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FAUNAL REMAINS FROM THE MILLER SITE (46-Ja-55), JACKSON COUNTY, WEST VIRGINIA

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Abstract: Analysis of 2,314 bone items recovered from 14 features and surface midden at the Miller site (46-Ja-55), Jackson County, West Virginia, indicates a highly focal economy during a (probably) short-term, spring-summer-fall occupation, Definite evidence of both winter occupation and maize agriculture is lacking, but neither possibility can be precluded. Although a small and uneven sample (54.5% of the bones were identifiable to species), the Miller site is comparable to other Fort Ancient assemblages.

The Miller site (46-Ja-55) is a small Fort Ancient settlement lying on an Ohio River alluvial terrace just north of Turkey Run, on Ravenswood Bottom, north of the town of Ravenswood, West Virginia. The site was test excavated during a five week period in 1976, under the supervision of Gary Wilkins of the West Virginia Geological Survey. The reader is referred to Wilkins' report on this site (this issue) for a more detailed description of the site and the archeological materials recovered.

The site midden varied from 12-18 in. in depth. Below this were the remnants of nine subsurface pits, ten fired areas, one burial, a secondary deposit of white ash, and three features interpreted as "potholders." The midden was arbitrarily excavated in 6-inch levels. The top 6 in. of midden was interpreted as plowzone and was removed with a front end loader. Only features were screened, which may have resulted in some sample bias.

FEATURES

Faunal remains are available from 14 features, as summarized in Table 1. Additional bone artifact material found in these features but not included in Table 1 are a deer metatarsal fragment probably used as a beamer (Feature 20); a worked fragment of box turtle carapace (bowl fragment?) from Feature 2; a bone awl tip, probably deer ulna, from Feature 8; and a squirrel humerus bead from Feature 19. Cut marks were present on only three bones, a distal right deer humerus and a distal left deer tibia in Feature 9, and a distal left deer humerus in Feature 15.

Neither species composition nor relative numbers of individual elements permit any inferences regarding seasonality, while sample size and preservation preclude age-grading of the deer remains. The minimum number of individuals was calculated for each species *by feature* and this is given in Table 2. These estimates are no doubt very inaccurate. When the total assemblage from these features is analyzed, using the same criteria, matching individual elements, etc., the total minimum number of individuals per species (given in parentheses in Table 2) drops remarkably—most notably in the case of deer, from 16 to 5. Percentage comparisons of number

of individuals (also in parentheses in Table 2) and pounds of usable meat percentage comparisons are based upon this analysis of the combined features. Because none of the deer mandible fragments were complete enough to estimate age of the individual, this factor could not be considered in calculating the pounds of usable meat.

MIDDEN

The bulk of the Miller faunal sample (1,951 items) comes from the surface midden. No significant differences were noted in the composition of the samples from the three 6-inch excavation levels, so that percentages based upon the minimum number of individuals and pounds of usable meat were calculated for the combined sample (Table 3). Calculation of pounds of usable meat for deer takes into account relative size of six of the individuals (astragali of which could be precisely measured), using tables provided by Emerson (1978).

Table 1. Distribution of faunal elements at the Miller site. Worked bone items are not included but are listed in the text. R, right; L, left; d, distal; p, proximal; f, fragment.

	FEATURE														LEVEL				
MAMMAL SPECIES	1	2	4	5	6	7	8	9	10	11	15	16	19	20	1	2	3	Total	%
Canis familiaris ulna vertebra femur																1L 1 1Rp		3	0.13
Urocyon cinereoargenteus mandible skull fragment molar ulna						1L							1R			1 1 1L		5	0.22
Ursus americanus metatarsal phalanx															1R	2		3	0.13
Procyon lotor mandible maxilla fragment humerus radius ulna tibia						1L	1R	1R							1R 1	2 1 1L 1L(awl)		10	0.43
Martes pennanti mandible															1L			1	0.04
Marmota monax mandible calcaneum											1R				1			2	0.09
Sciurus carolinensis mandible skull fragment incisor humerus femur tibia				1		1R	1R								1L	1L 1 1 1L 1L	1R 1R 2L2R	15	0.65
Oryzomys palustris femur																1L		1	0.04
Castor canadensis radius ulna sacrum femur tibia						1									1R 1R 1R 1R			5	0.22

Table 1. (cont.).

	FEATURE														LEVEL				
MAMMAL SPECIES	**1**	**2**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**15**	**16**	**19**	**20**	**1**	**2**	**3**	**Total**	**%**
Cervus canadensis																		4	0.17
skull							1												
radius															1Lp				
tibia															1Rd				
1st phalanx																1			
Odocoileus virginianus																		674	29.13
mandible fragment					1L	1R	2R		2R1L						1L3R1f	6L5R5f	5L1R1f		
maxilla fragment						1	1L1R						1L			20	2		
isolated teeth						2			2						11	10	3		
skull fragment							1								11	37	2		
antler															4	9	3		
axis							1								1	5	1		
atlas							1				1						1		
cervical vertebra				1			2								1	1			
thoracic vertebra				1											1	4	2		
lumbar vertebra															2	1	7		
vertebra fragment				1	2		4	2					1		18	49	10		
rib fragment						1									3	1			
humerus fragment	1			1			1Ld1Rd	2Rd		1	1Ld	1				9Ld7Rd	1Ld1Rd		
																1Rp7f			
radius							1Rd1Rp				1Ld1p				1Lp1Rd	8Ld4Lp	1Lp		
															3f	1Rp7Rd			
ulna				1R		1	1L	3L1R							1L	5L4R3f			
scapula fragment					1R	1	2R2L1f		1L1R3f			1L			1L1R3f	6L7R7f	1R2f		
1st phalanx				1			3	1					1		2	19	3		
2nd phalanx					1	1	2	1		1	1		1		4	3			
3rd phalanx															1	2	1		
astragalus						1L1R									3L6R	11L5R	1L		
calcaneum					1R		2L	1		1R						8L10R	2L1R		
metatarsal fragment	1			1d	1p		1d2p	1Lp				1			6Lp2d4Rp	1Ld1Lp	3d		
																5Rp5d5f			
metacarpal fragment						1Lp	2p	2Ld			1d				1Rp10d4f	4Ld4Lp5d	4Lp4Rp1d		
																3Rp3f			
pelvis fragment							1				2				8	21	4		
femur fragment							2Ld1Rp								1Lp2Ld1d	2Ld1Rd2f	2Ld1Rd		
															1Rp	4Lp2Rp			
tibia fragment							2Ld1Rp	1Ld1Lp							1Ld3Rd		1Ld		
naviculocuboid																2	1		
stylohyoid													1						
unidentified, probably deer	2	4				8	6	5	2		7	2	1	2	73	143	62	317	13.70
Unidentified mammal	1	6	2	7	8	21	40	20	12	2	7	7		13	194	491	125	956	41.31
Total mammal	5	10	2	15	15	44	91	42	24	5	23	12	7	15	409	1011	266	1996	86.26

Table 1. (cont.).

	FEATURE														LEVEL				
BIRD SPECIES	**1**	**2**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**15**	**16**	**19**	**20**	**1**	**2**	**3**	**Total**	**%**
Anas sp. tibiotarsus								1										1	0.04
Meleagris gallopavo humerus radius ulna coracoid						1L 1Ld	 2				1L			1Ld	1R 2 1L	3L 1Rp 1L1f 2L4R	3L1R 1	71	3.07
metatarsal sternum fragment femur tibiotarsus phalanx				1L		2R 1 1		1			1L				1R(awl) 1	3L3R 1R 2L1R5f 1	5L5R 1R		
carpometacarpus vertebra unidentified bird, probably turkey															3L 2	 2 6	1R 2	8	0.35
Unidentified bird	1					1	2	2			3	3			13	48	13	86	3.72
Total bird	1			1		7	4	4			5	3		1	24	84	32	166	7.17
FISH SPECIES																			
Ictalurus sp. spine															1	1		2	0.09
Castastomus sp. operculum															1			1	0.04
Accipenser fulvescens scute								1										1	0.04
Unidentified fish					1								1			5	2	9	0.38
Total fish					1			1					1		2	6	2	13	0.56

Table 1. (cont.).

	FEATURE														LEVEL				
REPTILE SPECIES	1	2	4	5	6	7	8	9	10	11	15	16	19	20	1	2	3	Total	%
Terrapene carolina																		135	5.83
plastron fragment				1	1				1						10	32	2		
carapace fragment		1		5				3	1	1	3	4			18	34	16		
humerus																1			
scapula																	1		
Chelydra serpentina																		1	0.04
scapula					1														
Trionyx spinifera																		1	0.04
plastron fragment												1							
Unidentified turtle												1				1		2	0.09
Total reptile		1		6	2			3	2	1	3	6			28	68	19	139	6.00
Grand Total, Mammal, Bird, Fish, Reptile Species	6	11	2	22	18	51	95	50	26	6	31	21	8	16	463	1169	319	2314	99.99

Table 2. Minimum number of individuals by feature, estimated pounds of usable meat, and percentage breakdowns.

Species	Feature														Total	%	Lbs. Meat	%
	1	2	4	5	6	7	8	9	10	11	15	16	19	20				
Urocyon cinereoargenteus					1								1		2 (1)	5.0 (5.3)	5.0	0.6
Procyon lotor							1	1							2 (1)	5.0 (5.3)	17.5	2.2
Marmota monax											1				1 (1)	2.5 (5.3)	5.0	0.6
Sciurus carolinensis				1		1	1	1							4 (2)	7.5(10.5)	3.0	0.4
Castor canadensis						1									1 (1)	2.5 (5.3)	20.0	2.5
Cervus canadensis							1								1 (1)	2.5 (5.3)	350.0	44.2
Odocoileus virginianus	1	1	1	1	1	2	2	2	2	1	1	1	1		16 (5)	37.5(26.3)	358.7	45.3
Anas sp.								1							1 (1)	2.5 (5.3)	6.0	0.8
Meleagris gallopavo				1				1			1		1		4 (2)	10.0(10.5)	17.0	2.1
Terrapene carolina	1		1	1				1	1	1	1	1			8 (1)	17.5 (5.3)	0.3	----
Chelydra serpentina					1										1 (1)	2.5 (5.3)	7.0	0.9
Trionyx spinifera											1				1 (1)	2.5 (5.3)	1.5	0.2
Accipenser fulvescens								1							1 (1)	2.5 (5.3)	0.5	----
Total	2	1	2	4	3	4	5	8	3	2	5	2	3		43(19)	100.0(100.3)	791.5	99.9

Table 3. Minimum numbers of individuals by 6-inch excavation level (3 = basal level), estimated pounds of usable meat, and percentage breakdowns.

Species	Level 1	Level 2	Level 3	Total	%	Lbs. Meat	%
Canis familiaris		1		1	2.6	8	0.5
Urocyon cinereoargenteus		1		1	2.6	5	0.3
Ursus americanus	1	1		1	2.6	200	13.5
Procyon lotor	1	1		1	2.6	15	1.0
Martes pennanti	1			1	2.6	7	0.5
Marmota monax	1	1		1	2.6	5	0.3
Sciurus carolinensis	1	1	2	3	7.7	4.5	0.3
Oryzomys palustris			1	1	2.6	----	----
Castor canadensis	1			1	2.6	20	1.3
Cervus canadensis	1	1		1	2.6	350	23.5
Odocoileus virginianus	6	11	4	11	28.2	789.2	53.1
Meleagris gallopavo	3	4	5	9	23.1	76.5	5.1
Terrapene carolina	1	2	1	4	10.2	1.0	0.1
Ictalurus sp.	1	1		2	5.1	4	0.3
Castastomus sp.	1			1	2.6	1	0.1
Total	19	25	13	39	100.3	1486.2	99.9

The mean value of these six was then used as an estimate of the weight of the other five individuals (astragali of which could not be measured precisely). While a logical procedure, no great brief is held that the deduced amount of usable deer meat has any real significance.

I have previously (Murphy 1977:102) expressed the belief that estimated minimum number of individuals is a more suitable standard for inter-site comparisons of the species composition of faunal samples and continue in this belief. Certainly nothing in the data from the Miller site suggests otherwise.

Artifact material encountered in the analysis of the midden sample includes a raccoon tibia fragment possibly used as an awl; a bear metatarsal cut and polished, very possibly from a medicine bag; a squirrel tibia bead stock; a turkey metatarsal awl fragment; and cut and polished deer metacarpal and metatarsal fragments that may have been used as beamers. These items are not included in Table 1. Butchering marks were noted on only a few specimens: on the anterior face of four deer astragali, on the distal end of two left and two right deer tibiae, on the distal end of two right and six left deer humeri, and on a deer atlas fragment.

Faunal elements from which seasonality might be inferred are not common in the midden deposit. The presence of bear and woodchuck (if the latter is not incidental to the aboriginal occupation of the site) were probably not winter kills, since both animals hibernate. Immature elements of turkey and beaver are of interest in showing that hunting was not limited to adult prey but neither can be age-graded precisely enough to indicate other than summer or early fall hunting. Presence of aquatic animals—fish, turtle, and naiads—also probably represents spring-summer-autumn hunting procurement.

Based upon the mid-shaft diameter of the available turkey humeri, approximately 60% of the turkeys utilized at the site were females or immature birds. This is based upon such a small sample (N=8), however, as to have little meaning. At the Buffalo site, Guilday (1971) found the turkey sample about equally divided between adult toms and females/immature birds. At Philo II and Richards, I found the ratio to be 60-75% females and immature birds. The latter is consistent with Smith's (1975) findings. The paucity of adult males is probably due to low amounts of males in the original population rather than to selection on the part of the hunters. In any case, the data provide no information on seasonality of procurement or habitation at the Miller site.

Deer mandibles complete enough to permit estimation of age by degree of tooth wear were comparatively common at the Miller site. After allowances were made for matching left and right mandibles of the same age, there remained the following: one, 6-7 mo.; one, 13-17 mo.; one, 20-24 mo.; three, 2½ yr.; two, 3½ yr.; three, 4½ yr.; one, 5½ yr.; and one, 8½-9½ yr. Again, no clear-cut evidence for winter hunting is seen, and the sample is too small to permit speculation about hunting patterns.

DISCUSSION

It will be noted that percentages of minimum number of individuals from the features and from the midden correspond rather closely: deer, 26.3-28.2%; elk, 5.3-2.6%; raccoon, 5.3-2.6%; turkey, 10.5-23.1%. Compared to faunal remains from other Fort Ancient sites, the Miller sample

shows little diversity, though this no doubt is due largely to the small sample size. Few species are represented, and only deer and elk provided substantial amounts of meat. Several factors, including excavation technique, limited amount of screening, and the relatively small sample size, suggest considerable sample bias; nonetheless, the Miller sample clearly represents Cleland's (1966) "focal" economy. Actually, given the small sample size, the Miller faunal assemblage is quite consistent with previously analyzed Fort Ancient samples.

Shane and Wagner (1980) have calculated "niche width" values for a number of Fort Ancient sites, and those obtained range from 1.25 (Buffalo) to 2.01 (Graham). Theoretically, the lower the niche width value, the more focal was the prehistoric food economy. The value derived from the Miller sample is 1.18, suggesting a highly focal subsistence pattern. There are many difficulties in applying such a mathematical scale, however, and it may be worth noting that while the original faunal analysis from the Philo II site (Shane 1976) yields a niche width of 1.68, a second sample of comparable size (Murphy 1977) yields a niche width value of 1.34, while a value of 1.74 was derived for the nearby and very similar Richards site. Parenthetically, it should be noted that Shane and Wagner (1980), in applying the concept of this measurement of niche width to various Fort Ancient faunal samples have indiscriminately lumped together analyses in which pounds of usable meat for deer have been based variously on an arbitrary 100 pounds per deer estimate or an estimate based on the relative age composition of the deer population. This is tantamount to comparing apples and oranges, and imaginary apples and oranges at that. It may also be argued that man, unlike most other animals, utilizes other species for more than just food and that applying the concept of niche width to prehistoric man might better be based on all the species utilized, not just those eaten.

It is clear, however, that the inhabitants of the Miller site relied heavily upon only two or three animal species. In the absence of any recovered plant remains, other than wood charcoal, one can only speculate whether the inhabitants engaged in maize horticulture or even in the gathering of nuts and wild plants, though both possibilities seem likely.

Naiad remains are abundant in the collection, and a list of species with numbers of left and right valves is given in Table 4. The shellfish were probably gathered directly from the Ohio River. The five most abundant species are *Pleurobema cordatum, Elliptic) crassidens, E. dilatatus, Pleurobema rubrum, and P. claua.* The subfamily Unioninae clearly dominates the fauna (nearly 74%), suggesting that the naiads were collected in riffles along the Ohio River. Prior to damming of the Ohio, the Waynesburg sandstone outcropped extensively along the river from the vicinity of Blennerhassett Island to Letart's Falls and no doubt provided numerous riffles. The contrast with naiad samples from hilltop Monongahela sites in southeastern Ohio (Hunt, Tower sites) is remarkable—at Hunt, 93.1% of the naiad sample represents the subfamilies Lampsilinae and Anodontinae, characteristic of slow-moving water with muddy bottoms. At Tower (Brown 1980), these two subfamilies represent 77% of the sample, again characteristic of the small, sluggish streams near the site.

CONCLUSIONS

Faunal remains from the Miller site permit few firm conclusions regarding subsistence pattern. The absence of any trace of cultigens or nuts and seeds is ambiguous. If not due to sampling bias,

it may indicate that the Miller site was a satellite camp, occupied seasonally only between planting and harvesting. Though currently fashionable and fashionably elaborate, such a scenario lacks solid evidence at the Miller site.

While clearly inhabited during much if not most of the spring, summer, and fall, the site may have been occupied year-round, although, again, there is no indubitable evidence for winter occupation. Nor are there indications that the site was primarily a fall hunting camp. The presence of a 10 year old child (Wilkins, this issue) suggests that family units were involved in occupation of the site, as does the abundance of pottery, and the comparatively elaborate layout of the site. Its small areal extent, as well as the shallowness of the midden, suggest that the site was occupied only for a relatively short period of time.

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Table 4. Number of left and right valves of identified naiad species.

Species	L-R Valves
Anodontoides ferussacianus (Lea)	1-0
Quadrula cylindrica (Say)	6-9
Quadrula metanevra (Rafinesque)	8-12
Amblema plicata (Say)	35-32
Cyclonaias tuberculata (Rafinesque)	35-29
Pleurobema clava (Lamarck)	56-45
Pleurobema coccineum (Conrad)	44-42
Pleurobema cordatum (Rafinesque)	340-320
Pleurobema rubrum (Rafinesque)	105-82
Elliptio crassidens (Lamarck)	152-126
Elliptio dilatatus (Rafinesque)	121-120
Ptychobranchus fasciolaris (Rafinesque)	54-45
Cyprogenia stegaria (Rafinesque)	0-8
Actinonaias carinata (Barnes)	56-57
Plagiola lineata (Rafinesque)	3-1
Obovaria retusa (Lamarck)	21-22
Obovaria olivaria (Rafinesque)	2-4
Potamilus alatus (Say)	2-0
Ligumia recta (Lamarck)	11-4
Lampsilis ovata (Say)	45-31
Epioblasma torulosa (Rafinesque)	8-9
Total	1205-994

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