

ANIMAL BONES FROM PERRY OAKS

by Stephanie Knight¹

The recording of the animal bones was completed to an assessment level, noting the number of each species present and the number attributed with fusion, tooth wear or metrical traits. The exception to this methodology is the material from middle Iron Age penannular gully 8 and a late Bronze Age waterhole. The material from these features was recorded in full detail with the aim of looking at the possible ritual nature of the deposition of animal bone.

Detailed recording of the animal bones followed the methodology set out in Halstead 1992. Separation of sheep and goat where possible followed Boessneck 1969, and the separation of red and fallow deer followed Lister 1996. Any measurements taken followed the guidelines set out in Von Den Driesch 1976.

A total of 5923 animal bones was excavated from the site. Long term storage of the animal bones and the archive has been arranged with the Museum of London. The vast majority of bone was collected by hand. A limited amount of material (7.5% of the total assemblage) was retrieved incidentally from sieved soil samples.

Preservation and Recovery

Of the 5973 fragments recovered, only 793 (13%) were identified to a species level, including the sheep/goat category. Of the total assemblage, 82% was described as being highly fragmented with their surface eroded, and 11% as fragmented with a poorly preserved surface.

Twenty four percent of the total assemblage is represented by loose teeth. Teeth, having a high density value, have a better chance of survival than other anatomical parts (Binford and Bertram 1977, 109). The high percentage of loose teeth recovered from the site is therefore characteristic of poor preservation of the animal bone in general.

Poor preservation of this nature is considered to bias an assemblage in a number of ways. Larger mammals have higher bone density values than medium sized or smaller mammals and may therefore be better represented in a fragment count (Lyman 1994, 246-247). Recovery by hand collection, with no sieving program aimed towards recovery of animal bone, will also bias an assemblage towards larger mammals (Payne 1972). Conversely, in a highly fragmented assemblage medium sized and smaller mammals may have a greater chance of displaying diagnostic characteristics (Maltby 1996, 19).

Overall the figures presented below are considered more likely to under-represent species such as sheep/goat and pig in comparison to larger mammals.

¹ This report is based upon an assessment of the 1999 material only by Andrew Bates, which was subsequently updated by Stephanie Knight. A full report on all of the animal bone from the Heathrow Terminal 5 excavations will be presented in Volume 2.

Neolithic

Only two features of this period produced any animal bone: the HE1 enclosure and both ditches of the C1 Stanwell Cursus. The small sample size of the Neolithic assemblage makes further analysis impractical, although the presence of domestic animals at the site during this period is noteworthy.

Table 1: Total fragment count of the Neolithic assemblage.

<i>Species</i>	<i>Fragments (EOE)</i>	<i>Loose Teeth Fragments (EOE)</i>
Cow (<i>Bos taurus</i>)	1	1
Cow/Red Deer	22	14
Large Mammal	2	2
Unidentified	1	1
Total	27	19

Bronze Age and Iron Age

Table 2: Total fragment count of the Bronze Age and Iron Age assemblage.

<i>Species</i>	<i>Bronze² Age Fragments</i>	<i>Percentage</i>	<i>Iron Age³ Fragments</i>	<i>Percentage</i>	<i>Total</i>	<i>Percentage</i>
Cow (<i>Bos taurus</i>)	38	9.67	204	7.94	242	8.17
Horse (<i>Equus caballus</i>)			71	2.76	71	2.40
Sheep/Goat (<i>Ovis aries/Capra hircus</i>)	20	5.09	78	3.04	98	3.31
Sheep (<i>Ovis aries</i>)			1	0.04	1	0.03
Goat (<i>Capra hircus</i>)			1	0.04	1	0.03
Pig (<i>Sus domesticus</i>)	2	0.51	14	0.54	16	0.54
Dog (<i>Canis familiaris</i>)			7	0.27	7	0.24
Auroch (<i>Bos primigenius</i>)	1	0.25			1	0.03
Red Deer (<i>Cervus elaphus</i>)	2	0.51	12	0.47	14	0.47
Cow/Horse	1	0.25	5	0.19	6	0.20
Cow/Red Deer	61	15.52	246	9.58	307	10.37
Sheep/Goat/Roe Deer	7	1.78	90	3.50	97	3.27
Large Mammal	74	18.83	845	32.90	919	31.04
Medium Mammal	111	28.24	243	9.46	354	11.95
Small Mammal	1	0.25			1	0.03
Unidentified	75	19.08	751	29.24	826	27.89
Totals	393		2568		2961	

² Includes the late Bronze Age and early Iron Age material.

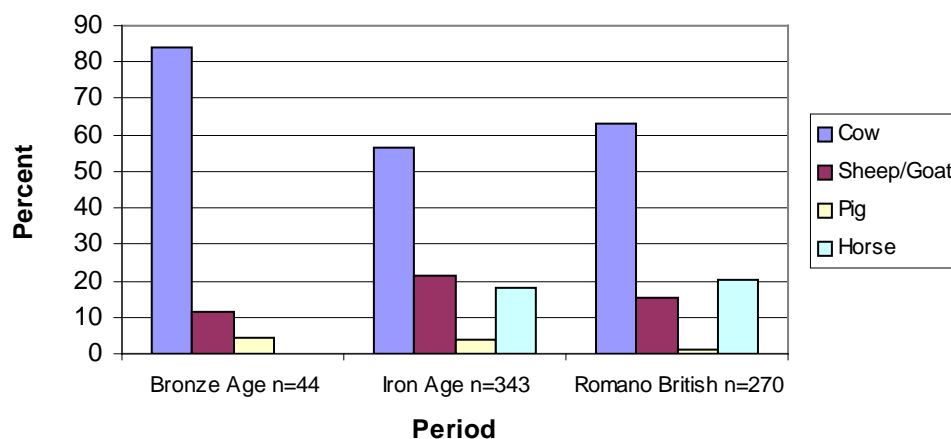
³ Includes late Iron Age/Romano-British material.

The figures presented in Table 2 represent the assemblage associated with the large mid-Bronze Age to Iron Age field system that was excavated across most of the site. No animal bone was recovered from specifically early Bronze Age contexts, although four bones were recovered from a waterhole of Bronze Age date which included an auroch distal humerus⁴.

Of the species represented, cow, sheep/goat and horse dominate the assemblage, although pig is also present throughout in small quantities. The proportion of species represented is not uncharacteristic of other assemblages from Bronze Age and Iron Age sites in Britain.

Figure 1⁵ should be treated with extreme caution due to small sample sizes. It would, however, suggest that there was no major change of the proportion of species included in the assemblage throughout the life of this field system, and into the Roman Period when the agricultural landscape was redesigned. This does not take into account the possibility of Perry Oaks being a producer site, the animals being removed on the hoof. This is particularly relevant to the Romano-British period when large markets are known to have existed in the form of towns, such as nearby Staines.

Fig 1: Main Domestic Species



The two principal stock animals at Perry Oaks during the Bronze Age and Iron Age periods are cattle and sheep/goat. The predominance of cattle over sheep/goat may simply be the result of low-lying areas, such as the Perry Oaks environment, being more suited to cattle husbandry. Similar proportions of species are found on other Iron Age sites on the gravel terraces of the Lower Thames Valley (Grant 1984, 103–5).

The low occurrence of pig on Iron Age sites is not unusual, although this species is almost certainly under-represented as it is often described as being poorly preserved, presumably due to low animal bone density values in comparison to other similar sized animals.

In a study of the Lower Thames Valley, horse is usually noted at being between 3% and 15% of an Iron Age assemblage (Moore-Colyer 1994, 4). Butchery marks were not recorded at Perry Oaks at an assessment level, but the use of horse for meat should not be overlooked;

⁴ Metrical comparison to the Starr Carr material can be found in appendix 1

⁵ Original data found in appendix 3

several sites have attested the butchery of horse, although its use for meat is usually considered secondary to its use for transport. The tooth wear data from horse of this period suggest the majority of animals from archaeological sites are older individuals, over 10 years of age, past the age for prime meat production (Maltby 1981, 184).

One fragment of goat was identified in the Iron Age assemblage, and more goat is likely to be present in the sheep/goat category but probably in small quantities (Maltby 1981, 60).

Possible ritual aspects of the late Bronze Age and Iron Age assemblage

The material from two features was recorded in greater detail to assess a possible ritual nature for the deposition of the animal bone. These included the material recovered from penannular gully 8 and the waterhole [180080]. Summary tables for the material from the penannular gully are given in appendix 2.

Table 5 (in appendix 2) suggests a bias towards larger mammals and a possible emphasis on horse within the penannular gully. The bias towards larger mammals is undoubtedly the result of very poor preservation, however, and is consistent with the Iron Age assemblage as a whole, regardless of feature type. The high occurrence of horse recovered from this feature is tempered by the fact that 12 of the 27 horse fragments recovered are identified as loose teeth or tooth fragments. An apparent emphasis on horse should be treated with caution, as the sample size becomes too small to confirm if it is of significance. Of the other 16 horse bones, three were gnawed.

There was no evidence of deliberate burial, articulation, or of the association of animals bones with other artefacts. There is nothing therefore in the character of the animal bones from this monument that would suggest a ritual aspect to their deposition, except perhaps their association with this feature.

Perhaps the best candidates for deliberate deposition of animal bone came from the waterhole, thought to be late Bronze Age in date. Specifically, a very well-preserved cow femur and tibia, potentially from the same individual although not articulated, were recovered from the primary fill and were therefore deposited soon after the excavation of this feature. This well is located in an area of a number of intercutting waterholes and wells which date from the Bronze Age to the Roman period, some of which contain whole pottery vessels which had clearly been deliberately placed. However, the same context includes ten other bones, most of which are of a more fragmentary nature. Again, there is no real evidence of deliberate placement of the animal body parts.

Romano-British

The proportion of cattle, sheep/goat and pig, in comparison to the data presented in King (1984; 1989) would suggest Romanised dietary preferences during this period. This would agree with the general statement of this part of Britain having a 'Romanised' life style, as indicated, for example, by the distribution of villa sites (Percival 1981, 34-35, 92). However, it is worth noting that in Figure 1 there would appear to be no major change in the proportion of cattle, sheep/goat and pig present on the site since the Bronze Age. It would therefore be difficult to present these figures as evidence of a Romanised site on the bases of dietary preferences.

Again, there is the problem of poor preservation conditions and small sample sizes creating an emphasis towards the larger mammals, making interpretation of these figures tentative at best. Also, the lack of mortality data means no interpretive statements can be made concerning the age of death of animals in relation to Romanisation.

Table 3: Total fragment count of the Romano-British assemblage.

<i>Species</i>	<i>Fragments</i>	<i>Percentage</i>
Cow (<i>Bos taurus</i>)	171	7.40
Horse (<i>Equus caballus</i>)	55	2.38
Sheep/Goat (<i>Ovis aries</i> / <i>Capra hircus</i>)	39	1.69
Sheep (<i>Ovis aries</i>)	2	0.09
Pig (<i>Sus domesticus</i>)	3	0.13
Red Deer (<i>Cervus elaphus</i>)	7	0.30
Roe Deer (<i>Capreolus capreolus</i>)	1	0.04
Cow/Red Deer	200	8.65
Sheep/Goat/Roe Deer	120	5.19
Sheep/Goat/Dog	1	0.04
Large Mammal	533	23.06
Medium Mammal	188	8.13
Unidentified	991	42.88
Totals	2311	

The first and third phalange of a newborn horse, thought to be from the same individual, were recovered from an late Iron Age / early Romano-British refuse pit. The occurrence of bones from a single newborn individual on the site cannot be used to suggest horse breeding took place there, but its presence is noteworthy.

Discussion

The animal bones are of limited value to the interpretation of the agricultural economy of the site as a result of poor preservation and limited samples sizes, although some tentative conclusions have been suggested. The analysis is thus largely descriptive rather than interpretive.

Cattle appear to have been present in the greatest number throughout the main phases of the site. This is suggested to be the result of the local environment being most suited to cattle husbandry, although the under-representation of species such as pig and sheep/goat is likely. Sheep have proven to be well represented on some low-lying sites, such as at the lake villages of Glastonbury and Meare (J.M. Maltby pers comm).

No obvious Romanisation in the character of the assemblage was noted. However, it is thought likely that some changes in the proportion of species influenced by Romanisation may pass unnoticed in the archaeozoological record.

Some species such as dog are conspicuously absent in some phases. No bird bone was recovered from the site, and the one fish fragment came from a soil sample thought to be contaminated by a modern drain.

The contribution of wild resources is noted in each period, although in small quantities. The range of wild species that would have contributed to the diet in each phase is almost certainly incomplete, particularly with reference to animals smaller than red deer and auroch, as these are more greatly affected by poor preservation.

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Appendix 1: Metrical data of two *Bos sp* distal humeri from pit [180100] and three aurochs, *Bos primigenius*, from Star Carr (Legge *et al* 1988, 130)⁶

Table 4: Metrical comparison of two *Bos sp* to *Bos primigenius*

<i>Site</i>	<i>Species</i>	<i>HTc (mm)</i>	<i>Bd (mm)</i>
WPR98	<i>Bos taurus</i>	32.0	77.5
WPR98	<i>Bos primigenius</i>	51.2	98.2
Star Carr	<i>Bos primigenius</i>	47.5	(97.5)
Star Carr	<i>Bos primigenius</i>	(41.7)	
Star Carr	<i>Bos primigenius</i>	45.3	(96.8)

⁶ Bracketed measurements should be used with caution.

Appendix 2: Summary table of the animal bone assemblage recovered from penannular gully 8

Table 5: Proportion of species recovered from Iron Age pits, ditches, penannular gully 8 and the Iron Age assemblage minus the gully 8 assemblage

<i>Species</i>	<i>Pits</i>	<i>Percentage</i>	<i>Ditches</i>	<i>Percentage</i>	<i>Gully 8</i>	<i>Percentage</i>	<i>Rest of Iron Age</i>	<i>Percentage</i>
Cow (<i>Bos taurus</i>)	48	9.02	118	11.76	37	7.58	172	12.61
Horse (<i>Equus caballus</i>)	21	3.95	40	3.99	27	5.53	51	3.739003
Sheep/Goat (<i>Ovis aries/Capra hircus</i>)	31	5.83	55	5.48	11	2.25	70	5.13
Pig (<i>Sus domesticus</i>)			13	1.3	3	0.61	11	0.81
Dog (<i>Canis familiaris</i>)			7	0.7	7	1.43		
Red Deer (<i>Cervus elaphus</i>)	11	2.07	1	0.1	4	0.82	8	0.59
Cow/Horse	1	0.19	2	0.2	1	0.2	4	0.29
Cow/Red Deer	93	17.48	138	13.76	15	3.07	231	16.93
Sheep/Goat/Roe Deer	8	1.5	70	6.98	16	3.28	75	5.5
Large Mammal	238	44.74	397	39.58	321	65.78	545	39.96
Medium Mammal	81	15.22	162	16.15	46	9.43	197	14.44
Total	532		1003		488		1364	
Total Larger Mammals	412	77.44	696	69.39	405	82.99	1011	74.12
Total Medium Mammals	120	22.56	307	30.61	83	17.01	353	25.88

Table 6: Canine-gnawed bone

<i>Species</i>	<i>Femur</i>	<i>Humerus</i>	<i>Metacarpal</i>	<i>Pelvis</i>	<i>Phalanx 1</i>	<i>Total</i>
Cow (<i>Bos taurus</i>)	2					2
Horse (<i>Equus caballus</i>)		1	1		1	3
Red Deer (<i>Cervus elaphus</i>)				1		1
Large Mammal		1				1

Table 7: Butchery

<i>Species</i>	<i>Humerus</i>	<i>Mandibular hinge</i>	<i>Mandible</i>	<i>Thoracic vertebrae</i>	<i>Tibia</i>	<i>Unidentified</i>	<i>Total</i>
Cow (<i>Bos taurus</i>)	D?						1
Red Deer (<i>Cervus elaphus</i>)			Other				1
Large Mammal		Other	Other	Chop		Other	4
Medium Mammal					F?		1

Key

D = Dismembered (Binford 1981)

F = Filleted (Binford 1981)

D? = Dismembered?

F? = Filleted?

Other = Other cut mark

Chop = Chop mark

Note: All cut marks were compared to the butchery marks described in Binford 1981. A ‘?’ appears where cut marks did not match these descriptions, but were considered to be related to filleting or dismembering respectively.

Appendix 3: Main domestic species found in each period

<i>Period</i>	<i>Cow</i>	<i>Sheep/Goat</i>	<i>Pig</i>	<i>Totals</i>
Bronze Age	37	5	2	44
Percentage	84.09	11.36	4.54	
Late Bronze Age Early Iron Age	1	15	0	16
Percentage	6.25	93.75	0	
Iron Age	194	73	13	280
Percentage	69.28	26.07	4.64	
Late Iron Age Early Romano-British	10	6	1	17
Percentage	58.82	35.29	5.88	
Romano British	171	41	3	215
Percentage	79.53	19.07	1.39	