Early and Middle Holocene Periods, 9500 to 3750 B.C.

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The Early and Middle Holocene encompasses the interval from the end of the last major cold advance of the Late Pleistocene, the Younger Dryas, through the end of a period of elevated global temperatures called the Hypsithermal, from roughly 9500 to 3750 B.C./10,000–5000 rcbp* (table 1) (D.G. Anderson 2001:156–161; I.W. Brown 1994:48; Stoltman 1978:714). Essentially modern floral and faunal communities were present, although their ranges were in some cases appreciably different from today (P.A. Delcourt and H.R. Delcourt 1987; Graham et al. 1996; Semken 1983; Watts, Grimm, and Hussey 1996; T. Webb et al. 1993). Pleistocene megafauna were long gone, having died out by or soon after the start of the Younger Dryas about 10,940 B.C. (Mead and Meltzer 1984). The Holocene was formerly thought to have been the time when human populations in the Southeast switched to the routine exploitation of modern plant and animal populations; however, these changes actually occurred appreciably earlier, well back in the Paleo-Indian era, traditionally dated prior to 9500 B.C. (D.G. Anderson and K.E. Sassaman 1996; D.F. Morse, D.G. Anderson, and A.C. Goodyear 1996).

The Early and Middle Holocene periods loosely correspond to the Early and Middle Archaic cultural periods (Bense 1994:61–85; J.B. Griffin 1967:178; D.B. Smith 1986:6–27). Over this roughly 6,000-year span, corresponding to roughly the first half of the current interglacial, hunting and gathering cultures persisted over the Southeast. While wild plant and animal resources were intensively collected, there is no evidence for the use of domesticated plants or animals, with the exception of the dog, which appears to have arrived with the first peoples during the Paleo-Indian period (M. Swartz 1997; D.N. Walker and G.C. Frison 1982). Dramatic cultural changes were occurring during this interval, particularly in the scale of group interaction and organizational complexity. Band-level groups are assumed to have been ubiquitous at the start of the era. By the end of the Middle Holocene they had been replaced in several parts of the region by societies characterized by monumental construction, extensive long-distance exchange and interaction, warfare, and probably a tribal level of social organization (D.G. Anderson and K.E. Sassaman 1996).

*Calendar dates are derived using the Calib 4.3 program employing the Stuiver et al. (1998) calibration. Given the differences between the 2 time scales (almost 1,500 years for the onset of the Early Holocene), both calendar and radiocarbon time should be used, and distinguished from each other, whenever possible in archeological interpretation and analysis, particularly for periods prior to several thousand years ago, when the discrepancies grow pronounced (D.G. Anderson 2001:143–144; Fiedel 1999; Sherratt 1997:271–272).

Early Archaic Occupations, 9500–6950 B.C.

The increase in global temperature at the end of the Younger Dryas that marks the onset of the Holocene era was on the order of 7° C, with temperatures rising to close to modern conditions (Lowe et al. 1995). Seasonal variation was greater than at present, with temperatures warmer in summer and colder in winter. A hardwood canopy dominated by oaks and hickory was present across much of the Southeast (P.A. Delcourt and H.R. Delcourt 1987; G.L. Jacobson et al. 1987; T. Webb et al. 1993). Fairly dense human populations are indicated across much of the region during the Early Archaic period, as evidenced by the presence of large numbers of sites and artifacts, particularly when compared with the preceding Paleo-Indian era (D.G. Anderson 1990:198–201, 1996a:158). Population growth, assumed to have been fairly pronounced during the Paleo-Indian period, may have slowed somewhat during the Early Archaic period, possibly because the landscape was becoming filled. The number of sites on the landscape, as recorded in southeastern state archeological site files, continued to increase over the course of the Archaic, effectively doubling in number from the Early Archaic to the Late Archaic (D.G. Anderson 1996a). This indicates populations continued to grow, something almost certainly facilitated by the emergence of new technologies and organizational forms. Site file data, while an admittedly crude measure of population size and distribution, are an important resource for exploring these questions (D.G. Anderson and V. Horak 1995).

Identifying Components

Early Archaic occupations across much of the Southeast are recognized by the occurrence of successive side- and corner-notched and bifurcate-based hafted bifaces (D.G. Anderson, L.D. O'Steen, and K.E. Sassaman 1996; Bense 1994:62–68; J. Chapman 1985:147–149; Coe 1964:67–70),

Table 1. Radiocarbon and Calendrical Timescale for Eastern Holocene Assemblages

Calibrated B.P. Intercepts from Calib 4.3	*Conventional dates*	*Radiocarbon years before the present*	*Period*
50	A.D. 1950	0	
298	1700	250	
524	1475	500	Historical
929	1077	1,000	Late Woodland
1388, 1358, 1354	675	1,500	
1948, 1936, 1934	A.D. 50	2,000	Middle Woodland
2710, 2629, 2617, 2542, 2513	600 B.C.	2,500	Early Woodland
3208, 3179, 3169	1200	3,000	
4500, 4490, 4440	2475	4,000	Late Archaic
5728	3750	5,000	
6850, 6838, 6825, 6800, 6764	4800	6,000	Middle Archaic
7820, 7807, 7792	5800	7,000	
8986, 8874, 8825, 8819	6950	8,000	
10,189	8240	9,000	Early Archaic
10,736, 10,708, 10,702	8775	9,500	
11,254, 11,253, 11,234	9300	9,900	
11,545, 11,512, 11,400, 11,340	9500 B.C.	10,000	

SOURCES: calibrations from Stuiver et al. 1998, adapted from D.G. Anderson 2001:146.

as well as by lanceolate Plains Paleo-Indian and Archaic forms such as Agate Basin, Scottsbluff, Cody, Eden, and Angostura in the western part of the region (Jeter and Williams 1989:84, 87–89; L. Johnson 1989:27–49). Some point forms that began in the Paleo-Indian period extended into the Early Archaic period, such as Dalton and various side-notched types. Dalton points are thought to extend no later than about 9300 B.C., although several later dates have been reported running as late as 8240 B.C. (Goodyear 1982). It is unlikely that Dalton continued much past about 9500 B.C., given the number of radiocarbon dates that have accumulated for side- and corner-notched points beginning at 9800 B.C. (J. Chapman 1985; Driskell 1994, 1996; J.S. Dunbar, S.D. Webb, and M.K. Faught 1988; Goodyear 1982, 1999), and an absence of direct associations of Daltons with these notched forms. A number of distinct named subtypes or variants of Dalton have been recognized in specific parts of the Southeast, such as Colbert, Greenbrier, Hardaway, and Nucholls, or San Patrice *var. Hope*. These may represent the signatures of distinct cultures or societies. Little effort has been directed to documenting the morphological distinctiveness and geographic distribution of these variants, however, and many may be local names for otherwise similar artifacts, or else reflect shapes effected by raw material constraints or resharpening/reworking (D.F. Morse 1997).

By about 9800 B.C., side-notched point forms appeared, as documented by dates at both the Dust Cave and Page-Ladson sites (fig. 1), and by 9500 B.C. or soon thereafter this point form is found in large numbers across the Southeast. A number of variants of this "Early Side Notched" horizon, as it is coming to be known, have been recognized. These include Big Sandy, Bolen, Kessell, Taylor, and San Patrice *var. St. Johns*. These varieties apparently differ slightly from one another in overall morphology, but little formal comparative quantitative analysis has been conducted to explore this variability and assess its meaning. While these apparent subregional differences in overall morphology may represent signatures of different archeological cultures, they may alternatively represent normal clinal variation in tool forms between similarly organized band level groups. Side-notched points continued until about 8750 to 8240 B.C., after which corner-notched types such as the Palmer and Kirk types, and Hardin Stemmed points occur. These are in turn followed by a series of bifurcate forms, including the MacCorkle, St. Albans, LeCroy, and Kanawha types, dating from about 8075 to 6650 B.C. (J. Chapman 1985a).

Technological Change

A fundamental change in culture and technological organization took place during the late Paleo-Indian period, with results that continued throughout the Early Archaic period and are regarded as hallmarks of the era. This change is most visibly marked by the appearance of notched and resharpened points, greater use of local lithic raw materials of varying quality, a decline in the number of formal, well-made chipped stone tools, and a marked increase in the numbers of sites, which are found scattered widely over the landscape, including in locations previously unoccupied or minimally used, such as rockshelters or interriverine areas (D.G. Anderson 1990:198–201, 1996a:160–163; J.S. Dunbar and S.D. Webb 1996:352; Walthall 1998a). These changes are thought to reflect increasing population levels and decreasing group ranges. They also represent a gradual change from settlement systems emphasizing logistical mobility and highly curated, collector-based technologies (i.e., with task groups radiating out from central base camps and staying at short-term camps as long as necessary to collect

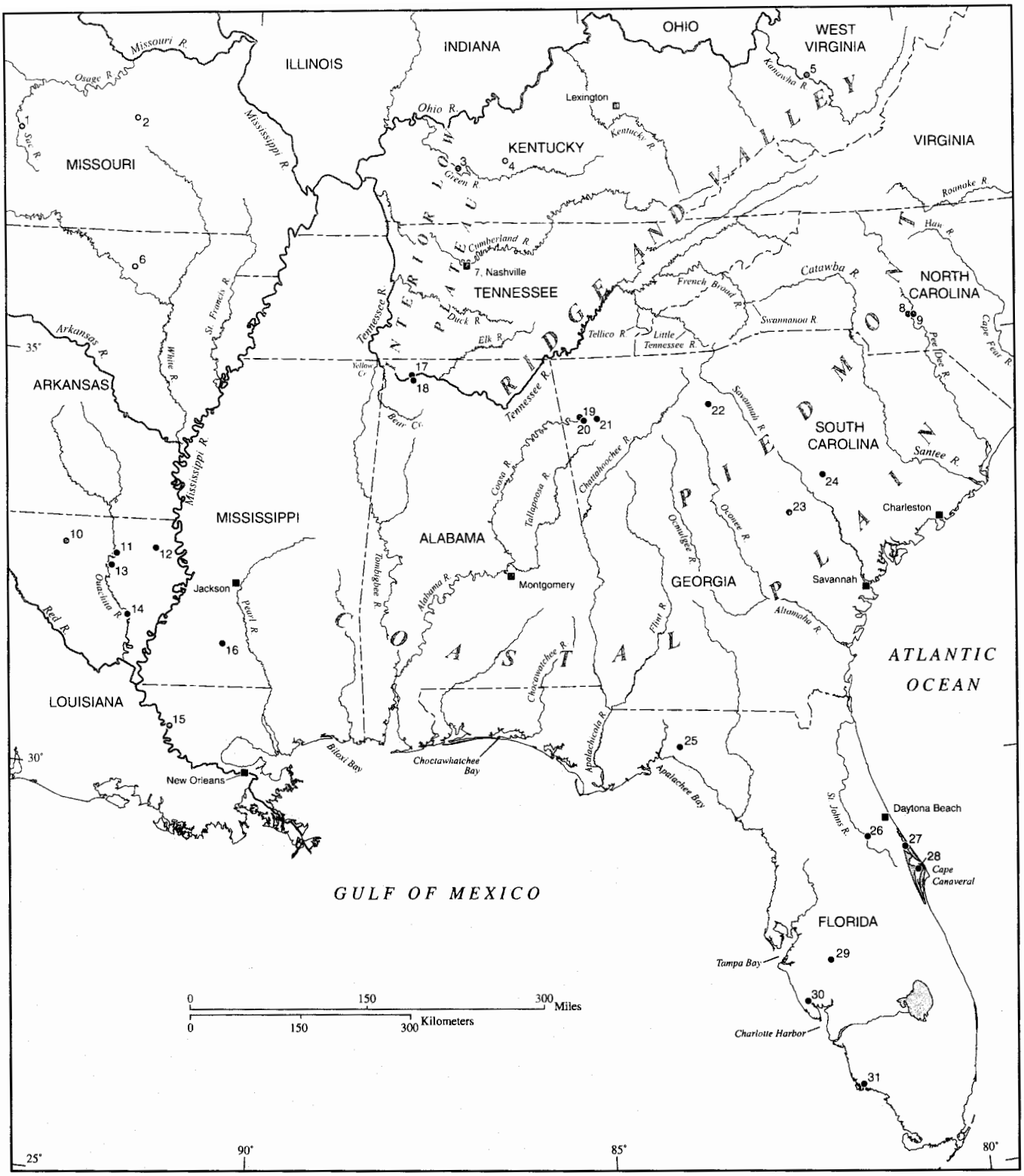

Fig. 1. Archeological sites of the Early and Middle Holocene. Missouri: 1, Big Eddy (23CE426); 2, Gourd Creek Cave (23PH14). Kentucky: 3, Indian Knoll (15OH2); 4, Iberia (no number). West Virginia: 5, St. Albans (46KA27). Arkansas: 6, La Crosse (no number). Tennessee: 7, Bowling Farm/Bosley Springs (40DV426). North Carolina: 8, Hardaway (31ST4); 9, Doershuk (31MG22). Louisiana: 10, Hedgepeth (16L17; 11, Frenchman's Bend (16OU259); 12, Poverty Point (16WC5); 13, Watson Brake (16OU175); 14, Caney (16CT5); 15, Monte Sano Mounds (16EBR17). Mississippi: 16, Ford Farm/Wesson (22LI500). Alabama: 17, Dust Cave (1LU496; 18, Town Creek Mounds (no number). Georgia: 19, Rome (no number); 20, Etowah (9BR1); 21, Vulcan (9BR775); 22, Carnesville (no number); 23, Buckhead Creek (no number). South Carolina: 24, G.S. Lewis (38AK288). Florida: 25, Page-Ladson (8JE591); 26, Tick I. (8VO24); 27, Tomoka (8VO81); 28, Windover (8BR246); 29, Wauchula Mund (no number); 30, Little Salt Spring (8SO18); 31, Horr's I. (8CR205-209, 211).

resources prior to returning to the home base, and using tools that were typically well made and carried about from place to place and reused as necessary until they were worn out) to settlement systems emphasizing foraging adaptations characterized by high residential mobility and expedient technologies (i.e., adaptations dominated by groups moving to resources and establishing numerous short-term camps, and using tools that were casually made, used, and discarded) (after Binford 1980; see also D.G. Anderson 1996b; Cable 1982, 1996 for local examples). These changes in technological organization and settlement patterning were brought about, in large part, by the increasing importance of foraging, generalist strategies over the region in response to postglacial warming, increasing human population levels, and the replacement of Late Pleistocene floral and faunal communities by essentially modern ones.

In the Southeast, these changes have been explored by various tests of Cable and Claggett's (1982) "Effective Temperature/Technological Organization" model, which examined how Paleo-Indian and Early Archaic technological organization shifted from logistical to residential mobility (and associated curated and expedient technologies, respectively) in response to postglacial warming, specifically increases in effective temperature, which is a measure of annual temperature distribution and intensity (D.G. Anderson and K.E. Sassaman 1996:27–28; Cable 1982, 1996; Bailey 1960; R.L. Kelly 1995:66). The theoretical foundation for this model is based on analyses of hunter-gatherers from around the world, whose technological organization, diet, and mobility strategies have been found to be closely linked to local effective temperature (Binford 1980:13–16; R.L. Kelly 1995:66–72, 117, 128–130). Changes in technological organization over both space and time among hunter-gatherers, accordingly, can to some extent be predicted by examining effective temperature. Given the broad changes in global climate that were occurring at the end of the Pleistocene and the onset of the Holocene, and the normal variation in climate and resource structure that occurs across a region as large as the Southeast, it is virtually certain that there was appreciable variation in Archaic adaptations over time and in different parts of the region, particularly moving from north to south, and from lower elevations to higher. The variability in projectile points over the region observed during this time may, in part, be due to overall differences in culture and group adaptation.

The change in point forms from lanceolate to serrated and notched types reflects a change from the occasional procurement of very large animals, such as mastodon, to the regular killing and processing of smaller game, of which deer soon assumed a primary role (Goodyear 1974; D.F. Morse, D.G. Anderson, and A.C. Goodyear 1996). It is clear that Early Archaic point forms (fig. 2), beginning with Dalton, were used extensively in cutting tasks, given the widespread evidence for resharpening, producing beveled forms, marginal serrations, and many points worked to exhaustion and small sizes. Likewise, the decline in the use of high quality raw materials and well made chipped stone tools that occurs over the course of the late Paleo-Indian and Early Archaic periods in many parts of the Southeast is thought by some investigators to be due, in part, to a decrease in group mobility, specifically the areas over which these groups moved (D.G. Anderson 1996b; Sassaman, Hansen, and Charles 1988). This would mean groups had less opportunity to visit stone sources at great distances and would have also had less need for high quality materials, since they would rarely be ranging far from sources, assum-

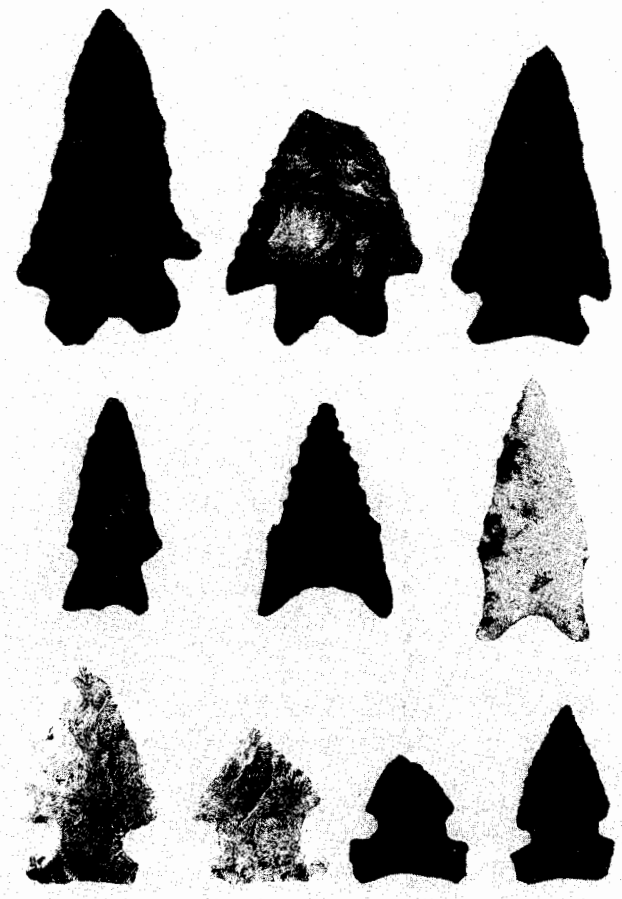

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Fig. 2. Early Archaic bifacially chipped stone projectile points and knives. top row, From Dust Cave, Ala., top left and center, bifurcated base forms, left, Kanawha type; top left, Kirk corner notched. center left, Jude point from Dust Cave; center center, Hardaway point from the south side of Buckhead Creek, Burke County, Ga.; center right, Dalton point of novaculite from Gourd Creek Cave, Mo. bottom, left and center, Kirk side-notched points from the G.S. Lewis site, S.C. bottom, second from right and right, Early side-notched points from Dust Cave. Length of top row right, 6.3 cm; rest to same scale.

ing stone was available locally. During earlier periods, when groups ranged extensively over the landscape and were highly dependent upon their stone tools, the need for reliable and predictable high quality lithic raw materials was critical, to maximize their use-life (Goodyear 1989). Other factors prompting a switch to lower quality lithic raw materials include the exhaustion of readily available high quality chert at source areas, the alluvial and colluvial covering of outcrops due to erosion and changes in climate and biota, and the inundation of raw material source areas both on the submerged continental shelf and in the interior due to changes in stream gradients and to rising sea levels (Goodyear 1999; Tesar 1994, 1996).

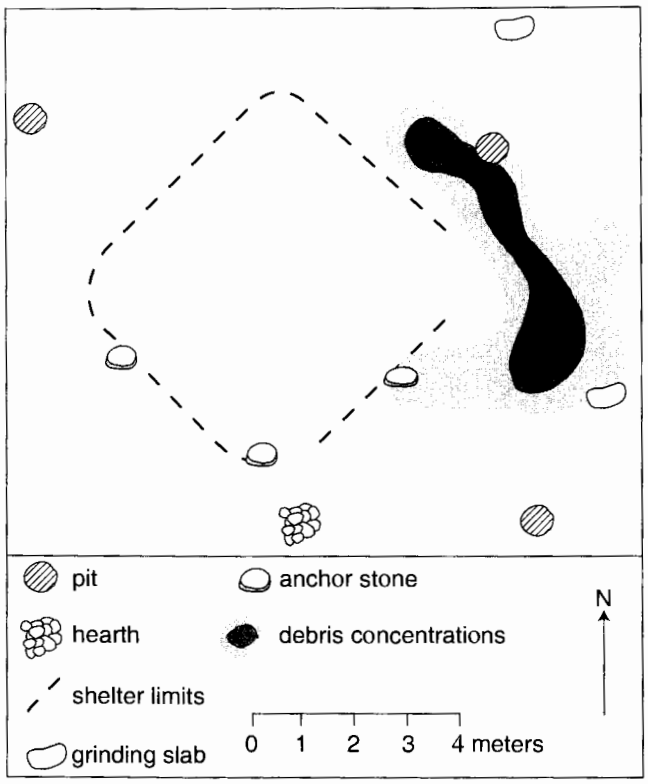
Settlement and Social Organization

Band-level groups are assumed to have been present across the Southeast during the Early Archaic, making use of most if not all parts of the landscape, and exploiting a wide range of resources (D.G. Anderson and K.E. Sassaman 1996; Meltzer and Smith 1986; Walthall 1998, 1998a). These bands in turn appear to have been loosely tied into larger mating and information exchange networks, or macrobands, centered along adjoining river basins and possibly major lithic raw material sources (D.G. Anderson and G.T. Hanson 1988; I.R. Daniel 2001). These inferred macrobands were informal and temporary structures, with constituent bands operating cooperatively as needed but otherwise essentially independent from one another, and not bound together by permanent mechanisms promoting a sense of ethnic identity. More complex organizational forms such as tribes are not thought to have been present during the Early Archaic period, and indeed are not thought to have emerged until well into the Middle Archaic period.

At the band level, residential population aggregates of from 50 to 150 people are assumed to have been present during the Early Archaic, occupying and moving primarily within a single drainage basin. Macrobands are assumed to consist of from roughly 500 to 1,500 people, corresponding to Wobst's (1974) minimum equilibrium mating networks. The maintenance of viable populations is assumed to have required mating networks extending over large areas. The principal mechanism hypothesized for maintaining interaction during the Early Archaic period, at least above the movement of individuals, was periodic multiband aggregation at Fall Line or quarry locations, or in intermediate areas between raw material sources. Such aggregation areas would have had to have had sufficient naturally occurring food resources to sustain large numbers of people at least temporarily, for a few days to a few weeks. The fluid movement of individuals or families between groups was also likely during the Early Archaic, although over time, as population density and organizational complexity increased, these movements may have become progressively more difficult (D.G. Anderson 1996b:39–45; Sassaman 1995). Open rather than closed mating networks are thought to have been present over much of the region during the Early Archaic, with probable clinal rather than disjunctive or steplike distributions of lithic raw materials and assemblages, save in those areas where major physiographic barriers such as mountain ranges constrained group movement (Sassaman, Hansen, and Charles 1988).

Site distribution data from across the region have been assembled to examine large-scale patterns in the distribution of Early, Middle, and Late Archaic populations (D.G. Anderson 1996a). These data indicate where apparent population concentrations were located, how widely they were spaced, and how these arrangements changed through time. A net increase in population size for the region can be inferred from these data, but at no time over the course of the Archaic period was the southeastern landscape uniformly occupied. Instead, vast stretches of the region were at various times unoccupied or underutilized. Concentrations of people in places like the middle Tennessee River valley or the Fall Line of the South Atlantic Slope may have been made possible by particularly rich and reliable biotic communities (Sassaman 1995). Judging by the size of demographic clusters and from patterns of raw material selection for tool manufacture, Early Archaic inhabitants of the Southeast maintained vast settlement ranges. The variety of site types within these ranges is great, and from this patterns of seasonal movement by small bands of people have been explained (D.G. Anderson and G.T. Hanson 1988; I.R. Daniel 2001; Gillam 1996; D.F. Morse 1977). During the Early Archaic groups probably did not stay put at a given site for more than a couple of months.

It would be wrong to see this extensive mobility during the Early Archaic as an imposition or constraint, for ethnographic data on hunter-gatherers show how important mobility is to these people as a matter of convenience and social harmony (R.L. Kelly 1995). Diminishing returns in the pursuit of food, interpersonal conflict, and waste disposal are all alleviated by relocating. Decisions about when and where to move were likely determined by a combination of tradition and contingent factors, such as food availability, weather, and recent contact with others. Settlement moves clearly were not haphazard or unplanned. Certain places in the landscape were preferred for habitation, and there appear to have been seasonal adjustments in the frequency and scale of mobility, although the details remain subject to debate (D.G. Anderson and G.T. Hanson 1988; I.R. Daniel 2001; Walthall 1998, 1998). Mobility during winter may have diminished and, possibly, populations may have dispersed, as the diversity and distribution of edible foods shrunk with the cold season. Along the South Atlantic Slope, small sites scattered across the hinterlands are evidence of the activities of small bands of hunters deployed from river-based winter camps (fig. 3) (Sassaman 1996a). The warm seasons brought opportunities for more diverse food pursuits, which seem to have been accommodated by more frequent moves. Short and intermediate term (i.e., annual to decadal or multidecadal scale) climatic fluctuations would have changed normal



after Ledbetter et al. 2001:fig. 64.

Fig. 3. Domestic structure at the Vulcan site, Ga., an Early Archaic temporary upland camp and lithic scatter. A concentration of knapping debris and mounded soil defined one corner of the structure, which was probably a skin tent anchored by large stones. A small hearth lay outside the structure, as did a sandstone grinding slab for food processing, and 3 smudge or hide smoking pits. Analysis of the use-wear on the stone tool edges indicated the site was the locus of butchering, hide working, and wood, antler, and bone working, and that the tools were made from chert brought into the site from at least 20 km distant (Ledbetter et al. 2001:175).

settlement routines somewhat during the Early Holocene as well, and the impacts of climatic fluctuation on human populations likewise played out differently over the region (D.G. Anderson 2001). Settlement systems and organizational forms were probably similar, but certainly not identical, across the region at this time.

Aside from the obvious need to feed themselves, Early Archaic populations continued to cope with the problem that faced their predecessors, that is, small population size. To guarantee access to eligible mates, Early Archaic groups had to stay in contact with one another. The flow of personnel between bands of people not only ensured biological rigor and population viability but also served the needs of communication and information sharing. Knowledge about the itinerary of neighboring bands, where they had been and planned to go, would have been critical to the sustainability of these early, small populations. Early Archaic people periodically aggregated at favored locations, places like shoals, major river confluences, possibly dense stands of mast-producing hardwoods, or at preferred sources of lithic raw material. Such gatherings may have been when marriages were arranged or conducted, group ceremonies held, and information and goods exchanged. Although individual bands may have participated regularly in aggregations, there is nothing in the record of Early Archaic settlement to suggest that large groups resided together for more than a few days or weeks. Apparently the mobile life was preferred, as it continued to be an effective strategy for personal autonomy, economic sustainability, and intergroup harmony.

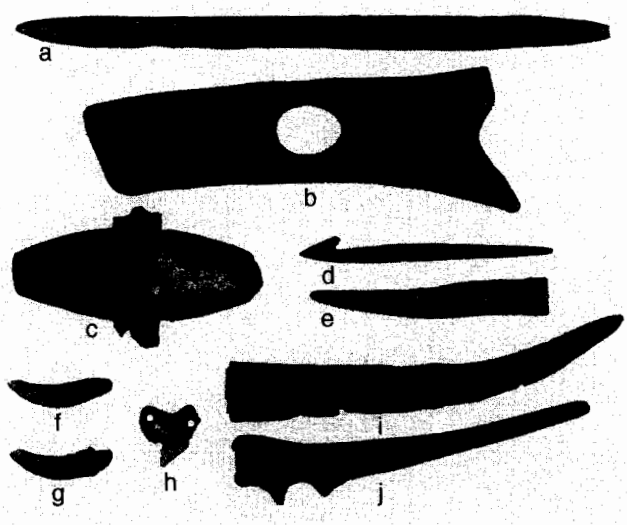
Coastal and Wet Sites

How Early Archaic Southeast peoples made use of the coastal zone is poorly understood. Sea levels continued to rise throughout the period, coming to within a few meters of present levels only after about 4000 B.C. (Colquhoun and Brooks 1986). Hence, coastal sites dating to the early part of the Archaic period are deeply submerged (Blanton 1996; Faught 1996; Faught and Donoghue 1997; Goodyear et al. 1983; Russo 1996a).

Many submerged or wet sites undoubtedly also exist in terrestrial settings in the region, although the best known are almost all from Florida and many are from later in time. The general lack of surface water in peninsular Florida during the early part of the Holocene encouraged settlement around sinks and ponds. These occupations involved the interment of humans in pond and bog settings at places such as the terminal Early Archaic/initial Middle Archaic Windover site near Cape Canaveral, where over 160 human burials were recovered from a saturated peat deposit (Doran and Dickel 1988, Doran et al. 1988). Archaic basketry, canoes, carved wooden sculpture, tools (fig. 4), utensils, and clothing, as well as superbly preserved human tissue has been found in wet sites, of which cemeteries like Windover and Little Salt Springs in Florida are the best known examples (Clausen et al. 1979; Doran et al. 1988; Purdy 1988, 1991). As more well-preserved human remains are found, mitochondrial DNA analyses may help delimit genetic relationships between ancient and modern Indian groups, as well as assist in determining the origins of the region's founding population. The use of dugout canoes has appreciable antiquity, with the earliest specimens dating to about 3200 B.C. (Milanich 1994:70; Newsom and Purdy 1990). The use of watercraft has been inferred as far back as Dalton times in the region, given the presence of adzes and other woodworking tools that would have been ideally suited for building dugout canoes (Jodry 1999; D.F. Morse 1997; D.F. Morse and P.A. Morse 1983).

Chronology and Stone Tool Technology

Most of the archeological record of the Early Archaic period consists of stone tools and the by-products of stone manu-



Fla. State U., Dept. of Anthr., Tallahassee: a, 90.11; b, 90.12; c, 155.7; d, 90.10; e, 424.96; f, 90.24; g, 90.18; h, 90.14; i, 121.48; j, 90.16.

Fig 4. Bone, antler, and tooth items from the Windover site, Fla. The unusual peat environment of the site preserved tools made from organic materials that are rarely found in archeological contexts (Doran 2002). Few tools here were made from stone, which was scarce and of poor quality. a, Bone pin; b, deer antler shaft straightener; c, deer antler atlatl or spearthrower handle with remains of wooden shaft; d, deer antler or bone harpoon hook; e, deer antler tine projectile point; f–g, canid teeth with adhesive from hafting and with ground tips making them suitable for use as engraving tools; h, tooth of a lemon shark with perforated base for hafting onto a small wooden handle; i, Deer antler tine pressure flaker used in the manufacture of stone tools; j, bevel tipped canid ulna awl used in plant processing and possibly the manufacture of fabric or basketry. Length of j about 12 cm, rest to scale.

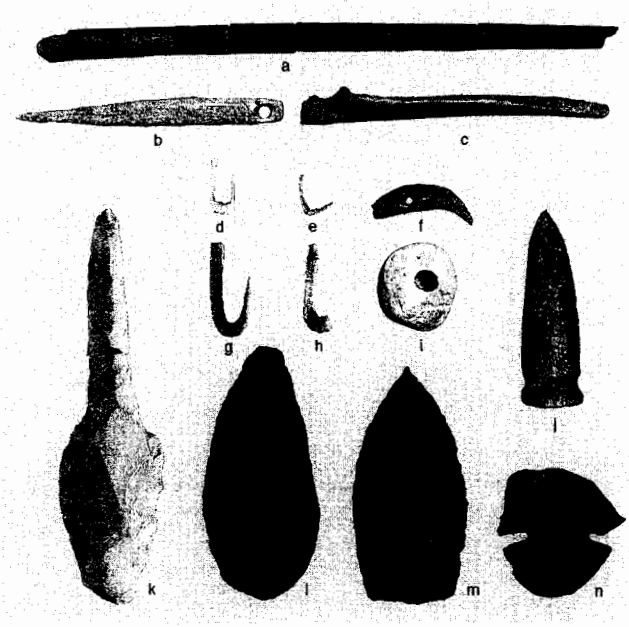


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Fig. 5. Early and Middle Holocene objects from Dust Cave, Ala. The deeply stratified cave has deposits from the late Pleistocene through the Middle Holocene. a, Bone shaft; b, bone needle; c, bone ulna awl; d–e, g–h, bone fishhooks; f, animal tooth with perforated base for hafting; i, perforated shell bead; j, bone peg; k, Early Archaic bifacial drill; l, teardrop biface; m, bifacial preform; n, Plevna bifacial scraper. Length of m about 6 cm, rest to scale.

facture and use. While many inferences about settlement, subsistence, and technological organization derived from these kinds of data have been obtained, often through highly sophisticated analyses, much more primary data is needed on foodways, biological health, social organization, and religious life. Paleosubsistence evidence, mostly based on plant and animal remains from rockshelter settings, supports a picture of generalized foraging and the importance of white-tailed deer and hickory nuts (Gremillion 1996; B.D. Smith 1986, 1992e; Styles and Klippel 1996; R.B. Walker 2000). The reconstructions about Early Archaic life described to this point are admittedly speculative, based as much on analogy and theory as on data.

In years past, stone tools were the sole source of data on chronology. At deeply stratified sites across the Southeast, archeologists documented differences in the design of stone tools from different layers. The relative chronologies afforded by these data were eventually tied to absolute ages with the help of radiocarbon dating. The cultural sequence for the Archaic period in the Southeast was formulated by Coe (1964) based on the Hardaway and Doershuk sites in North Carolina. This sequence was subsequently reaffirmed and clarified at other deeply stratified alluvial sites across the region, such as at Saint Albans in West Virginia (Broyles 1966, 1971), at a number of locations in the Little Tennessee River valley in eastern Tennessee (J. Chapman 1985a), and at Haw River in North Carolina (Claggett and Cable 1982). By the late 1970s chronologies for the Archaic period were fairly secure in several parts of the Southeast (D.G. Anderson and K.E. Sassaman 1996a), and refinement in chronology continues, for example at Big Eddy in Missouri (Lopinot, Ray, and Conner 1998, 2000) and Dust Cave in Alabama (fig. 5) (Goldman-Finn and Driskell 1994; Driskell 1994, 1996).

Stone tools are of course more than an inroad into prehistoric chronology. Analyses of the design and implementation of stone tool technology provide data on mobility range, seasonality, site duration, and division of labor (Cable 1982, 1996; Bradbury 1998; P.J. Carr 1994; J.L. Hofman 1984; J.K. Johnson 1993a; Kimball 1996; Sassaman 1996a). Many tools of the Early Archaic period were designed not only to function efficiently but also to last and be maintained for prolonged periods of use. High-quality raw material such as chert and rhyolite was preferred because it could be predictably shaped into specific tool forms and then maintained through sharpening and repair. The variety of

Early Archaic tool types reflects the functional specialization of forms, presumably a requirement of efficiency and reliability. These qualities alone speak volumes about Early Archaic life. Functional specialization implies focused activity—something targeted for a specific time and place. Designed for reliable, maintainable service, tools were suited to focused tasks away from replacement tools or raw materials, in other words, away from home. One such activity was deer hunting by parties of men. Food collecting and other subsistence activities of women may have also involved specialized stone tools, although based on ethnographic information, women's activities did not involve long-distance and prolonged forays from base camps. However, both men and women, along with children, routinely traveled long distances when relocating camps (R.L. Kelly 1994:111–132). Here again data from stone tools provide evidence of settlement relocation. The preferred raw materials for stone tools were transported as much as 300 kilometers from quarry sources, indicating group ranges were extensive.

Biological Relationships

Cultural and ecological similarities aside, specific biological relationships among Early and later Archaic populations, their forebears, and descendants are difficult to establish. Morphometric and molecular features of racial affiliation, such as shovel-shaped incisors, mitochondrial DNA lineages, and blood groups, indicate that living Native American populations descended from founding populations originating in northeastern Asia, but this says nothing about biological continuity within specific populations.

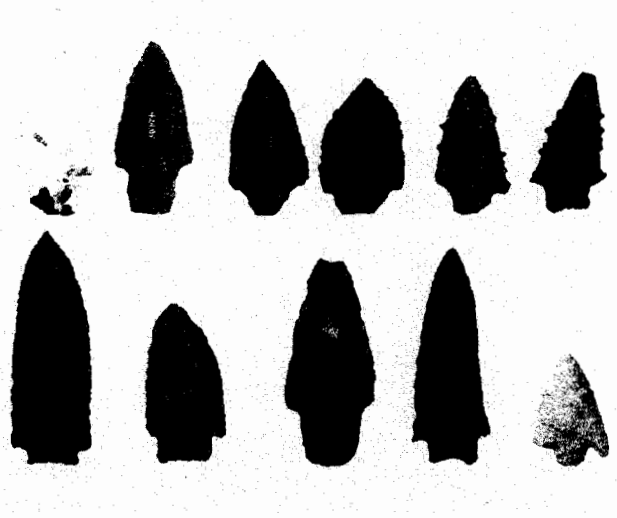
Middle Archaic Occupations, 6950–3750 B.C.

The Middle Holocene is loosely correlated with the Middle Archaic period, from 6950 to 3750 B.C. (Sassaman and Anderson 1996:xvii–xviii; D.G. Anderson, M. Russo, and K.E. Sassaman 2002; B.D. Smith 1986:18). The period is widely viewed as the time of human adaptation to the climate interval known as the Hypsithermal. This era was not one of appreciably greater overall global temperature than today, as has been long thought. Instead, temperatures were warmer in the summer and winters colder than at present in the northern hemisphere (Ganopolski et al. 1998). Ice core data, in fact, show no great decrease in continental ice volume as might be expected, given an increase in global temperatures (Hu et al. 1999).

Middle Holocene climate in the Southeast was not like that of today, however, regardless of how similar global temperatures may have been to the present. Seasonal temperature extremes were greater, which may have stressed local populations. Lake levels were at low stands or dry over large areas, particularly in the lower Midwest and Midsouth, which would have made areas with permanent water more favorable for settlement (Webb et al. 1993:454). In Florida and the lower South Atlantic Slope, in contrast with much of the rest of the region, a general increase in moisture is indicated, as higher sea and groundwater levels led to a filling of previously dry basins, and an expansion of the great interior Coastal Plain swamps like Okeefenokee and the Everglades (Watts, Grimm, and Hussey 1996; Mark J. Brooks, personal communication 2001). El Niño episodes may have been milder and less frequent during the Middle Holocene, reducing short-term climatic fluctuation somewhat, circumstances that apparently reversed at the end of the period (Sandweiss et al. 1996; F. Hamilton 1999: 350–351). In the lower Midwest and Midsouth, at the onset of the Middle Archaic, Middle Holocene climate appears to have been hotter and dryer than at present, leading to a reduction in upland vegetation, increased surface erosion, and aggrading floodplains (Knox 1983:32–34; Schuldenrein 1996:9–10, 26–27; H.E. Wright 1992). Formation of backwater slough habitat enhanced floodplain productivity, while shoal environments promoted freshwater shellfish. Across the lower Southeast, pine forests began to re-expand, replacing oak, and cypress swamps began to develop along the slowing river systems, particularly after about 4800 B.C. (P.A. Delcourt and H.R. Delcourt 1987; G.L. Jacobson, T. Webb, and E.C. Grimm 1987; Watts, Grimm, and Hussey 1996:32–36; T. Webb et al. 1993:448–450). These warming and drying trends in some parts of the region may have rendered riverine areas more favorable and upland areas less favorable to human populations, save in those areas where water sources (e.g., Carolina Bays, baygalls) were present over the landscape (J.A. Brown 1985:219–221; J.A. Brown and R.K. Vierra 1983:167–168; Sassaman 1995:182).

Identifying Components

Projectile points are the primary means by which Middle Archaic components are recognized in the Southeast (fig. 6). Over much of the eastern part of the Southeast, the notched and bifurcate Early Archaic forms were replaced by square and contracting stemmed Kirk Stemmed, Stanly Stemmed, Morrow Mountain Type I and Type II forms and, toward the end of the Middle Archaic, by lanceolate Guilford and MALA forms (Coe 1964; J. Chapman 1985a; Claggett and Cable 1982; B.A. Oliver 1985; Sassaman 1985). These types as well as Sykes, Benton, and Ledbetter forms are common in the Midsouth (Bense 1994; J.K. Johnson and S.O. Brookes 1989; Justice 1987; Walthall 1980). To the west of the Mississippi River, in what is sometimes called the trans-Mississippi South, a wide range of projectile point forms probably occurred during the Middle and Late Archaic periods, including the Yarbrough, Epps, Ensor, Evans, Kent, Wells, Bulverde and Carrollton types, some of which have affinities to the west, in Texas and on the eastern Plains (Aten 1983; Jeter and Williams 1989; E.S. Turner



top, left to right, Fla. State U., Dept. of Anthr., Tallahassee:158.20, 424.85; U. of Ala., Ala. Mus. of Nat. Hist., Tuscaloosa: 1989.51.10300, 1989.51.10371, 1989.51.10377, 1989.51.10335; bottom, left to right, U. of Ala., Ala. Mus. of Nat. Hist., Tuscaloosa: not recorded, 1989.51.11273, 1989.51.10564, 1989.51.11033; Smithsonian, Dept. of Anthr.: A32126 (neg. 78-6342).

Fig. 6. Middle Archaic chipped-stone projectile points and knives. top, left to right: 2 Fla. Archaic Stemmed chert points from Windover, Fla., with trace of mastic from hafting (only 4 stone tools were found at this site); 2 Morrow Mountain points from Dust Cave, Ala.; 2 Kirk stemmed and serrated points from Dust Cave. bottom, left to right: 2 Benton points from Dust Cave; 1 long-stemmed Morrow Mountain point from Dust Cave; 1 Buzzards Roost Creek point from Dust Cave; Eva II point from Bowling Farm/Bosley Springs site, Tenn. Length of top left about 9 cm, rest to scale.

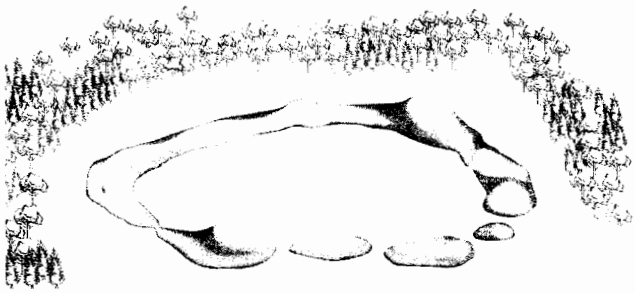
and T.R. Hester 1993). The dating of these Archaic forms in the western part of the region is much less precise than it is for many of the point types found farther east.

Cultural Change

The Middle Archaic was a time of dramatic cultural change in eastern North America, and in the Southeast in particular. Ceremonial shell and earthen mound construction was initiated in several areas, long-distance exchange networks spanning much of the region appeared, new tool forms were adopted, such as spearthrower weights and grooved axes, and there is increased evidence for interpersonal violence or warfare (D.G. Anderson, M. Russo, and K.E. Sassaman 2002; J.A. Brown 1985; J.A. Brown and Vierra 1983; Dye 1996:140; J.B. Griffin 1967:178; Jefferies 1995, 1996; J.K. Johnson and S.O. Brookes 1989; Marquardt 1985; Milner 1999; Russo 1996, 1996a; Sassaman 1996; B.D. Smith 1986:18–27; M. Smith 1996). While fairly simply organized foraging groups were present, they increasingly come to be found in geographically marginal areas, such as in the South Atlantic Piedmont or in western Louisiana (D.G. Anderson 1996b:164–165; Sassaman 1983, 1991, 1995:191). By 3500 B.C., large shell middens appearred along the coast (Russo 1996a). All these factors indicate local cultures were growing in scale and organizational complexity.

As early as 6000 B.C., shellfish began to be collected in significant numbers in the interior of the midcontinent, leaving behind food refuse and artifacts indicative of repeated, if not perennial occupation, a trend that continued through the initial Late Holocene (Claassen 1996; Dye 1996). In the ensuing centuries, the exploitation of rich riverine habitats encouraged or enabled more complex cultural developments, including long-distance exchange, mortuary ceremonialism, interpersonal strife, and technological innovation. Midden mounds of the sixth millennium B.C. in the Gulf Coastal Plain of Mississippi and Alabama testify to an expanding pattern of relatively permanent and circumscribed settlement, again predicated on exploitation of riverine and backwater resources (Bense 1987). A similar pattern developed in northeast Florida after about 4000 B.C., with intensive coastal occupations following in the next few centuries (Russo 1996a).

Massive earthen mound construction has been documented at a number of locations in the Lower Mississippi valley (Russo 1994a, 1996). Early mound complexes dating between 4275 and 3750 B.C. include Frenchman's Bend, Hedgepeth, and Watson Brake (Russo 1996a; J.W. Saunders, T. Allen, and R.T. Saucier 1994; J.W. Saunders et al. 1997). These are not isolated small mounds, but complexes requiring the cooperative interaction of large numbers of people. Watson Brake, for example, which was built between 4170 and 3750 B.C., includes 11 mounds up to seven meters in height connected by a circular earthen embankment 280 meters across (fig. 7). A number of early mound sites have also been found in coastal areas, where both earth and shell were commonly used as construction material (Russo 1994, 1996a). At the Horr's Island site on the southwest Florida coast, for example, a complex arrangement of mounds was constructed between 2600 and 3000 B.C. Analysis of subsistence remains indicates that this site was occupied year around, the earliest evidence for true sedentism in the region (Russo 1991a). Apparently, the abundant local marine resources allowed this sedentary lifestyle. Other early mounds dating to between 3500 and 2000 B.C. have been found in northeast Florida at Tomoka (Piatek 1994) and Tick Island (Aten 1999; Russo 1994:106–108). Other elaborate Middle Archaic cultures include the Shell Mound Archaic cultures of the Midsouth and lower Midwest (Claassen 1996; Marquardt and Watson 1983) and the Benton Interaction Sphere in the lower Midsouth (J.K. Johnson and S.O. Brookes 1989). While still considered egalitarian societies, it is clear that some individuals had much higher status than others, and likely competed in their own and other societies for recognition and leadership in warfare, exchange, and probably the direction of public construction episodes and ceremony.



after Marckese in J.L. Gibson 1994a: fig. 5.

Fig. 7. Reconstruction of the Watson Brake mound complex, La., one of the earliest mound centers in North America, looking north. The tallest mound is conical with an apron or platform at the southeast approach, while the remainder are dome shaped, the tallest of which is 4 m in height. There is no evidence the mounds were used for human burials or religious purposes. The builders were mobile fisher-hunter-gatherers who visited the area seasonally, probably summer through fall, to exploit the rich stream and swamp environment. These were preceramic, preagricultural, and nonsedentary people, which contradicts conventional anthropological wisdom about the level of social and technological complexity deemed necessary to build monumental architecture.

Why did complex societies first emerge in parts of eastern North America during the Middle Archaic, and not before or after? The Middle Holocene appears to have been a time of interrelated environmental stress and population pressure. Climatic stress is indicated by evidence for aridity and the expansion of pine forests over parts of the region (T. Webb et al. 1993:448–450, 454), while inferred group circumscription into resource-rich riverine or coastal zones may have placed pressure on and generated competition for these resources. As populations grew and mobility decreased, competition and interaction between groups appears to have increased, probably because people were forced closer and closer together on the landscape. This competition was held in a number of arenas, encompassing personal status items as indicted by the growth in exchange networks; for food or other natural resources as suggested by the increased evidence for warfare; and in collective ceremonial behavior, as reflected in the construction and use of elaborate mound centers in several areas. Critical population density and spacing thresholds may have thus been reached at a time when climatic uncertainty was exacerbated (D.G. Anderson 2001). F.E. Hamilton (1999:350) has noted that inferred increases in the occurrence and intensity of El Niño toward the end of the Middle Holocene (Rodbell et al. 1999; Sandweiss et al. 1996; Sandweiss, Maasch, and Anderson 1999) could have resulted in highly variable climatic conditions in eastern North America, including possibly greater and more frequent flooding. These changes could have prompted more extensive cooperative efforts among the region's peoples, directed to elaborate mound building, exchange, and ceremonial behavior. Some observed changes in organizational complexity have been attributed to long-term fluctuations in sea level (Widmer 1999). While climatic change may have contributed to the changes in organizational complexity that are observed in the Middle Archaic period, many more factors are also important, not the least of which was the cultural knowledge and diversity developed over thousands of years of prior settlement in the region.

Archaic shell and earthen mound sites are unevenly distributed across the Southeast and lower Midwest, and shell mounds are absent in some areas where mollusks were likely prevalent (Claassen 1991, 1991a, 1996:240–242). This indicates that regional political conditions, as well as climate or population levels, played a role in shaping shellfish exploitation patterns, mound construction activity, and settlement in general (Sassaman 1995, 2001). Mound construction of shell and earth may have occurred only where population levels were high and competition for resources was particularly intense, if this activity was a means of binding people together or to demarcate territories (D.G. Anderson 2002; Russo 1999; Widmer 1999). An even simpler explanation may be that shellfish were only used where other, more readily exploited or preferred resources were not easily available (Peacock 1998). The mounding of shell and earth in the Midsouth at this time parallels comparable developments in other parts of the region, in coastal areas and in the Lower Mississippi valley, and indicates that collective ceremonial behavior on a fairly large scale had emerged in many parts of the region (Claassen 1996; Russo 1996, 1996a; cf. Hensley 1994 and Milner and Jefferies 1998:130, who argue that the large interior shell sites were true middens, and not monumental or ceremonial architecture).

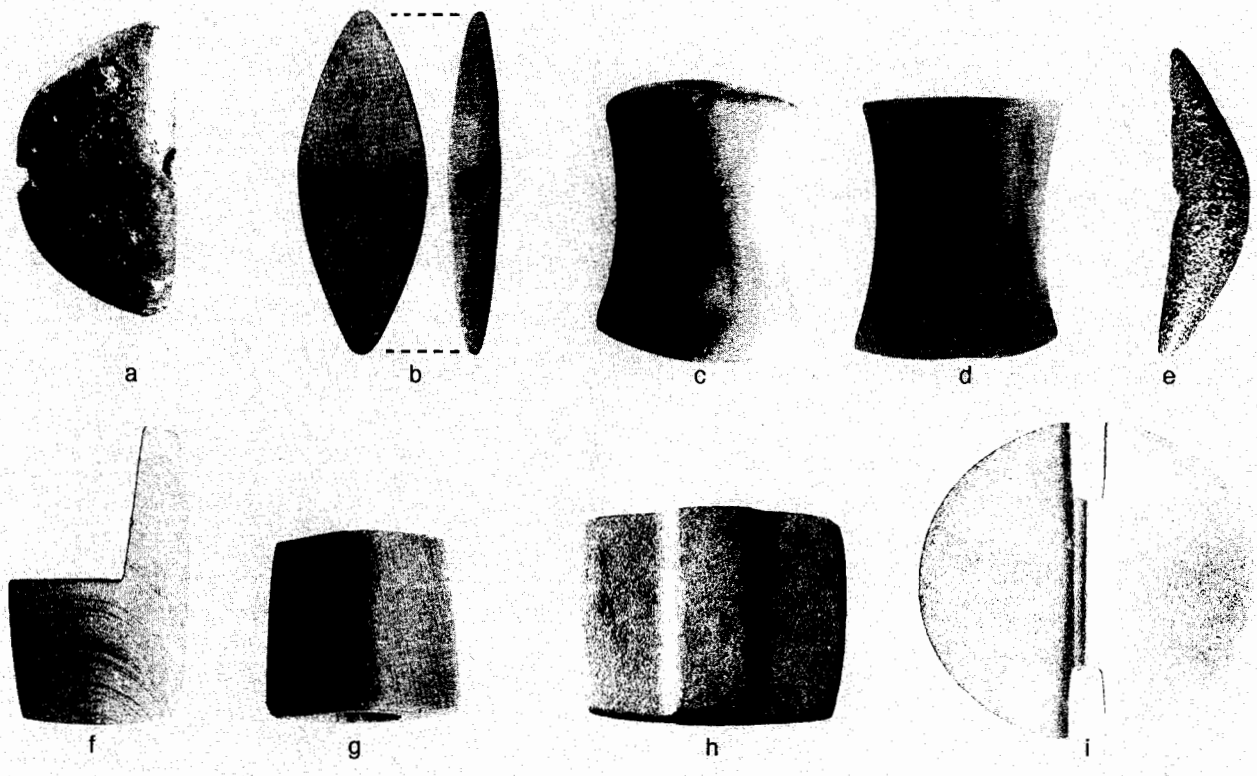
Settlement and Social Organization

While Middle Archaic populations undoubtedly varied in their internal organization and relations with others, they are generally viewed as egalitarian societies, meaning that they lacked institutionalized differences in status and power that would affect access to key resources, at least at the level of the individual. As tribal societies emerged toward the end of the era, it is equally clear that some lineages, and individuals within these lineages, controlled greater resources and had a higher status than others. The differential size of the various mounds at complex ceremonial centers like Watson Brake, if related to the size and ability of subgroups or lineages, attests to unequal divisions with local societies. Likewise, the existence of apparent territoriality in certain subregions implies a level of cultural inequality among neighboring populations, which may have affected access to potential mates, if not material resources per se.

The complex shell and earthern mound centers of the later Middle Archaic appear to reflect the actions of many band-sized groups, or tribal segments, bound together into new social formations by the collective ceremonial activity represented by the construction of these complexes, and the communal feasting, ritual and other behavior that likely took place at them (D.G. Anderson 2002; Bender 1985,

1985a). Mound construction and presumably associated exchange and ritual, in this view, helped create pantribal social institutions linking tribal segments from across large areas. Besides enhancing the status of tribal leaders, interaction and exchange likely helped reduce the possibility of warfare and alleviate subsistence stress, by creating ties between groups, bonds of alliance rather than enmity (Braun and Plog 1982; Brose 1979; Saitta 1983). When resources in one area grew scarce, the existence of alliances would facilitate temporary group relocation into more favored areas, and reduce the possibility of conflict, until the shortfall passed.

Despite localized trends toward increasing settlement permanence and monumental construction activity, most, if not all, Middle Archaic populations across the region practiced some degree of settlement mobility, usually relocating habitations seasonally to take advantage of changes in the availability of food resources, as well as for social reasons. The frequency and distance of settlement moves varied considerably among groups, as did the redundancy of land use and the size of home ranges. In some areas large numbers of people may have aggregated for varying lengths of time to engage in monumental construction and presumably associated ceremony, as in northeastern Louisiana or coastal Florida (Russo 1996, 1996a), or along the major rivers of the mid-South where large shell middens have been found (Marquardt and Watson 1983). In many other parts of the region, there is little or no evidence for such behavior. The Morrow Mountain peoples of the southern Piedmont, for example, maintained a seemingly undifferentiated settlement pattern, moving camps frequently throughout river and upland zones (Sassaman 1995).



Smithsonian, Dept. of Anthr.: a, A275946 (neg. 24581g); b, A327929; c, A62032 (neg. 24581g); Smithsonian, Natl. Mus. of the Amer. Ind.: d, 171928; Smithsonian, Dept. of Anthr.: e, A171062 (neg. 26754c). f, A249639 (neg. 24581d); g, A251920 (neg. 24581d); h, A171392 (neg. 26754c); i, A317061 (neg. 24581g).

Fig. 8. Bannerstones. Ground stone atlatl or spearthrower weights, finely crafted ornaments that were traded over long distances, were used to increase the force and impact of darts thrown from the atlatl stick. They first appeared in the Middle Archaic in a variety of forms and materials and gradually disappeared following the Late Archaic. The stone was chipped, pecked, and ground into shape, and then drilled with a reed and a sand abrasive. a, crescentic form of fuchsite from Carnesville, Ga; b, partially drilled slate shuttle form from Colbert or Lawrence County, Ala., showing the uncut tube created by the reed; c, reel form of quartz from Howard County, Mo.; d, quartz hourglass form from Indian Knoll, Ky.; e, knobbed lunate form from Etowah, Ga.; f, geniculate form of banded slate from near Iberia, Ky.; g, tubular form of banded slate from near La Crosse, Ark.; h, ovoid form from mounds on Buckhead Creek, Ga.; i, notched ovoid form from mound near Wachula, Fla. The earliest forms shown are the crescentic, shuttle, and reel, and the latest forms are the oviod, notched ovoid, and hourglass shapes (Kwas 1981). Height, a, 10.8 cm; b; 17.1 cm; c, 8.3 cm; d, 6.0 cm; e, 8.6 cm; f, 11.4 cm; g, 6.4 cm; h, 7.9 cm; i, 14.3 cm.

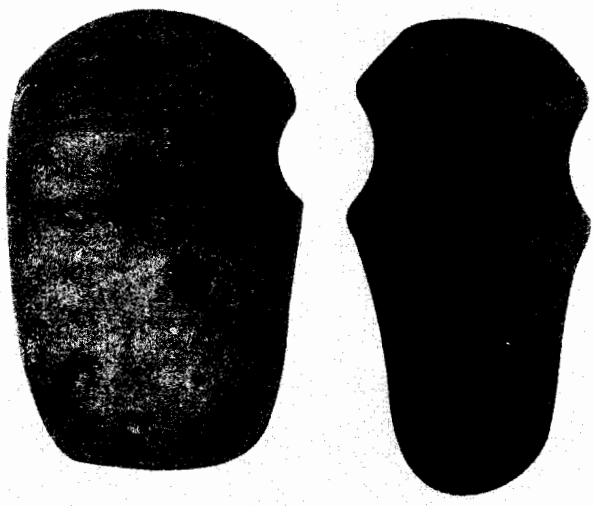


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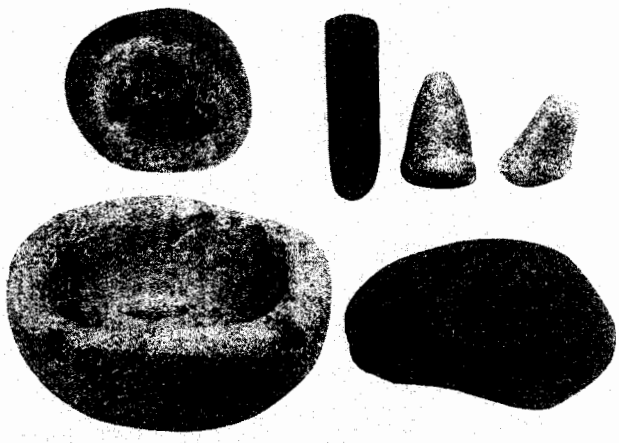
Fig. 9. Stone axes made by chipping, pecking, and grinding stone cobbles with grooves to facilitate hafting. Used as axes and adzes, these were primarily for heavy woodworking. The fully grooved form, right, was supplanted by the 3/4 grooved ax, left, in some areas. right, From Rome, Ga.; left, from St. Claire County, Mo. Length of left 14.8 cm, right to scale.



top, left to right, Smithsonian, Dept. of Anthr.: A327038; U. of Ala., Ala. Mus. of Nat. Hist., Tuscaloosa: b. 7127; 7161. Smithsonian, Dept. of Anthr.: A171594; bottom left, A171673; bottom right, A327884.

Fig. 10. Mortars and pestles. Coarse ground and pecked stone grinding tools were used to prepare or process foods such as nuts, seeds, and grains, and pigments, dyes, and other materials. top, left to right, Nutting stone, a large flat cobble with pecked indentations used to hold nuts for shelling or crushing from mounds near Town Creek at Muscle Shoals, Ala.; cylindrical stone pestle or mano used for grinding against a mortar stone, from Dust Cave, Ala.; conical pestle or muller from Dust Cave; tapered or truncated conical pestle from mound near the Coosa R., Rome, Ga. bottom left, Bowl-shaped soapstone mortar from Milton County, Ga.; bottom right, cobblestone mortar with pecked grinding surface from Colbert or Lawrence County, Ala. Length of bottom left 31 cm, rest to scale.

Information on community organization is scant, but judging from the size of most habitation sites, resident groups consisted of some 30 to 50 individuals, in several households. Evidence for Middle Archaic housing is limited to occasional posthole stains and prepared clay floors at a few sites (Sassaman and Ledbetter 1996). Posthole patterns suggest circular to subrectangular structures about four meters in size. The limited evidence implies that structures were simple and impermanent, although preservation bias should not be overlooked. Given relatively abundant evidence for substantial architecture by the onset of the Late Archaic period, better examples of structures during earlier periods is likely. While evidence for periodic social aggregation has been demonstrated by the presence of major mound and shell midden sites in some parts of the region, knowledge about associated residential structures at these sites remains minimal.

Judging from the large number of sites recorded in state site files from across much of the Southeast, Middle Archaic populations were at least comparable to those of the Early Archaic period, although there is also no evidence for a major increase in the numbers of sites compared to the preceding period, which might imply appreciably greater numbers of people (D.G. Anderson 1996a). Some parts of the region have yielded comparatively few sites, such as in the interriverine area of the South Atlantic Coastal Plain. Skeletal populations from the mid-South show that life expectancy at birth was about 20 years; those surviving to age 15 could expect to live an additional 15 to 20 years. Very few individuals survived past their sixth decade. Relatively high rates of skeletal trauma reflect rigorous lifestyles, occupational stress, and some interpersonal violence (M. Smith 1996). Indications of nutritional status reflect well-balanced, diverse diets: dental caries were few, and metabolic disorders rare. Nonspecific infectious diseases express low to moderate rates compared to agricultural groups.

Embedded projectile points occur occasionally in the skeletal remains of Middle Archaic individuals (M. Smith 1996). Also documented occasionally are traumas attributed to violent confrontation. Whether this evidence points to intergroup strife, domestic violence, or both remains to be seen, but nothing in the record of Middle Archaic conflict points to endemic, organized warfare. Instead, occasional low intensity conflict, perhaps related to status acquisition and the maintenance of territorial boundaries and buffer zones, is indicated.

The assumed division of labor by age and sex is not well-established with direct evidence for either the Early or Middle Archaic periods. Mortuary associations of functionally specific tools with particular genders are often ambiguous, although functioning atlatls (as opposed to intentionally broken ones) were most often associated with men, supporting the widespread assumption that men were primarily responsible for hunting. Limited analysis of work-related

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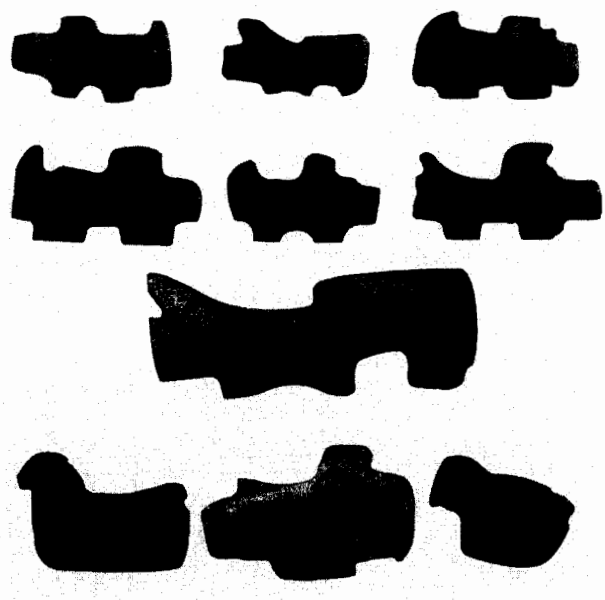
Fig. 11. Lapidary bead manufacturing. Drilled tubular stone beads made during the Middle Archaic are often found in caches in all states of manufacture. top, Soft, schistlike slate that was sawed into rectangular blanks and ground into shape, from Poverty Point, La. left to right, Bead blank; smoothed blank; partially ground blank; blanks partially sawed from stone slab. center, Tubular jasper bead manufacturing sequence (left to right): elongate pebble roughly chipped into shape, initial grinding, and bead blank with grinding near completion from the Keenan Cache, Brookhaven, Miss.; 2 finished ground and polished forms from the Fulton Cache, Ford Farm/Wesson site, Miss. bottom, Small jasper beads probably perforated by a stone drill with a long tip after they were ground and smoothed (left to right): 3 cushion-shaped beads with center holes marked but drilling incomplete from the Keenan Cache; 2 completed beads, exteriors smoothed, centers drilled from the Fulton Cache. Length of center far right, 5.9 cm.



Smithsonian, Dept. of Anthr.: top 2 rows, A305430; third row, A305429; bottom, left and right, A21918; center, La. State U., Mus. of Nat. Science, Dept. of Anthr., Baton Rouge: 16Ebr17.

Fig. 12. Middle Holocene zoomorphic jasper effigy beads. Animals and insects are represented by these beads, usually found in caches near the lower Mississippi R. valley with the distribution centering on southern Miss. The sweeping curves on several of these are thought to represent locust wings. bottom left and right, 2 birds. The identity of the rest of the forms, and of their purpose, is a mystery. Top 3 rows from the Fulton Cache, Ford Farm/Wesson site, Miss.; bottom left and right from the Keenan Cache, Brookhaven, Miss.; bottom center, from Monte Sano Mounds, La. Length of bottom left 3 cm, rest to scale, except bottom center, length 4.5 cm.

stress in skeletal tissue indicates that women routinely conducted repetitive one-handed tasks for processing plant foods (M. Smith 1996).

Middle Archaic subsistence economies revolved around the seasonal exploitation of wild plant and animal resources. Long-term trends include increasing reliance on aquatic resources in some coastal and riverine areas, and an apparent continuing diversification in the kinds of resources being exploited. In other parts of the region where evidence for the use of shellfish and other new resources is lacking, subsistence practices appear essentially unchanged from the Early Archaic period. Economies across the board appear to have been locally self-sufficient, with little to no reliance on intergroup exchange of foodstuffs. Food storage, if at all practiced, was likely limited to fall and winter caches by families or small coresident groups although evidence one way or the other for the existence of storage facilities, as with structures in general, is lacking from most areas. Division of labor for subsistence purposes was probably restricted to age and sex.

The specific mix of resources varied with local availability, although white-tailed deer, smaller mammals, and nuts

(acorn, hickory, walnut) were staples throughout much of the Eastern Woodlands (D.B. Smith 1986; Styles and Klippel 1996). Wild forms of gourd and squash began to be manipulated during the Middle Archaic period to become more economically useful for, and dependent on humans. However, these native species appear to have served as containers and perhaps other nonfood purposes before they became viable food resources in the Late Archaic period. Intensive collecting of smaller seeds such as chenopodium began to occur in some areas although evidence for domestication is not evident until the end of the Late Archaic (D.B. Smith 1992a; Gremillion 1996).

Unequivocal evidence for ritual away from obvious earthen or shell mound centers (where the construction of such sites was itself likely a product of such behavior) is limited to mortuary practices. Individuals generally were buried at sites of habitation, often in domestic refuse, although evidence for cemeteries has been observed in several subregions, notably at wet sites in Florida and apparently in shell midden sites in the Midsouth. Individuals were interred in a variety of positions (partially flexed, tightly flexed, seated), and in varying conditions (in flesh, bundled, cremated), even within regional subtraditions. Grave goods were generally few and tend to reflect achieved status; there is no evidence for hereditary inequality. Hunting ritual might be inferred from the manufacture and use of elaborate spearthrower weights (bannerstones). Also, turtle-shell rattles may have been used for ritual purposes.

Technological and Stylistic Innovation

Technology in the Middle Archaic tradition involved a variety of flaked stone tools, along with an increasing variety of ground and polished stone items. Raw materials for various industries were usually obtained locally in the course of routine settlement rounds, although some items like marine shell, copper, or some stone used in bannerstones (fig. 8) or grooved axes (fig. 9) moved great distances. Where preservation allows, bone and antler tools reflect a heavy reliance on organic media; wood was also likely extensively used, as were fibers for basketry. The most visible aspect of Middle Archaic flaked stone technology are hafted bifaces. A variety of stemmed biface forms supplanted the notched forms of the preceding tradition. Some functioned expressly as spear tips, others as knives, while most served multiple functions, reflecting the overall flexibility and limited specificity of the flaked stone industry. Many of the specialized tools of the Early Archaic period are absent, notably the formal unifaces. In general, a greater number of raw materials are used to make flaked stone tools compared with the preceding period, including a wide variety of low-grade, but ubiquitous sources such as vein quartz. Added to the tool inventory are various spearthrower weights. These polished and perforated objects have been found in positions between antler spearthrower handles and hooks, verifying their role in weapon technology. Other polished stone tools found include plummets, which probably served as bolas stones for capturing waterfowl and other small game. Ground-stone items include nutting stones (fig. 10), pestles, and mortars for processing plant foods, and semilunate knives, celts, notched netsinkers, and gouges. Grooved axes made from hard igneous rock are added late in the period after being preceded in limited locales by double-bitted flaked-stone axes. Bone and antler utensils include socketed projectiles, scrapers, fishhooks, and spearthrower parts. Extensive use of shell and other organic media likely occurred on the coast, where lithic raw materials are scarce, at least in the Southeast.

Few examples of purely ornamental items are noted for Middle Archaic assemblages, at least during the earlier part of the period. Elaborate spearthrower weights are present in some areas that may have functioned expressly as ceremonial or status items. Occasional polished stone (figs. 11–12) and organic beads and small pendants have been found in assemblages from sites scattered widely across the region, while turtle-shell rattles, beads, bone pins, and other organic objects have been recovered from burials in some areas. Distinctive stylistic areas or occurrence zones are evident for some of these items, that may delimit group ranges or territories, or zones of trade or interaction (Jefferies 1995, 1996; Sassaman 1996). Long-distance exchange did not figure prominently in Middle Archaic economies until the last few centuries of the period. The importation of marine shell and native copper into the Midsouth and lower Midwest in other than incidental amounts does not appear until around 4000 B.C. Likewise, spearthrower weights and plummets, or at least the raw materials to make them, may have been traded occasionally from interior Southeast groups to those in peninsular Florida, but there is no evidence for extensive interaction across large stretches of the region. Generally, Middle Archaic artifact assemblages are noted for a lack of elaborate material culture until the very end of the period.

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