; Sandy et al. 1966; Veatch and Stephenson 1911). The Fall Line Hills district contains a mantle of these ocean deposits that overlay much older Piedmont igneous and metamorphic rocks. Outcrops of these metamorphic and igneous rocks do not occur in the Coastal Plain beyond its extreme northern margin. Lag deposits of gravels and small cobbles are found within active and abandoned channels of the district, however, and these may contain igneous or metamorphic stone of Piedmont origin. In addition, cut-bank exposures of ancient marine deposits along rivers and headwater streams include beds of quartz and quartzite cobbles of variable size and quality. Because these are generally ancient, highly weathered rocks, none are particularly suited to flaked stone tool manufacture. They are, however, sufficient for many percussion, grinding, and cooking functions.

Despite the lack of hard-rock lithology of igneous and metamorphic origin, the Coastal Plain of Georgia is not devoid of knappable stone, for it contains many good sources of siliceous raw material in its extensive sedimentary deposits. The majority of knappable cherts are found in the Oligocene and Eocene deposits of the upper to middle Coastal Plain (Goad 1979; Figure 2). Smaller sources of younger age are scattered in limited portions of the rest of the province, but are especially abundant farther south in

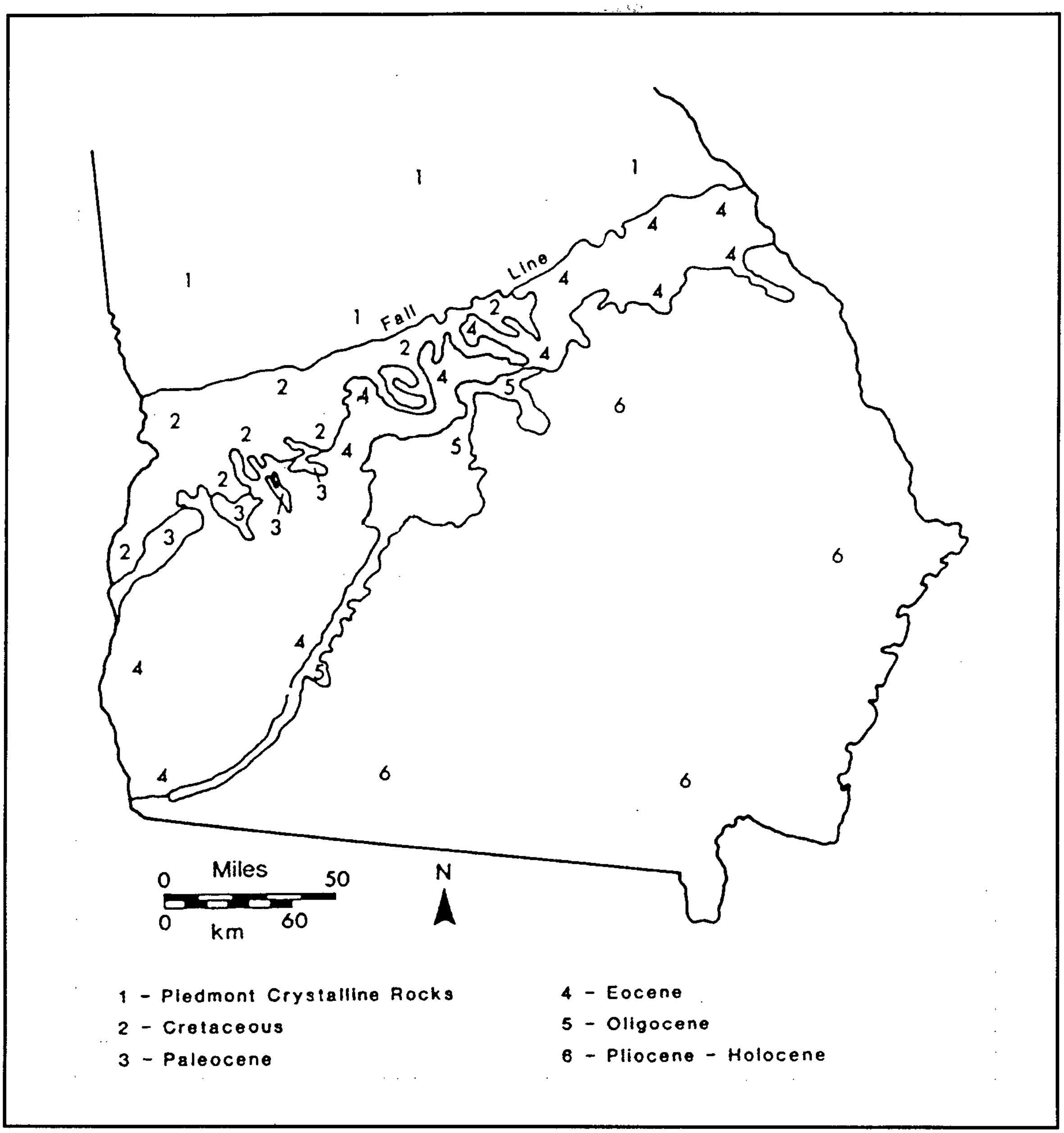


Figure 2. Distribution and age of geological formations in Georgia's Coastal Plain (after Gresham 1984).

Florida where chert outcrops in the north-central area and along the Gulf Coast were quarried throughout prehistory (Upchurch et al. 1982). Figure 3 shows the distribution of 32 counties with reported sources of chert; Table 3 provides a breakdown of the age and formation of these sources. Notwithstanding Goodyear and Charles' (1984) quarry surveys in the Savannah River valley and Goad's (1979) overview of chert sources provincewide, there is insufficient information to document the extent of prehistoric quarry activity at most of the geological outcrops of chert. Lacking other sources of stone, however, prehistoric tool makers in the Coastal Plain depended heavily on cherts and we can expect that most conspicuous sources of chert were quarried.

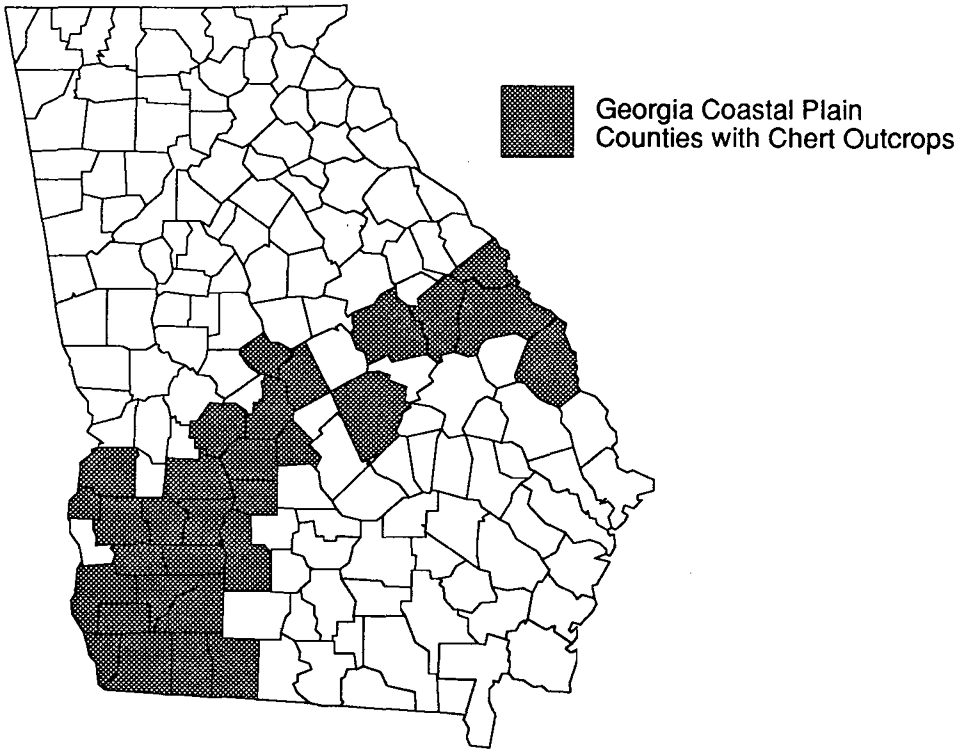


Figure 3. Coastal Plain counties in Georgia with reported chert outcrops (after Cooke 1943; Goad 1979; Sandy et al. 1966; Veatch and Stephenson 1911).

Table 3. Geological References to Chert in the Coastal Plain (after Cooke 1943; Goad 1979; Sandy et al. 1966; Veatch and Stephenson 1911).

Age	County
Paleocene	Macon, Quitman, Stewart, Sumter
Eocene, Claiborne Group	Bibb, Burke, Jefferson, Richmond, Twiggs, Washington
Eocene, Jackson Formation	Baker, Bibb, Crisp, Dooly, Early, Houston, Miller, Pulaski
Eocene, Barnwell Formation	Burke
Eocene or Oligocene	Screven
Oligocene	Baker, Calhoun, Crisp, Decatur, Dougherty, Early, Houston, Laurens, Lee, Miller, Mitchell, Pulaski, Randolph, Seminole, Sumter, Terrell, Thomas
Miocene	Grady, Mitchell, Worth

Chert outcrops are absent in most of the eastern portion of Georgia's Coastal Plain and across the entire Coastal Zone (Figure 3). Chert was transported in large quantity to nonsource areas of the interior Coastal Plain, such as the Ocmulgee Big Bend area (Frankie Snow, personal communication 1995). But along the Coastal Zone stone was not routinely employed in subsistence technology. Very few coastal assemblage contain more than a few lithic tools or debitage; such items are especially lacking at sites in the southern counties of Georgia's coast. In lieu of rock, coastal occupants fashioned tools from organic media such as bone, antler, and shell. In contrast to hard rock resources, clays were abundant in the former lagoons of old barrier islands (Trinkley 1986:18). These clays were no doubt exploited for pottery, as well as ceramic substitutes for stone, such as the baked clay objects Late Archaic occupants used in cooking (DePratter 1979a). Clays suited to pottery manufacture were likewise available throughout the interior Coastal Plain in the alluvial deposits of major rivers and in exposures of ancient marine deposits.

BIOTIC RESOURCES

Because the Fall Line Hills are composed of generally well-drained soils, the vegetation is largely xerophytic. An especially critical factor in determining the composition of local communities is the availability of groundwater. The advanced degree of dissection and presence of impervious clay strata in the Fall Line Hills are two factors which support mesic and even hydric communities along ridge slopes and stream bottoms. The topographic gradient of dissected ridges supports a variety of vegetational communities. The xeric "pine barrens" that have come to typify Sandhills vegetation extend across much of the ridgetops and upper side slopes. The ubiquitous stands of loblolly (*Pinus taeda*) and slash pine (*Pinus elliottii*) are products of twentieth-century silvicultural practice. The natural forest cover of Sandhills ridges is dominated by Longleaf pine (*Pinus palustris*), turkey oak (*Quercus laevis*) and other scrub oaks. Other natural constituents include the shrubs sparkleberry and deerberry (*Vaccimium* spp.), rosemary (*Ceratiola ericoides*), St. Andrews cross (*Hypericum hypercoides*), and sand myrtle (*Leiophyllum buxifolium*). A sparse herbaceous cover includes wire grasses (*Aristida* spp.) and jointweed (*Polygonella polygama*), among others, while prickly pear (*Opuntia compressa*) may be locally common.

Fire has been a determining factor in the evolution of forest communities throughout the Coastal Plain. Longleaf pine has long been favored over turkey oak and other xeric hardwoods where fire has been frequent. In the absence of fire—a modern condition—hardwood species gain dominance over pines. The source of natural fire is summer lightning strikes. Fires during this season will generally be lethal to hardwood stems of less than 10 cm in diameter, while Longleaf pine not only tolerates such burns but, as a result of long-term selection, depends on fire to reduce needle blight. Winter fires kill only the tops of hardwood species, leaving the roots to sprout the following spring. Thus, controlled burning in the winter by prehistoric people had the potential to improve xeric interfluves for game browse (Hudson 1976:276-277; Swanton 1946:318). Otherwise, the natural occurrence of lightning fires precluded sustained productivity of food species, rendering most well-drained ridges relatively worthless for subsistence pursuits.

Hardwood forests within the Fall Line Hills are found on slopes of ridges, in the bottoms of major tributaries, and within Carolina bays, pocosins, and bogs. In general, a moisture gradient mirrors the topographic gradient discussed above and provides habitat for mast producers and other broadleaf species of economic value to humans. In addition to improving soil development, increased moisture decreases susceptibility to fire, thereby permitting the natural succession to hardwoods. Over the long-term, however, fuels would build up in such areas so that intensive fires during periods of extreme drought destroyed many of the tree stems. This type of burning led to diversification of species of trees, shrubs and vines, as well as lesser herbaceous plants and graminoids, most of which were favorable to good wildlife habitat and largely useful for direct human exploitation.

Across the lower topographic gradients of the middle to lower Coastal Plain, the availability of surface water in interriverine areas is a critical determinant of food resource potential. As noted earlier, the sinkholes and bays scattered across interriverine zones would have supported mesic and hydric vegetation. Such locations were potentially used by migratory waterfowl and they would have certainly attracted game. But there are few data available to generalize about these wetland features, and we cannot be certain that all, or even most, were well-watered throughout the Holocene. Ongoing research at Carolina bays in Aiken and Barnwell counties, South Carolina suggests these features indeed contained water throughout the Holocene (Brooks et al. n.d.). Other data, reviewed in a section below, support the conclusion that Georgia's Coastal Plain contained abundant surface water. If so, the Coastal Plain would have been a heterogeneous landscape compared to the Piedmont, as it is today (Hoover and Parker 1991), so its resource structure would have required relatively high levels of settlement permanence and logistical mobility (sensu Binford 1980). Alternatively, groups may have opted to avoid conditions that restricted mobility and promoted greater specialization, which, one of us has argued (Sassaman 1995; n.d.), may help to explain the limited number of Middle Archaic sites in the province.

The Coastal Zone of Georgia contains diverse and productive habitats that were favored by prehistoric residents since at least the Late Archaic period. Excellent discussions of the climate, flora, and fauna of the Coastal Zone are provided by DePratter (1979a:5-15) and Trinkley (1986:8-38). Our brief review of this information is drawn primarily from these sources.

Oyster beds and associated marsh-lagoon resources were being exploited on the coast of Georgia by about 4200 B.P. The marsh-lagoon system may not have developed or matured until this time, so earlier settlement of the Georgia coast, if it depended on this coastal habitat, may not have been possible (DePratter 1979a:7; DePratter and Howard 1980). Because of differences in coastal morphology which affect tidal range, salt marshes behind the Silver Bluff islands should have developed slightly earlier at the northern end of the Coastal Zone.

In terms of the broader resource potential of the Coastal Zone, microenvironments other than the marsh-lagoon system were important to human occupants. DePratter (1979a:8-15) identifies four other microenvironments: open sea, beach and dune, maritime forest, and pine forest. Paleoenvironmental data on the floral and fauna composition of these microenvironments are limited. Archaeological evidence indicates that a variety of fish, shellfish, and turtles were taken from the aquatic habitats, and that acorns, hickory nuts, deer and smaller mammals were important terrestrial foods.

The contemporary maritime forests cover most of the high ground of the coastal islands and mainland fringe, and consist mainly of oak. Pine forests exist in lower portions of the Coastal Zone, but they are more prevalent west of the mainland fringe in the adjacent Coastal Plain.

Among the aquatic microenvironments, the marsh-lagoon system was undoubtedly the most important. Not only were abundant shellfish available, but the many fishes that inhabited the tidal creeks and rivers were more readily exploited than those of the open sea. Migratory waterfowl, small mammals, and numerous reptiles were also present.

The combined resources of the intertidal marsh-lagoon system and the maritime forests offered Late Archaic period residents year-round subsistence potential. Under the influence of nearby warm ocean air, the seasonality of the coast is minimal. Winters are short and mild, while summers are long, hot and humid. The only major climatic constraint for humans is the tropical storm season from late summer to early fall. High tides, torrential rains, and damage to near-shore food resources are dangers of tropical storms.

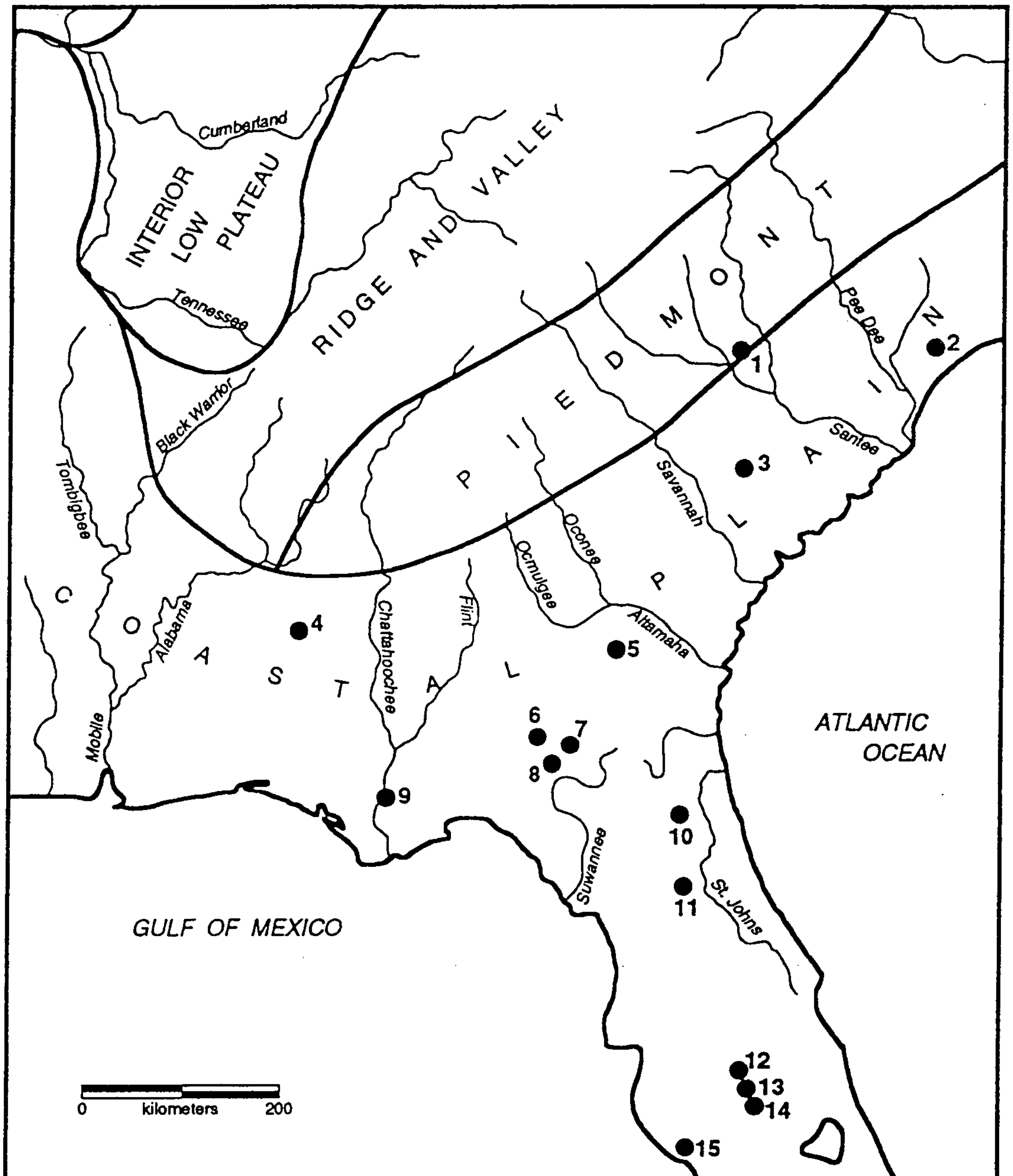
PALEOENVIRONMENT

Pollen assemblages from sites across the South Atlantic and Gulf Coastal Plain (Figure 4) show that oak-dominated forests were well-established at the onset of the Holocene (ca. 10,000 B.P.), and persisted until about 8500 B.P. when southern pine expanded at the expense of hardwoods (Watts et al. n.d.). Sediment records from these same sites document continuous deposition, indicating uninterrupted moist conditions.

In many places across the globe, a period of warm climate between about 8000 and 5000 B.P. had marked effects on the distribution of rainfall, vegetation, and fauna. In the American Midwest, the Climatic Optimum caused an eastward expansion of prairie habitat into present-day southern Illinois and Indiana. Referred to as the Prairie Peninsula, this expansion of grassland caused a reorganization of resources important to human populations. For instance, the faunal assemblages at Graham Cave (McMillan and Klippel 1981) in central Missouri and Modoc Rock Shelter (Styles et al. 1983) in southern Illinois show a clear decline in squirrels and other small terrestrial mammals, and an increase in white-tailed deer over the early Holocene. Several researchers attribute these changes in subsistence to an opening of forests, and thus expansion of deer habitat (McMillan and Klippel 1981; Styles et al. 1983), while others point to the increased demands on logistic-based hunting as environments became patchy and human populations less mobile (Nesius 1982). Either way, other, independent lines of evidence from the Midwest suggest mid-Holocene climate was drier, as well as warmer, than the early Holocene (see recent review of these data by Styles and Klippel n.d.).

As subsistence in the Midwest changed with increasingly dry and warm climate, settlement became increasingly focused on riverine locations, where fish and shellfish species began to be exploited in earnest. The trend toward river-focused settlement was initially viewed as a consequence of the decreased resource potential of upland habitat (e.g., Carmichael 1977), but is alternatively seen as a consequence of floodplain aggradation due in part to higher rates of upland erosion (Styles 1986). Thus, instead of being pushed into riverine niches, Middle Archaic populations were pulled by the increasing productivity of floodplains (Brown and Vierra 1983). Similar processes were also apparently afoot in the Midsouth, where shellfish middens began to accumulate at Tennessee River valley sites as early as 7500 B.P. (Dye n.d.).

No marked changes are apparent in the mid-Holocene record of the Georgia-Carolina area, and what changes there were cannot be conclusively tied to climatic warming (Goodyear et al. 1979:30). Moreover, lacking subsistence data for the Early and Middle Archaic periods, we are at a loss for information of changing human subsistence practices. Clearly, some changes in settlement and technology are observed (e.g., diminished use of Coastal Plain sites, and less reliance on formal unifaces), but how these relate to environmental change, if at all, is not evident. The environmental record is equally ambiguous. Below we review the two major sets of environmental data that are available—depositional records and pollen records—noting where necessary the alternative interpretations of these data.



1. White Pond (Watts 1980)
2. Clear Pond (Hussey 1993)
3. Little Clear Pond (Brooks and Taylor 1992)
4. Goshen Springs (Watts et al. 1994)
5. Chatterton Springs (Sielestad 1994)
6. Lake Louise (Watts et al. 1994)
7. Langdale Pond (Watts et al. 1994)
8. Lake Barchampe (Watts et al. 1994)
9. Camel Lake (Watts et al. 1994)
10. Sheelar Lake (Watts et al. 1994)
11. Mud Lake (Watts et al. 1994)
12. Lake Tulane (Watts et al. 1994)
13. Buck Lake (Watts et al. 1994)
14. Lake Annie (Watts et al. 1994)
15. Little Salt Spring (Clausen et al. 1979)

Figure 4. Locations of sites cored for pollen (after Sassaman and Anderson 1994:11).

Patterns of Deposition

Depositional histories of the rivers of the South Atlantic Slope have formed an important inferential basis for reconstructing Holocene climate (see recent review by Schuldenrein n.d.). However, the relationships between climate and fluvial systems are mediated by a variety of factors including, but certainly not limited to, vegetation cover, runoff patterns, and position of the local and regional hydrologic base levels. Nevertheless, the two usual lines of evidence for making inferences about climate are rates of net sedimentation, and pedogenesis. The former variable is a measure of the extent to which sediments in fluvial systems are deposited on alluvial landforms such as point bars, levees, and floodplains. Again, the linkages between climate and rates of deposition are not at all clear. High rates of sedimentation may indicate dry climate if upland ground cover vegetation is diminished to accelerate erosion and thus sediment input (Knox 1983; Schumm 1977). Conversely, higher sedimentation rates may indicate wet climate in that frequent flooding has the potential to incise river channels and thus free up sediments in fluvial contexts. The arbitrating factor in this equifinality is sediment source: the dry climate scenario implicates upland sediment, the wet climate scenario implicates sediment reworked in fluvial context. Unfortunately, geoarchaeological studies do not routinely address the issue of sediment source, so inferences about climate from rates of deposition are not to be trusted on their own (Taylor et al. 1994).

Pedogenesis is perhaps a more secure indicator of climatic conditions. Although soil formation results from a combination of parent material, biota, time, topography, as well as climate, a well-developed B horizon could not have formed under dry climatic conditions. Relating such a feature to an archaeological horizon is another issue altogether. Unlike depositional structures, soil horizons are the result of protracted surface and subsurface processes that cannot always be related to the surfaces utilized by humans. The formation of a B horizon, however, does require a stable surface. If an occupied surface is bracketed by other surfaces within a depositional sequence, the development of soil horizons from processes emanating from the occupied surface is a potentially sound indicator of climate at time of occupation.

Having qualified the interpretation of these data, a review of the depositional and pedogenic histories of several sites is instructive. Within the relatively thin (<1 m) depositional sequences of the Rucker's Bottom site in the Richard B. Russell reservoir (Anderson and Schuldenrein 1985; Schuldenrein n.d.), Early Archaic artifacts occurred in medium to coarse-grained sediments indicative of vigorous channel activity. Middle Archaic assemblages were found at varying depths but in progressively finer sediments indicative of gentler stream flow over the early Holocene. The Middle Archaic horizon also marked the appearance of lamellae—pedogenic structures that are essentially incipient B horizons. Diminished accretion rates are indicated by the stacked sequences of closely-spaced lamellae, suggesting to Schuldenrein that the alluvial system became increasingly stable over the Middle Archaic period, as increasingly smaller episodes of sedimentation across a broad floodplain were punctuated by pedogenesis on a short-term cycle. He interprets these data as indicative of episodes of moist climate interrupting a generally dry mid-Holocene. The presence of a cambic paleosol correlated with Late Archaic occupation at Rucker's Bottom at about 4000 B.P. signifies the onset of uniformly moister conditions conducive to advanced soil development.

Fewer inferences about climate have been advanced in the geoarchaeological research of Mark J. Brooks in the South Carolina Coastal Plain. The emphasis of Brooks' research has instead been on the effects of sea-level rise and fluctuations on fluvial systems (Brooks 1990; Brooks and Sassaman 1990; Brooks et al. 1986, 1990a). Even so, it is interesting to note that sites investigated by Brooks document a decrease in the rate of sedimentation over the course of the Holocene. Unfortunately, evidence for pedogenesis is not usually observed in the sandy, well-drained soils of the Coastal Plain[1]. The lack of soil development does not necessarily point to dry conditions, for these sediments are coarse and thus lack the fine-grained particles (i.e., silts and clays) that are translocated to form B horizons. From more recent work at Carolina bays in the upper Coastal Plain, Brooks and colleagues (n.d.) have documented well-watered conditions through the mid-Holocene. Accordingly, Brooks has since suggested that the relatively high rates of early to mid-Holocene alluvial deposition observed at terrace sites along the Savannah River may indicate climatic conditions moister than commonly assumed (Mark J. Brooks, personal communication, 1994).

A different type of depositional record is the accumulation of peat and other organic-rich deposits in lakes and sinkholes in the Southeast. These deposits are conducive to trapping and preserving pollen and have been documented in conjunction with palynological investigations (see below). A recent review of pollen studies in the South Atlantic Coastal Plain by Watts and colleagues (n.d.) shows that basins in the South Atlantic Slope began to fill with water very early in the Holocene and remained well watered throughout the Holocene (see also Brooks et al. 1993 for a preliminary discussion of Little Clear Pond in South Carolina). Many factors influenced the rise in water tables, including precipitation, evapotranspiration, and surface runoff. Because it is not always possible to control for these somewhat offsetting variables, reconstructing climate from water tables levels is difficult. Nevertheless, the depositional records of basins in the South Atlantic Coastal Plain reflect conditions as wet, if not wetter, in the mid-Holocene than the early Holocene.

Continuous sedimentation in basins throughout the mid-Holocene has been documented in South Carolina and locations northward (Watts et al. n.d.). From the Coastal Plain of south Georgia and Florida, lake and sinkhole records show marked fluctuations in sedimentation, although it is not at all clear to what extent, if any, these events reflect episodes of dry climate. For instance, at Little Salt Spring in southwest Florida (Clausen et al. 1979), peat-forming communities that began forming after 8500 B.P. were interrupted from about 8000-7000 B.P. Although this has not been recorded elsewhere, a local drying trend is not impossible, as factors other than regional climate may have been responsible. An example of small-scale depositional events is seen in a south Georgia bayhead peat deposit recently investigated by Seielstad (1994). Five meters of peat accumulation during the Holocene was interrupted occasionally by sand deposition from adjacent dune surfaces. Periods of dry climate may have encouraged inorganic deposition, but an equally plausible explanation, according to Seielstad, is that human-set fires denuded dune vegetation and accelerated erosion.

Finally, recent field investigations at a upland Fall Zone site in Chesterfield County, South Carolina by Joel D. Gunn offer a view on mid-Holocene climate consistent with Midwestern reconstructions (Gunn and Foss 1992; Gunn and Wilson 1993). Working from global-scale climatic variables, Gunn hypothesizes that upland landforms were desiccated during the mid-Holocene. Depositional evidence from Copperhead Hollow (38CT58) consists of wind-blown sands that accumulated on the leeward side of a dune between about 7500 and 6000 B.P. This suggests that the site was denuded of vegetation capable of restraining eolian transport during sub-epochal intervals of the mid-Holocene.

[1] Recent investigations at 38AL135 in Allendale County, South Carolina have revealed evidence for a mid-Holocene paleosol with a well-developed B horizon (Goodyear and Foss 1993). The exact timing of the formation of this horizon is not yet established, but it appears to coincide with occupations dating at least to the sixth millennium B.P., and it may have been enhanced by anthropogenic inputs. In any event, moist climatic conditions are implicated by this evidence.

Dune stabilization took place during the sixth millennium, when relatively intensive Guilford-phase occupation occurred at the site. A radiocarbon date of about 5300 B.P. for the Guilford occupation coincides with an episode of cool and moist climate inferred from global-scale variables (e.g., Kutzbach and Guettner 1986). Overall, Gunn views the mid-Holocene as a hot and dry time with respites of cool and moist climate. Rather than seeing these conditions as unfavorable to human exploitation, as some suggest for the Midwest, Gunn argues they were ideal for an economy focused on hunting of large game.

As we can see in the discussion to this point, there is no consensus on the sedimentary record of mid-Holocene climate. Most have argued for moist conditions throughout this period, while others have issued data indicative of periodic or even chronic dry conditions. Overall the data show a latitudinal difference, with South Carolina locales apparently moister than locations southward. Limited surface water in south Georgia and north Florida during the early to mid-Holocene may indeed have constrained human settlement choices, although it seems doubtful that fluvial systems would have been affected to the extent that flowing water was not available in the numerous creeks and river channels of the region.

Patterns of Vegetation

From palynological work across the South Atlantic Slope it is accepted that oak forest with herb understory was established very early in the Holocene (Delcourt and Delcourt 1987). By the mid-Holocene, oak/herb vegetation was replaced by pine and the extensive development of swamps and lakes. A recent review of the pollen evidence for this change shows some important variation in its timing and extent (Watts et al. n.d.).

All of the pollen sites shown in Figure 4 begin with a period of oak domination associated with herbs in the early Holocene. Hickory is also found with the oak maxima at Clear Pond in South Carolina and at two sites on the Georgia-Florida border. The expansion of pine began as early as 8460 B.P. at Clear Pond, achieving present levels at about 8000 B.P. This process was later and more protracted at sites to the south; in south Florida, for instance, pine dominance was not established until after 5000 B.P. Because of the comparatively short oak/herb phase and rapid pine advance, Watts et al. (n.d.) conclude that "South Carolina must be regarded as a distinctive climatic and vegetational province that does not conform to the patterns from farther south." Nevertheless, they see no evidence that South Carolina was any less well watered than sites to the south, and may have in fact been better watered. Furthermore, they note the important role of fire in maintenance of pine forests in the Southeast, and cite simulation studies based on orbital data (Kutzbach and Guettner 1986) that anticipate essentially modern seasonality by 6000 B.P., with high summer precipitation from thunderstorms with frequent lightning strikes. Although records of sedimentation from the various pollen sites would lead us to believe that the entire mid-Holocene was a period of moist climate, the lack of species-level data on pine coupled with incomplete information on local site conditions and charcoal frequencies makes it difficult to extrapolate to regional climate from the evidence of pine expansion alone.

Vegetational changes in the Piedmont were not nearly as dramatic as in the Coastal Plain. Although pollen data for the province in Georgia are not available, extrapolations from regional data suggest that oak-dominated forests were never completely replaced by pine in the mid-Holocene (Delcourt and Delcourt 1987). At worst, pine became an appreciable element in mixed hardwood-pine forests. Overall, a pattern of relative vegetational stability characterized the mid-Holocene Piedmont.

SEA-LEVEL FLUCTUATIONS AND FLUVIAL RESPONSE

DePratter and Howard (1977, 1980, 1981) documented fluctuations in sea level from archaeological and geological data they gathered from the Georgia coast. A detailed sea-level curve for the South Carolina coast has been developed by Colquhoun and Brooks from geological and archaeological research begun in 1978 (Brooks 1980; Brooks et al. 1979, 1989; Colquhoun and Brooks 1986; Colquhoun et al. 1980, 1981). Since the mid 1980s, related research in the Savannah River valley and surrounding area has centered on fluvial responses to sea-level transgressions (Brooks 1990; Brooks and Sassaman 1990; Brooks et al. 1986; Brooks et al. 1990a).

Sea Level Curve

Both South Carolina and Georgia data show that the rate of rise in post-Pleistocene sea level dropped markedly after 6000 B.P., after which levels fluctuated 2-3 m within a 4-m range of the present level. Documented sea levels were never higher than at present during the Middle and Late Archaic periods, but rather at least 1 m and as much as 4 m below the modern level since the rate of rise decreased after 6000 B.P. Needless to say, many sites dating to this period are now fully or partially submerged on the Georgia-Carolina coast. In fact, the basal depths of submerged, dated shell middens relative to the present high marsh surface are among the data Brooks and Colquhoun used to establish their sea-level curve.

Peaks in South Carolina sea level over the course of the Late Archaic period occurred at about 4800, 4200, and 3700 B.P. These were interspersed with low stands at about 5000, 4500, and 3300 B.P. These fluctuations undoubtedly impacted human settlement over the course of the Late Archaic period by altering the location of productive food resources and sites suitable for occupation.

The earliest shell middens of the Georgia-Carolina coast date to about 4200 B.P. That earlier uses of estuarine resources have not been documented in the area suggests that productive estuaries were not established until 4200 B.P. (Brooks et al. 1989:96; DePratter 1976, 1977). This is not at all certain. Russo (n.d.a) has made a convincing case for productive estuaries throughout the mid-Holocene in Florida. There a concerted search for early Atlantic coastal sites is beginning to produce positive results. Until a similar effort is made on the coasts of South Carolina and Georgia, we should not dismiss the possibility of pre-4200 B.P. sites because of presumptions about estuarine ecology (Brooks et al. 1990b).

Large shell middens and rings dating to between 4200 and 3000 B.P. on the Georgia-Carolina coast are generally located in the seaward areas of estuaries, often adjacent to major channels. Many such sites have been eroded by transgressions of the sea and some established during regressive intervals were buried and/or submerged. Within salt marshes the bases of middens are as much as 1.2 m below the existing high marsh surface (Brooks et al. 1989:94). Species composition in these middens is usually diverse, indicating a generalized estuarine/terrestrial adaptation to possibly year-round settlement.

After 3000 B.P. there was a general trend for shell middens to form farther inland and to be smaller and more dispersed than the Late Archaic coastal middens. This change is attributed to continued sea-level rise and the concomitant expansion of estuaries. Again, coastal sites established during regressive intervals after 3000 B.P. may be buried or destroyed, as DePratter and Howard (1977, 1980; DePratter 1977) have documented on the Georgia coast. Even so, the expansion and dispersal of shell-midden sites into the interior of the Coastal Zone signifies a shift in orientation that corresponds with something of a collapse in Late Archaic sociopolitical integration across the Georgia-Carolina region.

Fluvial Responses

Because sea level is the ultimate hydrologic base level for fluvial systems, changes in sea level correlate with fluvial histories well into the interior Coastal Plain. Mark Brooks has been investigating such correlations for the last decade (Brooks 1990; Brooks and Sassaman 1990; Brooks et al. 1986; Brooks et al. 1990a; see also Hanson 1982). What his work has shown is that modern floodplain development has progressed in a time-transgressive fashion from the coast to the interior beginning at about 6000 B.P. when the rate of sea-level rise slowed. Fluctuations in sea level from this point forward, as noted above, ensured that floodplain development was not a linear, unidirectional process. Instead, it was subject to a series of minor reversals, corresponding to sea-level regressions, that affected rates of river flow, aggradation, and flooding (Brooks et al. 1990a:25-34).

In terms of resource potential for humans, the upriver, time-transgressive process can be viewed as shifting ecotones: one involving the interface between salt and fresh water, another the interface between high-energy and low-energy flow. The former is a measure of the mix of species available in a given stretch of lower Coastal Plain river, and its susceptibility to changes in temperature and salinity. In the latter case, high-energy flow is present in the upriver portion of a straight, downcutting channel, while low-energy flow occurs downriver in a meandering channel laden with fine-grained sediment. Species adapted to either sets of conditions are available within a short distance of the interface, so it represents an especially productive riverine habitat for humans. Today in the Savannah River the interface lies in the Fall Zone, where impoundments have disrupted the upriver process. We know that the modern floodplain of the upper Coastal Plain portion of Savannah River did not form until after 4200 B.P., so the process that began on the coast at about 6000 B.P. took about 2,000 years to reach the Fall Zone.

Research comparing the occupation of riverine sites in the Coastal Plain with floodplain evolution is still in its infancy. Nevertheless, the process identified by Brooks has shown to be a viable explanation for broad-scale settlement changes in the Savannah River valley between 5000 and 2000 B.P. (Brooks and Hanson 1987). Brooks has even implicated tributary fluvial dynamics to the regional model, arguing that floodplain development established local hydrologic base levels for tributary watersheds. Hence, the process of floodplain development continued in a time-transgressive fashion up Coastal Plain tributaries. According to Brooks, improvements to upland habitat stemming from fluvial development enabled Late Archaic and eventually Woodland groups to expand settlement in the otherwise resource-poor areas of the interriverine upper Coastal Plain.

CHAPTER III
TYPOLOGY AND CHRONOLOGY

This chapter describes the "nuts and bolts" of Archaic prehistory—diagnostic artifact types and their chronology. We begin with descriptions of diagnostic flaked stone artifacts, organized by period, and follow up with discussions of the Late Archaic pottery series for the region. We also provide in this chapter an inventory and discussion of absolute dates from Archaic sites in Georgia and bordering areas.

DIAGNOSTIC FLAKED STONE ARTIFACT TYPES

Early Archaic

The Carolina Piedmont Tradition of biface manufacture, defined by Coe (1964) and recently refined by Oliver (1981, 1985), appears to have begun as a "regionalized technological modification of Paleoindian projectile point style" (Oliver 1985:197). At the Hardaway site in North Carolina, broad, thin blades with concave, thinned bases were recovered from the lowest depths of deposits. Associated with distinctive unifacial scrapers, these "Hardaway Blades" (Coe 1964:64-65) may be coeval with Clovis points, but probably postdate them. These forms are recognized by some Southeastern researchers as Hardaway-Dalton preforms (Goodyear et al. 1979:98), and should therefore date to the late Paleoindian subperiod. Also in the lowest stratum at Hardaway were side-notched bifaces with morphological similarity to Dalton points. The Hardaway-Dalton type (Coe 1964:64) is nearly identical to classic Daltons except for shallow, broad side-notches. The Hardaway Side-Notched (Coe 1964:67) is a distinctive form with narrow side-notches and a concave, recurved ground base. The appearance of pronounced notching in bifaces generally marks the onset of the Early Archaic period at about 10,000 B.P.

Side-Notched Tradition. Side-notching is a technological development that spans much of the eastern United States. Referred to as the "Big Sandy Horizon" (Tuck 1974:75) in reference to Big Sandy points of the Midsouth, numerous regional traditions of side-notching appear during the early Holocene. In the Georgia and South Carolina region, a side-notched form known as Taylor (Michie 1966) is believed to date to this period. Similar to the Big Sandy type (Kneberg 1956) of Alabama and Tennessee and the Bolen type of Florida (Bullen 1975), the Taylor point is common in the middle and lower Savannah River valley. The vast majority of Taylor points are made from Coastal Plain chert, which commonly occurs in the area of their distribution (Sassaman 1992). Examples made from quartz occur occasionally in Costal Plain assemblages, and quartz Taylors are reported from upper Piedmont sites (Tommy Charles, personal communication 1995). Because of the general similarity among Early Archaic side-notched bifaces across the Southeast, the choice of type names depends as much on location as morphological criteria. Nonethless, Taylor points, as defined by Michie (1966), are distinguished by decidely concave bases; well-defined, squared basal ears; rounded, symmetrical side notches; and the bases and notched are well ground. Resharpening usually results in beveled blade morphology. The biface is belived to be associated with Edgefield scrapers (see below).

Big Sandy is a side-notched biface that occurs with greatest frequency along the Tennessee River Valley of Alabama and Tennessee, although archaeologists recognize this type from sites spanning much of the lower Southeast (Justice 1987:62). The point was named from the Big Sandy I phase of the Midsouth Archaic (Kneberg 1956; Lewis and Kneberg 1959). The type encompasses considerable variation in form, although one of the distinguishing traits is notches that are wider than they are deep. Basal edges and notches are usually ground; blade edges may be serrated and beveled. Basal morphology varies from nearly straight to deeply concave, but all forms are well thinned. Being associated with Dalton, Greenbrier, and other lanceolate forms in Zone D of Stanfield-Worley in Alabama (DeJarnette et al. 1962), Big Sandy points were believed to date to the late Paleoindian period. Goodyear's (1982) synthesis shows that Dalton and related forms predate the side-notched forms, although the latter clearly remain among the earliest Early Archaic artifacts in the region and perhaps overlapped with late Paleoindian types. Big Sandys are routinely reported from sites in the Gulf Coastal Plain of Georgia. The Florida-based Bolen type converges morphologically with Big Sandy, leading to much confusion over the naming of Georgia Coastal Plain finds. Variants of the Big Sandy type proposed by Cambron and Hulse (1964; broad base, contracted base, auriculate) have not been widely embraced by Southeastern archaeologists.

As envisioned by Ripley Bullen (1975:51-52), a wide range of notched bifaces is encompassed by the Bolen type concept. He proposed only two types of Bolens (Plain and Beveled), but each of these was divided into several subtypes that included side-notched, corner-notched, expanded-notched, high-notched forms, and basal forms ranging from concave to convex. Most analysts now agree that the morphological variation Bullen considered important for typological purposes resulted from differences in use-histories, not ethnicity or change in time (see Milanich 1994:54). Examples with shallow, wide side-notches serve to distinguish Bolens from the Taylors (which have symmetrical, rounded notched). At Atlantic Coastal Plain locations between cores of the Bolen and Taylor distributions, such as the Ocmulgee Big Bend, a tremendous range of notched forms is observed (Figure 5).

Radiometric dates for side-notched points in Georgia and South Carolina are not available. A date of 9640±450 B.P. on charcoal from Zone D of the Stanfield-Worley bluffshelter (DeJarnette et al. 1962:85) is generally accepted for the (Big Sandy) side-notched horizon. In support of this assessment, recent work at the Page/Ladson site in northwest Florida has yielded a date of 9730±120 B.P. on deposits containing Bolen Side-Notched points (Dunbar et al. 1988:449). Two dates from Level 22 of Dust Cave in Alabama in excess of 10,300 B.P. inititally believed to date the Big Sandy horizon (Driskell 1992:275) are now considered to predate side-notched points (Boyce Driskell, personal communication, 1994).

Along with the side-notched points of the Big Sandy, Bolen, and Taylor varieties, a bifacial side-notched tool known as the Edgefield scraper (Michie 1968a) occurs throughout the eastern Coastal Plain and portions of the eastern Piedmont in Georgia. With its large haft element and robust, canted working edge (Figure 6), the Edgefield scraper is presumed to be a heavy-duty wood-working tool. Its co-occurrence with and similarity to bifaces of the side-notched suggest it dates to about 10,000-9500 B.P., although no absolute dates are available. Goodyear and colleagues (1980) documented the regional distribution of Edgefield scrapers in the Southeast, noting a close association with outcrops of Coastal Plain chert in South Carolina, Georgia, and Florida. This tool type is also found in the Oconee River valley of the Piedmont (DePratter 1975a:7; O'Steen et al. 1986), an area with local sources of metachert and side-notched points classified as Big Sandy by O'Steen (1983). Edgefield scrapers have not been routinely reported from other Piedmont locations, so there remains a distinctively Coastal Plain bent to their distribution. Many examples have been documented in south Georgia. Seven examples from this area are illustrated by Chris Trowell (1976). They include three from 9CF17, and one each from 9CF1, 9DG8, 9TF8, 9TF33, and 9TF38 (Figure 6). The example from site 9TF8 was found 42 inches below surface in association with Bolen points. The remaining examples were surface finds.

Corner-Notched Tradition. By 9500 B.P. corner-notching replaced side-notching as the primary technological trait of Early Archaic bifaces. Limited stratigraphic data from

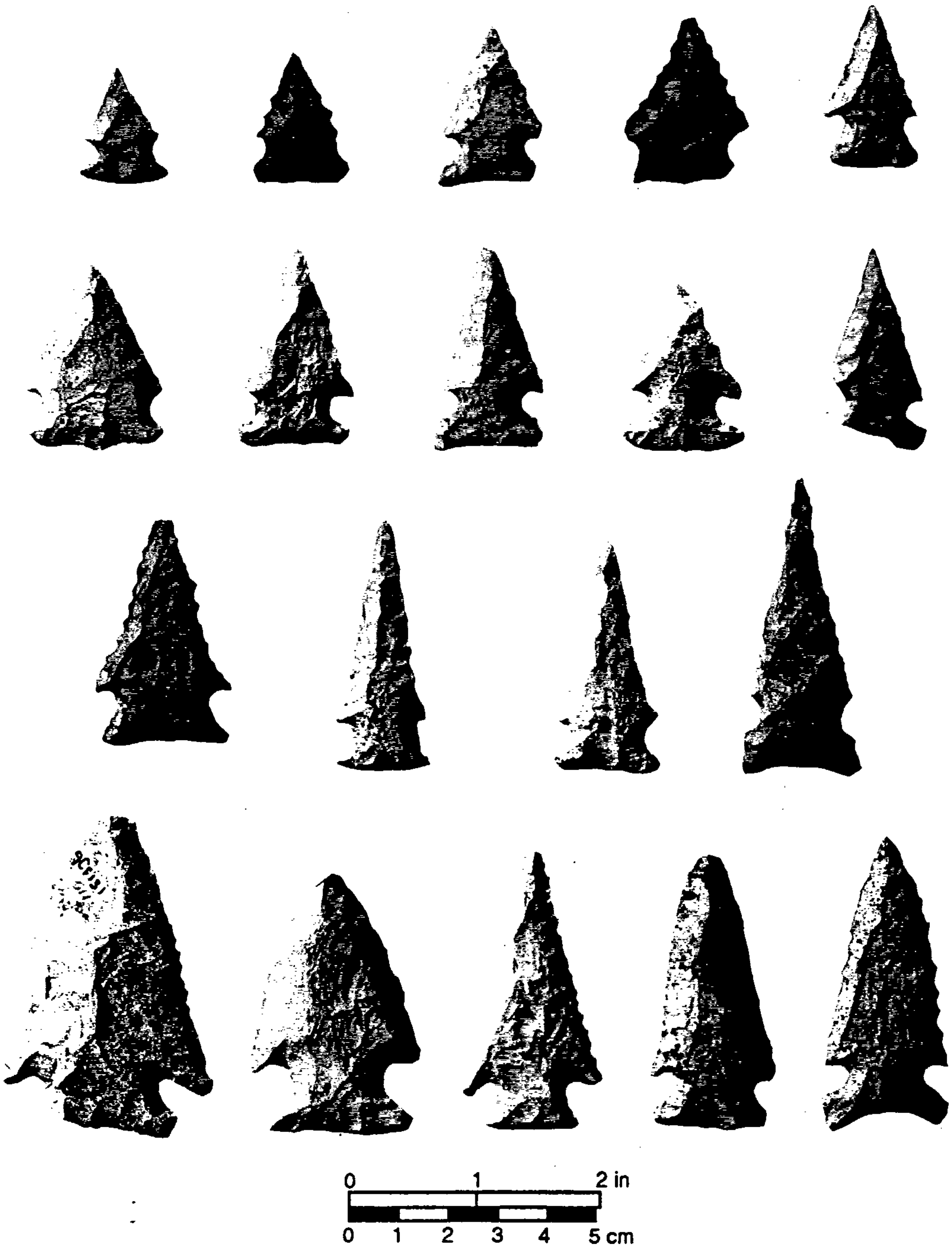


Figure 5. Examples of Early Archaic side-notched and corner-notched points from sites in the Feronia Locality of the Ocmulgee Big Bend in Coffee County (courtesy of Frankie Snow).

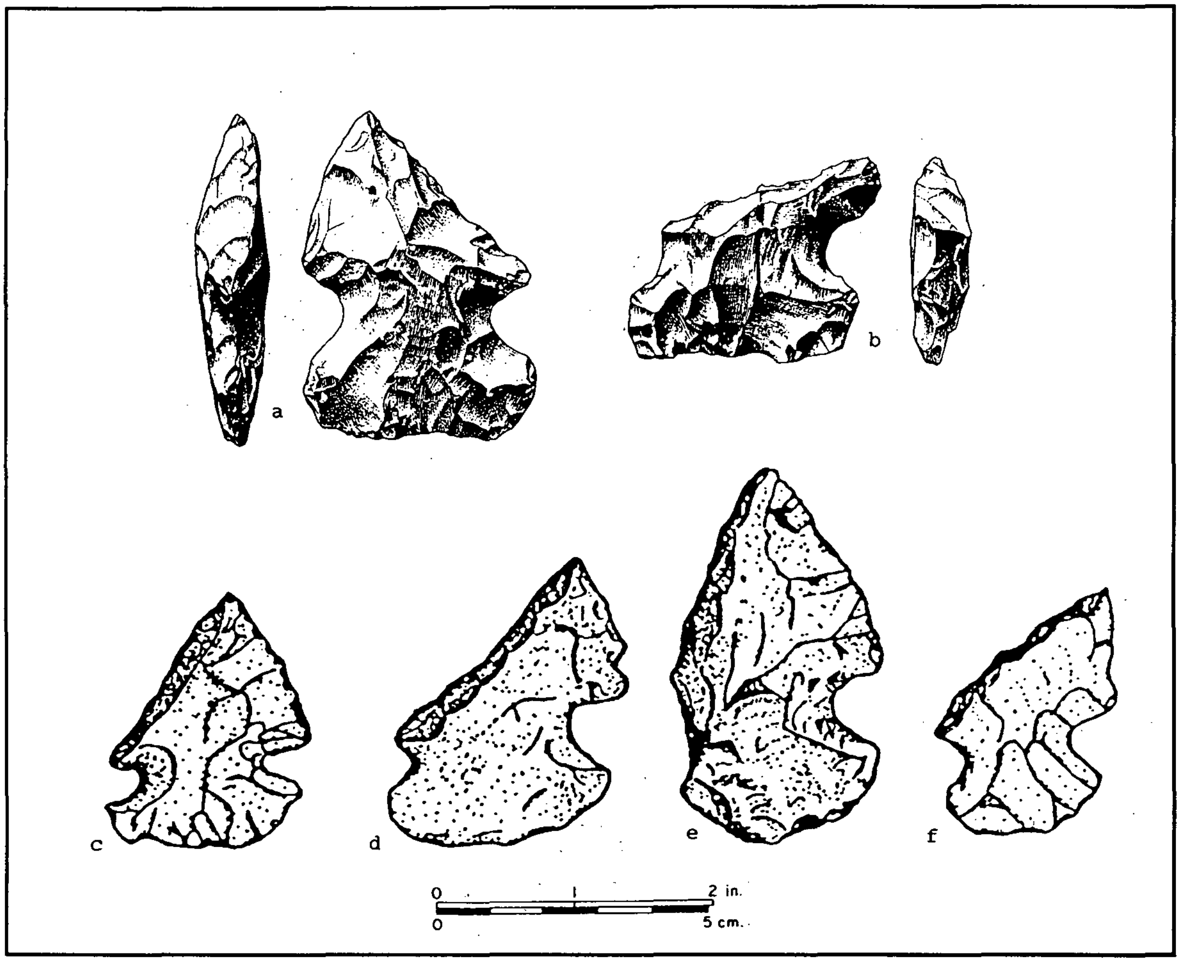


Figure 6. Examples of Edgefield scrapers (a, b. 38AK228 [drawn by Darby Erd]; c. 9TF38; d. 9TF33; e. 9CF1; f. 9TF8 [c-f. adapted from Trowell 1976]).

the Theriault site in Burke County, Georgia shows that side-notched Taylor points indeed predated corner-notched forms (Brockington 1971). Like the side-notching tradition, corner-notching is a pan-eastern technological trait. Referred to as the "Kirk Horizon" by Tuck (1974:76), the tradition is generally dated between 9500 and 9000 B.P. (Broyles 1971; Chapman 1977), but may have extended well into the ninth millennium in the Georgia-Carolina region.

The Carolina Piedmont sequence includes two varieties of corner-notched points. Following Coe's description (1964:67, 69), the Palmer Corner-Notched is a small variety with straight, heavily ground base and pronounced serrations along the blade margins (1964:67, 69). The second variety, defined as Kirk Corner-Notched (Coe 1964: 69-70), is larger than the Palmer, with occasional bevelling and serrations of the blade margin and straight to slightly rounded bases lacking grinding. The relative stratigraphic position of these types at the Hardaway site led Coe to the conclusion that the Palmer complex was an antecedent to Kirk.

Subsequent work at well-stratified sites in the Southeast has met difficulty in discriminating between the Palmer and Kirk types. Broyles (1971) was unable to discriminate between early and late corner-notched forms on the basis of basal grinding.

Corner-notched forms at the Bacon Farm and Icehouse Bottom sites in Tennessee exhibited a broad range of design and execution (Chapman 1977, 1978). To accommodate the variation, Chapman (1975) proposed the concept of "Kirk Corner-Notched Cluster," dividing it into "Upper Kirk" and "Lower Kirk." The Palmer type name is not utilized in his Lower Little Tennessee sequence (Chapman 1985:146-147), though the attribute of basal grinding does characterize points of the Lower Kirk subgroup.

At the Haw River sites in North Carolina several discrete Early Archaic occupation floors were excavated (Claggett and Cable 1982). The earliest component contained specimens that are consistent with the Palmer type description. Two overlaying components included larger examples of corner-notched hafted bifaces more similar, metrically, to the Kirk variety. Yet most of the larger specimens exhibited some degree of basal grinding, a trait thought to be exclusive to Palmer. These findings reaffirmed the trend toward increased size among the corner-notched varieties defined by Coe. However, they also show that other attributes, like basal grinding, did not evolve with size in a unified manner. Furthermore, the Haw River data suggest that increase in size of corner-notched varieties was a gradual, continuous process, making any division of the continuum completely arbitrary. With this, Cable argued that the typological distinction between Palmer and Kirk is no longer useful, and he called for the abandonment of the Kirk Corner-Notched designation (Cable 1982:381-382).

Research in the Piedmont of South Carolina has favored the use of Palmer to describe Early Archaic corner-notched hafted bifaces. For the most part, corner-notched points from this area are small and basally ground, making appropriate the use of Palmer over Kirk (Anderson and Schuldenrein 1985:289; Goodyear et al. 1979:183). Goodyear (et al. 1979:187) has pointed out some of the factors of tool use-life and maintenance that account for variability in corner-notched specimens, including the presence or absence of basal grinding. Raw material selection in the Piedmont also seems to have been an important determinant of the corner-notched form. The majority of specimens found in the Piedmont was made from locally available vein quartz. Because of its generally poor quality, quartz probably constrained the size and formal specificity of corner-notched points. Better materials such as Ridge and Valley chert or Coastal Plain chert enabled more precise control in shaping and maintaining tools as well as allowing for larger size. This is borne out in the contrast between quartz and Allendale chert Palmer points from the Early Archaic component at Rucker's Bottom (Anderson and Schuldenrein 1985:298).

The dearth of good stratigraphic contexts for corner-notched forms in Georgia precludes the recognition of temporal trends in size seen in the North Carolina sites. Where large and small corner-notched points occur together, such as at Rucker's Bottom, stratigraphic context is insufficient to determine their temporal relationship. Because raw material seems to account for some of the size differences, it is not unexpected that temporal trends in size, if characteristic of South Carolina assemblages, might reflect changes in raw material selection, or changes in the patterns of tool discard that are affected by availability of raw material. Given the North Carolina evidence, it is doubtful that size trends are entirely attributable to raw material selection, but it is a factor worth pursuing. Ten percent of the hafted bifaces from Hardaway given to the Palmer Corner-Notched type by Coe were manufactured from quartz (Coe 1964:69). Because none of the Kirk Corner-Notched specimens are quartz, it is probable that the modal tendencies of metric attributes between the two groups are broadened by the use of different raw materials.

In the Coastal Plain of South Carolina, corner-notched Early Archaic points represent an equal degree of typological ambiguity. In his analysis of materials from the Cal Smoak site, Anderson (et al. 1979:116) found that a clean separation of Palmer and Kirk forms could not be achieved under a strict application of the Coe typology. Anderson resorts to the criterion of basal grinding to sort the small sample (n = 5), but this property does not appear to covary with size. A larger sample of corner-notched hafted bifaces for Lewis-East on the SRS completely lack basal grinding, and exhibit a large measure of size variation. Hanson (1985; Hanson and Sassaman 1984) attributes much of the size variation to tool attrition and maintenance. Following Chapman (1975), Hanson employs the concept of Kirk corner-notched cluster to classify the Lewis specimens. The Lewis assemblage, like others in the province that consist primarily of local cherts, shows that raw material was probably not a constraint on the initial size of corner-notched points.

The Bolen subtypes for Florida, as proposed by Bullen (1975), encompass variation that we can subsume under the Kirk Corner Notched Cluster. In particular, Bullen's subtypes 3 and 4, varieties with corner-notches, undoubtedly include specimens postdating the side-notched horizon of ca. 10,000-9500 B.P. The Florida sequence in general views a split between the Bolen tradition of what is considerd late Paleoindian, and subsequent early Archaic manifestations which include types such as Kirk Stemmed/Serrated, Arrendondo, and Wacissa, but not the Kirk Corner-Notched (Milanich 1994:64). This confuses matters, to say the least, but we have to accept the fact that Florida types have not been defined from many excavated contexts.

Other Early Archaic Traditions. In some parts of the eastern United States, the corner-notched tradition is replaced by a bifurcate point tradition at about 9000 B.P. MacCorkle, St. Albans, LeCroy, and other varieties of bifurcate points are small bifaces with deep basal concavities as well as side- or corner-notching (Broyles 1971; Chapman 1975). A chronological sequence of the Bifurcate Point Tradition has been constructed by Chapman, who places phases of the tradition at 8900-7800 B.P. (Chapman 1985:146). Bifurcate points are rarely found in Early Archaic sites in the Georgia Coastal Plain.

The Arrendondo point of Florida is a thick biface with excurvate blade margins and and a deeply concave, nearly bifurcated haft element (Bullen 1975:39). Many specimens of this type are patinated and appear to be related to the bifurcate or Stanly traditions of the north (Albert C. Goodyear, personal communication, 1995). Reports of Arrendondo points in the Coastal Plain of Georgia are not uncommon, but we have no good data from this area to secure its temporal placement. These points may very well postdate the Early Archaic period. A similar form referred to as Hamilton (Bullen 1975:38) is routinely considered an Early Archaic type (Milanich 1994:64 Milanich and Fairbanks 1980:51). It seems likely that Hamilton points date to the later Archaic, perhaps even belonging to the Broadpoint Horizon of the Late Archaic period, or at least the late Middle Archaic period.

Middle Archaic

The Middle Archaic period in the Carolina Piedmont sequence, and generally throughout the Southeast, is delimited from the Early Archaic period by the appearance of stemmed hafted bifaces. Stemming is seen as an indigenous outgrowth of the Carolina Piedmont sequence (Coe 1964:121; Oliver 1985:210); elsewhere stemmed bifaces represent a dramatic break from the Early Archaic notched-point technologies. Either way, the Carolina Piedmont Tradition continues to have manifestations in certain portions of Georgia, but its applicability to the area begins to dwindle for Middle Archaic assemblages as other regional developments exert influence.

Kirk Stemmed/Kirk Serrated. Defined by Coe (1964:70) from excavations at the Hardaway site, the Kirk Stemmed and Kirk Serrated types are elongated blades with broad stems. Both types are described as having serrations on the blade, so the type names are somewhat confusing. It is clear that Coe, and more recently Oliver (1981, 1985), regard the Kirk Serrated as an evolved form of the Kirk Stemmed. The broad notches that formed the stem of the Kirk Stemmed variety gave way to a squared stem in the Kirk Serrated form. Coe's stratigraphic data from Hardaway supported this distinction, but work elsewhere does not (Broyles 1971:67; Chapman 1985).

Long and narrow blades averaging 9-10 mm in thickness characterize the sample of Kirk Stemmed/Serrated points in the Hardaway assemblage (Coe 1964:70). The Kirk Stemmed variety had an average length of 100 mm (range of 70-150 mm) and average width of 35 mm (range of 30-50 mm), while the Serrated type averaged 70 mm in length (range of 45-120 mm) and 30 mm in width (range of 25-35 mm). The differences in size may be partly explained by resharpening. Although the illustrations of both types in Coe's report (1964:71-72) reflect a uniformly advanced degree of resharpening for both types, the Kirk Serrated subsample includes more instances of tip resharpening, perhaps a consequence of transverse snaps to blades. Size data on Kirk Stemmed and Serrated points elsewhere are limited, but what little there is shows values more in line with the latter type (e.g., Cable 1982a:436), or significantly smaller (e.g., Broyles 1971:67; Chapman 1975:120). Size data on Kirk Stemmed or Serrated points from Georgia and South Carolina are not available.

Coe (1964:70) estimated the date range of the Kirk Serrated type at 8000-7000 B.P. From his work in the Lower Little Tennessee River valley in eastern Tennessee, Chapman (1976, 1985) places the Kirk Stemmed phase at 7950-7750 B.P. In this area, Early Archaic corner-notched forms assigned to the Kirk Cluster by Chapman (1975) are replaced by bifurcate point forms (forms not represented in the Carolina Piedmont sequence), before stemmed forms fitting the Kirk Stemmed description appear at about 8000 B.P. This clear separation of corner-notched, bifurcate, and stemmed forms was not duplicated by work at the Haw River sites (Cable 1982a), although examples of each type were well represented. Nevertheless, there is no reason to doubt the precedent of notching over stemming in the Carolinas, and of all the typological changes described by Coe, this appears to be the most consistently recognized at sites across the region. The temporal distinctiveness of the various forms seems to depend a great deal on the local impact of bifurcate traditions. Bifurcate points are rare in Coastal Plain Georgia, the southern half of South Carolina, in portions of North Carolina (Anderson 1991a; Steen 1986), having no apparent impact on the continuity between notched and stemmed biface traditions. Without the interruption of bifurcate forms, which may signify a distinctive adaptation to interior deciduous forests (Chapman 1975), chronological overlap between notched and stemmed forms is not unexpected. Data to support this supposition have yet to be developed for the Georgia-Carolina area.

The regional distribution of bifaces assigned to the Kirk Stemmed Cluster by Justice (1987:82-85) is vast, encompassing virtually all area east of the Mississippi River and south of northern New England. Among the types included in Justice's cluster are ones only remotely similar to the Kirk Stemmed/Serrated. In Georgia and South Carolina, Kirk Stemmed/Serrated points are not densely distributed outside the lower Piedmont and Fall Zone areas. Major exceptions are sites in the Ocmulgee Big Bend, where Frankie Snow (personal communication, 1995) has collected some appreciably large assemblages (Figure 7). Examples of Kirk Stemmed points are also known from the western Coastal Plain of South Carolina, near the Allendale chert quarries, although some recorded as such may be examples of later Middle Archaic points provisionally defined as MALA (Sassaman 1985). A large collection of bifaces from Aiken County, South Carolina recently recorded by Goodyear and Charles (personal communication, 1995) includes many *bona fide* Kirk Stemmed points. These finds notwithstanding, the Kirk Stemmed/Serrated types clearly have more limited distribution than the Kirk or Palmer Corner-Notched types of the Early Archaic period, but they are more widely distributed than the bifurcates and Stanly Stemmed. The Kirk Serrated type is widely recognized in north Florida (Milanich 1994).

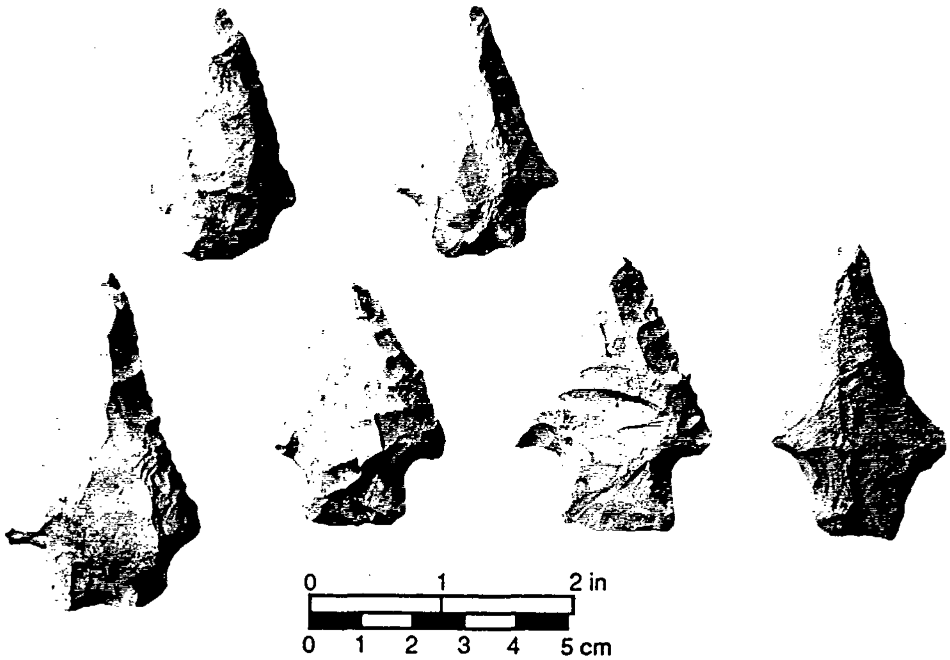


Figure 7. Examples of Kirk Stemmed points from sites in the Feronia Locality of the Ocmulgee Big Bend in Coffee County (courtesy of Frankie Snow).

Stanly Stemmed. Defined as "a broad triangular blade with a small squared stem and shallow notched base, "the Stanly Stemmed point was the earliest type found at the Doerschuk site (Coe 1964:35). Continuity with the preceding Kirk Stemmed/Serrated technology is evident in the Stanly Stemmed (Coe 1964:122; Oliver 1985:202). The slight indentation of Stanly Stemmed bases is reminiscent of bifurcate point traditions, although true bifurcate points, as defined for the Ridge and Valley province (Broyles 1971; Chapman 1975), do not form an appreciable component of the Carolina Piedmont type sites. Along with changes in stem and blade design over Kirk technology, the Stanly assemblages at both Doerschuk and Hardaway included semilunar or pick-type atlatl weights (Coe 1964:52-53). These remain the earliest examples of atlatl weights in the region.

The length of Stanly Stemmed points from Doerschuk ranges from 40-80 mm, with an average of 55 mm. Width ranges from 25-45 mm, averaging 35 mm (Coe 1964:35). The average length of Stanly points from the Haw River sites is nearly 9 mm less than the Doerschuk average, but the widths do not diverge as much. Examples from Icehouse Bottom in Tennessee (Chapman 1977) are likewise shorter than those from the type site. As in the Kirk Stemmed/Serrated examples, degree of resharpening may partially explain the metric differences. Examples illustrated by Coe (1964:36) include various levels of blade and tip attrition; but the shoulders are unaffected, presumably because they were bound in hafts (Blanton and Sassaman 1989:65). It is noteworthy that at least one of Coe's specimens (Coe 1964:Figure 31g) has an impact flute, evidence for a projectile function.

The Stanly occupation at Doerschuk was estimated by Coe (1964:54) to date to 7000 B.P. Again, a lack of radiocarbon dates from Stanly contexts in the Carolinas precludes good chronological resolution. Dates from Russell Cave in Alabama are six to eight centuries older (Griffin 1974). Likewise, Chapman's (1985) range for Stanly

Stemmed points in the Lower Little Tennessee valley is 7750-7450 B.P. This and his Kirk Stemmed date range may broadly apply to Georgia and South Carolina, as the short-lived nature of both of these phases may help to explain the relatively small number of finds in this area.

According to Justice (1987:99), the regional distribution of Stanly points is somewhat reduced over the Kirk Stemmed Cluster distribution, although it extends into New England with a local variant known as the Neville Stemmed (Dincauze 1976:26). Stanlys in South Carolina do not extend much farther south of the Pee Dee and Wateree River valleys. Minor occurrences of Stanly points are reported from Fall Zone locales across the state (Sassaman and Anderson 1994), but they are virtually nonexistent in the western Piedmont, the Coastal Plain of the Savannah River valley, the Edisto Basin, and on the coast (Anderson 1991a; Blanton and Sassaman 1989). Very few are reported from sites in Coastal Plain Georgia.

Morrow Mountain Stemmed. Morrow Mountain Stemmed points are among the most common diagnostic Middle Archaic artifacts in the Georgia-Carolina region. The type was divided into two varieties by Coe (1964:37, 43), who defined them in his report on the Doerschuk site. The Morrow Mountain I Stemmed is a small triangular blade with a short pointed stem. The Morrow Mountain II Stemmed is a long narrow blade with a long tapered stem. Coe (1964:43) argued that the Morrow Mountain II survived to a later date than the Morrow Mountain I. He also noted that the later variety (II) was concentrated in the Mid-Atlantic coastal zone. Oliver (1981, 1985) perpetuates the temporal order of these types, but corroborating data from stratified sites in the Carolinas are not available (e.g., Cable [1982a:517] attributes differences between varieties I and II to life-history stages). Nevertheless, when viewed in the context of accumulating evidence on the long duration of the Morrow Mountain phase, combined with the peculiarities of Morrow Mountain points made from Coastal Plain chert (see below), Coe's prediction may indeed prove accurate.

The Morrow Mountain point, and its successor, the Guilford point (see below), are a departure from the Carolina Piedmont sequence of notching and stemming. Coe (1964:122-123) cited possible western origins for these types, noting that they appeared without local precedent. He favored a eastward route of diffusion around the southern end of the Appalachian Mountains, into the Piedmont (Coe 1964:123). Oliver (1985) similarly characterizes Morrow Mountain and Guilford as intrusive traditions, but the implications of this for our understanding of local cultural developments have not been explored. One of us recently proposed that Morrow Mountain populations of the Carolina Piedmont resulted from fissioning of Midsouth groups who began to experience constraints on mobility and high levels of social strife at about 7500 B.P. (Sassaman 1995, n.d.). The argument remains speculative, but it is interesting to note that such conditions implicate a west-to-east time-transgressive process that fits Coe's original formulation, including his prediction about the temporal and coastal position of the Morrow Mountain II type.

Size variation of Morrow Mountain points is minor compared to Kirk Stemmed/Serrated and Stanly points. Coe's sample of variety I points range 30-70 mm in length and 22-45 mm in width, with respective averages of 45 mm and 30 mm. The longer, narrower variety II points range 30-80 mm in length and 18-30 mm in width, averaging 60 mm and 20 mm respectively. All of the Doerschuk specimens were made from metavolcanic and igneous raw materials. Other reported assemblages made from metavolcanics and quartz have average lengths very similar to Coe's variety I, but average widths intermediate between Coe's I and II averages (e.g., Cable 1982a: 489, 518, 535; Goodyear et al. 1979:203; Gunn and Wilson 1993:132; House and Wogaman 1978:145; Sassaman 1993b:60; Wetmore and Goodyear 1986:51). There is some suggestion that Morrow Mountain points made on Allendale chert from the lower Savannah River valley most often resemble Coe's variety II in having elongated and narrow blades and stems. Peculiar to many such chert specimens are hanging shoulders reminiscent of Eva points from the Midsouth (Sassaman and Anderson 1990:Plate 3c,d), and a high incidence of thermal alteration. Unfortunately, size data on Allendale specimens are not available, except for blade length and mid-blade width measurements provided by Blanton (1983:91-92). Blanton's study documented patterns of raw material utilization for the Morrow Mountain phase in South Carolina. He showed that blade maintenance was not as regular among Morrow Mountain points as among varieties of the Kirk and Stanly types, regardless of raw material selection. Localized raw material selection was the rule, and this appears to characterize Morrow Mountain technology throughout the Southeast (Blanton 1983; Chapman 1977; Gardner 1974).

Timing of the Morrow Mountain phase in Georgia-Carolina remains a frustrating issue. Coe (1964:123) did not expect Morrow Mountain to predate 6500 B.P., but Chapman's (1985) work in the Lower Little Tennessee River valley provides a secure phase range of 7450-6950 B.P. Morrow Mountain dates from sites in the Duck River valley of central Tennessee cluster at about 7500-6500 B.P. (Hall et al. 1985:63). Other dates from Stanfield-Worley Bluff Shelter (DeJarnette et al. 1962) and Russell Cave (Griffin 1974), both in Alabama, extend the range well into the first half of the seventh millennium B.P. Recent work at the Rae's Creek site in Augusta, Georgia provides a Morrow Mountain range of 7400-6660 B.P. from three radiocarbon dates (Crook 1990:124). South Carolina dates have never matched the antiquity of date ranges elsewhere. Instead, dates from the sixth and even fifth millennia B.P. recur, and are rightfully met with skepticism (e.g., Anderson 1979:90; Wetmore and Goodyear 1986:64-65). However, evidence continues to mount for a continuation of the Morrow Mountain phase into the early seventh millennium and perhaps the late sixth millennium. A date of 6390±200 B.P. was obtained recently on charcoal from a pit feature indirectly associated with Morrow Mountain points in Henry County, Georgia (Webb 1994:168). At Furman Shoals in Baldwin County, Georgia a radiocarbon date of 5730±100 B.P. was obtained on charcoal from flotation samples of strata with Morrow Mountain points (Espenshade et al. 1994:107). The 5730±70 B.P. date on nutshell from a burial pit from Mims Point might also pertain to Morrow Mountain occupation in the middle Savannah River valley, although direct association with diagnostic artifacts was lacking (Sassaman 1993b:30).

Justice (1987:107) documents a regional distribution for Morrow Mountain points that encompasses the entire range for Stanlys plus the Gulf Coastal Plain of eastern Alabama, Georgia, and northwest Florida. A variety of type names are invoked at local levels. In the Midsouth, Morrow Mountain apparently emerged from the Eva tradition (Lewis and Kneberg 1959:164), which likewise beget the Sykes (Lewis and Lewis 1961:40-41) and White Springs (DeJarnette et al. 1962:70) types. All of these varieties apparently coexisted in the middle Tennessee River valley during the eighth millennium B.P., but during the next millennium, the Morrow Mountain tradition disappeared in the Midsouth, as the Sykes-White Springs tradition persisted, giving way to the conspicuous Benton phenomenon of the sixth millennium B.P. (Kneberg 1956:25; Futato 1983). The relevance of all of this to Georgia-Carolina archaeology lies not so much in typology, but rather culture process. If the Morrow Mountain tradition of the Georgia-Carolina area is as long-lived as recent radiocarbon dates suggest, then this stands in stark contrast to the dynamic situation of the Midsouth. The reason for such divergence may lie in historical connections between the two regions, that is, as we have already alluded to, Morrow Mountain populations of Georgia-Carolina may represent something of a periphery to Midsouth populations. We further suspect that subsequent developments in Georgia-Carolina can be traced to continued processes of fissioning and emigration in the Midsouth, namely the influx of Benton phase people into the middle Savannah River valley at about 5500-5000 B.P. (Sassaman 1988, 1991a, 1995, n.d.). Although explanations for culture change based on population migrations became anathematized in the scientific revolution of the so-called New Archaeology, we suggest it is feasible to account for these proposed population movements in processual terms when one takes into consideration the sorts of social and economic pressures stemming from river-focused settlement in the Midsouth (Sassaman 1995, n.d.).

Little of this holds relevance for the archaeology of Coastal Plain Georgia, for the Middle Archaic period is virtually invisible in this area. Very few Morrow Mountain points are found south of the middle Savannah River valley. None are known from sites in the Ocmulgee Big Bend. Farther south, near the Florida line, tapered stemmed points begin to appear, but these are generally attributed to the Newnan and Hillsborough types of north-central Florida, which appear to date no earlier than 6000 B.P., and are thus considered in the section below on late Middle Archaic types.

We close this section by reiterating that very few Middle Archaic bifaces dating from 8000-6000 B.P. have been recovered from sites in the Georgia Coastal Plain, or on the coast. As we alluded to in Chapter 2, dry intervals during the mid-Holocene may have limited the availability of surface water in south Georgia and hence curtailed Middle Archaic site use (e.g., Kirkland 1994). However, we remain dubious about the lithic typology and chronology for this period, and remain open to the possibility that substantial Middle Archaic populations persisted through the early mid-Holocene with largely organic technology that has not been routinely preserved. Records of buried sites may eventually be found along the shores of water sinks that rose in level, as they have in Florida, and perhaps too along the now inundated coastline. Alternatively, one of us has argued that limited use of Costal Plain locations during Morrow Mountain times was a by-product of historical processes that encouraged groups to avoid conditions that constrained mobility (Sassaman 1995, n.d.). Whatever the case may be, after 6000 B.P. Middle Archaic prehistory takes a dramatic turn. Occupations of the Georgia Coastal Plain continue to be inconspicuous, but we begin to see influences from large popualtions to the south and west in a variety of biface types.

Late Middle Archaic

As alluded to above, biface typology for the last millennium of the Middle Archaic peiod (i.e., 6000-5000 B.P.) is highly localized and divergent. The Midsouth was home to rapid change and local variation and hence a plethora of Middle Archaic types. Intrusive elements of the Carolina Piedmont sequence continue with a poorly-defined lanceolate type called Guilford. A variety of ill-defined types abound in the Florida sequence, and the situation in Coastal Plain Georgia remains a mystery. In this section we review the various regional types, beginning with those of the Midsouth.

The Benton Stemmed type was named after Benton County, Tennessee, where it was first recognized by Kneberg (1956). She described the type as a trianguloid blade with excurvate edges and an incurvate base. Blades cross sections were flat and thin, and stems straight, but broad, often with steep retouch along stem margins. The broad, short stems left weak shoulders of most specimens. In the report of the Eva site, Benton County, Tennessee, Lewis and Lewis (1961:34) indicated that beveled flaking of stem margins is the most distinctive feature of the Benton Stemmed. From the examples of Bentons depicted in Plate 6 of the Eva report, it is evident that a wide range of blade and stem variation was allowed in their classification. Several of these specimens have elongated narrow blades; others are short, but all have beveled stem margins. Other specimens similar to the short Bentons, but lacking beveled stems, are classified as Sykes (Lewis and Lewis 1961:40; Plate 12). Named for the former owner of Eva, the Sykes type is characterized by Lewis and Lewis as a broad, short stemmed point with a broad, short blade. All but one of 18 Bentons reported from Eva came from Stratum I (subplowzone, nonshell midden up to 2.5' thick overlying mussel shell midden); half of the Sykes specimens (n=14) were in Stratum I, while the rest were evenly distributed among deeper strata. A variety of other stemmed points (now generally regarded as Late Archaic in age), including Ledbetter (Kneberg 1956:26), were common to Stratum I.

Cambron and Hulse (1964) provide further typological data on Benton Stemmed and related types. They illustrate an example of Benton Stemmed from the Hulse 17 site in Limestone County, Alabama (1964:11). This example depicts a short, relatively broad stem with asymmetrical, beveled stem margins. Cambron and Hulse also define a variant of the Benton Stemmed, which they term "Benton Broad Stemmed" (1964:12). They indicate that it occurs with less frequency than the parent type, but should be be coeval with Benton Stemmed. Further, they summarize information on the White Springs type, a short, broad, stemmed point lacking beveled stem margins (1964:116). White Springs specimens were documented at Stanfield-Worley Rockshelter in northwest Alabama in the lower levels of Zone A. A typological relationship to Benton Stemmed is noted (1964:116), although Cambron and Hulse argue that the latter postdated White Springs. Other possible variants of Benton Stemmed include the Buzzard Roost Creek type (Cambron 1958; Cambron and Hulse 1964:16) and the Elk River type (Cambron and Hulse 1964:82).

A preliminary review of the Southeastern literature shows that the chief distribution of Benton Stemmed and related types is in the Tennessee River Valley and major tributaries of western Tennessee, northeast Mississippi, and northwest Alabama (DeJarnette et al. 1962; Futato 1983; Lewis and Lewis 1961; Thorne et al. 1981; Webb and DeJarnette 1942), and in the upper Tombigbee River Valley, northeast Mississippi (Bense 1983; 1987). Benton and related types are also recognized outside this immediate area (e.g. Amick 1987; Hofman 1985), including western Georgia. Regardless of where these type designations are used, a great deal of typological (and chronological) ambiguity is evident.

One pervasive problem in archaeology of the Benton "heartland" is the chronological relationships of Sykes, White Springs, and Benton. Lewis and Lewis argued that Sykes predated Benton because only the former extended into the deep strata of the Eva site. Based on sites in the Yellow Creek Drainage, Mississippi, Broyles argues similarly, but notes the ambiguity of the Eva stratigraphy (Thorne et al. 1981:280). From sites in the Duck River Valley, Tennessee, Amick (1987:12) reports "Sykes/White Springs" C-14 dates of 6240±500 B.P. and 6375±215 B.P., and "Benton/Ledbetter" dates of 4130±130 and 4190±260 B.P. Chapman (1985:146) suggests a date range of 6500-5000 B.P. for Sykes in the Little Lower Tennessee Valley, but qualifies this estimate with a question mark.

The temporal precedence of Sykes and White Springs over Benton may be warranted, but there is evidence to the contrary. Many recent studies have noted contemporaneity of the types or explicitly acknowledged chronological overlap. Futato (1983), for instance, employed a "cluster" classification to hafted bifaces from the Bear Creek drainage, northwest Alabama, separating Sykes/White Springs and Benton into two clusters. Futato indicates that the Sykes/White Springs cluster may span a range as large as 2500 years, from 6500-4000 B.P., with the Sykes form occupying the latter end of this continuum. His Benton cluster includes the Buzzard Roost type and three provisional Benton divisions (Short Stemmed, Extended Stemmed, and Barbed). For this cluster, a C-14 date range of ca. 5700-5200 B.P. is reported, an interval that is completely encompassed by the Sykes/White Springs range. Sites in the Upper Tombigbee Valley, northeast Mississippi, yielded similarly old Benton dates (Bense 1983, 1987). At the Poplar site, Sykes/White Springs and Benton artifact distributions were similar, leading

Bense to conclude that "these markers (are) to be considered as a single cultural manifestation" for the Poplar site (Bense 1987:53). However, at the Walnut site, Sykes/White Springs dates were on average 500 years older than Benton dates (Bense 1987:68). Combining these data, Bense's proposed chronology for the Upper Tombigbee recognizes a Sykes/White Springs culture (6100 B.P.) predating Benton, then continuing with Benton (6000-5840 B.P.), followed by an exclusive Benton interval (5700-5300 B.P.).

Currently, it is apparent that the morphological variation inherent to Benton and related types prohibits regional conformity on the basis of one or a few attributes. Beveled stem margins are no longer considered a necessary or sufficient trait of Bentons. Of the five Benton variants defined from the Ilex site, Itawamba County, Mississippi, only one class (Variant C) is described as having beveled bases (see also Broyles in Thorne et al. 1981:234-235). Morphological diversity among these types is especially great in the haft element. Among the Ilex sample (n = 58) for instance, haft elements were formed by corner-removals or corner-notching and stem margins are straight to incurvate, and sometimes abraded or ground. Bases are flat, slightly excurvate or incurvate, and occasionally ground or abraded. Strongly incurvate bases have basal tangs. Similarly, some shoulders are weakly barbed, otherwise horizontal or tapered. Stem length is usually short, but longer examples are noted, while stem width generally remains uniform.

Within the Benton type, blade morphology is apparently less variable than haft elements. Of course, blade length varies considerably, but overall Benton represents a lanceolate blade tradition. In cross-section, blades can be biconvex, plano-convex or flattened. This variation probably relates to lateral resharpening of blade margins, with the thickest, most narrow blades reflecting late stages of edge retouch. Also, projectile functions for Bentons and related types are also evident from the incidence of impact fractures (e.g. Johnson 1981:59). Thick, narrow lanceolate blades, through either initial design or staged resharpening, make excellent projectiles when used with atlatls. In fact, Benton and related stemmed lanceolate forms are often found in association with atlatl parts (e.g. Lewis and Lewis 1961; Webb and DeJarnette 1942). From this evidence one could argue that the Benton tradition of stemmed lanceolate bifaces is a projectile tradition. It follows that much of the diversity seen among Benton and related bifaces resulted from impact repair. Importantly, as much, if not more damage from impact is expected in the haft element as in the blade (Flenniken and Raymond 1986). Thus, projectile function can easily account for much of the diversity found among forms referred to as Benton, White Springs, Sykes and the like.

The various late Middle Archaic point types discussed above have only periperal expressions in western Georgia, with especially limited occurrences in the western Coastal Plain. Nonetheless, one of us (Sassaman) has argued that these Midsouth traditions were the basis for cultural developments in the middle Savannah River valley. We review a possible related, local manifestation of the Benton horizon in this area after reviewing briefly the late Middle Archaic types of the Carolina Piedmont Tradition.

The Guilford Lanceolate remains among the most poorly known lithic traditions of the Carolinas. It was defined by Coe (1952;304, 1964:43) at Doerschuk as an intrusive element to the Carolina Piedmont sequence, but with no apparent connection to the Morrow Mountain tradition (Coe 1964:54). Consisting of a long, slender lanceolate blade with thick, lenticular cross-section and straight, rounded, or concave bases, the Guilford bears some resemblance to Nebo Hill points from Missouri, causing Coe to postulate a western origin for Guilford (Coe 1964:123). Unlike Morrow Mountain points, Guilfords have limited distribution in the East, being chiefly distributed in the Piedmont of the Carolinas.

Coe's sample of Guilford points from Doerschuk range 50-120 mm in length (average = 90 mm), and 20-35 mm in width (average = 30 mm). The well-made, classic form of Guilfords in Coe's sample is not widely duplicated across the Carolina Piedmont, and there is a great deal of ambiguity in assigning generalized lanceolate forms to the Guilford type. This is especially troublesome for quartz lanceolate points from the Georgia-Carolina Piedmont. Many of these are simple, often poorly shaped ovate bifaces with either biconvex or planoconvex cross-sections (Blanton and Sassaman 1989:67; Gunn and Wilson 1993:132-134). Because they vary in size and shape, certain lanceolate points from the South Carolina Piedmont cannot easily be discriminated from Morrow Mountain points. If fact, the morphological convergence between laterally resharpened Morrow Mountains and poorly-made lanceolate points, a problem exacerbated by the difficulty in recognizing flake scars on quartz, renders the sorting of these types extremely subjective (Anderson 1988:152-154; Anderson and Schuldenrein 1985:313; Goodyear et al. 1979:204). The possibility that the two types converged historically is supported by the discovery of a cache of 15 whole bifaces at 38LX5 (Anderson 1979:89-95). Several of the bifaces are lanceolate forms resembling rounded-base Guilfords, whereas the remaining points fit Morrow Mountain criteria. Although Coe viewed Morrow Mountain and Guilford as separate, historically unrelated cultural traditions, evidence from 38LX5 and generally throughout South Carolina suggests otherwise. At a minimum, Morrow Mountain points and Guilford Lanceolates were probably part of the same Piedmont toolkit, at least during the latter end of the Morrow Mountain phase (i.e. ca. 6000 B.P.) (Goodyear et al. 1979:204).

This brings to the fore questions about the antiquity and duration of Guilford Lanceolate technology. Coe had little evidence to bracket the Guilford phase from his North Carolina excavations. A Halifax stratum overlying a Guilford stratum at the Gaston site was dated to 3485±350 B.C. (Coe 1964:99), suggesting to Coe that the Guilford occupation occurred no later than 6000 B.P. (Coe 1964:118). This supposition is weakened, however, by the fact that the Halifax date was obtained from the combined charcoal of three hearths (Coe 1964:99), and that the two-sigma range of this date amounts to 1400 years. Unfortunately, better evidence for the timing of Guilford has not been forthcoming. Lacking datable contexts for the minor amounts of Guilford material observed in the Lower Little Tennessee valley, Chapman (1985:146) speculates that the Guilford phase spanned an interval of 7000-6000 B.P. Workers in South Carolina have generally assumed that the Guilford phase spanned the sixth millennium B.P. (Anderson and Joseph 1988; Sassaman et al. 1990:10). The first-ever date for a Guilford assemblage was recently obtained by Joel Gunn from excavations at the Copperhead Hollow site in Chesterfield County, South Carolina. Calcined bone indirectly associated with Guilford points was dated to 5350±60 B.P. (Gunn and Wilson 1993:128). This lone date obviously is scant evidence for extrapolating a date range for Guilford, but suffice it to say that the date is consistent with the ideas that Morrow Mountain persisted for a long time in South Carolina and that Guilford is a late expression of the same tradition.

There is a decidedly Piedmont orientation to Guilford Points in South Carolina (Blanton and Sassaman 1989:58), with only the upper Piedmont of the Savannah River valley lacking appreciable numbers of Guilford points (e.g., Anderson 1988:152; Tippitt and Marquardt 1984). Coastal Plain occurrences of Guilfords are not uncommon north of the Santee River valley, whereas south of the Santee River are found varieties of lanceolate and stemmed points assigned to the Brier Creek Lanceolate and MALA varieties (see below).

Michie (1968b) defined the Brier Creek Lanceolate point as a thick lanceolate biface with weak shoulders, parallel to slightly contracting stem margins, and an indented base. Forms fitting this description in South Carolina are clustered in the Coastal Plain south of the Santee River valley, and include finds from the extreme eastern Coastal Plain of Georgia. They were routinely made from Coastal Plain chert, which was usually thermally-altered. Roughly similar forms are seen in some of the Guilford specimens illustrated by Coe (1964:Figure 35a,e,g), although these lack the shoulders of Brier Creek Lanceolates. The resemblance between Guilford and Brier Creek lanceolates causes many South Carolina researchers to regard these as temporal equivalents (e.g. Blanton and Sassaman 1989; Wetmore and Goodyear 1986:20). Data to support or refute this supposition are not available. Irrespective of its ultimate historical relationship to Guilford, the Brier Creek Lanceolate is indeed part of the Coastal Plain technological tradition that is provisionally referred to as MALA.

The acronym "MALA" was devised to refer provisionally to stemmed and notched lanceolate points uncovered between Middle Archaic and Late Archaic strata at the Pen Point site in Barnwell County, South Carolina (Sassaman 1985). At this site, an assemblage of over 20 bifaces was recovered in the context of a lithic production feature that included 200 biface blanks and preform fragments and about 40,000 flakes. Geoarchaeological reconstructions (Brooks and Sassaman 1990) and other lines of evidence suggested the assemblage formed over a very short period of time, presumably a single-episode event, so the variation among hafted bifaces in assemblage could not be explained on temporal grounds alone. Because of the variation observed, the announcement of this find to the professional community specifically was *not* intended to serve as a formal type description for MALA points (Sassaman 1985:1). Nevertheless, investigators have since referred to MALA as a "type," and used the term to label any stemmed and/or notched lanceolate forms not fitting other type descriptions. Whereas the discovery of MALA points in good stratigraphic context at Pen Point has enhanced our knowledge about late Middle Archaic manifestations in South Carolina, it has also spawned some reckless applications, leading to widespread confusion about what MALA is. For this reason, we recapitulate the basic findings of the initial Pen Point report.

Of the 20 hafted bifaces and biface fragments illustrated in the report (Sassaman 1985:11), 15 are subdivided into three groups based on shoulder and haft element differences. Seven specimens assigned to Group 1 have flat bases and asymmetrical stem/shoulder morphology. One side of the haft element was formed by corner notching, the other by corner removal. The shoulder formed on the notched side is lower than the opposite shoulder. Group 2 includes five stemmed specimens with slightly indented bases and straight to slightly expanding stem margins. Group 3 consists of three bifaces with haft damage inflicted from pressure placed laterally at the basal margin. The nature of the damage implicates side notches.

Technofunctional reasons for variation among the Pen Point MALA bifaces were considered in the original article (Sassaman 1985:12-13), including simply interpersonal haft differences. Overall, the collective sample exhibits limited morphological variation. Most consistent is the ratio of haft element width to haft element length, which is roughly 2:1 (average ratio of 18.8:9.2 mm). With few exceptions the bifaces have thick, biconvex cross sections (average maximum thickness of 8.8 mm). Maximum length varies from 53.2-75.8 mm (average = 62.5) and maximum width varies from 19.9-29.0 (average = 25.6). All but three of the 20 specimens are made from Coastal Plain chert, all but one of which were thermally altered. Three quartz examples attest to utilization of probable Piedmont or Fall Zone materials. In addition to the haft damage noted above, which signifies cutting/whittling utilization, instances of impact fluting attest to projectile functions for some of the tools. The overall sense of these specimens is that they were well made, and well thermally altered dart points that doubled as knives in the context of tool replacement. Projections of scale of production from the debris left at Pen Point suggest that over 200 preforms were completed and transported from Pen Point in a single episode of tool manufacture and replacement (Sassaman 1994).

In attempting to reconcile the affinity of MALA points to existing types, the Halifax Side-Notched was considered. Defined from work at the Gaston site in the Roanoke Rapids area of North Carolina (South 1959), the Halifax point is described by Coe (1964:108) as a slender blade with slightly restricted base and shallow side notches. Coe noted that the type did not extend much west or south of the Roanoke rapids area, and indeed, very few have been identified from sites in South Carolina and Georgia. Size and morphology differences between it and the MALA specimens also lessened the likelihood for a historical connection; however, the stratigraphic placement of Halifax artifacts and features above the Guilford occupation at Gaston provided some basis for crossdating the MALA assemblage at Pen Point to approximately 5500 B.P. (Sassaman 1985:12).

Attention to possible western origins for MALA was stirred when Sassaman examined some Benton Stemmed bifaces at the Alabama Museum of Natural History in 1986. Although the distance between the middle Savannah River valley (presumed heartland for MALA) and the middle Tennessee River valley (heartland of Benton) equals the distance to the Roanoke Rapids area, there were a number of reasons besides morphological similarity to propose a linkage between MALA and Benton. Among them was physiography. Linking the middle Savannah and middle Tennessee river valleys is the junction between hard rock geology and the unconsolidated sands of the Coastal Plain referred to as the Fall Line. The ecotone formed by this interface was particularly attractive to prehistoric populations for millennia for its food diversity and abundance. Moreover, these locations afforded passage across rivers due to the favorable conditions created by shoals. These conditions may have enabled the eastward (or westward) expansion of a Fall Zone adaptation, with little to no disruption of traditional subsistence strategies and choices, or alternatively, the flow of information and/or personnel to produce Fall Zone-wide similarities in cultural expression (Sassaman 1988). The major problem with this scenario is that Fall Zone locales between the Tennessee and Savannah rivers have not yielded the sorts of evidence (artifactual or otherwise) for Benton or Benton-related occupations. Granted, the investigation of intervening areas has not even begun to match the level of intensity seen in the Savannah and Tennessee river areas. Of course, there is no particular reason why geographically unbroken occupations are expected in the above scenarios unless wholesale migration from one area to the next is completely ruled out.

Having restated the possibility for Benton origins to MALA, we note that much work remains to be done to document the extent and context of MALA finds in Georgia and South Carolina, and to compare this systematically to the rich Benton record of Alabama, Mississippi, and Tennessee. Some typological and technological issues have been already addressed (Sassaman and Anderson 1990:153-156). To briefly summarize these, the range of variation seen in the Sykes-White Springs-Benton continuum (e.g., Bense 1983; Futato 1983; Thorne et al. 1981) of the Midsouth easily subsumes the variation documented thus far for MALA in South Carolina. Benton and related forms in the Midsouth often have evidence for impact damage (Johnson 1981:51; Scott C. Meeks, personal communication 1994), and they are found sometimes in association with atlatl parts (e.g., Lewis and Lewis 1961; Webb and DeJarnette 1942). Nonsubsistence production and exchange of exaggerated biface forms characterized a Benton Exchange Sphere (Johnson and Brookes 1989; Lewis and Lewis 1961:36) and mortuary program (Hofman 1985; Webb and DeJarnette 1942). Evidence for parallel subsistence and ceremonial uses of MALA bifaces in South Carolina is mounting (e.g., Goodyear et al. 1990; Parler 1972; Sassaman 1988, 1994). Ancillary parallels are seen in the exploitation of shellfish and core reduction techniques. Continued efforts to compare Benton and MALA phenomena are hampered by a lack of data from excavated contexts in the Savannah River valley. To date, excavated contexts for MALA points in South Carolina include biface production loci at riverine sites and isolated finds at upland sites (Sassaman et al. 1990:310-312). Only one possible location of habitation, the G. S. Lewis-East site (38AK228E) in Aiken County, South Carolina, has been adequately excavated (Sassaman et al. 1990:91-96), but its details remain sketchy for lack of adequate reporting. An interesting aspect of the Lewis-East biface assemblage is the similarity between its "undifferentiated stemmed lanceolates" and forms found in association with Benton bifaces at the Eva site in Tennessee (Lewis and Lewis 1961:Plate 5b, k; Sassaman et al. 1990:311). Basal strata beneath shell deposits at Fennel Hill (a.k.a. Cox site and Milberry Mound; 38AK2), and possibly Stallings Island (9CB1) might also contain traces of MALA habitation. Ongoing work at Mims Point (38ED9) and the Victor Mills site (9CB138) may help to resolve the role of MALA in the initiation of shellfishing and intensive riverine occupation in the middle Savannah River valley (Sassaman 1993b, unpublished data).

Finally, the distribution of MALA points in South Carolina and Georgia is centered on the middle Coastal Plain of the Savannah River valley, a pattern that mirrors the distribution of Brier Creek Lanceolate points. These two traditions may indeed prove one and the same. Because both are known from assemblages largely consisting of heat-treated Coastal Plain chert, we have little knowledge about affiliations in the Piedmont province of the state, which again brings to question the relationship between Guilford and its presumed Coastal Plain counterparts.

The late Middle Archaic situation in Florida is a marked departure from the preceding millennia. Beginning at about 6000 B.P. sites in the St. Johns River valley include thick accumulations of shellfish and midden debris. As part of the so-called Mt. Taylor Culture, the St. Johns midden sites mark the onset of intensive, relatively permanent settlement in northeast Florida. At the same time, the interior peninsula area of Aluchua County was home to sizable Middle Archaic populations. One of the largest sites in this area (8AL356) produced dozens of well made, tapered stemmed bifaces referred to as Newnan (Bullen 1975:31; Clausen 1964). Dates from the type site and others in northeast Florida place the Newnan point at about 6000 B.P. A related variety is the Hillsborough point (Bullen 1975:30). A blade industry is associated with these tapered-stemmed biface traditions, and thermal-alteration on bifaces is very common.

Other contracting stemmed points from Florida are the Sumter and Thonotosassa types (Bullen 1975:36, 40). Both types are thick in cross section, often thermally-altered and patinated. Goodyear (personal communication, 1995) suggest that the small Sumter points are resharpened versions of the larger Thonotosassa type. Limited excavation contexts in central Florida place the types in the preceramic Archaic, but more specific dates are lacking. A third variety that is poorly defined is the Florida Archaic Stemmed type (Bullen 1975:32), a catchall for medium to large, thick, stemmed points with contracting to parallel stem margins. Bullen identified four variants of the type—Putnam, Levy, Marion, and Alachua—but no information about chronological or geographical differences among them. Little progress has been made in refining these types, which, Bullen notes (1975:32), are "the most common Florida point." These are indeed common to the interior northern half of the state, from the area northeast of Tampa bay to Alachua County. Given the tendency for these types to occur on thermally-altered chert, and their overall technology and morphology, a 6000-4000 B.P. date range is expected (Mark J. Brooks, personal communication, 1995).

The rise in Middle Archaic site use in north Florida appears to be associated with the increased availability of surface water. South Georgia would have experienced similar changes, but no archaeological evidence for intensive Middle Archaic settlement has been observed. A few sites in Frankie Snow's study area (e.g., Gregory Creek [9TF3]) have

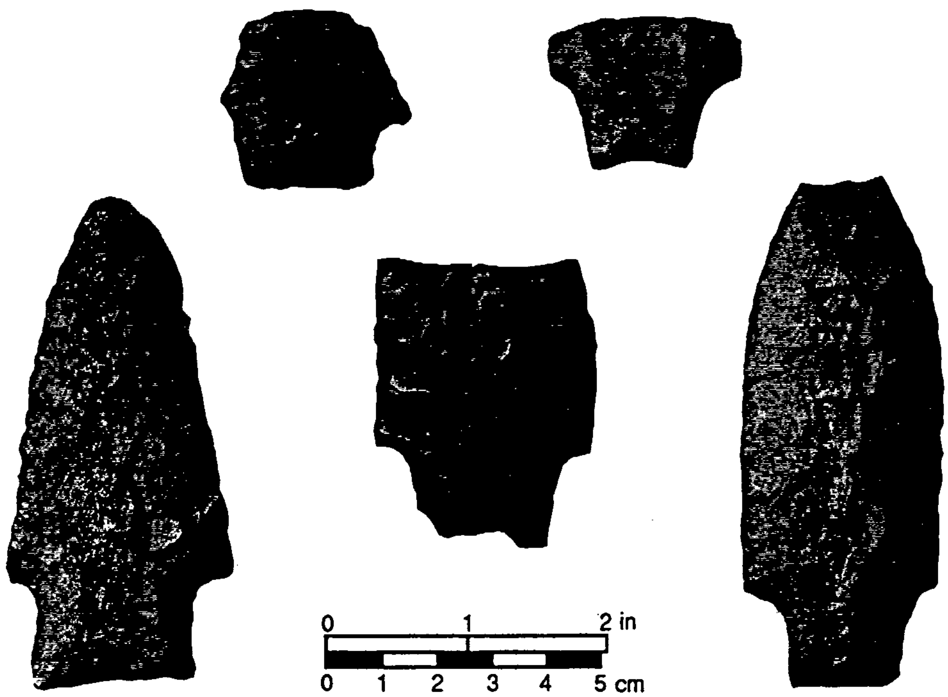


Figure 8. Probable Middle Archaic hafted bifaces from the Gregory Creek site (9TF3) in Telfair County (Courtesy of Frankie Snow).

contained contracting stemmed and other stemmed bifaces similar to Florida Archaic Stemmed types (Figure 8). Other occurrences of Newnan and Hillsborough points in south Georgia counties signify some connection with developments in Florida. Continued work at lime sinks and other interior wetland sites in south Georgia may some day reveal comparable late Middle Archaic manifestations.

Late Archaic

The beginning of the Late Archaic period in Georgia is set at 5000 B.P. Appearing at about this time are stemmed hafted biface forms belonging to the Broadspear Horizon of the Eastern Woodlands (Turnbaugh 1975). Other cultural developments include increased use of riverine locations, shellfish exploitation, the development of soapstone cooking technology, and the use of more, and more diverse, ground and polished stone tools. Each of these traits has local precedents extending back to at least the sixth millennium B.P. in parts of the Southeast. In the Georgia-Carolina area, however, it was not until after 5000 B.P. that shellfishing, polished and groundstone tool use, and intensive riverine occupations occurred at appreciable levels. Ironically, while Georgia-Carolina was behind other areas of the Southeast in these developments, it was home to some of the earliest, if not *the* earliest pottery in North America.

The termination of the Late Archaic period in South Carolina is much more ambiguous than its beginning. The introduction of ceramic vessel technology would seem to form a significant and conspicuous watershed in Southeastern prehistory, and for decades this indeed was a distinguishing criterion for the onset of Woodland period lifeways. However, pottery is an inappropriate time marker in the Georgia-Carolina region because it was not widely used during the first millennium or more after its introduction. Regionally, the Savannah River valley and Georgia-Carolina coast, along with peninsular Florida and small portions of the Midsouth, involved early pottery traditions not matched in surrounding and intervening areas. Whereas the use of pottery in these areas has sometimes been taken as evidence for spectacular or precocious cultural developments, qualifying as "Formative" culture (e.g., Hemmings 1970; Walthall and Jenkins 1976), pottery seems to have been grafted onto an existing Late Archaic technology with little change in settlement and subsistence. In the Savannah River valley, in fact, early pots were used as containers for indirect-heat cooking (Sassaman 1993c), a method that probably dates to the time of Paleoindian colonization when pits, skins, and other containers were used. What is more, the development of pots for use over fire was a slow and uneven process, with coastal populations quick to adopt innovations and riverine populations lagging behind for reasons that may have little to do with pottery function or efficiency. Altogether, the introduction and adoption of pottery at both the local and regional levels was a slow, variegated process. It was not until about 3000 B.P. that pottery was widely employed across the Southeast. This time also marks rather significant reorganization of regional populations, including the demise of the Poverty Point phenomenon (Gibson n.d.), as well as local group fissioning and dispersed upland occupation (Sassaman 1993c). Given these developments, 3000 B.P. represents a meaningful turning point in Southeastern prehistory, and a rational place to draw the temporal line between Archaic and Woodland periods in Georgia.

Savannah River Stemmed. Coe's (1964) definition for the Savannah River Stemmed was intended to formalize the type parameters for a specific variety of large, square-stemmed bifaces. Coe ackowledged that "this type has appeared, with little modification, as the dominant projectile point type of the late Archaic period" (Coe 1964:45). The type name is now widely used to refer to any number of square-stemmed biface forms in the eastern United States (e.g., Justice 1987; White 1982:46), thus its typological specificity, as established by Coe, has been largely lost.

First recognized by Claflin (1931) in his report on Stallings Island, the Savannah River Stemmed as defined by Coe (1964:44-45) is a "large, heavy, triangular blade with a broad stem." The stems are almost always square, and have consistently straight side margins. The basal margin of stems is usually concave, but occasionally straight. The typically long and broad, but thin blades give an overall massive appearance to the type. Coe's sample from Doerschuk ranged 70-170 mm in length, with an average of 100 mm, and 35-70 mm in width, with an average of 50 mm.

Claflin's examples of what he called the "Stalling's Island stem" consist of square-stemmed forms with straight basal margins (Claflin 1931:Plate 55g-i, k, l). He recognized a variant with concave bases that match the form of Coe's type (Claflin 1931:Plate 55e, f, j), noting that they occurred in lesser frequency at Stallings Island than the straight base form (Claflin 1931:34). He also identified several other variants of stemmed bifaces, some of which he attributed to different function, some to differences in raw material, and some to different cultures. The lengthy discussion Claflin devoted to exploring the range of variation in stemmed bifaces foreshadowed many later reports on Late Archaic assemblages. After more than 60 years since the Stallings Island report was published, we have only just begun to sort out the significance of this variation.

Refinements in Late Archaic hafted biface typology for Georgia-Carolina have come from the work of Jerald Ledbetter and the senior author. In a series of projects beginning with the Russell Reservoir, Elliott and Ledbetter have established a detailed phase sequence for the middle Savannah River valley (Elliott et al. 1994; Ledbetter 1991a; Wood et al. 1986). Not all of the phases in the sequence are equally well documented. One particularly strong aspect of the sequence is the Mill Branch phase, named from the work of Ledbetter (1991a) at the Mill Branch sites in Warren County, Georgia. Dating from about 4200-3800 B.P., the Mill Branch phase is characterized by the use of large stemmed bifaces closely fitting the type description of Coe's Savannah River Stemmed. An assemblage of 116 bifaces from 9WR4 at Mill Branch compared favorably with the Doerschuk sample both metrically and in the predominant use of metavolcanic material (Ledbetter 1991a:66-67). The Lover's Lane site (9RI86) in Augusta (Elliott and Doyon 1981; Elliott et al. 1994) also yielded a sizeable assemblage of these forms, as did the Stallings Island site. However, few Mill Branch phase sites have been excavated in the area, and the geographical extent of the phase remains uncertain (Elliott et al. 1994:371).

Other aspects of the Mill Branch phase assemblages in the middle Savannah River valley include perforated soapstone slabs, winged bannerstones, hematite, cruciform drills, and minor occurrences of Stallings fiber-tempered pottery, predominantly plain. The most significant aspect of the Mill Branch phase for the present discussion is the temporal specificity afforded the "classic" Savannah River Stemmed type. We acknowledge that large stemmed forms similar in morphology were manufactured before and after the Mill Branch phase, and that other stemmed bifaces were manufactured during the phase. However, it appears certain that the heyday of classic Savannah River Stemmed bifaces in the middle Savannah River valley was from 4200-3800 B.P., before and after times when other, smaller stemmed bifaces were in vogue (see Paris Island Stemmed, Otarre below), and before fiber-tempered pottery was widely used in the local area.

Because metavolcanic materials dominate Mill Branch phase biface assemblages, the role of raw material selection in biface form deserves some discussion. In recent years it has become increasingly apparent that certain raw materials placed size and design constraints on Late Archaic biface technology (e.g., Alterman 1987; Anderson and Schuldenrein 1985:328-331). The Savannah River Stemmed assemblage described by Coe (1964) was made from local rhyolites and andesites, metavolcanic rocks that occur in large packages in the Uwharrie outcrops of Piedmont North Carolina. Similarly, the Mill Branch site specimens described by Ledbetter (1991a) were mostly fabricated from large nodules of nearby metadacite. Assemblages from locations distant from sources of large metavolcanic nodules do not usually contain such large Savannah River Stemmed bifaces. However, smaller forms made from other materials and generally fitting the type description, at least in width and basal morphology, are not uncommon across the region. For instance, examples made from (presumably) Coastal Plain chert are illustrated in Claflin's Stallings Island report (Claflin 1931: Plates 55-56), and, of course, the type site for the Mill Branch phase included several chert specimens. These chert examples are routinely smaller than their metavolcanic counterparts, presumably owing to the limited size of homogeneous chert nodules, as well as higher levels of edge and tip reharpening among chert bifaces (Ledbetter 1991:65-66; Sassaman 1993d:165-166). This factor, among others, contributes to the typological confusion about Late Archaic stemmed bifaces. Classic Savannah River Stemmed forms are the largest Late Archaic bifaces ever made in the region, and clearly not all raw material sources could accommodate the size requirements.

Given the considerations to this point, the question brought to the fore is this: Did the size requirements of Savannah River Stemmed bifaces lead tool makers to a reliance on metavolcanic materials, or were metavolcanic materials used when available and size was otherwise compromised when sufficiently large nodules of stone were not available? A related question is this: Were the makers and users of classic, largely metavolcanic Savannah River Stemmed bifaces ethnically distinct from neighbors who manufactured smaller stemmed forms and relied on materials other than metavolcanics? The answers to these questions are not so clear, but we hasten to point out that neither upper Piedmont nor lower Coastal Plain sites in the Savannah River valley include assemblages resembling Mill Branch assemblages, raw material differences notwithstanding. Cooking technologies at this time are especially divergent along the valley, with lower Coastal Plain and coastal assemblages diversifying to include fiber-tempered vessels with shapes conducive to direct-heat cooking, while upper Piedmont sites lack pottery altogether. Perforated soapstone slabs, distributed well into the middle Coastal Plain before 4200 B.P., are not found far outside source areas during the Mill Branch phase. Given this limited evidence, and the fact that raw materials for flaked stone do not appear to move much during this time, it appears reasonable to draw cultural-historical boundaries around Mill Branch sites in the middle Savananh River valley at 4200-3800 B.P. to distinguish them from contemporaneous sites both upriver and downriver. How far the Mill Branch phase extends along the Fall Zone is open to debate. Certainly fiber-tempered pottery does not extend very far, but given its limited use in the area before 3800 B.P., it probably should not be the sole, or even primary, means for delineating a phase. Mill Branch and the Doerschuk lithic assemblages are seemingly homologous. Moreover, Mill Branch-like assemblages may extend to the inner Piedmont of the Oconee and Ocmulgee drainages of Georgia (Elliott et al. 1994:371; Ledbetter 1991:66-67). Thus, whereas Mill Branch phase sites appear to have limited distribution in the Savannah River valley, they may have homologs or close parallels along the Carolina Slate Belt from North Carolina to central Georgia. Dating for this phase in the middle Savannah area appears sound; it remains to be seen how occurrences and parallels elsewhere fit in.

Finally, Claflin (1931:35) speculated that the large variety of stemmed bifaces at Stallings Island were too large to be used on arrows, suggesting that they instead were suited for spears or used as knives. A knife function for Savannah River Stemmed bifaces seems likely (House and Ballenger 1976:73), although the colloquial use of the term "point," as well as Coe's (1964:42-44) term "projectile point," continue to mislead. Savannah River Stemmed bifaces rarely exhibit impact damage. Rather, they are often resharpened along margins and at tips to produce asymmetrical blade outlines. Advanced stages of blade resharpening result in cruciform shapes wherein blade shoulders, presumably buried in haft bindings, are unaffected by retouch. These so-called cruciform drills are a prominent feature of Mill Branch phase assemblages (Elliott et al. 1994:371), and were likely used to perforate soapstone slabs, among other things.

Paris Island Stemmed. The Paris Island Stemmed point takes its name from the Paris Island site in the Russell Reservior, excavated by Wood and colleagues (Wood et al. 1986). The type was not formally defined in the report of this excavation, but Elliott (1985) presented it as a tentative type in the hafted biface workshop organized by Glen Hanson and held at the offices of the Savannah River Archaeological Research Program in 1985. Whatley (1985) subsequently added to the type description in a report on Paris Island Stemmed points from the upper Coastal Plain of central Georgia.

Paris Island Stemmed points are triangular blades with sloping shoulders, an expanding stem, and a rounded base. Examples reported by Elliott (1985; see also Whatley 1985) average about 62 mm long, 37 mm wide, with stems 10 mm in length and 20 mm wide. A small sample reported by Ledbetter (1991:62) from 9WR4 matches the stem dimensions of Elliott's sample, but the blades of 9WR4 specimens are shorter and not as wide.

Radiocarbon dates on samples associated with Paris Island Stemmed assemblages at the type site fall in the 4200-4100 B.P. range (Wood et al. 1986:286). Similar points found at other Russell Reservoir sites were in deposits dating from 4400-4200 B.P. (Anderson et al. 1985; Wood et al. 1986:159). Investigators of these sites employed other type names, such as Small Savannah River Stemmed and Otarre (see below), to refer to the assemblages, but the early dates clearly place these forms well ahead of the small stemmed forms of the Carolina Piedmont sequence. These contexts enabled Elliott to propose a Paris Island phase for the middle Savannah River valley. Spanning 4550-4200 B.P., the Paris Island phase is characterized by Paris Island Stemmed points (made from a variety of raw materials), perforated soapstone slabs, atlatl weights/bannerstones, and the complete absence of pottery (Elliott et al. 1994:370-371).

Besides the sites already mentioned for this phase, the Moody site (38ED9) in Edgefield County, South Carolina, which Elliott also attributes to the Paris Island phase, contains a large assemblage of atlatl weights/bannerstones that are distinct from the winged variety typical of the subsequent Mill Branch phase. The Moody examples are what Knoblock (1939) referred to as the Southern Ovate variety, and Kwas (1981) dates to 6000-4000 B.P. The winged variety of the Mill Branch phase is what Knoblock (1939) called a Notched Ovate; he considered it a "developed" form of the Southern Ovate. The temporal relation of the two forms, as established by Elliott's phases, corroborates Knoblock's supposition. Of further interest is the regional distribution of the forms: Southern Ovates are located in the Midsouth, as well as the South Atlantic Slope, but the Notched Ovate (or winged variety, as locally known) appears to be restricted to the middle Savannah River valley. This underscores the possibility of a Midsouth-Savannah River connection for the late Middle Archaic period, while showing that subsequent developments became locally entrenched.

Like the Mill Branch phase, the geographic extent of the Paris Island phase is not fully documented. Unlike the Mill Branch phase, however, the prior Paris Island phase does not seem to extend northward into North Carolina. Indeed, the recognition of an early Late Archaic phase defined by the use of small stemmed bifaces is a notable exception to Coe's Carolina Piedmont sequence. For the longest time, researchers working in Georgia-Carolina assumed that the Late Archaic sequence went from large to small biface forms, as it seems to do in Piedmont North Carolina. The recognition of the Paris Island phase is among the more significant advances in our local understanding of Late Archaic chronology.

Otarre/Small Savannah River Stemmed. Defined by Keel (1976:194-196) from his excavations at the Warren Wilson site in North Carolina, the Otarre Stemmed type is a medium-sized triangular blade with stems that are usually square, but occasionally rounded or contracting. Keel's type sample ranged 37-70 mm in length (mean=51.4 mm), and 22-44 mm in width (mean=30.5 mm), with stems 9.5-20 mm long (mean=15.7 mm) and 9-20 mm wide (mean=14.9) (Keel 1976:194). Keel considered it to be the latest type of the Late Archaic period in the Southern Appalachians, a "lineal descendent" of the Savannah River Stemmed type (Keel 1976:196).

Many researchers working in Georgia-Carolina have contemplated the significance of small stemmed bifaces such as the Otarre Stemmed (e.g., Alterman 1987; Anderson 1988:195-199; Anderson and Schuldenrein 1985:326-331; Sassaman et al. 1990:158-161; White 1982:45-49). Most of the discussion revolves around the temporal specificity of small stemmed forms. An analysis of assemblages from Stallings Island by Bullen and Greene (1970) showed that large bifaces resembling Coe's Savannah River Stemmed were concentrated in the shell-free, preceramic strata, whereas small stemmed forms (what they called Types III and IV) were concentrated in the overlying shell strata with fiber-tempered pottery. As a corroboration of Coe's Carolina Piedmont sequence, the stratigraphic evidence from Stallings Island spawned local acceptance of a large-to-small stemmed evolutionary trend. As we have already seen, the sequence is not so straightforward. Besides the fact that small stemmed forms predate the large Savannah River Stemmed bifaces, Alterman's (1987) analysis of several hundred stemmed bifaces from sites in the Russell Reservior area suggested that large forms persisted throughout the Late Archaic period, and that factors such as intended function, raw material, and use-life stages were more critical determinants of form than temporal factors. Raw material is an especially critical factor, as we have noted, for it is hardly coincidental that forms referred to as Otarre are usually made from quartz (e.g., Goodyear et al. 1979:209). The bottom line is that small stemmed forms such as Otarre are not especially time sensitive, nor are they even typologically specific.

To add to the confusion about small stemmed points, consider the sequence of types in the Carolina Piedmont. Coe (1964:110) recognized a small variant of the Savannah River Stemmed biface from work at Gaston (see also South 1959:153-157), but he did not suggest any chronological distinction between large and small types. Oliver (1981, 1985) later drew from a number of data sets to suggest that a small stemmed point was a viable temporal marker for the latter half of the Late Archaic Period (ca. 4000-3000 B.P.). Rejecting Keel's (1976) type name, Oliver opted to describe the diminutive forms as "Small Savannah River Stemmed." Oliver further clarified the lineal order of the small stemmed varieties—Gypsy Stemmed and Swannanoa Stemmed—associated with Early Woodland pottery. The complete sequence is an unbroken line of stemmed forms that decrease uniformily in size through time (Oliver 1985:210). Obviously, this straightforward sequence does not apply to all, perhaps none, of the Georgia-Carolina Piedmont, although all researchers would agree that there is indeed an overall trend of decreasing size. Unfortunately, the Carolina Piedmont type names are widely applied in Georgia, usually with little regard to the typological overlap and ambiguity inherent to these various forms. Because so few radiocarbon dates have been derived from good contexts for the various Carolina Piedmont types, uncritical application of the type names based strictly on size is unwarranted if such assignments are then used to make statements about chronology.

Kiokee Creek Stemmed. A little known biface type defined for the middle Savannah River area is the Kiokee Creek Stemmed. Like Otarre and the Small Savananh River Stemmed, the Kiokee Creek Stemmed is a diminutive version, and presumed "typological descendent," of the Savannah River Stemmed. Recognized by Richard Smith (1974:212-213) from test excavations at sites in Columbia County, Georgia, the Kiokee Creek Stemmed point is a medium-sized, slant-shouldered biface with a short, usually straight stem; however, considerable variation in the stem and shoulder morphology is noted in the type description. In Smith's sample of 80 specimens, length varied from 32-70 mm (mean = 51 mm), and width varied from 20-37 mm (mean = 26 mm). A variety of raw materials was used, but two-thirds of those in Smith's sample were made from quartz.

Because Smith's (1974) report of his testing in the middle Savannah area was never distributed, the Kiokee Creek type was doomed to anonymity until the senior author resurrected it to describe some of the small stemmed bifaces from the Lovers Lane site (Elliott et al. 1994). In fact, the type was included in the definition of the Lovers Lane phase. With a proposed date range of about 3800-3400, the Lovers Lane phase marks the period of intensive occupation in the middle Savannah River valley involving the use of Stallings fiber-tempered pottery, a shift from metavolcanics to quartz and other raw materials for chipped stone tools, decreased use of soapstone cooking slabs and drills, reduction in atlatl weight/bannerstone industry, large-scale occupations at riverine sites, and the intensified use of shellfish. In this context, the Kiokee Creek Stemmed joins the Otarre, Small Savannah River Stemmed, and Bullen and Greene's Types II and IV, as popular candidates for the ceramic Late Archaic period. In essence, the phase designation also serves as the local expression of the Stallings III Phase of Stoltman (1974), and is the equivalent of Phase II as defined by Sassaman (1993c).

Broad River Stemmed. Another little known Late Archaic biface type takes us back to the Coastal Plain. From his extensive collections and salvage work at the Daws Island site (38BU9) and elsewhere in the Broad River estuary of Beaufort County, Michie (1969b) recognized a large stemmed biface form with a distinctive haft element design in association with Stallings fiber-tempered and Thom's Creek pottery, engraved bone pins, soapstone slabs, and baked clay objects. The diagnostic trait of the Broad River Stemmed is an exceptionally wide base (25-30 mm) on a short stem (8-10 mm). Michie has suggested that the Broad River Stemmed was utilized as a knife for the cutting of relatively hard materials such as antler and bone. He notes occurrences of the type at the Venning Creek shell midden north of Charleston, and at the Bass Pond site (38CH124) on Kiawah Island (Michie 1979:57). However, the most interesting aspect of its distribution is the Albert Love site (38AL10) in Allendale County, located at the headwaters of the Coosawhatchie River, which drains into the Broad River some 60 km downstream. According to Michie (personal communication, 1989) the Albert Love and Daws Island ceramic and lithic assemblages are virtually identical. He further suggests that the sites may represent the geographical extremes of an annual round for a distinct social group. Based on the dates from Daws Island, these occupations occurred between about 3400 and 3100 B.P.

The last few centuries of the Late Archaic period mark a turning point in local prehistory. Researchers working in the middle Savananh River valley acknowledge a period of settlement reorganization after about 3500 B.P., when large riverine sites such as Stallings Island were abandoned and upland sites began to be utilized for multiseasonal habitation (Brooks and Hanson 1987; Elliott et al. 1994:372; Hanson 1982; Sassaman 1993c, 1993d). A process of population fissioning was apparently underway at this time, a process resulting in dispersed, poorly integrated settlement and increased ethnic/cultural diversity, at least as far as we can tell from lithic tool designs. The Broad River Stemmed seems to mark one of a wide variety of distinct types for the terminal Late Archaic. We have not yet been able to match its typological specificity in contemporaneous assemblages in Georgia, but there indeed is great promise for this if we can get past the confines of established small stemmed biface typology.

Gary Stemmed/Mack. Medium-sized, tapered-stemmed bifaces are observed in Late Archaic and Early Woodland assemblages across much of the Eastern Woodlands. From excavations in Texas, Newell and Krieger (1949) defined the Gary Stemmed as a trianguloid-bladed, contracting stemmed form. A considerable amount of shoulder and stem diversity is noted for this type, and thus it is often invoked to describe any tapered-stemmed point not fitting Morrow Mountain criteria. Despite the morphological ambiguity, medium-sized tapered-stemmed bifaces consistently occur at the Late Archaic-Early Woodland "transition." The antiquity of these forms remains uncertain, and in Alabama they appear to persist as late as the Middle Woodland period (Phillips 1970).

The distribution of Gary points as documented by Justice (1987:190) does not encompass the South Atlantic Slope. However, he notes that a variety of type names are used in this area to describe similar tapered-stemmed forms. In South Carolina, the Gary type name exists on state site files, so its use is not at all uncommon (see Chapter 5). A local equivalent less often invoked is the Mack Point. Named for the Allen Mack Site (38OR67) in Orangeburg County, South Carolina (Beth and Parler 1982; Parler and Lee 1981), the Mack point is associated with Thom's Creek pottery at sites in the Edisto River drainage and elsewhere across the Coastal Plain. Charles (1981:30) referred to these forms as "Type G" in his statewide collectors survey. Typically made from thermally unaltered Coastal Plain chert, Mack points are sometimes fabricated from metavolcanic materials, including rhyolites that may have originated from the Uwharrie area of North Carolina

(Goodyear et al. 1990:3-4). The stretch between Piedmont North Carolina and southern Coastal Plain South Carolina delineates roughly the major distribution of large contracting stemmed points in South Carolina (see Chapter 5). However, tapered stemmed forms are not included in the Carolina Piedmont sequence, so a distinctively South Carolina bias for the distribution is indicated. Mack- or Gary-like points are not commonly reported from the Georgia Coastal Plain.

Western Georgia Coastal Plain Late Archaic Types. Moving west into the Gulf-draining watersheds of Georgia's Coastal Plain, the diversity, and hence typological confusion, of stemmed bifaces seems to increase. Stemmed bifaces in the area are attributed variously to types defined for Alabama and Florida, as summarized by Cambron and Hulse (1964), and Bullen (1975, respectively, as well as those of the Carolina Piedmont sequence (Coe 1964). To illustrate the diversity of forms present in the area, we highlight the results of one project conducted by Southeastern Archaeological Services in Sumter County (Gresham et al. 1989). At the Mill Creek site (9SU6) in Americus, Gresham and colleagues uncovered a large assemblage of hafted bifaces from 32 2 x 2-m test units, most restricted to the upper 70 cm of soil, but some as deep as 120 cm below surface. Several notched or expanded stem forms were attributed to the Lafayette and Clay types of Florida, and the McIntire type of Alabama (Figure 9a-g), and several others were classified as Abbey points, also an Alabama type (Figure 9h-m). By and large, however, Gresham and colleagues took a conservative approach to classification by describing the majority of stemmed bifaces to a catch-all "Late Archaic Stemmed" category (Figure 9n-u, Figure 10).

As is often the case in the sandy sites of Georgia's Coastal Plain, the stratigraphic position of the various stemmed bifaces offered little conclusive evidence of the relative sequence of types (Figure 11). In general, the vertical position of stemmed specimens showed they dated to the Late Archaic period, perhaps also the late Middle Archaic period, but finer resolution was not possible. The catchall Late Archaic Stemmed category included examples that others might classify as Benton, Pickwick, Savannah River, Paris Island, Ledbetter, or any number of other regional types. Until better stratigraphic contexts are found and properly examined, it is unwise to force the variation of Archaic stemmed points into existing types. This is the same conclusion reached after years of testing and analysis on the Savannah River Site (Sassaman et al. 1990), but this should not be taken to mean that typology is unnecessary or impossible, only that much more detailed work remains to done at local scales in order to accurately characterize the temporal and cultural variation Late Archaic stemmed points embody.

The same situation exists in Florida. There a diversification in land use during the later Archaic period is accompanied by increasingly divergent material culture. The interior forests of north-central Florida experienced declined use over the late Middle Archaic as Late Archaic populations intensified occupations in the St. Johns basin and along the Atlantic and Gulf coasts. Flaked stone artifacts are not especially good chronological markers during this time, but fortunately Florida was home to its own early fiber-tempered and related wares that serve the purposes of chronology.

LATE ARCHAIC POTTERY

South Carolina and Georgia are noted across the globe as a hotbed of early pottery technology in the New World. It is the addition of pottery at about 4500 B.P. that affords so much typological and chronological resolution to the Georgia-Carolina Late Archaic period. This is not to say that early pottery taxonomy is without its problems and ambiguity, for it is. In general, however, the basic sequences for early ceramic wares are well established, and there are dozens of credible radiocarbon dates on materials associated

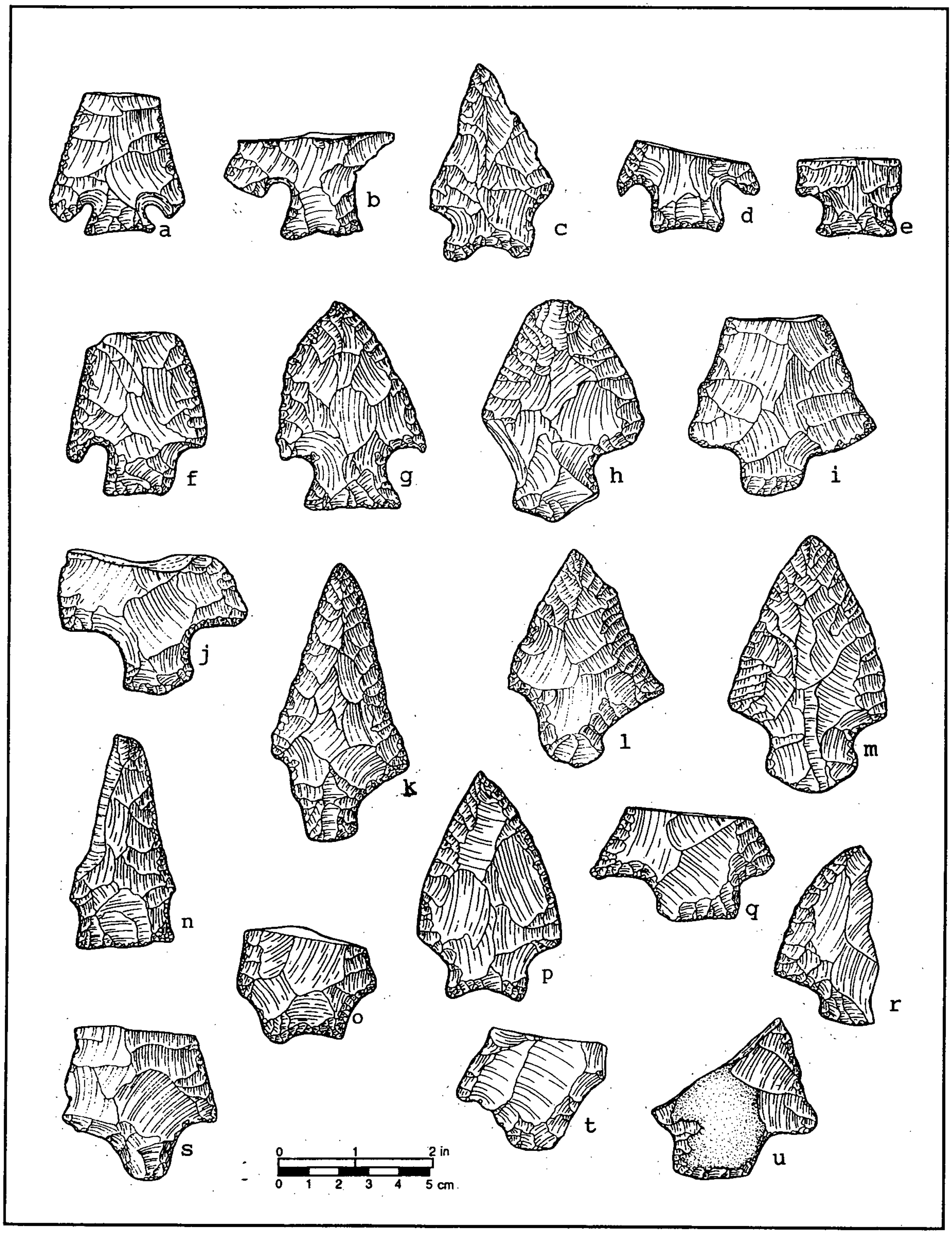


Figure 9. Middle and Late Archaic hafted bifaces recovered from excavations of the Mill Creek site (9SU6), Sumter County (a,b. Lafayette; c,d. Clay; e-g. McIntire; h-m. Abbey; n. Kirk Stemmed; o. Arrendondo; p. Hamilton; q-u. Archaic Stemmed) (adapted from Gresham et al. 1989).

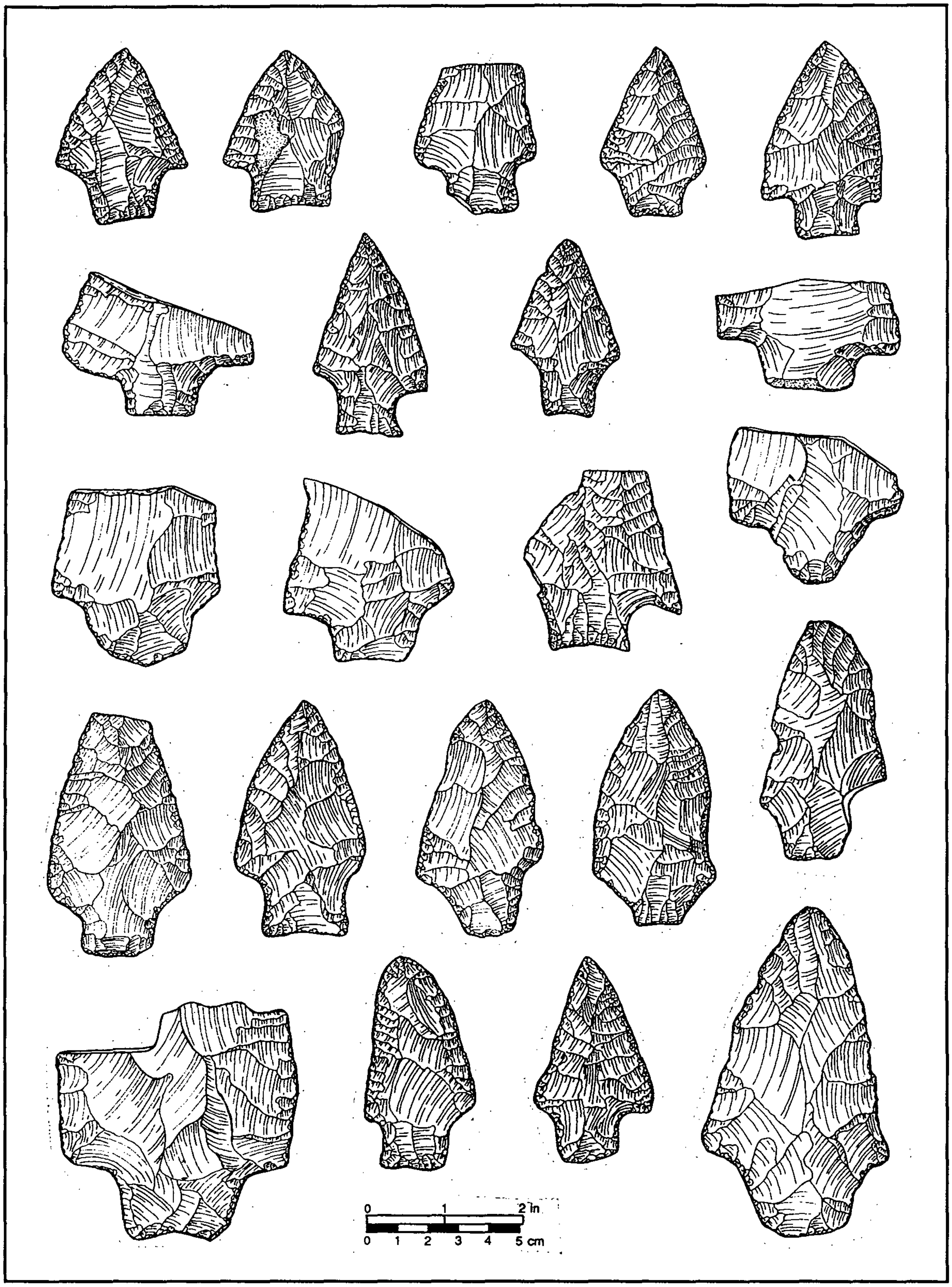


Figure 10. Archaic Stemmed hafted bifaces recovered from excavations of the Mill Creek site (9SU6), Sumter County (adapted from Gresham et al. 1989).

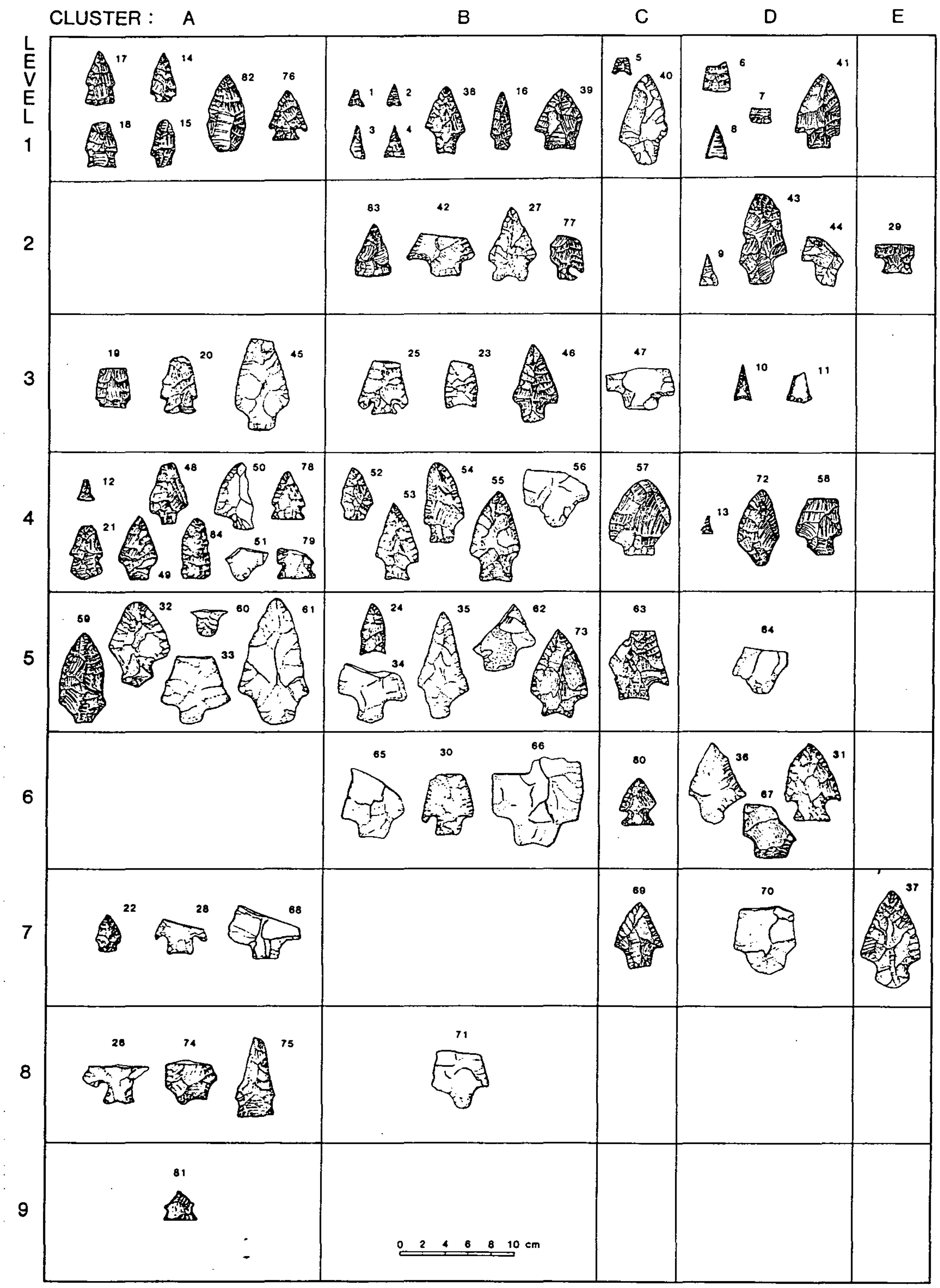


Figure 11. Stratigraphic position of hafted bifaces from five excavation areas of the Mill Creek site (9SU6), Sumter County (1-13. Mississippian triangular; 14-16. Duval; 17-22. Bakers Creek; 23, 24. Woodland triangular; 25, 26. Lafayette; 27, 28. Clay; 29-31. McIntire; 32-37. Abbey; 38-71. Archaic Stemmed; 72. Morrow Mountain; 73. Hamilton; 74. Arrendondo; 75. Kirk Stemmed; 76-81. Kirk Corner-Notched; 82-84. thin biface) (reprinted from Gresham et al. 1989; courtesy Southeastern Archeological Services, Inc.).

with early pottery in the area (see section below on radiocarbon dates). What is more, variation in pottery surface treatment and technology has been used to infer sociocultural boundaries, as well as temporal phases.

Several series of early pottery are known for the Late Archaic of Georgia: Stallings fiber-tempered and St. Simons fiber-tempered are the earliest wares, with Thom's Creek sand-tempered accompanying Stallings in limited portions of the eastern Coastal Plain. Orange fiber-tempered pottery from Florida has minor influence on the Georgia coast, where St. Simons wares abound. The Ocmulgee Big Bend area is home to a little-known variant of fiber-tempered ware, as well as the better documented Satilla series, which includes simple-stamped pottery with a sandy fiber paste. The Norwood series of Gulf Coastal Florida may be related to Satilla, and appears to have limited expression in southwest Georgia.

Stallings and St. Simons Fiber-Tempered Pottery. Sites containing Stallings fiber-tempered pottery are centered on the middle and lower Savannah River valley and on the South Carolina coast south of Charleston (Anderson 1975; Sassaman 1993c; Stoltman 1972). The series was obviously named for the Stallings Island site near Augusta, although in his report of excavations at this site, Claflin (1931) did not offer type designations, nor did he even indicate that thousands of the sherds he uncovered were tempered with fiber. Ironically, it was work on the coast, and not at the "type" site, that established the taxonomy of South Carolina's earliest pottery.

Archaeological explorations of South Carolina and Georgia's coastlines began in the late nineteenth century (Moore 1897, 1898a), but it was not until the 1930s that sustained archaeological investigations on the coast commenced. Early in that decade Woldemar Ritter and Warren K. Moorehead launched test excavations at several sites in the vicinity of Beaufort, South Carolina (Flannery 1943), most notably the Chesterfield shell ring (38BU29). A sample of 158 sherds from the site was analyzed by James B. Griffin (1943). With the exception of a cordmarked sherd, all specimens were fiber tempered. Drawing on the then recently published report of excavations at Stallings Island (Claflin 1931), Griffin proposed the "Stallings Plain" and "Stallings Punctate" type designations to describe the sherds. Tabulation of the sample show that 82 percent of the sherds were decorated with punctations, finger-pinching, and incising. A wide variety of punctation implements were employed to produce random, separate linear, and "drag and jab" linear motifs.

Other early excavations at sites with fiber-tempered pottery were conducted on St. Simons Island (Holder 1938), and at the Bilbo site (9CH4) near Savannah, Georgia (Waring 1968a). Three other sites in the vicinity of Savannah (Deptford, Refuge and Dulany) yielded important information leading to the definition of an early fiber-tempered ceramic horizon on the coast. The deeply stratified deposits at the Deptford site (9CH2) provided the basis for the Woodland ceramic sequence formulated by Caldwell and Waring (1939). Fiber-tempered pottery was found below check-stamped and cordmarked sherds of the Woodland traditions, giving one of the earliest indications of the antiquity of fiber-tempered pottery.

Use of the term "St. Simons" to describe fiber-tempered pottery can be traced to Holder's work on St. Simons Island in 1936-37 (Holder 1938), but the first published use of the term appears in a ceramic sequence by Caldwell and Waring (1939), and it was not until the Irene report was published in 1941 (Caldwell and McCann 1941) that a type description was available (see Williams 1968a:103-104).

Waring called the materials from Bilbo "St. Simons," despite the urging of Griffin to use the Stallings Island designation because it was the only well-documented site at the time. As we indicated above, Griffin used the Stallings type designation for the first time in his discussion of sherds from Chesterfield (Griffin 1943). To confuse matters, Waring subsequently used the term "Bilbo Plain and Incised" for fiber-tempered wares in the Savannah area, and he constructed a phase sequence employing these types (Waring 1968b:216; Williams 1968a:104). Fortunately, the Bilbo terminology never really caught on (Donald Crusoe [1972; Crusoe and DePratter 1976] was one of the few to employ Waring's terminology), and has since fallen from favor.

Use of the Stallings type descriptions and phase designations on the Georgia coast, as first proposed by Griffin (1943) and advocated by Williams (1968a:105), has not been embraced by many archaeologists. The reluctance to use terminology attributed to the interior site of Stallings Island, despite its analytical precedence, stems from the belief that interior and coastal technologies were divergent. Waring was an early proponent of distinct traditions, and he made some preliminary suggestions about the historical relationships and interactions of neighboring populations (e.g., Waring 1968c). Conversely, Stoltman (1974:19) and Trinkley (1980a:159) have pointed out that differences between interior and coastal pottery assemblages are not sufficient to separate Stallings from either Bilbo or St. Simons.

The modern-day expert on fiber-tempered pottery from the Georgia coast is Chester DePratter. In his sequence, DePratter (1979b) employs the St. Simons type name for materials at sites from the mouth of the Savannah to St. Simons Island. He recognizes two phases of St. Simons period: St. Simons I and St. Simons II. Plain pottery is the only type present in the earlier phase (as exemplified by assemblages from Sapelo Island; Figure 12), dating from 4200-3700 B.P. (DePratter 1979b:114). Punctation, including both random and linear, occurs with appreciable frequency on the Georgia coast about 3800-3700 BP (DePratter 1979b:114-115). Incised decoration is also thought to begin in the later phase, but perhaps slightly later than punctation (DePratter 1979b:115). Two coastal Georgia sites with an abundance of decorated St. Simons wares are Cane Patch (9CH35; Figure 13) and A. Busch Krick (9McI87; Figure 14), sites which also include a few examples of incised pottery that fit type descriptions for Orange incised pottery (see below).

Differences in the technology and design of fiber-tempered pottery along the coast warrant a typological distinction between St. Simons on the Georgia coast and Stallings and Thom's Creek on the South Carolina coast. Specifically, assemblages from the Georgia coast are dominated by plain pottery, and sherds have a consistently fine paste. Among the few assemblages with abundant decoration, incising, punctation over incisions, and shell punctations are common, while drag and jab reed punctation is rare. At the mouth of the Savannah, decorated assemblages are more common, with linear punctations the rule, though incising is not uncommon. North of the Savannah delta, decorated sherds are abundant, with drag and jab most common, and shell punctations and finger pinching used. Incising is absent or rare.

Typological control over fiber-tempered pottery from sites in the interior Coastal Plain had to await the sustained program of research launched in the 1960s. Stoltman (1974) issued the first comprehensive nomenclature for organizing the temporal variability of Late Archaic manifestations in the Savannah watershed. He defined three phases of the "Stallings Culture": Stallings I—a preceramic phase; Stallings II—a ceramic phase dominated by plain fiber-tempered pottery; and Stallings III—a ceramic phase characterized by plain and decorated fiber-tempered pottery (Stoltman 1974:19). Absolute dates for these phases were not provided, but the dates for plain fiber-tempered pottery at

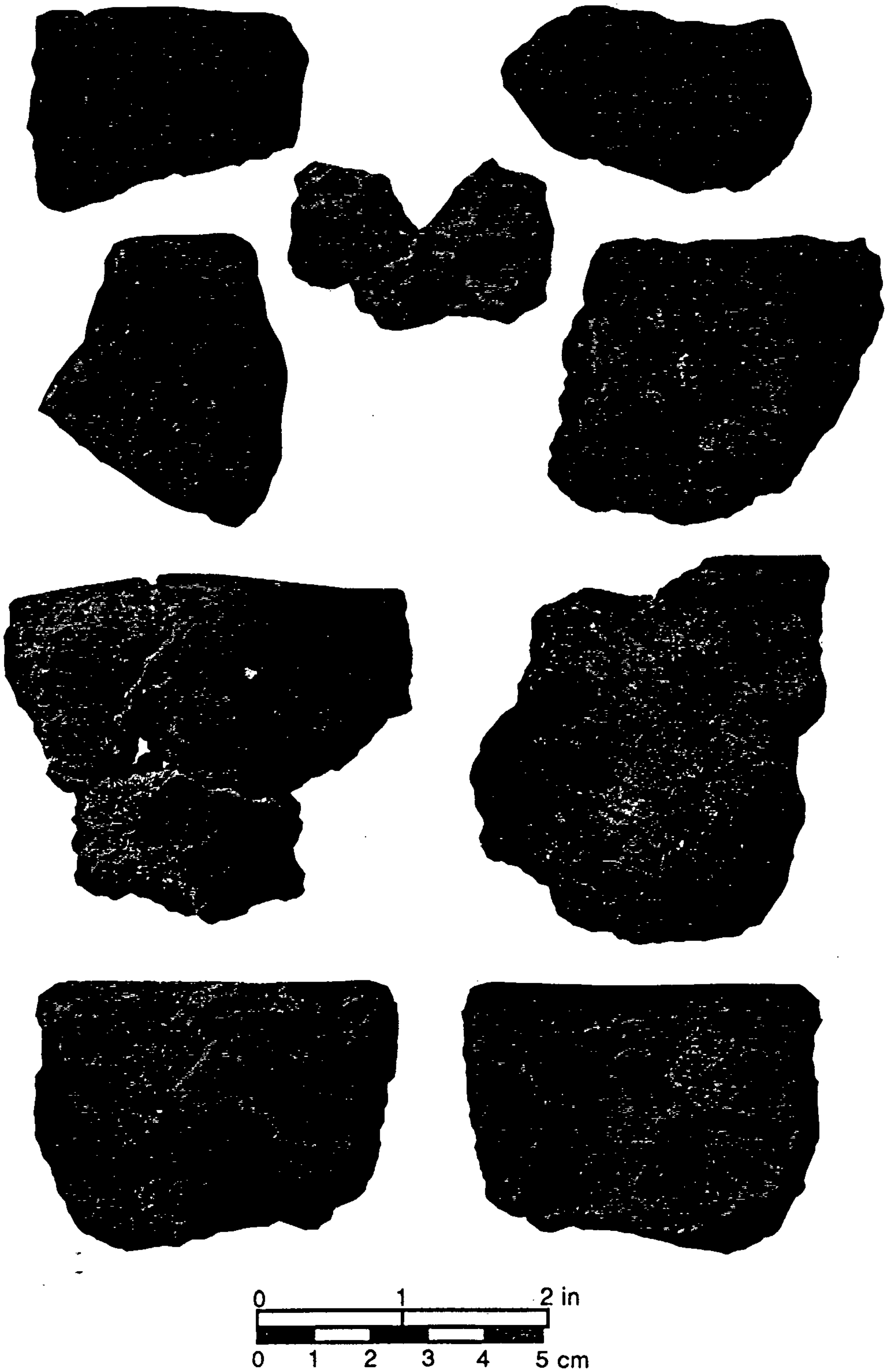


Figure 12. St. Simons fiber-tempered sherds from Sapelo Ring No. 1 (9McI1-1) (bottom plain sherd is duplicated in reverse [bottom right] to show interior scraping).

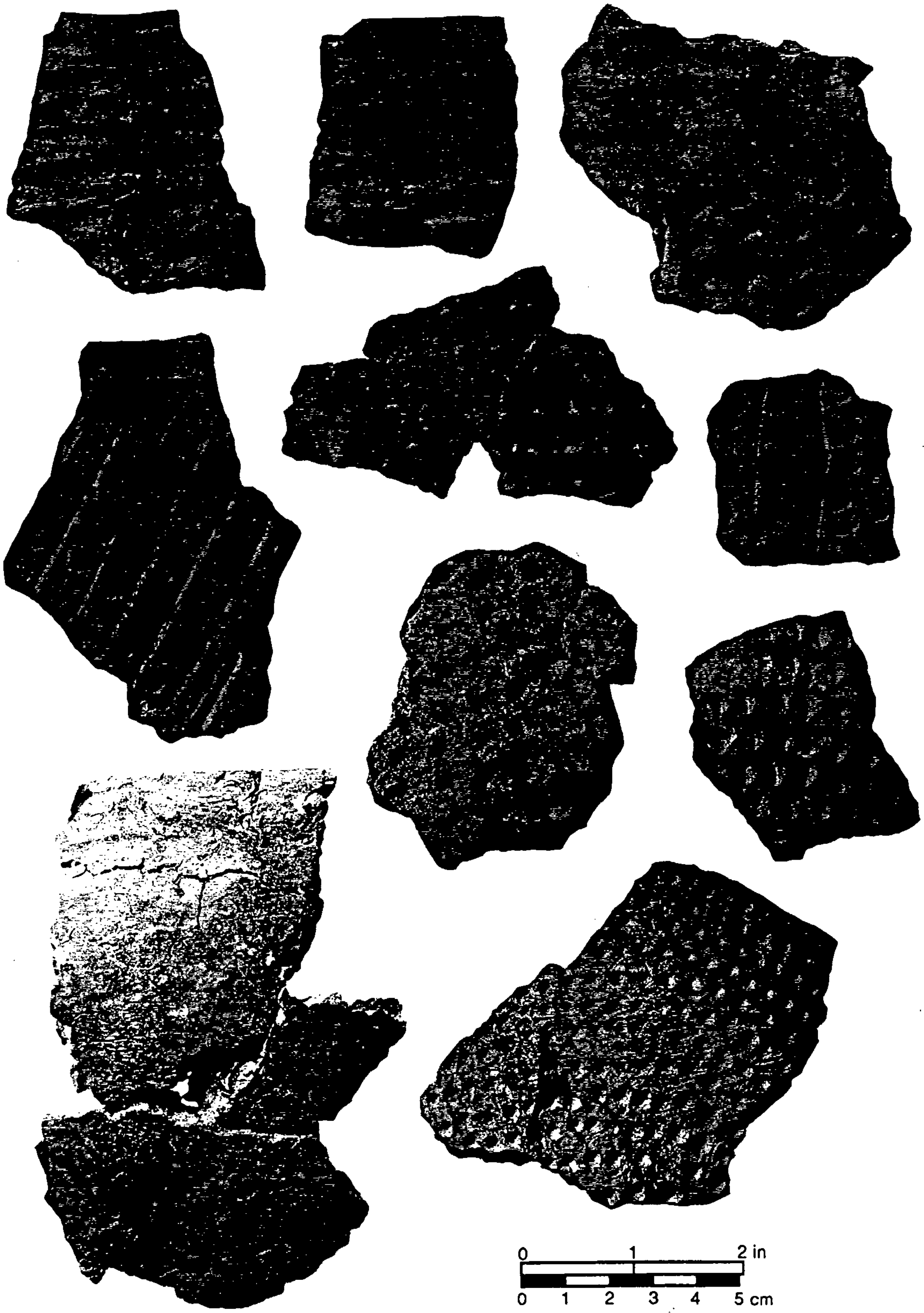


Figure 13. St. Simons fiber-tempered sherds from Cane Patch (9CH35).

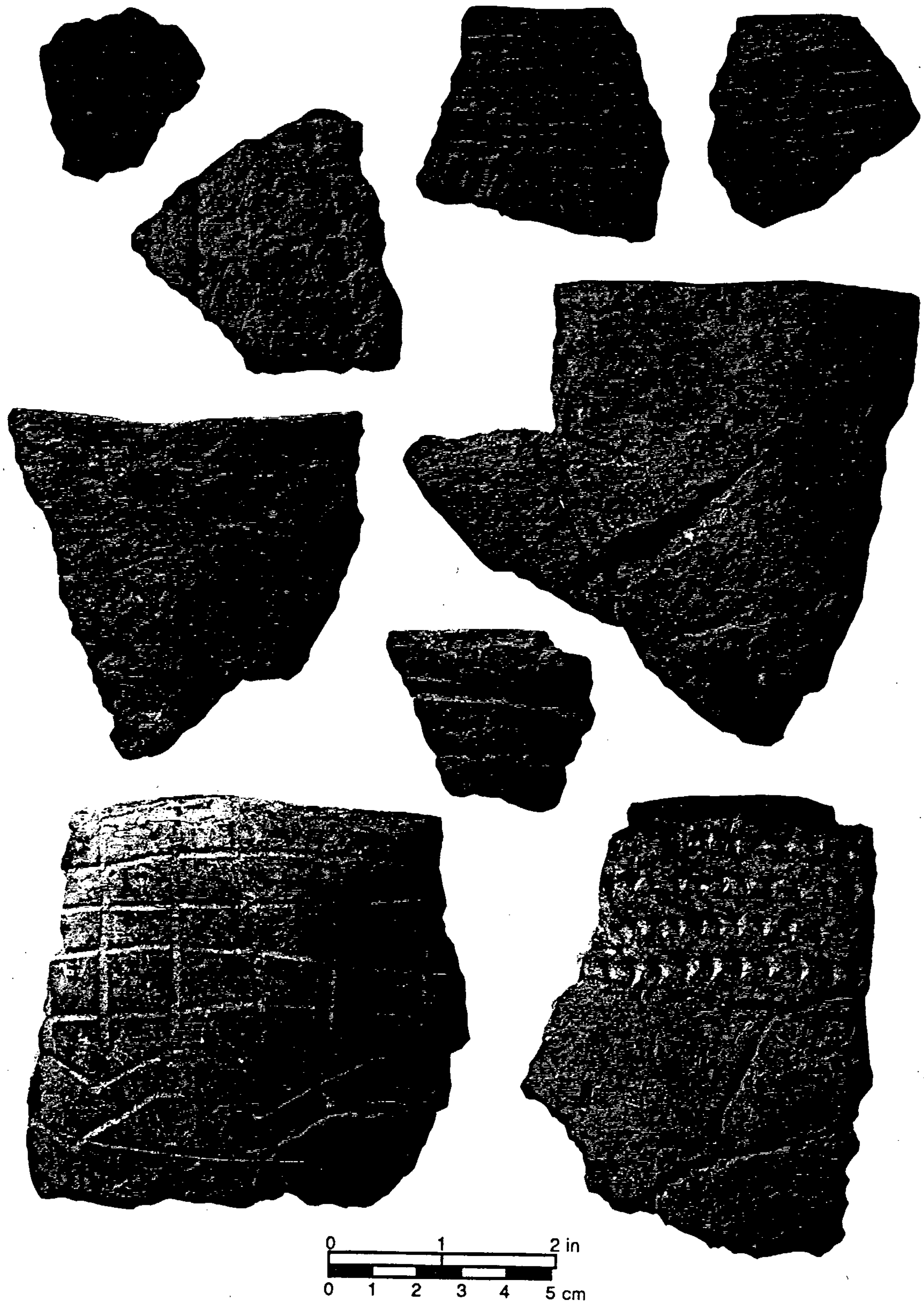


Figure 14. St. Simons fiber-tempered sherds from A. Busch Krick (9McI87).

Rabbit Mount showed that Stallings II began at about 4500 B.P. Fiber-tempered assemblages with abundant decoration at Stallings Island and Bilbo date to around 3700 B.P. and this has been used to mark the beginning of the Stallings III phase. Although the coastal record lacks preceramic and early ceramic components, the Stallings II and III phases mesh fairly well with DePratter's St. Simons I and St. Simons II phases, respectively. However, it seems clear that the St. Simons wares of the Georgia coast bear little resemblance to fiber-tempered pottery assemblages of the interior Coastal Plain of Georgia. As we review below, fiber-tempered pottery of the Ocmulgee and Ogeechee rivers is stylistically and technologically distinct from St. Simons pottery. The St. Simons series appears to accurately reflect the existence of Georgian coastal populations distinct from interior counterparts and from Florida or South Carolina coastal neighbors. Interaction among these groups no doubt occurred, but it apparently did little to influence ceramic traditions.

Lacking an unequivocal hafted biface sequence corresponding to preceramic and ceramic phases, as we discussed above, a lack of pottery alone is usually assumed, often implicitly, to be indicative of early Late Archaic sites. This is an unfortunate bias of the interior record. In relying on the absence of pottery to define preceramic assemblages, the assumption is made that all assemblages of pottery-using residents will contain pottery. Little consideration has been given to the possibility that early pottery may have been a seasonal and/or site-specific technology.

A related bias is the assumption that once pottery was available in the valley (by 4500 B.P.) it was widely adopted. Radiocarbon dates on Piedmont sites in the Russell Reservoir area indicate that pottery was not used in this area until after 3700 B.P., perhaps not until after 3500 B.P., a full millennium after it was being used in the Coastal Plain. What is more, an early fiber-tempered pottery component at Stallings Island (i.e., Stallings II) has not been observed, and the date for inception of pottery use at the site is only 3730 B.P. Accordingly, the Stallings I-II-III phase sequence does not apply throughout the valley.

Sufficient radiometric and stratigraphic data are available to suggest the following provisions to the Stallings I-II-III phase sequence: (1) the Stallings I phase persisted in the Piedmont well into the fourth millennium, and (2) a Stallings II phase is not recognized in the Piedmont. Both of these provisions are somewhat incorporated into Elliott's recent phase sequence for the middle Savannah River valley (Elliott et al. 1994). In addition, the phase sequence established by Sassaman (1993c) for an analysis of the technofunctional variation of Late Archaic cooking technology addresses these and other nuances.

A brief review of the taxonomy offered by Sassaman (1993c) brings to a close our discussion of the Stallings series. Collections of sherds from 29 sites in the Savannah River area and coasts of Georgia and South Carolina were examined to construct a paradigmatic classification based on technological, as well as stylistic traits. Stratigraphic data from Bilbo were used to infer the existence of an early tradition of pottery production that included the use of thickened and flanged lips on plain fiber-tempered basins. Assemblages with such vessels were subdivided into two groups: those with thickened/flanged lipped plain vessels in excess of 20 percent, and those with such vessels less than or equal to 20 percent. Assemblages in the former group included only a small percentage of decorated vessels, more than half of which had separate linear punctations, and less than 17 percent with drag and jab punctation or incising. These assemblages were assigned to Group I.

Assemblages with thickened/flanged lipped plain vessels at 20 percent or less (Group II) included at least 25 percent drag and jab punctated designs among decorated vessels, and they all included examples of multiple design motifs (e.g., incising and punctation), designs lacking among Group I vessels.

A third group (Group III) included assemblages with a wide variety of design elements and motifs, but none included multiple designs, and plain vessels did not have thickened or flanged lips. Radiocarbon dates were continuous across these groups, but clearly showed the temporal sequence from Group I to III. Accordingly, these groupings were put into temporal and spatial context to establish three Phases (I-III): Phase I from 4500-3800 B.P.; Phase II from 3800-3400 B.P.; and Phase III from 3400-3000 B.P. We only need to add at this point that the Paris Island and Mill Branch phases prescribed by Elliott encompass all of Sassaman's Phase I. Pottery is absent in the earlier Paris Island phase, and used in only limited fashion in the Mill Branch phase. This accurately reflects the variegated nature of early pottery use in the region, underscoring the need for local sequences and processual models to account for the wide range of variation.

Fiber-tempered pottery occurs in appreciable frequency in the Coastal Plain of Georgia outside the Savannah River valley, but little of this has been adequately described, let alone dated. In the Ocmulgee Big Bend area, for instance, Frankie Snow and colleagues have collected fiber-tempered pottery from scores of sites. The Ogeechee River valley is itself home to some of the more spectacular shell middens in Georgia, most of which have been destroyed by looters. Pottery from those examined to date contain a substantial fraction of punctated sherds with sandy paste (Sassaman et al. 1995). By definition, these wares are more similar, technologically, to the sand-tempered wares of South Carolina referred to as Thom's Creek.

Thom's Creek Sand-Tempered Pottery. Griffin (1945) defined Thom's Creek pottery from a collection of sherds obtained from the Thom's Creek site (38LX2) near Columbia. Consisting of a series of plain, punctated, finger-pinched, and simple stamped wares, Thom's Creek resembles Stallings pottery except that it lacks fiber in the paste. The two series have considerable geographic and temporal overlap, with Thom's Creek emerging slightly later than Stallings, and with a more northerly distribution along the coast and lower Coastal Plain (Anderson 1975; Trinkley 1980a, 1980b).

As with Stallings wares, a good deal of confusion surrounded the various terms used to describe Thom's Creek pottery in the first few decades after its recognition (see Cable and Williams 1993:20-27 for insightful discussion of taxonomic history). Waring (1968c; originally 1952) introduced the term "Horse Island Punctate" to distinguish the sand-tempered wares of coastal South Carolina from the fiber-tempered wares of coastal Georgia. He indicated that a wide range of punctations were used, but no mention was made of finger-pinched motifs. Perhaps unaware of the incidence of finger-pinching at the Horse Island, Waring identified an Awendaw Complex to describe finger-pinched and gouged sand-tempered pottery from the Charleston area. Later, DePratter et al. (1973) rejected the distinction between the Awendaw and Horse Island complexes, opting for the Awendaw terminology. South (1973) proposed a systematic taxonomy of coastal pottery employing Ware-Groups, Wares, and Types. Under this system, Awendaw and Horse Island shell ring were offered as provisional types of the Thom's Creek Ware. In his systematic analysis of early coastal sand-tempered pottery, Trinkley (1980b) followed South's taxonomy, formally describing "Awendaw Finger-Pinched" as one of six Thom's Creek types, but choosing to subsume the Horse Island Punctate type under the Thom's Creek Punctate type, a decision Caldwell had ostensibly reached by 1969 (Trinkley 1980b:2). Trinkley (1983:44) has since renamed the Awendaw type "Thom's Creek Finger Pinched" to establish terminological conformity with the series.

Trinkley's sustained research on Thom's Creek pottery (1980a, 1980b) has clarified much of the confusion in the literature, and the terminology he established in this work is still widely used. Other refinements have been offered by Espenshade (1993a; Espenshade and Brockington 1989) and Cable (1992; Cable et al. 1993). Because Thom's Creek pottery from the coast of South Carolina does not occur in coastal Georgia, a detailed review of the series is unnecessary. The reader is referred to the reports cited above, or to Sassaman and Anderson (1994) for a review.

Thom's Creek pottery from sites in the interior Coastal Plain is similar, though not identical to coastal varieties. Thom's Creek wares appear to be widely distributed across the entire South Carolina Coastal Plain, though our best information about it comes from work in the Savannah River valley. Phelps (1968) reports on Thom's Creek assemblages from White's Mound (9RI4) near Augusta, and at the Boy Scout site (now known as Theriault, 9BK2) on Brier Creek in Burke County, Georgia. His sample of 416 sherds were used to define four varieties of Thom's Creek pottery: punctated, incised, simple stamped, and plain. Importantly, more than half of Phelps' sample of rim sherds exhibited some form of lip decoration—simple stamped, cordmarked, dowel stamped, and punctated—a trait not very common among Thom's Creek sherds from the coast. A recent report on excavations at 38AK157, an upland site in the Aiken Plateau, documents a high incidence of cordmarking on lips of plain and punctated Thom's Creek vessels (Sassaman 1993d:109-110).

Coastal and interior Thom's Creek assemblages differ more in technology than in style. The paste of pottery from interior sites is uniformly sandy or gritty. Although a range of paste types are noted for coastal Thom's Creek assemblages (e.g., Cable 1993; Espenshade and Brockington 1989:164), most assemblages are dominated by sherds with no visible aplastic inclusions (Anderson 1982:262; Trinkley 1980b:14). Another difference within the Savannah River valley is vessel wall thickness. Average vessel wall thickness for assemblages from sites in the upper Coastal Plain is about 2 mm thicker than averages for assemblages from sites in the tidal zone (Sassaman 1993d:139-141). The sand-tempered Late Archaic pottery from two shell-midden sites in Jenkins County, Georgia is especially thick (Sassaman et al. 1995), warranting perhaps a new type designation.

Finally, the chronological relationship between Thom's Creek and Stallings pottery in the interior Coastal Plain has not been fully explored. The two wares co-occur at many sites in the Savannah River and Ogeechee valleys (examples of which are illustrated in Figures 15-17), but few good contexts of co-occurrence have been dated (cf. Anderson et al. 1982). Stratigraphic data are also ambiguous. Fiber-tempered pottery is slightly deeper than Thom's Creek pottery at some sites (Crook 1990; Phelps and Burgess 1964; Phelps 1968; Stoltman 1974), but not at others (Brockington 1971). Recent testing at the Midden Point site (9BK113) in Burke County, Georgia revealed two distinct stratigraphic sequences. In one test unit, plain Stallings pottery dominated lower shell strata, and yielded to decorated and plain Stallings and Thom's Creek pottery in upper strata. Several meters away in another test unit, Thom's Creek pottery was recovered from all strata of the shell midden. The intervening area was looted, so stratigraphic relationships between the test units is unknown. It seems likely that the unit dominated by Thom's Creek pottery contained shell midden deposits postdating the basal strata of the first unit, indicating the midden formed laterally, as well as vertically (cf. Cable 1993). A series of radiocarbon dates from the site suggest that Thom's Creek pottery appeared around 3800 B.P., along with abundant decorated Stallings pottery. This corroborates the Stallings sequence described earlier, while helping to incorporate the Thom's Creek series. However, clearly many more such stratigraphic contexts and radiometric dates are needed before Thom's Creek is fully integrated. As it now stands, the development of non- or sand-tempered pottery appears to have greater antiquity on the coast than in the interior (Hanson 1982:14),

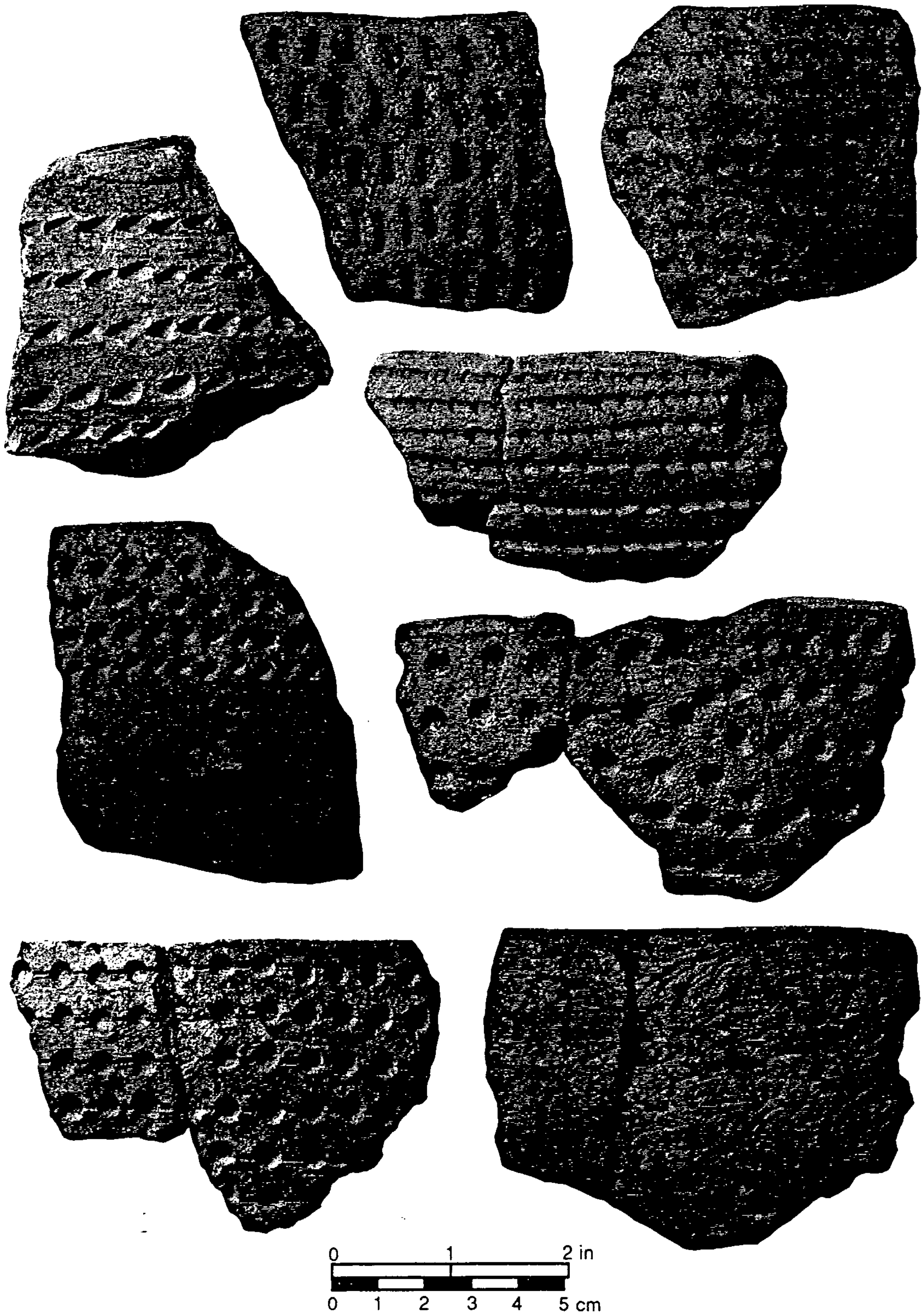


Figure 15. Punctated sand-tempered and fiber-tempered sherds from Theriault (9BK2), Burke County.

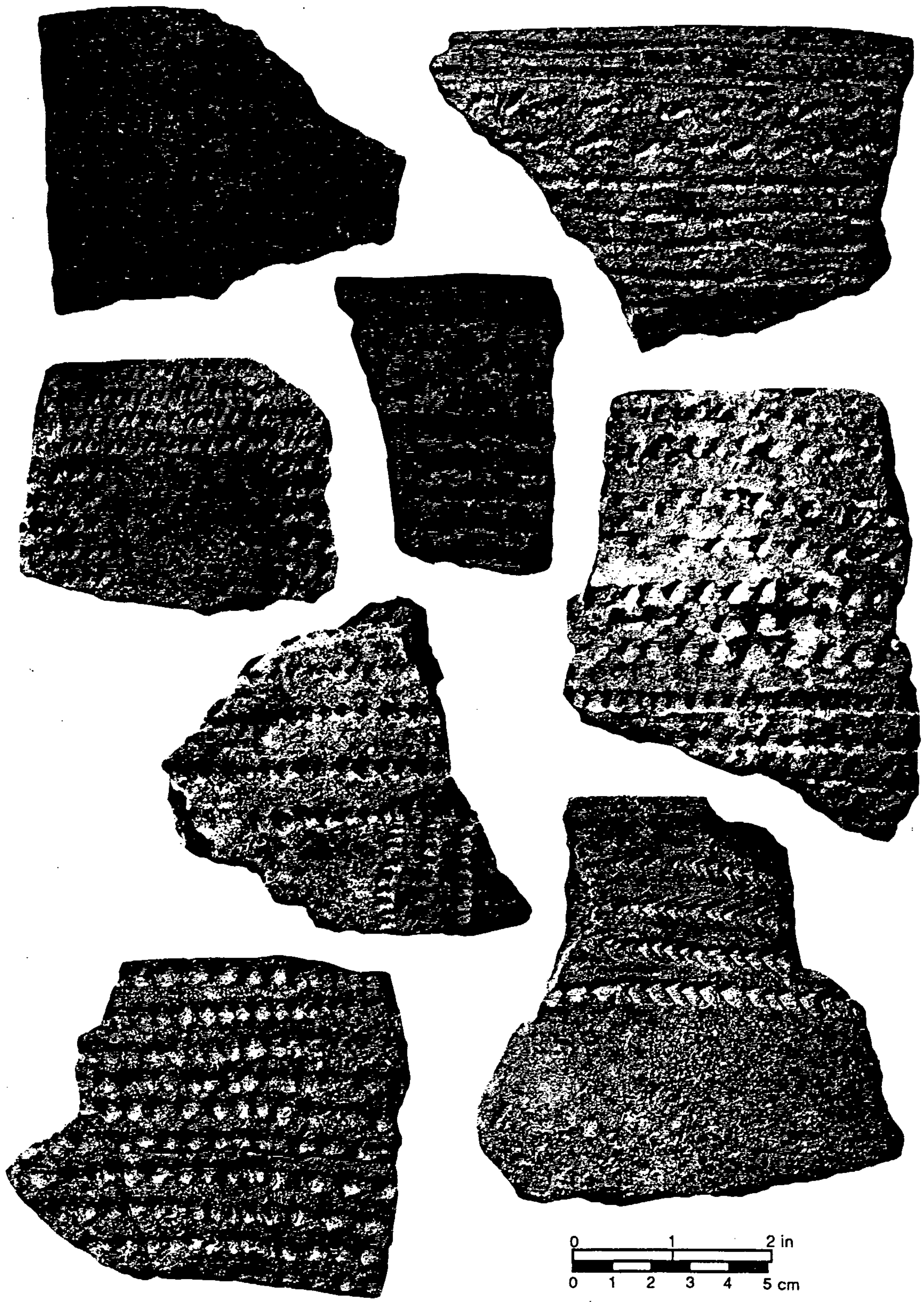


Figure 16. Plain fiber-tempered, and punctated sand-tempered and fiber-tempered sherds from the Strange site, Jenkins County.

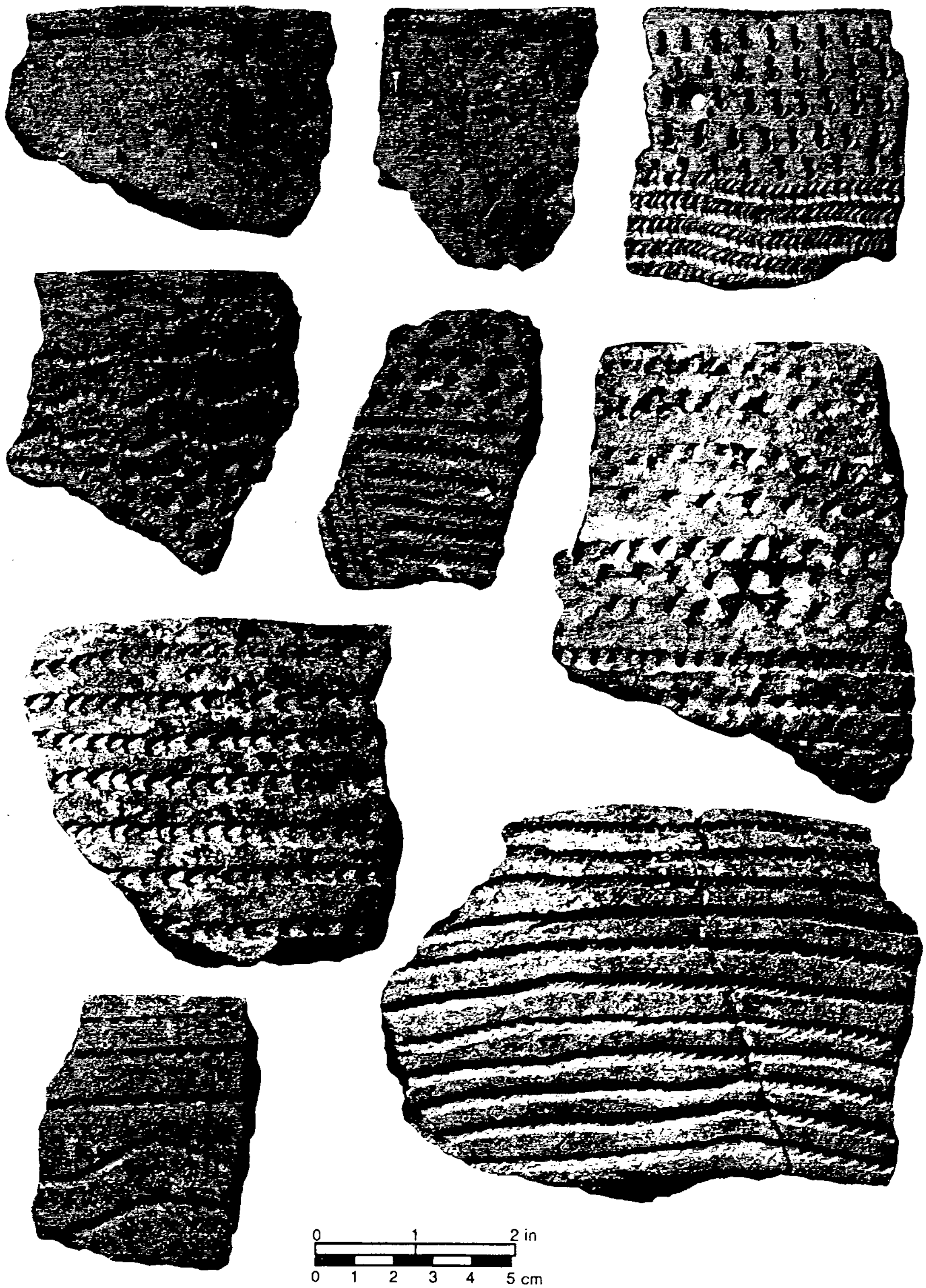


Figure 17. Plain fiber-tempered, and punctated sand-tempered and fiber-tempered sherds from Chew Mill Swamp, Jenkins County.

so we continue to recognize, for the Savannah River valley at least, a phase of exclusively fiber-tempered pottery (i.e., Stoltman's Stallings II; Elliott's Mill Branch phase; Sassaman's Phase I).

Orange. Fiber-tempered pottery appears in Florida no later than 4000 B.P. The earliest wares were until recently believed to be confined to the St. Johns Basin, where the Orange series of plain and incised wares was defined from collections at several freshwater shell middens (Bullen 1955, 1972; Goggin 1952). However, recent work has established the existence of fiber-tempered pottery across much of Florida (see summary by Milanich 1994:86-104). There are insufficient data on these various wares at this time to provide a detailed typology and chronology for the entire state.

Bullen's (1972) Orange period chronology includes five subperiods. Orange 1 (ca. 4000-3650 B.P.) is characterized by the use of flat-based, rectangular containers that were tempered with fiber, had plain surfaces, thin walls (6-7 mm), and simple rounded lips. The subsequent Orange 2 period (ca. 3650-3450 B.P.) introduced incised decorations that included concentric vertical diamonds with horizontal lines on vessels of similar form as the preceding period. Plain pottery persisted in abundance, and there are occasional instances of the so-called Tick Island style of incised spirals with background punctations. Orange 3 (ca. 3450-3250 B.P.) vessels include large, straight-walled and round-mouthed pots with flat bottoms and lesser numbers of shallow rectangular vessels. Some vessels resemble soapstone pots, which were introduced for the first time in this period. Decorations on Orange 3 pots include incised straight lines, some set obliquely, and a limited number of punctations or ticks. Pastes with mixtures of sand and fiber appear in Orange 4 times (ca. 3250-3000 B.P.). Coiling also appears, and decorations are limited to simple incised motifs. the final period, Orange 5 (ca. 3000-2500 B.P.) marks the emergence of the chalky St. Johns wares.

The validity of Bullen's sequence for northeast Florida has not been fully tested, although in general outline it seems to have withheld what limited scrutiny it has seen. The Orange tradition does not appear to have much of a manifestation in the interior Coastal Plain of Georgia, and only a bit more influence on the coast of Georgia. Orange pottery has been identified at sites in the Kings Bay locality of Camden County (Adams 1985), and at sites in the Okefenokee Swamp (Trowell 1979). Isolated finds of Orange-like pottery at points farther north are not unusual (e.g., Sapelo Island), although the St. Simons series of predominately plain and punctated pottery is a more appropriate type designation for virtually all of Georgia's coastal fiber-tempered ceramics. Thus, the St. Marys River, which today borders Florida in the extreme southeast corner of Georgia, appears to have marked a cultural boundary of sorts in the ceramic Late Archaic, much as it did in later prehistoric times (Goggin 1952).

Satilla and Ocmulgee Series. As of 1977, Frankie Snow and colleagues had identified 121 sites in the Ocmulgee Big Bend area with fiber-tempered pottery. Little of this material can be accommodated by existing typologies (e.g., Stallings, Orange, St. Simons), and hence warrant their own typological categories. Snow (1977a) has to some extent begun this process with his Satilla Series.

Satilla wares are semi-fiber-tempered pottery with plain, simple stamped, and check stamped surface treatments. Sites with Satilla pottery are prevalent along the upper Satilla river, in the interriverine area between the Satilla and Ocmulgee rivers, and southwest into the Gulf-draining Alapaha River. Satilla sherds are thin (mean = 7.6 mm), show occasional coil breaks, and have very sandy paste. Its sandy paste and simple stamped surfaces are shared with the Norwood series of Gulf Coastal Florida (Phelps 1965; see below), but Norwood does not include check stamped surfaces. Rather, the practice of check stamping may signify an early expression of the subsequent Deptford series, which does not predate 2500 B.P. A time interval of 3000-2500 B.P. is a reasonable guess for the Satilla series. This estimate will have to await absolute dates, which Snow (1977a:12) indicates may be possible to obtain from the Satilla River Dune Site (9CF31), where hearths with Satilla pottery have been exposed.

The fiber-tempered pottery from nearby Ocmulgee River sites deviates technologically and stylistically from Satilla wares. The Ocmulgee pottery is thick (mean = 11.1 mm) and largely plain. What few decorated sherds Snow has collected include punctated and incised varieties from sites on the Ocmulgee proper (Figure 18); sites with plain wares extend into the adjoining upland tributaries. The decorated sherds include examples that fit into Stallings, St. Simons and Orange type criteria, yet they are a distinct minority. In each of these series the incidence of predominately plain pottery would indicate an early component. However, the Ocmulgee wares have a sandy paste like Satilla, and co-occur on sites with soapstone vessel sherds, an association that would suggest a date no earlier than 3500 B.P. in either the Stallings or Orange sequences. It stands to reason that the Ocmulgee fiber-tempered pottery is relatively late (i.e., post-3500 B.P.), though, again, absolute dates are needed to verify this supposition.

Norwood. Semi-fiber-tempered pottery from sites in northwest Florida have surfaces with stick impressions and a sandy paste. Phelps (1965) developed the Norwood series to accommodate these wares and to distinguish them from the fine-paste, incised Orange pottery. However, as Milanich (1994:95-97) has recently pointed out, not all Norwood pottery has a sandy paste, while some Orange pottery does, and designs of the Orange series occasionally appear in Norwood assemblages. The chronology and typological validity of Norwood remain to be determined.

Other Fiber-Tempered Wares. Fiber-tempered or semi-fiber-tempered pottery can be found throughout the Georgia Coastal Plain. Outside the Savannah, Ogeechee, and coastal settings, the amount of pottery is not impressive. There are indeed some secondary centers of dense assemblages, such as in the Ocmulgee Big Bend, but by and large the incidence of pottery is generally low. This causes some difficulty in assigning occasional fiber-tempered sherds to one of the established type series.

The fiber tempered ware found in western Georgia has been identified variously as Stallings Island, Orange, or Norwood wares. Fiber-tempered pottery in this area includes plain, incised, and punctated vessels. Some of the sherds are entirely fiber tempered, while others, presumably later in the sequence, contain fiber and grit tempering. Chase notes that the sherds with mixed temper tend to be thinner sherds and are more likely to bear design motifs. Important excavated sites with fiber-tempered pottery include the Water Tower site (9CE33), Carmouche (9ME21), and Snelling's Pond (9CE20) (Chase 1957a; Gresham et al. 1984). The most in-depth treatment of the fiber tempered pottery was conducted at the Carmouche site.

Southeastern Archeological Services excavations at the Tarver Site, 9JO6, resulted in the definition of the Tufts Spring phase for the Macon Plateau area (Ledbetter et al. 1994:I). This phase has a suggested date range from ca. 2200 to 1800 B.C. and is marked by the use of predominantly plain fiber-tempered pottery and Savannah River projectile points. The Tarver site itself produced very little fiber-tempered pottery, but other sites in the Macon area cited by Ledbetter contain appreciably denser assemblages of plain and occasionally punctated pottery.

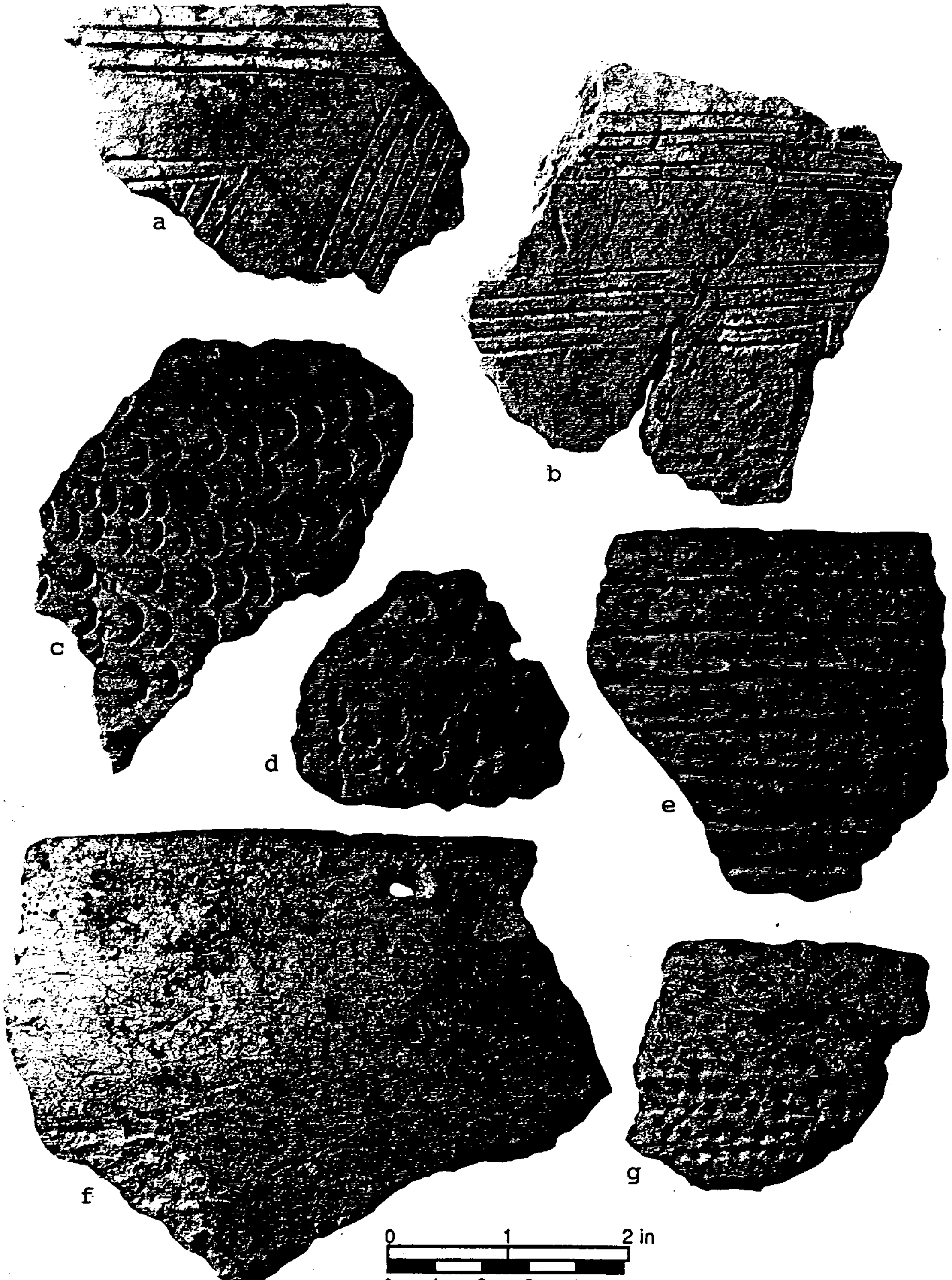


Figure 18. Examples of fiber-tempered sherds from south Georgia sites (a,b. mid-Satilla River; c. 9WL13; d, e, g. 9JD10; f. 9WL11) (courtesy of Frankie Snow).

OTHER DIAGNOSTIC ARTIFACTS

Perforated Soapstone Slabs. Long referred to as "netsinkers" (e.g., Claflin 1931:32; Jones 1873:337; Wauchope 1966:192), perforated soapstone slabs are now known to have served a cooking function in indirect heat "stone boiling" (Anderson et al. 1979, 1985:239; Dagenhardt 1972; Elliott 1981; Sassaman 1993c; Wood et al. 1986:324). These items were apparently first used in the Savannah River valley at about 5000 B.P., and they waned in popularity during the fourth millennium as pottery was adopted for cooking needs. Perforated soapstone slabs are common to Late Archaic assemblages near source areas in the Savannah River valley, decreasing with distance from source, and virtually absence, even near sources of soapstone, west of the Oconee River and north of the Saluda River. Coastal Plain sites dating to the fifth millennium in the Savannah River valley contain substantial numbers of broken slabs, supporting the hypothesis of a trading network between Piedmont groups near outcrops and their Coastal Plain counterparts.

Elliott (et al. 1994:256-260) has compared perforated soapstone slabs from assemblages of varying age in search of temporally-sensitive attributes. He suggests that slab thickness may increase through time, but is quick to note that slabs from sites far from outcrops also tend to be thick, regardless of age. Both trends may be indicative of efforts to conserve soapstone (Elliott et al. 1994:259), as is the strategy of reperforating broken slabs for continued use (Sassaman 1993c:121-123). Other possible time-sensitive attributes, such as shape (Anderson 1988:174-175) or type of perforation, have yet to be systematically investigated.

Finally, recent excavation at the Mims Point site (38ED9) has yielded several examples of pitted soapstone nodules similar to ones recovered from Stallings Island (Claflin 1931:31, Plate 51; Sassaman 1993b:79-81), and other ongoing work at the Victor Mills site (9CB138) is producing examples of slabs with partially drilled holes. Kevin Eberhard (personal communication, 1994) suggests that a developmental sequence in cooking stone technology is represented by these various forms. In his model, soapstone cooking stones began in the late Middle Archaic as unmodified or slightly modified nodules, and were replaced by pitted nodules that were more effectively transported from fire to container with tongs. Pits eventually were replaced by partially drilled holes as slab thickness decreased and became more uniform to maximize heat transfer. Finally, holes were drilled completely through thin slabs to accept a stick or antler tine as a transfer device. This line of reasoning seems well supported by available evidence, and ongoing excavations at middle Savannah River valley sites should aim to collect more data to evaluate the validity of what could prove to be an important chronological tool.

Soapstone Vessels. An Archaic soapstone bowl industry extended the full length of the eastern seaboard from Labrador to Alabama. Aboriginal bowl quarries captured the curiosity of researchers during the latter half of the nineteenth century and there was a flurry of research articles describing quarries in various states. Significant studies on soapstone bowls were produced by William Henry Holmes (1897), David Bushnell (1939), and others (Dickens and Carnes 1983; Ferguson 1976; Elliott 1981, 1986a). Delineating the age range of the soapstone bowl industry has proven more elusive. Only one radiocarbon date even remotely associated with soapstone bowls has been obtained from the Savannah River valley (Anderson and Joseph 1988), while most of the large excavated sites, such as Stallings Island, Lake Springs, and others, either did not yield soapstone bowls or yielded them in extremely low frequency and in poor context.

The soapstone bowl industry may have lasted more than 1,600 years in Georgia. Most of the radiocarbon dates for sites with soapstone bowls are from the Tennessee Valley, where they generally date to after 3500 B.P. The earliest reported date in Georgia is 4170±150 B.P. and was obtained from a hearth feature containing a soapstone bowl sherd at 9FY36 on the upper Flint River drainage (Elliott 1989:93). This single date deviates from the norm, however, and it needs to be corroborated before the antiquity of the stone bowl industry can be firmly established. The most recent date for soapstone bowls in Georgia, 2550±60 B.P., was obtained from the Cagle site (Crook 1984), although Dunlap, Cartersville, and Mossy Oak pottery were found in the same stratum, and soapstone scavenging and recycling cannot be ruled out. Nonetheless, radiocarbon dates from eastern Tennessee for soapstone bowl strata suggest that the technology continued into at least the eighth century B.C. More locally, a date of 3410±80 B.P. was obtained from a nondiagnostic feature within a midden containing soapstone bowl sherds and Stallings Island pottery at McCalla Bottoms on the upper Savannah River (Anderson and Joseph 1988:Appendix). A much later date of 3150±250 B.P. (M–394) was obtained by Bullen for an Orange III fiber-tempered pottery and soapstone bowl stratum at Site J-5 in Lake Seminole (Bullen 1958). Similarly late dates are being obtained directly from the soot of soapstone vessel sherds. Soot from a sherd from the Tinker Creek site (38AK224) in Aiken County, South Carolina yielded an uncorrected date of 3160±60 (Beta-79986; Sassaman, unpublished data), while another example from a site in northern Berkely County, South Carolina (38BK984) yielded an uncorrected date of 3200±60 B.P. (Beta-81405; Eric Poplin, personal communication 1995). As additional dates on the soot from vessel surfaces are obtained (ongoing research by Sassaman), we should not be surprised to find that soapstone vessel technology throughout the Southeast coincided with the peak of Poverty Point regional exchange networks, roughly 3300-2900 B.P.

The chronology of the soapstone bowl industry in Georgia is an especially important issue because of the possible role Georgian artisans had in Poverty Point exchange (Gibson n.d.). Sourcing studies conducted by Smith (1981, 1991) have implicated eastern Alabama or western Georgia sources for bowls imported into northeast Louisiana, where Poverty Point is located. So-called outposts of Poverty Point exchange include the Choctawhatchee bay of the Florida Gulf Coast, where members of the Elliott's Point Complex (Thomas and Campbell 1991) procured soapstone for bowls from presumably upriver connections in western Georgia. Archaeologists working in Georgia should seek evidence for the role of Georgia residents in this process of production and exchange.

Bannerstones. There is some chronological specificity to the variety of bannerstones that were made and used throughout the Archaic period in Georgia. The earliest examples are the pick or semilunate type that Coe (1964) found in association with Stanly points. Other Middle Archaic varieties have not been defined for the area, but by at least 4500 B.P., winged forms associated with the Paris Island phase in the middle Savannah River valley are prevalent. Classified as the Southern Ovate by Knoblock (1939), these winged forms occur with great frequency in the lower Piedmont of the Savannah valley, and in limited, but sometimes spectacular contexts such as in a cache within the Tomoko Mounds of Florida (Douglas 1882; Piatek 1994). The Tomoko Mounds finds are believed to be from the Mount Taylor period of roughly 6000-5000 B.P. (Piatek 1994), so the Savannah River examples may predate the Paris Island phase by several centuries.

Another variety of winged bannerstone—what Knoblock (1939) referred to as the Notched Southern Ovate—is diagnostic of the Mill Branch phase of the middle Savannah River valley, dated to about 4200-3800 B.P. These "butterfly" forms occur occasionally outside the middle Savannah, but their distribution is much more limited than the true Southern Ovate. Other temporal patterns to the use of bannerstones has been explored by Kwas (1981), although none of this analysis bears directly on bannerstone chronology in the Georgia Coastal Plain.

Grooved Axes. Woodworking technology has great antiquity in the Southeast. Dalton adzes (Morse and Goodyear 1973), Kirk phase chipped and polished celts (Anderson and Hanson 1988:275; Broyles 1971; Chapman 1985:147), and Guilford chipped-stone axe (Coe 1964:113) attest to developments in heavy-duty woodworking technology over a 4000-year period. The innovation of grooved polished axes first appeared in the Middle Archaic period of the Midwest by 7000 B.P. (Brown and Vierra 1983; Fowler 1959). These earliest examples are fully grooved; after about 6000 B.P., three-quarter grooved axes were also made. None of the woodworking technology appears to have been routinely employed by groups occupying the Georgia Coastal Plain. However, by about 4500 B.P., grooved axes are included in the tool inventories of Late Archaic populations near sources areas in Georgia (i.e., Piedmont and mountains), and occasional finds of grooved axes are reported from Coastal Plain sites. It appears that grooved axe technology continued for at least 1500 years in the Georgia-Carolina area, so the temporal specificity of these items is not so great. By and large, grooved axes—full or three-quarter—signify a Late Archaic or Early Woodland component.

ABSOLUTE CHRONOLOGY

Radiocarbon dating of sites on the coast of Georgia got off to an early start in the late 1950s due to the interest of James B. Griffin in the work at shell ring sites such as Bilbo and Sapelo Island. Griffin was instrumental in establishing the first radiocarbon lab for archaeological dating at the University of Michigan. Since these early days, contractors and researchers have added dozens of dates from interior sites, as well as the coast. In the section that follows we review the radiocarbon record for the Georgia Coastal Plain, drawing generalization when possible and pointing to some of the major gaps and problems in the radiocarbon record. We also review briefly the unsuccessful efforts to apply thermolumenescence (TL) techniques to the dating of Coastal Plain sherds.

THE RADIOCARBON RECORD

A review of published and some unpublished radiocarbon dates from sites in and around the Georgia Coastal Plain area yielded a total of 125 assays that either date to the Archaic period (i.e., 10,000-3000 B.P.), or are reported in association with Archaic period artifacts. The uncorrected dates are listed in Appendix A, along with site numbers and names, lab numbers, provenience and association information, material dated, and citations. This inventory includes all dates from coastal and Coastal Plain Georgia, as well as dates from extreme southwest coastal South Carolina, the entire Savannah River valley, the lower Piedmont of Georgia, the Apalachicola River of northwest Florida, and the St. Marys area of northeast Florida. We do not suppose that this listing is comprehensive; many unpublished dates and even obscure published dates may have gone undetected in our search. A quick review of the list shows that over the majority of the dates are from shell-midden sites on the coast of Georgia and in the Savannah River valley. Although this may indicate a local bias on our part, shell-midden contexts are both preferred targets of professional investigations and good places to find preserved, datable organics.

Before proceeding with an examination of the radiocarbon record, a few words on correction and calibration are in order. The dates listed in Appendix A and discussed herein are largely uncorrected. The major exception to this are assays reported in the last few years by the University of Georgia's Radiocarbon Laboratory. The UGA Lab provides C13-adjusted dates to its customers, along with the C13/C12 ratio and a subtraction factor to obtain an uncorrected date. Samples consisting of wood or nutshell have minuscule C13 adjustments, factors usually on the order of 10-20 years. Other materials, especially grasses and shell, have larger correction factors, but none of these materials have been processed for Archaic sites by the UGA Lab in recent years. Other labs have not routinely provided C13/C12 ratios and correction factors, and, of course, neither did UGA in the early decades of its operation. The extant record therefore includes many uncorrected dates that cannot be precisely corrected. This problem spills over into calibration because it is unwise to calibrate dates without first correcting them. There may be means to overcome these problems, but such is well beyond our present purposes. Instead, we restrict most of our discussion to records of uncorrected and uncalibrated dates. Our treatment of marine shell deviates from this general rule. Michael Russo has consulted with the radiocarbon experts of Beta Analytic on series of marine shell samples from coastal Florida. From his work in the St. Mary's river area of northeast Florida, Russo (1992) has consistently received C13/C12 corrections on the order of about 400 years. Beta Analytic has provided Russo with corrections for enough samples to suggest that a correction of 420 years be added to any marine shell for which C13/C12 ratios are not available. Hence, in the discussion that follows we consider both uncorrected dates for all samples, as well as dates for marine shell that are corrected by an addition of 420 radiocarbon years.

Trends of the Complete Radiocarbon Record

A graphic display of all radiocarbon dates predating 2800 B.P. from the study area is provided in Figure 19. Each date is marked by a centroid (short vertical line) and a plus/minus range of one standard deviation (horizontal line).

Conspicuous in the distribution of all dates is the limited number of assays predating 6000 B.P. In fact, the seventh millennium of radiocarbon years is a major gap in the record, with only four dates reported. Only a couple more dates each are reported from the preceding two millennia, making Early and Middle Archaic absolute chronology sketchy at best.

The other side of the 6000 B.P. divide is well-provided with radiocarbon dates, especially after 4500 B.P., where nearly three-quarters of the entire record resides. The period between 4000 and 3500 B.P. alone accounts for 45 dates, over one-third of the record in less than one-tenth of the time range. This period, of course, marks the heyday of Stallings and St. Simons Culture, with its numerous shell middens and preserved organic materials.

More specific observations of the distribution of dates are enabled by a histogram of dates per century in Figure 20. Data such as these must be viewed with extreme caution. It is dangerous to equate the frequency of dates with the size of site or human populations (e.g., Glassow et al. 1988), not only because of the preservation and investigation biases noted earlier, but also because of variation in the production of carbon isotopes that causes clustering. Nevertheless, some aspects of the distribution can be traced to cultural historical factors.

The largest gap in the distribution is the period from 8600 to 7600 B.P., where only one date is found. This is the purported range of the Kirk Stemmed and Stanly phases of the Carolina Piedmont sequence, and a period that is very poorly defined in Florida. This 1000 years thus appears to mark a true gap in the region's radiocarbon chronology due to an occupational hiatus. In fact, no century-long period before 5800 B.P. is represented by more than one radiocarbon date from materials in direct association with diagnostic artifacts, and virtually all the dates preceding 4500 come from sites in the Fall Zone of lower Piedmont. As we have seen, there are finds of diagnostic artifacts in the Georgia Coastal Plain during these early centuries, especially for the first half-millennium of the Early Archaic period. There have never been, however, excavations in the Coastal Plain that yielded preserved organics from such early contexts.

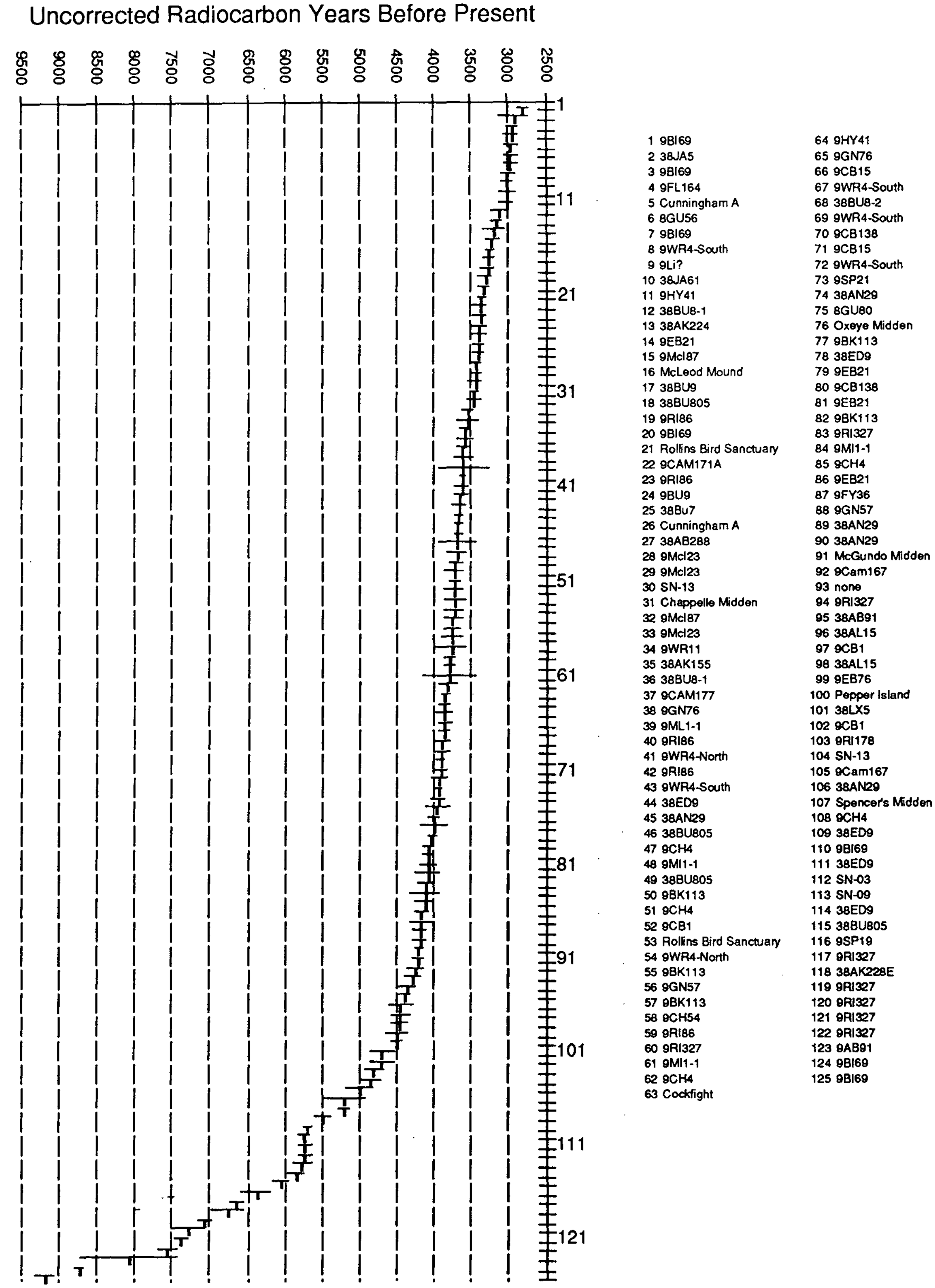


Figure 19. Uncorrected radiocarbon dates for the Georgia Coastal Plain region (horizontal bar for each date signifies ± one sigma).

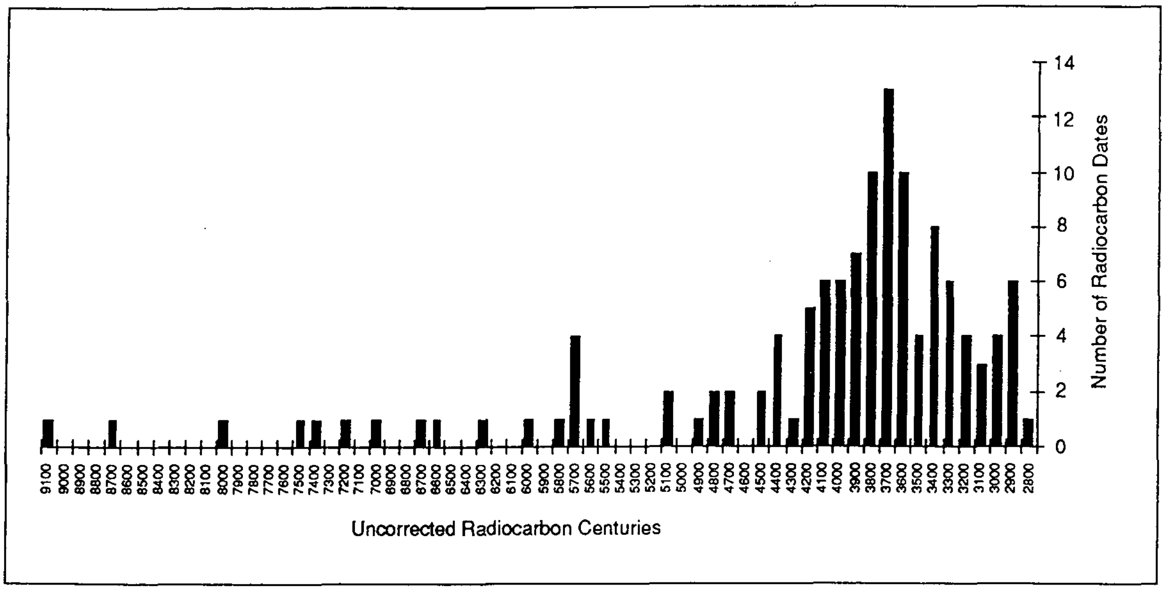


Figure 20. Frequency distribution of radiocarbon dates by uncorrected radiocarbon centuries.

The abundant Late Archaic record resembles a normal distribution centered on the 3700s B.P. Nearly all of the 13 dates that form this peak have good associations with Stallings or St. Simons fiber-tempered pottery; all but two are from sites with shell middens. The vast majority of younger dates are likewise from shell-midden or shell-ring sites and have pottery assemblages in association, whereas most of the older dates are from aceramic or preceramic sites that lack shell. Shell middens and pottery are, of course, as old as 4500 B.P. in the region, but their appearance is very spotty before the fourth millennium. In fact, the century 4000-3900 B.P. appears to mark a significant turning point in Late Archaic prehistory. At about this time, or shortly later, shellfishing became a conspicuous pursuit in the middle Savannah River valley, and with it the use of elaborate decoration on fiber-tempered pottery. In reviewing the radiocarbon record, we caution that the entire Late Archaic period, from 5000-3000 B.P., was a time of numerous, but spatially uneven, changes. Accordingly, it is difficult to interpret radiocarbon chronology apart from locational data, even at the scale of a river valley.

The Radiocarbon Record of Diagnostic Materials

We reviewed the reported contexts and associations of each of the 125 dates in our database to cull out cases of questionable value. No doubt some researchers will find some of our calls too conservative, others too accommodating. By and large our judgments were simply those of primary investigators. The principle criterion for acceptance, obviously, was whether or not the materials dated were believed to be in reasonable association with unequivocal diagnostic artifacts.

The culled record consists of 97 radiocarbon dates. A graphic display of the uncorrected dates, with divisions by diagnostic material, is given in Figure 21. Because a large number (n = 21) of these dates were obtained from marine shell, we felt compelled to provide corrections. The display with corrected marine shell dates is provided in Figure 22. A careful comparison of the uncorrected and corrected sequences shows little change for most of the subgroups. However, the St. Simons and Orange dates are shifted back to the earliest centuries of the Stallings period, suggesting that all three pottery series emerged at about the same time.

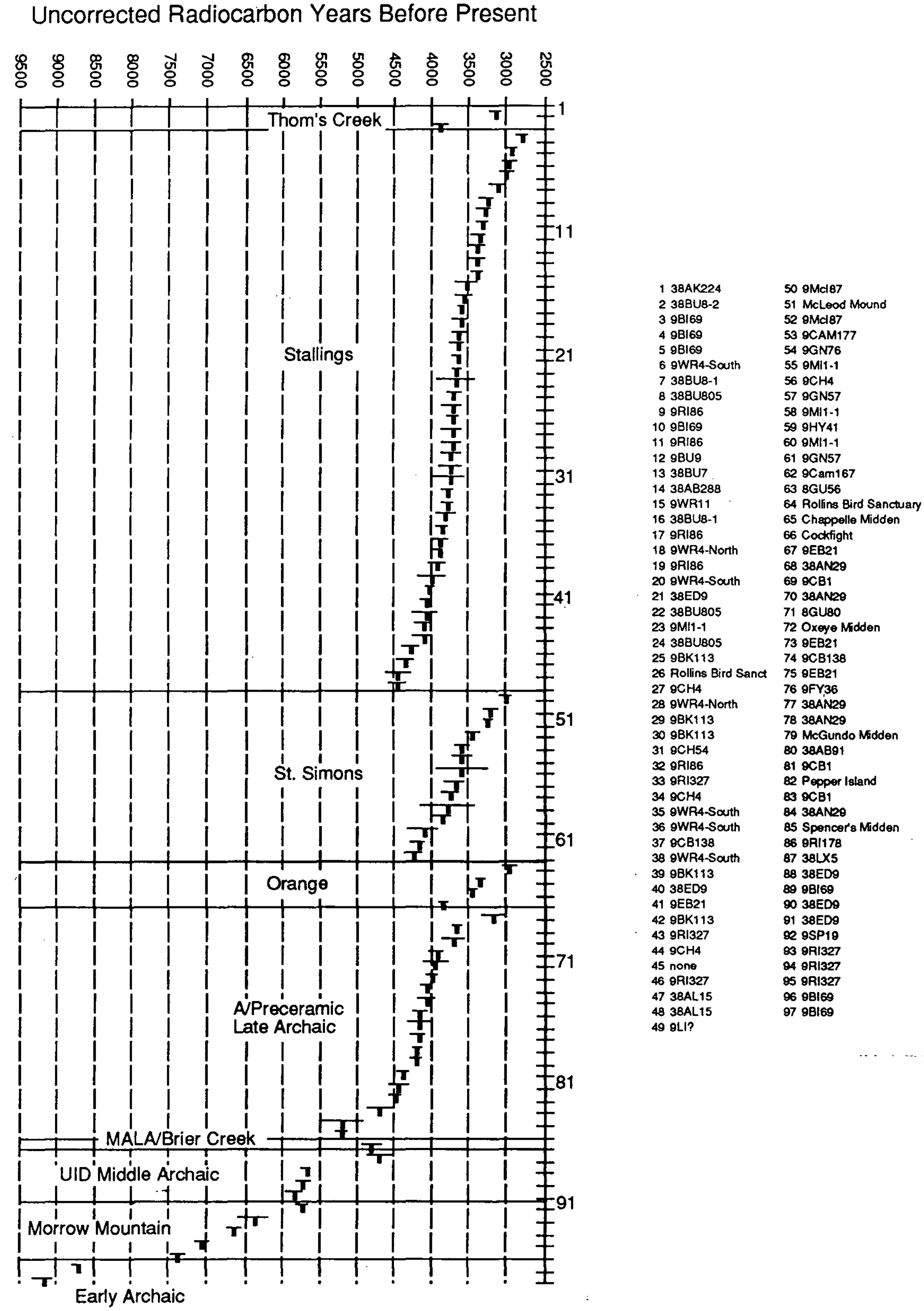


Figure 21. Uncorrected radiocarbon dates with good association and context by culture-historical phase/period (horizontal bar for each date signifies ± one sigma).

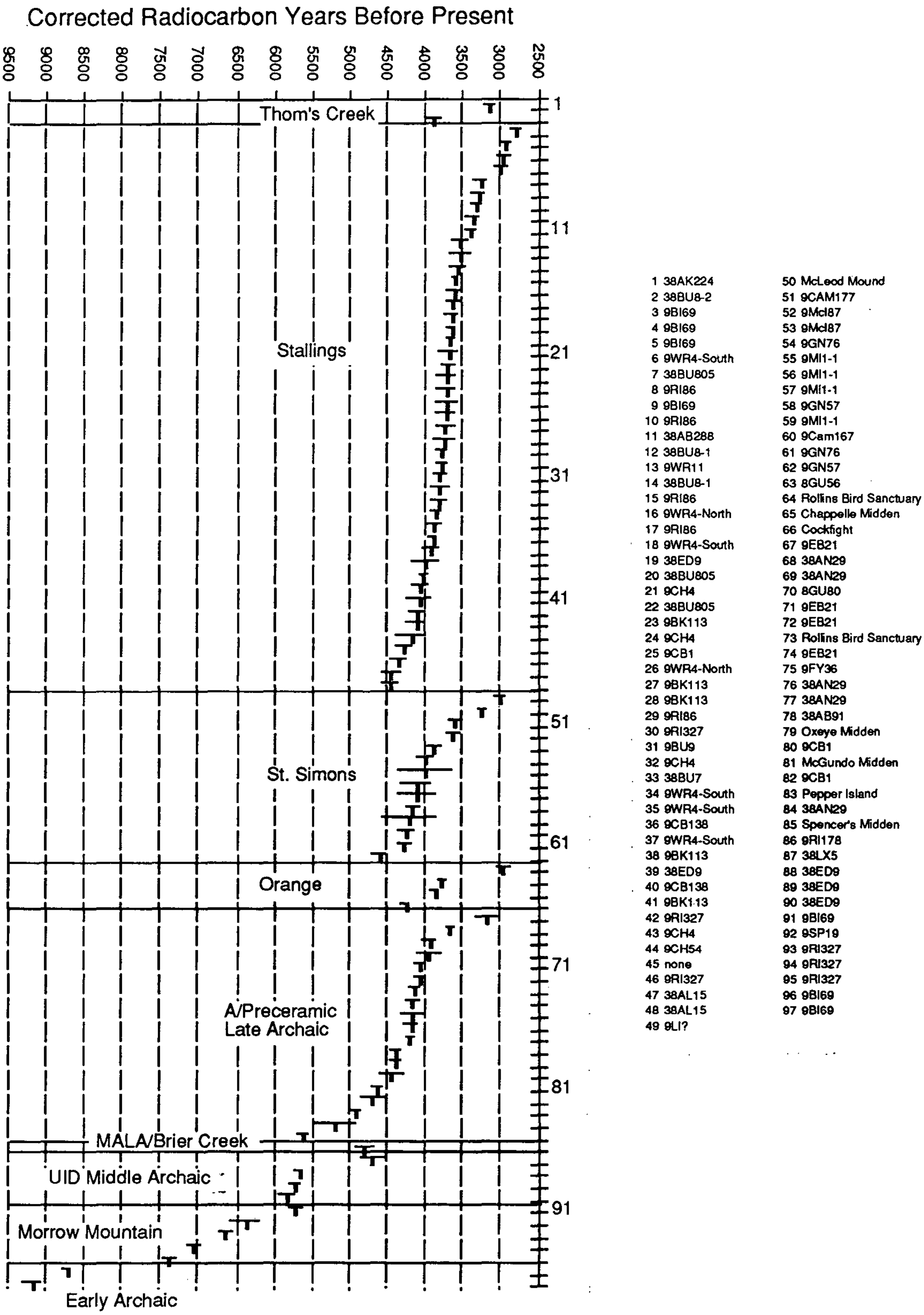


Figure 22. Corrected radiocarbon dates with good association and context by culture-historical phase/period (horizontal bar for each date signifies ± one sigma).

In the paragraphs that follow, we review each of the cultural-historical groups for observations on location, context, and anomalies.

Early Archaic. The minuscule record of two Early Archaic dates for Georgia are from the recent excavations directed by Chris Espenshade at a site (9BL69) on Lake Sinclair in the lower Piedmont of the Oconee River (Espenshade et al. 1994). Palmer points and a Bolen were found in the strata containing the two pits features Espenshade dated. The association of these points with the dated materials is thus indirect, although it is clear that Palmer points would fit comfortably in the one-sigma range of these two dates (i.e., 9300-8680 B.P.). The recent end of the conventional range for Bolen (i.e., ca. 10,000-9500 B.P.) is reached at the two-sigma range of the earliest radiocarbon date. Obviously, many more dates are needed to refine the Early Archaic chronology of Coastal Plain Georgia.

Morrow Mountain. The small record of five Morrow Mountain dates are from sites in interior Georgia: three from one site on the Fall Line, Rae's Creek in Augusta (Crook 1990); and one each from two Piedmont sites, 9BL69 on Lake Sinclair (Espenshade et al. 1994) and a site in Henry County (Webb 1994). Morrow Mountain associations for all these dates appear to be good; if so, a long duration for the period is indicated. Late dates on Morrow Mountain-associated materials from sites in South Carolina have been culled from this record because of poor context (i.e., shallow and/or mixed). Importantly, if the newly obtained dates from Georgia accurately represent the continuance of the Morrow Mountain period into the early seventh and late sixth millennia, we may have grounds for accepting the late South Carolina dates. Either way, the Morrow Mountain radiometric record is only beginning to take shape, and we will certainly require dozens more dates before fleshing-out possible time-transgressive processes. Coastal Plain sites in Georgia will not likely contribute to this growing record for they have produced few Morrow Mountain points from surface finds, let alone buried contexts with datable organics.

UID Middle Archaic. Three dates from the Mims Point site in Edgefield County range from 5840 and 5680 B.P., with a one-sigma intercept of 5740-5730 B.P. (Sassaman 1993; unpublished). The dates come from three distinct features—a burial, earth oven, and hearth—located within eight meters of one another. None of the features yielded diagnostic projectile points, although the general vicinity and overlying disturbed midden produced dozens of Morrow Mountain points and a few MALAs. The burial and hearth features were full of freshwater shellfish, the oldest yet dated in archaeological context in Georgia-Carolina. This component appears to represent the onset of shellfishing and relatively intensive riverine settlement in the middle Savannah River valley. Ongoing work will hopefully identify the suite of diagnostic materials dating to this interval and, by extension, provide a better means for identifying late Middle Archaic occupations in the study area.

MALA/Brier Creek. The first (and only) date for MALA/Brier Creek-associated materials was reported last year by Ledbetter and Elliott from their excavations at Phinizy Swamp in Augusta (Elliott et al. 1994:120). Not much can be said about this date other than it falls at the late end of the presumed time span for Middle Archaic lanceolates (i.e., 6000-5000 B.P.). We are optimistic that Albert Goodyear's ongoing work at Smith's Lake Creek in Allendale County will add several dates for MALA. In 1994, Goodyear sampled a deeply buried Middle Archaic stratum that contained several pit features, two containing abundant charred nutshell. Unequivocal artifact associations in the features so far are lacking, but future excavations slated for 1995 will hopefully alleviate the problem.

Aceramic/Preceramic Late Archaic. A suite of 19 dates forms the record of the aceramic or preceramic Late Archaic period across the study area. This group consists chiefly of materials associated with Savannah River Stemmed points or local variants such as the Paris Island Stemmed, and, by definition, none are associated with Late Archaic pottery. Pottery use began in the lower Savannah River valley at about 4500 B.P., and it persisted throughout the remainder of the Late Archaic period. The aceramic or preceramic Late Archaic record includes cases that predate the appearance of pottery anywhere in the region, but it largely consists of cases dating from 4500-3500 B.P., the heyday of early pottery. The coexistence of sites with and without pottery is one of the more interesting aspects of Late Archaic prehistory in the region. In the Savannah River valley, for example, pottery was made and used for several centuries in the Fall Zone and Coastal Plain, and on the coast, before it was adopted in the Piedmont. Ten dates from three a/preceramic sites in the Richard B. Russell reservoir are contrasted with several contemporaneous dates from sites downriver. A larger, parallel contrast is seen in the lack of sites with pottery elsewhere in the region compared to the numerous ceramic-bearing sites in South Carolina, Georgia, and Florida. Explanations for these variegated patterns are the subject of other research (Sassaman 1993c), so suffice it to say that context within a regional landscape is critical to the interpretation of Late Archaic radiocarbon dates. The existence of pottery in the middle Coastal Plain of South Carolina at 4500 B.P. does not render a date of 3700 B.P. for an aceramic Late Archaic assemblage from the Piedmont unacceptable. We must accept temporal and spatial variation in the use of materials normally considered indicative of cultural horizons.

The set of 19 aceramic or preceramic dates includes five from five sites in the St. Marys River area obtained by Michael Russo (1992). All of the dates were obtained from oyster shell. As we indicated earlier, oyster shell dates were corrected for display in Figure 22. With these corrections, the St. Marys dates are among the oldest Late Archaic dates in the region. It is noteworthy, too, that at least one of Russo's dates places an aceramic occupation at Rollins Bird Sanctuary during the time when pottery was used widely along the coastal zone (ca. 4000 B.P.).

Orange. There are many more dates from Orange fiber-tempered pottery than the four displayed in Figure 22, but we choose to include only those from areas adjoining Coastal Plain Florida. The oldest dates in our sample are from the St. Marys area, which, again, have been corrected by an addition of 420 years (Russo 1992). The fourth date is from the work of Nancy White (1994) at shell mounds around Apalachicola Bay. White does not attribute her simple stamped and plain fiber-tempered pottery to the Orange series without reservation because of the late date. She notes the similarity of the Apalachicola material to the Norwood series, which is presumably late, but likewise hesitates to assign it to this series because it is so poorly defined. We suspect that many more late dates from plain and simple stamped fiber-tempered pottery would be forthcoming if preserved contexts for Georgia Coastal Plain assemblages were located.

St. Simons. By definition, all of the St. Simons dates are from sites on the coast of Georgia, including those in the Kings Bay area of Camden County. Corrections for the St. Simons shell dates push the entire sequence back a few centuries, making it coeval with the better-dated Stallings sequence. The corrections clear-up a few of the sticky problems with certain St. Simons assemblages, such as the late dates for the initial occupation of the West Ring at Canon's Point (Marrinan 1975) and for shell accumulation at Sapelo Shell Ring No. 1. Likewise, it now appears that many of the occupations of the Georgia coast dwindled in scale and density after 4000 B.P. A few key sites with elaborately decorated assemblages (e.g., Cane Patch and A. Busch Krick) appear to have been occupied during the interval of 4000-3500 B.P., and of course occupations involving fiber-tempered pottery on St. Catherine's Island are even later. Overall, however, the northward trend for coastal occupations first noted by Antonio Waring becomes even more apparent when shell date corrections are considered.

Stallings. Forty-six dates for materials associated with Stallings fiber-tempered pottery form the largest subset of the radiocarbon database. All but two of the dates were obtained from charcoal or nutshell, so date corrections are not a significant issue. The shape of the date distribution is a normal curve consisting of a tail of early dates mostly from the period 4500-4000 B.P., a 4000-3500 B.P. peak, and a tail of late dates from the 3500-3000 B.P. period. The 4500-4000 B.P dates are from materials associated with mostly plain fiber-tempered pottery from sites from the lower Savannah River. These correspond closely to early phase of the Stallings series as defined by Stoltman (1974). Sassaman (1993c) further characterizes this early phase by the high frequencies of thickened and flanged lips on plain vessels. The contexts dating to 4000-3500 B.P. are dominated by assemblages of decorated, as well as plain fiber-tempered pottery, which characterizes the late phases of the Stallings series. The late phase established by Stoltman continues to about 3000 B.P., but Sassaman (1993c) recognizes a separate late phase spanning roughly 3400-3000 B.P. when plain fiber-tempered pottery regains popularity in some locales, but without thickened and flanged lips, and pottery is first used in the upper Piedmont.

Thom's Creek. Only two dates in our sample are attributed to Thom's Creek assemblages. Over a dozen other dates exist for Thom's Creek assemblages from the South Carolina coast (see Sassaman and Anderson 1994:50). The older date included in our sample is from the Small Ford Shell Ring on Hilton Head island (Calmes 1968), while the late date is from the soot of a soapstone vessel in loose association with Thom's Creek pottery at the Tinker Creek site in Aiken County, South Carolina (Sassaman, unpublished data). We should note that many of the dates reported as "Stallings" in Figures 21 and 22 pertain to assemblages with both Stallings and Thom's Creek pottery. For instance, dates from Midden Point (9BK113) secure a Thom's Creek occupation on Brier Creek at about 3750 B.P.

THERMOLUMENESCENE DATING

Thermolumenescence (TL) dating has been attempted on several Archaic assemblages in the Georgia Coastal Plain, but the results have been somewhat discouraging.

Rudolph and Gresham (1985) received mixed TL results in dating thermally-altered chert from a buried workshop site in Lee County, Georgia. While one date fell within an acceptable range for the Holocene epoch, a second date placed the cultural material in the Pleistocene, well older than any previously dated assemblages in the eastern United States.

An unsuccessful attempt was made to date two samples of Stallings Island Plain pottery from Georgia Power Company Site SN-08 in Screven County using TL dating. Problems with signal fading may have been caused by the presence of feldspars in the clay samples. Since most of the clays in the Georgia piedmont are derived from weathered feldspars, this problem is expected to recur if additional samples are attempted (Elliott 1986b).

Crook (1987) received inconclusive results in TL dating pottery from the Lowe site in Telfair County. A plain sand- and fiber-tempered pottery sherd yielded a TL date of 2700±260 B.P., seemingly too recent for fiber-tempered ware in Georgia. While the merit of this dating technique should not be entirely ruled out in application to Archaic period site of the Georgia coastal plain, the results should be critically assessed and cross-checked using other dating methods.

CHAPTER IV
KEY SURVEYS AND SITE INVESTIGATIONS

A review of archaeological survey and excavation in the Coastal Plain and Coastal Zone of Georgia is presented in this chapter. The review was compiled from examination of 1,104 survey and excavation reports that were on file at the University of Georgia. Additional information was obtained from the libraries of Southeastern Archeological Services and Garrow and Associates, as well as published monographs and journal articles. Other important research reports undoubtedly exist in the libraries and filing cabinets at the Georgia Department of Natural Resources, the Office of the State Archaeologist, and at other private consulting firms, but time did not allow a complete review of the literature. Initially, information was gathered on surveys and excavation projects that did not yield Archaic components, but gathering this information was abandoned when the scope of this task became apparent. Nevertheless, the data compiled herein should provide a good understanding of the intensity and distribution of previous studies in the Coastal Plain.

Our review of surveys and sites in the Georgia Coastal Plain is organized by watershed. We begin with the Savannah River valley, the most thoroughly surveyed and investigated in the study area. Our review then moves southward across the south Atlantic Coastal Plain, turning west after the Altamaha drainage to include the Gulf-draining watersheds of west Georgia.

SAVANNAH RIVER WATERSHED

Archaeological investigations on both the Georgia and South Carolina sides of the Savannah River have a long history that continues today under contract and directed research. Given the orientation of this synthesis effort, our review of this work in the Savannah River valley emphasizes Georgia projects. We include, however, several key sites located in South Carolina directly along the Savannah River. For more detailed summaries of South Carolina surveys and excavations, the reader is directed to Anderson (1977, 1994), Sassaman and Anderson (1994), Sassaman et al. (1990), and Stoltman (1974).

Major Surveys

The South Carolina Institute of Archaeology and Anthropology (SCIAA) surveyed a section of the Savannah River floodplain in Richmond County for Georgia Department of Transportation's Bobby Jones Expressway corridor (Ferguson and Widmer 1976). With the help of the Augusta Archaeological Society members, they identified three important Archaic sites: Taylor Hill (9RI89), Lovers Lane (9RI86), and Sand Bar Ferry (9RI88). All three sites have since been excavated (see below; Elliott and Doyon 1981; Elliott et al. 1994). At Taylor Hill, Ferguson and Widmer identified Dalton, Palmer, Kirk, Stanly, Morrow Mountain, and Savannah River projectile points, as well as bannerstones and soapstone artifacts. Lovers Lane yielded Savannah River and Bullen and Greene Type 1, 2, and 3 projectile points, soapstone vessel sherds, other soapstone artifacts, and Stallings Plain and Stallings Punctate pottery. Sand Bar Ferry yielded Savannah River projectile points and soapstone artifacts.

In another study for Georgia Department of Transportation in the Savannah River floodplain near Augusta, Bowen identified 36 sites, including 11 Archaic sites (Bowen 1979). Several sites were previously located by the Bobby Jones Expressway survey. Bowen's survey identified four Early Archaic (Kirk and side-notched projectile points), four Middle Archaic (Morrow Mountain points), and five Late Archaic components (Stallings pottery, soapstone, and Savannah River points).

Table 4. Archaic Projectile Point Inventory, Phinizy Swamp and Butler Creek Area (Jerald Ledbetter, personal communication, 1995).

Type	Survey/Excavation	Collectors	Total
Taylor	10	27	37
Kirk Corner Notched	5	4	9
Bifurcate	3	6	9
Kirk Stemmed	0	2	2
Morrow Mountain	14	11	25
MALA	11	7	18
Brier Creek Lanceolate	5	8	13
Late Archaic stemmed	4	8	12
Total	52	73	125

Price (1991) surveyed 5.9 ha in Phinizy Swamp and located five sites, including one with Early and Late Archaic components (notched-base points and soapstone) and one with Late Archaic component (plain fiber-tempered pottery and stemmed points).

Southeastern Wildlife Services surveyed for a 12.1-ha tract and a 3.9 km x 30 m corridor for the City of Augusta on the Butler Creek and Savannah River terraces in Richmond County (Ledbetter and Doyon 1980). They located 11 sites, including three sites that contained Early and Middle Archaic components, and six with Late Archaic components. As part of this study, Ledbetter summarized the extant projectile point data for the Phinizy Swamp/Butler Creek area that he was able to tally from professional reports and collector interviews. This information was not included in their report, but we present it in Table 4 (Jerald Ledbetter, personal communication, 1995). These data provide a relative gauge of the intensity of settlement for this portion of the Savannah River watershed.

Southeastern Archeological Services surveyed a sample of four east-west alternative routes of the Fall Line Freeway for the Georgia Department of Transportation, whose total length was 636.5 km. This proposed highway spanned the entire state and crossed portions of the Savannah, Ogeechee, Altamaha, and Appalachicola river watersheds. The survey examined 131.5 km of highway widening and proposed right-of-way, which consisted of a random 10 percent sample (160 0.4-km segments) of the routes (64.4 km) and 75 high probability areas (59 km), defined as river and creek crossings (Gresham and Rudolph 1986). The survey identified 15 Early Archaic, 6 Middle Archaic, and 15 Late Archaic sites.

U.S. Army's Fort Gordon Reservation in interriverine sections of Richmond, Jefferson, Columbia, and McDuffie counties has been extensively studied by Southeastern Archeological Services and New World Research (Campbell et al. 1981; Braley 1991a, b, 1993; King and Braley 1992). Approximately 20,243 ha have been systematically surveyed and 1,181 sites located. These include 67 Early Archaic, 52 Middle Archaic, and 98 Late Archaic sites.

New World Research examined 1,799 ha on Fort Gordon and located 89 sites, including 15 Early or Middle Archaic, 22 Late Archaic (10 with Late Archaic points, 10 with Stallings pottery, and one with both), and 7 possible Thom's Creek pottery sites. Eight sites yielded Late Archaic perforated soapstone slabs (Campbell et al. 1981).

Braley (1993) examined 1,420 ha and located 21 Archaic sites including 14 Early, 3 Middle, and 4 Late Archaic lithic and 5 Stallings pottery sites. King and Braley (1992) reported on survey of 1,416 ha where 1 Early, 1 Middle, 8 Late Archaic, and 4 general Archaic sites were found.

Archaic period diagnostic artifacts that have been reported from Fort Gordon include Taylor, Palmer/Taylor, Kirk, Morrow Mountain, MALA, Savannah River, South Prong Creek, and Late Archaic stemmed points, soapstone vessel sherds, perforated soapstone slabs, Stallings series pottery (Stallings Plain, Stallings Punctate [punctated and incised motifs], and Stallings Simple Stamped), and semi-fiber-tempered sherds that New World Research investigators classified as Norwood.

Soil Systems conducted a reconnaissance survey for Kimberly-Clark Corporation of a 182.1-ha sample of an industrial development on north side of McBean Creek (Garrow et al. 1980). Twenty-one sites were found, including nine with prehistoric components. One site contained Middle Archaic points, but no other diagnostic Archaic sites were reported.

Garrow and Associates conducted a survey for Georgia Power Company along the Vogtle to Goshen transmission line (27.5 km x 41.8 m corridor) in Burke and Richmond counties (Garrow and Bauer 1984). Of 31 sites found, 27 yielded prehistoric components, two with Early Archaic (Kirk Corner-Notched) and one with Middle Archaic diagnostics. No Late Archaic components were represented. Site GPC RI#1 had Early and Middle Archaic components. Their survey area parallels the Savannah River and crossed several small streams, but was predominantly interriverine. The project area crossed some chert source areas, but no quarries were identified.

Honerkamp (1973) surveyed the Plant Vogtle tract adjacent to the Savannah River in Burke County for Georgia Power Company. This effort yielded eight sites, including one Early Archaic isolated find. The size of the project was not specified in the report, but it is estimated from an appendix to be about 372 ha.

Garrow and Associates surveyed a 453.8-ha tract on Walnut Branch in Burke County for a proposed development. A total of 101.2 ha was surveyed intensively and the remaining area was covered by reconnaissance-level effort. Five sites were found, including two with Early, Middle, and Late Archaic components (Stanyard 1993).

Garrow and Associates conducted a series of electric transmission line corridor surveys for Georgia Power Company as part of the power distribution network for Plant Vogtle. The largest of these surveys was the Vogtle-Effingham-Thalmann transmission line (246 km x 46-m corridor) that crossed several river watersheds including the Savannah, Ogeechee, and Altamaha (Garrow 1984). Most (76%) of the study was within the Coastal Marine Flatlands subprovince of the Coastal Plain, of which approximately one-quarter lies within the Savannah River watershed. The section of the survey route within the Vidalia Uplands subprovince lies entirely within the Savannah River watershed. A total 112 sites was found, and 116 aboriginal components were identified. Four Early Archaic sites [diagnostics include two Kirk Stemmed, although one illustrated example resembles a MALA] were identified by the survey, all within the Vidalia Uplands. No Middle Archaic sites were identified, although one Morrow Mountain point was recorded as an isolated find. Seventeen Late Archaic sites were recorded, including 11 within the Vidalia Uplands. Late Archaic diagnostics included Savannah River, Late Archaic stemmed, Otarre, and Gary points. Punctated pottery, either Thom's Creek or Stallings series, from one site is illustrated in the report, but is not described. It is unclear from the report if early ceramics were found on any other sites in the study. One soapstone vessel sherd was found on a site in Screven County, but again, this is not evident from reading the report (Elizabeth Gantt, personal communication, 1984).

Albert Goodyear and Tommy Charles of the South Carolina Institute for Archaeology and Anthropology conducted a survey of chert quarries in the Allendale, South Carolina area and in neighboring areas of Brier Creek in Georgia (Goodyear and Charles 1984). Their work, as well as earlier work by University of Georgia graduate student, Sharon Goad (1979), was critical in identifying the lithic source areas that were extremely important during the Archaic period.

Ledbetter (1991b) provides a brief, but informative account of three surface sites on a portion of the Smith Tract on Brier Creek in Burke County, Georgia. The study area is immediately opposite Brier Creek from the Theriault site and is located in a chert-rich locality. Plain fiber tempered, decorated fiber tempered, and Thom's Creek Punctate pottery are reported. A variety of Late Archaic stemmed points also are reported.

The University of Georgia conducted surface survey of portions of the Ebenezer Creek watershed in Screven and Effingham counties for the Soil Conservation Service, resulting in the location of 108 archaeological sites (Fish 1976a). Fish classified 42 sites as Archaic period, although diagnostic artifact types for only 20 are listed in his Appendix I. The discrepancy can be accounted for by Fish's liberal use of an Archaic period assignment to unifacial flake tools. A total of 33 Archaic sites was found on Lakeland soils. Fish identified 113 Early Archaic period, 453 Middle Archaic period, and 261 Late Archaic projectile points from survey sites or from local amateur collections. A high frequency of projectile points was attributed to the Middle Archaic period, a pattern is not reflected in other studies in the region, but this can be partially explained by Fish's criteria for Middle Archaic period diagnostic artifacts, which include Kirk and Palmer point types. Most researchers group these types with the Early Archaic period. Early Archaic points (defined by the presence of Dalton or Hardaway points) were reported from four sites. Middle Archaic points (Kirk, Stanly, Morrow Mountain or Palmer point) were reported on 11 sites. Late Archaic points (Savannah River or Halifax types) were reported on 11 sites. Stallings pottery was reported from seven sites, including two sites with Stallings Punctate.

Rita Elliott (1993, 1994) conducted two contiguous surveys for Georgia Department of Transportation on SR21 in Screven and Effingham counties. The lower segment she surveyed under Southeastern Archeological Services, from Rincon to Shawnee, totalled 95.2 ha and was entirely within the Savannah River watershed, but the upper segment surveyed under New South Associates, from Shawnee to Sylvania, included portions of the Ogeechee River watershed. One Archaic site was identified in the Savannah River watershed portion of these two contiguous studies. It contained a Bolen/Palmer and a stemmed Late Archaic point.

Jones (1995) recently surveyed 259 ha on Ebenezer Creek in Effingham County and located six sites, including one with a Late Archaic ceramic component (classified as Satilla Plain).

Garrow and Associates conducted survey of 728 ha along Mill Creek near the Savannah River in Effingham County for the Fort Howard Paper Company (Elliott and Smith 1985). Project elevations ranged from 3 to 22 m amsl, but most sites were on a bluff (an ancient shoreline feature of the Penholoway formation) well above the Savannah River floodplain. The sites were within a kilometer of the Savannah River swamp. The survey located 54 sites including nine sites with definitive Archaic components. Twenty-two other sites yielded indeterminate prehistoric lithic artifacts that also may date to the Archaic period. Diagnostic artifacts that were identified include Paleoindian/Early Archaic endscrapers, Kirk Corner-Notched and Gary points, soapstone vessels, perforated soapstone slabs, and Stallings pottery.

Key Excavated Sites

Lovers Lane (9RI86). Several important Archaic sites have been tested or excavated in the Savannah River floodplain below Augusta in Richmond County, Georgia. The Lovers Lane Site (9RI86) stretches across two adjacent sand ridges on the inside of a meander cut-off just downriver of the city of Augusta. The site received intermittent testing in the 1970s (Bowen 1979; Ferguson and Widmer 1976) and was further examined by Elliott and Doyon (1981) in response to the relocation of the Augusta Railroad. These latter investigators made an extensive controlled surface collection and excavated six 2 x 2-m pits and a 15-m backhoe trench. This work revealed stratified Late Archaic deposits in excess of 1 m in the low portion of the site, including remnants of an organic midden.

During the summer of 1991, an extensive data recovery program was undertaken by Southeastern Archeological Services to mitigate the impact of construction for the Bobby Jones Expressway extension (Elliott et al. 1994). Three phases of investigation at Lovers Lane were undertaken: (1) the site was further defined by shovel-testing, test unit excavations, and backhoe trenching; (2) A block (Block A) measuring 49 m^2 was excavated by hand in 1 x 1-m units; and (3) two blocks were mechanically stripped, one (Block B) measuring 1133 m^2, to reveal subsurface features, most of which were completely removed. Block A contained several late Archaic components, but was dominated by an assemblage of bifaces and other lithic artifacts from the Mill Branch phase (see Chapter 3). The block also produced sixteen features including large pits, and small pits or postholes. but no discernible structures. Block B was dominated by a component of the Stallings ceramic phase named after the site by Elliott, and included 385 features. Among the features were postholes, earth ovens, other large pits, large shallow basins, and two human cremations. At least five structures representing perhaps three distinct occupations were inferred by Elliott from the distributions of postholes.

Phinizy Swamp (9RI178). The second of three sites salvaged ahead of construction of the Bobby Jones Expressway extension was Phinizy Swamp (9RI178). The site was located on a low alluvial feature bordering Phinizy Swamp to the southwest of Lovers Lane. Excavations headed by R. Jerald Ledbetter (Elliott et al. 1994) consisted of ten 2 x 2-m test units and two small blocks. Initial testing at the site revealed deep deposits, but these appeared to be mixed until controlled excavations could produce sufficient samples of diagnostic artifacts. Of particular interest at this site is the essentially complete stratified sequence for the Middle Archaic period. At units at the north end of the site, a transitional Middle-Late Archaic stratum at 30-40 cm BS was underlain by Morrow Mountain deposits 40-60 cm BS. In units to the south a Stanly component was located at 60-70 cm BS, over an Early Archaic stratum at 70-90 cm BS. Farther south, a transitional Middle-Late Archaic assemblage at 70-80 cm BS was underlain by a stratum with Morrow Mountain points at 100-110 cm BS. Small blocks were opened in the north and south areas to provide better samples of these various assemblages, and to search for features. The results showed that the transitional Middle-Late Archaic occupation was the most intensive. Brier Creek lanceolate points dominated the hafted bifaces assemblage, followed by lesser numbers of MALA point fragments. In Block A at the southern end of the site, a large, charcoal-rich area with charred walnut shell and fire-cracked rock and debitage was attributed to Brier Creek/MALA occupation. A date of 4805±139 on some walnut shell is the only radiocarbon assay for this period in the Savannah River valley.

Sandbar Ferry (9RI88). Site 9RI88, located near the Savannah River channel east of Augusta in Richmond County, Georgia, was tested by Elliott and Doyon (1981) for the Georgia Department of Transportation. The site yielded a preceramic Late Archaic component that included stemmed points and soapstone perforated slabs. Several features were identified.

Taylor Hill (9RI89). Taylor Hill (9RI89) is a 40.5-ha elevated landform in the Savannah River floodplain a short distance southeast Augusta in Richmond County, Georgia. The site was visited by several survey teams before test excavations were conducted by Southeastern Wildlife Services in 1980 (Bowen 1978; Ferguson and Widmer 1976; Ledbetter and Doyon 1980). A small portion of the site was tested for the Georgia Department of Transportation by controlled surface collection and test units. Early, Middle, and Late Archaic components were excavated at the Taylor Hill site (9RI89) in addition to its more publicized Paleoindian component (Anderson et al. 1990; Elliott and Doyon 1981). Diagnostic bifaces include Big Sandy Side-Notched, Palmer/Kirk Corner-Notched, bifurcate, Morrow Mountain, Savannah River. Rock hearths and pits were associated with the Early Archaic components.

Butler Creek Sites. Site 9RI45 is a large site on the Butler Creek terrace in Richmond County that was excavated by Southeastern Wildlife Services. The site was identified by Bowen (1978, 1979) during Georgia Department of Transportation surveys. Ledbetter and Doyon (1980) identified Early, Middle, and Late Archaic components from controlled surface collections and excavation of 11 m^2. A later study examined a marginal section of the site (Elliott and Doyon 1981). Diagnostic Archaic artifacts from 9RI45 include Big Sandy, untyped corner notched, Morrow Mountain, stemmed Late Archaic, fiber-tempered pottery, soapstone vessel sherds, and perforated soasptone slabs. Artifact-bearing deposits at the site were relatively shallow (<50 cm BS).

Four other Archaic period sites on Butler Creek were tested by Southeastern Wildlife Services for the City of Augusta. All revealed shallow artifact deposits. Site 9RI76 was examined by 4 m^2 of tests that yielded several unspecified soapstone artifacts attributed to the Archaic period. Site 9RI71 was examined by 2 m^2 of testing that yielded a Late Archaic Savannah River point. Two square meters of testing at 9RI72 produced Late Archaic stemmed points. Site 9RI77, located at the confluence of Butler Creek and the Savannah River yielded Early Archaic corner notched, Guilford, and Late Archaic stemmed points and soapstone vessel sherds from 2 m^2 of testing (Ledbetter and Doyon 1980).

Fort Gordon. Braley (1993) reported testing five sites on Fort Gordon with excavations totalling 15.5 m^2. Four of the five yielded Archaic period artifacts. Site 9RI346 produced soapstone vessel sherds; 9MF20 yielded plain fiber-tempered pottery and unspecified bifaces; 9MF21 also contained plain fiber-tempered pottery; and 9MF57 included Stallings Punctate sherds and unspecified bifaces. Fort Gordon contains many other Archaic sites of note, but to date professional investigations have been limited to reconnaissance and minor testing. No full-scale excavations of Archaic sites have occurred on Fort Gordon.

Mill Branch Sites. Two sites (9WR4 and 9WR11) were exacavated by Jerald Ledbetter of Southeastern Archeological Services for the J.M. Huber Corporation (Ledbetter 1991a). Located near the headwaters of Brier Creek in Warren County, Georgia, the sites included assemblages of Archaic artifacts and features, including a well-preserved Late Archaic semi-subterranean pit house. A block 20 x 20 m in size was stripped at the northern end of 9WR4 to reveal Late Archaic and Early Woodland features. A fire-cracked rock midden 15-20 m wide and numerous thermal pit features were recorded. Two pits yielded radiocarbon dates of 3631±102 B.P. and 3740±134 B.P. Throughout the north block were sherds of plain and decorated fiber-tempered pottery, along with small- to medium-sized stemmed bifaces. A second block some 25 x 25 m in size was stripped in the south end of 9WR4 to reveal a series of large pit features and refuse-filled pithouse with postholes and a large central hearth. Two dates from the hearth and a third from an adjacent pit feature firmly establish the pithouse occupation at ca. 3900 B.P. Among the thousands of artifacts recovered from the pithouse and surrounding area were scores of large Savannah River Stemmed points made from metavolcanic rock, winged bannerstone fragments, drill cores, and perforated soasptone slabs. The assemblage from the pithouse was later used to help define the Mill Branch phase of the Late Archaic (Elliott et al. 1994).

Site 9WR11, a low-lying area 100 m to the south of 9WR4, also contained Late Archaic features. Two large pits included fiber-tempered pottery and medium-sized stemmed points. A date from one of these features was 3549±134 B.P.

The results of Ledbetter's work at the Mill Branch sites form some of the most significant new data on Late Archaic occupations seen in this area for many years. The National Park Service plans to publish Ledbetter's fine report in a new series on contract archaeology.

White's Mound (9RI4). A site with Late Archaic shell deposits about 15 km downriver from Augusta is White's Mound (9RI4) in the Savannah River floodplain. A crew from the University of Georgia began testing at the site in 1963, and David Phelps completed the work later that year. In the only published report of the site, Phelps and Burgess (1964:199) describe it as "a low, crescent-shaped mound (about 700 ft. by 200 ft. [213 m by 61 m]) that was originally the result of sand deposition on an inside bend of the river" (1964:199). From this description it is probable that the site was a point bar of the Savannah River. Across most of the site three poorly-defined zones of cultural deposits are noted: the deepest zone (Zone 3) consists of reddish-brown sand 45 to 90 cm deep, containing Stallings and Thom's Creek sherds and soapstone vessel fragments in the lower half which continue in the upper half coincident with Woodland period sherds. Pits and a few burials penetrated Zone 3, intruding into the yellow sands (Zone 4) of the point bar deposits. Zones 2 and 1, light gray sandy clay and gray humus, respectively, contain a mixture of Late Archaic, Woodland and historic materials. Of greater significance, however, is the occurrence of shell deposits at the north end of the site. Three 10 x 10-ft (ca. 3 x 3-m) squares in that area revealed lenses and pits of shell refuse dominated by Stallings pottery.

Further information on the investigations of Phelps and Burgess is limited. The intent of the only published account of White's Mound was to describe a "possible case of cannibalism" (Phelps and Burgess 1964). The affiliation of the human remains attributed to cannibalistic behavior is uncertain, but it should be noted that 70 baked clay objects were recovered from the bone pit, as were a soapstone "boatstone," perforated bear claws, Woodland sherds, and a single fiber-tempered sherd. Baked clay objects were recovered in abundance (over 1,110) throughout the site, and should relate to the Late Archaic occupation, though stratigraphic information about this class of artifact, as well as its soapstone equivalent which was also abundant, has never been presented.

An additional test pit at White's Mound was excavated by Joffre Coe in 1963. Trinkley (1980b:48) provides a tabulation of the sherds by level in this test unit, as well as some commentary on the sherd assemblage. From this information, it is evident that Coe excavated in a poorly stratified portion of the site; no separation is found between the Late Archaic and Woodland components. It is nonetheless noteworthy that over 60 percent of the fiber-tempered sherds are described as having coil fractures. Trinkley (1980b:47) further indicates that the incidence of coiling increases through the sequence and that this coincides with the appearance of Thom's Creek pottery in the shallow levels.

G.S. Lewis-East (38AK228E). The G.S. Lewis site is a 21 hectare multicomponent site at the confluence of Upper Three Runs and the Savannah River (Hanson and Sassaman 1984; Sassaman et al. 1990:91-96). In 1984, a 348 m^2 block was excavated at the east end of the site (herein referred to as Lewis-East) to mitigate the impact of dredge disposal. Within the stratified 70 cm of deposits examined beneath mechanically-removed overburden were well-defined Early and Late Archaic components. The Early Archaic assemblage consisted of over two dozen Kirk Corner-Notched points, two Edgefield scrapers, six hafted endscrapers, a chipped adze, a polished adze and whetstone, bifacial microliths, abundant Coastal Plain chert debitage, hematite, and numerous cobble tools. The assemblage and its spatial structure was used by Hanson (1988) to infer a base camp function for the site, which was then incorporated into the drainage-wide settlement model of Anderson and Hanson (1988) as a cold-season occupation.

The overlying Late Archaic assemblage consists of dozens of hafted bifaces, preforms, flake blanks and cores, several hundred utilized flakes, 54 kg of debitage, cobble tools, 54 soapstone slab fragments, and several fragmented polished stone items including a finger ring, beads, and atlatl weights. Late Archaic pottery was absent. Pit features were defined, though no evidence of architectural remains was observed. Because a report of this work has not been completed, a detailed summary of the findings are warranted.

Two distinct clusters of Late Archaic materials were identified in the Lewis-East block. The north half contained a relatively wide distribution of artifacts with two major density modes. One mode was a 20 m^2 area of lithic production debris indicative of large flake blank reduction. Cores, debitage, preform fragments, hammerstones and discarded hafted bifaces were abundant in this area. Also present were six soapstone slab fragments. Approximately 5 m to the north was a second mode about 24 m^2 in an area consisting of Savannah River Stemmed hafted bifaces, a few preform and blank fragments, four soapstone slabs and some polished stone. Only minor amounts of debitage and cobble tools were present. Additional bifaces and soapstone slabs were found in the areas between and to the east of these modes.

In the south half of the block was located a discrete 16 m^2 cluster, consisting of stemmed bifaces, blank and preform fragments, abundant debitage, 10 soapstone slabs and polished stone. The stemmed bifaces are forms which appear to be amalgams of Middle and Late Archaic types. Some have hanging barbed shoulders and slightly tapered stems, others have short, broad stems with asymmetrical shoulder design, while two are more typical Savannah River Stemmed forms. Most share a lanceolate blade morphology similar to MALA specimens found elsewhere. Near the edge of the cluster to the north, one other lanceolate form was present, along with other biface fragments and additional polished stone. Both the south cluster and these items to the north lie on a surface that is slightly deeper than the assemblage in the north half of the block.

Preliminary analysis of the Lewis-East assemblage suggests that the north and south clusters represent functionally-equivalent Late Archaic occupations that are probably chronologically distinct. The south cluster seems to be an especially early Late Archaic occupation, perhaps contemporaneous with MALA activity elsewhere in the Savannah River valley (ca. 5000 B.P.). The north cluster is dominated by more typical Late Archaic stemmed bifaces, and probably dates between 5000 and 4500 B.P. Both clusters yielded soapstone slabs, but neither contained soapstone vessel sherds.

Pen Point (38BR383). Pen Point is situated on a small point bar of the first terrace of the Savannah River at the confluence of Pen Branch and the Savannah River Swamp. Secondary testing in 1981-82, consisting of one isolated 2 x 2-m and eight 1 x 2-m units divided between two test trenches, documented a stratified Early Archaic-Middle Woodland sequence within the upper meter of fluvial sands. Block excavation of 33 m^2 was undertaken in 1984 to recover larger assemblage samples for purposes of chronology and technological analysis (Hanson and Sassaman 1984). Archaic components defined by this work include a mixed Early Archaic assemblage with abundant unifacial tools, two (Middle Archaic) Morrow Mountain phase occupations, minor (Late Archaic) Savannah River phase utilization, and an intervening lithic assemblage indicative of large-scale biface production during a previously unrecognized archaeological phase.

The intervening lithic assemblage, defined as Feature 14 and situated between 40-50 cm BS, included stemmed and notched hafted bifaces having no prior typological definition in the region. As discussed in Chapter 3, these forms, provisionally defined as MALA, have typological parallels in the Benton phase of the Midsouth, and have inspired much speculation as the their origin in the local area. The biface production debris of Feature 14, which includes tens of thousands of flakes and several hundred preform fragments, has been used to estimate that over 200 bifaces were made and carried from the site in a single episode of manufacture (Sassaman 1994). This level of production represents a marked departure from the expedient technology of the Morrow Mountain phase, suggesting either dramatic change in subsistence economy, or the rising importance of bifaces in nonsubsistence production and exchange. A small sample of carbonized nutshell from the feature was submitted for radiocarbon dating using the accelerator method, yielding an uncorrected assay of 2730±110 B.P. (Beta-24764/ETH-3693). Unfortunately, the date is much too recent to corroborate the artifact crossdating, and on stratigraphic grounds alone it must be rejected.

The stratum underlying Feature 14 contained two Morrow Mountain phase assemblages. An appreciable amount of groundstone and diverse flaked stone tools attest to somewhat higher levels of assemblage diversity compared to Piedmont sites, but density was not very great. Above the MALA/Benton assemblage was a thin stratum (ca. 25-30 cm BS) containing Savannah River phase lithic artifacts. Neither Stallings nor Thom's Creek sherds were recovered in this stratum. The lithic assemblage consisted of relatively low amounts of hafted bifaces, preform fragments, utilized flakes, and debitage. Overall, the assemblage suggested limited use of the site during the Late Archaic period.

Allendale Chert Quarry Sites. Virtually all of the Allendale chert quarries and quarry-related sites documented by Goodyear and Charles (1984) have produced evidence of Archaic period utilization. Goodyear's long-term research interest in these sites revolves around the Paleoindian and Early Archaic quarry activity seen in the abundance of preforms and chert debris, some of which is sealed beneath thick alluvium. In addition, three sites are particularly noteworthy for containing evidence of intensive Middle Archaic occupations. Sites 38AL135 and 38AL143 on Smith's Lake Creek, and 38AL23 on a cut-off chute of the Savannah River each contain buried Middle Archaic strata. Testing at 38AL23 revealed a dense assemblage of MALA preforms and hafted bifaces at about 35-60 cm BS comparable to the Feature 14 assemblage at Pen Point. Similar evidence has been uncovered in limited testing at 38AL135. Recent work at 38AL143 reveals an even deeper Middle Archaic sequence with Morrow Mountain and MALA components well represented. A thick stratum of organically-enriched soil at about 60-90 cm BS has produced several pit features, as well as abundant thermally-altered flakes and preform fragments. Two pits contained numerous charred hickory nutshell fragments, and one also held a flake core reminiscent of those found at Pen Point. Nutshell from one of the features has been dated to 3700±120 B.P., indicating that Late Archaic features have intruded into the Middle Archaic stratum. Interestingly, the sort of Late Archaic assemblage one would expect at 3700 B.P., notably Stallings pottery, has not turned up in excavations to date. Continued work at 38AL143 may substantiate the existence of aceramic or at least functionally-distinct Late Archaic occupations late in the local sequence, as well as refine our knowledge of the Middle Archaic sequence.

Rabbit Mount (38AL15). Archaeological investigations at Groton Plantation by James Stoltman (1974) in 1964 resulted in the documentation of the earliest known fiber-tempered pottery assemblage in the Southeast. The assemblage came from Rabbit Mount, a sand knoll (abandoned point bar?) of the Savannah River floodplain containing small, buried Late Archaic shell middens. Stoltman's excavations at the site amounted to about 51 m^2, most of this divided between two separate shell deposits. Two basic stratigraphic sequences were observed, one with intact buried shell midden, the other lacking shell refuse. The shell-midden sequence consisted of surficial silty sands up to 40 cm thick overlying freshwater shell midden 12 to 58 cm thick. Below the shell was a zone of leached midden in silty sand underlain by relatively sterile yellow sands. Shell deposits were discontinuous, and two separate middens were tested: a northern midden of indeterminate size, and a southern midden at least 6.1 x 6.8 m in extent. The sequence in each of the middens was similar.

Several intrusive features, including human and dog burials, were uncovered. Most of these were of definite or probable Late Woodland age. One feature assigned to the Late Archaic component of the site was a clay floor beneath the shell midden. Possible post molds adjacent to the feature along with a relatively high density of lithic tools suggested to Stoltman that the feature was the floor of some type of habitation structure (Stoltman 1974:51, 54-56).

The artifact assemblage of the shell midden contained an abundance of fiber-tempered pottery, perforated soapstone slab fragments, bone and lithic tools, and lithic debris. Plain sherds dominated the midden assemblage, whereas decorated sherds tended to be more common above, rather than within the midden. An appreciable number of Thom's Creek sherds was also recovered, but most of these came from nonshell contexts, primarily in isolated test pits away from the middens. Stoltman proposed an occupational sequence beginning with plain fiber-tempered pottery during midden accumulation followed by a nonshell occupation characterized by the use of plain and decorated sand-tempered pottery. Decorated fiber-tempered pottery at the site is described as intermediate between the plain wares and later Thom's Creek assemblage. Thus, although Stallings and Thom's Creek pottery were found together at the site, Stoltman argues that they are not locally contemporaneous. He goes on to comment negatively on the argument that fiber- and sand-tempered pottery are contemporaneous in the region (Stoltman 1974:78). The only published date for early sand-tempered pottery at the time Stoltman wrote was from Yough Hall Plantation, an association which has met with repeated skepticism (Trinkley 1980b:14; Williams 1968b).

Charcoal samples were collected from the lower portion of a 5-ft (1.5-m) square in each of the shell midden areas at Rabbit Mount. These independent samples yielded uncorrected radiocarbon dates of 4450±135 and 4465±95 B.P. (Stoltman 1966). These remain the oldest dates for fiber-tempered pottery in the Southeast. Despite the lack of additional dates of this antiquity, the independent nature of the samples and their agreement ranks them among the most securely dated contexts for fiber-tempered pottery in the region.

Fennel Hill (38AL2). About 20 km upriver from Rabbit Mount is the Fennel Hill site. Fennel Hill, also known as Cox and Millberry Mound, is a multicomponent site that contained substantial shell-midden deposits dating to the Late Archaic period. The site was excavated by Fred Cook in 1964, William Edwards in 1969, and local amateurs intermittently. The site is now completely destroyed. No comprehensive report of excavations has been prepared, but Trinkley (1975) has described sherds from a surface collection and from the excavations of Edwards. His analysis showed that at least two spatially distinct deposits were present: Late Archaic components (Stallings and Thom's Creek) within the shell midden, and later Woodland components apparently located away from the central deposit of shell (Trinkley 1975:8). Edwards' work apparently focused on the nonshell portion of the site.

Additional information on the site was provided by Fred Cook (personal communication, 1988). He described the site as a sand mount (point bar?) about 0.4 ha in size. A crescent-shaped shell midden approximately 23 m long and 9 m wide was located at the north end of the site. Cook's investigations concentrated on this Late Archaic shell midden, amounting to about 44 m^2 of excavation to an average depth of 56 cm.

The shell midden was reportedly divided into an upper zone, about 30 cm thick, characterized by a dark organic midden with crushed shell and containing predominantly Stallings fiber-tempered pottery, along with lesser amounts of later wares, and a lower zone, also about 30 cm thick, characterized by a "cleaner" midden of dense, whole shellfish remains, and containing little to no pottery, but with abundant soapstone slab fragments. A thin zone below the shell contained corner-notched and stemmed lanceolate blades, most made from thermally-altered Allendale chert. These probably reflect the presence of a MALA component related to ones located at the G.S. Lewis-East and Pen Point sites upriver (Sassaman 1988; Sassaman et al. 1990).

Finally, an untitled, undated, and anonymous report (on file at the South Carolina Institute of Archaeology and Anthropology) on the "Milberry Mound" site depicts a rich assemblage of lithic, bone and antler tools and ornaments. An accompanying map shows the site location to indeed be Fennel Hill. Shell deposits as deep as 1.5 m are briefly described. Features mentioned include fire and storage pits and a 10 cm thick clay floor 30 cm below surface. Lithic tools include numerous biface forms, most square stemmed, drills, perforated soapstone slabs, and groundstone. Two atlatl weight fragments, one with a drill core, are illustrated. Also shown are bone pins, many decorated, bone awls and other tools, and antler projectile points. Several antler hafts are noted. Three shell beads, a drilled tooth, a perforated mussel shell and other objects of apparent ornamentation are listed. A large worked conch shell and a shark tooth are given as evidence for coastal contact. Finally, clay objects are reported from throughout the excavation. The anonymous author notes that the objects appear to be sun-baked, as opposed to fired, and suggests they came from house floors. Based on the photograph of these items, however, they are probably baked clay objects similar to those found on the coast.

Theriault (9BK2). The Theriault site located on Brier Creek in Burke County is one of the sadder stories of Archaic period research in the Georgia Coastal Plain. Important Early, Middle, and Late Archaic components were identified on this site, but it has been poorly reported. The site is near, if not directly on, chert outcrops, and chipping debris was abundant. William Edwards of the University of South Carolina conducted excavations in 1966 at Theriault that went unreported until years later, when they were reconstructed by Paul Brockington (1971). Gordon Midgette's excavations during the late 1960s are totally undescribed and exist only as southeastern archaeological folklore (Seddon 1972). David Phelps apparently also visited Theriault but referred to it as the Boy Scout site. Relic collectors reportedly have devastated the remaining portions of the site.

Brockington's (1971) report of the Edwards' expedition indicates that a total of 62 5 x 5-ft (1.5 x 1.5-m) units was excavated to 90 to 120 cm in three areas of the site. These units yielded over half a ton of chert debitage, nearly 1,000 preforms and blanks, 120 diagnostic hafted bifaces, and an assortment of unifaces, hammerstones, abraders, chipped stone axes, and pottery. Unfortunately, stratigraphic separation of the various components present was not observed, nor was vertical superposition of Archaic diagnostic hafted bifaces achieved. The most numerous type was the Savannah River Stemmed, represented by 31 specimens distributed evenly through the entire deposit. A moderate number of fiber-tempered sherds (n = 120) were also found throughout the deposits, but most were found 6 to 30 inches (15 to 76 cm) BS, with a mode at the 18 to 24-inch (46 to 61-cm) level. Interestingly, sand-tempered sherds were concentrated in the upper two levels (0 to 31 cm BS), suggesting that some superposition of Late Archaic and Woodland components was preserved. However, sand-tempered sherds tabulated as either drag and jab or punctate (n = 38) in Brockington's analysis (1971:35) exhibit a vertical distribution similar to fiber-tempered sherds. Inasmuch as these represent Thom's Creek varieties, stratigraphic separation of the fiber-tempered and Thom's Creek components is not observed. Finally, one perforated soapstone slab fragment was recovered in the excavation, and several others were in private collections from the site. Several clay "lumps" were also found, perhaps remnants of baked clay objects (Brockington 1971:37).

Midden Point (9BK113). Midden Point is a Late Archaic shell midden and extensive deposit of lithic debris located on the north bank of Brier Creek in Burke County, Georgia. In 1991 staff of the Savannah River Archaeological Research Program (SRARP) responded to a report of looting at the site. Through the cooperation of the land overseers, The Nature Conservancy, SRARP staff excavated two 1 x 2-m test units in intact portions of the looted shell midden (Sassaman 1991b). Both units penetrated mixed shell and earth midden deposits over one meter in depth. As noted in Chapter 3, the units produced different assemblages: one contained predominantly plain fiber-tempered pottery overlain by plain and decorated fiber-tempered and sand-tempered pottery, while the other unit was dominated by sand-tempered Thom's Creek pottery throughout. A series of five radiocarbon dates bracket the midden deposits at about 4100-3700 B.P.

Conspicuous in the layers of earth in the midden were tens of thousands of flakes of Coastal Plain chert from a local source. Like the nearby Theriault site, Midden Point is strewn with the by-products of secondary lithic reduction. Hafted bifaces in the test units conform generally to the Savannah River Stemmed type, with other varieties of stemmed bifaces also represented. A cache of five "rocker-based" blades were located at the top of a refuse-filled pit deep in the shell midden. Faunal remains were especially abundant in the test units. A preliminary analysis reveals enormous diversity in the assemblage of terrestrial and aquatic species, and occupation from spring through fall, but not winter (Freer 1992). Ongoing work at Midden Point under the direction of Steve Hale (1993) is adding better information on subsistence, and hopefully more seasonality data.

Other Burke County Sites. Soil Systems tested one site (20056-1) near Red Branch in Burke County with a 1 m^2 test unit and identified Early Archaic Palmer or Kirk stemmed component in apparent stratified context. Artifacts were found to a depth of 1.17 m (Wheaton et al. 1982).

Garrow and Associates excavated 52 m^2 at Georgia Power Company Site Bur-13 in Burke County and found Kirk and Savannah River points. The site was badly disturbed and no further excavation was attempted (Finch and Manning 1985).

The University of Florida conducted test excavations at the Brown's Cabin Site on Georgia Power Plant Vogtle (Honerkamp 1973). The site was located adjacent to the Savannah River. Nine 2 x 4-ft (0.6 x 1.2-m) test pits were excavated and Maples-like projectile points and unifacial scrapers were reported. A Middle to Late Archaic period was assigned to the site. An earlier 3 x 6-ft (0.9 x 1.8-m) excavation by the Augusta Archaeological Society was observed by Honerkamp, but not formally reported.

Stanyard (1993) conducted excavations for Garrow and Associates on two Archaic period sites in interriverine portions of Burke County on Walnut Branch. Site 1 contained Greenbrier, Palmer/Kirk, Morrow Mountain, and Savannah River points and was investigated by one 1 x 1-m test and four 2 x 10-m strips. Site 2 contained unspecified Early Archaic, Middle Archaic (Morrow Mountain), and Late Archaic (Savannah River Stemmed) components. Excavations included 20 m^2 of screened units and stripped areas totalling 20 m^2. The deposits were shallow and no Archaic period features were identified.

Lower Brier Creek Georgia Power Company Sites. Excavations during the mid-1980s by Garrow and Associates for the Georgia Power Company were conducted at a series of buried sites along Brier Creek (Elliott 1986b; Elliott and O'Steen 1987; Espenshade 1986; Garrow 1984; Wise 1986). Although each excavation area was given a separate site number, the loci were surprisingly consistent in content, feature preservation, stratigraphy, and integrity so as to be considered one continuous site separated only by minor drainages. These sites were important for defining Middle and Late Archaic chert reduction strategies for the Brier Creek region. This portion of the Brier Creek terrace, near its confluence with the Savannah River, experienced peak use during the Middle and Late Archaic periods, as evidenced by discarded stone debitage. While none of the excavations was located on chert quarries, there was considerable reduction debris present. Several Middle and Late Archaic radiocarbon dates were obtained from the sites. The sparseness of features, low frequency of diagnostic artifacts, extensively bioturbated character of the loose sand deposits, and stifling sampling restrictions reduced the value of these excavations somewhat, but they constitute the largest block excavations in the interior Coastal Plain of Georgia (Elliott and O'Steen 1987).

The proposed transmission line corridor was sampled with a single line of shovel tests placed at 5-m intervals, once a site was discovered. The contents of these tests were troweled for artifacts (not screened). The survey data was used by design planners to shift transmission tower locations to avoid, where possible, the highest density areas of sites. By shifting the design in this manner many sites were completely protected from direct construction impact. Sampling of other sites was skewed by confining excavations to low to moderate artifact density areas of the site. The north-south dimensions of these sites were not determined by this testing scheme.

The transmission tower locations that could not be avoided were identified as "designated work areas" (DWAs) and testing and data recovery activity was confined within these 30 x 145-m rectangular DWAs. Test units were 2 x 2-m squares randomly placed within the DWAs. Testing data was then entered into a computer program, developed by Dennis Finch, to map horizontal artifact density estimates over the rest of the DWA and data recovery blocks were placed within the areas of predicted high yield. In the case of Georgia Power Company site SN-08, the expected yield projected from the testing data was not achieved by the data recovery blocks.

Testing at Georgia Power Company site SN-03 consisted of 56 m^2 of excavation (O'Steen and Espenshade 1985). Minor Middle and Late Archaic components were identified in a sand matrix. Diagnostic artifacts included Stallings Plain pottery, a perforated soapstone slab, a Guilford-like biface, and a corner notched point, which resembled a Lafayette type.

Data recovery at SN-03 consisted of an additional 112 m^2 of excavation in two blocks (O'Steen 1986). Uncovered were stratified deposits ranging from the Archaic period to the historic era. The Archaic assemblages consisted generally of intermediate- to late-stage biface production debris. Diagnostic Archaic hafted bifaces included Kirk Corner-Notched, MALA, and Savannah River or Gary Stemmed. Additional evidence for food preparation and woodworking was observed in the Late Archaic assemblage. The greater density and diversity of Late Archaic artifacts at this site was duplicated at other Brier Creek excavations.

Testing at Georgia Power Company site SN-13 consisting of 14 2 x 2-m units yielded three biface caches attributed to the Late Archaic period (Joseph 1985). A pit feature (Feature 4) was also recorded and hickory nutshell from it yielded an uncorrected radiocarbon date of 3450±80 B.P. The relationship of this feature to the caches or to any other aspects of the Late Archaic assemblage at the site was not determined. In the data recovery phase of investigations, three 8 x 8-m blocks were excavated (Espenshade 1986). One of the blocks (Block A) contained a Late Archaic component in the upper two levels. Five Savannah River Stemmed bifaces and Stallings sherds were present. The other blocks were noteworthy for the Early Archaic assemblages they contained. In Block B a large hearth containing hickory nutshell and maypop seeds was recognized in level 5. An uncorrected radiocarbon date of 4860±130 B.P. was obtained on nutshell from the feature (Feature 6B). Although an Early Archaic affiliation was anticipated, the feature is attributed to the Late Archaic period. Espenshade (1986:74-76) indicates that plowing at the site probably obliterated the upper portion of the feature, and that one of the nearby Late Archaic biface caches found during testing was situated at roughly the same depth as the hearth.

Testing was conducted at two DWAs on Georgia Power Company site SN-12 (O'Steen 1985). DWA1 was examined by 56 m^2 of excavation. Early, Middle, and Late Archaic components were identified in a disturbed deposit in DWA1. Diagnostic artifacts include Palmer Corner-Notched, Brier Creek Lanceolate, Savannah River Stemmed, and contracting stemmed points, and soapstone fragments. Soils on this portion of the site were badly disturbed. DWA2 was sampled by 64 m^2 of excavation. Diagnostic artifacts recovered include Savannah River Stemmed, Gary, and possibly Lafayette projectile points, perforated soapstone slabs, and Stallings Plain, Thom's Creek Plain, and Thom's Creek Punctate sherds. These Archaic components were badly disturbed by cultivation and thoroughly mixed with later occupations.

Two areas of Georgia Power Company site SN-09 were examined. Major occupation of the northern area was during the Late Archaic period with minor use during the Early Archaic and Middle-Late Archaic transition. Diagnostic artifacts include plain fiber-tempered pottery, perforated soapstone slabs, hafted bifaces (unspecified Early Archaic side-notched, Mack, stemmed/slightly side-notched, Savannah River stemmed, MALA), and hafted endscrapers. A few small rock clusters were found. DWA1 was tested by a 52 m^2 sample (Blanton 1985).

The Archaic deposits in this northern area (DWA1) of SN-09 were below the water table at time of testing, and Late Archaic artifacts were found imbedded in bog iron concretions in several test unit. John Foss, pedologist, examined this phenomenon and described it as Stratum III, which was discontinuous across the site. "The presence of this stratum in only a portion of the profile is confusing. The mottled 10YR3/4 Dark Yellowish

Brown sand with bog iron concretions resembles a Bs-Horizon, a zone of laterization. As such, it should be present across the entire profile. It is possible that unknown disturbance (a localized Holocene erosion episode?) has removed this stratum from the western portion of the profile" (Foss cited in Blanton 1985:16). The area of bog iron was avoided during data recovery because of logistical problems with its excavation (dug like concrete). Because of drought conditions however, the high water table had subsided by the time data recovery excavations were undertaken.

The southern part of SN-09, 275 m south of DWA1, was mainly used during terminal Late Archaic (Thom's Creek Punctate) and later periods, but also present was a minor Early Archaic assemblage (Early Archaic Palmer Corner-Notched point, Big Sandy, and hafted endscraper), a Savannah River point, a Gary point, a soapstone bowl sherd, a possible MALA, and a large orthoquartzite Morrow Mountain-like biface. DWA2 was also tested by 52 m^2 (Blanton 1985). A Palmer point was found at the interface between organically stained sands and relatively sterile, coarse sands. Ninety-nine percent of the lithics consisted of Coastal Plain chert; the remaining one percent included quartz, orthoquartzite, dark gray chert, diabase, and metavolcanic stone. Only 32 percent of chert debitage was heat treated, but 73 percent of hafted bifaces did show evidence of heat treating, suggesting heat treating occurred near the end of the reduction sequence.

Data recovery of SN-09 consisted of one 146 m^2 block in DWA1 and two 32 m^2 blocks in DWA2, all excavated to depths of over one meter (Wise 1986). Components dating from the Early Archaic through Early Woodland periods were investigated. Wise (1986) concluded that the site was used for short-term functions (mostly lithic tool reduction) during most periods, except the Late Archaic, when the site was more frequently visited. Two radiocarbon dates were obtained on samples from general level fill, one of which dated to the Middle Archaic period (5760±125 B.P.). This sample's association with diagnostic materials was uncertain.

Testing at Georgia Power Company SN-08 involved sampling of two areas each by 40 m^2 on DWA1 and 52 m^2 on DWA2 (Elliott 1985). The western areas had no research potential, but data recovery was conducted on the eastern section. Testing of DWA2 yielded a Palmer point, Early Archaic hafted endscrapers, Brier Creek Lanceolates, and Stallings Plain and Stallings Punctate pottery. One biface cache of three preforms was found.

Data recovery at Georgia Power Company site SN-08 consisted of excavation of two block units totalling 80 m^2 (Elliott 1986b). Diagnostic artifacts included Big Sandy (Bolen) Side-Notched, Kirk/Palmer Corner-Notched, MALA, Brier Creek Lanceolate, Late Archaic stemmed, contracting stemmed, perforated soapstone slabs, and Stallings Plain pottery. Careful mapping of the block excavations by level allowed a better understanding of the extent of natural disturbance from animal burrows and trees.

Georgia Power Company site SN-05 contained a shallower stratigraphy than most of the other sites and the soil contained a greater percentage of clay, but features were observed (O'Steen and Espenshade 1985). Testing consisted of 72 m^2 of excavation. Diagnostic Archaic period artifacts included Stallings Plain pottery and Savannah River, Gary, and Lafayette points.

Two blocks (52 m^2 and 111 m^2) were excavated in the data recovery phase of SN-05 (Blanton and Espenshade 1986). Primary components at the site ranged from Late Archaic through Middle Woodland periods. Recovered in the large block were Stallings sherds, soapstone slab fragments, a soapstone vessel fragment, and Savannah River hafted bifaces. The fiber-tempered sherds were all plain or eroded, but a few Thom's Creek sherds with drag and jab punctations were also present. Some of the Stallings sherds contained sand or grit in the paste.

Testing also was conducted at Georgia Power Company site SN-15 and Georgia Power Company site SN-22 (Joseph 1985). SN-15 was sampled by 56 m^2 and contained Early, Middle, and Late Archaic components. Diagnostic artifacts included Palmer, Kirk Stemmed, Stanly, Savannah River Stemmed, and Gary projectile points; hafted endscrapers; and Stallings and Thom's Creek pottery. SN-22 was sampled by 44 m^2. It also contained Early, Middle, and Late Archaic components. Diagnostics include hafted endscrapers, and Morrow Mountain and Savannah River Stemmed points. Both of these sites were assessed as severely disturbed.

Sweetheart Mound. Unpublished excavations were conducted in 1958 by the University of Georgia at the Sweetheart Mound site in the Savannah River floodplain in Screven County (Hollingsworth 1963). Several skeletons were recovered and one was apparently radiocarbon dated between 3500 and 4000 BP. Later excavations by the Archaeological Society at Georgia Southern College yielded additional skeletons from a more recent period. These early excavations remain unreported and no details on the material culture or the location of the collections from this site were located. Steven Hale and Georgia Southern University students recently conducted additional excavations at Sweetheart Mound, but a report has not been produced.

Fort Howard Sites. Excavations were conducted at 16 sites on Mill Creek in Effingham County by Garrow and Associates for the Fort Howard Paper Company. The project included hundreds of systematic shovel tests and hand excavation, mostly dug as dispersed 2 x 2 m test units. Eight sites yielded definitive evidence of Archaic occupation and more than 100 m^2 were sampled on these sites (Smith 1986). Three sites, 9EF97, 9EF134, and 9EF138, each received 20 m^2 test excavation, while the remaining sites received lesser amounts of excavation.

Archaic material, mostly debitage, was found at 11 sites (Table 5), mostly in a light-colored sand zone beneath the darker topsoil zone. None of the sites exhibited intact stratigraphy and natural soil disturbances were thought to be the source of soil mixing. On 9EF138, lithics peaked above ceramics in vertical stratigraphy, evidence of disturbance. Archaic artifacts were concentrated between 20 and 70 cm below surface (Elliott and Smith 1985; Smith 1986).

Debitage was not abundant on these sites. Most chert debitage was interior flakes. Chert was dominant, comprising more than 96 percent of debitage on 9EF134. Other raw materials include argillite, granite, petrified wood, quartz, quartzite, slate, and undifferentiated metavolcanics. Some evidence of bipolar flaking technology was observed. Site furniture was generally absent. Fire-cracked rocks also were not common. Small amount of calcined bone were reported. The Archaic sites were interpreted as a series of short-term occupations where stone tool maintenance and final stages of stone tool production from preforms were accomplished (Smith 1986).

Other Effingham County Sites. Fish (1976a) conducted excavations totalling 28 m^2 at four sites in the Ebenezer Creek watershed that produced Archaic period diagnostic artifacts. Site 9EF15 yielded a possible Early Archaic uniface and a Middle Archaic point; 9EF16 yielded Late Archaic bifaces and Stallings Plain sherds; 9EF56 yielded Middle Archaic points; and 9EF76 yielded Late Archaic points.

Table 5. Summary of Archaic Components from the Fort Howard Project.

Site	Diagnostics
9EF97	Paleoindian/Early Archaic endscraper; Kirk/Palmer Corner-Notched; Savannah River points; soapstone vessel; Stallings pottery
9EF101	MALA point
9EF132	Early Archaic corner-notched point
9EF134	Paleoindian/Early Archaic endscrapers; MALA point; Gary point; stemmed Archaic point; Stallings pottery
9EF135	Stallings sherd
9EF137	Savannah River point
9EF138	Bannerstone; Stallings Punctate, Thom's Creek, and St. Simons Incised pottery
9EF141	Kirk/ Palmer point, plain fiber-tempered sherd
Site 28	Kirk Corner-Notched point
Site 9	Stallings Plain; small stemmed point
Site 48	Soapstone perforated slab

Excavations of 24 m^2 at Georgia Power Company site EF-08, located on the south side of Sand Pond, a Carolina Bay, located Savannah River Stemmed points and fiber-tempered pottery. Artifacts were found to a depth of 60 cm below surface, but the site was determined to be badly disturbed (Finch and Manning 1985).

Excavations at New Ebenezer (9EF28) on the Savannah River below the confluence of Ebenezer Creek in Effingham County by the LAMAR Institute identified Archaic lithic and Stallings ceramic components in buried context (Elliott 1988; 1990). Stallings Plain and Stallings Punctate sherds were observed. Most of the projectile points were made from Coastal Plain chert, although limited use of locally occuring petrified wood is evident. The projectile points include undifferentiated stemmed Archaic varieties. Site furniture includes one metate.

Bilbo (9CH4). Bilbo is a deeply stratified midden of alternating shell and sand approximately 30 x 30 m in extent. At the time Waring tested the site, it was situated in an abandoned meander of the Savannah River, bordered on the east and west by sandy bluffs.

In 1939 Antonio Waring excavated approximately 123 m^2 of Bilbo to an average depth of around 1.4 m (Stoltman 1972:42). He identified four zones in the sequence (Waring 1968a:155). The bottom layer (Midden Zone 1) consisted of a nearly uniform layer of oyster shell, 25 to 50 cm thick, lying on basal clays. Waring indicated that the "appearance was that of fresh, untrodden shell in which no ash or thick midden material was added" (Waring 1968a:155). The only artifacts recovered from this zone were a splinter awl, a perforated soapstone slab fragment, a perforated conch shell and a baked clay object. Also present were "numerous animal bones" (Waring 1968a:155).

Overlying the oyster shell was a black, midden-stained river gravel (Midden Zone 2) 15 to 30 cm thick. Recovered from this zone was a small amount of fiber-tempered pottery, mostly plain, flaked stone artifacts and bone. Several clay-lined ("storage" [sic]) pits were observed, one containing 2 bone awls and a bone pin, as were a few hearth-like features (Waring 1968a:156).

Above Midden Zone 2 was 30 cm or more of lightly stained river gravel containing few artifacts. Midden Zone 3 was comprised of dense mussel and oyster shell combined with sand and ash. Decorated and plain fiber-tempered pottery, flaked stone and bone tools, and bone refuse was recovered. The zone was arbitrarily terminated at 38 cm from the surface. The remaining surficial deposit (Midden Zone 4) contained artifacts of later cultural periods, including historic remains, as well as fiber-tempered pottery. Pits and hearths were found throughout Zones 3 and 4.

The vertical distribution of fiber-tempered pottery in Waring's stratigraphic block (n = 1,273) exhibits a predominance of plain wares in the lowest and shallowest levels, interrupted by a mode of linear punctate sherds centered on Level 8. Random punctate and incised sherds comprise minor fractions of the assemblage in nearly all levels. Correlating this distribution with Waring's stratigraphic description, at least two distinct components are evident: an early plain fiber-tempered component with an occasional decorated sherd concentrated in Midden Zone 2 (Levels 15 to below ground water); and a later plain and linear punctate component in Midden Zone 3 (roughly Levels 6-10). Absolute sherd frequencies (Waring 1968a:179) support this interpretation. The upper 38 cm of mixed deposits (Midden Zone 4) might constitute a third fiber-tempered component in which the proportion of plain ware increases. Waring notes (1968a:160) that among plain sherds wedge-like lips are restricted to the deepest levels, indicating that plain sherds may be used to define temporally-distinct components of the sequence.

Bilbo was revisited in 1957 by William Haag, who opened 39.5 m^2 to an average depth of 0.8 m (Dye 1976). Only one unit (Unit 7; 5 x 10 ft [1.5 x 3 m]) penetrated the entire deposit. Based on the descriptions of this unit by Dye (1976:41-51), a deeper, more complex stratigraphic sequence was found by Haag than by Waring. Ten zones were observed. The lowest, Zone 1, consisted of sterile blue clay, excavated to a depth of 8.5 ft (2.6 m) below surface. From 6 to 6.5 ft (1.8 to 2 m) below the surface, Zone 2 consisted of a mixture of blue clay, shell and some wood, and contained 5 plain fiber-tempered sherds and one baked clay object. Zone 3 was a thin (5 to 7.5-cm) lens of charcoal, wood roots and nuts. The overlying stratum, Zone 4 consisted of nearly solid oyster shell along with two lithic tools, faunal remains, and 39 plain fiber-tempered sherds. This zone corresponds with Waring's Midden Zone 1, though Waring recovered no pottery in his excavation of this stratum.

Above this initial shell midden was a 30 cm thick layer of coarse sand with clay lenses (Zone 5). Numerous and diverse faunal remains, nut remains, bone and lithic tools, and plain, incised and punctated fiber-tempered sherds were recovered. This zone seems to correspond with Waring's Midden Zone 2, with the difference in grain size attributed to relative location on the active point bar (Dye 1976:45). The second shell midden in the sequence is represented by Zone 6. Lithic and bone tools, faunal remains, and plain, incised and punctate fiber tempered sherds were recovered. This zone cannot be reconciled within the Waring sequence, and it may represent an isolated shell lens at the site (Dye 1976:46).

Over the second shell midden was a mixed zone of dark earth and sand (Zone 7) about 30 cm thick containing lithic and bone tools, faunal material, plain, punctate and incised fiber-tempered sherds and a few Middle Woodland (Deptford) sherds. Above this was a thin upper shell midden (Zone 8), perhaps localized like Zone 6, with an assemblage similar to Zone 7. The upper 46 to 61 cm of deposits (Zones 9 and 10) contained a mixture of prehistoric and historic materials in a matrix of dark earth, ash and minor shell.

It is evident that either Haag encountered a particularly complex portion of the site, or that Waring simplified his profile drawing provided in his report. Additional profiles of the Waring excavations were lost before his work was published (Waring 1968a:154-155), so we are left with only two limited sections. Haag's work establishes a fiber-tempered association for the earliest shell midden at the site, though it is hard to believe that Waring did not find a single sherd in the seemingly extensive exposures he made of this stratum. On the other hand, Waring himself admitted that work below the water table was indeed difficult (Waring 1968a:157). Perhaps he simply did not attempt to excavate much of this zone. He at least gives no indication that this lowest shell midden was penetrated, as Haag clearly did. Thus, the Haag sequence from Unit 7, small though it is relative to the entire excavation, must stand as the sequence of record for Bilbo.

Of particular importance in Haag sequence is the definition of a pure plain fiber-tempered component in the lowest three levels of sherd-bearing deposits (Levels 11-13; Zones 2-4). Three radiocarbon dates were obtained on charcoal and bone from Level 12, the lower portion of the first oyster shell layer in the sequence. The uncorrected dates are 3730±125, 3820±125, and 4125±115 B.P. The subsequent shell layer (Zone 6) is associated primarily with plain and linear punctate sherds and yielded an uncorrected radiocarbon date on charcoal of 3700±125 B.P. Linear punctate sherds increase in both relative and absolute frequency in Zone 8 (Levels 4-5), the third dense shell layer. Also in this zone is the first appearance of random punctate sherds. An anomalous date of 5500±115 B.P. from charcoal in Level 5 is attributed by Haag to the use of ancient wood out of the nearby marsh (Williams 1968a:330).

Other Savannah Delta Sites. Three other sites in the vicinity of Savannah yielded important information leading to the definition of an early fiber-tempered ceramic horizon on the coast. The deeply stratified deposits at the Deptford site (9CH2) provided the basis for the Woodland ceramic sequence formulated by Caldwell and Waring (1939). Fiber-tempered pottery was found below check-stamped and cordmarked sherds of the Woodland traditions, giving one of the earliest indications of the antiquity of fiber-tempered pottery.

The Refuge site, several kilometers upriver from Savannah in the freshwater zone, is a mussel midden with multiple ceramic period components. Waring (1968d) conducted excavations at the site in 1947. The sequence is most famous for the documentation of a pre-Deptford Early Woodland complex (Refuge), but also uncovered was a minor fiber-tempered component at the 5 to 6-ft (1.5 to 1.8-m) depth range. All the fiber-tempered pottery at this depth was plain, though a few decorated, as well as plain sherds were found at shallower depths (Waring 1968d).

The Dulany site (9CH54) at Brewton Hill, to the immediate east of Bilbo, is reported by Waring (1968d:208) to have been an oyster shell midden 1.2 to 1.8 m deep and 230 m long. Ash and animal bone was observed in the midden. A surface collection of the site by Waring yielded 432 fiber-tempered sherds, 97 percent of which were plain, four Late Woodland sherds, 1 complete and 25 fragmented baked clay objects, 6 Savannah River Stemmed bifaces, a scraper, 1 grooved stone fragment, and a conch shell gouge. The site was later tested by Lewis H. Larson, and from his work an uncorrected radiocarbon date of 3770±200 B.P. was obtained on oyster shell 46 cm above the base of the midden. A 420-year correction added to this date (see Chapter 3), adjusts the age to 4190±200 B.P., which is consistent with other early assemblages dominated by plain ware.

OGEECHEE RIVER WATERSHED

Major Surveys

The Ogeechee River watershed is probably the least surveyed and least known region of the Georgia Coastal Plain.

Soil Systems survey of the Vogtle-Wadley transmission line for Georgia Power Company covered portions of the Savannah and Ogeechee River drainages. A total of 32 sites was found including 19 with prehistoric components (Wheaton et al. 1982). They reported chert outcrops on Ogeechee tributaries in Burke and Jefferson counties, and a chert quarry in Jefferson County. At the Rocky Creek and Steiner Creek crossing (Site 20056-12) chert and limestone outcroppings were reported and dense chert debitage was reported nearby, suggesting a quarry may be present in the vicinity. A possible chert quarry locus and chert outcroppings were reported at Spring Creek in Jefferson County (Site 20056-26). One unspecified Archaic projectile point was reported from the survey, but the lithic sites were otherwise non-diagnostic.

Garrow and Associates surveyed a 90.8 km x 45.7 m corridor in Jefferson, Washington, Hancock, and Putnam counties for the Wadley-Wallace Dam transmission line for Georgia Power Company, which included a small section of the Piedmont province within the Altamaha River watershed (Garrow et al. 1984). The study area encompassed 415 ha and 83 sites were recorded along the route. Four Early Archaic sites were reported including Kirk Corner-Notched and bifurcate points. Three of these sites were found in the Vidalia Upland subprovince of the Coastal Plain. Six Middle Archaic sites were identified, including one in the Fall Line Hills and two in the Vidalia Uplands subprovinces. Stanly and Morrow Mountain points were reported. Late Archaic components, identified by Savannah River Stemmed and Gary-like points, were found on nine sites, including one in the Fall Line Hills and three in the Vidalia Uplands subprovince. No soapstone artifacts or fiber-tempered pottery were reported from this study.

Roland A. Steiner assembled a very large artifact collection during the mid- to late-nineteenth century, composed of mostly Archaic period points, from the tributaries of the Ogeechee River system in Burke County, Georgia (Elliott et al. 1994). The collection was from the Davis Plantation, or "Old Evans Place" which was located on Buckhead Creek. As Wheaton and his colleages observed, the Buckhead and Rocky Creek areas of Burke County is a chert-rich zone (Wheaton et al. 1982). The limits of Steiner's collecting radius have not been established. While the collection is attributed to the Old Evans Place, it may also include artifacts from a few adjacent plantations in Burke County.

Another major untapped source of information on Archaic settlement in the Ogeechee River drainage is the McGlashan collection at the Smithsonian Institution. Jonathan McGlashan amassed a large collection (20,000+ artifacts) during the mid-nineteenth century, which were purchased from McGlashan's widow by Henry Rogan during the Bureau of American Ethnology mound exploration (ca. 1888). The collection is primarily composed of Archaic points, but it has not been studied in any detail. The collection is attributed to the Ogeechee River drainage, according to a recently discovered letter written by Roland Steiner to Thomas Wilson. Steiner states that McGlashan served as an engineer charged with relocating a 225-km railroad line that paralleled the Ogeechee River and the artifacts were gathered by the construction crew from many sites along the route. Although the collection lacks individual site provenience, it is useful as a drainage-wide sample, particularly since most of the Ogeechee River drainage is contained within the Coastal Plain province..

Southeastern Archeological Services conducted intensive survey of 3,255 ha on the Di-Lane Plantation in Burke County for the Georgia Department of Natural Resources (Price and Braley 1995). The survey recorded 238 sites, including 11 Early Archaic, 9 Middle Archaic, 24 Late Archaic, 9 Late Archaic or Early Woodland, and 15 that contained unifacial tools suspected to be either Paleoindian or Early Archaic. Eight chert quarry sites were recorded. The Early Archaic sites included four with Taylor points, two with Palmer/Kirk points, one with bifurcates, and four with basally-notched point fragments.

The Middle Archaic sites included three with Stanly points, seven with Morrow Mountain points, and one with MALA points. The Late Archaic sites included eight with Savannah River Stemmed points, one with Lafayette points, five with soapstone (including three perforated slabs, but no bowls), nine with Stallings series pottery (including Stallings Punctate), and five with Thom's Creek Punctate pottery. Twelve sites yielded stemmed points that were either Late Archaic or Early Woodland in age.

King (1992) surveyed a 6.1 km corridor and a 1.6 ha tract in Emanuel and Burke counties and located seven sites, including two Late Archaic sites. One Late Archaic site (9BK63) on the Ogeechee River contained Stallings (Stallings Plain, Stallings Punctate pottery) and Thom's Creek series sherds (Thom's Creek Plain and Thom's Creek Punctate). The site was being actively looted at the time of King's survey. The other site (9EM22) contained Lafayette and Late Archaic stemmed points.

The Rocky Ford site is an important Late Archaic period shell-midden site located at the mouth of Horse Creek in Screven County (Bartsch 1981). While no formal survey has been conducted at this site, it merits mention as one of the Ogeechee's rich Late Archaic shell middens. Such sites have long-been the target of looters with particular interest in carved bone pins (e.g., Roshto 1985). Several shell middens have been completely destroyed, with litle opportunity for archaeological salvage. Fortunately, two sites in Jenkins County were visited by Frankie Snow in 1985 when hundreds of artifacts were left abandoned on the surface of looted midden (Snow 1985; Sassaman 1993a). The large samples of pottery Snow collected from the Strange and Chew Mill sites are dominated by punctated sand-tempered and semi-fiber-tempered wares. The punctation designs are very elaborate, similar in many respects to the design repetoire of Stallings Island sherds. Technologically, the Chew Mill and Strange pottery differs from Stallings ware not only in its sandy paste, but in being so thick and heavy (Sassaman et al. 1995). The differences between this Ogeechee River pottery and classic Stallings and St. Simons ware are sufficient to warrant a separate type name, although some may choose to include the Ogeechee wares within the Thom's Creek series. Dates for these assemblages are, of course, unavailable, given the looted context; however, dates could be obtained on some of the bone collected by Snow. Alternatively, recent test excavations at these sites by Steven Hale (1994) of Georgia Southern University may provide radiometric data.

Trowell (1977a) described the Paul Martin collection, a surface collection made during the mid 1950s from 9BU7, a 2-ha highway borrow pit site on the Ogeechee River between Statesboro and Oliver in Bulloch County. Because of the large size of the collection and limited time available for research, Trowell was only able to examine 50 percent of the collection. Projectile points in the collection include Alachua, Arrendonda, Bolen Beveled, Bolen Plain, Clay, Culbreath, Elora, Lafayette, Ledbetter, Levy, MacCorkle, Marion, Morrow Mountain I, Palmer, Putnam, Savannah River Stemmed, Stanfield, Stanly, Westo, and "unassignable stemmed" types (Trowell 1977a). The lithics were Coastal Plain chert. Plain and decorated fiber-tempered pottery and one soapstone fragment also were reported. Trowell described the fiber-tempered ware as more similar to coastal wares than Stallings types. Site furniture, including manos, metates, anvils, and nutting stones, were observed in the collection. Trowell photographed projectile points and the collection was returned to the Martin family.

Ms. Carolina Brown of Guyton, Georgia has a small collection kept in a cigar box from a Late Archaic shell midden near Millen, in Jenkins County, Georgia (Elliott 1992:4). She collected the material from the surface of the site after it had been looted. Her collection inlcudes several engraved bone awls characteristic of the Stallings Culture. This site is not recorded in the state site files. Ms. Brown also has artifacts collected from her property on the Ogeechee River in Effingham County (9EF192). The collection was examined by Fish (1976a) and again later by Elliott (1992). Early Archaic corner notched, Middle Archaic, and Late Archaic stemmed projectile points and Stallings Plain and Stallings Punctate and Thom's Creek Punctate pottery were noted. Her collection also included grinding slabs, drills, nutting stones, pipes, ornaments, and significant amounts of petrified wood, which Ms. Brown reports is found on sandbars in the Ogeechee River channel near her property.

Site 9SN1, located between Halcyondale and Stalco in southwestern Screven County, was recorded by Robert Wauchope, based on a 1935 newspaper article about a site, which was described as "a burial ground" (Lufburrow 1935). Later examination of pottery from a site in the same vicinity by John Cain identified primarily Stallings series wares.

Garrow and Associates surveyed a 28.5 km x 30 m corridor in Screven and Effingham counties and located one Early Archaic site, identified by a corner-notched point (Bloom 1989).

New South Associates surveyed a corridor for Georgia Department of Transportation in Screven and Effingham counties for the widening of an existing highway (24.4 km x 30 m corridor) and for a bypass around Newington, Georgia (8.6 km x 45-91 m corridor). The survey located 31 sites, including two with Archaic components that were situated on the perimeter of Humphrey's Bay, a large Carolina bay located in Screven County north of Newington. One Late Archaic site (identified by a Lafayette point) was on the southwestern side of the bay. This site was later tested by Jannie Laubser (personal communication, 1995). Elliott surveyed the entire perimeter of the bay and located a large Archaic site (9SN168) on the eastern and southern side. Elliott found a Late Archaic/Early Woodland stemmed point and fiber-tempered pottery. Elliott also examined the David and Reneé Walker collection, which was gathered over several decades from the perimeter of Humprey's Bay (9SN165 and 9SN168). Their collection includes a full range of Archaic projectile points (Bolen, Kirk Corner-Notched, stemmed Archaic, Brier Creek Lanceolate, Lafayette, and other types), perforated soapstone slabs, soapstone vessel sherds, Stallings pottery (Stallings Plain and Stallings Punctate), and other ground stone items including several manos and large metates. Middle Archaic point types were not well represented in the collection (R. Elliott 1994). The research at Humphrey's Bay represents the most extensively studied Carolina bay Archaic site in Georgia.

The University of Georgia survey of the Ebenezer Creek watershed in Screven and Effingham for Soil Conservation Service also included some survey tracts in the Ogeechee River watershed and one Archaic site was defined from the Carolina Brown collection (Fish 1976a). Most of this study focused on the Savannah River watershed.

The LAMAR Institute conducted a surface survey of 219 ha in western Effingham County for the Historic Effingham Society (Elliott 1992). This study identified 30 sites on 10 scattered tracts ranging in size from 4 to 58 ha. The study areas were nearly evenly divided between riverine settings and interriverine areas. Five sites yielded diagnostic Archaic period artifacts: 9EF192 on the Ogeechee River bluff (Early Archaic corner notched, Late Archaic stemmed, Thom's Creek and Stallings pottery); 9EF193, adjacent to Mingledorf Bay (Archaic [expanded] stemmed point); 9EF204 on the Ogeechee River bluff, (Paleoindian or Early Archaic hafted unifacial scraper and two Late Archaic stemmed points); 9EF212 on the Ogeechee River swamp margin (Late Archaic stemmed point); and 9EF218 on the Ogeechee River swamp margin (Savannah River Stemmed). Lithics were sparse over the study area, a factor attributed to the absence of chert resources in the region.

Survey for Interstate 16 by the Georgia Historical Commission located a total of 26 sites in four counties in portions of the Altamaha and Ogeechee River watersheds. Five sites were found along the highway route in the Ogeechee River watershed, two in Candler County and three in Bulloch County (Anonymous 1973). A site at the Canoochee River crossing (71-I16-3) contained Dalton, Big Sandy, Palmer, Morrow Mountain I and II, and Savannah River Stemmed projectile points, based on examination of the Sherman Byrd family artifact collection.

Mosely Farm is a Stallings Culture site 0.8 to 1.2 ha in extent located on a minor drainage of the Ogeechee River in Bulloch County near Statesboro, Georgia (Kelly and Knowlton 1958:5-6). Stone tools and fiber-tempered pottery were noted, but mussel shell was not reported.

Soil Systems surveyed 38.5 ha for a wastewater treatment plant in Evans County near Claxton and located six sites. Only one yielded diagnostic Archaic period artifacts, a Savannah River Stemmed point (Wheaton and Watson 1978).

A five-percent sample survey of Fort Stewart Military Reservation, comprised of surface reconnaissance of 370 km of plowed firebreaks (Miller et al. 1983) found 68 aboriginal sites, including 17 undifferentiated Archaic period sites and eight Late Archaic St. Simons phase sites, identified by St. Simons Plain pottery. One Dalton component was included among the Archaic sites. Although few details on the Archaic period were described, corner-notched and side-notched points and one Edgefield Scraper (from 9Bry36) are illustrated in the report. Archaic (lithic?) sites were most commonly found on Ocilla, Fuquay, and Stilson soils, while St. Simons sites were mostly found on Ocilla and Albany soils (Miller et al. 1983:237).

Carolina Archaeological Services surveyed 1,507.3 ha on Fort Stewart and located 44 sites, including two Early Archaic and one Late Archaic sites (Jackson et al. 1988). Diagnostic artifacts that were found included a possible Palmer Corner-Notched, Kirk Corner-Notched, and Savannah River Stemmed points.

Survey by Garrow and Associates for Georgia Power Company's Vogtle-Effingham-Thalmann transmission line corridor, discussed in the Savannah River watershed survey section, included sections of Effingham, Bryan and Liberty counties within the Ogeechee River watershed. Six Late Archaic sites were recorded within the Coastal Marine Flatlands subprovince, which includes mostly areas within the Ogeechee River watershed. By our estimates, five of these Late Archaic sites lie within the Ogeechee River watershed. Stemmed Archaic points and an unidentified contracting stem were reported from this section of their study route.

Key Excavated Sites

Test excavations by Soil Systems for Georgia Power Company totalling 4 m^2 at site 20056-17 on Eightmile Creek in Burke County yielded unspecified Early and Middle Archaic projectile points (Wheaton et al. 1982). The artifacts were found in a shallow deposit (<40 cm thick), but non-diagnostic hearth features were identified.

University of Georgia conducted excavations in 1953 at the Galphinton Site (9JF9) on the west side of the Ogeechee River in Jefferson County, but the results were only briefly reported (Kelly and Cain 1956). They excavated approximately 14 m^2 and found Stallings Plain and Stallings Punctate pottery, perforated soapstone slabs, and stemmed

Table 6. Stratigraphic Summary of the Galphinton Site (9JF9) Excavations.

Depth	Comments
0-6 inches (0-15 cm)	13 fiber-tempered sherds; 132 later sherds
6-12 inches (15-30 cm)	48 fiber tempered sherds (ornamented); 53 later sherds
12-18 inches (30-46 cm)	Worked flint increases; soapstone perforated slabs
18-24 inches (46-61 cm)	No comments
24-32 inches (61-81 cm)	A few fiber-tempered sherds; a few simple stamped; decreasing amounts of scrap flint, but more finished artifacts, mostly stemmed projectile points
32 inches-7 ft (81-213 cm)	No comments

projectile points, in addition to later period artifacts. Table 6 provides a stratigraphic summary of the excavation results.

New South Associates conducted test excavations at two Archaic sites for Georgia Department of Transportation for the Georgia Highway 21 widening in interriverine sections of Effingham and Screven counties. Site 26 was a large site surrounding a Carolina bay (Humphreys Bay). Cultural material extended around most of the bay perimeter, but the section impacted by the highway contained mixed stratigraphy. Site 28 was a smaller site surrounded by swamp on Ogeechee Creek. No diagnostics were recovered and the stratigraphy again appeared to be mixed (Jannie Laubser and Michael Griffin, personal communication, 1995).

Excavations by Garrow and Associates for Georgia Power Company at a site in Liberty County (Georgia Power Company LI-01) yielded important lithic resource data for the Late Archaic period (Espenshade 1985). Small, locally occurring quartz and quartzite cobbles or pebbles were used to manufacture, by bipolar flaking, medium-sized stemmed projectile points. The quartz occurs in marine gravels. This lithic resource extraction strategy and knappable stone resource was previously undocumented in the Georgia Coastal Plain. Although this particular site may not date to the Archaic period, Archaic period groups may have utilized the stone source on other workshop or quarry sites. If so, this would be an important aspect of Archaic period stone quarrying technology in the Georgia Coastal Plain.

ALTAMAHA RIVER WATERSHED

Major Surveys

Smith (1982a) surveyed a 8.7-km corridor of unspecified width on the Oconee River in Baldwin County and located one Early and Middle Archaic site. Diagnostic artifacts include Palmer Corner-Notched and Morrow Mountain points, and unspecified soapstone.

Funkhauser (1976) reported on survey of 400 ha on the Oconee River in Laurens County, in which 28 sites were recorded. One site (9LS5) produced Stallings Plain and Stallings Punctate pottery and large stemmed Late Archaic points.

Webb (1990) surveyed 252 ha on Town Creek in Jones County and located 17 sites including three Archaic sites. Two of these had Middle Archaic components (Morrow Mountain and Benton [sic]), while all three had Late Archaic components (Savannah River Stemmed).

Garrow and Associates surveyed a corridor of unspecified length on Big Sandy Creek in Twiggs County and located nine sites, including one Middle Archaic (Morrow Mountain) and one Late Archaic (Savannah River Stemmed) site (Jennings 1989).

Ingmanson (1964) surveyed 710.5 ha for a reservoir on Tobesofkee Creek in Bibb County. He located one Middle and Late Archaic lithic site and one Late Archaic lithic site.

Several surveys have been conducted in Houston County below Macon. Griffin (1977) reported on a survey of two corridors for a wastewater treatment facility. One site on Sandy Run Creek yielded a side-notched Archaic point and a soapstone vessel sherd.

Garrow and Associates conducted survey of 1,295.5 ha on the Warner Robbins AFB on the Ocmulgee River in Houstoun County, which located 33 sites (Blanton and Reed 1987). Archaic components were well represented by 10 Early Archaic, 2 possible Middle Archaic, 7 Late Archaic, and one general Archaic site. Diagnostic points that were reported included Bolen, Bolen/Palmer, Kirk Corner-Notched, Kirk Stemmed, Sumter, Otarre, Gary, Savannah River Stemmed types. A limonite bannerstone fragment also was reported.

Garrow and Associates surveyed for Oglethorpe Power Corporation the Northrop substation and transmission line, a 10. 85 km x 23 m study tract in interriverine Peach and Houston counties (Elliott 1987). Eight sites were identified, including six prehistoric sites and three with Archaic components. One site in Houston County yielded Late Archaic period artifacts (Savannah River Stemmed and other stemmed points, and Stallings Punctate pottery) and was tested as part of the same study. Site 1 yielded Morrow Mountain points and unifacial flake tools in disturbed context. Site 8 yielded a corner-notched projectile point of possible Early Archaic age.

Gardner (1993) surveyed a 24.5 km x 15.2 m corridor in Houston and Twiggs counties and located nine sites, including two Archaic sites. One contained a late Middle Archaic (MALA) component and the other site, located at the Ocmulgee River, contained Stallings Plain pottery.

Southeastern Archeological Services surveyed a 13.3 km transmission line corridor in Twiggs County and found six sites, including one site with an Early Archaic Kirk component (Gresham 1984b). The survey collection contained large amounts of early stage reduction flakes suggesting to Gresham that a chert source was probably located nearby. Split quartz pebbles, indicative of bipolar tool manufacture, were found on another site in the survey, but no diagnostic Archaic artifacts were associated with it.

Neilsen (1965) reported on reconnaissance conducted by Georgia State College in nine counties (Bleckley, Dodge, Laurens, Montgomery, Pulaski, Telfair, Treutlen, Wheeler, and Wilcox) for the Heart of Georgia Planning and Development Commission. Seventy sites were found including 10 sites with Stallings pottery (seven with Stallings Plain and three with Stallings Plain and Punctate). No details of the preceramic Archaic period findings were provided, except that side-notched, Kirk Corner-Notched, Kirk Serrated, and stemmed Archaic points and perforated soapstone slabs were found. One chert quarry site was recorded. No information was reported on the acreage covered.

Survey for Interstate 16 by the Georgia Historical Commission located a total of 26 sites in four counties in portions of the Altamaha and Ogeechee River watersheds (Midgette 1973). Four sites were located in the Altamaha River watershed along the highway route, two in Treutlen County and two in Emanuel County. One site in Treutlen County at Pendleton Creek yielded side-notched and bifurcate type Early Archaic projectile points.

One site near the Ohoopee River in Emanuel County produced plain fiber-tempered pottery, soapstone vessel sherds, stemmed projectile point and unifacial flake tools. Another site in the same vicinity yielded a side-notched projectile point.

The University of Georgia surveyed three areas totalling 3.6 ha on the Oconee River in Treutlen and Wheeler counties and located three sites, including one (9WI12) with a deeply buried cultural deposit containing punctated fiber-tempered pottery (Fish and Rudolph 1978).

Southeastern Archeological Services conducted a survey of 17.9 km x 30.5 m corridor in Dodge and Telfair counties for Oglethorpe Power Corporation and found eight sites, including two Early Archaic, two Late Archaic, one possible Middle Archaic (Smith 1988). Diagnostic artifacts included Bolen, Hamilton or Arredondo, Gary or Florida Archaic stemmed, Late Archaic stemmed points and plain fiber-tempered pottery.

Southeastern Archeological Services conducted a survey of a 34 km x 45.7 m corridor and substation site in Coffee County resulting in the location of 11 archaeological sites, some with Archaic components (Braley 1987).

Southeastern Archeological Services conducted a survey of 10.5 ha on the Altamaha River in Appling County and located five sites, including one deeply buried site (70-80 cm below surface) with fiber-tempered and fiber- and grit-tempered pottery. Their survey also included a revisit of Frankie Snow's Archaic site 9AP12 (see below), but no Archaic period artifacts were found.

Webb (1982) surveyed a 12.8 km x 30.5 m corridor in Tattnall County and located three sites, including one Late Archaic site with plain fiber-tempered pottery.

Price (1994) surveyed a 40.2 km long corridor for Highway 341 widening in Wayne County and located 19 sites, including two with Archaic components. One had been previously recorded by DePratter and was general Archaic, while the other contained plain fiber-tempered pottery and debitage.

The University of Georgia surveyed selected portions of the Big Mortar-Snuffbox Swamp watershed in Long and McIntosh counties, resulting in the location of 171 sites, including 42 Archaic period sites (Table 7; Zurel et al. 1975). The project areas (218 ha total) were widely distributed across the interior of the two counties. Stallings fiber-tempered pottery sites were most frequent (n = 37), but Early, Middle and Late Archaic projectile point types were reported in low frequencies. The frequency of Stallings pottery was high on some sites. For example, 9MCI266 yielded 300 sherds. Their survey report makes no mention of soapstone artifacts in the survey area.

Table 7. Summary of Archaic Sites, Big Mortar-Snuffbox Swamp Survey (after Zurel et al. 1975).

Diagnostic Type	Site Count	Diagnostic Type	Site Count
Hardaway	1	Large stemmed point	1
Big Sandy Side-Notched	1	Gary	1
Bolen Plain/Greenbrier	1	Afton	1
Westo	7	Stallings Plain	28
Levy	1	Stallings Punctate	1
Ledbetter	1	Stallings Incised	1
Savannah River Stemmed	1	Stallings Simple Stamped	1
Lafayette	2	Stallings unspecified	6

Big Bend Survey. Researchers Frankie Snow and Chris Trowell at South Georgia College in Douglas, Georgia have been active over the past three decades in recording archaeological resources of that area. Snow's survey of the Ocmulgee Big Bend region of the Alapaha, Altamaha, Ocmulgee, Oconee, and Satilla rivers has been a unique ongoing project in south-central Georgia. A summary of the survey was compiled by Snow in 1977, but since that time he, and associate Chris Trowell, have continued to amass site data and artifact collections from more than 1,000 sites in the region (Snow 1977a, 1977b, personal communication, 1995).

His 1977 survey report contains information on 197 Archaic period sites in a 20-county area. The counties include Appling, Atkinson, Bacon, Ben Hill, Berrien, Coffee, Dodge, Irwin, Jeff Davis, Lanier, Laurens, Montgomery, Pulaski, Telfair, Tift, Toombs, Treutlen, Ware, Wheeler, and Wilcox. A summary of the components on these 197 sites are presented in Table 8. Portions of Snow's more recent work are documented in a series of papers on the Feronia locality (Blanton and Snow 1986, 1989). Most of Snow's survey data compiled since 1977 has not been entered into the state site file inventory at the University of Georgia and many of the collections from these sites have not been analyzed or quantified. Snow maintains records and site collections at South Georgia College where they await study. In the absence of financial resources needed to process and properly curate these collections, Snow is serving as their interim steward. The research potential of these collections is tremendous, and there is an acute need to have the collections completely inventoried and curated.

Survey at Sandy Hammock (9PU10) in Pulaski County identified a deeply buried lithic zone where flint was found in quantities that suggested an "Archaic factory operation" to Snow. At Mosquito Creek, 8 km east of Sandy Hammock, Snow recorded 11 sites, including numerous Archaic period lithic sites. The Flat Tub Landing area on the Ocmulgee River produced 24 sites, including several Satilla series sites. Snow considered the Flat Tub vicinity to be the northern limit of the Satilla series distribution, since his surveys to the north did not contain this pottery. Survey at Rocky Hammock, below Flat Tub Landing, yielded 15 sites. A deeply buried Early Archaic site was found at 9TU17, which produced Bolen points, caches of biface blanks, and fiber-tempered pottery. Dalton and Late Archaic (soapstone and fiber-tempered pottery) were reported at Bells Ferry Crossing near the Oconee and Ocmulgee rivers confluence. Falling Rock (9AP10), on the Altamaha River in Appling County, produced preceramic Archaic and fiber-tempered

Table 8. Summary of Archaic Components by Drainage in the Big Bend Survey (after Snow 1977a; Trowell 1976).

	Altamaha	Oconee	Ocmulgee	Satilla	Alapaha	Total
Bolen Side-Notched		2	36	15	5	58
Kirk Corner-Notched	1	2	28	4		35
Edgefield Scraper			5	1		6
Eggstone			2	1		3
UID Early Archaic	1		2			3
Early Archaic Total	*2*	*4*	*71*	*19*	*5*	*101*
Middle Archaic Total			*2(18?)*	*(1?)*		*2(19?)*
Savannah River Stemmed			21(3?)	8(1?)		29(4?)
Plain Fiber-Tempered Pottery	10	9	77	20	5	121
Decorated Fiber-Tempered Pottery	1	1	29	2		33
Satilla Pottery			7	16	5	28
Soapstone			4			4
Late Archaic Total	*9*	*7*	*88*	*34*	*7*	*145*

pottery sites and Davis Field (9AP15) produced plain fiber-tempered pottery. The Satilla series extended into the Alapaha drainage to the southwest Snow considers the Satilla series to be at least partially contemporaneous with the Refuge series of eastern Georgia, and Refuge ceramics were quite rare in his study area (Snow 1977b).

Snow has compiled important data on the distribution and technology of the fiber-tempered and Satilla series pottery in the south Georgia. He has recovered plain fiber-tempered pottery from sites in both riverine and upland locales, while decorated fiber-tempered pottery, the minority ware, was generally restricted to sites along the Ocmulgee River. Compared to Stallings and St. Simons pottery, the plain fiber-tempered sherds from Snow's collections are especially thick. The mean thickness of seven plain fiber-tempered rim sherds from the Squeaking Tree site (9TF5) (measured 3 cm below the lip) is 11.3 mm. A small amount of punctated fiber-tempered pottery is associated with these plain sherds, as is a large assemblage of soapstone vessels sherds. The Gregory Creek site (9TF3) produced an assemblage of fiber-tempered pottery and soapstone vessel sherds similar to those from Squeaking Tree. Gregory Creek also produced one of the few possible Middle Archaic assemblages from the Big Bend area. As can be seen from Table 8, the Middle Archaic presence in the Big Bend area remains elusive.

Lithic resources within Snow's study area are very limited. High-quality chert is found only in the outer fringe of his study area (near Abbeville in Pulaski County, and in Laurens County). One low-grade chert source is reported by Snow from Coffee County, but evidence of its use during the Archaic period is not evidenced. This material is a light gray chalky chert that is very brittle. To the extreme south of his study area, silicified coral outcrops along the Suwanee drainage. Most of the study area, however, does not contain sources of knappable stone.

Snow reported on the Nipple point, which he suspects is a Paleoindian side-notched type, although related to Bolen, Big Sandy I, and Taylor varieties (Snow 1980). He observed seven examples of this rare type from surface collections in Bulloch, Coffee, Lowndes, and Wheeler counties. Snow also reported on the distribution of six pitted stones, or egg stones in south central Georgia (Snow 1976). Illustrated examples were from 9JD10, 9CF28, and an unidentified site in Bacon County. Other egg stone finds include sites in Brantley, Coffee, and Early counties. Snow notes that Bolen points were more common than Kirk and Palmer types in his study region (Snow 1977b).

One difficulty in assessing Snow's survey data lies in comparing his results with other studies. His methods were largely salvage oriented and the extensiveness of the surveyed areas is not explicitly stated in his report. His technique included repeated visits to sites, circumstances not afforded in CRM archaeology. The end result is a higher yield of diagnostic artifacts and a better understanding of the total components represented at sites. Lastly, Snow's data are limited because it is almost exclusively information gathered by surface collection. This deficiency has been somewhat alleviated by recent excavations at some of Snow's sites by later work by Dennis Blanton, Keith Stephenson, and Dwight Kirkland.

We attempted to derive an estimate of the site density reflected in Snow's data by examining a "typical" study area within a riverine zone. One of Snow's survey tracts, a timber clearcut on the Ocmulgee River located on the Jacksonville and China Hill U.S.G.S. 7.5 minute quadrangle maps, covered approximately 950 ha. Nineteen archaeological sites were identified within this study tract, indicating a site density of one site per 50 ha.

Blanton and Snow's survey of the Feronia locality in Coffee County yielded a high density of Early Archaic sites. An area approximately 400 ha produced 16 Paleoindian or

Early Archaic sites (Blanton and Snow 1989). They note that the Feronia area does not contain natural deposits of knappable stone nearby, and suggest that the geographic setting near the divide between the Gulf of Mexico and the Atlantic Ocean may have been a factor in the high density of sites in this area. Bolen/Palmer type points were found on seven sites (n = 51) and Kirk Stemmed and Kirk Corner-Notched points were found on eight sites (n = 32). Two sites yielded Edgefield Scrapers (n = 8), and one of the sites (9CF132) contained seven examples. Egg stones were found on two sites.

The most recent study that reexamined a portion of Snow's study area was Dwight Kirkland's survey of the Chatterton Springs locality in Coffee County. Kirkland's study was primarily confined to surface survey of all exposed areas within a 4.8-km radius of Chatterton Springs. Chatterton Springs is a seep spring that occurs at a eolian sand dune and flatwoods ecotone. The study included portions of the Seventeen Mile River and Bear, Cat, Otter, and Tiger creeks. Kirkland surveyed 971 ha and examined 99 sites, including 22 previously recorded sites. He identified 11 Early Archaic, 6 Middle Archaic, and 21 Late Archaic sites. The Early Archaic sites included 10 with Bolen points, four with Kirk points, and one that yielded an Edgefield Scraper (9CF7). The Middle Archaic sites included four with Morrow Mountain, three with Florida Archaic stemmed, and one with Paris Island stemmed points. The Late Archaic period sites included 9 Savannah River Stemmed, one Culbreath, one Lafayette, one Clay, one Wade, and two Tallahassee point sites. Ten fiber-tempered and seven Satilla series pottery sites, as well as two Refuge pottery sites, were included among the Archaic sites. Satilla decorative motifs observed in Kirkland's study area include Satilla Brushed, Satilla Plain, Satilla Simple Stanped, Satilla Slashed, and Willacoochee Check Stamped. Kirkland's study is complemented by Seielstad's (1994) paleoenvironmental reconstruction of the region, which was based on a single core sample from the Chatterton Springs peat.

Key Excavated Sites

Laurens County Sites. University of Georgia conducted excavations at three Archaic sites near the Oconee River in Laurens County (Marvin Smith 1978). Extensive backhoe trenching at 9LS4 and 9LS5 revealed a sparse lithic deposit interpreted as intermittent Archaic campsites. Robert Carver, geologist, suggested that the site soils were eolian sand of Pleistocene to Holocene age and that bioturbation was responsible for the mixed stratigraphy. Site 9LS5 yielded a large, square (complete) soapstone perforated slab and a soapstone bowl fragment. Nearly 7,000 chert flakes were recovered from the trenches at 9LS5. Projectile points from 9LS5 include Elora, Gary, Kirk Corner-Notched, Pickwick (or Ledbetter), Savannah River Stemmed, and unclassified corner-notched and stemmed types. Stallings Plain and Stallings Punctate pottery also was recovered from the site. Refuge-like fiber- and sand-tempered and Refuge pottery also was reported. Heaviest occupation at 9LC5 was during the Refuge Phase and preceramic Late Archaic, but the absence of site furniture suggested short-term occupations. Backhoe trenching at 9LS44 on the Oconee River levee yielded Gary, Savannah River Stemmed, and unclassified stemmed projectile point types, as well as more than 3,000 pieces of chert debitage. Minor amounts of Stallings Punctate pottery also were reported, but, again, site furniture was absent. Backhoe trench and test unit excavations at 9LS23 yielded later occupations as well as an outcrop of opal-replaced shell of probable Eocene age that may have been used by aboriginals, although it was not suitable for knapping (Marvin Smith 1978:5).

Macon Plateau. WPA excavations at the Funeral Mound on the Ocmulgee River near Macon encountered a minor amount of Archaic artifacts. Fairbanks (1981:73-74) illustrates a selection of projectile points and flake tools in his report. They include Bolen, Gary, Kirk Corner-Notched, MALA, Morrow Mountain, and Savannah River types, as well as an Edgefield Scraper. Minor amounts of Stallings Plain and Stallings Punctate pottery were found in the pre-mound midden (Fairbanks 1981:41).

Ingmanson (1964) excavated in the Ocmulgee River floodplain at Ocmulgee National Monument and reported on the Archaic sequence that was represented. Cosner (1973) provides additional information about the stratigraphic sequence at this location. "Spinner-type" points (Early Archaic) were found in the lower sand member. Above that in a mottled silty sandy clay were Morrow Mountain points. Next came an intermediate sand that contained a Savannah River Stemmed point. Fiber-tempered pottery and soapstone vessel sherds were found in the upper half of the intermediate sand zone. The Archaic period sediments were overlain by more than 3 m of historic period sediment.

Tarver. Webb (1990) and Ledbetter et al. (1994) conducted excavations at the Tarver site at the Fall Line on Town Creek in Jones County. Webb found Morrow Mountain, Savannah River, and untyped medium stemmed projectile points. Ledbetter identified a Late Archaic house and he defined the Tufts Spring phase based on his findings at this site and previous findings by WPA excavators at the Tufts Springs sites.

Tufts Springs Sites. WPA excavations at the Tufts Springs Sites 1 and 2 yielded important Archaic period findings (Stoutamire et al. 1976). Both sites are located more than 2 km west of the Ocmulgee River in Bibb County. Site 1 consisted of a mound that was tested by three trenches (one 5 x 90 ft [1.5 x 27 m], one 5 x 100 ft [1.5 x 30 m], and one 10 x 10 ft [30 x 30 m]), and eight 5 x 10-ft (1.5 x 3-m) test units. Stratigraphic records and other provenience information for the site have been lost, but the site yielded a significant amount of early pottery (29% of the sample). The pottery included Stallings Plain, Stallings Punctate (incised and incised and punctated motifs), and unidentified grit and fiber-tempered and sand and fiber-tempered pottery. Soapstone vessel sherds and perforated soapstone slabs also were found. Several bannerstones, including a Stanly type, were reported. The projectile points from the site were typed by Stoutamire and his colleagues and included: Abbey, Cotaco Creek, Dalton, Elora, Guilford, LeCroy, Limestone, Morrow Mountain, Pine Tree, Savannah River Stemmed, Small Appalachian Stemmed, Sugar Creek, and White Springs types. Several human burials were found within the mound, but none contained grave goods, so their age, and the age of the mound was not determined since Woodland components also were present. The test units beyond the mound did not contain significant amounts of artifacts, however, which suggests that Archaic settlement focused on the mound and was likely associated with its construction. The structure of the mound was not described, but it was approximately 30 m in diameter.

Tuft Springs Site 2 was investigated by ten 5 x 10-ft (1.5 x 3-m) test pits. It also yielded a significant amount of early pottery (43%), which included Stallings Plain, Stallings Punctate (punctate and incised and punctate motifs), Stallings Simple Stamped, and unidentified fiber and sand-tempered and fiber and grit-tempered sherds. Soapstone vessel sherds were present. Projectile points included Morrow Mountain and unidentified stemmed types (Stoutamire et al. 1976).

Cowart's Landing. WPA excavations at the Cowart's Landing Site on the Ocmulgee River, which included 34 10 x 10-ft (3 x 3-m) test pits and additional trenches, located Big Sandy, corner notched, Motley, Savannah River Stemmed, Pickwick, Halifax Side-Notched, and unspecified stemmed points, 57 soapstone artifacts (including vessels and perforated rim sherds [perforated slabs?]), and a minor amount of fiber-tempered pottery (Hamilton et al. 1975).

Warner Robbins AFB. Several Archaic sites on the U.S. Army's Warner Robbins Air Force Base in Houston County have been excavated. Excavation of 28 m^2 at 9HT40 yielded a deeply buried Archaic deposit that included Bolen, Palmer/Kirk, Kirk Stemmed, MacCorkle, Morrow Mountain, and Savannah River Stemmed points, and Satilla Plain pottery. One transitional Paleoindian or Early Archaic feature was identified, but it was not excavated because it was suspected as a possible human burial. This oval feature (Feature 3) contained stone tools that were interpreted as possible grave goods. No bone was observed (Stanyard and Fryman 1994).

Excavations by Southeastern Archeological Services at 9HT8 on Sandy Run Creek identified a Late Archaic component. Subsequent excavation of 23 m^2 by Garrow and Associates yielded deeply buried Archaic deposits that included Morrow Mountain and large stemmed points, soapstone fragments, and plain and incised fiber-tempered pottery (Stanyard and Fryman 1992). Excavations of 12 m^2 at 9HT7 yielded Savannah River Stemmed, Gary, and unspecified Late Archaic stemmed points (Blanton and Reed 1987). Minor excavations at 9HT37 identified a Late Archaic component that included fiber-tempered pottery and Savannah River Stemmed points. The deposits extended more than one meter below surface on this site.

OPC Site 4. Garrow and Associates excavated 2 m^2 on Site 4 in Houston County during a project for Oglethorpe Power Corporation (Elliott 1987). The site situated on a lower ridge slope above tributaries of Bay Creek yielded Late Archaic period artifacts in the upper 50 cm soil zone. Diagnostics recovered included Savannah River stemmed and other stemmed points and Stallings Plain and Stallings Punctate pottery. Almost all of the lithics were Coastal Plain chert, but petrified wood, quartzite, and crystal quartz were observed. Quartz fire cracked rock also was present. The two meter sample yielded 317 debitage, 7 tools and 2 cores.

Heart of Georgia Survey Sites. Georgia State College conducted test excavations on three sites, 9TF2, 9LS1, and 9PU4, as part of the Heart of Georgia Survey (Nielsen 1965). Few details of the excavations are provided, however.

Lowe (9TF139). Excavations were conducted at the Lowe Site, 9TF139, on the Ocmulgee River in Telfair County by Georgia State University for the Georgia Department of Transportation (Crook 1987). Crook found transitional Paleoindian, Early Archaic, and Late Archaic occuipations, as well as later components. The excavations included hand excavated 2 x 2-m squares and a large mechanically stripped area. The Early Archaic component was minor and was represented by Kirk Corner Notched projectile points. The Late Archaic component, which he termed the Early Ocmulgee phase, was represented by Savannah River points, plain and punctated fiber-tempered pottery, sand and fiber tempered pottery, and a single steatite fragment. Coastal plain chert was the dominant lithic resource on the site, although local quartz, petrified wood, and Ridge and Valley chert also were present in minor amounts. The age of the Early Archaic component was estimated at approximately 7,000 B.P., based on cross dating. The Early Ocmulgee phase (Late Archaic) component was estimated at approximately 2,500 B.C. to A. D. 200, based on seriation and chronometric dates (Crook 1987:67). The Archaic deposits were badly disturbed by later occupations.

9TF2. Excavations by University of South Florida at 9TF2, an erosional remnant in Telfair County on the Ocmulgee River, revealed Late Archaic occupation (White 1985). Four 2 x 2-m tests and a small backhoe trench were excavated. A few Archaic projectile points and fiber-tempered pottery were reported.

Big Mortar-Snuffbox Swamp Sites. The University of Georgia exavated several sites that yielded Archaic components during the Big Mortar-Snuffbox Swamp project for the Soil Conservation Service (Zurel et al. 1975). Approximately 12 m^2 were excavated at 9MCI186 revealing Stallings Plain pottery and a Levy projectile point. Site 9MCI160 was sampled by 9 m^2 and it yielded Stallings Plain pottery and Hardaway and Westo projectile points.

SATILLA AND ST. MARYS RIVER WATERSHEDS

Major Surveys

Blanton (1979) presents the most survey data for this region in his survey of the Upper Satilla Basin in Pierce and Ware counties. He examined 115 sites, some previously documented by Snow (1977a). Bolen, Kirk, Gary, Citrus, and Savannah River Stemmed, and Savannah River-like points were reported. A total of 62 Early Archaic, 70 Late Archaic, and 38 Satilla Series sites was reported. Soapstone vessels sherds also were reported.

Warnock and Blanton (1977) described a collection from the Wildes Site, 9BC16, an interriverine site in Bacon County. Point types included Big Sandy, Kirk, Savannah River, and "four unidentified points which have Savannah River-like bases but rounded shoulders similar to those of Morrow Mountain points" (Warnock and Blanton 1977). A pitted egg stone also was recovered from the site.

Betty Smith (1979a) surveyed an unspecified length of transmission line corridor in Pierce, Ware, and Brantley counties for Oglethorpe Power Corporation and examined four Archaic sites, but only one site was within the project area. All four sites yielded plain fiber-tempered pottery and two were identified as Satilla series.

Kirkland and Trowell (1977) describe a collection from the Widow Lake site, 9CR3, a timber clearcut site on a sand terrace near an old oxbow lake in the Satilla River floodplain. Early and Middle Archaic projectile points include Bolen Beveled (subtypes 1 and 3), Culbreath, Elora, and Stanfield. Two pieces of soapstone also were reported. A total of 241 fiber-tempered potsherds was collected. Most were plain, thick sherds. Three subtypes, Satilla Plain, Satilla Simple Stamped, and Satilla Slashed were reported. The Satilla wares were characterized as relatively thin sherds. Despite the abundance of fiber-tempered pottery, no Late Archaic projectile points were present in the collection. The oxbow lake environment of this site is marginally tidal.

Garrow (1980) reported on survey by Soil Systems of 141.7 ha on the Satilla River in Pierce and Ware counties. Eleven sites were located including two sites with Satilla Plain pottery. One Kirk Corner-Notched projectile point was reported. The survey revisited three previously recorded sites, two located by Smith's transmission line survey and the Seasholtz site (9WE11), which was destroyed by sand quarrying.

Robin Smith (1978) reported on survey for the Kings Bay Submarine Base in Camden County, Georgia where 34 sites were found in 3,608 ha. The Archaic period sites were restricted to the St. Simons phase (1,000 B.C. and later). Fiber-tempered pottery was recovered at the Kings Bay Site (9CAM171) and at 9CAM187.

Key Excavated Sites

Kings Bay Sites. Twenty-two sites excavated as part of the Kings Bay Project in Camden County have yielded Late Archaic remains (Table 9). Well over 500 m^2 were hand excavated on these sites, comprising the largest excavated sample from the Coastal Zone.

Work at the Mill Creek Shell Midden A (9CAM167) is noteworthy for its early dates on fiber-tempered pottery (Johnson 1978). The site is one of seven oyster shell middens adjacent to the salt marsh bordering the western edge of Kings Bay. Midden A consisted of a shallow, discontinuous midden covering about 1 hectare in extent. The recovered artifact assemblage was dominated by fiber-tempered pottery. Sherds from the hearth consisted of plain and Orange incised fiber-tempered sherds, several of the latter crossmending to form a large portion of a shallow bowl (Johnson 1978:Figure 7). An uncorrected date of 5000±180 B.P. was obtained on wood charcoal in the hearth. A second date of 4260±105 B.P. was obtained on charcoal 9 cm below the hearth. Because of the reversed nature of the assays, Johnson (1978:48) suggests that one of the dates might be invalid, noting that the earlier date is inconsistent with other fiber-tempered dates in the area. Subsequent excavation in the Kings Bay locality yielded dates of 3380±80 B.P. on Orange Incised pottery at the Kings Bay Site (9CAM171), and 3600±100 B.P. on plain fiber-tempered pottery and minor examples of Orange Incised from Devil's Walkingstick (9CAM177) (DesJean 1985:19, 25).

The late dates from Kings Bay are consistent with the Orange chronology defined by Bullen (1972), but the earlier date of 5000 B.P. should not be dismissed out of hand as it lends support to the idea that the earliest portion of the fiber-tempered archaeological record on the coast has been truncated by sea-level rise. In this regard, it is noteworthy that the Mill Creek Middens lie on the higher elevations of the Princess Anne formation, while virtually all well-documented fiber-tempered sites (all postdating 4200 B.P.) on the Georgia coast lie on lower, seaward landforms of the Silver Bluff formation. An analysis of shellfish remains from the Mill Creek middens would be useful in determining the relationship of the sites to sea level. However, it is uncertain how much, if any, of the

Table 9. Inventory of Types of Archaic Period Artifacts from Excavated Sites on Kings Bay (after Adams 1985; Rock 1985, 1986; Robin Smith 1984, 1986; Smith et al. 1980; Ward and Rock 1986)

Site	Diagnostic Artifacts
9CAM168	Plain fiber-tempered pottery, Late Archaic stemmed point
9CAM170	Plain fiber-tempered pottery
9CAM171	St. Simons pottery, Orange pottery, plain fiber-tempered pottery, large stemmed points, contracting stemmed point
9CAM172	St. Simons pottery
9CAM175	Fiber-tempered pottery
9CAM176	Fiber-tempered pottery
9CAM177	Fiber-tempered pottery
9CAM182	St. Simons plain pottery
9CAM184	Fiber-tempered pottery, Stallings and St. Simons series?
9CAM186	St. Simons plain pottery
9CAM187	Fiber and sand tempered pottery
9CAM190	Plain fiber-tempered pottery
9CAM191	Plain fiber-tempered pottery
9CAM192	Plain fiber-tempered pottery
9CAM193	Plain fiber-tempered pottery

shellfish remains were deposited by Late Archaic inhabitants. DesJean (1985:21) states that only nonshell sites are found at Kings Bay, but not enough information on the Mill Creek middens is available to evaluate this statement.

Finally, the Kings Bay sites are remarkable for its low incidence of diagnostic chipped stone tools from the Archaic period. Even debitage is present in low frequency, indicating low reliance on stone tools at these sites. The dearth of pre-Late Archaic components from the excavation data strongly suggests that those landforms were not suited for habitation during most of the Archaic period, either because they were submerged or too distant from the marsh environment.

SUWANNEE RIVER WATERSHED

Major Surveys

Webb (1984) surveyed 4.2 ha in Wilcox County and located one Early Archaic site with Kirk Serrated points, pitted cobbles, and abrador stones.

George Price surveyed an area of approximately 400 ha in Turner County, north and east of Ashburn, Georgia on the headwaters of the Alapaha River and located 16 aboriginal sites. The Price collection was reviewed by the senior author for this study. A range of Early, Middle and Late Archaic projectile points were well represented in the collection, but fiber-tempered pottery was not identified. Soapstone vessel sherds were present in low frequencies and included flat bottomed and conical vessels; no perforated soapstone slabs were observed.

Webb (1985) surveyed 106.9 ha in Turner County east of Ashburn and located three Archaic lithic sites, including one with Early, Middle, and Late Archaic components, one Kirk Serrated site, and one unidentified Archaic site. The multicomponent sites yielded Palmer, Kirk Corner Notched, Morrow Mountain II, Flint Creek, and Savannah River Stemmed point types, and a bannerstone fragment.

Garrow and Associates surveyed a 607.3-ha tract on King Branch in Turner County and located 19 sites, including two Archaic sites. One contained an Early Archaic side-notched point and the other had an Archaic stemmed point (Robert Fryman, personal communication, 1995).

Webb (1989) surveyed a 1.6 km transmission line corridor in interriverine portions of Ben Hill and Irwin counties and located two aboriginal sites, inlcuding one with a stemmed Archaic point.

Betty Smith (1982b) surveyed a 20.9 km x 30-38 m corridor in the Alapaha River basin in Berrien and Atkinson counties for Oglethorpe Power Corporation and located three sites, including one Archaic site with a large stemmed point.

Baker (1991) surveyed 141.7 ha of uplands near the Withlacoochee River in Lowndes County and located 10 sites, including one Archaic site with Early and Late Archaic components. Diagnostic artifacts that were identified include Big Sandy and Savannah River Stemmed points, an Edgefield Scraper, and plain fiber-tempered pottery. A significant amount of agatized coral was represented in the lithic assemblage.

Wright (1985) surveyed 141.7 ha for Moody Air Force Base in the Mud Creek drainage of Lowndes County and located four sites, including one unspecified Archaic lithic site.

Ruple (1991) surveyed 3.2 ha in Lowndes County and reported one Kirk Corner-Notched point as an isolated find.

Survey of a portion of Okefenokee Swamp in Clinch, Charlton, and Ware counties examined the west-central area of the swamp near the effluence of the Suwannee River, the Pocket, Jones Island, and Mixons Hammock. Surface examination of 26.8 km of roads yielded 48 sites; 11.5 km of firebreaks yielded 27 sites; 3 plowed fields totalling 39 ha yielded 9 sites, upland pastures yielded 90 sites, and an unspecified amount of pine plantations yielded three sites. Most of the sites consisted of isolated debitage scatters. Few details on Archaic components were provided, but fiber-tempered pottery was found on three sites (DePratter 1982; Paulk 1980). No diagnostic Archaic points were identified.

Key Excavated Sites

Banks Lake Dam. Southeastern Archeological Services excavated 21 m^2 at the Banks Lake Dam Site (9LN7) in Lanier County for the US Fish and Wildlife Service (Gresham 1993). Fiber-tempered pottery and Early Archaic Taylor Side-Notched and Late Archaic stemmed points were recovered, as well as later materials, from the upper 50-cm soil zone. The project environment is near a series of natural sinks or Carolina bays, although the geomorphology is not well understood.

OCKLOCKNEE RIVER WATERSHED

Major Surveys

Gresham (1988) surveyed a 2.42 km x 23 m corridor and a 1.4 ha tract near Doerum in Colquitt County and located six sites, including one with Late Archaic stemmed points.

Georgia Department of Natural Resources surveyed 1,198.4 ha on Black, Buss, and Big Tired creeks in Grady County, Georgia and found four sites from the Early and Late Archaic periods (Midgette 1974). Bolen Side-Notched, Kirk Corner-Notched, Savannah River Stemmed, and broad stemmed points were illustrated in the report. No fiber-tempered pottery or soapstone was mentioned.

Key Excavated Sites

No major excavations involving Archaic period components have been reported for the Ocklocknee River watershed.

CHATTAHOOCHEE AND FLINT RIVER WATERSHEDS

Major Surveys

Harold Huscher (1959), representing the National Park Service (Smithsonian) River Basin Survey, conducted a survey for the USCOE's Walter F. George Reservoir (aka Lake Eufala). The survey identified Archaic sites, but no final report has been prepared. Unpublished microfilm of Huscher's notes, site forms, and other records, on file at Columbus Museum of Arts and Science were examined. The original documents are stored at the NAA, Smithsonian Institution, Washington, D.C.

Tom Huston was an avid relic collector in Columbus, as well as a major manufacturer of snack foods. Mr. Huston commissioned Margaret Ashley to perform an archeological survey on the Chattahoochee River valley. Margaret Ashley was an Atlanta native who studied anthropology under Franz Boas. Ashley spent less than two months examining mound and village sites in Chattahoochee, Harris, and Muscogee counties, assisted by Frank Schnell, Sr. In a letter from Ashley to Peter Brannon, dated September 6, 1928, she inquired about the location of the quarry mentioned by Brannon in his 1909 article. Ashley was unable to locate the quarry, and no chipped stone quarries have been identified on Fort Benning (Ashley 1928). Conversations between Ashley and Frank Schnell, Jr., made shortly before her death, indicated that all notes or records of her work that had been in her possession were destroyed (Frank Schnell, Jr., personal communication, 1993).

Ledbetter (1994) surveyed a 3.7 km x 15-23 m corridor along the Chattahoochee River and an additional 172.5 ha in Muscogee County and located 12 sites, including five with Archaic components. Two sites yielded Savannah River Stemmed points, three had stemmed Archaic points, one produced a Big Sandy point, and one had a corner-notched point. The Bull Creek site was among the sites revisited by Ledbetter, who is presently reanalyzing the previously excavated material from that site. The old collection contains several Archaic points from various time periods (Jerald Ledbetter personal communication, 1995).

Fort Benning Surveys. Approximately 22 percent of U.S. Army's Fort Benning Military Reservation in Chattahoochee and Muscogee counties, Georgia and Russell County, Alabama has been systematically surveyed. Fort Benning covers more than 75,303.6 ha and includes expansive sections of the Chattahoochee floodplain, as well as extensive interriverine sections. The extreme northern edge of Fort Benning in Muscogee County contains Piedmont geology, but the vast majority is Fall Line Hills. More than 800 archaeological sites have been recorded including 39 Early Archaic, 27 Middle Archaic, 37 Late Archaic, 48 Terminal Archaic/Gulf Formational, and 55 general Archaic.

David Chase was stationed at Fort Benning in 1955 and had active involvement in its archeology for more than two decades. Throughout his career at Fort Benning, ending with his retirement in 1963, Chase made collections and recorded more than 100 archeological sites on Fort Benning. A partial listing of Chase's published and unpublished writings pertaining to the Georgia Coastal Plain is included in our bibliography (Chase 1955, 1956, 1957a–e, 1959a, b, 1960, 1962, 1963, 1967, n.d.).

Frank Schnell, Jr., conducted many studies in the Columbus area. Schnell delineated the boundaries of two previously recorded, but poorly defined sites, 9CE66 and 1RU63, in 1982. (Schnell 1982).

Major surveys of the base have been conducted since 1977 and a recent overview of this research is being prepared by Garrow and Associates (Elliott et al. in progress). Research has been conducted by several CRM firms. Their studies, which include descriptions of many dozen Archaic sites, are detailed in numerous contract reports (Benson 1993; Braley and Wood 1982; Dickinson and Wayne 1985; Elliott 1992b; Kohler et al. 1980; Ledbetter and Spencer 1987; McCullough 1982:21; Poplin 1987; Poplin and Goodwin 1988a, 1988b; Shogren 1992; Roemer et al. 1993a-c; Thomas et al. 1983).

Garrow and Associates examined the spatial distribution of Archaic period sites on Fort Benning using survey data gathered prior to 1994. Elevation was an important factor affecting settlement locations over time on Fort Benning. Most Early and Late Archaic sites were located below 101 m, while most Middle Archaic sites were located above this elevation. Early Archaic sites were more common on eastern facing slopes; Middle and

Late Archaic sites showed a slight preference for northern facing slopes; and Transitional Archaic/Gulf Formational sites exhibit a slight preference for northeast facing slopes. Early Archaic sites were most common on Upatoi Creek, but also were well represented on the Chattahoochee River. Middle and Late Archaic sites were most common on Ochillee and Upatoi creeks, but were infrequent on the Chattahoochee River. Transitional Archaic to Woodland and Gulf Formational period sites were most frequent on the Chattahoochee River and Ochillee and Upatoi creeks.

Deeply buried sites are widely distributed across Fort Benning in a variety of environments. Sites with artifacts preserved below the plow-disturbed soil zone, were defined as those that contain artifacts more than 50 cm below ground surface. A total of 104 sites on Fort Benning meets these criteria. These sites range in elevation from 59 to 171 m amsl, and they are equally distributed above and below 100 m amsl. The most frequently occurring aspect is to the southwest (n = 22). These sites are located both immediately adjacent to permanent water and more than 1.3 km from a permanent water source. Deeply buried sites were most frequently encountered on Ochillee Creek, followed by Upatoi Creek and the Chattahoochee River (n = 49, 25, and 18, respectively). Forty of these sites contain Paleoindian or Archaic components, while 60 contain aboriginal ceramic components (Elliott et al. in progress).

Subsequent research on Fort Benning continues to add to the Archaic period database. Brockington and Associates surveyed two tracts for a proposed land exchange, one 1,265-ha tact in Muscogee County and a 1,306-ha tract in Chattahoochee County (Gardner et al. 1994). The survey located 88 sites including 11 Early, 6 Middle, and 12 Late Archaic (Savannah River Stemmed points), and 8 Gulf Formational. Eleven of these sites were tested.

Most recent survey by Southern Research on the upper stretches of Upatoi, Cox, and Kendall creeks at the Fall Line has yielded a high frequency of Late Archaic sites containing fiber-tempered pottery, soapstone vessel sherds, and stemmed points (Dean Wood, personal communication, 1995).

Other Chattahoochee Watershed Surveys. Brockington and Associates surveyed a 31.8-km transect in interriverine Chattahoochee and Stewart counties for Georgia Department of Transportation resulting in the location of nine sites (Gardner et al. 1993). Two sites, 9SW141 and 9CE432, yielded isolated examples of Early Archaic (Palmer) projectile points.

Southeastern Archeological Services surveyed a 19.9 km x 23 m corridor and a 1.5 ha tract in the interriverine portions of Stewart county and found 22 sites, including two Early Archaic, two Middle Archaic, five Late Archaic, and six general Archaic sites. Diagnostic artifacts included Early Archaic corner-notched, Arredondo, Benton, and Late Archaic stemmed points and plain fiber-tempered pottery (Ledbetter and O'Steen 1985).

Southeastern Archeological Services surveyed a 23.7 km transect in interriverine Stewart and Randolph counties for Oglethorpe Power Corporation resulting in the location of 19 prehistoric sites (Ledbetter 1984). Kirk Corner-Notched and Late Archaic stemmed projectile points were reported from 9SW(SAS)10, but the density of aboriginal material was light over most of the project area. One small chert quarry, 9RH(SAS)18, located on Oligocene chert formations, was found outside the project corridor, but no diagnostic projectile points were found. A possible Paleoindian or Early Archaic age was proposed based on the presence of several unifacial flake tools.

Flint River Survey. John Worth (1988) conducted a reconnaissance survey within the middle Flint River region resulting in the location of 113 archeological sites. All survey areas were near the Flint River flooplain and the survey focused on identifying ceramic period sites. Worth also used collector information to enhance his study. Worth provides no estimates of the total area examined by his study. Early Archaic components (Bolen, Palmer, and Kirk) were common. Coastal Plain chert was the dominant raw material for Early Archaic points, but quartz and Ridge and Valley chert also were observed in collections. Morrow Mountain projectile points were present, but uncommon. Most of the Morrow Mountain points were made from quartz, but other raw materials were represented. Late Archaic components were extremely common and diagnostics include Savannah River Stemmed points, soapstone bowl fragments, and Stallings Plain and Stallings Punctate fiber-tempered pottery. Soapstone atlatl weights also were reported. Coastal Plain chert was the preferred material for Late Archaic projectiles, but other raw materials, including quartz, were observed. Worth observed that soapstone bowls and fiber-tempered pottery often were found on the same sites and both were well represented in his study area.

Howry (1978) surveyed a development tract of unspecified size on the Flint River in Macon County and located six aboriginal sites, including one with an Early and one Late Archaic period component. Decatur Side-Notched and Late Archaic stemmed projectile points and talc (soapstone?) fragments were the diagnostics reported. Chert nodules were observed in the river near the project area and aboriginal quarrying was suspected.

Southeastern Archeological Services surveyed a 21-ha area at the confluence of Mill and Muckalee creeks in Sumter County for the City of Americus. Two sites were identified and data recovery excavations were conducted at one of these (Price et al. 1988). Artifacts reported include Stallings Plain pottery and unspecified Middle and Late Archaic stemmed points.

Shoreline survey was conducted by the Columbus Museum of Arts and Science of Georgia Power Company's Lake Blackshear on the Flint River when the lake level was lowered 3.4 m. This survey resulted in the location 219 sites. Most of these were chert lithic scatters, but no details on the Archaic components are provided (Schnell 1975a). The site forms for these 219 sites are not on file at the University of Georgia, Archaeological Site Files, and data on Archaic components was unavailable. No professional archaeology was conducted within this reservoir during its original construction.

Benson (1992) surveyed a 24-km corridor in an interriverine portion of Lee County and located 14 sites, including one Late Archaic site (Abbey and Savannah River Stemmed points) and three chert quarries and reduction workshops. Chert boulders and nodules were reportedly scattered across the entire survey route and were usually concentrated on the gentle ridge slopes. The Archaic site was located very near one of the quarry sites.

Southeastern Archeological Services surveyed a 19 km x 30.5 m transect in Lee, Sumter, and Worth counties for Oglethorpe Power Corporation resulting in the location of seven prehistoric sites, including one site with a soapstone vessel sherd and Archaic stemmed projectile points (Gresham 1984c). This transect crossed the Flint River below Lake Blackshear. One chert quarry/workshop was recommended for testing.

The University of Georgia surveyed a 15-ha section of the Flint River in Dougherty County for the City of Albany and identified a chert quarry (9DU29) that was 4.8 ha in extent. Savannah River Stemmed projectile points were found in association with the quarry (Rudolph and Barber 1979). The quarry was reportedly 25 percent intact.

Betty Smith (1979b) surveyed a 6.4-km section of transmission line corridor and a substation tract in Dougherty County for Oglethorpe Power Corporation resulting in the identification of five aboriginal sites. No diagnostic Archaic tools were reported, but a small flint outcrop that was possibly a quarry was recorded as 9DU36.

Braley and Smith (1986) surveyed a 7.2-km corridor and a 2.4-ha tract in Dougherty County and found seven sites, including one general Archaic (possibly Late Archaic) lithic site.

Wright (1980) reported on survey of unspecified size for an airport development near Albany, Georgia. The tract is in an interriverine area of Dougherty County. Five sites were identified, including one site with Archaic lithics (scrapers) and axes. No diagnostic projectile points were reported. One site (ARA-Du-4), located outside the proposed development, contained flint outcrops with firm evidence of aboriginal quarrying. The site contained boulders up to 1 m wide bearing quarry flaking scars.

Southeastern Archeological Services conducted survey of a 59-ha tract in interriverine Dooly County for the City of Vienna. This study located 10 prehistoric sites including two Late Archaic and other nondiagnostic lithic sites (Gresham 1983).

Survey by Georgia Department of Transportation along a transect paralleling the Flint River in Crisp, Worth, and Dougherty counties identified eight sites, including one site with large stemmed projectile points and Arrondondo-like points (N. Anderson 1977). The report includes a photograph of a large "limerock boulder," suggesting that chert outcrops were near the project area.

The University of Georgia surveyed 485 ha on an interriverine section along Gum Creek in Crisp County for the City of Cordele. The survey located 10 sites including six Archaic sites. All six contained Late Archaic components and two had Middle Archaic components. In a study of approximately 14 ha immediately adjacent to this study, Fish identified one additional Late Archaic site, identified by a Savannah River point (Fish 1976b, 1977).

Survey for the City of Colquitt and the Miller County Commission of a 676-ha tract on Spring Creek in interriverine Miller County immediately west of Colquitt located three sites including one nondiagnostic flint quarry and one Archaic lithic site with Kirk Corner-Notched, Archaic Stemmed, and Wade or Cotaco [Creek?] points (Morrell and Tesar 1979). The chert quarry, which was located outside their study tract, consisted of massive flint bounders exposed in a road cut and in the Spring Creek floodplain as a result of bridge construction. Quarrying evidence consisted of flake scars and fire discolored surfaces. Cores and debitage were present, but no diagnostic artifacts were found.

University of Georgia conducted surface survey along the Big Slough drainage in interriverine Miller and Grady counties for the Soil Conservation Service (Fish and Mitchell 1976). This project located 89 prehistoric lithic sites. The project was a 25-percent sample (a 34 km long transect) of 137,145 m of a 72 km^2 long study area. The entire watershed encompasses nearly 60,000 ha. A total of 26 sites yielded projectile points and nine sites included artifacts classsified as site furniture (axes, anvils, or grinding stones). It was impossible to glean from the report the frequency of Archaic period sites found by the survey. Most (89 of 132, or 94.7%) of the diagnostic projectile points were classified as Late Archaic (Fish and Mitchell 1976:14). Late Archaic types included Clay, Elora, Savannah River Stemmed, Wade and unspecified contracting stemmed points. The remaining projectile points were classified as Middle Archaic, including Stanly and unspecified corner-notched points.

Nancy White (1981) summarized surveys conducted in Lake Seminole from 1948, 1950, and 1981. Lake Seminole includes 15,176 ha and has 515 km of shoreline and it impounds portions of the Flint and Chattahoochee rivers. A total of 302 prehistoric sites has been recorded within 13,360 ha of the reservoir basin that have been systematically surveyed. A wide variety of Archaic projectile point types are reported from the Lake Seminole region with Bolen and Archaic Stemmed the most prevalent. Other Archaic point types include: Big Sandy, Kirk Corner-Notched, Kirk Stemmed, Morrow Mountain, Elora, Savannah River Stemmed, Levy, Leon, Lafayette, Cotaco Creek, Putnam, Clay, Wacissa, Little Bear Creek, and Swan Lake/Jackson. Seventeen fiber-tempered pottery sites are reported, and three of these also contain soapstone vessel sherds. Two sites contained soapstone vessel sherds, but no fiber-tempered ware. While the soapstone vessels were found in Late Archaic contexts, White observed that soapstone ornaments were found in Weeden Island components (White 1981:600).

The University of Georgia surveyed portions of the interriverine Dry Creek watershed in Decatur, Early, Miller, and Seminole counties for the Soil Conservation Service. This study resulted in the location of 119 prehistoric sites (Fish and Fish 1977). The survey identified 71 nondiagnostic lithic sites and 35 Archaic sites. Specific components were not identified in their report. An Index of Diversity was used during this study to compare the surface assemblages from these sites.

Key Excavated Sites

Box Springs (9CE16). The Box Springs site (9CE16) was test excavated by Chase in 1956. He dug a total of four tests including three small trenches and one large trench. The size and location of these test were not specified. Artifacts were found to a depth of 1.27 m. Stallings pottery was identified by Chase, although the site form, completed in 1973 by Gail Schnell, lists Old Quartz and Early Woodland (Orange Phase) components. Chase (1957c) also illustrated Early Archaic, and possibly Middle Archaic point types from this site. According to Gresham, three separate occupations were recognized (Chase 1957c; Gresham 1982). Bolen and Kirk/Palmer points were reported, including one at 97 cm in Test Unit 1 and one at 69 cm in Test Unit 3. Chase also reported "keeled endscrapers" from Box Springs (Chase 1957c).

Carmouche Range (9ME21). The Carmouche Range Site (9ME21) is the most thoroughly investigated site in the western Georgia Coastal Plain. The site was located and tested on its northeastern portion by Chase in 1957 and 1958, respectively. No report of his investigations was located. Artifacts were found by Chase to a depth of 38 cm below surface (Gresham et al. 1984).

The site was surveyed in 1982 by Southeastern Wildlife Services and examined by surface collection and six shovel tests. Southeastern Wildlife Services returned to test the site and excavated six 1 x 2-m test units and 13 shovel tests. McCullough found artifacts extending to nearly 1 m below surface in apparent stratified context, including Late Archaic (Stallings) and later components (McCullough 1982:29-35).

Data recovery excavations consisting of a single large block unit were conducted by Southeastern Archeological Services at 9ME21 during 1983, resulting in the identification of Paleoindian/Early Archaic (Tallahassee, Bolen), Late Archaic (Stallings Island), and later components. Data recovery included excavation of 65 shovel tests spaced on a grid at 5-m intervals, followed by three 2-m long trenches that were expanded into a hand excavated block, which totaled 354 m^2, or an estimated two-percent sample of the site. The block extended to a maximum depth of 90 cm below surface, although only a 10 square meter sample was examined at the lowest level. Southeastern Archeological Services researchers noticed that although the site was severely affected by bioturbation, stratigraphic relationships could, nevertheless, be extracted from the data. Eleven radiocarbon dates were obtained from seven features and date the Late Archaic (Stallings Island Phase) and Mississippian components at the site. A total of 83 cultural features was excavated.

Projectile point types from the site include Bolen Plain, Decatur/Bolen Beveled, LeCroy, Kirk Serrated, Kirk/Cypress Creek, Stanly, Morrow Mountain/Maples Broad Stemmed, Morrow Mountain I, Archaic Stemmed, Wade, Pickwick, Hamilton Stemmed, Elora, Limestone, Lafayette, Coosa Side Notched, and Tallahassee types. Problems in determining the chronological position of the Tallahassee point sample were encountered, and following an in-depth study Gresham tentatively concluded that "it is a very early Archaic type" that includes subtypes of "unknown affiliation" (Gresham et al. 1984:151). Pottery types from the site include Stallings Plain, and Stallings Punctate wares. Eleven soapstone vessel sherds were recovered (Gresham et al. 1984).

9ME219. A total of 42 m^2 was hand excavated at 9ME219, located on Upatoi Creek, and five backhoe trenches, varying in length from 21 to 32 m, were dug (Bruce and Neumann 1989; Ledbetter and Spencer 1987; Poplin 1987:66). One Decatur and one Putnam point were recovered from beneath the ceramic component in the 60-80 cm zone representing the Early to Middle Archaic period. An Adena-like contracting stemmed point was found in the 30-40 cm zone. Three Stallings fiber-tempered sherds were recovered from the 9-60 cm zone. No cultural features were located, and Christopher Goodwin Associates concluded that 9ME219 was a very small, sparsely scattered site with no intact stratigraphy (Bruce and Neumann 1989:32). The site was interpreted as a small short-term Early to Middle Archaic upland, limited-activity area (Bruce and Neumann 1989:46).

Other Excavated Sites on Fort Benning. Minor excavations were conducted at a series of other sites at Fort Benning, a summary of which is provided in Table 10. Many of these sites may contain additional important archaeological resources. A recent Historic Preservation Plan prepared by Garrow and Associates for Fort Benning addresses these issues (Elliott et al. in progress). Also included in Table 10 are 11 sites tested by Brockington and Associates in Muscogee and Chattahoochee counties for a proposed land exchange between the City of Columbus and Fort Benning (Gardner et al. 1994).

Walter F. George Sites. OAR excavated at four sites on Walter F. George Lake on the Chattahoochee River in Stewart and Quitman counties, Georgia and Barbour County, Alabama (Mistovich and Knight 1986). All four sites yielded minor amounts of Archaic material. Site 9SW71 produced Crawford Creek, Damron, Elora projectile points and plain fiber-tempered pottery. Grader stripping at site 9SW19 produced Elora, Savannah River Stemmed, and "residual stemmed" projectile points. Excavations at a stone mound site, 9QU58, in the Cool Branch vicinity, yielded Elora, Kirk Serrated, Palmer, Pickwick, Savannah River Stemmed, Swan Lake and "residual stemmed" projectile points. The site also yielded an atlatl weight, drill, and plain fiber-tempered pottery. Grader stripping at site 1BR25 yielded a Bolen projectile point and plain fiber-tempered pottery.

Florence Marina State Park. Southeastern Archeological Services conducted excavations at Florence Marina State Park on the Chattahoochee River in Stewart County. Systematic shovel tests, 2 x 2 m test units, backhoe trenches, and hand excavation of a 21

Table 10. Summary of Other Excavated Archaic Sites in the Fort Benning Area.

Site	Diagnostics
9CE4	unspecified Archaic lithics, Stallings Punctate pottery, soapstone sherds
9CE7	Sykes/White Springs point, Stallings Plain pottery, soapstone vessel sherds
9CE11	Morrow Mountain and unspecified stemmed Archaic points, Stallings pottery, and soapstone
9CE14	Archaic and Orange Phase pottery
9CE17	Big Sandy point
9CE19	Stallings Plain pottery and soapstone sherds
9CE20	Unspecified Early Archaic, Savannah River, and unspecified Late Archaic or Early Woodland points, Stallings pottery, soapstone vessels
9CE23	unspecified Archaic stone artifacts
9CE46	Early, Middle, and Late Archaic (unspecified diagnostic artifacts)
9CE47	Stallings pottery and a stemmed point
9CE50	Stallings pottery
9CE66	Stallings pottery
9CE67	Archaic site (unspecified diagnostic artifacts)
9CE75	Stallings Plain pottery and Archaic stemmed points
9CE96	Soapstone sherds
9CE99	stemmed Archaic points, bifurcate Archaic point
9CE180	Late Archaic or Early Woodland period stemmed point
9CE205	Savannah River point
9CE285	Unspecified soapstone artifacts, Late Archaic
9CE352	Norwood pottery and South Prong Creek, Fairland, and Flint River stemmed points
9CE600	Bolen, Morrow Mountain, and Savannah River points; Stallings Island Plain pottery
9CE601	Savannah River points; Stallings Plain pottery
9CE602	Hardaway/Bolen and Kirk/Palmer points and Stallings Plain pottery
9CE608	Stallings Plain pottery and a soapstone artifact
9ME14	Early Archaic unifacial tools, Stallings Plain pottery, soapstone sherd
9ME15	Stallings pottery; Archaic points
9ME19	Palmer point, and a Westo or Rheems Creek point
9ME39	Kirk/Palmer, St. Albans, and Savannah River points; soapstone vessels and plain fiber-tempered pottery
9ME45	Kirk Stemmed, Morrow Mountain, Savannah River points; soapstone vessels and plain fiber-tempered pottery
9ME116	Stallings pottery
9ME234	Stallings Plain pottery
9ME292	Morrow Mountain point
9ME315	Savannah River point
9ME348	Late Archaic stemmed point
9ME351	Kirk/Palmer and Morrow Mountain points
9ME357	Arrendondo, Morrow Mountain, Benton, and Savannah River points and Stallings Plain pottery
9ME359	Taylor, Kirk Stemmed, Morrow Mountain, Guilford, and Savannah River points and Stallings Plain pottery

(Sources: Benson 1993:449-459; Caldwell 1958; Chase 1955, 1957a, 1957c, 1959a; David Chase, personal communication 1994;Elliott 1992b:92-98, 105-108; Gardner et al. 1994; Kohler et al. 1980; Ledbetter and Spencer 1987:62, 90-92; McCullough 1982:25-29, 35-41, 1983:37-43; Poplin and Goodwin 1988b:150-152; Roemer et al. 1993a, b; Poplin 1987; Shogren 1992:82, 87, 112-120).

x 30 m block made up the excavation (Ledbetter and Braley 1989). Archaic period artifacts were a minority of the materials recovered.

Macon County Sites. Environmental Resource Technicians (Howry 1978) excavated test units (8 m^2 total) at five locations in Macon County, including four that yielded Archaic period artifacts. Their study of 9MA10 included a 4 m^2 hand excavated block and other areas that were machine stripped. Late Archaic stemmed projectile points were recovered. A similar amount of excavation was conducted at 9MA11 where an Early Archaic Decatur projectile point was found. The other Archaic findings are not described in any detail.

9SU6. Southeastern Archeological Services conducted excavations at 9SU6 on Mill Creek in interriverine Sumter County for the City of Americus (Gresham et al. 1989). A total of 129 m^2 was hand excavated yielding a deeply buried cultural deposit. Most artifacts were found in the upper 70 cm of soil, but some were found as deep as 120 cm below surface. Archaic components include Big Sandy, Kirk Stemmed, Arrendondo, Late Archaic stemmed, Stallings fiber-tempered pottery, and soapstone bowl sherds. The most intensive use of the area was during the Late Archaic period. Gresham's report includes an in-depth discussion of the factors leading to site formation in the Coastal Plain. Gresham concluded that bioturbation was the most likely cause of the rough stratification.

Lee County Chery Quarry. Southeastern Archeological Services conducted limited excavations (4 m^2) on a chert quarry and workshop in Lee County for Oglethorpe Power Corporation (Rudolph and Gresham 1985). Their small test yielded over 20,000 chert artifacts, some extending more than 90 cm below surface, but no diagnostic tools. The site was interpreted as a primary chert reduction and flake production locus, rather than a biface production site. Their study included an attempt to date the chert by the thermoluminescence method, which yielded mixed results. The stratigraphy, at least from 30 to 90 cm below surface, appeared to be intact. The chert on this site is apparently of Eocene age. While no diagnostic Archaic period artifacts were found, the sites importance as a lithic source in this section of Georgia is recognized.

Dooly County Sites. Southeastern Archeological Services conducted grader stripping of plowzone (505 m^2) and systematic surface collection on eight sites that covered a 40-ha tract in interriverine Dooly County (Gresham 1984a). The study tract was within an Oligocene chert source area along Pennahatchee Creek. A variety of stemmed Archaic projectile points found by this project were described and illustrated. These include straight stemmed, expanded stemmed, and contracting stemmed examples. Site 9DY1 contained a variety of stemmed points. Site 9DY2 contained evidence of early stage lithic reduction and was interpreted as a chert quarry. It also contained a variety of stemmed points. Site 9DY5 yielded Early Archaic side-notched (Bolen Beveled, Ecusta, or Decatur type) and Late Archaic stemmed points. Site 9DY6 was the largest site and it contained the most artifacts. Excavations at 9DY6 yielded 10 prehistoric features and other evidence of "semi-sedentary habitation" (Gresham 1984a:11). Archaic stemmed points, attributed to the Middle and Late Archaic period, were found, but radiocarbon dates suggest a Woodland component also was present. Another chert quarry and workshop site, 9DY4 (SAS number) was located outside of their study area and a small artifact collection was made.

Souther Field Airport Sites. Excavations at Souther Field Airport by the Columbus Museum of Arts and Science near the headwaters of Kinchafoonee Creek in Sumter County uncovered three chert workshops (Schnell 1975b). Diagnostic projectile point that were found on the surface of these sites included Decatur, Elora, Gary, Guilford (rounded base variety), Morrow Mountain, Wade, and Provisional Type 8 (Cambron and Hulse 1964) types. Forty-five m^2 were excavated at 9SU4, and no further work was conducted since Schnell observed that the site did not contain a stratified cultural sequence.

Muckafoonee (9DU37). Soil Systems conducted test excavations at two sites on Muckafoonee Creek near Albany in Dougherty County for Georgia Power Company.

Excavations at one site, Muckafoonee (9DU37), revealed a deep deposit of Archaic lithics. Six square meters were hand excavated and two backhoe trenches were dug, totaling 9 m^2 (Elliott et al. 1982; Shive 1983). Early, Middle, and Late Archaic lithic components were identified, as was a Paleoindian component. A total of 14,867 chert flakes, 91 utilized flakes, two bifaces, 39 biface fragments, seven endscrapers, nine gravers, three perforators, one side scraper, a soapstone vessel sherd, a hematite hollow cane drill core, and 570 fire-cracked rocks was recovered in the hand excavated test unit. The site was immediately adjacent to chert outcrops in Muckafoonee Creek.

9RH18. Brockington and Associates conducted excavations at 9RH18 in Randolph County for the Georgia Department of Transportation (Espenshade 1993b). Early Archaic projectile points reported include Palmer Corner-Notched, Kirk, and Arrendondo. Savannah River stemmed projectile points also were reported. All were made from Coastal Plains chert. Stallings Plain fiber-tempered pottery also was reported. Excavations included shovel tests, ten 2 x 2-m units (40 m^2), and mechanical stripping to remove the plowzone from a 10-percent of the site area. No features were found in the stripped area. The cultural soils were shallow and mixed, attributed to bioturbation or other natural disturbance and depositional factors.

Baker County sites. Excavations for a development at the Cooleewahee Creek site and the Pineland site in Baker County identified Archaic projectile points, including Bolen Site Notched, Kirk Stemmed, Stanly, Morrow Mountain, Elora, Little Bear Creek, Savannah River, Wade, McIntire, Coosa, Clay, and Putnam types (McCluskey 1976). Fiber-tempered pottery also was reported.

Marine Corps Supply Center Site. Excavations were conducted during 1973 by University of Georgia at the Marine Corps Supply Center Site in Dougherty County after the site was exposed while bulldozing a road (Smith 1992:10). A midden and "about ten fired areas" below the midden were reported. The fired areas were interpreted as burned-out stumps that postdated the Early Archaic components where they occurred. A total of 2.3 m^2 was excavated revealing artifacts to 20 cm below surface. The site was interpreted as a single component Early Archaic site, although a few Savannah River-like points were present on the surface. No details on the Early Archaic projectile points were provided. Some of the artifacts were to be curated at the Marine Corps Supply Center.

A survey of the Marine Corps Logistics Base by the U.S. Army Corps of Engineers revisited the area reported by Smith, but was unable to relocate their site with precision (Seckinger and Nielson 1990). Eight sites were identified on the base, and three yielded Archaic projectile points, including Elora and McIntire types. The size of the study area was not specified. No chert quarries were identified, although one of the sites, 9DU69, may be the same as that described by Smith (1992:10).

9DT3. Georgia Department of Transportation excavated 4 m^2 at 9DT3 in Dougherty County where large stemmed points and Arrondondo-like projectile points were found (N. Anderson 1977).

9MI3 and 9MI4. Subsurface explorations were conducted by University of Georgia for the Soil Conservation Service at two sites in Miller County, 9MI3 and 9MI4, in the Dry Creek watershed (Fish and Fish 1977: Appendix IV; Goad 1977). Site 9MI3 contained a Paleoindian component and was examined by four trenches and a series of posthole tests. Site 9MI4 yielded Middle and Late Archaic projectile points on the surface, but no artifacts were found in five shovel tests.

Big Slough Sites. Two sites in the Big Slough watershed, MI7 and MI43 were each tested by 8 m^2 of excavation, yielding Late Archaic lithic artifacts (Fish and Mitchell 1976).

Lake Seminole Sites. Bullen reported on excavations at six sites in Lake Seminole. He reexamined several sites that had been previously visited by C. B. Moore (Bullen 1958). Four of the sites were on the Chattahoochee River drainage, one was near the confluence of the Flint and Chattahoochee rivers, and one was on the Appalachicola River a short distance below the Flint and Chattahoochee rivers confluence. Bullen found an Archaic component 4 to 4.6 m below the present ground surface on a levee of the Chattahoochee River.

White (1981) summarized the excavations at eight sites within the Flint River portion of Lake Seminole.

Lane Springs. Excavations at the Lane Springs site, a site at a pond on upper Spring Creek, conducted by University of Georgia as part of the Jim Woodruff Reservoir project, yielded an Archaic lithic deposit that included numerous manos and one mortar (Kelly 1950).

SEA ISLANDS

Major Surveys

Surveys of the Sea Islands of Georgia have a long history, going back to the days of C. B. Moore (1897), William McKinley, and WPA efforts. In the modern era, Chester DePratter (1973a, 1974, 1975b, 1976, 1977, 1979a) has conducted the most extensive work, much of it in conjunction with geologist James Howard in their efforts to reconstruct shoreline changes associated with sea level rise (DePratter and Howard 1980, 1981). All major islands with the exception of Cumberland Island were surveyed at varying levels of intensity by DePratter.

Surveys of the Georgia Sea Islands have continued since the early to mid-1970s, when DePratter conducted most of his work. Most Sea Island surveys prior to the 1980s were surface reconnaissance with no systematic shovel testing. Elliott (1985) surveyed a 40-ha tract of Skidaway Island using systematic shovel tests and several non-shell midden sites were recorded, but he reported only a single fiber-tempered sherd.

Archaeologists of the American Museum of Natural History continue the long-term program of survey and testing on St. Catherine's Island (e.g., Thomas and Larson 1979). Although the focus of this project has been on the mission-period archaeology, sites with late fiber-tempered components have been tested (see below).

Simpkins (1975) reported on seven sites found on Sapelo Island from McMichael's survey. Two of these, Sapelo Shell Ring and McKinley's Ring Number II, yielded Late Archaic pottery (St. Simons Plain). Sapelo Island shell rings have, of course, long-been the target of archaeological investigations since the time of C. B. Moore (see below).

Sue Moore (n.d.) reported 20 sites in approximately 2,024 ha of St. Simon's Island, including four with Late Archaic period artifacts. Site 9GN211 yielded 51 early sherds, including: St. Simons Plain, St. Simons Punctate, and St. Simons Incised, as well as other unidentified fiber- and sand-tempered pottery and an undescribed projectile point. Oatland Fields Site and the Causeway Site yielded a minor amount of plain fiber-tempered pottery. An engraved bone pin from the Sinclair Site indicates a likely Late Archaic component. Excavations at St. Simons shell rings by Rochelle Marrianan are summarized in a section below.

McGregor (1975), a retired archaeologist, reported on informal reconnaissance survey of Jekyll Island, where 22 sites were located. Archaic components were listed for only one site, Fred Cook Site 2, which had fiber-tempered pottery.

Sheldon (1976) reported on survey of 850 ha of Colonel's Island, an interior marsh island in Glynn County, which identified 27 sites. Three Late Archaic shell-midden sites were located, based on the presence of plain fiber-tempered pottery.

Cultural Resource Management surveyed 405 ha of Hermitage Island, an interior marsh island in Glynn County, Georgia and identified two sites, one of which was a shell-midden site that contained unspecified Late Archaic projectile points (Benton and Swindell 1980).

Ehrenhard (1976) conducted reconnaissance survey of Cumberland Island and located 36 sites. Stallings pottery was found only one of these sites. Middle Archaic projectile points types (Culbreath, Alachua-like, and unspecified Middle Archaic stemmed types) were reported, apparently washed out on the beach.

Key Excavated Sites

Wilmington Island Sites. Four sites excavated by the WPA on Wilmington Island yielded Late Archaic remains. Extensive excavation at site 9CH11 produced St. Simons Series (plain, incised, and punctated) and sand- and fiber-tempered pottery, broad straight base stemmed points, and engraved bone pins indicative of a Late Archaic occupation. Site 9CH16 yielded a minor amount of St. Simons Plain, St. Simons Incised, and St. Simons Punctate pottery. Extensive excavations at the Oemler Site (9CH8) contained St. Simons series pottery (plain, incised, and punctated), perforated soapstone slabs, and Late Archaic stemmed and contracting stemmed points. Excavations at Meldrim (9CH12) yielded minor amounts of St. Simons series pottery (plain, incised, and punctated) and three soapstone vessel sherds. Site 9CH9 produced a minor amount of St. Simons Plain and St. Simons Punctate pottery.

Skidaway Island Sites. DePratter (1975b) reported on testing of eight sites on Skidaway Island. One site had a St. Simons pottery component. Webb and DePratter (1982) reported on testing of 9CH113, a site with a St. Simons pottery component. Testing of a portion of the site that was located beneath the salt marsh yielded a dense chipped stone assemblage. Although the debitage was nondiagnostic, its presence in intact context beneath an active salt marsh strongly suggests that it predates the St. Simons phase occupation.

The Pagan Plum site (9CH61) is an oyster shell midden on the north end of Skidaway Island. Two 4 x 4-ft (1.2 x 1.2-m) test pits were dug by Crusoe and DePratter in 1972 (1976), and DePratter (1973b) returned later that year to add an additional 13.5 m^2 of excavation. The midden was found to extend some 46 m along the marsh edge, with a maximum width of 15 m and maximum depth of 1.2 m. DePratter (1979a:44-45) describes general characteristics of the artifact and faunal assemblages, but greater detail is provided by Martin (1980) in a paper on Pagan Plum subsistence. Martin gives a breakdown of sherds and baked clay objects by level in a 4 x 8-ft (1.2 x 2.4-m) section of one of DePratter's units. Fiber-tempered sherds (n = 224) were present in nearly all levels to a depth of 1.4 m below surface, but no decorated sherds were found. A small number (n = 9) of sand-tempered sherds occurred up to 107 cm deep. Two linear punctate (Thom's Creek) sherds were recovered in the 18 to 24-inch (46 to 61-cm) level. Other artifacts included seven baked clay objects, all deeper than 76 cm, and bone, antler and shell tools, most from the lower half of the deposit. DePratter (1979a:45) indicates that a carbon sample from the middle of the deposit gave an age of 3600 B.P., a date considered by him to be too recent because of the lack of decorated fiber-tempered pottery. A second date of 2900 B.P. from a pit beneath the midden is emphatically rejected by DePratter (1979a:45). Rejection of the latter date is understandable, but the lack of decorated fiber-tempered pottery is insufficient to reject the former date, especially considering the presence of decorated sand-tempered sherds.

Garrow and Associates excavated more than 300 m^2 at 9CH733 on Skidaway Island by using hand excavation and mechanical stripping. St. Simons pottery (St. Simons Plain and St. Simons Punctate) were present as minority wares (Smith et al. 1988).

Cane Patch (9CH35). The Cane Patch site (9CH35) is a shell midden located on the north end of Ossabaw Island (Crusoe and DePratter 1976:8-10; DePratter 1979a:42-43). What originally must have been an enormous midden covered an area at least 46 m in diameter in the early 1970s. Crusoe and DePratter removed a 3 x 15-ft (0.9 x 4.6-m) trench within an undisturbed ridge 2.1 to 3 m in height along the western edge of the midden. Fiber-tempered pottery was abundant, as were bone tools. An unusually high percentage of the pottery was decorated. Designs included punctation, incisions, and grooves that were occasionally applied so deep as to nearly penetrate vessel walls. Of particular note among the sherds is a high incidence of sooting of exterior surfaces (Skibo et al. 1988). The midden consisted of oyster shell, along with lesser amounts of clam, whelk, periwinkle and mussel. Crab and fish were also common. Terrestrial species, although rare, were dominated by deer and raccoon (DePratter 1979a:43). No radiocarbon dates were obtained from these excavations.

A. Busch Krick (9McI87). A. Busch Krick (9McI87) is a semicircular shell midden situated on the southern tip of Creighton Island. Mounded shell deposits vary from 1.2 to 2.1 m in height, and the distance between opposite ends of the midden is about 38 m (DePratter 1979a:50). A 3 x 25-ft (0.9 x 7.6-m) trench and a 6 x 6-ft (1.8 x 1.8-m) square in the midden were excavated by Crusoe and DePratter (1976:7-9). Fiber-tempered pottery, bone, antler and shell tools were common. Decorated pottery was not as common as at Cane Patch, but it was better represented than at most coastal Georgia sites. Perhaps the most significant find at A. Busch Krick was a circular area of crushed shell 3.6 m in diameter at a depth of 1.1 m. A possible hearth containing charcoal, bone, and ash was located at the center of the feature. DePratter (1979a:50) suggest that the 23 cm thick crushed shell was probably the floor of a structure with permanent walls. Two radiocarbon dates were obtained on shell from Pit 1. Conch shell from the base of the midden gave a date of 3215±80 B.P., while a sample of oyster shell 30-40 cm above base of midden yielded a date of 3470±85 B.P. (Brandau and Noakes 1972:494-495). The shell strata were apparently reversed or disturbed in some fashion, but the older date can be taken as the *terminus ante quem* for the initiation of the midden. A correction factor of +420 years should be added to these shell dates.

Cunningham Mound C. Recent excavations on St. Catherines Island by the American Museum of Natural History yielded minor fiber-tempered assemblages at a few sites. One noteworthy site is Cunningham Mound C, a small Refuge-Deptford burial mound. Plain fiber-tempered sherds were scattered throughout the excavated portions of the site, and some were found in a cremation pit radiocarbon dated to 3010±60 B.P.

(Thomas and Larsen 1979:20, 58, 64). The cremation contained the remains of two adults, and the fiber-tempered sherds are attributed to "very early ceremonial activity at the site" (Thomas and Larsen 1979:64). Assuming that the cremation is the "very early ceremonial activity" to which the writers refer (and this is not altogether clear), the radiocarbon assay constitutes one of the latest dates assigned to fiber-tempered pottery in the region.

Sapelo Island Sites. Test excavations at the Sapelo Island Shell Ring No.1 (9McI 23) were undertaken by Moore in 1897 (Moore 1897), Waring and Larson in 1950 (Waring and Larson 1968), and by Larson in 1974-75 (Simpkins 1975; Simpkins and McMichael 1976). The ring is exceptionally large, measuring up to 91 m in diameter, 2.1 to 2.7 m in height, and with a 9.1 to 15.2 m base. Two other rings were associated with this largest one, though these have long been destroyed (Waring and Larson 1968:268; Simpkins 1975). When Waring visited the site in 1949, hundreds of small shell middens, averaging about 6 m in diameter, were scattered across the site.

Waring and Larson excavated a trench from the center to the outer edge of the ring. The interior was practically devoid of cultural material. Midden deposits comprising the ring yielded a stratified sequence consisting of four strata. The base of the midden (Stratum 4) had a 90 cm thick layer of loose shell, mostly oyster, resting on sterile yellow sands. Several pits averaging 60 cm in diameter and 45 cm deep were dug into the sands. These contained shell refuse similar to the initial ring midden suggesting they were excavated just prior to the onset of ring deposition. Above Stratum 4 was a 37 cm thick layer of mixed shell and dark sand. Overlying this was a second layer of loose shell lacking sand (Stratum 2), 30 to 60 cm thick. Capping the deposit was 60 cm of dark sandy soil and shell. Some deviations from this generalized description are noted by Waring and Larson, including the presence of ash layers and possible hearths in Stratum 3.

Fiber-tempered pottery was found in all levels of the midden excavation, and in the pits intruding into basal sands. Importantly, decorated sherds were restricted to the upper stratum. This finding corroborated the observations made by Waring on his initial visit to the site when he noted that decorated sherds were absent in the lower strata of a pothunter's excavation (Waring and Larson 1968:268). Another important stratigraphic trend is the decrease in baked clay objects. Seventy-nine of the 102 baked clay objects recovered came from the lowest shell layer (Stratum 4), the rest from the stratum immediately above. Other artifacts were likewise concentrated in the lowest two strata. These included a whole atlatl weight, a sandstone bead, seven bone pins, three awls and eight other pieces of worked bone and antler.

Two radiocarbon assays on shell from the midden yielded uncorrected dates of 3600±350 and 3800±350 B.P. (Williams 1968b:329). The provenience of the shell samples is unknown. Williams states (Waring and Larson 1968:270) that Waring must have collected the shell from the basal component of the ring, but this cannot be verified. As we noted in the previous chapter, adding corrections to these shell dates of 420 years places the assemblages of predominately plain fiber-tempered pottery squarely into DePratter's St. Simons I phase.

Subsequent testing at Sapelo led by Larson concentrated on the multiple small shell middens in the area to determine the relationship of these features to the ring (Simpkins 1975; Simpkins and McMichael 1976). One test unit about 40 m southwest of the ring yielded plain fiber-tempered pottery and baked clay objects in sands below a late prehistoric shell deposit. Another unit closer to the ring contained a seemingly stratified sequence of Mississippian, Woodland and Late Archaic remains. A fiber-tempered pottery horizon was observed at 74-88 cm BS in a zone of leached gray-tan sand. A refuse pit was located at 80-135 cm BS. Its contents included fish bones, hickory nutshell, unidentifiable seeds and a plain fiber-tempered sherd. An uncorrected radiocarbon date of 4120±200 B.P. was obtained on nutshell and seeds from this pit (Simpkins 1975:22). In the same unit was a portion of a plain fiber-tempered bowl at 80-100 cm BS. From these observations, Simpkins (1975:23) suggest that a thin, but widespread fiber-tempered occupation zone was buried beneath aeolian sands. It is reasonable to add that the radiocarbon date from the pit feature of the postulated buried component approximates the timing of the earliest component of the shell ring.

One other note concerning Sapelo Island investigations involves three reported dates on unspecified shell rings. Two dates are reported for "a relatively undisturbed ring of ca. 50 m diameter and 2 to 3 m high" (Noakes and Brandau 1974:133). These are identical dates of 3430 (±65; ±70) B.P. from oyster shell 1 and 2 m in depth. The third date 3545±65 B.P. is on oyster shell 2 m in depth from a "remnant of one of the neighboring rings that were partially quarried" (Noakes and Brandau 1974:133).

St. Simons Sites. Excavations on St. Simons Island by Preston Holder yielded important Late Archaic remains, but unfortunately, the excavations were not adequately reported (Holder 1938). Nevertheless, unpublished information from the excavations were used by researchers to define the St. Simons fiber-tempered pottery series.

Marrinan's (1975) excavated at two shell rings at Cannon's Point on St. Simons Island. One ring located in the marsh, Marsh Ring (9GN57), contained plain fiber-tempered pottery throughout midden deposits 1.75 meters in depth. Uncorrected radiocarbon dates bracketing the lower and upper levels of the midden are 4190±90 and 3765±90 B.P. A second shell ring (West Ring - 9GN76) located on land to the west of the marsh ring contained at least 60 cm of midden deposits. Grit-tempered sherds were recovered in the upper level, but below this only plain and decorated fiber-tempered pottery was found. Uncorrected radiocarbon dates bracketing the fiber-tempered accumulation of the ring are 3860±90 and 3605±110 B.P. Finally, a buried surface in the marsh immediately to the south of the Marsh Ring was identified by the presence of buried tree stumps. Pottery associated with this surface included both fiber- and grit-tempered sherds. Importantly, the fiber-tempered pottery from this area contained a high proportion of grit, while those from the rings contained either no grit or only an occasional piece (Marrinan 1975:62). Uncorrected radiocarbon dates for this sample are 2770±95 and 2785±80 B.P.

The decorated fiber-tempered sherds from Canon's Point include incised and punctated designs similar to Orange incised pottery from Florida. At the Marsh Ring Orange-like sherds were restricted to the upper levels of the midden, whereas in the West Ring these were found in the basal levels. Overall, decorated fiber-tempered sherds are rare at both sites, and there is no clear stratigraphic sequence from plain to decorated.

Cumberland Island Sites. Minor amounts of St. Simons Plain pottery were recovered from Dungess Wharf (9CAM6) on Cumberland Island in the lowest excavation level (Level 7). Approximately 4 m^2 were excavated on this site. Minor amounts of Orange Plain pottery was collected from NPS CAM14 and minor amounts of Orange Plain, Orange Incised, and St. Simons Plain pottery from NPS CAM15. Both sites were located on the eastern edge of the marsh and were described as erosional remnants, and apparently no excavations were conducted on these latter two sites (Ehrenhard 1976).

CHAPTER V
REGIONAL PATTERNS

Regionwide patterns of Archaic site distributions in Georgia are difficult to derive from the localized and typically inconsistent records of site occurrence from CRM and independent research projects. The Georgia State Site Files, like site files anywhere, are only as good as the data that are submitted by archaeologists. Obviously, a record that has been accumulating for decades by practitioners of varying expertise is not likely to provide a solid foundation for regional pattern recognition. Nevertheless, we attempt in this chapter to examine broad-scale patterns to Archaic site distributions from site files data, drawing from project-specific data when possible to refine the quality and consistency of our information. Georgia lacks the sort of independent database that is provided by the Collectors Survey conducted by Tommy Charles of the South Carolina Institute of Archaeology and Anthropology. In lieu of such data, we address the potential of collectors data from locales in the Coastal Plain at the close of this chapter.

STATE SITE FILES DATA

In a 1994 status report on the Master Archaeological Site Files maintained at the Department of Anthropology in Athens, Georgia, Mark Williams presented quantitative and distributional data on 23,749 archaeological sites in the state (Williams 1994). Of these, approximately 900 sites do not have UTM locational information. Data on 21,515 sites with coordinates sites were imported into a GIS mapping program, which was used by Williams to generate a series of state maps showing the distribution of archaeological sites by time period, including the Early, Middle, and Late Archaic periods (Williams 1994:Figures 5-7).

Distributions maps for each of the Archaic periods and for a catch-all general Archaic category are provided in Figures 23-26. Clustering in the distribution of sites on these maps is clearly a reflection of professional archaeological activity. Each of the period maps shows dense clusters of sites in the locations of major reservoir projects, such as Wallace, Allatoona, Lanier, and Russell. Clusters are likewise seen in the locations of Fort Gordon and Fort Benning, as well as dozens of smaller project areas.

With such obvious bias in the site files data, possible inferences about site patterning are limited. Knowing, however, that survey in the Coastal Plain of Georgia has been relatively intensive in many places, as we outlined in Chapter 4, the limited site files records for Early Archaic and especially Middle Archaic sites in the province appears to be an accurate depiction of relative site density. Indeed, the map of Late Archaic sites includes an appreciable number of records in the Coastal Zone. The extent to which earlier sites are lacking due to recognition problems may be seen in the incidence of "general Archaic" sites in the Coastal Plain (Figure 26). Such records appear to be more prevalent in the western portion of the province, a pattern that makes sense considering the ambiguity of Archaic biface typology for this portion of the state.

Additional inferences about the distribution of site files data can be gleaned from relative frequency values. One of the data tables provided by Williams is a breakdown of site components by physiographic districts as defined by Hodler and Schretter (1986:16-17). Figure 1 (Chapter 2) shows the boundaries and names of districts within the Coastal Plain province and Coastal Zone. Table 11 lists the component counts for Archaic periods by physiographic district, as well as the area (in hectares) and total number of sites per district in the site files.

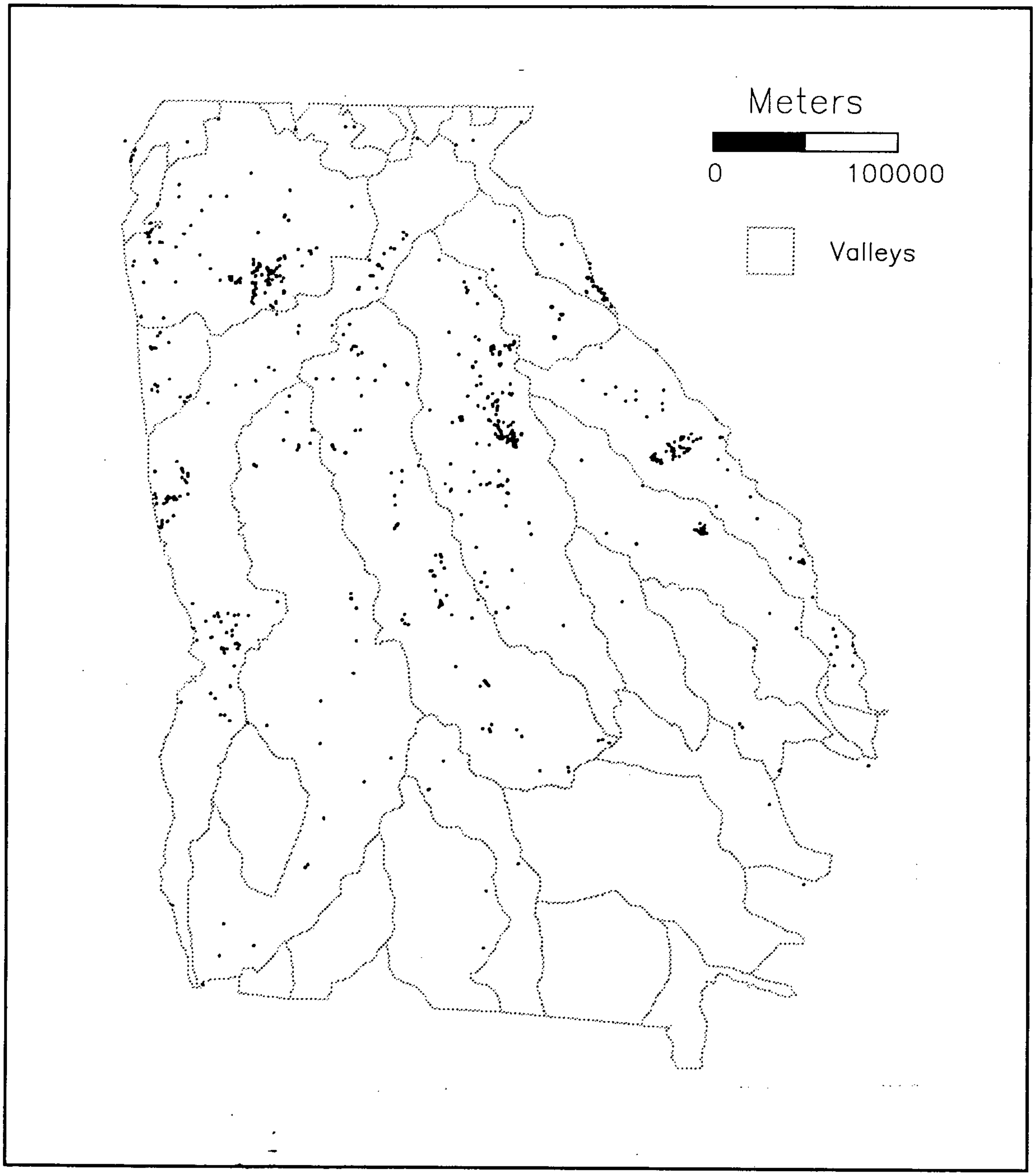


Figure 23. Distribution of Early Archaic sites on file in the State Site Files (courtesy of Mark Williams).

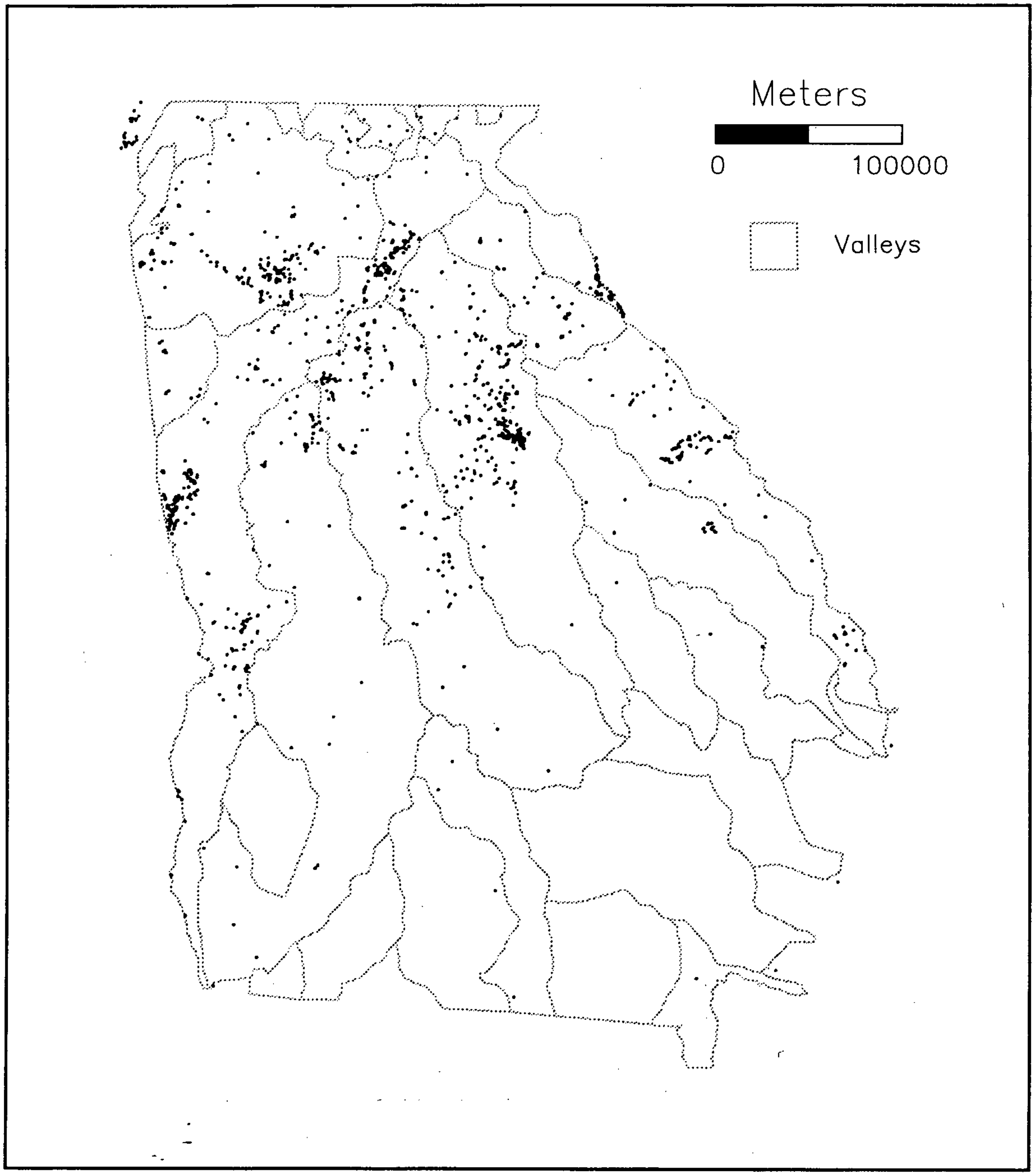


Figure 24. Distribution of Middle Archaic sites on file in the State Site Files (courtesy of Mark Williams).

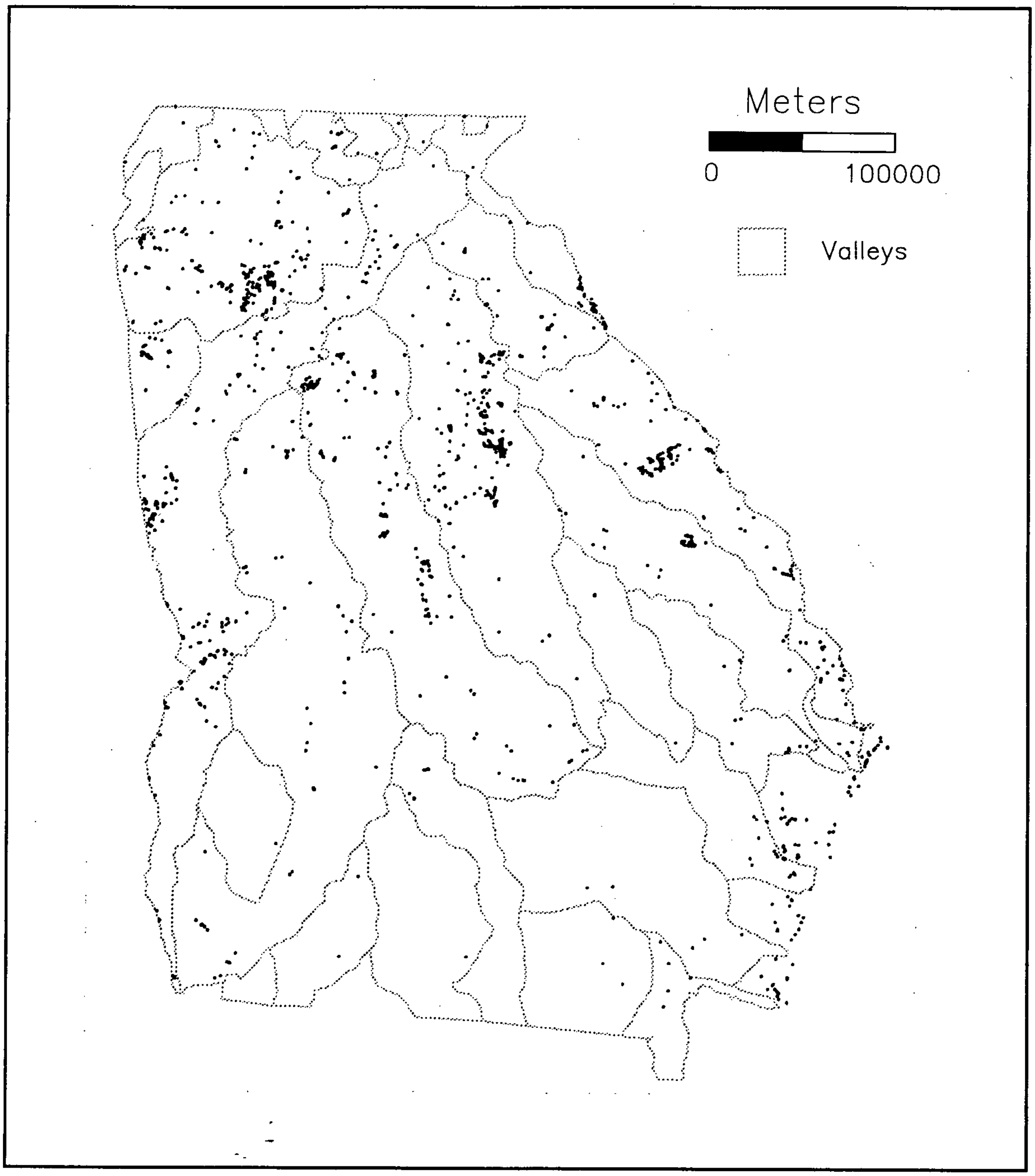


Figure 25. Distribution of Late Archaic sites on file in the State Site Files (courtesy of Mark Williams).

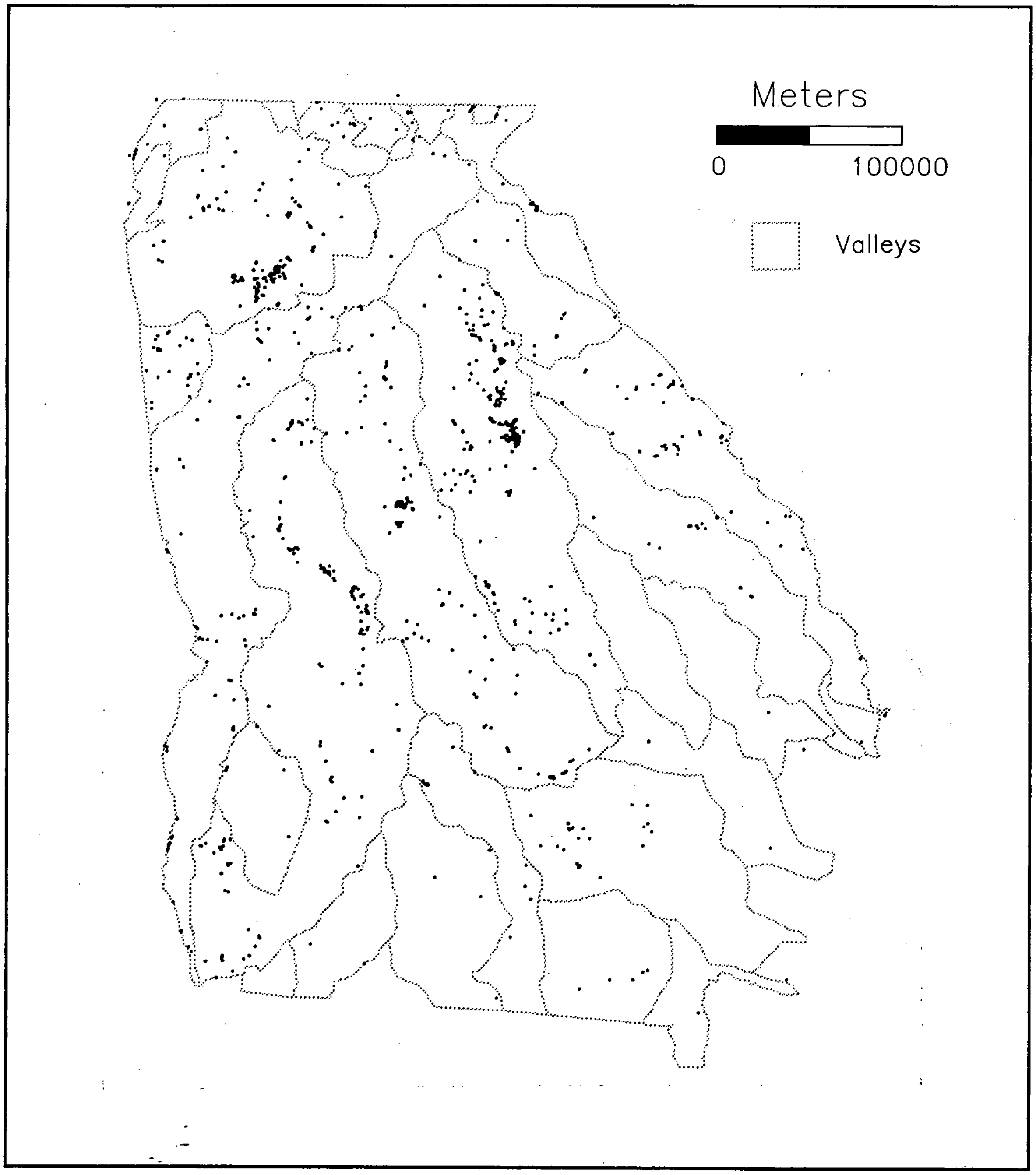


Figure 26. Distribution of general Archaic sites on file in the State Site Files (courtesy of Mark Williams).

Table 11. Inventory of Coastal Plain and Coastal Archaic Sites on Record in Georgia State Site Files by Physiographic District (after Williams 1994:71).

District	Area (ha)	All Sites	Early Archaic	Middle Archaic	Late Archaic
Fall Line Hills	1,980,415	3,091	140	143	213
Fort Valley Plateau	121,776	60	5	3	7
Dougherty Plain	671,796	494	9	6	22
Tifton Upland	1,525,307	334	7	5	12
Vidalia Upland	2,391,554	1,380	68	30	86
Bacon Terraces	699,912	249	0	0	2
Okefenokee Basin	518,024	298	0	1	7
Barrier Island Sequence	1,405,534	2,123	14	18	162
Total	9,314,318	8,029	243	206	511

Expressed as percentages of all sites in a district, Archaic period components vary from 0 to nearly 12 percent (Figure 27). Among Archaic components, those of the Late Archaic are consistently highest, and in the lower Coastal Plain districts they form virtually the entire Archaic record. With one exception, Middle Archaic sites form a consistently low proportion of all sites; in the Fall Line Hills the fraction of Middle and Early Archaic components is roughly equal. Variation among the districts is marked for all periods. The extent to which this variation stems from actual land use patterning, as opposed to analytical biases is unknown.

We can reduce at least one source of analytical bias by recalculating relative frequencies of components from the total number of Archaic site records, instead of all sites. This step will eliminate variation in Archaic relative frequencies due to variation in non-Archaic site frequencies. A histogram of the recalculated values is provided in Figure 27. As this figure clearly shows, the differences among districts are reduced dramatically. We now see a consistent relationship among the proportions of Early, Middle, and Late Archaic sites across all districts of the interior Coastal Plain. The districts on or near the coast reflect the dominance of Late Archaic sites.

Our hopes of extracting more specific locational data from the site files were squelched by a lack of consistent, computerized data. Similarly, we could not extract better information on the composition of component assemblages. For example, the database was searched for sites in Georgia that contain soapstone artifacts. Only fifty-five sites were identified. The actual frequency of reported sites with soapstone is far greater. The Lake Oconee area, for example, yielded more than 300 sites containing soapstone (Elliott 1981), so clearly this information has not been consistently recorded on the site form or in the database files. Williams notes that if a site contained soapstone, but no other diagnostic Archaic period artifacts, it was coded as Archaic with soapstone as the key identifier. The database also was searched for early pottery sites and 91 Stallings series, 32 St. Simons series, and 166 unspecified fiber-tempered pottery sites were located. The actual frequency is likely much higher. For example, the Lake Oconee region has produced more than 50 Stallings series sites alone, and that area is peripheral to the main distribution of early pottery sites in Georgia. The records of specific diagnostic projectile point types is equally erratic in the site file data, so no tally was attempted. Some of this diagnostic artifact information may be listed on individual site forms, but the information was left off the computer coding because of size limitations. We were unable to examine the paper files for all 95 counties of our study area given the limited scope of this project.

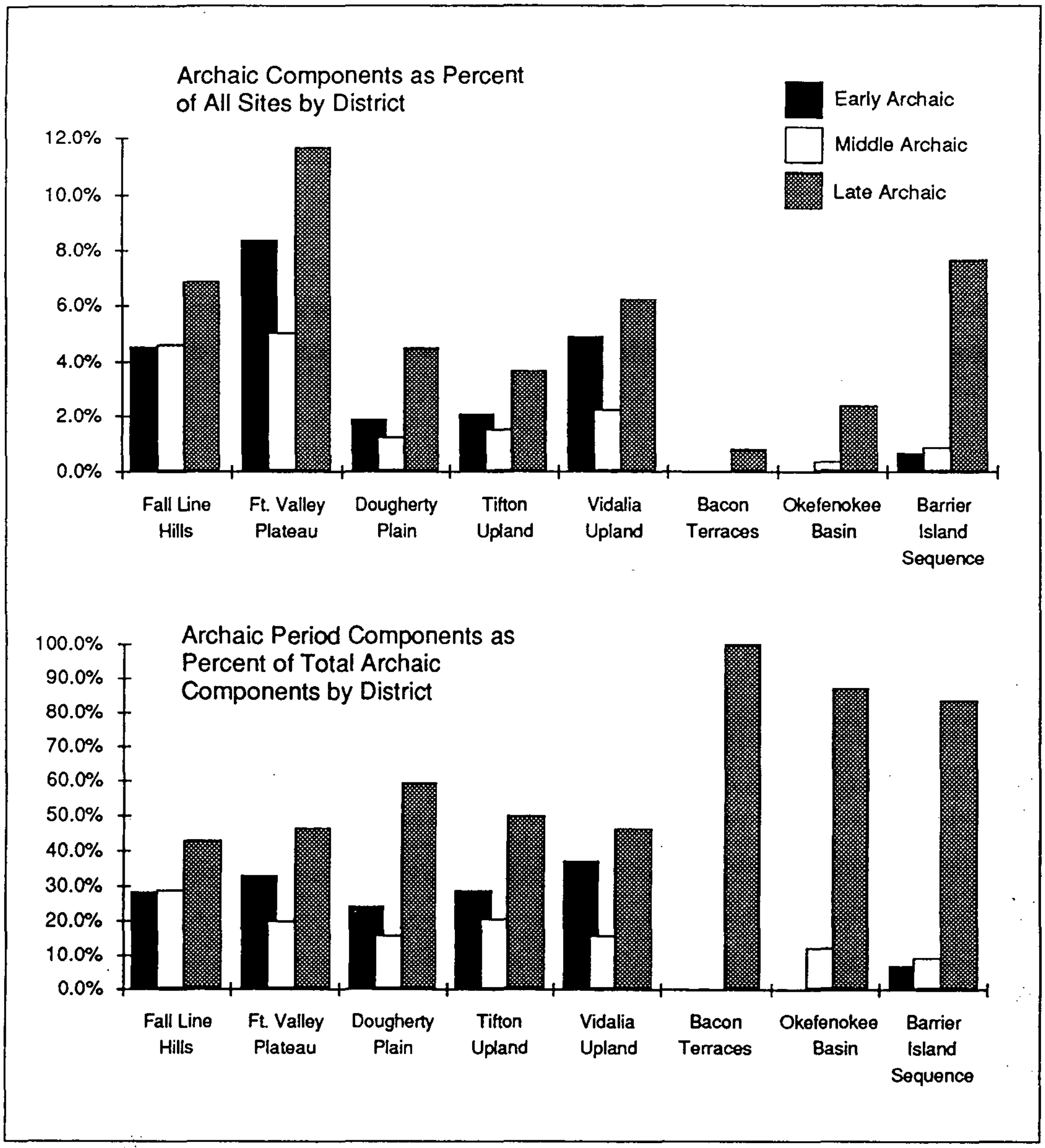


Figure 27. Archaic components as percentage of all sites by district (top), and as percentage of total Archaic sites by district (after Williams 1994).

SITE DENSITY FOR SURVEY RECORDS

Lacking any effective means of extracting better locational and component data from the site files, we turned to the reports of intensive surveys reviewed in the previous chapter. Each of the hundreds of reports reviewed for this study was evaluated for the quality and accuracy of reported data. Again we were frustrated by the lack of consistency in reporting basic information about survey tract size, level of coverage, criteria of artifact classification, and the like. Needless to say, we quickly concluded that only the most rudimentary analyses of site distribution would be possible. In keeping with the physiographic district scheme used by Williams, we collated by district all survey records for projects that included explicit data on area surveyed and number of components identified by Archaic period. The data we compiled are listed in Table 12.

Table 12. Inventory of Coastal Plain and Coastal Archaic Sites from Selected Surveys by Physiographic District.

District	Number of Tracts	Survey Area (ha)	Early Archaic	Middle Archaic	Late Archaic
Fall Line Hills	11	394	13	7	23
Fort Valley Plateau	2	1,321	11	3	8
Dougherty Plain	2	87	0	0	2
Tifton Upland	9	2,567	9	3	14
Vidalia Upland	9	4,599	31	12	43
Bacon Terraces	4	1,245	12	6	25
Okefenokee Basin	0	0	-	-	-
Barrier Island Sequence	6	6,807	5	0	61
Total	43	17,020	81	31	176

Before proceeding, some qualifications about the data listed in Table 12 are necessary. First, we do not pretend that these data are comprehensive for we know there are many more survey reports with sufficient information to be included here. Our data set was simply the first culling of the mountain of gray, noncomputerized literature. Because the data are limited, we cannot expect them to be representative, although we trust whatever biases persist in the data, they are distributed evenly across our analytical units (i.e., time periods and districts), so that relative values are yet informative. Finally, we chose not to include the survey data from Forts Benning and Gordon, despite the large number of survey projects and sizable site inventories. These studies were excluded because, frankly, we could not adequately determine the true extent of survey coverage. Twenty-two percent of Fort Benning is said to have been surveyed, which would amount to over 16,000 ha of surveyed land. One-hundred-fifty-one diagnostic Archaic (and Gulf Formational) components are reported from this amount of survey. This may seem like a lot of sites, but the actual density values per unit surveyed are dramatically lower than other Fall Line Hills surveys we reviewed. We suspect that not all of the 22 percent reported surveyed was surveyed at the same level of intensity as the small projects we reviewed, or, no doubt, that there were dramatic differences in the landform composition of different projects. Either way, the Fort Benning data skew downward the density figures for Archaic sites in the Fall Line Hills. The results from Fort Gordon have a similar effect, as do data from the Savannah River Site in South Carolina. It is likely that the relatively low Archaic density at these large sandhills installations (consistently around one Archaic component per square kilometer) is due to the large fraction of interfluvial land surveyed. If so, the low density figures are accurate measures of regional-scale land-use patterns, but they are not comparable to data from smaller survey projects elsewhere that are more often mandated by laws regarding wetlands or are otherwise focused on bottomland locations.

Having qualified these survey data, we turn attention to the density values of Archaic components for physiographic districts based on the data provided in Table 12. A graphic display of the density values is provided in Figure 28. As these data show, the Fall Line Hills has the highest component densities of all districts across the three period samples. The eleven survey tracts that comprise the relatively small (394 ha) areal sample for this district are spread evenly across the state. Although this sample is small, we suspect the density figures are fairly accurate, for surveys of the Fall Line Hills consistently yield numerous sites.

Apart from the Fall Line Hills district, the density values for Archaic components are consistently low to moderate. The exceptional Dougherty Plain figures are suspect due to the extremely small size of our sample (87 ha). Otherwise, the interior Coastal Plain

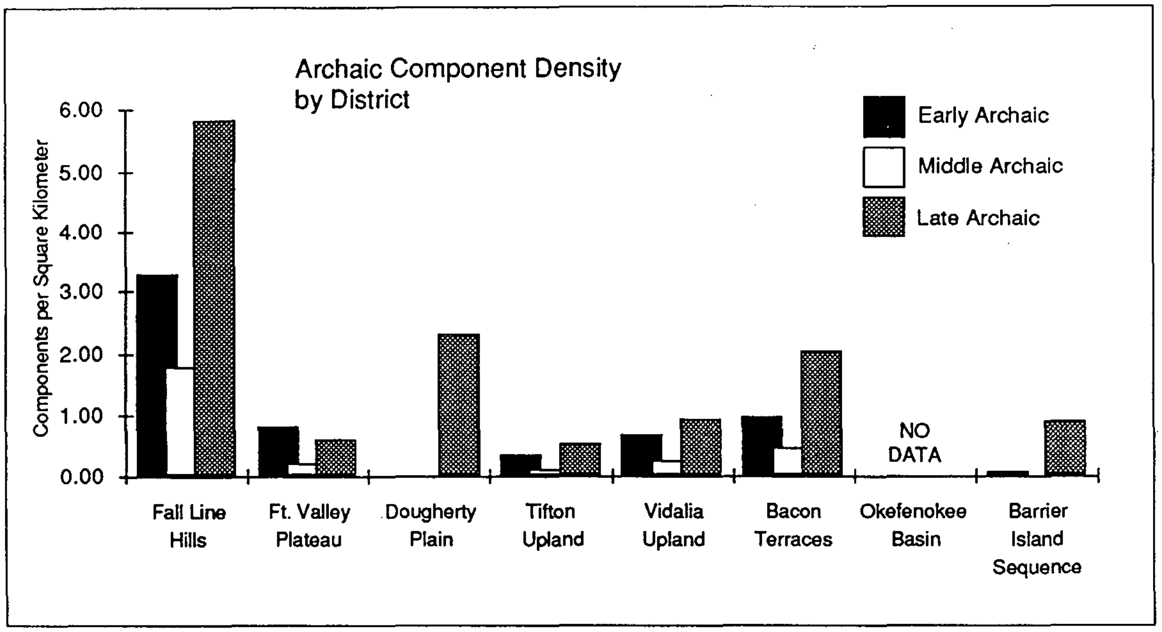


Figure 28. Archaic component density by district.

districts (Tifton Upland, Vidalia Upland, and Bacon Terraces) yield generally similar patterns, with interesting variation among them. Density figures increase from the Gulf-draining watersheds (Tifton) to the Atlantic-draining watersheds (Vidalia), and are highest in the Bacon Terrace district—the "pivot point" between Gulf- and Atlantic-draining watersheds. The relatively high values for the Bacon terraces confirms the results of long-term surveys by Frankie Snow and Chris Trowell; namely, that the area just to the south of the Ocmulgee Big Bend is rich in archaeological resources. Finally, the Barrier Island Sequence figures seen in Figure 28 are no surprise as they recapitulate the bias against early sites, being comprised almost exclusively of Late Archaic sites.

In comparing density figures across periods, we note that Middle Archaic sites are always the lowest, although such sites are appreciably dense in the Fall Line Hills (being adjacent to the Piedmont province, where density figures are extremely high). Early Archaic values are usually intermediate, except in the Fort Valley Plateau district, where they exceed slightly the Late Archaic value. Density figures for Late Archaic sites in other districts mirror the patterns of the other periods, except, of course, with greater magnitude. Overall, the density data show a consistent pattern of differential land-use throughout the Archaic period. Again, the Barrier Island Sequence is a different situation altogether.

PRIVATE COLLECTOR SURVEY DATA

It may come as a shock to many professional archaeologists that the data residing in the hands of private collectors is in many respects more valuable for analyzing regional-scale land use than all the data collected in professional surveys and excavations. This fact became apparent to South Carolina archaeologists through the efforts of Tommy Charles of the South Carolina Institute of Archaeology and Anthropology, who, over the course of several years, compiled data on literally tens of thousands of diagnostic artifacts from collections across the state (Charles 1981, 1983, 1986, n.d.). Granted, much of the data Charles collected lacks site provenience, but when examined at the course-grained level of county provenience, for instance, broad-scale patterns of prehistoric land-use can be observed. Moreover, Charles' data are consistent, as he himself has classified each of the artifacts in the inventory. His data include raw material, as well as typological data, which has proved valuable for reconstructing patterns of mobility. Several papers, monographs, and management reports have employed Charles' data to great effect (Anderson 1991; Anderson and Hanson 1988; Sassaman 1992; Sassaman and Anderson 1994; Sassaman et al. 1988; Tippett 1992). Ignoring the data in collectors' possession because of ethical concerns or a purist attitude guarantees that archaeologists will have but only a very small, biased sample of the archaeological record left by prehistoric people.

Georgia has a long and interesting history of prehistoric relic collecting. This activity has become ingrained in the historical cultural tradition of the region. The collector, in Georgia, ranges from individuals who possess a single pottery sherd or projectile point, to those with collections numbering in the tens of thousands. Among the ranks are such notables as former President James Earl Carter. As the South Carolina example shows, collector data are extremely valuable and there must be efforts initiated to compile and curate this information. To date efforts to record collector data have been sporadic and unsystematic. We hope that this situation can be improved in the coming years, and to this end we provide in this final section a few leads.

One of the earliest collectors in Georgia was Charles C. Jones, Jr., a pioneer in the field of archaeology and a contemporary of Ephraim Squire and other early archaeological explorers. Jones was a world-renowned student of history and archaeology and a relic collector. Despite his published record of archaeological activities (Jones 1861, 1873, 1880), few artifacts or other records pertaining to his specific sites in the state were located. A collection of artifacts collected by Jones from the Savannah River valley found their way into the Smithsonian Institution's collection through direct donation by Jones, indirect donation by way of former Smithsonian curator, Charles Rau, and through purchase following Jones' death (The American Museum Journal, Volume 1:1900-1901). Preliminary search of the Smithsonian's current holdings by the senior author indicates that this collection has greatly dwindled in size through the years. As of 1968, portions of Jones' collection were in possession of the Claflin family in Belmont, Massachussetts (see note by S. Williams in Waring 1968e:289). Other material collected by Jones formerly in the Heye Museum now may be in dead storage in Washington, D.C. The portion of Jones' collection that was examined at the Smithsonian Institution includes Late Archaic pottery, projectile points, soapstone, and shell beads from Stallings Island and Price's Island, both in the Piedmont province.

Other major collections from the Savannah River valley are in the possession of D. J. Crandall, Lewis and Sylvia Trout, and Dr. Jack Hudson of Augusta (Ledbetter and Doyon 1980). Collections from Effingham County include those of A. G. Barnhill (Mitchell 1975).

Trowell (1977b) described the Grant Seaholtz collection from a commercial sand and clay quarry site, 9WE11, on a ridge south of the Satilla River in Ware County. The collection was assembled over a 30-year period. Archaic period materials were present as a minority. Satilla Plain fiber-tempered and unidentified plain fiber-tempered pottery, and a few large Archaic stemmed points were reported.

John Whatley, an avocational archaeologist formerly from the Macon area and now residing in Thomson, has knowledge of many collections from the Macon Plateau area, as well as contacts with individuals knowledgeable about Ogeechee River sites. Macon County collections in those of Fred Edwards (Howry 1979), and the Grubbs collection consists of artifacts from Houston and Dooly counties (Gresham 1984a).

Mrs. Mary Hudson maintained a collection form Bibb County (Ingmanson 1964), Slaton Toler has collections from Treutlen County, and Canoochee River artifacts exist in the Sherman Byrd collection (Midgette 1973).

Eli Willcox (1977) presented a brief description of the Blake Williams surface collection from 9BC15, located on a low sand ridge on the south side of Big Satilla Creek. The collection included a minor amount of plain fiber-tempered pottery.

Randy Nance, Folkston, Charlton County has a well documented collection from Charlton, Clinch, and Echols counties. Danny Smith has a collection from the Phillips Mill locality (Chris Trowell, personal communication 1995). Frankie Snow and Chris Trowell have numerous other contacts from south Georgia, and, of course, the enormous professional collections they have made over the years await full documentation.

These are but a few of the vast numbers of collections in the possession of private citizens. Charles found that most collectors are more than willing to share their find with professionals, and in the course of recording data on types and raw materials, Charles instills in many of these folks a sense of the scientific value of provenience data and related information. Archaeologists gain a tremendous database on regional-scale patterning and collectors are better educated about site preservation and the need for better documentation. Georgia sorely needs a directed, well funded collectors survey program.

CHAPTER VI
MODELS

In this chapter we review some of the models that have been developed to describe or explain Archaic period prehistory in Coastal Plain and coastal Georgia. Most of the models we discuss deal with the relationship between sites and environmental properties. Many serve to define site types in a settlement-subsistence system, whereas others revolve around particular classes of artifacts in systems-wide locational dimensions. Because of the nature of the Archaic period database, virtually all models are technology-based. There are few models dealing with subsistence, and even fewer examining social factors such as exchange, mating alliances, ritual, or boundary maintenance. The scales of models vary, yet most are either project-specific or province-specific. We highlight the few attempts at interprovincial and regional-scale modeling as we suspect that these large-scales of analysis have much more to offer archaeological inquiry than recent practice would lead one to believe.

We begin with discussion of Coastal Plain and coastal models, then consider interprovincial models that implicate settlement components and mobility within the Fall Zone and Piedmont provinces.

COASTAL PLAIN MODELS

For a long time archaeologists working in the South Atlantic Slope believed that Coastal Plain habitats were too impoverished to support substantial Early and Middle Archaic populations (Larson 1980; Stoltman 1974:230-231). Late Archaic use of riverine habitats was well known (Waring 1968a), but even then use of interfluvial areas of the interior Coastal Plain was believed prohibitive (Caldwell 1952:313; Stoltman 1972:49). The recent volume of work in large tracts of interior Coastal Plain of Georgia-Carolina has changed this view of Late Archaic settlement (e.g., Anderson et al. 1979; 1982; Brooks and Canouts 1984; Brooks and Scurry 1978; Elliott and O'Steen 1987; Gresham 1984; Gresham et al. 1989; Sassaman et al. 1990; Snow 1977a; Trinkley 1974a). Still, the limited number of Middle Archaic sites in the province (see Chapter 5) hinders studies of Middle Archaic settlement. Researchers have instead explored reasons why interior Coastal Plain sites were not more widely utilized during the period, or have begun to look in places too long ignored. We review these alternatives, as well as the better known Late Archaic models, in the sections that follow.

Early Archaic Seasonal Settlement

In a recent, widely read model of Early Archaic settlement in the South Atlantic region, Anderson and Hanson (1988) propose that bands of mobile hunter-gatherers occupied individual drainages, moving seasonally along rivers to procure a variety of biotic and abiotic resources and to interact with members of the larger regional populations to which they belonged. This model is regional in scope and would thus be more appropriately discussed in the section below on interprovincial models. However, we review briefly here the implications of this model for Coastal Plain sites in Georgia.

The drainagewide settlement strategies of Early Archaic bands described in Anderson and Hanson's model include Coastal Plain occupations during the winter and spring seasons. Upper Coastal Plain sites were selected for winter base camps of relatively prolonged use. From base camps specialized work parties were deployed for deer hunting and other subsistence pursuits. This pattern of logistical organization (sensu Binford 1980) created an archaeological record of intersite functional variability, specifically some combination of habitation sites and short-term procurement stations. Because they involved numerous maintenance activities, habitations would contain diverse tool assemblages and associated debris. Short-term use sites would, in contrast, contain only a limited a number of specialized tools and associated debris. The locations of these distinct site types would be linked closely with environment factors, such as distance to water and soil type, that affect a site's suitability for long-term habitation or specialized resource procurement. Based partly on evidence from the upper Coastal Plain of the Savannah River valley, Anderson and Hanson posit that base camps would be located on the terraces of major rivers and specialized work stations distributed throughout the immediately surrounding terrain and adjacent uplands.

The site type dichotomy between habitation sites and specialized work stations (i.e., resource extraction or procurement sites) can be traced back to at least the 1960s, when archaeologists were beginning to explain how and why sites varied in content and location (e.g., Binford and Binford 1966). This basic dichotomy is a key feature of the Riverine-Interriverine model developed by John House and Albert Goodyear to interpret intersite functional and locational variation for sites in the South Carolina Piedmont (House and Ballenger 1976; Goodyear et al. 1979). In essence, the Upper Coastal Plain winter settlement strategies of Anderson and Hanson's model parallel the Riverine-Interriverine model—they both posit relatively long-term habitation use of riverine sites coupled with short-term, specialized use of upland or interriverine locations. However, the model developed by House and Goodyear never specified the geographical extent of settlement systems, as Anderson and Hanson's model does, so it implicitly places all seasons of occupation within a relatively small area, such as a portion of an Piedmont river valley. While these circumstances may have actually characterized later Archaic populations, it seems unlikely that Early Archaic bands were so restricted (although see alternative models by O'Steen and Daniel in section below).

The model posited by Anderson and Hanson deviates significantly for the generic Archaic settlement model by suggesting that Early Archaic bands not only ranged very far in their annual rounds, but that they also adjusted the frequency and distance of settlement moves to seasonal changes in economic and social demands and opportunities. Hence, as spring approached, groups abandoned winter base camps in the Upper Coastal Plain to quickly relocate to the Lower Coastal Plain and perhaps even on the coast, where spring plant and animal resources would become available earliest. During this time a foraging strategy (sensu Binford 1980) of settlement and subsistence organization was advantageous. As foragers, groups relocated habitation camps frequently, avoiding the need for logistic forays far from home. Accordingly, the level of intersite functional variation was diminished as the occurrence of specialized and mass-processing activities decreased. Resource extraction sites would still exist, but because they were presumably used for shorter periods of time, or at least never reused, they are archaeologically less visible than those associated with winter base camps.

Many aspects and assumptions of the Anderson and Hanson model remain to be tested, although this indeed is one of the great values of the model—it provides a wide variety of test implications. We must add, however, that the model was designed to describe and explain the Early Archaic record of the South Atlantic Slope. As concerns the Gulf-draining portion of Georgia's Coastal Plain, Anderson and Hanson indicate only that a settlement system distinct from that of the South Atlantic Slope existed. How such a system differed is beyond the scope of their model. In the years to come, archaeologists working with Early Archaic records of Georgia's Gulf Coastal Plain may be able to adapt elements of the Anderson and Hanson model for local use, or perhaps offer alternatives. Regarding the latter, we direct the reader to our section below on interprovincial models for some discussion of a few alternatives that have already been offered.

Middle Archaic Abandonment

Ever since palynological data became available to document the expansion of pine in the Coastal Plain after 8000 B.P. (e.g., Watts 1971, 1980), the relative lack of Middle Archaic sites in the province has been blamed on resource impoverishment. Regional-scale paleovegetation maps (e.g., Delcourt and Delcourt 1987) show that pine expanded from about 10 percent of Coastal Plain forest cover at 8000 B.P. to about 40 percent by 6000 B.P., while oak dropped from 50 to about 30 percent. Piedmont vegetation during this same interval was largely unchanged. Insofar as the productivity of forests covaries with availability of mast, Piedmont forest would have been more attractive to Middle Archaic populations than Coastal Plain forests. The seemingly disproportionate distribution of Middle Archaic sites in South Carolina and Georgia made sense in these terms (Anderson n.d.; Blanton and Sassaman 1989; Sassaman 1995).

How real this pattern is, and whether or not pine expansion has anything to do with it, are issues that remain to be resolved (Kowalewski 1995). It is unlikely that Coastal Plain habitats were completely uninhabitable, for it is indeed possible that open habitat encouraged game productivity, as Gunn has suggested (Gunn and Wilson 1993), and that upland wetlands supported rich resources during the mid-Holocene, as Brooks and colleagues (n.d.) predict. The seep springs of south Georgia may have offered similarly moist habitat in upland settings. Palynological research by Seilestad (1994) at Chatterton Springs in Coffee County suggests that Middle Archaic times were warm and moist, allowing oak to prosper locally. However, a survey of the Chatterton Spring area by Dwight Kirkland (1994) revealed diminished use of the area during Middle Archaic times. This same trend has been noted by Snow (1977a) and Blanton (1979) in their surveys of south Georgia.

It is certainly feasible that Middle Archaic groups flourished in the Coastal Plain of Georgia, utilizing technology that archaeologist cannot attribute to this time period. If their tools were made from mostly organic media we cannot expect it to be preserved in most Coastal Plain settings. Continuing efforts to locate and characterize upland wetland sites (e.g., Brooks et al. n.d.; Kirkland 1994; Seielstad 1994) may eventually reveal whether or not such locations were oases of Middle Archaic habitat in an otherwise dry environment, and if so, what such assemblages consist of, including possibly organic media in saturated conditions. If this pattern of targeting upland wetlands is verified, it would parallel the Paleoindian karst land-use pattern noted by Dunbar and Waller (1992) for north Florida. The common denominator here is the focus on point resources, namely wetland features such as sinks, bays, and seep springs. This is a pattern that deviates markedly from the river-oriented strategies that are featured in so many models of Archaic settlement.

Even though paleoenvironmental data may someday reveal that mid-Holocene seep springs, bays, and other wetland sites were highly productive, we cannot assume they were routinely occupied. The fact that such features are point resources, and thus assume a patchy distribution compared to the Piedmont suggests that economic activity in the Coastal Plain would have been more taxing on local populations. Strategies for exploiting patchy resources may involve logistical mobility, task specialization, resource transportation, and food storage—all of which incurs higher energy costs, as well as greater social obligation and debt. Middle Archaic groups may have avoided prolonged use of Coastal Plain resources because of these hidden costs, not because they were impoverished (e.g., Sassaman 1991a, 1995).

As research on paleoenvironments and Middle Archaic site distributions continues, we will be in a better position to match the changing landscape record with archaeological data. The recent synthesis of Coastal Plain palynological data by Watts et al (n.d.) shows that pine expanded early and quickly from a center in the South Carolina Coastal Plain, not peninsular Florida. Given this, a logical hypothesis would be that early Middle Archaic groups in South Carolina were most effected by vegetational changes, and that other Middle Archaic groups (such as those in Georgia) gradually adapted to new conditions over the course of the seventh and sixth millennia. There is enough evidence from site distributions to suggest that by 6000 B.P., utilization of Coastal Plain habitats in Georgia-Carolina was on the rise. Importantly, the emphasis in land-use appears to be riverine, as groups begin to take advantage of developing floodplain habitat, thus setting the stage for Late Archaic riverine economies.

Sandhills Variation

The Sandhills formations that border the seaward margin of the Fall Zone lend considerable topographic relief to the Upper Coastal Plain of Georgia and the Carolinas. Extensive surveys of military bases within the Sandhills have revealed a record of upland tributary and interfluvial site use spanning all of prehistory (see Braley 1991 for summary of much of this work). Testing and block excavation at sites in the Aiken Plateau of the Sandhills (Savannah River Site, South Carolina) has added information about long-term changes in site use (Sassaman 1989, 1993d; Sassaman et al. 1990). Use of the Aiken Plateau during the Early Archaic period is consistent with the Anderson and Hanson model discussed above; that is, sites containing small assemblages of worn and broken bifaces and hide-working tools are believed to reflect short-term resource procurement activities deployed from winter base camps located along the Savannah River. Middle Archaic utilization of the Aiken Plateau left a more inconspicuous record. Isolated occurrences of Middle Archaic stone tools (e.g., Morrow Mountain, Guilford, and MALA points) dot the upland areas of the Aiken Plateau, but no evidence for habitation of intensive resource procurement has been located. In contrast, the evidence for Late Archaic Sandhills use suggests a pattern of dispersed seasonal (fall/winter?) settlement that intensified after 3400 B.P. to include possible year-round habitation within upland tributary watersheds.

How well does the Aiken Plateau pattern apply to Sandhills areas in Georgia and elsewhere? Definitive answers must await better samples from subsurface investigation. In recent years, however, archaeological investigations in the Sandhills of Fort Gordon in Georgia and Fort Jackson in South Carolina have produced hundred of site records. Despite limited subsurface evidence, the survey database of these areas is sufficient to document appreciable interareal differences in the use of Sandhills environments (Braley 1991c). For instance, Fort Gordon has few Middle Archaic sites compared to the large inventory from Fort Jackson. Fort Jackson has lots of Late Archaic sites too, but few with early pottery. Fort Gordon has sites with Stallings fiber-tempered pottery, but practically none with Thom's Creek sherds.

Are such differences traceable to environmental variation in Sandhills locales? Fort Jackson and Fort Gordon indeed differ with respect to hydrology and hard rock geology. Bisected by Brier Creek and tied into downstream chert outcrops, Fort Gordon is both well-watered and lithic-rich for a sandhills location, whereas Fort Jackson has neither of these qualities. This of course, does little to explain the lower occurrence of Middle Archaic sites on Fort Gordon, although it could account for a greater incidence of Late Archaic habitation sites (if the incidence of pottery is sufficient to consider a site domestic). More important it would appear are the large-scale demographics and sociopolitical configurations of the regional landscape. The higher incidence of Middle Archaic sites at Fort Jackson would appear to be a function of the ecological and sociopolitical attraction of Fall Zone floodplain locations in central South Carolina, and not anything in the Sandhills itself. Similarly, the existence of a large Late Archaic population in the middle Savannah River valley cannot be credited to the ecological potential of Brier Creek on Fort Gordon, although it no doubt serves to explain the high incidence of ceramic Late Archaic sites on the fort. The central South Carolina Middle Archaic population was not matched in the middle Savannah River valley, and the Savannah's Late Archaic population was not matched in central South Carolina. Nor were either of these groups at either time necessarily part of the same sociopolitical entity.

The point to all of this is that models developed to explain the distribution of sites in Sandhills locations cannot be lifted to other Sandhills locations and applied without modifications for the specific, surrounding conditions. It goes without saying that the models must take into account the circumstances of the surrounding terrain and populations. As dry, upland environment not especially suited to long-term human settlement, sandhills throughout the region are "marginal" habitats that may have been limited to short-term extraction activities during the Early and Middle Archaic, and only small-scale, seasonal use during most of the Late Archaic period. But in considering Sandhills locations "marginal," we must be able to answer two related questions: Marginal to what?; and, Marginal for whom? Both questions require extralocal scales of analysis.

Before closing this section, we must highlight one recent alternative to the Sandhills models of the last decade or two. From his excavations at Copperhead Hollow in Chesterfield County, South Carolina, Joel D. Gunn has concluded that certain upland sandhills sites were utilized as a residential base camps during the Middle Archaic period (Gunn and Wilson 1993). Geoarchaeological investigations determined that Copperhead Hollow itself was an active sand dune during the mid-Holocene, when, according to Gunn, the uplands were desiccated from global warming. Whereas the effects of mid-Holocene warming on Sandhills vegetation has usually been viewed as the limiting factor to prolonged or intensive use, Gunn argues that the open habitat of upland margins would have been attractive to game species and thus human settlement.

In addition, Gunn compares the utilization of Sandhills sites across the Carolinas to seek variation that may relate to phyisographic and seasonal differences. He hypothesizes that during the mid-Holocene, rivers that originated in the Ridge and Valley province would have been preferred for warm-season settlement over Piedmont-originating rivers because the latter would have been sediment choked and swampy in summer due to upland erosion. Sites along the upland margins of Piedmont rivers, such as the Lynches River where Copperhead Hollow lies, would have been preferred for fall and winter occupation to take advantage of the improved game habitat in the open, savanna-like sandhills. As Gunn notes (Gunn and Wilson 1993:171), the data are too sparse to test this "two rivers" hypothesis, but it indeed is an interesting proposition framed at an appropriate scale of analysis and worthy of further investigation. Further work in the Sandhills of Georgia could be directed to this other related issues.

Middle Coastal Plain Floodplain Swamp Model

James Stoltman's work at Groton Plantation (1974) in Allendale County was among the earliest efforts to examine settlement pattern for the interior Coastal Plain. As part of his 1964 dissertation work, Stoltman conducted extensive testing at the Rabbit Mount site (38AL15), a Stallings shell midden site yielding the earliest dates ever for fiber-tempered pottery (Stoltman 1966). He also conducted survey of bluffs along the margin of the floodplain to locate 19 nonshell sites. Based on the area-wide distribution of Stallings pottery, Stoltman concluded that Late Archaic populations focused most of their activity on floodplain locations, particularly swamps with seasonally flooded backwater sloughs.

Because Stoltman's observations about site distribution centered on pottery, he may have underestimated upland site use. Certainly, several of his upland sites contained Late

Archaic lithic tools, although these tended to be from assemblages with limited diversity (Stoltman 1974:224), supporting the idea that they formed from the limited activities of individuals occupying floodplain sites.

Stoltman considered the Late Archaic populations of his study area to be relatively sedentary (Stoltman 1974:208), though this was based more on inference about the productivity of floodplain habitat than on hard evidence. Additional surveys of Groton Plantation by Drexel Peterson (1971), and more recently by Chester DePratter (personal communication, 1994) have tended to duplicate Stoltman's data. Better evidence for upland use of the area by Middle Archaic populations may be seen in DePratter's work, but again very few artifacts indicative of Late Archaic occupations are found at upland sites compared to floodplain sites. DePratter is quick to note, however, that the Groton uplands have been thoroughly inspected by private collectors who would tend to retrieve diagnostic artifacts such as projectile points.

Aside from the mid-1960s work at Rabbit Mount, few other middle Coastal Plain sites were tested before the 1980s. The major exception in Georgia was the Theriault site on Brier Creek (Brockington 1971), although given the emphasis on lithic raw material procurement and reduction at this site, we have little other than lithic debitage and bifaces on which to base judgments of site function. Other early work in South Carolina contributed better data for modeling settlement. Located on a low ridge overlooking a swamp of the Edisto River, the Cal Smoak site (38BM4) yielded enough assemblage diversity to suggest it was a seasonally reoccupied habitation site, possibly focused on the hunting of white-tailed deer (Anderson et al. 1979:92). Drawing from other evidence from nearby sites, Anderson and colleagues constructed a tentative settlement model. They suggested that during the Early and Middle Archaic periods, sites tended to be located along swamp margins, particularly on terraces overlooking floodplains. Although small sites were located in the hinterland, in general, artifact density dropped with distance from swamp edge (Anderson et al. 1979:92), indicating limited use of interriverine habitats. The higher diversity and density of the Late Archaic assemblage at Cal Smoak suggested that populations of the Stallings and Thom's Creek phases occupied swamp edge sites for longer periods of time, perhaps experiencing a higher level of residence stability over previous periods (Anderson et al. 1979:92-93). Several researchers have linked the expanded use of bottomland resources in the Late Archaic period to inferred wetter conditions of the late mid-Holocene (Brooks and Hanson 1987; Hanson 1982). Consequent with rising sea level, increased moisture contributed to higher water tables after 5000 B.P. across the Lower and then Middle Coastal Plain, leading in many places to the formation of expansive swamps and backwater habitat.

Since 1980 surveys and excavations at middle Coastal Plain locales have largely confirmed the reliability of the floodplain swamp model for predicting locations of sizable, multicomponent archaeological sites. Two caveats to the model should be noted, however. First, fluvial systems in unconsolidated, low-gradient sand plains are highly dynamic, and some early to mid-Holocene channels are now in-filled and effectively removed from active flooding. Such features are not always easy to detect, so survey efforts can benefit from collaboration with geomorphologists experienced in Coastal Plain fluvial systems. Second, evidence is mounting that Carolina bays in interfluvial areas of the Coastal Plain were well-watered during the mid- to late Holocene (Brooks et al. n.d.). These features are not now routinely checked for sites, and they could prove to contain some of the richest Middle and Late Archaic assemblages in the province. The Albert Love site in Allendale County, South Carolina is a case in point (Trinkley 1974). Relatedly, the body of survey data accumulated by Frankie Snow, Chris Trowel, and others in south Georgia suggests that a variety of water sources aside from rivers and riverine swamps attracted the attentions of Late Archaic populations.

Sedentism at Freshwater Shell-Midden Sites

Archaic period freshwater shell-midden sites have limited spatial and temporal occurrence in Georgia: they are located in only the Savannah River and Ogeechee River valleys and date to a period of about 4500-3000 B.P. Many such sites are found in the Fall Zone area of the middle Savannah River, from the dam at Lake Thurmond (location of now-submerged Lake Spring site [Elliott 1993; Miller 1949]) to the upper Coastal Plain downriver from Augusta, Georgia. These sites include massive accumulations of shellfish at Stallings Island (9CB1) and Lake Spring (9CB162), smaller middens at sites such as Kiokee Creek (9CB25; Elliott 1993) and Victor Mills (9CB138; Sassaman, unpublished data), and sites with shell-filled pits such as Uchee Creek (9CB15; Smith 1974) and Mims Point (Elliott 1983, 1984; Sassaman 1993b). Shell-midden sites of varying size also occur in middle and lower Coastal Plain locations along the Savannah River (e.g., Stoltman 1974; Waring 1968a), including along Brier Creek, and at numerous locations along the Ogeechee River.

Early investigative emphasis on large shell middens contributed to the idea that Late Archaic populations in the Savannah River valley were relatively sedentary (Caldwell 1958; Claflin 1931). In recent years, mounting data on interriverine sites has served to overturn this notion. The recent trend has been to view large shell-midden sites as points of aggregation for local populations. Data on the seasonality of such events are lacking from freshwater contexts, although we presume that occupation of the floodplain sites could not have occurred during especially rainy times, such as the late winter and early spring. A pattern of aggregation and dispersal is implicated in many discussion of Late Archaic settlement, with late spring-summer riverine aggregation followed by fall and winter upland dispersal (Sassaman et al. 1990; White 1982).

Interior Lower Coastal Plain Models

Models of prehistoric utilization of the interior lower Coastal Plain are relatively young but have undergone substantial revision in a short period of time. Milanich (1971, 1972) was among the first to offer a formal model of settlement. Developed for the Middle Woodland Deptford culture, but applied more widely to earlier populations, the model posits seasonal transhumance between the coast and the interior lower Coastal plain. Not long after Milanich issued this model, investigations in South Carolina's Lowcountry began to yield anomalous data. For instance, in his study of the Palm Tree site in Berkeley County, Widmer (1976) noted that an apparent decrease occurred in the intensity of site use between the Late Archaic and Woodland periods, which he attributed to an adaptive shift. Widmer examined Late Archaic site distribution in the entire Cooper River drainage to formulate a model in which two discrete adaptive systems existed, one on the coast, the other in the interior. The coastal adaptation, Widmer argued, was sedentary, whereas the interior groups were semi-nomadic, moving up and down Lowcountry rivers in a seasonal manner. Evidence to support this model are not all that strong, but we should note that in Florida, where data on the seasonality of coastal settlements are well developed (e.g., Russo n.d.a), sedentary coastal adaptations appear to extend as far back as the sixth millennium. These data have forced a reevaluation of the coastal transhumance model for Florida (Milanich 1994), and there is no reason to consider Georgia and South Carolina circumstances to be any different.

Other work in the Interior Lower Coastal Plain of South Carolina served to document both patterns of aboriginal settlement over time and environmental variables useful for predicting the location of sites. Survey of the Amoco Chemical Plant by Brooks and Scurry (1978) encompassed roughly 2000 acres along Grove Creek in Berkeley

County. The survey tract was divided into 200 x 200-m blocks and then stratified by soil type. The distribution of 49 sites in the strata clearly showed that "sites of all periods were much more likely to be found in the relatively restricted areas of well drained soils" (Brooks and Scurry 1978:xi). Although many archaeologists working in the Lowcountry had made this observation before, Brooks and Scurry were the first to demonstrate it empirically by testing poorly-drained, as well as well-drained areas. Their model has since become standard for evaluating the potential for archaeological sites in Lowcountry project areas.

A technological organizational approach to the study of adaptive change is seen in the work of Anderson and colleagues (1982) at the Mattassee Lake sites on the margin of the Santee River Swamp. The sites (38BK226 and 38BK229) contained evidence of occupations dating from the Early Archaic period. Site 38BK229 yielded evidence for quarrying nearby orthoquartzite outcrops during the terminal Late Archaic period. Over 97 percent of the lithic assemblage in this component consisted of orthoquartzite. Anderson et al. (1982) suggested that such activity specialization was the work of a temporary task group, one belonging to a larger settlement system, perhaps based somewhere in the Coastal Sea Islands. In contrast, the assemblage from the nearby site 38BK226 included a wider variety of lithic tools, both expedient and curated, and a greater diversity of raw materials, including rock from Piedmont sources. This evidence suggested that two Late Archaic populations—one from the coast, one from the interior—utilized the Mattassee Lake area. Accordingly, use of the area by the coastal population consisted of short visits by specialized work parties, while the other population maintained a seasonal round of settlement moves along Coastal Plain rivers. These expectations parallel those of Widmer described above.

COASTAL MODELS

Information on coastal settlement during the Archaic Period is limited to data from Late Archaic sites. Shell middens and shell rings have received nearly all the attention in coastal studies, but nonshell sites are gaining recognition as an important Late Archaic site type. Numerous models have been proposed to explain the functional relationships among shell middens, shell rings, and nonshell sites, and debate on the subject continues in earnest. In the section that follows we review some of the more established models of settlement-subsistence and then follow this with a section on recent developments. Our review includes studies and data from the South Carolina coast that have been particularly influential in formulating models of coastal settlement.

Late Archaic Coastal Settlement-Subsistence

Waring (1968c:253) identified three types of sites along the Georgia-Carolina coast: (1) scattered occupations along marsh edges and bluffs, (2) marsh middens, and (3) shell rings. His "scattered occupations" apparently included nonshell sites which have yet to be adequately documented. The marsh middens are interpreted as "primary fishing stations from which weirs were tended and where oysters were opened" for transport back to dwellings (Waring 1968c:253). The location of dwellings is not specified, but presumably these were adjacent-to-marsh shell middens. Waring describes shell rings as communal centers, but is unable to provide any detail about the sorts of activity that may have occurred there.

Michie (1979) offered a similar typology of coastal sites, drawing a functional distinction between amorphous shell middens and rings on the basis of assemblage content. He argued that amorphous shell middens such as Bilbo, Daws Island, Venning Creek and Bass Pond represent base camps located in estuarine habitat which afforded access to both marine and terrestrial habitats. Assemblages from these sites are described as the most diverse of coastal sites, particularly in regard to the lithic inventory, a large portion of which is believed to be employed in the manufacture of bone and antler tools (Michie 1979:93-95). Associated with each of these sites are shell rings. The assemblages of shell rings, Michie argued, are less diverse than base camps, suggesting a more restricted function. Similar to Waring, Michie proposed that shell rings served communal functions, perhaps as ceremonial centers. Marrinan (1975:95) also assigned social significance to shell ring sites, though she did not specify the relationship of rings to other types of sites.

Based primarily on his excavations at Stratton Place and Lighthouse Point in South Carolina Trinkley (1980a:31-312) posited an alternative to Michie's model. Trinkley's primary objections to Michie's model are that shell rings contain unequivocal evidence for intensive habitation, they are located to take full advantage of both terrestrial and aquatic resources, and that the "artifact assemblage from the postulated 'base camps' is no different from that found at shell rings" (Trinkley 1980a:312). On the first two counts, Trinkley's evidence is compelling (see below), but the assemblage argument is weakened because quantitative comparisons of "base camps" and shell ring assemblages are not provided.

One of the more valuable results of Trinkley's research on shell rings is his documentation of intrasite patterning. Trinkley found that shell ring sites consist of four distinct activity areas: (1) exterior edge of ring, (2) shell midden, (3) interior edge of ring, and (4) interior of ring (Trinkley 1985:108). The exterior edge of the ring represents the zone of refuse accumulation, where refuse was deposited over the edge of the ring causing the deposit to gradually accrete outward. The occurrence of pottery and shell refuse quickly drops away from the ring, with virtually no evidence of aboriginal activity 50 to 100 feet away. Trinkley located no evidence for habitation on the exterior perimeter of the ring. Ring middens themselves consist of adjacent primary house middens deposited in a circle and gradually accumulating to form a contiguous ring of varying height and width. Large shellfish steaming pits are located under the midden, and to some extent, midden accumulation resulted from repeated episodes of pit construction, use and abandonment. Post holes are also present under the ring midden and are suspected to be present throughout the midden, though no clear structures are identified. Along the interior edge of the ring midden, pits containing hardened ash, burnt shell and fish bone are common. Because of the completeness of wood combustion, these features were interpreted as roasting pits or hearths (Trinkley 1980a:186). Evidence for habitation was not observed, though this portion of the ring appears to have been an important food preparation activity area. Ring interiors themselves contain very few artifacts or features, suggesting limited activity. This is supported by low levels of certain soil chemicals in ring interiors (Trinkley 1980a, 1985:116-117). Trinkley suggested (1985:117-118) that interiors served as areas of communal activities which presumably did not yield much primary refuse. He further speculates that the circular nature of the rings can be related to the egalitarian nature of the resident populations, "where a circular clustering of habitations would promote communication and social interaction" (1985:118).

Subsistence data from Lighthouse Point indicate that the shell ring there was occupied year-round (Trinkley 1980a:175). Trinkley (1980a:306) estimated that the site could represent the remains of a band of 20 adults living year-round at the site for 20-30 years, or 30 adults for 13-20 years.

In contrast to Trinkley's characterization of shell ring settlement, some evidence from the Georgia coast suggests that more complex patterns might have existed. For instance, testing outside of shell rings on Sapelo Island yielded evidence for Archaic period midden (Simpkins 1975; Simpkins and McMichael 1976). Simpkins and McMichael suggested that occupation outside of the ring indicates "more complex social organization than the egalitarian nature commonly attributed to pure hunting/gathering cultures" (1976:99). Further evidence to support this has not been amassed.

DePratter (1979a:28-31) examined the distribution of coastal Late Archaic sites with respect to geological formations of the Georgia coast. He divides sites into three categories: (1) shell rings, (2) simple middens, and (3) surface scatters. He concludes that mainland sites are small and scattered, excepting those located on the Savannah River (e.g., Bilbo). Shell rings and middens with fiber-tempered pottery are concentrated on late Pleistocene (Silver Bluff formation) islands. Importantly, sites tend to be located at island margins overlooking the most extensive marshes: on the east side in the cases of Wilmington and Skidaway Islands, and on the west side in the case of more southerly islands. Only three small midden sites were located on the seaward Holocene islands, perhaps, as DePratter states (1979a:31), because only a small segment of these islands was available for occupation.

Noting that all of the Georgia shell middens and rings contained roughly similar artifact and faunal assemblages, DePratter argues that coastal populations "practiced a concentrated pattern of settlement" (1979a:35). In other words, settlements were relatively permanent, with nearly all activities taking place at a single location. DePratter implies that several sedentary communities coexisted along the Georgia coast by suggesting that site selection was to some extent influenced by the location of neighbors. However, the size of individual communities is estimated to be small. He suggests that only a few structures could have fit on the average shell midden, so he concludes that shell middens and rings were occupied by small bands consisting of two to six families. Nonshell scatters are dismissed as limited occupations in marginal areas, so the total population of the Georgia coast is argued to have been small at any given time (DePratter 1979a:37-38).

As the review to this point shows, most writers agree that shell rings formed through the accumulation of individual household middens (see also Waring and Larson 1968:273) with emphasis on the secular aspects of ring occupations. Not enough attention has been given to the social and ceremonial significance of shell rings. For instance, nearly all shell rings and other shell middens on the coast have yielded human skeletal remains (see listing by Trinkley 1980a:322), albeit usually small fragmentary remains. These are sometimes recovered from basal shell strata that lack artifacts or food remains other than shell. Perhaps shell was accumulated at certain sites for the purpose of human interment, a hypothesis proposed by Claassen (1991, n.d.) to account for Shell Mound Archaic sites across eastern North America. A function such as this does not preclude habitation, but rather offers an alternative or supplemental explanation for why rings and large amorphous midden sites were revisited and/or occupied for long periods of time.

This brings to the fore the significance of shellfish to the subsistence of Late Archaic populations. This problem has long attracted attention among Southeastern archaeologists, with opinions ranging from shellfish being central to the subsistence economy (Caldwell 1958), to it being merely a supplement (Parmalee and Klippel 1974), to nonsubsistence or indirect subsistence (e.g. fish bait) alternatives (Claassen 1991). The relative contribution of shellfish to Late Archaic diets on the south Atlantic coast remains unknown. However, we can probably conclude that shellfish were not collected throughout the year on the coast. Claassen (1986) indicates that with minor exceptions, Atlantic shellfish were collected from the late fall to spring, a period coinciding with the fastest rate of growth among oysters. This is the time when carbohydrates peak in oysters, but protein is low. Conversely, protein is maximized during periods of slow growth (i.e., summer). Thus, shellfish exploitation on the coast may have had to be complemented by other sources of protein. From his study of shell from a Thom's Creek midden at Bass

Pond, South Carolina, Lawrence (1993) concludes that oysters were collected during the spring or early summer. This evidence may complement shellfish seasonality from other sites, but we note that vertebrate faunal remains from Bass Pond point to fall and/or early winter occupation (Wilson 1993).

Coastal shell middens and rings do indeed contain the remains of foods other than shellfish as various projects by Trinkley have demonstrated. At Lighthouse Point, for example, deer, raccoon, turtle, duck and turkey were important terrestrial resources (Trinkley 1980a:236-245, 300-305). Fish remains consisting chiefly of sea catfish, mullet, and black drum could not be quantified, but they appear to have been very important. Other species represented by more than one individual include opossum, rabbit, gray squirrel, mink, mud turtle, cooters and sliders, and snapping turtle. The ranked importance of species on the basis of potential kilocalories is deer, fish, birds (primarily turkey), raccoon and turtle. On the basis of kilocalories per unit excavated, deer comprise 40-50 percent, shellfish 32-39 percent, small game 12-15 percent, and birds, turtle and fish combined 6 percent of total caloric yield. Trinkley suspects that fish are underrepresented (1980a:305), and postulates that they could have been as important as shellfish. Marrinan's (1975:101) analysis of the Cannon's Point faunal assemblage shows fish (menhaden, marine catfish, drum and mullet) and crustaceans were more important than mollusks. Mammals in the Cannon's Point assemblage represent more meat by weight compared to fish and crustaceans, but the number of individual mammals was small (Marrinan 1975:77). At Bass Pond, deer was the focus of subsistence, with relatively few other species, terrestrial or aquatic, represented in appreciable frequencies (Wilson 1993). Obviously, a considerable amount of variation is apparent in coastal subsistence records.

Sites lacking substantial shellfish remains on the coast suffer from poor preservation, so they have limited potential for supplementing subsistence information from shell midden sites. For example, shellfish at Fish Haul were not abundant, being restricted to pit features. Due to the favorable preservation of these features, the 178.2 kg of shellfish recovered (most from one feature) yielded a biomass estimate (21.1 kg) which exceeded all other resources combined. The non-shellfish remains at Fish Haul were dominated by mammals (deer, raccoon, rabbit, fox squirrel), followed in terms of biomass by fish (drum, sheephead), aquatic reptiles (diamondback terrapin), birds (turkey, loon and duck) and snakes (Rattlesnake, Copperhead/Moccassin, Mudsnake) (Wilson and Wilson 1986:292). Calculations of MNI, diversity and equitability suggest that while few species account for the bulk of biomass, primarily deer, terrapin and drum, a diffuse pattern of procurement is evident (Wilson and Wilson 1986:295).

The only plant food remain found with any regularly at coastal sites is hickory nutshell (Trinkley 1976, 1986, 1993). Acorn has also been observed at a lower frequency than hickory at some sites (Marrinan 1975:94; Trinkley 1976; cf. Waring and Larson 1968:267, who placed greater emphasis on acorn). Hawthorne seeds are reported at Fish Haul (Trinkley 1986:318), and hackberry was found at Canon's Point (Marrinan 1975:94). Trinkley (1986:319, 1993:203) suggests that the ubiquity of hickory at Fish Haul and Bass Pond indicates that this resource was a major food source. A fall-winter occupation is implied, though storage of the resource is possible.

INTERPROVINCIAL MODELS

Models that crosscut physiographic boundaries to take into account large-scale population movements or forms of integration and interaction revolve primarily around regional distributions of material culture. Such databases include distributional data on particular classes of material culture, raw material, and stylistic elements. Unfortunately, Georgia researchers have not even begun to develop the sorts of databases available in

South Carolina, such as the raw material and biface data amassed by Tommy Charles. As we show below, these data have been used to great effect in modeling Archaic period mobility range in South Carolina.

Early Archaic Settlement

The Anderson and Hanson (1988) model of Early Archaic settlement that we partly reviewed in a section above was built from a combination of empirical observations and theoretical assumptions. Among the more relevant observations supporting the idea that Early Archaic bands traversed the entire length of the Savannah River valley in an annual round was the occurrence of lithic raw materials hundreds of kilometers from source areas. Quantitative distributions of raw materials in the Early Archaic biface samples recorded by Charles showed that an appreciable proportion of Coastal Plain chert was delivered into the Piedmont province, and that Piedmont materials were often delivered into the Coastal Plain. The shapes of these raw material distributions suggests that the movement of materials was gradual and continuous, implying either down-the-line exchange or settlement mobility. The latter interpretation is supported by Anderson and Hanson in a chain of logical arguments that implicate seasonality, demographic constraints, and socioeconomic demands.

The import of the larger, regional-scale elements of Anderson and Hanson's model for work in the Georgia Coastal Plain are twofold. First, Coastal Plain sites ought to contain material evidence for use of Piedmont sites along river valleys that crosscut these provinces. Researchers should attempt to not only locate these elements in Coastal Plain assemblages, but to also consider the condition and context of such evidence as a test of the model. For instance, tools made from Piedmont raw materials ought to show advanced levels of edge attrition and maintenance compared to tools from local sources. Moreover, the frequency and especially size of flakes from Piedmont-derived tools will prove invaluable in determining the tool's condition when it arrived at a Coastal Plain site. By assembling site-level data sets on such observations, we will someday be in a much better position to evaluate the nuances of Anderson and Hanson's model as it applies to group mobility and raw material procurement.

The second area of import of the model for Coastal Plain research has to do with the relationship of bands in adjacent drainages. Anderson and Hanson view large drainages as the defining limits of Early Archaic "territory," implying that some level of social differentiation might be expected among drainage-based populations. If this is true, we might be able to detect some morphological variation of lithic tools among drainages. This is an issue that has yet to receive even casual inspection, although the implications are clear and the data are available.

Moving now into some of the alternatives to the Anderson and Hanson model, we begin with a model developed by Lisa O'Steen (1983) for Early Archaic assemblages in the Wallace Reservoir of the Georgia Piedmont. Her outlook on Early Archaic settlement is much different than that espoused by Anderson and Hanson, for O'Steen posits much reduced levels of settlement mobility. In particular, the shoals habitat of the Piedmont Oconee River are believed to have been favored resource targets, sufficiently bountiful to support Early Archaic bands for extended periods of time. The nonlocal raw materials that occur at such sites are considered by O'Steen to have been delivered through exchange, not settlement mobility. Her model does not rule out aggregation among geographically-dispersed bands, but it does imply a much smaller range of annual band mobility than does the Anderson and Hanson model. In fact, the model implies that Coastal Plain and Piedmont groups were socially distinct, albeit interacting, components of the regional population.

A similar emphasis on key, point resources is offered in a recent model of Early Archaic settlement developed by Daniel (1994) in his reanalysis of the Hardaway site. Daniel's emphasis is on sources of high-grade lithic raw material, in particular the Uwharrie rhyolites in the vicinity of Hardaway. Because of the importance of such materials to Early Archaic technology, Daniel makes the case that groups centered their activities and movements around quarry sites. He posits two major band ranges in the South Atlantic Slope: a Uwharrie range centered on the rhyolite quarries, and an Allendale range centered on the major sources of marine chert in Coastal Plain South Carolina and Georgia. Interaction between these two major bands occurred, according to Daniel, in the intervening Piedmont and Coastal Plain areas between the ranges. Thus, raw materials from these respective ranges moved as much, if not more, *across* drainages as they did up and down drainages.

Data to evaluate these various alternatives are sorely needed. Again, the implications are clear and potential observations exist at both the site-specific and intersite levels of analysis. To date, few such data have been developed for Georgia. The South Carolina analyses of biface and raw material distributions conducted by Sassaman and others (Sassaman 1992; Sassaman et al. 1988; Tippett 1992) have tended to support the Anderson and Hanson model, although we quickly note that these same data can be interpreted in a variety of ways (e.g., Daniel 1994), and independent data are not yet available. Also, we stress again that none of the models reviewed here were intended to explain the Early Archaic of the Gulf Coastal Plain. In this area the level of analysis and model-building has lagged behind, so there is much room for new studies and new insight.

We close this section with some preliminary comments concerning the record of Early Archaic settlement in the Big Bend of the Ocmulgee River. Snow's ongoing efforts to record and collect sites across this area continues to build an impressive database on Early Archaic sites. Many such sites contain large, dense assemblages of flakes and tools made from Coastal Plain chert, yet there are no local sources of this material. Apparently, Early Archaic groups supported repeated, if not relatively permanent use of the Big Bend area by importing large quantities of chert. That these groups targeted the Big Bend area for reasons other than chert suggests that Daniel's model cannot be extrapolated across the greater Southeast. Unfortunately, this same observation tells us nothing about the relevance of either Anderson and Hanson's or O'Steen's models to the Big Bend record. We simply have no knowledge on whether chert was delivered to relatively settled residents through exchange or brought in routinely though seasonal mobility. Some basic distributional data on bifaces and raw materials may be informative in this regard.

Edgefield Scrapers and Early Archaic Settlement

A different perspective on Early Archaic settlement is made possible by distributional studies of specialized lithic tools. As we noted in Chapter 3, the Edgefield scraper is a heavy-duty woodworking tool believed to date to the earliest centuries of the Early Archaic period. The distinctive south Coastal Plain distribution of this tool form, as documented by Goodyear and colleagues (1980), would seem to suggest that Coastal Plain groups were distinct from Piedmont groups. Alternatively, this specialized tool may have served only seasonal needs for groups moving up and down major drainages on an annual basis (Goodyear et al. 1980). In South Carolina quartz side-notched bifaces are not uncommon in Coastal Plain assemblages, supporting the inference of valleywide movement. However, few Coastal Plain chert examples are among the side-notched points of the Piedmont. In contrast, the subsequent (Kirk) corner-notched horizon assemblages in the Piedmont contain appreciable numbers of Coastal Plain chert specimens.

A somewhat different pattern holds for portions of the Georgia Piedmont. Side-notched points referred to as Big Sandy by O'Steen (1983) comprise a sizable fraction of Early Archaic bifaces in the Oconee Valley. Most are made from local materials, including a Piedmont variety of chert (Ledbetter et al. 1981), yet some are made on Coastal Plain cherts. In these same assemblages are examples of Coastal Plain chert Edgefield scrapers (O'Steen et al. 1986:13). Such occurrences suggest that Edgefield scrapers are chert-dependent, that is, made and used only in the context of abundant cryptocrystalline raw material. The data also support the notion that bands using Edgefield scrapers moved up and down Piedmont-draining rivers, as indicated in the Anderson and Hanson model. We hasten to add, however, that this pattern does not hold for the Piedmont-draining rivers of central South Carolina, so, as Daniel (1994) indicates, the local distribution of raw materials is a potential overriding factor in the distribution of specialized activities and settlement choice. Better bridging arguments that explicitly link raw material procurement, task organization, and settlement mobility are sorely needed.

Middle Archaic Mobility Reduction and Demographic Division

The same data sets used to build and test inferences about Early Archaic settlement mobility have been used to examine changes in mobility range over time. The distribution of Middle Archaic hafted bifaces in the Savannah River valley reveals a reduction in the displacement of province-specific raw materials (Sassaman and Anderson 1994; Sassaman et al. 1988). Many researchers have made similar observations with site-level and subregional survey samples across the greater Southeast. The evidence suggest that Middle Archaic band ranges began to shrink after about 8000 B.P. to encompass only portions of major physiographic zones. In Georgia and South Carolina, a distinctive Piedmont orientation is evident in the abundance of sites containing quartz Morrow Mountain points. This contrasts sharply with the limited evidence for utilization of the Coastal Plain we discussed in a section above. Implied here is a split in regional population between the two provinces. The resultant Piedmont population is relatively well understood from an archaeological point of view. Sites are numerous, small, lacking assemblage diversity, and with no obvious locational biases (Sassaman 1983). The pattern fits the forager model developed by Binford (1980) to explain an archaeological record of limited intersite functional variability. Thus, even though the apparent trend is for reduced settlement range, higher levels of residential mobility over the Early Archaic period (at least during the cold-weather months) are suggested. Coupled with this are reduced levels of tool specialization and curation, and a nearly total reliance on local raw materials.

Many archaeologists appear to be comfortable with this forager scenario for the Piedmont Middle Archaic. No one, however, has a good handle on the Coastal Plain situation during the first two millennia of the period. As we discussed earlier, much of the Coastal Plain may have been abandoned between 8000 and 6000 B.P. Alternatively, we may simply have little knowledge about local manifestations, including possible coastal populations. In any event, by about 6000 B.P. the Coastal Plain trend is towards the floodplain swamp adaptations that characterize the early centuries of the Late Archaic period (see section above).

Mid-Holocene Cultural Diversity

Divergence in Middle Archaic patterns at the subregional level are paralleled in macroregional developments. Explanations for the diversity of Middle Archaic societies in the Southeast generally involve ecological variables. For instance, the riverine orientation of certain Midsouth populations can be viewed as an adaptation to increasingly productive floodplain habitats (e.g. Brown and Vierra 1983; Styles 1986). In contrast, the unspecialized, highly mobile societies of the Georgia-Carolina Piedmont can be seen as adaptation to fine-grained resource structure involving no marked differences between riverine and interriverine habitats (Cable 1982b; Sassaman 1983).

Alternative explanations implicating social and political histories have been inspired by recent debates concerning the ethnographic validity of certain hunter-gatherer features. Specifically, research into the history of Kalahari San groups shows instances of contact with food producing societies as early as the Iron Age (Denbow and Wilmsen 1984; Wilmsen 1989). Some have suggested that efforts to resist economic or political domination include features that we have come to equate with an ecological adaptation to marginal environments, namely, high levels of mobility, flexible social networks, and immediate return economies (Pederson and Waehle 1988; Woodburn 1988; cf. Lee 1988, 1992; Solway and Lee 1990 for a counter discussion). If these essential forager attributes are indeed encouraged, if not created, through histories of contacts with more powerful societies, then what are we to make of similar adaptations documented for the prehistoric past, such as the mid-Holocene societies of the Georgia-Carolina Piedmont?

One distinct possibility is that mid-Holocene foragers arose out of resistance to the increasing economic and sociopolitical pressures of river-based groups in the Midwest and Midsouth (Sassaman 1995). Considering the level of occupational intensity evident in the Middle Archaic archaeological record of the Tennessee River valley, we can imagine that life had its costs. Skeletons from graves at Midsouth sites include many examples of violent death. Nonsubsistence production and exchange networks that emerged at this time may have either offset or fueled conflict, but either way they placed demands on local production. Ceremonialism and ritual to mask any inequities and contradictions had costs too, especially if they involved group feasting. These and other machinations of life on Midsouth rivers no doubt encouraged certain people to opt out. Fissioning from Midsouth locales may have taken any number of forms, but most relevant to this discussion are any population movements eastward into the Appalachians and Piedmont provinces. The Morrow Mountain tradition in the Georgia-Carolina Piedmont may represent one such outcome. Joffre Coe suspected long ago that Morrow Mountain populations in the east had origins in the west. His speculation was based on pan-regional similarities in point form. The argument advanced here is that although histories of contact and interaction may be manifested in stylistic similarities, as Coe noted, they can just as well create cultural divergence. No one would argue that Morrow Mountain adaptations to the riverine environments of the Midsouth are identical to those of the Georgia-Carolina Piedmont. And while environmental differences between the two areas may be the first place to look for explanation, it is hard to ignore the fact that Morrow Mountain populations in Georgia-Carolina did not intensively exploit riverine habitat; minimally, they never opted to collect and mound shellfish at riverine sites.

The process of economic intensification and fissioning apparently continued in the Midsouth well into the sixth millennium B.P. The hypothesis described in Chapter 3 for the relocation of Benton phase groups from the Middle Tennessee River valley is one possible expression of this ongoing process. In this case, the process may not have been driven by resistance as much as expansion, for the changes initiated in the Savannah River valley at this time were a marked departure from the organizational pose of indigenous Morrow Mountain groups. Within Georgia and South Carolina, however, the beginnings of shellfishing, river-centric settlement, and more intensive social life set off a local process of cultural diversification with neighboring groups diverging into distinct lifeways and cultural traditions. The variation in Late Archaic cooking technology described in an earlier section of this chapter is one expression of this process.

Late Archaic Cooking Technology

Interprovincial differences in the use of alternative cooking technology during the Late Archaic period was the subject of a recent study (Sassaman 1993c). As we outlined earlier in our discussion of typology, Late Archaic pottery was made and used on the coast and in the lower Savannah River valley long before it was used elsewhere. Reasons for the early use of pottery have usually centered on economic factors, specifically the presumed intensification of increasingly sedentary populations (e.g., Brown 1989; Goodyear 1988). There were no explicit reasons why pottery was not adopted elsewhere at an earlier date, only the vague notion that economic conditions elsewhere did not encourage such innovation.

To investigate the problem of pottery's slow acceptance in the Savannah River valley, technofunctional data on pottery and its nonceramic counterparts were collected from over 20 sites. Also collected were data on perforated soapstone cooking slabs. Taking into consideration the advanced level of conservation and recycling of soapstone slabs at locations distant from sources, a distributional analysis showed relatively high frequencies of slabs at middle Coastal Plain shell-midden sites. Inferred from this was a pattern of directed exchange between groups in lower Piedmont source areas and the Coastal Plain. These Coastal Plain sites contained assemblages of predominately plain fiber-tempered pottery. Technofunctional analyses indicated the vessels were flat-bottomed basins suited for indirect-heat cooking (i.e., stone boiling). Coastal assemblages dating a few centuries later (post-4200 B.P.) included vessels with properties conducive to direct-heat cooking, such as thinner vessel walls and a lower orifice to volume ratio. A high incidence of soot on these vessels confirmed this functional inference. It was this sort of pottery that was eventually adopted for use in the middle Savannah River valley at about 3700 B.P., but there is little evidence that these were routinely used over fire. Instead, a technique of indirect-heat cooking with soapstone slabs appears to have persisted for a few centuries. Only after 3000 B.P. was pottery widely used across the region.

In explaining these patterns in the Savannah River valley, the role of soapstone exchange in creating social alliance was apparently a critical factor. Individuals with direct access to soapstone were in a position to create and maintain a variety of trading partners in the time before pottery appeared. A tradition of alliance making based in soapstone would have inhibited any innovation with the potential to undermine the status quo. Individuals in nonsource areas also stood to gain from the perpetuation of alliances, but because the benefits of alliances may not have been equitably distributed, incentives for innovation may have risen. Alternatively, the effort to participate in alliances may have fueled a process of economic intensification in nonsource areas that encouraged the development of innovations. That the first pottery was in fact designed for use as stone-boiling containers underscores the strength of the soapstone tradition. When innovations were developed for direct-heat cooking, they were slow to be accepted among individuals with direct access to soapstone. It was not until the consolidated alliances in the middle Savannah River valley collapsed after 3500 B.P. that the innovations of direct-heat cooking were more widely accepted. Initial acceptance of such innovations by individuals socially peripheral to soapstone production and exchange may in fact have contributed to the erosion of consolidated alliances.

Many aspects of the forgoing model beg more and better empirical support. Some of its inferences are admittedly weak, but the strength of the model is its emphasis on social process to explain variation in material culture. Important too is the large scale of analysis, one which implicates a wide range of variation in the design and use of alternative cooking technology. Its application can even be expanded to the macroregional scale to explore reasons why pottery was not widely used before 3000 B.P. A preliminary effort in this regard implicates Poverty Point exchange. Production and exchange for the Poverty Point network may have harbored resistance to innovation much in the same way as soapstone exchange did in the Savannah River valley. Although Poverty Point does not appear to have any direct influence on Late Archaic histories in Georgia (Gibson n.d.), potential indirect influences are worthy of future consideration. As an example, some of the soapstone mined in the Atlanta area was apparently exported down the Chattahoochee and Flint rivers into the Gulf Coastal Plain, and ultimately into the Poverty Point heartland of Louisiana. The processes involved in soasptone production and exchange likely had far-reaching consequences on local labor organization, alliances, and perhaps other aspects of social and economic organization.

Late Archaic Ethnic Diversity

Early ceramic vessel technology provides an effective inferential basis for reconstructing and explaining ethnic diversity in Georgia's Late Archaic period. Variation of surface decoration and technology of Late Archaic pottery suggest that at least three traditions coexisted in Georgia. We reviewed in Chapter 3 the typological and chronological aspects of these traditions. The St. Simons wares of the north and central Georgia coast (DePratter 1979b) signify a distinct maritime tradition, one characterized by the use of fiber tempering, punctations, often over incising, and a high incidence of plain pottery. The northern extension of Florida's Orange tradition is found on the extreme southern coast of Georgia (e.g., Adams 1985; Russo 1992). Its emphasis on rectilinear and curvilinear incising on fiber-tempered wares is markedly distinct from the St. Simons wares. Finally, the Stallings fiber-tempered tradition centered on the central Savannah River valley (Sassaman 1993c) and its sand-tempered counterpart, the Thom's Creek tradition of South Carolina (Trinkley 1980a, b), boast a variety of punctated surface decorations, notably the drag and jab designs that occur in only very limited frequency in the St. Simons series and never in the Orange series.

These four series—Stallings, Thom's Creek, Orange, and St. Simons—are relatively well documented and generally accepted by archaeologists as expressions of ethnic or cultural distinction. What has not yet been considered seriously is cultural diversity within these traditions and the processes within and between groups that contributed to such diversity. Instead, there remains a tendency to collapse a great deal of variation into existing series. This is both a problem with systematics, and a symptom of short-sighted research designs.

There exist perhaps no better opportunity for improving our recognition and understanding of Late Archaic ethnic diversity than in Georgia's Coastal Plain pottery. In the province exist numerous large assemblages of Late Archaic wares on the peripheries of established traditions. Most notable in this regard are the rich assemblages from numerous Ogeechee River valley shell middens, and the surprisingly rich assemblages from the Ocmulgee Big Bend area. Added to these are the mysterious pottery of the Satilla series (Snow 1977a), and Norwood-like pottery from the Gulf Coastal Plain. The timing, distribution, and interrelationships of these various "peripheral" elements are issues that will speak volumes about the processes of ethnic differentiation in Georgia. In contemplating these issues researchers should pay close attention to differences in the patterns of technology versus style. For instance, Ogeechee River valley assemblages are virtually identical to Stallings punctated pottery from the middle Savannah River, but they are much different from Stallings technologically in their sandy pastes and extremely thick vessel walls (Sassaman et al. 1995). What type of interaction between these two areas would lead to stylistic, but not technological sharing?

CONCLUSION

Models to organize and explain the data of Georgia's Coastal Plain and coastal Archaic vary from local-scale descriptions of site selection to regional-scale processes of cultural interaction. Small-scale models are generally more empirical than large-scale models. They are empirical because they were built from observation, and thus are somewhat accurate representations of experience. But because they are data-driven, local-scale models are not easily adapted for use elsewhere, nor are they easily extrapolated to higher levels of observation or explanation. The chief value of conceptual approaches to modeling is that it is possible to experiment with all sorts of scales and types of data. Large-scales of observation are especially good for capturing a wide range of variation, and thus forcing observers to explain similarity and difference among phenomena. This is not to say that large-scales of analysis are sufficient or always appropriate. But we do insist that the investigation of a single site or even a feature within a site cannot fully succeed without comparisons at multiple scales, both temporal and spatial. It may sound patronizing to suggest that practitioners of a field of comparative science improve their comparative skills, but there clearly is room for expanding analyses in this direction, and we suggest that large scales of comparison may be especially productive.

CHAPTER VII
RECOMMENDATIONS

Our review of Archaic period archaeology in Georgia's Coastal Plain and Coastal Zone highlights both advances and persistent gaps in our knowledge. Many of the topics discussed in the foregoing chapters point to avenues for continued research. What is not so evident to this point are the steps necessary to implement new research issues, and perhaps more importantly, to ensure the preservation and documentation of archaeological resources so that advances in our understanding of prehistory can continue. This final chapter consists of recommendations for managing and investigating the Archaic period record of Georgia's Coastal Plain and coast. We organize our recommendations by answering in order the questions outlined in Chapter 1 that are guiding the production of all of Georgia's Research Design Papers.

RESEARCH DESIGN QUESTIONS

1. What are the cultural resources and their condition?

Approximately 5,000 archaeological sites with UTM coordinates are recorded in the Georgia state site files for the physiographic districts that comprise the Coastal Plain and Coastal Zone. Another 3,000+ sites comprise the Fall Line Hills inventory. Excluding this latter subsample, the Archaic period sites of the study area account for only a few hundred sites. Early Archaic components occur on 98 sites, Middle Archaic components occur on 63 sites, and Late Archaic components occur on 298 sites. By and large, the Coastal Plain record consists of Early Archaic and Late Archaic sites, while the extant coastal record is almost exclusively Late Archaic in age. Middle Archaic sites remain poorly represented across the study area, and reasons for this diminished record are not altogether clear.

Without an independent means of verifying the extent of professional survey in the study area, we do not know how representative the state site files data are of the actual distribution of sites. Of course, the site files is but a small sample of the actual population of sites, but is it representative of this population? Probably not. Considering that much of the site files consists of records generated from federally-mandated surveys, the sample of sites is biased towards areas that have been developed, and towards landforms protected by multiple layers of environmental regulations (e.g., wetlands). Add to this the bias of archaeologists for focusing efforts in places believed to contain the biggest and best sites, and we clearly have a distorted view of the record.

The site files record includes shell middens (freshwater and coastal), coastal shell rings, quarries, quarry workshops, nonshell riverine and coastal sites, and interfluvial or upland sites. More details about functions of these sites depends on the models one wishes to rely on, some of which we reviewed in the previous chapter.

Information on the condition of these sites is not routinely provided in site files data, although in general we can state that the biggest and most accessible sites are often badly damaged or completely destroyed. The Late Archaic shell middens of the Ogeechee River are among the most severely damaged sites in Coastal Plain Georgia. Many of the shell middens and rings along the coast have suffered from coastal development and erosion. The vast bottomland Archaic sites of south Georgia have witnessed extensive logging and cultivation. Despite all this damage, many elements of the largest Archaic sites may remain intact beneath plow zones, looters' backdirt and graded surfaces, and thus should not be dismissed as insignificant without extensive subsurface testing.

The bulk of the Archaic period record in Coastal Plain and coastal Georgia consists of small scatters of lithic tools and debris. Many such sites are nondiagnostic (i.e., lack diagnostic hafted bifaces or pottery). Others consisting of isolated diagnostic finds are not routinely recorded as "sites." Hence, the majority of the locations containing artifacts of the Archaic period are not recognized as a part of that record. For many resource management and research questions, this conclusion is inconsequential. However, we must remind ourselves periodically that the site-unit level of analysis, one that requires some recognition of the cultural placement of a resource in a typological and chronological framework, is insensitive to the extensive land-use patterns of mobile hunter-gatherers. Data from the small work stations and resource extraction camps that comprise the majority of the record are essential to interpreting the role of larger sites in a regional settlement-subsistence system. The relevance of such sites can only be realized with research designs that transcend the site unit of analysis to include regional-scale reconstructions and modeling. The need to investigate more thoroughly the small "scatters" that make up the record is heightened by the fact that such sites may contain evidence of the minimal social and economic units that comprise Archaic period communities. Such evidence will be obscured at the larger sites because of reoccupation and greater levels of recent disturbance. Many small upland "scatters," for instance, remain virtually intact despite cultivation, due to local blankets of colluvium or wind-blown sand. Georgia archaeologists must continue to locate and test such sites and tie them into the record of larger sites with research designs that link a variety of archaeological manifestation into systems-level observations—even when conceptual components of such systems are absent from the prescribed boundaries of project areas.

2. What are the locations and distribution of these resources?

In Chapter 5 we provided data from the Georgia state site files on the distribution of sites by time period. Here we explore in brief some of the general locational patterns of particular site types.

Beginning with the most conspicuous of Archaic sites, Late Archaic shell middens include both freshwater and saltwater locations. Freshwater midden sites are largely confined to the Savannah River, Brier Creek, and Ogeechee River. There are no definitive correlates for the location of sites within these drainages, nor a straightforward explanation for the lack of such sites elsewhere in the study area. Productive mussels beds were clearly a prerequisite to intensive shellfishing, but apparently never a sufficient cause for this behavior. Instead, larger-scale demographic and cultural influences and constraints serve to explain the distribution of Late Archaic shell middens, not local conditions per se.

Shell rings and a variety of saltwater shellfish midden sites are found throughout the Barrier Island Sequence. The settlement models we described in the previous chapter provide some conceptual guidance about the relationships of these various site types in system terms. In addition, the work of DePratter (1979a) is recommended for gaining greater appreciation for conditions affecting specific site locations: ecological, geological, as well as cultural.

Elsewhere in the Coastal Plain, apart from freshwater shell middens, sites of the Late Archaic period are widely distributed. Early Archaic sites, while not as numerous as those of the Late Archaic period, are likewise widely distributed in the province. There exist no apparent lacunae in the overall distribution of Early and Late Archaic sites. Naturally, the biggest and densest sites are located near sources of permanent water, both linear sources and point sources (see Question 6 below). Level, well-drained soils were no doubt preferred by Archaic inhabitants for long-term or repeated habitation, but we hasten to point out that changes in sea level and hydrology have greatly altered the drainage characteristics of bottomland sites, making it difficult to predict site locations on modern soil qualities alone. Sound paleoenvironmental data are required to make inferences about potential site locations prior to ca. 4000 B.P.

A similar recommendation can be made for upland or interfluvial sites. Too often archaeologist assume that upland landforms lack the sorts of depositional contexts that would cover and preserve archaeological deposits. This simply is not the case. Contexts of colluvial and aeolian deposition have been documented in upland areas of South Carolina's Coastal Plain (e.g., Gunn and Wilson 1993; Sassaman 1993c). Sequences as much as one meter in depth are not unusual in colluvial settings of even gentle topographic relief. The common belief that many such sites have been buried by bioturbation does not hold up to detailed paeloenvironmental scrutiny in many cases. Even those that have cannot be dismissed, for horizontal spatial data may be preserved, and, in any event, such assemblages still have relevance for models of regional organization. In seeking contexts for buried upland sites, researchers are advised to deeply test the toes of ridge slopes, ridge noses, and heads of seep springs. Carolina bays and other upland wetlands are also likely locations for buried deposits. The rims of bays are proving especially productive in this regard (Brooks et al. n.d.)

Sources of knappable stone were especially valued by Early Archaic occupants in the study area, and even later inhabitants made productive use of Georgia's many chert resources. Despite the obvious importance of chert and other stone resources, very little research has been done to identify and characterize the chert quarries and other stone sources in the region. This is quickly apparent when an inventory of chert quarry sites is assembled. Geological data provides us with a general understanding of where quarry sites are expected to occur (Chapter 2), but few of these areas have been systematically surveyed (for exceptions see Goad 1979; Goodyear and Charles 1984). We do know that there are many chert-rich areas in the Coastal Plain, but also broad expanses that have no chert or any knappable stone, such as portions of south Georgia. These empty zones have very important implications for archaeologists monitoring the movement of stone across the landscape and attempting to derive social and economic meaning from these data. Comparisons of assemblages from chert-rich areas with chert-poor zones may allow archaeologists to document relevant social and economic variation. A basic prerequisite for this, however, is a secure understanding of the distribution of stone sources. These data for the Georgia Coastal Plain are presently inadequate. Survey efforts should be designed to identify, characterize, and delineate areas of knappable stone.

3. What was the approximate original density of the resources and how many have been destroyed or disturbed?

This question is an especially difficult one to address because we simply do not have a reliable measure of site distributions and conditions predating the middle part of this century. It stands to reason that the destruction of sites is at least proportional to the level of modern development. Much of Georgia's Coastal Plain and coast is undeveloped, however. Logging, agriculture, and looting have taken their toll in these areas, although locations with some deposition have been potentially spared total destruction.

If we return to our data from Chapter 5 on the density of (diagnostic) Archaic components in well surveyed tracts, values in the range of 0.5 to 1.0 sites per km^2 provide minimum and maximum estimates of site density for the province, excluding the Fall Zone Hills, which would require values exceeding three sites per km^2. Given a total area for the study area (excluding Fall Line Hills) of 73,339 km^2, we arrive at a total inventory ranging from 36,670 to 73,339 sites. That the state site files includes less than one-tenth of one percent of all sites is, to say the least, a sobering thought.

4. What previous investigations have been conducted in the study unit and what are their biases?

Archaeological investigations in Georgia's Coastal Plain have been dominated in recent decades by routine Cultural Resource Management (CRM) surveys and data recovery projects. Large-scale surveys leading to management plans and predictive models have been conducted on Forts Gordon and Benning. Other large-scale surveys lacking long-range management goals have been conducted throughout the province. In general, the level of survey intensity has been adequate, although there no doubt exist some biases in many projects for landforms believed to contain the highest site densities. In one sense this is good, for it results in large inventories of important sites. However, the recurrent neglect toward interfluvial or upland landforms is contributing to a systematic bias in survey records. Recent work at seep springs, Carolina bays, and other upland wetlands is showing that point resources in these nonfluvial regimes were targeted often by Archaic populations for intensive use.

Excavation has not matched the level of survey coverage in the province. This is a symptom of the CRM process, which culls from consideration many sites due to lack of research potential. This is reality, and it is practical; we simply cannot excavate all sites, no matter how significant they may be to systems-level research. Nevertheless, archaeologists should continue to encourage sponsors and regulatory agencies to allow greater levels of subsurface testing at small sites and "scatters" as a means of improving the quality of information to assess site significance, and, more to the point, as a means of "mitigating" adverse effects by sampling an otherwise neglected resource. A simple 1 x 2-m test unit at such sites, located in the most profitable area based on shovel-test results, should provide enough data on raw material, flake size, and use-edges to contribute to regional-scale, systems-level modeling. As it now stands, the multiphase CRM process precludes the possibility of adequately sampling sites. We have for too long been forced to make recommendations for additional testing from the results of a few shovel tests. We encourage the SHPO to insist on more intensive levels of testing in Phase I surveys, and to pressure sponsors to fund these efforts.

The history of archaeological investigations on Georgia's coast differs from the Coastal Plain. Cultural Resource studies have been conducted in many locations on the coast, but by and large our knowledge of Archaic period coastal sites is derived from the research of Waring, Marrinan, DePratter, Thomas, and a few others. As good as much of this research is, we probably do not have an adequate sample of the full range of sites in the Coastal Zone, at least not on the mainland fringe. The investigative bias has been on shell middens and shell rings. Nonshell sites have not been investigated adequately, although these sites no doubt comprise the great majority of coastal resources. Granted, because they generally lack abundant lithic remains, Archaic coastal sites in general contain small material culture assemblages. Eliminate the shell and there is little to identify a site as having been occupied. This is an especially acute problem for preceramic Archaic sites.

5. What are the archaeological phases represented within the study unit and what are their components?

We summarized in Chapter 3 the typological and chronological framework that allows archaeologists to recognize and order Archaic period resources in the study area. Our bias is clear: we have much better information and more experience with Archaic period manifestations in the Savannah River valley area. In this area, the sequence of periods and some phases are well documented. There is of course much room for refinement in that Early and Middle Archaic periods have not been adequately subdivided into local phases, and we have yet to document the time-space parameters of all Late Archaic phases.

Elsewhere in the Coastal Plain of Georgia, typology and chronology remain sketchy. The wide variety of Archaic lithic types defined for Alabama, Florida, and the Carolina Piedmont sequences converge in portions of the study area. This is an especially frustrating aspect of working with reports from south Georgia and the Gulf Coastal Plain, for the recognition of types seems to do more with the experience of the investigator than with any meaningful culture history. The ongoing work at Fort Benning is beginning to clarify the Gulf Coastal sequence, as would continued efforts to analyze and classify the vast collections from south Georgia curated at South Georgia College.

The coastal Georgia sequence is limited to the Late Archaic period, largely the ceramic St. Simons phases as defined by DePratter (1979b) for the north Georgia coast. On the south Georgia coast expressions of Florida's ceramic Orange phases are observed. The intervening area could stand some additional attention. We have inadequate data on the "blending" of Orange and St. Simons traits, nor on the boundaries that may have existed between these distinct traditions.

6. What are the distinctive environments represented within the study unit?

The question of environments would appear to a be a redundant issue to address in each research design paper. If we focus discussion on modern environments, then the discussion is the same for each time period under consideration. Paleoenvironments, of course, are a different issue altogether. As we recounted in Chapter 2, some rather dramatic environmental changes took place over the eight millennia of the Archaic period. Changes involving sea level, groundwater, and fluvial dynamics have perhaps had the most dramatic effects on site location and land-use patterns, as well as preservation potential.

Like Coastal Plain fluvial systems elsewhere, Georgia's rivers have evolved from braided and downcutting systems to sinuous, meandering systems. Many of the riverine landforms available for occupation during the Archaic period have since been cut off from active channels by switching, and exist now on old levee and point bar formations in ridge and swale topography. Some of the oldest of these exist on raised, dissected terrace formations. Buried by a meter or more of alluvium, such sites may go undetected in survey efforts focused on active channel margins. It is thus necessary to consider carefully the archaeological potential of old fluvial landforms, even those judged by geologists to have predated human occupation. High terrace segments and other sand bodies far removed from active channels contain alluvial deposits that cap much older (prehuman) alluvium (e.g., Brooks and Sassaman 1990).

Nonlinear hydrologic features in Georgia's Coastal Plain were apparently very important point resources during the Archaic period. Aside from Georgia's most conspicuous nonlinear hydrologic feature, the Okefennokee Swamp, there are many freshwater wetland areas likely to contain significant archaeological sites. These include seep springs, deep aquifer springs, Carolina bays, limesinks, and cypress ponds. Systematic examination of such features needs to be conducted to define their associated archaeological potential. Snow notes that a critical feature affecting human settlement near these landforms is size. If the water feature is of sufficient size suitable for a bird rookery, then predators, including humans, would have been attracted to them.

Springs. Two distinct varieties of upland springs are seep springs, whose waters are derived from surface run-off, and deep aquifer springs, whose source lies deep beneath the ground. Chatterton Springs in Coffee County is an example of a seep spring that is situated at the edge of a aeolian sand dune and the flatwoods (Kirkland 1994). Snow (personal communication, 1995) reports this type of environment often contains important Archaic sites nearby. Kirkland's (1994) survey of Chatterton Springs supports this observation. Examples of deep aquifer springs include Oswichee Springs and Blue Water Springs. Like seep springs these appear to have great archaeological potential but have received little attention thus far.

Bays and Limesinks. Carolina bays are curious natural features of the Coastal Plain landscape. These oval to circular wetland features are extremely common in southeastern Georgia. To the west, these comingle with limesinks and other water features and are difficult to distinguish. Deeply buried archaeological sites have been reported in association with Carolina bays, particularly on the southeastern rims of these landforms. Despite the abundance of Carolina bays and the potential for important sites associated with them, few in Georgia have been excavated. Limesinks are common features of south-central and southwestern Georgia. They vary markedly in size, but often have archaeological sites associated with them. Underwater archeological studies of limesinks in Florida have yielded deeply stratified deposits from the Archaic and Paleoindian periods, and it is reasonable to expect that similar natural features in southern Georgia harbor similar remains.

Cypress Ponds. Cypress Ponds are small, circular, shallow water features that are found in the coastal flatwoods of southern Georgia. These features often have sand deposits, interpreted as aeolian, on their northern and eastern side and often contain Archaic sites (Kirkland 1994). Many are seasonally flooded, but are dry for part of the year.

Other landform features whose archaeological potential has not been adequately considered are caves and rockshelters. Such features occur in southern Georgia, particularly in southwestern Georgia, but no sites have yet been recorded in association with them. Many caves and rocksheleters have flowing water associated with them, which may have been an attractive feature. In fact, these features often form from the erosion of seep springs or other types of groundwater flows. A recent survey in Coastal Plain South Carolina explored the archaeological potential of Eocene age sandstone exposures, several of which forms rock overhangs. One such site (whose location is being kept confidential) contained a stratified sequence nearly three meters deep. Within the sequence were sealed strata of Early Archaic and Middle Archaic age. The depth of this sequence is tentatively attributed to colluviation from the surrounding slopes, as well as roof fall. In seeking evidence for similar features closer to the coast, we must be aware that rising sea level and consequent fluvial infilling may have completely covered evidence for rockshelters and caves.

Finally, the potential for submerged and buried sites in the Coastal Zone of Georgia remains inadequately investigated. Through the research of DePratter and Howard (1977, 1980), many have come to accept the conclusion that the potential for intensive coastal settlement was limited before about 4200 B.P., the time after which productive estuarine habitat was believed to have formed due to a reduction in the rate and magnitude of sea-level rise. Recent perspectives render this conclusion dubious (Russo n.d.a). Back-barrier locations in the sea islands are likely locations for protected sites. It remains possible that even these locations were destroyed by transgressions of sea level post-dating 4000 B.P., but we cannot dismiss the possibility for preserved sites without looking. At a minimum, some of the smaller shell middens may be completely submerged, even at low tide, but remain intact due to the nonerosive qualities of densely packed shell. The potential for much earlier sites in seaward locations of the continental shelf is completely unknown, but based on work in Florida, we would benefit form some systematic efforts to locate old channels and deltas and conduct testing on terrace/levee landforms adjacent to such features.

7. What is the nature of cultural adaptation within the study unit?

The populations that occupied Georgia's Coastal Plain and Coastal Zone during the Archaic period were hunters and gatherers. There is no evidence as of yet for the use of any native domesticates, such as the bottle gourd and squash, that have turned up in Archaic contexts in Florida as early as 7000 B.P. Georgia's Archaic populations made extensive use of natural resources such as deer, turtle, fish, small mammals, hickory, and presumably other nuts and plant foods, although direct evidence for these resources is almost never found. There exists no evidence as of yet that Archaic populations routinely captured and ate anadromous fish such as shad, although many archaeologists suspect as much. During the Late Archaic period shellfish were included in the diets of certain interior populations, and those of all coastal groups. Other marine resources complemented the terrestrial resources of coastal dwellers, virtually all of which could be collected in the shallow waters and adjacent marsh flats of estuaries.

The technology of Archaic period hunter-gatherers was manufactured usually from local resources. The flaked stone components of Early Archaic technology were relatively sophisticated and specialized. It required the use of high-quality fine-grained rock, and thus may have caused these early occupants, like their Paleoindian predecessors, to focus activities in and around sources of good rock. Stone technology became more generalized and simplified in the Middle Archaic period as groups perhaps experienced reduced settlement ranges and less demand for specialized tools. Of course, little is known about Middle Archaic occupants of the Coastal Plain and coast, in part because we cannot recognize their nonperishable technological elements, or, alternatively, there simply were not many people in the region during this time. Whatever organic elements there were to their technology, its preservation depended on either permanently saturated conditions (such as the Windover site in Florida), or the neutralizing effects of shellfish refuse. In these latter contexts of the Late Archaic period we find evidence for elaborate bone and antler tools, including elements of spearthrowers, or atlatls. The other innovations normally attributed to this time period are not well represented in much of the study area. These include grooved axes and bannerstones or atlatl weights. Being well outside the source area of rocks suited to make ground and polished stone tools, such technology may have been too costly to acquire and use. Instead, as we see on the Georgia coast, shell was drafted into many technological roles in lieu of stone. It is at coastal locations that we also witness the development of ceramic vessel technology, among the oldest in North America. Although pottery was also made and used by interior groups, notably those of the Savannah and Ogeechee rivers, it was on the coast that innovations for using pots directly over fire emerged.

The overall pattern of technological change during the Archaic period may appear to be one of gradually increasing complexity, diversity, and innovation, all occurring under the pressures of increasing sedentism and economic intensification. We believe this depiction hides more than it reveals. We must appreciate the fact that even during the time of greatest complexity of the Late Archaic period—a time of innovation, resource expansion, and intensive land-use—not all constituent groups were a part of the process. Along with those groups that set the pace of change were groups holding tight to traditional lifestyles, or even ones that reverted to earlier adaptations (e.g., mobile foraging of Middle Archaic) in order to survive the changes around them. In other words, there always existed a great deal of social and cultural variation in the archaeological manifestations we lump under the rubric "Archaic." Such variation is seen at a variety of scales, from local to extralocal, and from synchronic to diachronic. Put into process, this variation was probably the source of many changes we often attribute to environment. For instance, the Late Archaic lifestyles of coastal Georgia and the middle Savannah River valley may have been transformed because of a collapse or change in the relationships between them, or with other groups.

8. What information is required to more fully understand the nature of this adaptation?

The list of data sets we need to address the unanswered questions of Archaic prehistory is woefully long. For Coastal Plain sites we have virtually no sound information on subsistence, architecture, community patterning, ritual, biological health and disease, and organic-based technologies. Preserved organics are only routinely found at shell-middens sites, freshwater versions of which in Coastal Plain Georgia have never been excavated to modern standards, and very few of the coastal samples are adequate.

For all site types we need much more extensive site excavations to locate and examine intrasite patterning. Evidence for structures, activity areas, and other spatial features that are not easily recognized at the scale of small excavations can be gleaned from records of large block excavations (e.g., Sassaman 1993d).

More and better data on the provenance of lithic resources in Coastal Plain Georgia are recommended. Basic characterization studies are needed to determine the full range of materials available to Archaic toolmakers. Coupled with sourcing data on tools from particular sites, provenance information will enable us to better infer the direction and scale of mobility and/or exchange patterns.

Data on the regional-scale distribution of key diagnostics of the Archaic period are required to reconstruct long-term demographic trends and cultural affiliations of the region. The collectors survey conducted by Tommy Charles of the South Carolina Institute of Archaeology and Anthropology is a model of such data gathering. Along with this, directed efforts to catalog and classify the enormous collections curated by Frankie Snow will provide the needed data to refine Archaic typologies for south Georgia. It is unlikely that any CRM project in the future will provide the size and quality of regional sample existing in Snow's collections. It is sadly true, however, that all CRM projects in south Georgia that involve Archaic assemblages will suffer without the results of a serious analysis of Snow's collections.

More and better radiometric dates are needed for Coastal Plain and coastal Georgia. Again the lack of preserved organics in good contexts is a major hindrance to progress in dating. Reckless applications of radiometric dating to aggregate samples of charcoal from poorly defined stratigraphic or feature contexts is another obstacle. Rather than jumping to the use of poor samples, archaeologists are advised to make more careful use of AMS dating from small stratigraphic and feature contexts, the soot adhering to vessel walls (including soapstone vessels), and even the fibers of fiber-tempered pottery.

9. What type of investigation and what specific research problems are required to gather this needed information?

Our recommendations in response to this question fall into three groups: (1) maximizing the potential of extant data sets; (2) expanding the scales of analysis of the data sets we normally examine in site investigations; and (3) developing new types of evidence.

We already noted the need to examine in detail the collections housed at South Georgia College, and to initiate a collectors survey similar to the one conducted in South Carolina. These recommendations are only a beginning. There exists enormous research potential in the extant collections of professionals and avocationals alike. This potential cannot await the time and energy of hungry young graduate students. Each and every archaeologists aiming to understand the archaeology of a particular site will benefit from detailed knowledge of the collections of the surrounding area. Archaeologists constrained by the economic and time strictures of CRM may claim that such efforts are cost-prohibitive. However, a week's worth of research on collections and extant reports can lead to months of employment by improving the quality and focus of proposals.

More comparative analyses within the bounds of intensive survey and data recovery projects will vastly improve the quality of site-specific results. Every analysis of a site assemblage should include comparisons with similar sites, both near and far. The spin-off questions this generates will easily pay for the added time and expense. In the context of CRM this not only serves to meet the spirit of the law, it makes good business sense by ensuring a rich and continuing pool of research questions.

The value of larger-scale excavations in upland locations has already been discussed. We make a similar recommendation for shell midden sites: expand excavations beyond midden boundaries to locate evidence for structures and other features. This is an especially important recommendation for the numerous looted shell middens of Coastal Plain and coastal Georgia. Looting beyond the boundaries of shell deposits is unusual, but in at least one case in Columbia County, this is where a rich suite of features was found.

Efforts to locate and collect data on subsistence must be improved. Although flotation is routinely used in the context of preserved features, we could benefit for further experimentation with nonfeature contexts, such as bulk samples from buried strata. Phytolith and pollen analyses has not been fully explored. Trace element analyses might also prove beneficial in locating evidence for fishing. All such efforts must be directed toward issues of site seasonality, not only subsistence reconstruction.

In the realm of seeking new types of evidence, "nonsite" or "siteless" approaches to archaeological survey have not been adequately explored. Although these techniques of survey were designed for and work best with surface distributions (e.g., Ebert 1993), subsurface testing designs could benefit for an approach that treats space as a continuous variable to explore how landscapes were used by mobile hunter-gatherers. The site concept that lies at the heart of the CRM process precludes this sort of thinking. However, if the SHPO is willing to allow for some experimentation in this regard, the long-term benefits might include better recognition of the full range of archaeological resources, a much better sense of the sources of archaeological variation and how constituent elements of these resources relate to one another, and perhaps even a viable approach for recognizing and dealing with resource redundancy.

Other new avenues to pursue include directed surveys to locate archaeological evidence in places too long overlooked, such as upland wetlands, rock shelters, and submerged coastal contexts. We cannot await the possibility of federally-mandated projects to locate such resources. Rather, graduate students, professionals, and the dedicated layperson are called upon to investigate these important frontiers. Our views of Archaic archaeology may be radically altered by their findings.

10. What types of resources in the study unit should be considered significant and why?

Any Archaic period resource that contains preserved organics in reasonably sound archaeological context must be considered highly significant. Preserved organics include not only the obvious bones and plant remains that constitute evidence of Archaic diets, but also any organics, however minute, that can be dated with radiometric techniques. By reasonably sound context we mean in a subsurface context and in association with artifacts of Archaic period age. A lack of the usual diagnostic artifacts (i.e, hafted bifaces, sherds, soapstone) should not preclude significance in the event of preserved organics, for nontraditonal attributes of the material remains—flaking patterns or raw material selection—may prove highly diagnostic of specific time periods in contexts that do not routinely contain discarded points and pottery.

All freshwater shell-midden sites, short of being completely destroyed, should be considered highly significant. It is our experience that even the worst cases of shell-midden looting have not completely obliterated the submidden feature assemblage, nor have off-midden deposits been greatly impacted. The reasons for deeming all freshwater shell middens significant are obvious: they are the best, if not only contexts for retrieving large samples of subsistence remains and other organic materials. Thus far, no such freshwater sites in Georgia have been adequately examined. Saltwater shell-midden sites and shell rings have witnessed better and more investigations than their freshwater counterparts. Still, there remain many unanswered questions about coastal shell middens and especially shell rings to warrant all such sites highly significant.

Any site containing a stratified archaeological sequence should be considered significant. Given the general lack of refinement to Archaic period chronologies and typologies for the study area, any context that will provide added insight into the variety and sequence of diagnostic materials is valuable. We must be careful not to jump to the conclusion that seemingly stratified deposits resulted from bioturbation (e.g., Michie 1990), without first eliminating the possibilities that aeolian, colluvial, or alluvial processes buried the site.

Archaic deposits in locations thus far not adequately investigated must be given the benefit of potential significance in cases of limited artifact occurrence and lack of preserved organics. Such locations include interfluvial landforms, seep springs, Carolina bays, rock shelters, submerged contexts, and other unusual locations.

Buried, single-component sites should be considered highly significant even in the absence of dense artifact assemblage and preserved organics. Such resources are needed to refine knowledge about associations between diagnostic artifacts and nondiagnostic classes of tools and debris. These sites also have great potential for analysis of site structure. Finally, in that these sites consist of the minimal economic and social units of Archaic period communities, labor organization, social organization, and other domestic-level questions may be addressed.

Ultimately, any resource can be rendered significant by a carefully thought-out and integrated research design. Abuses in this regard are legion in the history of CRM and academic research. But the system is designed to evaluate resources in terms of research potential, so it benefits everyone if individuals responsible for resource management can draw upon an honest and meaningful set of research issues in evaluating site significance. Not everyone has the luxury or desire to develop and perpetuate their own research agendas, but that is fine. The research agendas of colleagues are usually open for others to work with. Of course, what this requires on the part of the "borrower" is a sound knowledge of current research, including theory. Too often a small aspect of one's research program is divorced from its context to be used as the lever by with site significance is evaluated. Most research programs cannot be dismantled and used as "parts" without undermining their entire value.

11. What kind of sample of the resource base should be physically preserved and why?

Freshwater shell middens left in the Ogeechee and Savannah River valleys should be preserved in place, with careful, relatively small-scale investigations permitted to adequately characterize content and integrity. A comprehensive survey of the Ogeechee River valley would be a wise prerequisite to any efforts at preservation in place, for we simply do not have enough information on its resources and their condition. We have no knowledge of "pristine" examples of freshwater shell middens.

Examples of Georgia's coastal shell rings are certainly worthy of preservation. Unfortunately, we have no detailed knowledge about the condition of rings that still exist. A survey to inventory those remaining and their condition would be a very worthwhile project.

Examples of nonshell riverine and upland sites across the interior Coastal Plain may be worthy of in-place preservation, although one would be hard pressed to draw up a list from existing records. An inventory of key sites in Georgia comparable to that compiled by the South Carolina Heritage Trust (Judge and Smith 1991) would serve efforts to purchase and protect sites. In general, nonshell sites with distinctive stratification, chert quarries or workshops, organic/feature preservation, or assemblages rich in nonlocal materials should be considered highly significant. Other potentially significant sites include those located on major watershed divides, associated with nonlinear features (e.g., bays), and well-preserved single-component sites.

On a different note, Georgian archaeologists need to be concerned about the lack of proper curation facilities and standards for the vast collections housed across the state. One of the most pressing problems in developing a long-term research and management plan is maintaining a permanent record of previous research and insuring adequate curation of the collections so that they will be available to researchers in the future. This is, of course, a problem of international proportions that transcends the Archaic period and the state of Georgia, but it is directly applicable to the Georgia situation. Georgia does not have a centralized archaeological research facility, museum, or records archive. Although the University of Georgia has made significant improvement in a statewide site files, significant amounts of site and artifact information continue to languish in various locations throughout the state.

Since Frankie Snow's 1977 publication of the Ocmulgee Big Bend survey where he provided summary data on more than 300 sites, he and his colleagues have gathered a large amount of site data and artifact collections from hundreds of additional sites in south Georgia. Snow estimates that the site inventory well exceeds 1,000 sites. These sites are recorded in the notes and map files at South Georgia College, but most are not recorded in the Master Archaeological Site File at the University of Georgia. Many of the artifacts collections have not been analyzed, but have been warehoused in shoe boxes, or other archivally substandard containers. While Snow and his colleagues are dedicated to maintaining these records, South Georgia College has made no long-term commitment to preserve the collections or associated records. There is an acute need to get these records and collections properly inventoried and curated, and we call on the archaeological community to find the time and money to accomplish this goal. No doubt dozens of other collections require similar attention, but we consider Snow's resources to be among the most valuable, extensive, and professionally-collected in the study area.

12. What are the predicted locations of unidentified cultural resources, based upon locations of known resources, and what degree of confidence can be placed in these predictions?

There is no adequate statistical basis for characterizing, let alone extrapolating, the locational patterning of Archaic sites in the study area. This indeed was one of the most frustrating aspects of this research, as it was when the junior author teamed up with David

Anderson to compile a management report for South Carolina's Archaic resources (Sassaman and Anderson 1994). The emerging new technology of Geographic Information Systems (GIS) and its application at the University of Georgia under Mark Williams represent the tools needed to remedy this situation. Now all we need are the data! This is a daunting prospect. Even if the site files data were 100 percent accurate and complete (and they are far from it), and we could characterize locational patterns such as mean distance to water, soil type, and aspect, they would consist of only one-tenth of a percent of all sites. One need not be a statistical wizard to know this is woefully inadequate. Given these limitations and the unlikely prospect that they will be overcome anytime soon, we better leave any predictions about site locations to the project-specific level of analysis (e.g., the preservation plan of Fort Benning). In the meantime we encourage project directors to acquire and use Geographic Positioning Systems technology to improve the accuracy of site mapping, and to ensure that site forms are complete and accurate when submitted to the site files. We also encourage project archaeologists to provide summary data on site locational patterns for all large-scale surveys (i.e., those exceeding 1,000 hectares). This requires data collection beyond what is necessary for site forms, but it is vital to the development of predictive models. Until GIS technology and adequate data layers are more widely applied, archaeologists should strive to collect their own locational data.

13. What land-use activities have disturbed and continue to threaten the resource base? <u>*and*</u>
14. What land-use activities are compatible with the resource base?

Our review of the Archaic period has not, to this point, taken into consideration land-use patterns and their effects on archaeological resources. The Archaic period record is largely a subsurface record, the major exceptions being shell middens and shell rings. There are, of course, vast surface assemblages across the study area that have been and continue to be exposed by cultivation, logging, erosion, and other land-altering activities. Surface assemblages on lands privately held and even those in public trust are more often visited and picked over by collectors than by professional archaeologists. This is not going to change, hence the continual need to educate collectors about the importance of provenience and to visit them periodically to inventory their collections. What also will not change are many of the processes that bring artifacts to the surface, particularly cultivation. Archaeologists, like collectors, take advantage of plowed fields to locate sites. Inasmuch as plowing simply continues to turn over the same 20 cm of soil, this land-use activity is perfectly compatible with the subsurface Archaic resource base. Deep plowing (e.g., chisel-plowing) has the potential to disturb previously undisturbed deposits, but we have no information on the extent to which this method is used in Coastal Plain Georgia.

Silviculture and logging may or may not be compatible with the resource base, depending on the methods involved. The practices of commercial logging operations include a type of field preparation known as bedding. The harrow used in bedding reaches as much as 45 cm below the surface, causing severe damage to buried features and other subsurface deposits (Stephenson and Snow 1993). Another technique of preparation, shearing and raking, limits the impact to the upper few centimeters of soil. While shearing and raking is a common technique of upland site preparation, bedding is required in wetland areas. Archaic sites on lowland landforms that became progressively wet over the course of the Holocene are potential victims of bedding operations.

Timbering operations in many areas have moved away from potentially destructive methods to involve more limited harvesting, natural regeneration, and low-impact preparation. Such operations are perfectly compatible with subsurface Archaic resources. The only aspects of these operations of potential threat to such sites are road and firebreak construction/maintenance, and loading deck preparation and use.

Although commercial and residential development in Georgia's Coastal Plain and coast lags well behind development in Florida and the Carolinas, new construction is clearly having an impact. More often than not, development projects do not involve federal monies or licensing that invoke archaeological review. Little can thus be done within the existing legal framework, other than attempt to educate developers about the value of historic preservation. Greater public awareness about the destructive aspects of development may lead, in the long run, to legal reforms.

Agriculture, logging, and development represent potential impacts to Archaic sites of extensive proportions. However, a more damaging impact is the focused attack on sites by looters. Innumerable sites in the Coastal Plain of Georgia have been systematically mined for artifacts. Late Archaic shell middens of the Savannah and Ogeechee rivers are favored targets (Sassaman 1993a). The engraved bone pins found occasionally at such sites bring hundreds of dollars on the antiquities market. But also under attack are any sites yielding whole bifaces. In some instances, sites that have been exposed by plowing become long-term looting projects. This is an especially acute problem on timber lands leased to hunting clubs, whose members sometimes take a very casual attitude about the management of the land and its resources. If landlords were educated about the concern for site preservation, they might be willing to include wording in leases to help protect sites.

CONCLUSIONS

Our review of the Archaic period record of Georgia's Coastal Plain and coast only begins to reveal the complexity of issues associated with identifying, investigating, and preserving resources of this record. We provided in this final chapter some recommendations for improving the management and research approaches to Archaic prehistory. To repeat some of the more important recommendations: (1) Attention must be focused on recognizing and defining the elusive Middle Archaic record of the study area; (2) A collectors survey modeled after the one in South Carolina must be initiated, well-funded, and sustained; (3) A directed effort is needed to inventory and curate the valuable, large collections from south Georgia housed at South Georgia College; (4) From the findings of collectors surveys and professional inventories, a detailed review of typological variation among Archaic period artifacts is needed to resolve the ambiguities borne of inconsistent uses of borrowed type names and criteria; (5) Site files data need to be integrated with GIS layers of environmental variables to establish locational parameters for sites; (6) A regionwide survey of chert outcrops and quarries is required; (7) Freshwater shell middens, particularly those on the Ogeechee River, need to be inventoried, tested, and some preserved in place; (8) An inventory and assessment of coastal shell rings is required; (9) Research must be focused on the cultural diversity of the Late Archaic period, its expressions, causes, and transformations; (10) Rock shelters and upland wetlands, including seep springs, bays, and sinks, must be targeted for intensive survey and testing; (11) An effort must be launched to locate and test submerged coastal landforms with Archaic site potential.

Above all, we recommend that archaeologists confronting Archaic period resources dispense with the simplistic notion that the people who created these resources were cut from the same pattern. Despite the archaeological systematics that lump them together, Archaic societies were varied and multifaceted. This diversity is evident in virtually every comparisons one can make between constituent parts of the archaeological record, be it river valleys, sites, activity areas, or the surface decoration of pots. Our ability to improve knowledge of Archaic prehistory thus hinges on comparative approaches at multiple scales. Much good anthropology remains to be done with the resources of Georgia's Archaic period, and we hope the review provided here offers some fruitful direction.

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Sample #	Site No.	Site Name	C14 BP	Sigma	Association	Material	Provenience	Reference
Beta-71952	9BI69		2800	70	Stallings	charcoal	Unit 19, level 6/7	Espenshade et al. 1994:105
M-267	38Ja5	Refuge	2920	200	Refuge	clam shell	"clambake" (i.e. feature) 36" into midden	Crane and Griffin 1958:1122; Williams 1968:329; Caldwell 1970
Beta-71954	9BI69		2940	60	Stallings	charcoal	Feature 2	Espenshade et al. 1994:105
Beta-20179	9Fl164	Rush	2950	90	?	charcoal	Feature 27, shallow basin w/FCR	Wood and Ledbetter 1990:135
UGa-1254		Cunningham Mound A	2965	75	?	charcoal	Feature 3	Thomas and Larsen 1979: Table 4
Beta-71953	9BI69		2970	80	Stallings	charcoal	Feature 1	Espenshade et al. 1994:105
Beta-26899	8GU56	Depot Creek	2970	80	Norwood/Orange	charcoal	Test Unit C, Level 7	White 1994:38
UGa-6167	9Wr4-South	Mill Branch	3004	89	Stallings	charcoal	Feature 30 Level 3	Ledbetter 1991:48
UGa-1686	9Li???	Cunningham Mound C	3010	80	Stallings	charcoal	Feature 2; human cremation	Thomas and Larson 1979:20, 58, 64
QC-784	38Ja61	Second Refuge Site	3020	115	Refuge	shell	Shell from base of midden	Lepionka et al. 1983:38; Trinkley 1990:11; Howard et al. 1980:28
Beta-64956	9HY41		3030	90	?	charcoal	Feature 4	Webb 1994
I-2849	38Bu8-1	Large Ford Shell Ring	3120	110	Stallings	oyster shell	30" above charcoal (I-2850) in periwinkle layer and 27" BS	Calmes 1968; RC vol 11(1), Buckley and Willis 1969:79
Beta-79986	38AK224	Tinker Creek	3160	60	Soapstone vessel	soot	soot on vessel sherd from Prov. 321, Level C (1)	Sassaman, unpublished
Beta-3763	9Eb21	Parris Island South	3190	140	precer LA	charcoal	Level C fill	Wood et al. 1986:286
UGa-226	9McI87	A. Busch Krick	3215	80	Stallings	conch shell	Base of midden (1.7-1.8 m BS), Pit 1	RC vol 14(2), Brandau and Noakes 1972:494
UCLA-1997E		McLeod Mound	3250	60	Stallings	charcoal	charcoal from primary humus	Thomas and Larsen 1979; Howard, DePratter and Frey 1980:28
UGa-3305	38BU9	Daws Island	3270	80	?	charcoal		SCIAA site files
Beta-16922	38Bu805	Fish Haul	3280	80	Stallings	charcoal	Feature 18, reused shellfish steaming pit; 129-141 block	Trinkley 1986:140
UGA-6452	9RI86	Lovers Lane	3306	84	Stallings	wood/nutshell	Feature 91	Elliott et al. 1992:Appendix B-19
Beta-71955	9BI69		3320	70	Stallings	charcoal	Feature 3	Espenshade et al. 1994:105
UGa-2905	38Ch12	Lighthouse Point	3345	70	Thom's Creek	charcoal	Feature 37	Trinkley 1980b:191-192
Beta-50155		Rollins Bird Sanctuary	3360	60	Orange	oyster	4850N/250E, 60-65 cm BS	Russo 1992:Table 1
Beta-4430	9CAM171A	Kings Bay-Big Cedar	3380	80	?	charcoal	Feature 5	Adams 1985:201
UGA-6458	9RI86	Lovers Lane	3386	83	Stallings	cane	Feature 409	Elliott et al. 1992:Appendix B-19
GX-2281	38Bu9	Daws Island	3395	100	Stallings	shell	from eroding shell midden	Michie 1973
I-2848	38Bu7	Sea Pines Shell Ring	3400	110	Stallings	clam shell	base of shell deposits; Level 4, 20-26" BS	Calmes 1968; RC vol. 11(1), Buckley and Willis 1969:79
UGa-1562		Cunningham Mound A	3405	80	?	charcoal	charcoal from central pit	Thomas and Larsen 1979:Table 4
Beta-2530	38Ab288	McCalla Bottom	3410	80	Stallings	unpublished	Block 1, Feature 7	Glander et al.1981; Anderson and Schuldenrein 1985:8
UGa-73	9McI23	Sapelo Island	3430	65	?	oyster shell	1 m depth in ring 50 m diam, 2-3 high	Noakes and Brandau 1974:133
UGa-74	9McI23	Sapelo Island	3430	70	?	oyster shell	2 m depth in ring 50 m diam, 2-3 high	Noakes and Brandau 1974:133
unpublished	SN-13	none	3450	80	?	hickory nutshell	Feature 4, 30 cm deep pit originating 36 cm BD	Joseph 1985:9
Beta-47535		Chappelle Midden	3460	60	Orange	oyster	EU 1/L3	Russo 1992:Table 1
UGa-227	9McI87	A. Busch Krick	3470	85	Stallings	oyster shell	30-40 cm above base of midden (1.4 m BS), Pit 1	Brandau and Noakes 1972:495
UGa-75	9McI23	Sapelo Island	3545	65	?	oyster shell	2 m depth in remnant of ring neighboring one with UGA-7	Noakes and Brandau 1974:133
UGa-6318	9Wr11	Mill Branch	3549	134	Stallings	charcoal	Feature 1	Ledbetter 1991:48
Beta-78830	38AK155		3580	60	?	hickory nutshell	Feature 1	Cabak and Sassaman n.d.
I-2850	38Bu8-1	Large Ford Shell Ring	3585	115	Stallings	charcoal	level 9, 56-57" BS; bottom hald of shell deposits	Calmes 1968; RC vol. 11(1), Buckley and Willis 1969:79
UM-523	9Gn76	Canon's Point	3600	110	Stallings	oyster shell	West shell ring test 1, 12-20 cm BS (Level 2); dates last oc	Marrinan 1975:49; RC vol 18(2), Stipp et al. 1976:212
M-39	9MI1-1	Sapelo Shell Ring 1	3600	350	Stallings	shell	general shell level fill	Crane 1956:665; Williams 1968:329
Beta-3499	9CAM177	Devils Walkingstick	3600	100	F-T	charcoal	Feature 3	Adams 1985:154
UGA-6456	9RI86	Lovers Lane	3622	33	Stallings	wood/nutshell	Feature 95B	Elliott et al. 1992:Appendix B-19
UGa-6168	9Wr4-North	Mill Branch	3631	102	Stallings	charcoal	Feature 14	Ledbetter 1991:48
UGA-6454	9RI86	Lovers Lane	3649	92	Stallings	nutshell	Feature 31B	Elliott et al. 1992:Appendix B-19
UGa-6164	9Wr4-South	Mill Branch	3659	83	Stallings	charcoal	Feature 4	Ledbetter 1991:48
Beta-78828	38ED9	Mims Point	3660	60	Stallings	hickory nutshell	Feature 42	Sassaman n.d.
Beta-6400	38An29	Sara's Ridge	3680	60	precer LA	charcoal	XU 2, near Feature 125	Wood et al. 1986:159
Beta-16924	38Bu805	Fish Haul	3680	60	Stallings	charcoal	Feature 23, shellfish steaming pit; 1982 block	Trinkley 1986:147
M-39	9MI1-1	Sapelo Island Shell Ring	3700	250	Stallings	oyster shell		RC vol. 1, Crane and Griffin 1959:188; Caldwell 1970
M-1109	9Ch4	Bilbo	3700	125	Stallings	charcoal	3-3.5' (Haag Zone 6; nearly solid shell; middle shell zone)	Crane and Griffin 1963:239-40; Williams 1968:330; Dye 1976:45
Beta-16923	38Bu805	Fish Haul	3720	90	Stallings	charcoal - wood	Feature 21, pit; 1982 block	Trinkley 1986:147
USC-2	9BK113	Midden Point	3729	123	Stallings	hickory nutshell	Level 5I	Sassaman n.d.
M-1112	9Ch4	Bilbo	3730	125	Stallings	bone	5.5-6' (Haag Zone 3-4; at or just below nearly solid oyster;	Crane and Griffin 1963:239-40; Williams 1968:330; Dye 1976:43-44
M-1278	9Cb1	Stallings Island	3730	150	Stallings	charcoal	Pit 4; basal depth of 30 in BS	Crane and Griffin 1965:134; Williams 1968:331; Bullen and Greene 197(
Beta-45925		Rollins Bird Sanctuary	3730	60	precer LA	oyster	4750N/525E, 100-120 cm BS	Russo 1992:Table 1
UGa-6321	9Wr4-North	Mill Branch	3740	134	Stallings	charcoal	Feature 26	Ledbetter 1991:48
USC-4	9BK113	Midden Point	3742	138	Stallings	hickory nutshell	Level 5G	Sassaman n.d.
UM-521	9Gn57	Canon's Point	3760	90	Stallings	oyster shell	Marsh shell ring sq.18N 3E, 13 cm BS Level 3; dates last o	Marrinan 1975:48; RC vol 18(2), Stipp et al. 1976:212
USC-5	9BK113	Midden Point	3765	139	Stallings	hickory nutshell	Level 6J1	Sassaman n.d.

Sample #	Site No.	Site Name	C14 BP	Sigma	Association	Material	Provenience	Reference
M-236	9Ch54	Dulaney	3770	200	Stallings	shell - oyster	18" above base of shell midden	Crane and Griffin 1958:1122; Williams 1968:329; Caldwell 1970
UGA-6523	9RI86	Lovers Lane	3788	79	Stallings	wood/nutshell	Feature 110	Elliott et al. 1992:Appendix B-19
Beta-35190	9Ri327	Rae's Creek	3800	70	Stallings	charred wood	N223 E203 90-100cmbs	Crook 1990:38
M-39	9MI1-1	Sapelo Shell Ring 1	3800	350	Stallings	oyster shell	general shell level fill	Crane 1956:665; Williams 1968:329
M-1111	9Ch4	Bilbo	3820	125	Stallings	charcoal	5.5-6' (Haag Zone 3-4; at or just below nearly solid oyster;	Crane and Griffin 1963:239-40; Williams 1968:330; Dye 1976:43-44
Beta-50154		Cockfight	3850	60	Orange	oyster	TP 37/10-30 cm BS	Russo 1992:Table 1
UM-341	9Cb15	Uchee Creek	3860	75	?	shell	Pit 6	RC vol. 17(3), Eldridge et al. 1975:407
UM-522	9Gn76	Canon's Point	3860	90	Stallings	oyster shell	West shell ring test 1, 45-55 cm BS (Level 4); dates initial	Marrianan 1975:49; Stipp et al. 1976:212
Beta-64957	9HY41		3860	100	?	charcoal	Feature 18	Webb 1994
UGa-6165	9Wr4-South	Mill Branch	3867	79	Stallings	charcoal	Feature 30 Level 4	Ledbetter 1991:48
I-3047	38Bu8-2	Small Ford Shell Ring	3890	110	Thom's Creek	charcoal	base of midden; level 4, 18-24"	Calmes 1968; RC vol. 11(1), Buckley and Willis 1969:79
UGa-6166	9Wr4-South	Mill Branch	3895	102	Stallings	charcoal	Feature 30 Level 5	Ledbetter 1991:48
Beta-79985	9CB138	Victor Mills	3910	60	Stallings	hickory nutshell	Prov 18, Stratum II	Sassaman, unpublished
UM-340	9Cb15	Uchee Creek	3915	85	?	shell	Pit 2	RC vol. 17(3), Eldridge et al. 1975:407
UGa-6322	9Wr4-South	Mill Branch	3928	97	Stallings	charcoal	Feature 4	Ledbetter 1991:48
Beta-2735	38An29	Sara's Ridge	3950	80	precer LA	charcoal	XU1, Feature 21	Wood et al. 1986:126
Beta-64959	9SP21		3950	60	?	charcoal	Stratum 4	Webb 1994
Beta-31785	8GU80	Clark Creek	3970	160	LA	charcoal	Test Unit B, Level 11	White 1994:132
Beta-47531		Oxeye Midden	3990	70	precer LA	oyster	TP3/60-80 cm BS	Russo 1992:Table 1
USC-3	9BK113	Midden Point	4002	166	Stallings	hickory nutshell	Level 6G	Sassaman n.d.
AA-8840	38ED9	Mims Point	4025	65	Stallings	hickory nutshell	Feature 1	Sassaman 1993:23
Beta-3762	9Eb21	Parris Island South	4070	70	precer LA	charcoal	Level X fill	Wood et al. 1986:286
Beta-3761	9Eb21	Parris Island South	4090	70	precer LA	hickory nutshell	Feature 10	Wood et al. 1986:260,286
Beta-79984	9CB138	Victory Mills	4090	110	Stallings	charcoal	Feature 3	Sassaman, unpublished
USC-6	9BK113	Midden Point	4095	167	Stallings	hickory nutshell	Level 5L	Sassaman n.d.
Beta-35191	9Ri327	Rae's Creek	4100	110	Stallings	charred wood	N229 E203 90-100cmbs	Crook 1990:38
RL-580	9MI1-1	Sapelo Shell Ring 1	4120	200	Stallings	hickory nutshell	refuse pit 80-135 cm BS of unit approx. 30 m south of She	Simpkins 1975
O-1047	9Ch4	Bilbo	4125	115	Stallings	charcoal	5.5-6' (Haag Zone 3-4; at or just below nearly solid oyster;	Williams 1968:330; Dye 1976:43-44: Crane and Griffin 1963:240
Beta-3759	9Eb21	Parris Island South	4170	100	precer LA	charcoal	Level C fill	Wood et al. 1986:286
Beta-29029	9FY36	Falcon Field	4170	150	precer LA	wood charcoal	Feature 4	Elliott 1989:55
UM-520	9Gn57	Canon's Point	4190	50	Stallings	oyster shell	Marsh Ring; base of midden deposit 1.47 m BS; initial occ	Marrinan 1975:48; Stipp et al. 1976:212
Beta-2736	38An29	Sara's Ridge	4200	90	precer LA	charcoal	XU2, Feature 37	Wood et al. 1986:159
Beta-2737	38An29	Sara's Ridge	4210	60	precer LA	charcoal	XU 2, Feature 63	Wood et al. 1986:159
Beta-45924		McGundo Midden	4210	70	precer LA	oyster	EU4/L. 18-19	Russo 1992:Table 1
UM-1433	9Cam167	Kings Bay	4260	100	Stallings	carbonized wood	Feature 2, FS #60, KBS 8(hearth 24 cm BS)	RC vol 21(1), Calvert et al. 1979:109; Johnson 1978:48
Beta-29451	none	WV14	4290	120	Stallings	charcoal/nutshell	Feature 1, Prov. 6; shell-filled refuse pit	Brooks and Sassaman n.d.
Beta-35189	9Ri327	Rae's Creek	4370	110	Stallings	charred wood	N226 E203 100-110cmbs	Crook 1990:38
Beta-4307	38Ab91	Rocky River	4400	70	precer LA	unpublished	EU 77 midden	Anderson and Schuldenrein 1985:8
GX-0343	38Al15	Rabbit Mount	4450	135	Stallings	charcoal	level prov. charcoal from square 18, level B2	Stoltman 1966, 1974
M-1277	9Cb1	Stallings Island	4450	150	precer LA	charcoal/nutshell	Pit 2; basal depth of 70 in BS.	Crane and Griffin 1965:134; Williams 1968:331; Bullen and Greene 197(
GX-0345	38Al15	Rabbit Mount	4465	95	Stallings	charcoal	level prov. charcoal from square 15, level B2	Stoltman 1966, 1974
UGa-3612	9Eb76	Rufus Bullard	4500	135	?	unpublished	30S10W, Feature B	Flint and Suggs 1980; Anderson and Schuldenrein 1985:8
Beta-47533		Pepper island	4500	70	precer LA	oyster	TP1/0-30 cm BS	Russo 1992:Table 1
RL-1036	38Lx5		4700	160	MA	charcoal	Feature 6, cache of middle archaic bifaces	Anderson 1978:Table 3
M-1279	9Cb1	Stallings Island	4700	150	precer LA	charcoal & nutsh	Pit 5; basal depth of 70 in BS	Crane and Griffin 1965:134; Williams 1968:331; Bullen and Greene 197(
UGA-6367D	9RI178	Phinizy Swamp	4805	139	MALA/BrierCrk	walnut shell	Feature 5	Elliott et al. 1992:120
Beta-14423	SN-13	none	4860	130	?	hickory nutshell	Feature 6A, hearth, 23 cm deep, first recognized in Level 5	Espenshade 1986:74
UM-1432	9Cam167	Kings Bay	5000	180	?	carbonized wood	Feature 2, FS #56, KBS 8 (hearth 24 cm BS)	RC vol. 21(1), Calvert et al. 1979:109; Johnson 1978:48
Beta-6399	38An29	Sara's Ridge	5200	280	precer LA	charcoal	XU 2, near Feature 125	Wood et al. 1986:159
Beta-50153		Spencer's Midden	5210	80	precer LA	oyster	EU1/L18	Russo 1992:Table 1
O-1046	9Ch4	Bilbo	5500	115	?	charcoal	2-2.5' (Haag Zones 7-8; Waring Zone 3)	Williams 1968:330; Crane and Griffin 1963:240
Beta-78827	38ED9	Mims Point	5680	60	MA	hickory nutshell	Feature 37	Sassaman n.d.
AA-8841	38ED9	Mims Point	5730	70	MA	hickory nutshell	Feature 6	Sassaman 1993:28
Beta-71949	9BI69		5730	100	MM	charcoal	Unit 9, levels 10/11	Espenshade et al. 1994:105
Beta-13290	SN-03	none	5740	90	?	hickory nutshell	Level 5, Block 2; 6 samples combined from Level 5 fill; ca	Elliott 1986:71
unpublished	SN-09	none	5760	125	?	unpublished	Level 6 (62-72 cm BS)	Wise 1986
Beta-78826	38ED9	Mims Point	5840	110	MA	hickory nutshell	Feature 30	Sassaman n.d.
Beta-16925	38Bu805	Fish Haul	6060	110	?	charcoal	Feature 28, probable tree hole, originally thought to be hea	Trinkley 1986:141

Sample #	Site No.	Site Name	C14 BP	Sigma	Association	Material	Provenience	Reference
Beta-64958	9SP19		6390	200	MM	charcoal	Feature 9	Webb 1994
Beta-35184	9Ri327	Rae's Creek	6660	90	MM	charred wood	base of stratum G*	Crook 1990:124
Beta-23663	38AK228B	G.S. Lewis-East	6770	220	?		Feature 62	SRARP unpublished
Beta-35186	9Ri327	Rae's Creek	7070	100	MM	charred wood	basal 10cm of stratum G	Crook 1990:124
Beta-35188	9Ri327	Rae's Creek	7290	210	?	charred wood	Stratum I	Crook 1990:124
Beta-35185	9Ri327	Rae's Creek	7400	90	MM	charred wood	5 levels in middle of midden, Stratum G	Crook 1990:124
Beta-35187	9Ri327	Rae's Creek	7570	130	?	charred wood	four levels within upper half of midden, Stratum J	Crook 1990:124
Beta-2527	9AB91	Rocky River	8080	630	?	?	F1 or F7 (see comments)	Anderson and Schuldenrein 1985:8, citing Glander et al. 1981
Beta-71957	9BI69		8730	50	Palmer	charcoal	Feature 8	Espenshade et al. 1994:105
Beta-71956	9BI69		9190	110	Palmer	charcoal	Feature 7	Espenshade et al. 1994:105