FAUNAL EXPLOITATION AND CHIEFDOM ORGANIZATION AT MOUNDVILLE, ALABAMA

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In recent years our knowledge of the organization and development of chiefdom level societies has become increasingly more detailed. The economic organization of chiefdoms has been of particular interest. Recent studies of Mississippian chiefdoms have focused on characterizing different aspect of the economic system, such as identifying and clarifying the role of craft specialists. The purpose of this paper is to help clarify the differences between simple and complex chiefdoms by investigating one specific part of chiefdom level economies: the subsistence base. Specifically, this paper deals with attempting to identify what Fried has called "unequal access to the basic resources that sustain life" (1967:109).

A number of studies on Mississippian faunal resources have identified differences in the distribution of both specific faunal species and specific portions of white-tail deer within the sociopolitical hierarchy (Bogan 1980; Scott 1982, 1983). The immediate goal of this paper is to discuss the evidence for status related differences in faunal resources and to identify when those differences occurred in relation to the development of a complex chiefdom during the Moundville Phase in the Black Warrior River Valley.

The Moundville Phase

The Moundville Phase, located on the Black Warrior River near Tuscaloosa, Alabama, is one of the most thoroughly investigated Mississippian chiefdoms. The site of Moundville covers over 100 hectares and consists of at least 20 mounds of various sizes arranged around a central plaza. The later prehistoric occupation at Moundville and in the surrounding river valley, has been divided into five phased based on the ceramic analysis conducted by Vin Steponaitis (1983). The Mississippian period , the Moundville Phase, covers the middle three subphases and lasted from about AD 900 to 1500.

During the Moundville I phase the settlement pattern in the river valley consisted of several single mound sites of roughly equal size, including Moundville, and a number of dispersed hamlets or farmsteads. Chris Peebles' mortuary analysis (1974, 1983) identified two different classes of individuals during this period. From the information currently available, it is probable that these sites present a series of roughly equivalent simple chiefdoms with each single mound site being the center of a politically independent entity.

Margaret Scarry's analysis of botanical remains (1986) from the Late Woodland West Jefferson phase and from the Moundville I phase has shown that maize, hickory nuts, and acorns were the dominant botanical resources. Maize production became increasingly important during the West Jefferson phase and became the dominant botanical resource by the beginning of the Moundville I phase, prior to the emergence of the Moundville chiefdom.

By the late Moundville I phase, Moundville appears to have become more important than the other mound sites. By this time Moundville has a larger amount of nonlocal items, such as mica and copper, and the central plaza of the site appears to have been laid out (Peebles 1987).

During the Moundville II phase there was a four tiered settlement hierarchy in the river valley with one multimound site--Moundville, a number of single mound sites, several residential sites, and numerous small farmsteads or hamlets. From the mortuary analysis there appears to be an additional level in the sociopolitical hierarchy bringing the total to two levels of distinction above the average household.

From this information, it is evident that sometime during the end of the Moundville I phase and the beginning of the Moundville II phase a complex chiefdom had developed with Moundville as the center and incorporating the entire river valley under its control.

During the Moundville III phase, additional single mound centers were constructed and inhabited, especially to the south of Moundville. Based on a nearest neighbor analyses conducted by Tandy Bozeman (1982), the Moundville III phase residential and single mound sites are located in close to the optimal position for the flow of tribute from the residential sites to the single mound sites and then to Moundville. This suggests that the valley was divided into a number of districts headed by minor chiefs.

Paul Welch's (1986) recent analysis of the economic system during the mature Moundville Phase suggests that by the Moundville III phase there were part-time craft specialists based at Moundville producing items manufactured from non-local materials and producing certain ceramic types. In addition, the distribution of most non-local finished items appears to have been controlled by Moundville.

Mary Powell (1988) has recently completed a study on the relative health of the individuals at Moundville. Her results indicate that there was no nutritional stress in either the upper or lower status individuals and that the overall health of individuals during the Moundville Phase was quite good. Unfortunately the sample sizes were too small to break down into different time periods. In addition, no samples from individuals representing the highest status level were available for study and no none-Moundville skeletons were included . Her study indicates that any provisioning of elites with subsistence resources probably did not have an overall effect on the diet of lower status individuals.

The Faunal Samples

The material used in this study has been recovered by a number of individuals since 1970. The time consuming nature of excavations at Moundville and lack of systematically collected faunal material from

excavations during the 1930s and 40's has resulted in gaps in the data so that samples are not available from all of the sociopolitical levels during all of the phases. Due to these gaps, the following results can only be considered preliminary and indicative of general patterns and trends during the Moundville Phase.

Figure 1 shows the approximate chronological placement and the settlement type represented by the five faunal samples used for this study. Three of the samples are from Moundville and the other two samples are from associated sites.

Of the three faunal samples from Moundville, two are from previously excavated areas and one is from an area excavated by myself with small crews from the University of California, Santa Barbara, and the University of Alabama. Figure 2 shows the approximate location of each of the Moundville deposits used in this study.

The north of Mound R (Mdvl-NR) material was recovered from two 2 m x 2 m units excavated by Margaret Scarry as part of Chris Pebbles' University of Michigan Moundville Project (Scarry 1981). The material from these units have been used as part of Steponaitis' analysis of Moundville ceramics and as part of Scarry's analysis of botanical resources (Steponaitis 1983; Scarry 1986).

The deposit consisted of small Moundville II and III phase middens over a deep late Moundville I deposit. The Moundville I deposit contained numerous features and levels of alternating midden and house floors. Portions of the Moundville II phase and Moundville I phase deposits were used for this analysis.

The west of Mound C (Mdvl-WC) deposit is a small sample of previously unanalyzed material collected in 1971 from a midden filled feature that was disturbed by a tree fall. The feature was located approximately 20 meters west of the northwest corner of the mound and approximately 5 meters down the side of the ravine. Based on an analysis of the recovered ceramics, this material appears to date from the Moundville II phase, between approximately A.D. 1250 and A.D. 1400.

The material from west of Mound R (Mdvl-WR) was recovered from a 3 m x 4 m block excavation conducted during 1986 and 1987. The excavation extended to a depth of approximately 45 centimeters below surface. The deposit was primarily undifferentiated midden with a hard clay surface encountered in one area, a corner of a wall trench structure encountered in another area, and several post holes and other features. Based on the recovered ceramics the material also appears to date from the Moundville II phase. There may be, however, some mixing of material from the Moundville I phase.

The faunal material from this deposit consists of the greater than 1/4 inch bone recovered from the undifferentiated midden and from the area

around the structure.

Two other Moundville Phase sites are used in this analysis (Figure 3): 1TU459--tentatively named the Oliver Site, and 1HA-7 and 8 --the White site.

The Oliver site was identified as a farmstead and was located within Tuscaloosa city limits and approximately 275 meters south of the Black Warrior River. At the time of its discovery, the site was in the process of being destroyed and a quick salvage project was conducted by the University of Alabama. Portions of two rectangular wall trench structures were identified and sketched but were destroyed before they could be excavated. Six large midden filled pits were located to the north of the structure and were excavated (Alexander 1982; Knight 1982). The faunal sample used in this study was recovered from these pits.

Based on the identified ceramics from these features, the site appears to be a relatively early Moundville I phase farmstead.

The White site is the southernmost site identified as belonging to the Moundville Phase. The site consists of a large platform mound and an adjoining village/residential area. The site is located on a large oxbow lake approximately 1/2 a kilometer from the Black Warrior River. The faunal material was excavated and analyzed by Welch (1986) as part of his study on the economic system of the Moundville Phase. The remains were recovered from a 4 m x 6 m block excavation and are restricted to a relatively pure late Moundville III phase midden.

In order to identify provisioning of elite with specific portion of deer, difference in the sociopolitical status of the generators of the different deposits must be examined. Four different measure of status were used: 1) location of the deposits, 2) serving verses cooking ware, 3) relative abundance of religious or luxury goods, and 4) the relative abundance of various nonlocal material and goods. Table 1 shows the ranking of the deposits using each of these measures.

In regard to location of the deposits, site type and location within Moundville can be used as an indication of possible status. Based on mortuary analysis, the farmsteads are believed to have been inhabited by individuals of so called commoner status, the single mound centers were probably inhabited by individuals of common and intermediate status, and Moundville was probably inhabited by all status levels (Peebles 1983). Within Moundville, the elites were buried either in or near mounds and most probably lived in those areas. It is presently unclear where individuals of other status levels lived. Using these guidelines, the Mdvl-WC deposit is located just off the side of a mound and the burials from Mound C have been identified as being from the highest sociopolitical level in Peebles' mortuary analysis (Peebles 1974). The Mdvl- NR and Mdvl-WR deposits come from areas were both commoner and intermediate status burial were recovered. The White site deposit could have been generated by all but the highest status

individuals, and the Oliver site deposit can be assumed to be from non-elite individuals.

Numerous researchers have identified differences in the relative proportion of serving to cooking vessels in relation to the status of a household (Whalen 1975; Drennan 1976; Smith 1987). Higher status households usually have a higher serving to cooking vessel ratio than lower status households. Using Moundville Phase ceramics, serving ware can be assumed to be those ceramic types with surface treatment that could be harmed by heating, such as burnished or painted surfaces, and cooking ware can be assumed to be the unburnished/ unpainted ceramics.

Using these distinctions the Mdvl- WC deposit has the highest serving to cooking ware ratio, the Mdvl-NR and Mdvl-WR deposits have intermediate serving to cooking ware ratios, the White and Oliver sites have significantly lower ratios. The ratios range from 0.8 for the Mdvl-WC deposit to 0.19 for the Oliver site deposits.

The presence and relative amount of religious and luxury items, defined as nonutilitarian items associated with elite and intermediate status burials, can also be used as a measure (Smith 1987:314-317). Using the presence of objects such as pipes, pendants, bone beads, and yellow and red ochre, the Mdvl-WC deposit appear to have the greatest variety of religious/luxury objects, the White site, the Mdvl-WR, and the Oliver site deposits have decreasingly lesser amounts. There is currently no information on the frequency of these items in the Mdvl-NR deposits.

The proportion of various classes of nonlocal material and objects has been used as a measure of status by other researchers (Welch 1986; Smith 1987). It must be noted that manufacturing debris may not be an indication of the highest status since attached part time craft specialists, the people most likely responsible for craft manufacturing at Moundville, are usually not of the highest status in chiefdom level societies. Instead they often produce goods that are then the property of the elites. In many societies craft specialization often has a negative connotation for status, with craft production used as a means of supplementing a marginal existence. Welch (1986) has, however, demonstrated that various non-local craft items and material appear to be restricted to inhabitants of Moundville. Non-local material is used here to differentiate the intermediate status deposits from each other.

I used three different categories of nonlocal material: chipped stone, greenstone, and miscellaneous relatively rare nonlocal materials including copper, mica, and galena. Examining the proportion of nonlocal chipped stone to local chipped stone fragments, over 55% of the Moundville samples chipped stone was non-local as compared to 18% of the Oliver site chipped stone and only 2% of the White site chipped stone. The extremely small amount of nonlocal chipped stone at the White site may be the result of either a general decrease in the importation of nonlocal chipped stone material during the late Moundville III phase, a trend supported by Peebles'

analysis of other nonlocal goods (1987), or due to nonlocal chipped stone being increasingly restricted to the inhabitants of Moundville.

The proportion of nonlocal greenstone, a material used to manufacture groundstone objects, can be used in the same way as chipped stone. Since each deposit represents a different density of refuse, the number of greenstone fragments in relation to the number of greater than 1/2 inch sherds has been used as a measure of the density of greenstone. The Mdvl-NR deposit had a higher density of greenstone than the other deposits (greenstone to sherd ratio of 0.016 versus less than 0.010 for the other deposits). This high density has been interpreted by Welch as being the result of specialized manufacturing of greenstone object in this locality at Moundville (Welch 1986).

The other non-local materials used to assess status in this study were: copper, micaceous sandstone paint palettes, mica, galena, green paint, and graphite. The ranking shown in Table 1 reflects the frequency of these materials in each deposit.

To summarize the relative status of the deposits, the Mdvl-WC deposit appears to be the highest status sample in this study, the Mdvl-NR and Mdvl-WR deposits represent intermediate status households, the White site also represents intermediate status households, although probably slightly lower in status than the Moundville samples, and the Oliver site appears to represent the lowest status level. It should be stressed that, because of chronological differences in the deposits this ranking can only be preliminary.

Results

While there is not time during this paper to detail various aspect of my analysis of the faunal remains, differential preservation of bone, both within Moundville and between the different sites, does not appear to be a factor in the results. There are differences, however, in the fragmentation of the different samples so that I will rely on bone weight to illustrate my results, rather than counts of identified specimens or minimum number of individuals.

Table 2 shows the proportion of total bone weight in each broad taxanomic category for each site. When these categories are examined for chronological differences, rather than status differences, one general trend is evident: there is an increase in the use of reptile, primarily turtle and snake.

Examining the results for status related differences, 3 changes are evident: 1) there is a drop in the amount of large mammal, almost entirely whitetail deer (Odocoileus virginianus), in the highest status deposit (Mdvl-WC); 2) there is an increase in medium mammal in the highest status deposit, due primarily to the presence of beaver (Castor canadensis); and 3) there is a

general increase in the amount of bird, almost all turkey (Meleagris gallopavo), the higher the status that the deposit represents. While there is a decrease in the amount of large mammal in the highest status deposit, it still comprises the largest class of faunal remains both by weight and by count.

In order to assess if status related differential access to specific portions of deer occurred in the Moundville Phase, I have borrowed Susan Scott's technique (1982, 1983) of comparing weight of each anatomical portion to what would be expected if the entire deer was present. Although I have not included the data, the analysis of number of identified fragments closely parallels the values shown for weight. The majority of long bone fragments and vertebrae fragments were, however, too small to be identified to the exact bone, the use of body part weights allows for the inclusion of these data.

Table 3 shows the proportion of weight of identified deer and large mammal by anatomical section as compared to the proportion in a whole deer. The body part labeled "foot" includes metapodials as well as carpals and tarsals.

When the table is ordered by the status represented by the deposits, ignoring possible chronological differences, two patterns are evident: first, there is a decrease in skull and limb bones the higher the status of the deposit and, second, there is an increase in axial bones the higher the status. The overall low values for skull and foot bones in all of the deposits, as compared to the expected value, may be a result of the "schlep effect": these are the bones most likely to be left behind if a carcass has to be transported from a distance. The presence of some foot bones does suggest that at least some deer were being brought whole to the sites.

If skull and foot bones are removed from the analysis, there is still a strong patter of an increase in axial bones and a decrease in long bones, as shown in Table 4.

Welch's analysis of the White site remains, representing an intermediate status deposit, has identified proportionately more hind limbs than fore limbs. Arthur Bogan's (1980) analysis of Dallas Phase faunal remains from Tennessee has shown a preference for fore limbs as well as axial elements within the highest status deposits, and Scott's analysis of the Lubbub remains, a Mississippian site located to the west of Moundville, has also shown a higher frequency of fore limbs in the higher status deposits (1983:358). Removing unidentified long bone fragments from the analysis, the results from the Moundville Phase samples also show an increase in forelimb fragments in the higher status deposit. This preference for fore limbs is, however, also present in the presumed lowest status deposit, the Oliver site.

If these same results are examined in order to determine when differential access to portions of deer occurred (Table 5), the late Moundville I phase deposit from Mdvl-NR closely resembles the expected values for the

entire deer if skull and foot bones are removed from consideration. The early Moundville I phase Oliver site, however, does not agree with the expected values for deer. The lack of axial bones at the Oliver site can not be explained given the evidence available. A sample of faunal material from a Moundville I phase elite household is needed in order to determine if the Oliver site values are a result of differential transportation of deer skeletal parts from a kill site or are a result of farmsteads provisioning elites.

In conclusion, there is evidence for provisioning the elite with specific portions of deer: axial portions and fore limbs. In addition, it appears that intermediate status households, represented by the White site and the Mdvl-WR deposits, were probably receiving more limbs, with intermediate status inhabitants of Moundville receiving more fore limbs and axial elements than intermediate status inhabitants of other sites. This corresponds well with evidence from the settlement pattern analysis and from Welch study of the economic system: tribute goods were probably moving from the hamlets to the minor centers and then to Moundville. The inhabitants of Moundville, whether elite or of intermediate status, were thus provided with more axial cuts of deer and relatively smaller amounts of deer limbs.

Chronologically, strong evidence for provisioning the elite and intermediate status households with deer does not appear before the Moundville II phase. That is, provisioning all higher status individuals with deer appears to be a characteristic of the complex chiefdom of the Moundville Phase.

If the results of Powell study of the health of individuals at Moundville also reflect the health of individuals at other Moundville Phase sites, then this provisioning does not appear to have had an effect on the health of lower status individuals. It can then be concluded that this tribute does not appear to have been given at great personal cost to non-elites.

Assuming that the Mdvl-WC deposit is not an anomaly, then the smaller amount of large mammal remains in this deposit suggests that deer given at tribute functioned as a symbolic gift, rather than as a way of supplying the elite with a <u>needed</u> subsistence resource.

If these results hold up with additional analysis of Moundville Phase and other Mississippian samples, a tributary economic system may only be a characteristic of complex or more developed Mississippian chiefdoms. The next step will then be to identify the possible benefits for providing the elite with faunal resources.

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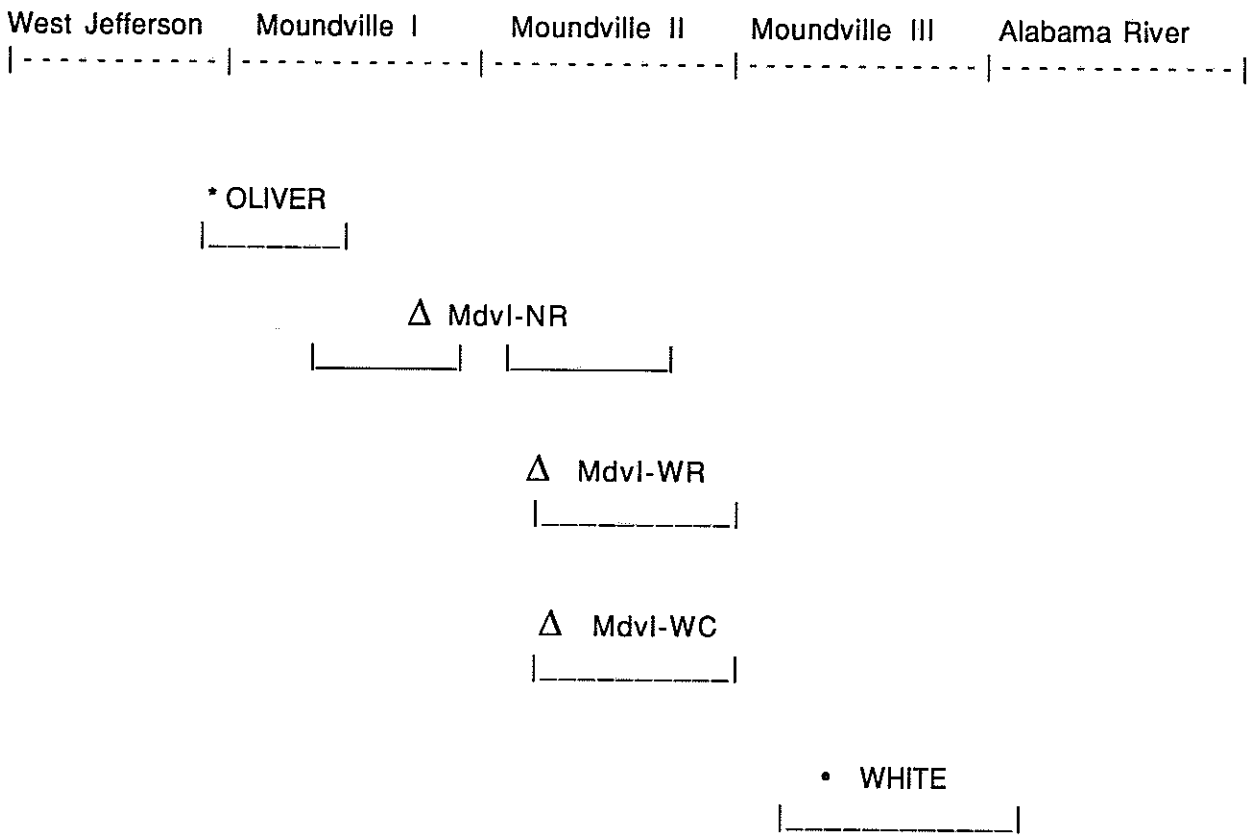
Figure 1. Chronological relationship and settlement type of sites used in analysis.



Key: * Farmstead
• Minor (single mound) center
Δ Major (multi-mound) center

Figure 2. **Location of Moundville deposits used in the analysis.**

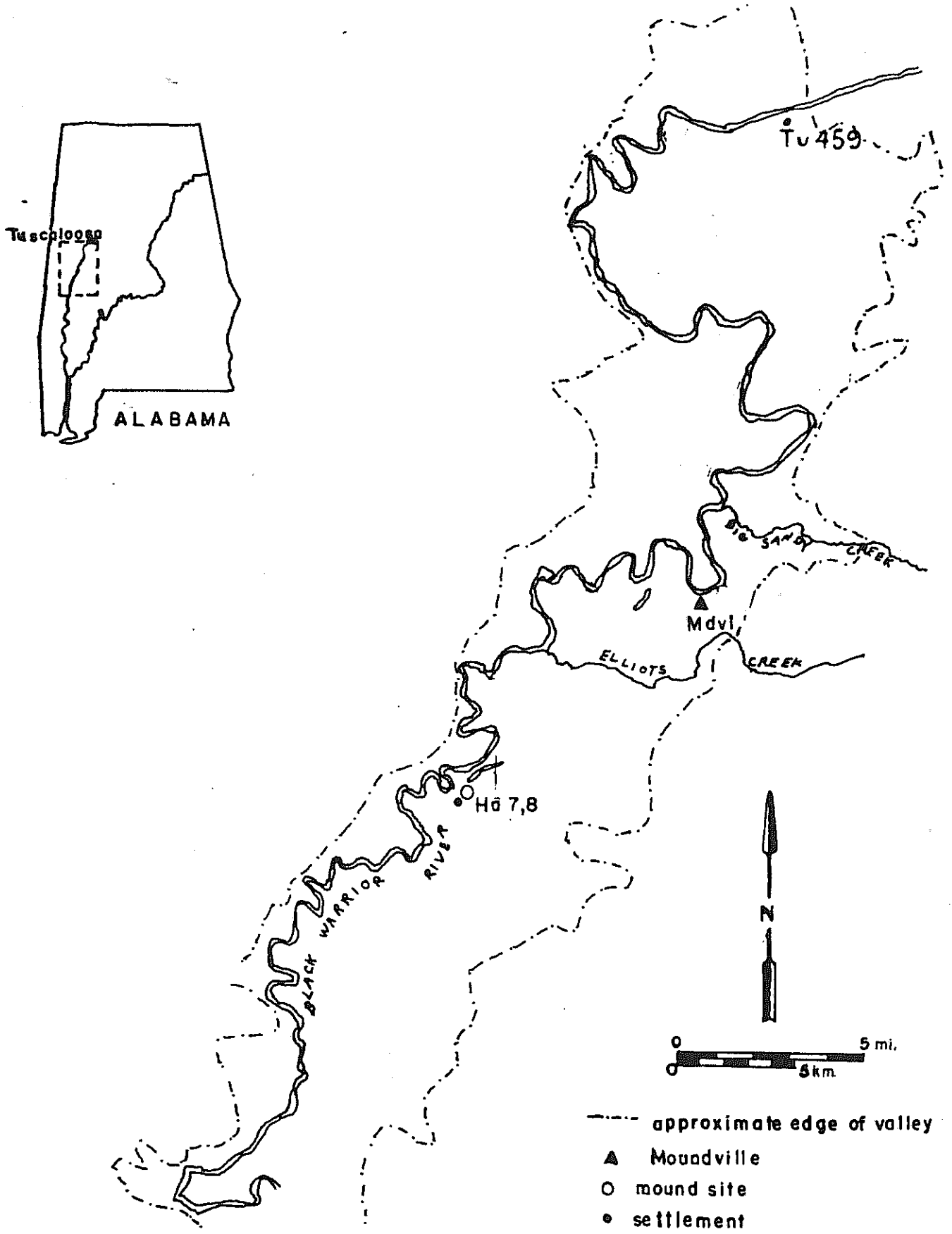


Figure 3. Location of sites used in the analysis.

Table 1. Relative status of the deposits used in study as ranked by different measures.

LOCATION	SERVING:COOKING VESSELS	RELIGIOUS/LUXURY ITEMS	NONLOCAL CHIPPED STONE	GREENSTONE (GRNST:SHERD)	NONLOCAL MATERIAL
Mdvl-WC	Mdvl-WC	Mdvl-WC	Mdvl-NR	Mdvl-NR	Mdvl-NR
Mdvl-NR	Mdvl-NR	WHITE	Mdvl-WR	Mdvl-WC	Mdvl-WR
Mdvl-WR	Mdvl-WR	Mdvl-WR	Mdvl-WC	Mdvl-WR	WHITE
WHITE	WHITE	OLIVER	OLIVER	WHITE	Mdvl-WC
OLIVER	OLIVER		WHITE	OLIVER	OLIVER

Table 2. Percent of total bone weight in each broad taxanomic category in each deposit.

	OLIVER	Mdvl-NR 1	Mdvl-NR 2	Mdvl-WR	Mdvl-WC	WHITE	TOTAL
LARGE MAM	89.4	81.0	80.3	83.7	68.7	81.9	79.2
MEDIUM MAM	.4	1.9	3.2	1.6	4.3	1.4	2.3
SMALL MAM	.5	2.8	1.8	1.1	2.6	2.1	2.2
BIRD	5.0	9.3	7.6	5.5	21.8	3.6	9.9
FISH	3.7	3.4	3.9	4.9	1.8	1.0	2.7
REPTILE	1.1	1.5	3.2	3.3	.7	9.9	3.8
AMPHIBIAN	.0	.0	.0	.0	.0	.0	0.0
TOTAL WT.	484.5	2948.6	241.1	1501.3	2373.9	2672.0	10221.4

Table 3. Percent of deer and large mammal bones in each body part category, ordered by the relative status represented by the deposits.

BODY PART	OLIVER %	WHITE[1] %	Mdvl-WR %	Mdvl-NR %	Mdvl-WC %	EXPECTED[2] %
SKULL	7.0	4.1	3.1	2.6	0.5	11.9
AXIAL	13.6	11.6	22.5	32.7	44.4	25.5
LIMBS	73.2	71.7	69.7	61.0	50.6	44.0
FOOT	6.2	12.6	4.7	3.7	4.6	18.9

BODY PART	OLIVER %	WHITE[1] %	Mdvl-WR %	Mdvl-NR %	Mdvl-WC %	EXPECTED[2] %
FORE LIMB	31.4	9.1	19.1	17.3	27.6	17.2
HIND LIMB	5.2	41.0	19.6	23.2	18.6	26.8

[1] From Welch 1986.

[2] From Scott 1983:357, calculated for a single buck, aged ca. 14 months.

Table 4. Percent of deer and large mammal bones in each body part category, minus skull and foot bones, ordered by the relative status represented by the deposits.

BODY PART	OLIVER %	WHITE[1] %	Mdvl-WR %	Mdvl-NR %	Mdvl-WC %	EXPECTED[2] %
AXIAL	15.7	13.9	24.4	34.9	46.7	36.7
LIMBS	84.3	86.1	75.6	65.1	53.3	63.3

BODY PART	OLIVER %	WHITE[1] %	Mdvl-WR %	Mdvl-NR %	Mdvl-WC %	EXPECTED[2] %
FORE LIMB	45.6	16.8	22.7	19.1	29.2	24.7
HIND LIMB	7.6	55.6	23.3	25.7	19.7	38.6

[1] From Welch 1986.

[2] From Scott 1983:357, calculated for a single buck, aged ca. 14 months.

Table 5. Percent of deer and unidentified large mammal bones in each body part category, minus skull and foot bones, presented in chronological order.

BODY PART	OLIVER EARLY MDVL I	Mdvl-NR LATE MDVL I	Mdvl-NR/WR MDVL II	Mdvl-WC MDVL II	WHITE[1] MDVL III	EXPECTED[2]
AXIAL	15.7	38.9	23.8	46.7	13.9	36.7
LIMBS	84.3	64.1	76.2	53.3	86.1	63.3

BODY PART	OLIVER EARLY MDVL1	Mdvl-NR LATE MDVL1	Mdvl-NR/WR MDVL II	Mdvl-WC MDVL II	WHITE[1] MDVL III	EXPECTED[2]
FORE LIMB	45.6	19.0	22.7	29.2	16.8	24.7
HIND LIMB	7.6	26.1	22.3	19.7	55.6	38.6

[1] From Welch 1986.

[2] From Scott 1983:357, calculated for a single buck, aged ca. 14 months.