MISSISSIPPIAN ADAPTATIONS TO THE MIDDLE CUMBERLAND DRAINAGE OF CENTRAL TENNESSEE

Robert L. Jolley

ABSTRACT

This study examines the Mississippian population density of the Middle Cumberland drainage in the vicinity of Nashville. To explain the high Mississippian population density of the area, a number of ecological and sociocultural hypotheses are considered. The hypotheses that have been previously used to explain differences in the distribution and density of Mississippian sites are considered to be less plausible than alternate hypotheses proposed in this paper.

Introduction

It has long been recognized that man tends to organize and distribute his settlements over space in relation to both his social and natural environment (Doxiadis 1970). This study will briefly examine Mississippian cultural adaptations to the natural and social environment as reflected in the distribution of settlements in one specific area, the Middle Cumberland drainage. The complex way in which Mississippian social organization and environmental requisites interact and affect the structure and location of Mississippian sites has been previously examined for the Lower Cumberland and Lower Tennessee drainages (Clay 1976).

The study area (Fig. 1) lies within the Nashville Basin section of the Interior Low Plateau physiographic province (Fenneman 1938). Ecologically, the research area is classified as part of the tulip-oak region of the Temperate Deciduous Forest Biome, which is a combination of Braun's (1950) Mixed Mesophytic and Western Mesophytic forests (Shelford 1963:18–19). The survey area is also included within the Carolinian Biotic province (Dice 1943:16), which is characterized by a rich and diverse faunal assemblage.

The Mississippian period (circa A.D. 900–1500) is the final period of prehistoric cultural development in the southeastern United States. The period is characterized by intensive horticulture of maize, beans,

and squash and by socially ranked societies. The level of sociocultural complexity is comparable to a chiefdom (see Fried 1967; Service 1971). A hierarchical settlement system comprising civic-ceremonial centers, villages, hamlets, farmsteads, and seasonal/ephemeral procurement stations has been suggested for the Middle Cumberland drainage during Mississippian times (Jolley 1980:94).

The lowest and functionally least complex site in a settlement system will reflect a response to a restricted local environment (Butler 1976:2). Consequently, farmsteads and seasonal/ephemeral procurement stations would be expected to be located in close proximity to the natural environment that is being exploited, while the location of the highest and most functionally complex sites within the settlement hierarchy would be expected to reflect an adaptation to the social environment. This study will not examine each hierarchy of the settlement system to determine how each settlement type may reflect differing adaptations to the natural and social environment. This factor will be accepted as given and the study will focus on the distribution and density of Mississippian sites in the Middle Cumberland drainage within a 15-km radius of Nashville. Implications for other regions will be drawn and Mississippian adaptations to the social environment considered.

The Middle Cumberland area in the vicinity of Nashville was densely populated during Mississippian times. In 1823 an early historian, citing the numerous prehistoric graves and earthworks in the Nashville vicinity, stated that "the former inhabitants were ten times, if not twenty times more numerous than those who at present occupy the country" (Haywood 1823:108–109). Sixty-seven years later, an antiquarian wrote that a greater number of aboriginal graves (i.e., Mississippian stone box burials) occurred within a 30-mi radius of Nashville "than the aggregate of the present cemeteries of the whites within the same limits" (Thruston 1890:5). In particular, one Mississippian stone box grave site was noted to extend for a mile (Troost 1843:358) and another, the Noel Cemetery, had over 3,000 graves excavated prior to 1890 (Thruston 1890:2).

These observations have been confirmed by a number of subsequent archaeological excavations and surveys. Site survey records indicate a large number of Mississippian sites in the Nashville vicinity. Surveys of the Cumberland River and its tributaries (Jolley 1978, 1979, 1980) suggest a high density of Mississippian sites in the research area and a greater Mississippian exploitation of all physiographic zones, especially uplands and secondary stream valleys. A cluster of four ceremonial centers located within 10 km of one another in the Nashville vicinity suggests a high population density. Recent archaeological ex-

cavations in the research area at the Averbuch site (Reed 1978; Berryman 1981) and the Noel Cemetery site (Benthall 1976) attest to the size and complexity of Mississippian sites located in secondary stream uplands of the study area.

Examination of Previous Hypotheses

The high density of Mississippian sites in the Nashville vicinity implies a greater Mississippian population density. Three hypotheses may be proposed as plausible explanations for a high carrying capacity in the Nashville vicinity during Mississippian times. All three hypotheses are commensurate with current interpretations of Mississippian adaptations to their natural environment. The following are the hypotheses:

1. A high carrying capacity was maintained during Mississippian times in the Nashville vicinity by an ecotone.
2. A high carrying capacity was maintained during Mississippian times in the Nashville vicinity by high capability yield soils.
3. A high carrying capacity was maintained during Mississippian times in the vicinity of Nashville by the concentration of exploitable subsistence resources in meander bends of the Cumberland River.

The lack of quantified data precludes the possibility of statistically testing these hypotheses. However, archaeological, historical, and environmental data can be collaborated to determine if these are plausible explanations.

Larson (1970:21) has noted that many major Mississippian sites are located along boundaries of natural areas providing easy access to two or more significantly contrasting ecological zones. Nashville is situated within 15 km of the boundary between two major physiographic provinces, the Nashville Basin and the Highland Rim. Such an area is termed an ecotone and tends to produce a greater variety and density of plant and animal populations (Odum 1965:287). A region with a tendency for greater diversity and density of plant and animal resources may enhance the region's carrying capacity. However, the highest Mississippian population density appears to have been centered at the present-day location of the city of Nashville which is located several kilometers from the interface of the two physiographic provinces. If the ecotone was an influencing factor, then population density should be concentrated in closer proximity to it. Ecological data indicate that an ecotone may not always have a greater diversity

of food resources (King and Graham 1981:132). Consequently, the first hypothesis cannot be accepted.

That Mississippian habitation sites should be associated with agriculturally productive soils, particularly silt loams, has been a long-held logical assumption. Ward (1965) has previously demonstrated the logic behind this assumption and has tested its applicability to select Mississippian sites in the southeastern United States. His contention has been supported by subsequent intensive surveys conducted in various regions (Cottier 1975:60; Butler 1976:5; Peebles 1978:400), including the Middle Cumberland drainage (Jolley 1979:52, 1980:90). The available soil survey information for the Middle Cumberland area indicates that high phosphate soils of the same association (Armour-Pickwick-Lynnville) are not confined to the Nashville vicinity but appear throughout the Nashville Basin section of the Cumberland drainage (U.S.D.A. 1974). Consequently, the second hypothesis, that a greater Mississippian population density was due to the presence of high capability yield soils, cannot be accepted.

Thruston (1890:5) attributed the large aboriginal population density in the Nashville vicinity to a temperate climate and a fertile, well-developed valley. The Nashville area, situated within the Nashville Basin physiographic province, is characterized by prominent meander bends and low-lying uplands. This stands in marked contrast to the neighboring Western Highland Rim, where the Cumberland River is characterized by a relatively straight course and flanked by relatively steep dissected uplands. The meander bends of the Nashville Basin effectively concentrate a large amount of fertile alluvial bottomlands in a circumscribed area. Additionally, in contrast to the Western Highland Rim, the low-lying uplands of the Nashville Basin permit easier access to important upland resources (i.e., nuts and deer). This hypothesis is compatible with the logical contention that Mississippian cultural systems throughout the eastern United States were adapted to the meander belt zones of river valleys due to circumscribed agricultural land and concentrated biotic resources (Smith 1978:481). However, since the Cumberland River meander belt system occurs throughout the Nashville Basin, this hypothesis alone does not explain the greater Mississippian population density in one section of the Nashville Basin, the Nashville vicinity.

Examination of Alternate Hypotheses

Although the three aforementioned hypotheses may explain a greater Mississippian population density along the Cumberland River in the

Nashville Basin in contrast to the Highland Rim, these hypotheses do not explain the greater Mississippian population density in the Nashville vicinity. All three hypotheses relate to environmental factors that are not unique to the Nashville vicinity. These hypotheses do not take into consideration the social complexity of the Mississippian cultural system, particularly the socioeconomic complexity (i.e., redistributive economy). Nor do these hypotheses take into consideration ecological factors affecting the availability of large game animals. Consequently, the following three hypotheses may be proposed:

4. A high carrying capacity was maintained by control of a locally available resource that was in great demand elsewhere.
5. A high carrying capacity was maintained by proximity to a central hub in a major aboriginal trade/transportation network.
6. A high carrying capacity was maintained by the presence of a large salt spring which attracted large numbers of game animals to a confined and predictable area.

Like the three previous hypotheses, the lack of quantified data precludes statistical testing. However, archaeological, historical, environmental, and ethnographic data can be collaborated to determine if these are plausible explanations.

A nineteenth-century antiquarian stated that a salt and sulphur spring, Old French Lick, located in Nashville, "was doubtless the central feature of a populous aboriginal settlement" (Thruston 1890: 158). The importance of this salt/sulphur spring during Mississippian times is suggested by the location of two Mississippian civic-ceremonial centers, one adjacent to it and one across the river from it (Jones 1876:51). The presence of large quantities of salt pan ceramics at French Lick suggests the Mississippian production of salt (Robertson 1878:276–278).

Salt is a physiological necessity in the human diet. Vivid descriptions of suffering and death are reported by chroniclers of the DeSoto expedition in those areas of the southeastern United States where salt was not readily available (Varner and Varner 1951:421–422). The need for supplemental intake of salt becomes greater when a population's subsistence base is primarily vegetarian (Dauphinee 1960:412). Consequently, it may be surmised that Mississippian populations had to rely upon supplemental sources of salt to fulfill their basic physiological needs.

Driver (1961:237) maintains that salt was the most important item of trade in the prehistoric Southeast. Ethnographic and archaeological data indicate that salt was extensively traded during Mississippian

times (Keslin 1964). Thus, settlement location next to a salt spring would provide a Mississippian population with a trade item that was in great demand. The flow of subsistence and prestige items into the Nashville vicinity in exchange for this locally abundant resource would enhance the carrying capacity of the local Mississippian population. Since accounts state that salt was manufactured here in considerable quantities during historic times (Thruston 1890:159), it is apparent that inexhaustable supplies of it were available during Mississippian times.

Salt/sulphur springs may have also attracted large herds of game animals from distant areas. In 1770, trappers observed "an immense number of buffalo and wild game more than they had ever seen at any one place" at the Old French Lick at Nashville (Haywood 1823:90). A large amount of protein biomass from within and outside of the Nashville Basin ecosystem would be flowing into the Nashville French Lick area. This would result in the concentration of protein biomass in a relatively confined and predictable area. This concentration may have minimized any potential protein deficiencies in the Mississippian diet. A high carrying capacity for the area would be the result of this increased protein biomass if the resource remained undepleted.

A correlation between known historic Indian trails and the location of major ceremonial sites dating back to Middle Woodland times has been established (Faulkner 1968:31–32; Walthall 1973:598; Jefferies 1976:49). Consequently, it can be assumed that the trail system documented by Myer (1928) for the Southeast was in existence during Mississippian times. Nashville is a central hub in the trail system (see Fig. 2). Trails lead from Nashville to the Lower, Middle, and Upper Tennessee Valleys and the Lower Ohio Valley. The Nashville hub controls an area encompassing a radius of over 200 km. The Mississippian sociopolitical unit controlling this hub would be able to regulate the flow of goods throughout a much larger area. The flow of wealth in the form of imported raw materials or cultural items manufactured from exotic raw material (e.g., Dover chert, Chattanooga black shale, conch shell, copper, steatite, and catlinite) and subsistence items could be regulated and taxed while, at the same time, exchanged for a much valued trade item (salt) that was locally abundant. Obviously, this would enhance the carrying capacity of the Mississippian sociopolitical unit in control of this hub.

The location of aboriginal trails, salt/sulphur springs, and large herds of game animals are interrelated phenomena. Myer (1928) found that many of the aboriginal trails of the Southeastern United States converged at salt springs. Animal trails that invariably led to salt/sulphur springs were formed first. Aboriginals used and improved these trails in the pursuit of game and supplemental sources of salt. Late in the

prehistoric period, these trails were modified to form trade/transportation routes.

Thus, it is apparent that hypotheses 4, 5, and 6, which encompass both cultural and ecological variables, are the most plausible explanations for the high Mississippian population density of the Nashville vicinity. An energy flow model illustrating the resulting high carrying capacity is depicted in Fig. 3. Strategic positioning was a key factor. A high carrying capacity was maintained in the vicinity of Nashville during Mississippian times through control of a central hub in an aboriginal trail system situated next to a salt/sulphur spring. Energy from outside the Nashville Basin ecosystem was channeled into the Nashville Basin ecosystem and regulated by the Mississippian cultural system. The flow of energy was both cultural and natural. The natural energy flow consisted of protein biomass and the cultural energy flow consisted of prestige and subsistence items. Moreover, the Mississippian sociopolitical unit in control of this hub possessed the requisite level of cultural complexity to "bank" energy through the accumulation of nonperishable wealth/prestige items that could be exchanged for subsistence items during any lean periods.

Application of the Model Outside the Nashville Area

If the aforementioned model is correct, then aspects of it should be reflected in the distribution of smaller hubs or regional centers within the Middle Cumberland drainage. According to the proposed model, most regional civic-ceremonial centers (i.e., platform mounds), particularly the ones most distant from Nashville, would be expected to be located next to salt springs. The majority of civic-ceremonial centers within the Middle Cumberland drainage are located adjacent or in close proximity to the historic Indian trail system documented by Myer (Fig. 4). A number of these civic-ceremonial centers (Old Town, Castalian Springs, Hughs, Fewkes, DeGraffenried, Gordon, Sellars, Dixon Creek and Flynn's Creek) are located next to springs, two of which are known to be salt springs (Castalian Springs and Flynn's Creek). Consequently, supporting evidence for the proposed model is reflected in the location of the regional civic-ceremonial centers.

Work by other investigators suggests that the aforementioned model is applicable to other regions. A correlation between the location of Mississippian sites and the location of salt springs and aboriginal trails has been established thoughout the southeastern United States (Wentowski 1970). The atypical location of a Mississippian site in east Tennessee has been attributed to its proximity to a salt spring and an

aboriginal trail (Hood 1975). More importantly, the area surrounding Missouri salt springs had a dense Mississippian population, and densely populated Mississippian centers (i.e., Cahokia, Moundville, and Angel) have been related to major salt springs (Wentowksi 1970: 90–92).

The Social Environment and Warfare

The complexity of the Mississippian cultural system in the Nashville Basin is exemplified by the placement of major civic-ceremonial centers along secondary streams of the Middle Cumberland drainage. Although the placement of these centers is seemingly nonstrategic, it is strategic in that their placement forms an arc around the northern section of the Nashville Basin (Fig. 5). A social boundary is further maintained by the cluster of civic-ceremonial centers to the immediate south. A social boundary is not needed to the southeast because an effective natural boundary has been formed by the barren cedar glades (see Harper 1926; Quarterman 1950).

Butler (1977:281) maintains that a Mississippian cultural system may construct a series of fortified sites around the periphery of the system in order to prevent raids. As noted by Thruston (1890:5, 32), the civic-ceremonial centers of the Nashville Basin were situated "nearly equidistant from the common center of Nashville" and were "outlying or frontier forts or defenses especially designed to protect this large interior population in the neighborhood of Nashville from attack on the north, east and south." Although Butler's contention and Thruston's observation appear to be valid, an objection must be raised to the common practice of assuming that palisaded or enclosed settlements are synonymous with defensive, fortified works (see Larson 1972). Recent interpretations of the Kincaid settlement system by Butler (1976:11) suggest that the palisades of the Kincaid site may not reflect a defensive purpose but a status device of conspicuous consumption. Enclosed Mississippian settlements, in many cases, may reflect an adaptive mechanism that was brought in from areas where Mississippian warfare was endemic. Demonstrable evidence for warfare can only be obtained (and even quantified) by the incidence of violent death reflected in burial populations.

The density and distribution of Mississippian stone box graves in central Tennessee led Thruston (1890:31) to speculate that the area was peacefully settled. Current evidence suggests the absence of endemic warfare during the Mississippian period in the Nashville vicinity. The absence of endemic warfare in the interior of the Nashville Basin can

be inferred by the absence of instances of violent death among four separate Mississippian burial populations comprising several hundred individuals (see Dowd 1972; Ferguson 1972; O'Brien 1977) and the low incidence of violent death represented in the Averbuch skeletal series (Berryman 1981). In the Averbuch skeletal series a total of 6 individuals out of a population of 887 displayed features that could be attributed to acts of violence (i.e., scalping, knife cuts, and projectile points imbedded in human bone). This low incidence (.68%) stands in marked contrast to the high incidence of violent death (15.4–34.8%) reported for cultural groups that are ethnographically characterized as warlike, the Mae Enga of New Guinea (Meggitt 1977:110) and the Yanomano of South America (Chagnon 1968:354).

Conclusions

This study examines Mississippian cultural systems synchronically. There simply is not enough current data from the Middle Cumberland region to discuss Mississippian adaptations diachronically. However, I am in agreement with Clay's (1976:153) assertion that Mississippian culture is characterized by hierarchies of interaction that change spatially through time.

The primary purpose of this paper is to suggest that unemphasized factors (i.e., salt springs and trade) affect the density and distribution of Mississippian settlements. These factors may have been as influential as or more influential than factors currently emphasized. The secondary purpose of this paper is to challenge the premise that Mississippian populations engaged in endemic warfare throughout the southeastern United States. The observations of early antiquarians have been purposely integrated into the paper to illustrate their validity and applicability to research currently in vogue.

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Nashville, Tennessee

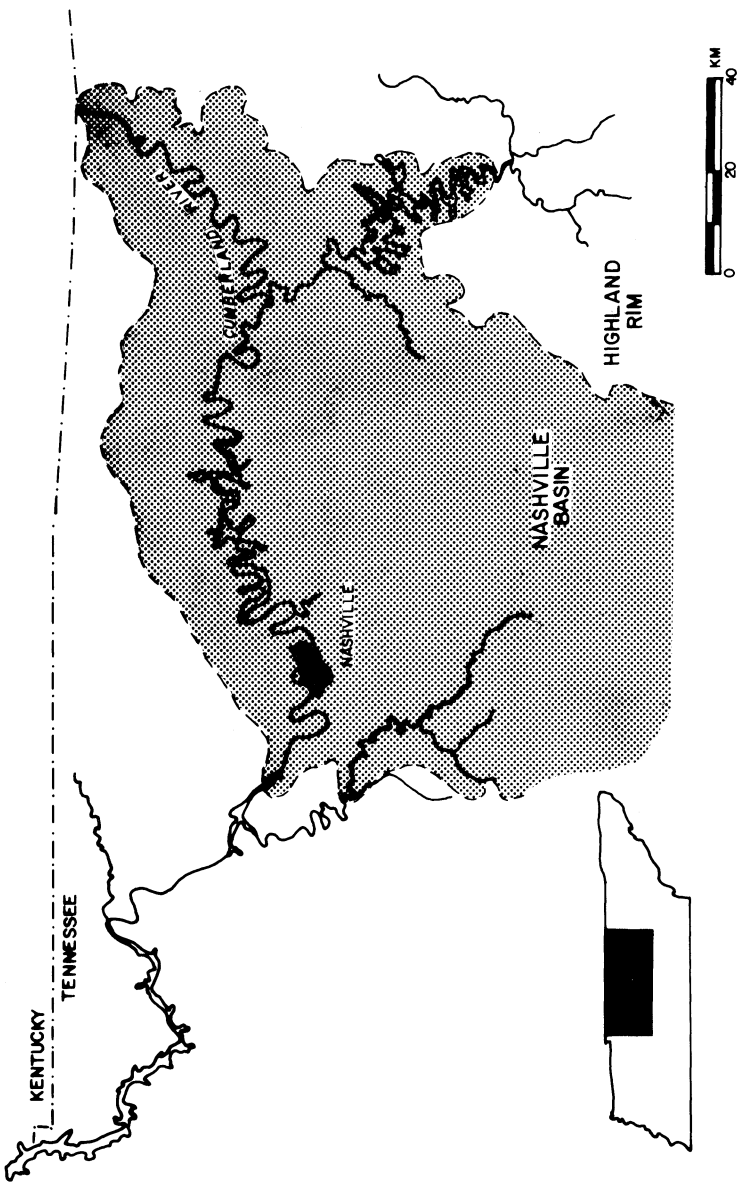

Fig. 1. Location of study area.

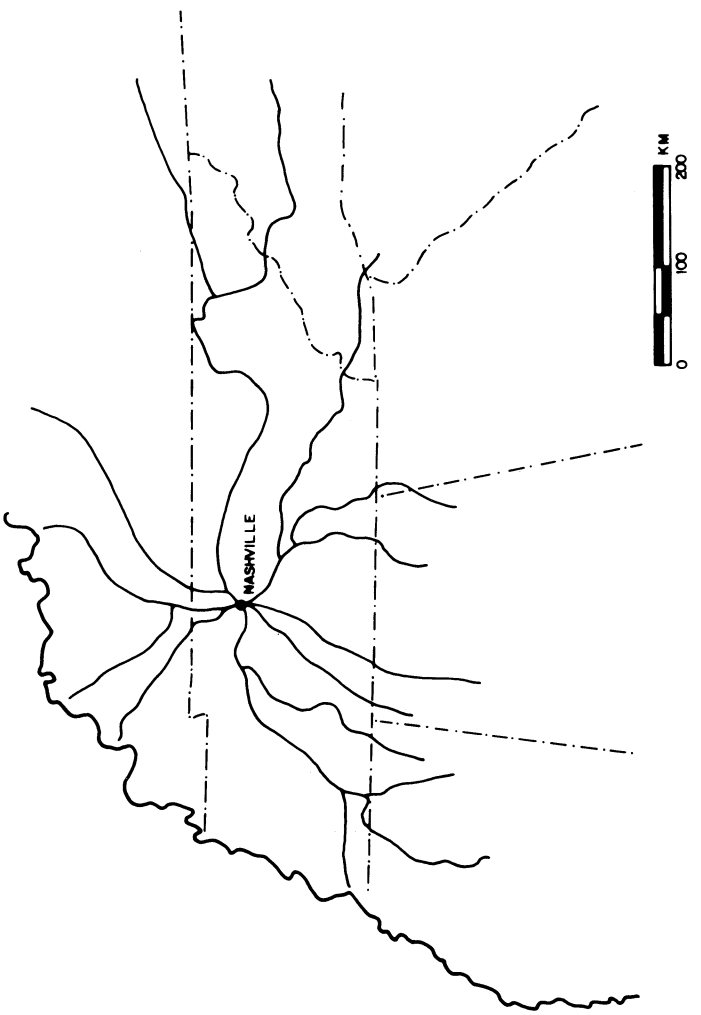

Fig. 2. Historic Indian trails in the vicinity of Nashville (taken from Myer, 1928).

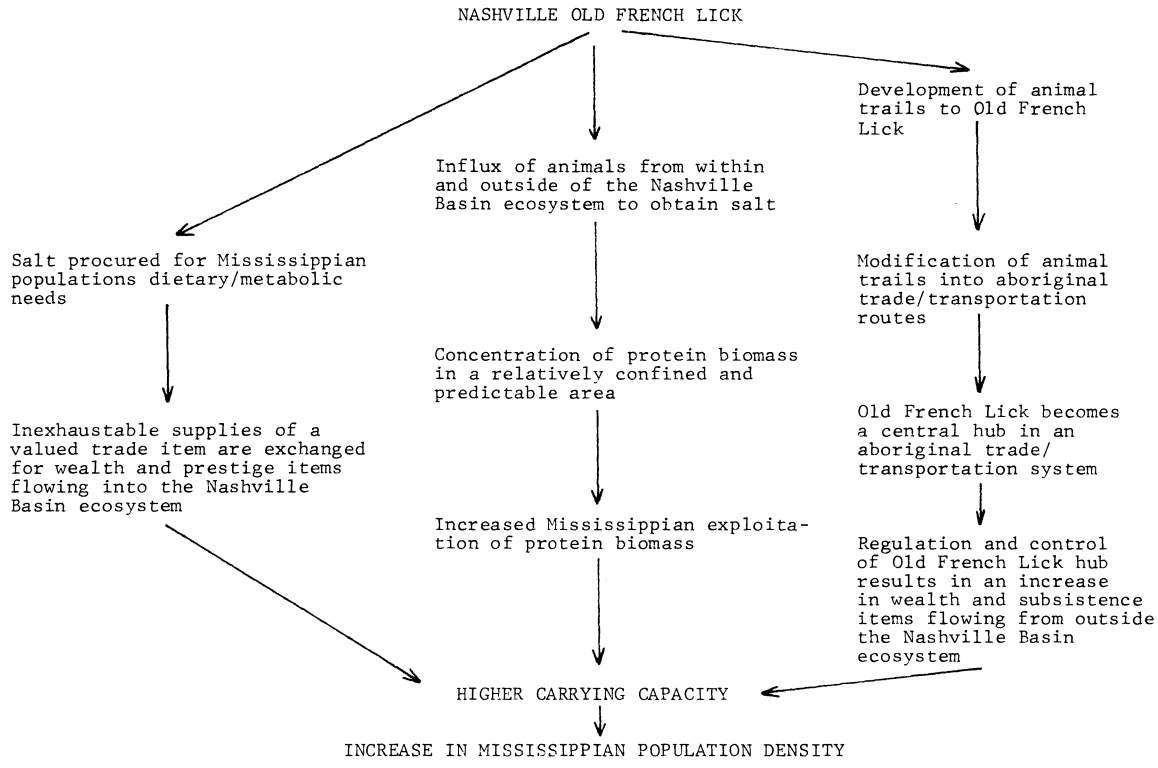

Fig. 3. Flow model of energy and goods during Mississippian times in the Nashville Old French Lick area.

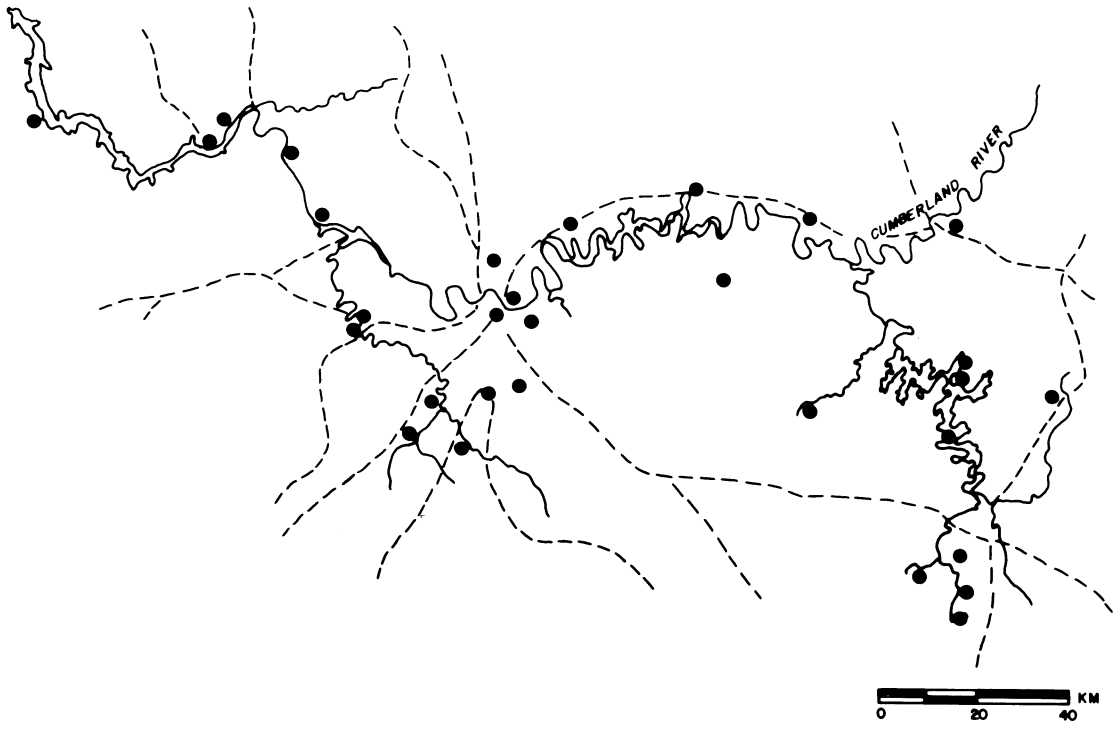

Fig. 4. Location of Mississippian civic-ceremonial centers in relation to the historic aboriginal trail system documented by Myer (1928).

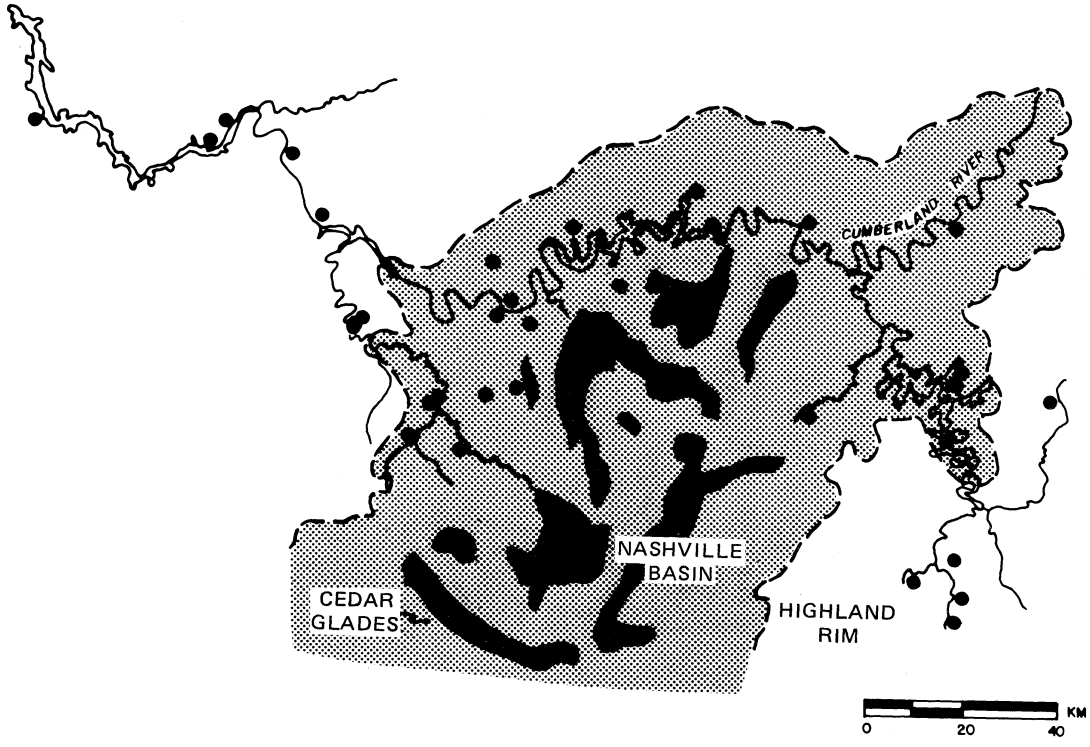

Fig. 5. Location of Mississippian civic-ceremonial centers in relation to major physiographic and natural zones.

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