Oxen at Oxon Hill Manor:

Identifying Draught Cattle from the Archaeological Record of Colonial Maryland

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Introduction

Situated on the bluffs overlooking the Potomac River, Oxon Hill Manor was a typical eighteenth-century Chesapeake tobacco plantation. In the face of fluctuating tobacco prices, many Chesapeake planters, including those at Oxon Hill, shifted from land clearing and tobacco production to the production of ancillary crops—such as corn and wheat—and the care of livestock in the mid- to late-eighteenth century. In contrast to tobacco cultivation, the cultivation of wheat and other grains relied on plowing and, thus, on animal labor. This research uses methodologies for assessing the pathological and osteometric indicators of draught exploitation on the eighteenth-century cattle bones from Oxon Hill Manor.

Methodologies

Using Bartosiewicz, Van Neer, and Lentacker's (1997) methodology, this research examines pathological manifestations on cattle metapodials and phalanges from an eighteenth-century well and possible smokehouse at Oxon Hill Manor. For each complete element, the pathological index (PI) was calculated using the formula:

$$PI = \frac{\text{(sum of the scores from each type of pathology – number of variables)}}{\text{(maximum score – number of variables)}}$$

The PI can range from zero to one, with one being the most severely pathological. This measure allows for the comparison of pathological severity amongst all elements but can only be used on elements complete enough for all pathologies to be assessed.

Elements assessed using Bartosiewicz et. al's (1997) methodology. Metacarpals are in blue, and metatarsals are in green. First phalanges are red, second phalanges are orange, and third phalanges are grey.

The table below shows which pathologies were assessed from each element and if they were ranked for severity (1-4) or presence/absence (1-2).

Osteometric analyses of the metacarpals were used as complementary, but indirect, evidence of draught exploitation. Measurements were taken of fully-fused metacarpals from Oxon Hill. Because of their weight-bearing functions, metacarpals can be measured to distinguish amongst cows, bulls, and steers. DNA tests confirm that the distal breadth of metacarpals is strongly correlated with the sex of the individual. The sex distribution of individuals at Oxon Hill Manor is closely related to the husbandry strategies of the plantation, including the keeping of cattle as draught oxen.

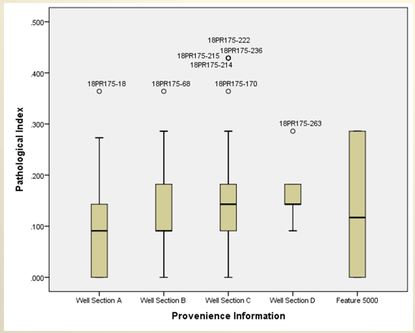
Pathology	Scoring	Elements Assessed
Proximal Exostoses	1-4	Metacarpal, Metatarsal, Phalanx I, Phalanx II, Phalanx III
Proximal Lipping	1-3 (metapodials) 1-4 (phalanges)	Metacarpal, Metatarsal, Phalanx I, Phalanx II, Phalanx III
Proximal Osteoarthritis / Eburnation	1-2	Metacarpal, Metatarsal, Phalanx I, Phalanx II, Phalanx III
Striated Facet Near Proximal Surface	1-2	Metacarpal
Transverse Striations on Medio-Proximal Surface	1-2	Metatarsal
Depression on Palmar/Plantar Surface Near Distal End	1-3	Metacarpal, Metatarsal
Distal Exostoses	1-4	Metacarpal, Metatarsal, Phalanx I, Phalanx II, Phalanx III
Broadening of Distal Articular Surface	1-4	Metacarpal, Metatarsal
Distal Osteoarthritis / Eburnation	1-2	Metacarpal, Metatarsal, Phalanx I, Phalanx II
Fusion of the 2nd Metacarpal	1-2	Metacarpal

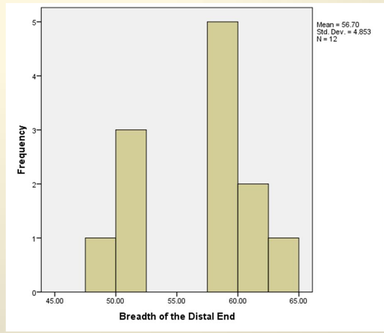
Abstract

The methodologies for identifying and analyzing draught cattle from the archaeological record have been developed and refined over the past twenty years. However, little research has been done which applies these methodologies to faunal assemblages from the New World. This research identifies possible draught cattle from an eighteenth-century well and a possible smokehouse at Oxon Hill Manor in Prince George's County, Maryland, using pathological and osteometric analyses. Analyses of pathologies on metapodials and phalanges identify which specimens most likely came from individuals used for draught labor. Osteometrics delineate the sex ratios of cattle in the archaeological record, thus providing a means for assessing the husbandry strategies in regions where draught cattle were used. As Oxon Hill Manor was home to an elite upper class planting family, the site provides a unique opportunity to explore the changing roles of draught oxen with the shift from tobacco to diversified agriculture in the last half of the eighteenth century. Additionally, the documentary record from Oxon Hill Manor provides a means to test the reliability of these methods for identifying draught cattle from British North American faunal assemblages.

Results

A total of 273 cattle lower leg bones or bone fragments from Oxon Hill Manor were assessed. Of this total, 228 bones were complete enough to allow for the calculation of the pathological index. Eight bones from the 5 contexts had pathological indices which were significantly higher than those of the other bones from that context, suggesting that these bones may have come from draught oxen.



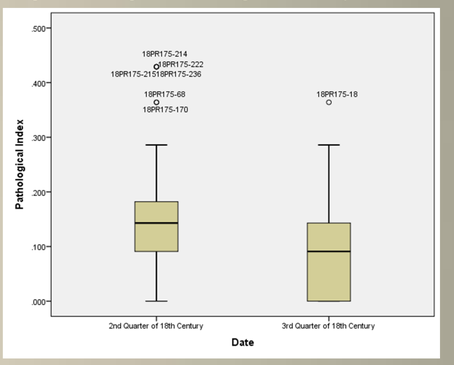


Only 12 distal metacarpals were recovered from the eighteenth-century deposits at Oxon Hill Manor, so the distal breadths of these elements were graphed together to give an idea of the sex distribution. The distal breadths of the metacarpals show a clear bimodal distribution, suggesting the presence of females and males in the Oxon Hill assemblage without distinguishing which males may have been bulls and which may have been steers.

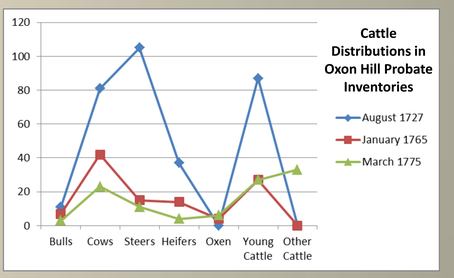
Bone 18PR175-257 from Oxon Hill Manor's Well Section D, which dates to the second quarter of the eighteenth century, had some of the highest pathology scores of any specimen from Oxon Hill Manor. It also had a distal breadth of 58.86 mm, placing it within the cluster of supposed male metacarpals, perhaps indicating that this metacarpal fragment came from a draught ox during Oxon Hill's initial transition to mixed agricultural production.

Discussion

The mid-eighteenth-century shift towards mixed grain production at Oxon Hill Manor is seen directly in probate inventories taken in 1727, 1765, and 1775. Wheat and oxen are absent from the 1727 inventory but are present in both of the later inventories. One expects the faunal data also to show a gradual increase in the usage of draught oxen through time. However, when the faunal data are organized chronologically, the average pathological index is higher in the second quarter of the eighteenth century than in the third. There are also more outlying pathological indices in the second quarter of the eighteenth century, possibly indicating more draught oxen during this earlier period.



Differences in sample sizes likely create the illusion of a decrease in the use of draught oxen through time at Oxon Hill Manor; 195 complete specimens were from the second quarter of the eighteenth century and only 33 complete specimens were from the third quarter. Thus, only three percent of the complete elements from each of the two quarters were significantly pathological, suggesting that very few, if any, draught oxen were present in the archaeological assemblage. The pathological specimens from the second quarter of the eighteenth century likely came from older cattle which were not used for traction. Many of the pathologies assessed are degenerative changes which can be age-, weight-, and/or work-related. The 1727 inventory of Oxon Hill Manor indicates that numerous cattle were kept past five years of age during this time but were not used for traction or milk production.



The age distributions and usages of cattle at Oxon Hill throughout the eighteenth century point to the changing husbandry strategies of the colonial Chesapeake. At the time of the 1727 inventory, the energies of the plantation were put towards tobacco production rather than livestock production or the management of pasture lands. Cattle did not receive supplemental feed so took slightly longer reach a marketable weight, explaining the presence of arthritic changes in the feet of some cattle from a time when draught oxen were not heavily used at Oxon Hill.

By the mid- to late-eighteenth century, many Chesapeake planters turned to mixed grain agriculture, plowing, crop rotation, and livestock production for market. Unfortunately, the archaeological specimens from the third quarter of the eighteenth century do little to corroborate the increased usage of draught oxen at Oxen Hill Manor as indicated in the 1765 and 1775 inventories, likely because of the relatively small sample size.

Conclusions

This research marks an important step in bringing novel methodologies to the fore in zooarchaeological analyses of New World assemblages. By identifying and understanding the many roles which animals played at colonial North American sites, including those of traction animals, one can better understand the intricacies of the plantation landscape. From the eighteenth-century assemblages of Oxon Hill Manor, one may see the first glimpses of change in husbandry strategies and agricultural production in a pathological metacarpal likely from a male draught oxen used in plowing for mixed grain production. When the results from this study are combined with studies of other eighteenth-century Chesapeake assemblages, including those from the last quarter of the eighteenth century, it is hoped that the faunal data will verify the claims made in the historic documents of the increased importance of draught oxen throughout the century. In this way, these methodologies will receive the attention they deserve in the zooarchaeology of British colonial sites and will be incorporated elsewhere to further our understanding of animals' changing roles in past societies.

Acknowledgments

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