

SECTION III HORTICULTURALISTS (WOODLAND)

Chapter 9

Late Woodland/Mississippian Transition: 400AD-900AD (1600BP-1100BP)

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The late Woodland in the Southeastern United States is marked by the dispersal of the Hopewell Interaction Sphere. Mound sites may have still been occupied in this time, but artifactual evidence is scarce (Blitz 1988). Overall, there is an apparent “collapse” of Middle Woodland interregional systems. There is a definite decrease in number of components identified with Late Woodland as compared to the other Woodland periods, and the trend continues into the Mississippian Period.

Material Culture and Technology

Point Types of the Late Woodland found at Tennessee Sites:

Hamilton Incurvate – Late Woodland – Hamilton phase. Common type found throughout the literature of Tennessee (Faulkner and McCollough 1973; Lewis and Kneberg 1946; Schroedl 1978). This type was prevalent in mortuary offerings at Hiwassee Island, and likely were functional arrow points as well (Lewis and Kneberg 1946; Lewis et al. 1995).

Jack's Reef Pentagonal and Jack's Reef Corner Notched – Late Woodland, present at Dunbar Cave. Justice (1987) assigned a wide range to these types. However, they are not commonly identified in Tennessee sites.

Scallorn and Sequoyah – Justice (1987) included West Tennessee in the distribution map of these – have not found anything else on these types pertaining to Tennessee. May possibly be Terminal Woodland/Early Mississippian types.

Community Organization/Site Structure/ Subsistence

The apparent “collapse” of Middle Woodland interregional systems, and the threads of emerging chiefdoms explored. House structure. Location of sites. Tables of locations of sites compared to Early and Middle Woodland sites. A definite decrease in number of components identified with Late Woodland as compared to the other Woodland periods, and the trend continues into the Mississippian Period. Explore the idea that, similar to the Early Woodland, separating the Late Woodland from either Middle Woodland or Mississippian components may skew the number of recorded Late Woodland components.

During the Late Woodland in the Normandy Reservoir sites there is an increase in the use of maize (*Zea mays*) in the diet. No longer does maize seem to be restricted to ceremonial use (Cobb and Shea 1977, Crites 1978). Instead it supplemental to the arboreal nuts and marine mollusks being consumed. Other plants were still being cultivated including goosefoot (*Chenopodium sp.*), knotweed (*Polygonum sp.*), and maygrass (*Phalaris caroliniana*) (Cobb and Faulkner 1978).

Mortuary Behavior

Evidence of mortuary patterning is scarce for Middle Tennessee. Burials at sites in the Normandy Reservoir are rare for the Late Woodland (Brown 1982; Faulkner 2002). This may be due to burials being interred farther away from habitation areas, and therefore, they were not discovered during testing (Faulkner 2002). Both cremations and flesh inhumations are found in this period. Treatment of the cremations is similar to what is seen in the McFarland phase of the Middle Woodland with no grave goods and individuals in separate containers (Brown 1982). Flesh inhumations are generally partially flexed and a few were buried with artifacts such as a bone awl or marine beads (Brown 1982)

As discussed earlier in this volume, the Archaic period was characterized by a gathering and hunting subsistence strategy. The cultivation of plants did not commence until the Woodland period, and full-scale agriculture characterizes the Mississippian period. As such, the Woodland period is essentially stuck in the middle between a true foraging strategy and a true agricultural one.

Numerous studies have been completed on assessing the significance in terms of impact on human health for the transition from foraging to agriculture (for a review, see Cohen and Armelagos 1984). The hypothesis that the shift from hunting and gathering to agriculture results in a general decrease in overall health has drawn attention from skeletal biologists in the past 30 years or so (Cohen and Armelagos 1984). This hypothesis was mainly in response to Childe (1951) who asserted that the shift to agriculture led to an improvement in health because there was a decreased demand for labor to produce food. The primary advantage of agriculture was that growing more food

in a smaller space could feed more people (Childe 1951; Cohen 1977). Studies that challenged this found problems with Childe's interpretation. For example, Lee and Devore (1976) found that modern day gatherer-hunter groups such as the !Kung San of the Kalahari Desert had more provisions, better nutrition and health, and had more leisure time than did their farmer counterparts.

Out of studies like this, a new interpretation developed: that the adoption of agriculture as the primary method of subsistence had negative effects on health (Cohen and Armelagos 1984). The main danger that accompanies agriculture is the possibility of famine due to drought and blight (Cohen and Armelagos 1984; Swedlund and Armelagos 1990). Gatherer-hunter groups are not tied to one specific area like sedentary agricultural groups, and in case of food shortages, they can move to areas where food is present.

Another large problem that results from agriculture as the main subsistence strategy is that of resultant nutritional deficiencies. Typically, agriculture leads to dependence on cereal grains alone and many of these staples are deficient in essential minerals and amino acids (Cohen and Armelagos 1984; Stuart-Macadam 1989). For example, maize is high in carbohydrates but deficient in the necessary amino acid lysine and maize also has phytates which inhibit the absorption of important minerals like iron (Stuart-Macadam 1989). Thus, the cultivation of one plant is dangerous because not only can it fail due to uncontrollable factors with the natural environment (lack of rain, insect activity) – and this would obviously lead to periods of starvation – but even when the crop is in abundance, the habitual consumption of it subjects people to nutritional stress because it is not providing all the necessary nutrients. Starvation and nutritional stress lead to weakened immune systems which practically invites disease to take hold (Rosado 1994).

The spread of infectious disease is facilitated by the increased population size as well (Rosado 1994). As outlined above, foragers would not be subject to the same types of stressors and therefore should exhibit better signs of health.

Since Woodland peoples were not dependent on one staple crop as their Mississippian successors were (Buikstra *et al.* 1988), a reasonable hypothesis is that bioarchaeological studies of health should reveal relatively healthy populations. For the state of Tennessee, while there are numerous known Woodland sites and burials have been recovered from many of them (e.g. Cole 1975; Sullivan 1989; Lafferty 1981); McCollough 1979; Mainfort 1988; Schroedl 1978), few studies have been published that focus on the specific issue of health assessment.

Perhaps the best known Woodland site in Tennessee is Pinson Mounds, (40Md1) located in West Tennessee (Mainfort 1988; Kwas 1996). While it was not primarily a mortuary site, six burial mounds have been identified (Mainfort 1988). While 35 burials were excavated from among these burial mounds, the analysis of these individuals is limited to a basic biological profile (Mainfort 1988).

Hinton (1981) examined the temporomandibular joint (joint where lower jaw and skull meet) between Tennessee Archaic, Woodland, and Mississippian populations. He found that the size of this joint decreased throughout time, with the size of the joint in Late Woodland populations from East Tennessee being intermediate to earlier Archaic and later Mississippian populations. This result is expected, as different populations had different masticatory forces exerted on their teeth and jaws due to the differential diets (Hinton 1981). Dental wear in general is known to have been severe in many prehistoric populations in general (reference). For example, an examination of a Late Woodland

female individual excavated from a shaft-and-chamber grave at the Jernigan II site in Coffee County, Tennessee exhibits “worn and deeply faceted teeth” despite the fact she was between 16-20 years when she died (McCollough *et al.* 1979).

Smith (2006) recently published a study examining treponemal disease in West-Central Tennessee prehistoric populations. Eight individuals from the Ledbetter Landing (40Bn77) site, dated to an Early Woodland component, displayed evidence consistent with treponemal disease. Treponemal disease (which includes nonvenereal syphilis, yaws, bejel, treponarid and pinta) is known to be sensitive to increasing population density that occurs prior to the adoption of agriculture as a subsistence strategy (Smith 2006). While few studies have been completed on health in Tennessee Woodland populations, the fact that some Woodland individuals suffered from treponematosis illustrates that people were subject to a variety of illnesses in prehistory.

**DARK ZONE CAVE USE IN TENNESSEE
WOODLAND PERIOD
(DRAFT)**

Sarah A. Blankenship

WOODLAND PERIOD (CA. 1000 BC – AD 1000)

Woodland Cave Mineral Extraction

During the Early Woodland period (ca. 1000 B.C. – 300 B.C.), prehistoric extractive activities within Midsouth caves intensified, with the advent of mining of sulfate minerals such as gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$), mirabilite ($\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$), and epsomite ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$). Gypsum, hydrated calcium sulfate, occurs as crusts or in fibrous form (satin spar) on cave walls and ceilings and as needle-like speleothems

(selenite) in cave sediments (Hill and Forti 1997: 193-194). Mirabilite and epsomite, sulfates of sodium and magnesium respectively, form as crystals, crusts, or “cotton” on cave floors, walls, and ceilings (Hill and Forti 1997: 196-197). Exactly why these substances were removed from cave interiors by prehistoric miners is not known. Crothers et al. (2002: 512) suggest that gypsum powder may have been used in the manufacture of white paint. Selenite and satin spar crystals may have functioned as ceremonial objects or trade items. Both epsomite and mirabilite have laxative properties and thus may have served a medicinal purpose.

Salts Cave and Mammoth Cave in the Mammoth Cave System, Kentucky (Kennedy and Watson 1997; Munsen et al. 1989; Watson [ed.] 1969, 1974) contain the earliest evidence thus far for subterranean sulfate mining; beginning ca. 3000 years ago, gypsum, mirabilite, and possibly epsomite were intensively sought. The techniques for obtaining such minerals were relatively ubiquitous and included “digging into floor sediments for selenite crystals, breaking off natural speleothem features such as gypsum crust and gypsum flowers, brushing or scraping mirabilite and epsomite from walls and breakdown blocks, and battering satin spar...from crevices in walls and ceilings” (Crothers et al. 2002: 512). Big Bone Cave (Crothers 1987, 2001; Faulkner 1991) and Hubbards Cave (Douglas [ed.] 1997; Pritchard 2001), both in middle Tennessee, also contain evidence of Woodland-period gypsum mining. In Big Bone Cave, selenite crystals within the cave floor sediments, rather than gypsum crust from the walls and ceilings, appear to have been of primary interest to the prehistoric miners (Crothers 1987, 2001). Eight radiocarbon determinations from a variety of material remains found within Big Bone Cave (e.g., river cane, plant fibers, and human paleofecal specimens) suggest

that the mining activity was most intensive during the Early Woodland period (a calibrated age range of 2850 – 1900 B.P.) (Crothers 1987, 2001; Crothers et al. 2002; Faulkner 1991). Similar to Mammoth and Salts Cave, prehistoric gypsum mining in Hubbards Cave consisted of battering gypsum crust from passage walls with the aid of river cobble hammerstones, which can still be found throughout the cave. Four radiocarbon dates obtained from cane torch fragments indicate that gypsum mining took place at Hubbards Cave during the Early Middle Woodland and Late Middle Woodland periods (2730 – 1280 B.P.) (Pritchard 2001).

Pritchard (2001) has examined the relationship among these major gypsum-mining sites in the Midsouth, proposing that mining activity in Mammoth, Salts, and Big Bone caves all preceded that at Hubbards. Using the BCal[®] on-line Bayesian radiocarbon calibration program, Pritchard analyzed uncalibrated radiocarbon dates from the aforementioned sites and conducted probability tests of the proposed temporal model. The resulting calibrated chronology of prehistoric activity at these sites is as follows (Pritchard 2001: 89): Mammoth Cave, 2871 BC – AD 179 (Late Archaic to Middle Woodland); Salts Cave, 1201 BC – AD 62 (Terminal Archaic to Middle Woodland); Big Bone Cave, 1401 BC – AD 609 (Late Archaic to Late Woodland); Hubbards Cave, 1001 BC – AD 889 (Woodland). Results of the analyses “indicate a significant amount of elapsed time between the earliest known dates from Mammoth and those from Hubbards” (Pritchard 2001: 100). In addition, probability tests confirmed that “the gypsum mining phenomenon began further north [Kentucky] and spread southward to Big Bone Cave and then Hubbards Cave [middle Tennessee]” (Pritchard 2001: 100). Based on these results, Pritchard argues that prehistoric subterranean mining activity at Hubbards Cave may

reflect the expanding interaction sphere of middle Tennessee's inhabitants at that time (2001: 100). Thus, gypsum mining may have been linked to other phenomena such as inter-group trade and increasing social complexity during the Woodland period.

Woodland Ceremonial/Mortuary Caves

More than 50 prehistoric ceremonial caves (i.e., caves that exhibit ritual expression in the form of petroglyphs, pictographs, and/or mud glyphs) have been identified in the Southeast (e.g., Faulkner 1988, 1992, 1997; Faulkner [ed.] 1986; Simek, Franklin, and Sherwood 1998; Simek et al. 1997; Simek et al. 2001; Simek et al. 2006). Few, however, contain associated artifacts that have yielded only Woodland age radiocarbon determinations, as the majority indicate both Woodland and Mississippian-period use (Crothers et al. 2002). Nonetheless, current evidence suggests that the production of cave art during the Woodland period was more common than earlier periods in southeastern prehistory (Crothers et al. 2002).

At present, 5th Unnamed Cave in middle Tennessee is the earliest definitive Woodland cave art site in the Midsouth (Crothers et al. 2002; Simek, Cressler, and Pope 2004). Two petroglyphs are found on the limestone wall within the cave; an anthropomorph with a square torso and a "toothy mouth" with no associated representation of a head or body. A single accelerator mass spectrometry (AMS) radiocarbon determination on a fragment of bone from the cave yielded a date of 2030 ± 50 B.P. (calibrated age range of 180 BC – AD 70), indicating use of the cave during the Middle Woodland (Crothers et al. 2002: 519; Simek, Cressler, and Pope 2004: Table 10.1). Although deposits within the cave have been badly disturbed by looting, the

remains of at least two individuals were recovered from the talus below the petroglyphs and were likely interred by dropping the remains through a vertical shaft entrance (Simek, Cressler, and Pope 2004). In the Midsouth, the use of pit caves as repositories for human remains occurred primarily during the Woodland period, between ca. 500 – 1000 B.P. (Crothers et al. 2002; Haskins 1987; Oakley 1971).

The toothy mouth, “an oval with multiple vertical lines filling the interior,” has been observed in several other southeastern caves (Simek, Cressler, and Pope 2004: 172). In all instances, the caves also contain multiple human burials. Thus, although the exact meaning of this motif is uncertain, there appears to be a relationship between the presence of this particular motif and the occurrence of multiple human interments within cave interiors (Simek, Cressler, and Pope 2004). The majority of these sites are later in age, dating to the Mississippian period (ca. AD 1000 - AD 1600). Fifth Unnamed Cave may therefore indicate that this phenomenon had its beginnings in the Middle Woodland and extended into the subsequent Mississippian period (Simek, Cressler, and Pope 2004: 172-173).