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Summary

Almost 700 hand-recovered animal bones and teeth were identified and recorded from the late Iron Age site at Barrington. Most derive from pits and ditches and belonged to sheep (50%), cattle (26%), pig (15%) and horse (5%) and a small number of other species. The low frequency of pig suggests most of the inhabitants of Barrington were perhaps of lowly status.
The sheep were small and slender-limbed and the majority were slaughtered within the first two years of life indicating that they were probably kept primarily for their meat. The assemblage includes an exceptionally small dog mandible and a pony lower premolar tooth (P2) with an amomalous bevelled front corner. Apart from a higher proportion of juvenile lambs in the pits, there was little difference between the faunal assemblages from pits and ditches and it seems most likely that the pits were simply filled with rubbish after their use was discontinued.

Author's address :-

Dr S J M Davis
ENGLISH HERITAGE
23 Savile Row
London
W1X 1AB

ANCIENT MONUMENTS LABORATORY REPORTS SERIES

Animal bones from the Iron Age site at Edix Hill, Barrington, Cambridgeshire, 1989-1991 excavations

Simon JM Davis

Introduction

An Iron Age settlement was discovered at Edix Hill, Barrington, 11 miles SW of Cambridge (TL 37464959). It was excavated by the Cambridgeshire County Council Archaeological Unit directed by Tim Malim in 1989, 1990 and 1991. (The site was under threat from ploughing and unauthorised digging with the aid of metal detectors.)

The Iron Age pottery is said to be derived from a large settlement and ranges in date from 150 BC to AD 50. Exceptional finds include a lava quern stone, a jet ring, and a possible ritual deposit (in a pit) of a dog with a cow skull placed on top of its head. According to Malim (1993) the pits at Barrington were carefully constructed and were most probably used for storage or industrial use. No large deposits of charred grain indicative of grain storage were identified, and there was no evidence for seasonal cleaning-out by burning. Evidence from the molluscan remains indicates open conditions (Murphy, in Malim 1993).

One especially important concern is what were the pits used for? This question has recently been discussed (for Iron Age sites in England) by Cunliffe (1992) and Wilson (1992). Pits often contained skeletons or parts of skeletons of humans and animals which Cunliffe believes bear witness to some kind of ritual activity. Wilson, however, questions this suggestion and suspects that the bones more probably represent waste disposal. Does the Barrington pit faunal assemblage differ from the faunal assemblage as a whole in such a way as to indicate some special function of the pits in antiquity? The aims of this report are first to attempt to answer this question, and second to describe the animal remains from Barrington and try and deduce what is possible about the economy of the Iron age inhabitants of this site.

The fauna (table 1)

Most of the animal remains were recovered by hand and derive from the Iron Age pits and ditches (dated to between 150 BC and AD 50). It is unfortunate that sieving was not undertaken on a larger scale as many smaller bones and isolated teeth, even of large animals such as cattle and sheep may well have been missed causing a bias favouring larger bones. Several small bags of sieved material were recovered, but these contain too few remains of small mammals to be of any great significance. Most bones are fairly well preserved and some appear to have been gnawed by carnivores (see below). The Barrington bones will be stored at the Museum of Anthropology and Archaeology, University of Cambridge, Downing Street.

Methods

For a full description of the methods used see Davis (1992). In brief, all mandibular teeth and a restricted suite of *"parts of the skeleton always recorded"* (ie a predetermined set of articular ends/epiphyses and metaphyses of girdle, limb and foot bones) were recorded and used in counts (see tables 2 - 4). In order to avoid multiple counting of very fragmented bones, at least 50% of a given part had to be present for it to be counted. Broken, and therefore single, metapodial condyles of caprines and cattle were counted as halves, as were each of the two central pig metapodials.

A mammal-bone epiphysis is described as "unfused" when there are no spicules of bone connecting epiphysis to shaft so that the two separate easily. A mammal bone epiphysis is described as "fused" once it cannot be detached from the metaphysis. Caprine teeth were assigned to the eruption and wear stages of Payne (1973 and 1987), pig and cattle teeth were assigned to the eruption and wear stages of Grant (1982).

Measurements taken on the humerus and cattle metapodials are illustrated in Davis (1992: figures 1 and 2), those taken on equid mandibular cheek teeth follow Davis (1987) and on pig teeth follow Payne and Bull (1988). In general, other measurements taken are those recommended by von den Driesch (1976).

Results and discussion

a) Species represented and their size (tables 1 - 4, and appendix)

Sheep and goat. Caprine bones and teeth are generally difficult to determine to species. Some, such as the dP_3 and dP_4, astragalus, and metapodials (Payne, 1969, 1985 and Boessneck, 1969) are relatively easy to identify as either sheep or goat. As tables 1 - 4 indicate, most of these caprine bones at Barrington belonged to sheep and there was no evidence for the presence of goat. In the British Iron Age goats were kept in very small numbers only (Grant, 1984a). For the purposes of further study (eg biometry and age at death) the sheep/goat teeth and bones are referred to herein as sheep.

The sheep at Barrington are compared to their Roman and medieval relatives from Owslebury, Hampshire and Launceston Castle, Cornwall respectively (Maltby, 1987; Albarella and Davis, 1995; Davis, in press) using a log ratio diagram, with a sample of 26 modern unimproved Shetland ewes (see figure 1). This shows that the Barrington sheep were rather small and little different from the Roman sheep at Owslebury and the medieval ones at Launceston Castle. Note that most of the breadth and depth measurements of various bones such as humerus, tibia, astragalus and the metapodials, lie to the left of the Shetland standard (the 0.00 line in figure 1). It is interesting that two of the three metapodials are longer than the Shetland standard sample. Since limb-bone lengths are all highly correlated (Davis, in press) it is probable that the Iron Age sheep at Barrington had long slender limb-bones compared to modern unimproved Shetland sheep. The Roman and medieval sheep mentioned above also had longer and slenderer limb bones than the modern Shetland standard. Luff's (1993) measurements of the distal widths (Bd) of sheep tibiae from Roman Colchester also indicate that the Barrington sheep were probably also similar in size to those from that city. The distal tibia widths (Bd) listed for several Roman sites in Luff (1982) are also similar to the tibia Bd measurements at Barrington.

Cattle. There are too few cattle bones at Barrington to enable detailed study of their size (many others are too damaged to be measurable). Those that were measured are small, though not quite as small as the ones at Danebury (Grant, 1984).

Equids. Equid bones and teeth can also be difficult to determine to species (certain ass and horse bones are sometimes easily confused). The Barrington equid teeth undoubtedly belonged to horse: the enamel folds on the biting surfaces of the mandibular teeth had "U" shaped lingual folds and the buccal folds partially penetrate between the flexids in the molars (see Eisenmann, 1981).

There are several series of horse mandibular teeth and their measurements (appendix) can be compared to the Iron Age pony from Hook in Hampshire (Davis, 1987). The P_2 - P_4 tooth row from context 160 is similar in size to the Hook pony, but the two other specimens, a P_3 - M_3 tooth row from context 111 and the P_2 from context 162 (see also below) are approximately 10% larger than the Hook pony. Differences in equid dental measurements should be treated with caution due to age-related changes in the shape and size of teeth. The metacarpal from context 315.1 has a lateral length of 193.5 mm and the metatarsal from context 611.2 has a lateral length of 250.9 mm. Multiplying these measurements by Kiesewalter's factors (von den Driesch and Boessneck, 1974) indicates their withers heights were 1.24 metres (12 hands 1 inch) and 1.34 metres (13 hands 1 inch) respectively. Since the pony - horse boundary lies at 14 hands 2 inches, both Barrington metapodials belonged to ponies rather than horses. According to Coy and Maltby (1987) Iron Age ponies ranged from 10-14 hands.

Pigs. The absence of any especially large specimens of *Sus* suggests that the small sample of pig bones and teeth belonged to the domestic pig rather than its large relative, the wild boar, which survived in England until the 17th century (Harting, 1880; 102).

Dog. The mandible of an exceptionally small dog from context 5 (appendix) has a lower carnassial tooth (M_1) whose antero-posterior length measures 13.3 mm. (Besides being too small for fox, the specimen has a severely reduced metaconid. Reduction of this small cusp on the M_1 is a characteristic of dogs and wolves, while foxes have M_1s with a prominent metaconid.) I have compared it with specimens in Ralph Harcourt's collection of modern dog skeletons in the AMLab. The Barrington mandible is smaller than a Jack Russell and almost as small as a Pekingese. Harcourt (1974) surveyed dog remains from archaeological sites in Britain. He suggested that small dogs of this size, otherwise known as lap dogs, were (as indeed they are today) a luxury. As far as his records indicated, lap dogs first appeared in Roman times. Barrington is not a Roman site, but is more or less contemporary with the early Roman period in Britain. One wonders whether this dog mandible from context 5 reflects the high status of one of the inhabitants of Barrington or whether perhaps it belonged to an unfortunate dog which strayed away from a nearby Roman settlement!

Other taxa. Several hare and a fox bone testify to some hunting by the inhabitants of Barrington. There is a single fragment of deer (probably red deer) antler from context 27. It appears to have been worked: its surface had been abraded perhaps by rubbing on a stone. The absence of other deer bones is worth noting but in view of the total size of the assemblage, may not be of any great significance. According to Grant (1984a) bones of wild animals are very rare on most Iron Age sites in Britain. Little importance can be attached to a mole bone (tables 1 and 3). Moles are burrowing animals and this bone probably represents a later contamination. The presence of water vole (in pits only, see below) and amphibia bones (in both pits and ditches) indicate the presence of water at or near the site.

The field vole remains all derive from a pit (context 102.1) into which the voles may have fallen and become trapped. All the water vole bones also derive from pits (several from the same one as the field voles) and so these voles too may have suffered the same fate.

A mature falconid tibiotarsus was identified by Dale Serjeantson as peregrine falcon. She has compared it with sexed specimens at the Ornithology Department of the Natural History Museum (Tring) and suggests (pers. comm.) that it is more likely to have belonged to a female than a male. She also points out that this species is rare on Iron Age sites in England.

b) Frequencies of taxa

Of the nearly 700 recorded bones and teeth 50% belonged to sheep, 26% to cattle and 15% to pig. Undoubtedly hand collection has meant that many of the smaller bones and teeth, especially the smaller taxa, were lost during excavation. Notwithstanding recovery (as well as preservation) biasses, and given the greater size of cattle, the inhabitants of Barrington probably ate mainly beef and rather less lamb/mutton and some pork. A closer look at table 2 shows that there are approximately 4 - 5 times more sheep molars than cattle molars. These teeth tend to preserve well, are less subject to the action of dogs, and are easier to see on excavation. They may therefore provide a better estimate of the ratio of sheep to cattle - at Barrington more like 5 to 1, though given the greater size of (even Iron Age) cattle, it still seems reasonable to assume that the inhabitants of Barrington ate more beef than mutton. At the nearby site of Baldock, sheep were also the most common species in the Iron Age phase (Chaplin and McCormick, 1986).

The abundance of sheep compared to cattle appears to be a characteristic of first millennium Iron Age sites in England, especially the second half. This general increase in the numbers of sheep throughout the first millennium is linked to the spread of downland arable, with even higher frequencies of sheep occurring on sites located on higher ground such as chalk downland (Grant, 1984a; Cunliffe, 1991). At Danebury for example sheep numbers were as high as 70% (Grant, 1984b). Robinson and Wilson (1987) noted that the percentages of sheep remains on 12 Iron Age sites in the midlands ranged between 25% and 63% while on 15 Romano-British sites these percentages dropped to between 12% and 45% with pig and cattle becoming more frequent (see also King, 1978). Thus with its predominance of sheep over cattle and pig the Barrington fauna is typical of Iron Age sites in southern Britain. Another point of interest is the rather low percentage of pig. Annie Grant (in press) suggests that there is a correlation between relatively high proportions of pig remains and high status occupation, although she cautions that the 'high' percentages are rather lower than those of Roman and medieval periods. Those with little pig are low status or ordinary rural sites. The Celts prized pork above all other flesh and regarded it as the food of the gods (Ross, 1967; 313).

c) Parts of the skeleton present and butchery marks.

There are insufficient bones to investigate possible body-part preferences. Variations between the different bone-counts probably reflect differential preservation and recovery (Brain, 1967). However, the rather high ratio of teeth to bones, especially in the case of the sheep, is worth noting and is probably to some extent due to the action of dogs; teeth are harder than bones and relatively unpalatable. High teeth-to-bone ratios appear to characterise many rural sites where the rate of deposition may have been lower (than in towns) and dogs were perhaps more common (Albarella and Davis, 1994).

Some bones at Barrington had been gnawed and some others, generally smaller ones, show the typical pattern of partial digestion (as described by Payne and Munson, 1985) also probably the result of carnivore activity (see table 5). The number of gnawed plus partially digested bones in ditches is 14 (4%) and in pits is 18 (6%). This small difference in apparent carnivore activity between pits and ditches, however, is not statistically significant (at the 5% level, $\chi^2 = 1.3$). General post-depositional destruction may also have been more severe in ditches than in pits, a factor which may have some bearing upon the frequencies of juveniles versus adults (see below). Thus for sheep in ditches the bone:tooth ratio is only 0.4:1 while in the pits it is higher at 0.6:1. (These ratios are calculated by comparing total numbers of all sheep teeth with total numbers of all sheep bones in tables 3 and 4.)

Some of the bones had been chopped and/or bear cut marks (table 5), but the number is too small to allow, for example, a comparison of the cattle and equid bones. However, an equid femur (context 642.1) has a small mark which may have been inflicted by a blade and an equid metapodial (context 162) has some small transverse cut marks which may well be skinning marks. With so few butchery/cut mark data for both equid bones and cattle bones it is not possible to discern any difference in the treatment of these two animals at Barrington. Whether horse flesh was exploited (eg fed to the dogs or consumed by the human inhabitants) remains an unanswered question. In the Celtic tradition the horse played an important role, and there are known references to horses being killed and eaten such as the ritual consumption of a mare during the inauguration of a king (Ross, 1967; 321-333).

d) Age distribution of animals culled (tables 6 and 7)

Sheep. The relatively large number of lambs is especially evident. Note the high counts of deciduous teeth compared to permanent ones (tables 2 and 6). If we look more closely at these, ie at the wear stages of the last deciduous premolar or dP_4, the majority are in wear stages 13 - 18 (probably aged around 3 - 18 months; Deniz and Payne, 1982). They do not therefore appear to include many lambs in the 0 - 3 month old category (there is just one with no wear). In other words they belonged to "older" lambs. In table 7 the dental wear data are pooled into the mandible age classes of Payne (1973). This also shows the high numbers, some 18-25 out of a total of 48 mandibles, culled in their first year of life and only <11 culled at ages greater than three years. A large cull of lambs towards the end of their juvenile period suggests, admittedly tentatively (especially since it is quite likely that younger lamb bones and teeth did not preserve and/or were not recovered), that the prime reason for rearing sheep at Barrington was for their meat. This age pattern of the Barrington sheep is somewhat at variance with those patterns found on many other Iron Age sites (Grant, 1984a), though as Grant indicates, there was considerable variation. Countrywide, wool appears to have become increasingly important as evidenced by the findings of loom weights, spindle whorls and weaving combs (Ryder, 1983). Robinson and Wilson (1987) suggest too that the provision of meat from relatively young animals was a major aim of the sheep husbandry, though there may well have been a greater demand for secondary products. In Roman times evidence suggests that sheep were slaughtered at later ages implying greater emphasis on milk and wool.

With so few specimens, it is difficult to interpret the cattle, horse and pig ageing data. As is generally the case for pig, an animal bred mainly for its meat and fat, most of the pigs at Barrington were culled young. The cattle were culled over a wide range of ages, and the presence of some milk equid teeth as well as very worn permanent teeth suggests (very tentatively) that horses may have been bred locally and many exploited for their full life span.

e) An equid premolar with a strange pattern of wear

Most remarkable is the equid anterior mandible fragment (plates 1 and 2) from context 162 showing a peculiar pattern of tooth wear. It has canine teeth and so probably belonged to a stallion. Especially interesting is the front part of the biting surface of the P_2 (the first cheek tooth). This is bevelled. The amount of bevel (measured as suggested by Anthony and Brown, 1991) is 3.5 mm. Similar bevelled equid P_2s are described from the Roman site at Towcester, Northamptonshire by Payne (1983) and Buhen in upper Egypt by Clutton-Brock (1974). First appearances of the Barrington tooth suggest bit wear. Using their tongue, horses are able to lift the bit off the gum where it normally resides in the gap (diastema) between the canine and P_2 and rest it on the front part or paraconid of the P_2. Anthony and Brown (1991) have examined large numbers of mandibles of horses which either had or had not been harnessed with a bit. They describe the damage to the P_2 that taking the bit between the teeth may cause: a) The enamel folds on the occlusal surface of the paraconid suffer a particular kind of chipping or crazing which they term "spalling" and which is visible to the naked eye. b) The height of the enamel ridges on the front part of the tooth is reduced to become flush with the dentine, and c) the whole front part of the tooth becomes worn down more than the rear part, so that when viewed from the side the P_2 appears to be bevelled or stepped.

Closer examination of the tooth from context 162 at Barrington (see the scanning electron microscope photograph in plate 2), fails to reveal any evidence for spalling of the enamel. Indeed the enamel folds of the paraconid are little different from those further back on the tooth. Moreover, the enamel in this region is not completely flush with the dentine, although it has to be admitted that the height of the enamel above the dentine at the front of the tooth is less than further back. Overall then, there seems insufficient evidence for bit wear or even bit wear followed by a period of normal wear.

This leaves two other possible explanations for the bevel: a) The anterior part of the P_2 had been filed down or b) this aberrant wear pattern occurred 'naturally' as a result of unequal wear between the P_2 and its counterpart in the upper jaw. Bevelling of the P_2 can be caused if a horse is "parrot-mouthed" when the upper tooth row overshoots the lower one (Payne, in press). Today horses may, on occasion, have their P_2s filed to remove the pointed ends and prevent injury to the cheek. This is done on polo ponies, though in Britain it is generally the upper teeth that are treated, but in Argentina both upper and lower premolars are treated in this manner (Payne, in press). Immediately following such treatment both enamel and dentine would be flush, but after several weeks/months, continued wear would reduce the height of the dentine more than the harder enamel and the latter's folds would again stand proud.

As already mentioned, the enamel on the bevelled part of the specimen from context 162, does indeed stand proud but not to quite the same extent as on the posterior 2/3rds of the biting surface. This could be taken as evidence that the tooth had indeed been filed some weeks/months before the death of the horse. (Any file marks of course would have been worn away by subsequent chewing.) My own feeling, however, is that this peculiar wear pattern is simply due to unequal wear of upper and lower P2s. The opposing upper P^2, if found, would have had a downward pointing front part, or, viewed from the side, the mirror image of the lower tooth. Unfortunately the corresponding P^2 was not found.

f) Other anomalies and pathology

In artiodactyls the lower third molar tooth is characterised by having three pillars. The third pillar, or hypoconulid, is somewhat smaller, and occasionally fails to develop. The cause of this failure is not understood and it may be an inherited trait. Of the 10 cattle M_3s at Barrington, 3 have missing hypoconulids - a rather high frequency. Relatively high frequencies have been reported in Roman assemblages at Exeter, Devon (10/76 cases; Maltby, 1979) and Dorchester, Dorset (7/114 cases; Maltby, 1993) and the medieval levels at Launceston, Cornwall (14/108 cases; Albarella and Davis, 1995). In the post-medieval at Launceston this trait appears to have almost completely disappeared and Maltby (1979; 40) suggests that it may have disappeared from English cattle some time after the Roman period. More data concerning this trait should prove interesting and may reflect genotypic variation in cattle both geographically and through time.

A cattle *caput femoris* (the proximal articular surface of the thigh bone) from context 629.1 has exostoses (bony outgrowths) around its neck and the *caput* surface is worn down and shiny in appearance. This condition may develop in old individuals and is thought to be associated with old work animals and animals which have suffered excessive strain to their hind quarters.

g) Pits versus ditches and the nature of the pit contexts containing animal bones

A detailed examination of the pit contexts in which bones and teeth were found revealed that most of the bones and teeth derived from "infills" rather than primary deposits. Malim believes (pers. comm.) that this means that the animal remains in the pits are probably derived from rubbish and were not placed purposefully in the pits for say storage or as part of some kind of ceremony.

There is no evidence from the presence/absence of species (except perhaps the voles), and the frequencies of taxa, for any difference between pits and ditches (tables 3 and 4).

Tables 8 and 9 show that the percentages of juvenile sheep teeth and bones are higher in the pits than in the ditches. One possibility which comes to mind is that the pits were excavated with greater care (and/or soil in the pits was more often sieved) so that milk teeth and unfused limb bones (these are both more fragile and often smaller) were less likely to have been lost in excavation. All the rodent jaws and bones were from pits (see table 4) which supports this possibility. However Malim assures me that pits and ditches were excavated with equal care. Malim has, however, suggested that perhaps the conditions of preservation were better in the pits than in the ditches due to different soil conditions. Robinson and Wilson (1987) note that bones from Iron Age sites tend to be well preserved "particularly those deposited in storage pits, but those in ditches are more degraded."

Another possible explanation for the higher numbers of juvenile sheep in the pits (I am grateful to Sebastian Payne for this suggestion) is that it reflects seasonal dumping in pits. In England sheep generally give birth in the spring. If pits were used for dumping dead carcasses in the spring and summer rather than the winter, and given a high mortality rate among new-born sheep, we would expect to find more juvenile animals in the pits. In order to determine seasonal information from teeth we need to consider the wear stages of the milk teeth. For example (and assuming spring birthing) deciduous fourth premolars in wear stages 0 - 13 and first and second molars in stages 0 - 4 would be from animals dying mainly in the spring and summer. Unfortunately, (see also table 10) while there appears to be a suggestive trend, there are too few of these teeth in these early wear stages to be able to draw such a conclusion with any degree of confidence.

The pit - context 531. This pit was thought, at the time of excavation, to contain a special burial of a dog with a cattle skull placed on top of it. The dog skeleton is nearly complete and in articulation. The cattle skull is also complete and lay the right way up over the dog's skull. The dog bones are relatively undamaged, and do not bear any traces of butchery or knife cuts. Clearly a complete carcass was buried. Other bones and teeth recorded from this context include a pig milk incisor, a caprine mandible, a cattle distal radius and a gnawed cattle calcaneum. The dog femur and tibia are similar in size to a modern collie skeleton in the AMLab collection which stood 18 inches at the shoulder. Perhaps the dog carcass was dumped in the pit (no longer in use) in order to facilitate rapid disposal. But it is not possible to determine whether the cattle skull and underlying dog skeleton represent the remains of some kind of special (?ritual) burial, or merely the dumping of a dead dog and a cattle skull on top.

Summary and conclusions

Most of the faunal remains from Barrington were from animals eaten in antiquity. Taking into consideration the greater weight of cattle compared to sheep, the frequencies of the species at Barrington indicate that the bulk of the meat consumed at Barrington was probably beef, followed by lamb/mutton and some pork. The relatively (in comparison to earlier Iron Age sites and Roman sites) high percentage of sheep is typical of this period and the low number of pig bones indicates a settlement of low status.

The sheep (there was no evidence for goat) were similar in size (and probably also conformation) to Roman and medieval sheep, and they had similarly slender metapodials. They were small compared to modern unimproved sheep. The rather high proportion of lamb teeth suggests that the sheep were kept primarily for meat, though it is quite probable that their milk and wool were also exploited.

Most of the animal bones from the pits were recovered from the later rather than the primary fillings. This suggests that animal bones in pits are derived from debris which had been lying around the site rather than being specially placed in pits. There appears to be little difference between the pits and ditches at Barrington, except for a higher proportion of juvenile sheep bones and teeth in the pits. This could reflect better conditions for preservation in pits and/or more careful excavation of these features. A suggestion that the pits were used in the summer (ie after being emptied of their grain during the winter) for dumping dead sheep, many of which may have been spring-born lambs cannot be proven due to the scarcity of data.

A very small dog mandible, which must have belonged to a lap dog, is noteworthy. A peculiarly bevelled equid lower cheek tooth (P_2) could be an early example of a veterinary practice in which horse teeth are filed down to prevent injury to their cheeks, although a more probable but mundane explanation is that it was caused by unequal wear of upper versus lower P2s.

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	N	%
Sheep/Goat	337	50
(Sheep	76)	
(Goat	-)	
Cattle	177	26
Pig	102	15
Horse	35	5
?Red deer	+	
Hare	5	
Dog	19	
Fox	1	
Water vole	19	
Field vole	17	
Mole	1	
Peregrine falcon	1	
Amphibia	7	

Table 1

Numbers of animal bones found at Barrington. Percentages are given for the more common food animals. "+" denotes the presence of a non-countable (see Davis, 1992) bone.

		Cattle	Sh/Goat	Pig	Horse	Dog	Hare	Others
Teeth (mandibular)	I	29	6	9	3	-	-	
	dI	1	4	7	2	-	-	
	C	-	-	9 (6m+3f)	1	1	-	
	dC	-	-	-	-	-	-	
	P_1	-	-	2	-	-	-	
	P_2	5	3	1	2	-	-	
	P_3	7	15	3	3	2	-	
	P_4	2	16	2	3	2	1	
	dP_2	3	10 (9=Sh)	3	-	-	-	
	dP_3	5	23 (22=Sh)	4	1	-	-	
	dP_4	10	30 (29=Sh)	3	-	-	-	
	M_1	3	29	3	1	3	1	Water vole 6 Field vole 17
	M_2	1	22	3	1	-	1	Water vole 6
	M_3	10	22	5	2	-	1	Water vole 5
	$M_{1/2}$	12	43	1	6	-	-	
Scapula (glenoid)	U	1	2	2	-	1	-	
	F	2	2	1	-	1	-	
	?	5	6	1	1	1	-	
Distal humerus	UM	-	-	3	-	-	-	
	UE	-	1	2	-	-	-	
	F	6	15 (5=Sh)	1	-	-	-	Mole 1, Fox 1
Distal radius	UM	-	7	2	-	-	-	
	UE	-	1	1	-	-	-	
	F	3	1	-	-	-	-	
Distal metacarpal	UM	1	6	4	-	-	-	
	UE	-	-	-	-	-	-	
	F	3	3 (3=Sh)	-	3	-	-	
C2		1	-	-	-	-	-	
Ischium (acetabulum)		6	6	3	-	1	-	
Distal femur	UM	-	2	2	-	-	-	
	UE	-	2	1	-	-	-	
	F	1	5	-	2	1	1	Water vole 1
Distal tibia	UM	1	7	-	-	-	-	
	UE	-	-	-	-	-	-	
	F	11	8	2	-	2	-	W vole 1, Falcon 1
Calcaneum	U	4	5	3	-	-	-	
	F	3	5	-	-	1	-	
	?	8	1	1	-	-	-	
Astragalus		9	10 (5=Sh)	2	1	2	-	
Distal metatarsal	UM	-	5	1	-	-	-	
	UE	-	-	-	-	-	-	
	F	4.5	2 (2=Sh)	-	1	-	-	
Phalanx 1 proximal	UM	2	3	7	-	-	-	
	UE	-	-	2	-	-	-	
	F	10	4	1	3	2	-	
Phalanx 3		4	2 (1=Sh)	1	-	-	-	
Distal metapodial	UM	0.5	2	-	-	-	-	
	UE	1.5	1	3.5	-	-	-	
	F	1	-	-	2	-	-	
Long bones etc (various)								Amphibia 7 antler frag pres
Totals		176.5	337	101.5	35	19	5	
%		26	50	15	5	3	present	

Table 2. Numbers of teeth and bones from Barrington. Some sheep/goat bones could be identified to species and their numbers are given in brackets, where this was possible all were sheep (=Sh). UM = unfused metaphysis, UE = unfused epiphysis, F = fused end, m = male, f = female. The antler fragment is probably red deer.

		Cattle	Sh/Goat	Pig	Horse	Dog	Hare	Others
Teeth (mandibular)	I	15	2	3	-	-	-	Water vole 1
	dI	-	-	5	-	-	-	
	C	-	-	3 (3m)	-	1	-	
	dC	-	-	-	-	-	-	
	P_1	-	-	-	-	-	-	
	P_2	5	1	1	-	-	-	
	P_3	1	4	2	1	-	-	
	P_4	1	5	1	-	-	1	
	dP_2	2	7	2	-	-	-	
	dP_3	4	12	2	1	-	-	
	dP_4	5	18	2	-	-	-	
	M_1	1	14	3	-	1	1	Water vole 6 Field vole 17
	M_2	1	9	2	-	-	1	Water vole 6
	M_3	4	7	2	-	-	1	Water vole 5
	$M_{1/2}$	2	8	-	3	-	-	
Scapula (glenoid)	U	1	2	2	-	-	-	
	F	-	1	-	-	1	-	
	?	3	2	1	-	-	-	
Distal **humerus**	UM	-	-	2	-	-	-	
	UE	-	1	2	-	-	-	
	F	2	6	1	-	-	-	Mole 1
Distal **radius**	UM	-	6	2	-	-	-	
	UE	-	-	1	-	-	-	
	F	2	-	-	-	-	-	
Distal **metacarpal**	UM	-	2	3.5	-	-	-	
	UE	-	-	-	-	-	-	
	F	2	1	-	2	-	-	
C2		1	-	-	-	-	-	
Ischium (acetabulum)		1	2	-	-	1	-	
Distal **femur**	UM	-	1	1	-	-	-	
	UE	-	1	1	-	-	-	
	F	1	2	-	-	1	1	Water vole 1
Distal **tibia**	UM	-	5	-	-	-	-	
	UE	-	-	-	-	-	-	
	F	4	5	-	-	2	-	Water vole 1
Calcaneum	U	-	1	1	-	-	-	
	F	1	2	-	-	1	-	
	?	3	1	-	-	-	-	
Astragalus		2	4	1	-	2	-	
Distal **metatarsal**	UM	-	3	1	-	-	-	
	UE	-	-	-	-	-	-	
	F	2.5	1.5	-	-	-	-	
Phalanx 1 proximal	UM	1	2	6	-	-	-	
	UE	-	-	2	-	-	-	
	F	4	1	1	1	1	-	
Phalanx 3		2	1	1	-	-	-	
Distal **metapodial**	UM	-	1	-	-	-	-	
	UE	1.5	0.5	3	-	-	-	
	F	1	-	-	-	-	-	
Long bones (various)								Amphibia 4
Totals		76	142	60.5	8	11	5	
%		25	47	20	3	4	2	

Table 3. Numbers of teeth and bones from Barrington **PITS**. UM = unfused metaphysis, UE = unfused epiphysis, F = fused end, m = male, f = female.

		Cattle	Sh/Goat	Pig	Horse	Dog	Hare	Others
Teeth (mandibular)	I	14	3	6	2	-	-	
	dI	1	3	2	2	-	-	
	C	-	-	6	1	-	-	
	dC	-	-	-	-	-	-	
	P_1	-	-	2	-	-	-	
	P_2	-	2	-	2	-	-	
	P_3	5	11	1	2	2	-	
	P_4	1	11	1	3	2	-	
	dP_2	1	3	1	-	-	-	
	dP_3	1	10	2	-	-	-	
	dP_4	5	11	1	-	-	-	
	M_1	2	14	-	1	2	-	
	M_2	-	12	1	1	-	-	
	M_3	6	14	3	2	-	-	
	$M_{1/2}$	9	34	1	2	-	-	
Scapula (glenoid)	U	-	-	-	-	-	-	
	F	2	1	1	-	-	-	
	?	2	4	-	-	1	-	
Distal **humerus**	UM	-	-	-	-	-	-	
	UE	-	-	-	-	-	-	
	F	4	7	-	-	-	-	Fox 1
Distal **radius**	UM	-	-	-	-	-	-	
	UE	-	-	-	-	-	-	
	F	1	1	-	-	-	-	
Distal **metacarpal**	UM	1	4	0.5	-	-	-	
	UE	-	-	-	-	-	-	
	F	1	1.5	-	1	-	-	
C2		-	-	-	-	-	-	
Ischium (acetabulum)		5	4	2	-	-	-	
Distal **femur**	UM	-	1	1	-	-	-	
	UE	-	1	-	-	-	-	
	F	-	3	-	2	-	-	
Distal **tibia**	UM	1	2	-	-	-	-	
	UE	-	-	-	-	-	-	
	F	5	3	1	-	-	-	Falcon 1
Calcaneum	U	3	4	2	-	-	-	
	F	2	2	-	-	-	-	
	?	4	-	1	-	-	-	
Astragalus		7	5	1	1	-	-	
Distal **metatarsal**	UM	-	2	-	-	-	-	
	UE	-	-	-	-	-	-	
	F	2	0.5	-	1	-	-	
Phalanx 1 proximal	UM	1	1	1	-	-	-	
	UE	-	-	-	-	-	-	
	F	5	3	-	2	1	-	
Phalanx 3		2	1	-	-	-	-	
Distal **metapodial**	UM	0.5	1	-	2	-	-	
	UE	-	0.5	0.5	-	-	-	
	F	-	-	-	-	-	-	
Long bones etc (various)								Amphibia 3 antler frag pres
Totals		93.5	180.5	38	27	8	-	
%		27	52	11	8	2		

Table 4. Numbers of teeth and bones from Barrington DITCHES. UM = unfused metaphysis, UE = unfused epiphysis, F = fused end, m = male, f = female. The antler fragment is probably red deer.

a) Ditches

	Cattle	Sh/Goat	Pig	Horse	Dog	Hare
Number of bones with cut marks	3	4	-	2	-	-
Number of gnawed bones	3	1	2	2	-	-
Number of partially digested bones	-	6	-	-	-	-
Total number of bones	48.5	52.5	11	9	2	-

b) Pits

	Cattle	Sh/Goat	Pig	Horse	Dog	Hare
Number of bones with cut marks	1	1	-	-	-	-
Number of gnawed bones	9	3	-	1	-	-
Number of partially digested bones	-	4	1	-	-	-
Total number of bones	35	55	32.5	3	9	1

Table 5.

The effect of carnivores on the Barrington animal bones - ditches and pits compared. Numbers of gnawed and partially digested bones.

Cattle

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	unassigned
dP_4	1	3	1	-	-	-	-	1	-	4	-	-	-	-	-	-	-
P_4	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-
M_1	1	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-
$M_{1/2}$	1	1	-	-	-	3	1	-	-	-	4	1	1	-	-	-	-
M_2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
M_3	-	-	1	-	2	-	1	1	-	2	2	1	-	-	-	-	-

Pig

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	unassigned
dP_4	-	1	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-
P_4	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
M_1	-	-	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-
$M_{1/2}$	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M_2	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-
M_3	4	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sheep/goat

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	unassigned
dP_4	1	-	-	-	-	-	-	-	-	-	1	-	-	9	7	-	5	2	2	-	-	-	-	-	3
P_4	-	-	-	-	-	-	-	-	4	2	-	-	6	-	1	1	-	-	-	-	-	-	-	-	2
M_1	2	-	-	-	-	1	3	1	4	11	-	2	1	-	2	2	-	-	-	-	-	-	-	-	-
$M_{1/2}$	-	-	-	-	-	4	9	2	8	15	1	-	-	1	-	-	-	-	-	-	-	-	-	-	3
M_2	2	-	-	-	-	2	2	2	3	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M_3	1	-	1	1	2	3	2	-	1	2	-	7	-	-	-	-	-	-	-	-	-	-	-	-	2

Table 6. Eruption and wear stages of the cattle, pig and sheep/goat teeth at Barrington. Wear stages follow Grant (1982) for cattle and pig and Payne (1987) for sheep/goat.

Stage:	A	B	B/C	C	C/D	D	D/E	E	E/F	F	F/G	G	H	I
Age:	0-2 mo	2-6 mo		6-12 mo		1-2 yr		2-3 yr		3-4 yr		4-6 yr	6-8 yr	8-10 yr
N =	1	-	10	7	7	3	4	5	3	2	3	1	2	-

Table 7.

Sheep/goat mandibles assigned to the dental eruption and wear stages of Payne (1973). These are mandibles with either a P_4 or dP_4.

	PITS		DITCHES	
	Cattle	Sh/G	Cattle	Sh/G
Deciduous teeth	11	37	8	27
Adult teeth	30	50	37	101
% juveniles	**27**	**43**	**18**	**21**
Unfused limb bones (metaphysis or epiphysis)	3.5	24	6.5	15
Fused limb bones	19.5	19.5	22	22
% juveniles	**15**	**55**	**23**	**41**

Table 8.

The pits and ditches at Barrington compared: numbers and percentages of juvenile and adult cattle and sheep/goat teeth and limb bones.

Plate 1

A series of photographs to show the peculiar bevelling of the equid mandibular premolar, the first cheek tooth (P_2). On the left is a general view of the buccal (external) side of the entire mandible fragment. On the right are (from top to bottom) buccal, occlusal and lingual views of the P_2. The scales are in centimetres and millimetres.

Plate 2

A composite scanning electron microscope photograph of a cast of the occlusal (biting) surface of the equid premolar tooth (P_2) from context 162. The scale is 10 mm.

Figure 1

A Log_{10} ratio diagram comparing the measurements of the Barrington sheep bones with the mean values (represented by the 0.00 line) of measurements of a sample of 26 modern unimproved Shetland female sheep (from Davis, in press). Note that most of the Barrington sheep measurements are smaller than those of the Shetland standard.

Younger sheep: PITS v DITCHES

DITCHES:

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
dP_4	1	-	-	-	-	-	-	-	-	-	-	-	-	1	3	-	3	1	1	-	-	-	-	-	
M_1	-	-	-	-	-	1	2	1	-	6	-	1	1	-	1	1	-	-	-	-	-	-	-	-	
$M_{1/2}$	-	-	-	-	-	2	7	2	7	12	1	-	-	1	-	-	-	-	-	-	-	-	-	-	
M_2	1	-	-	-	-	1	2	-	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
M_1+M_2	1	-	-	-	-	4	11	3	9	24	1	1	1	1	1	1	-	-	-	-	-	-	-	-	(total = 58)
%M_1+M_2	*2*	-	-	-	-	*7*	*19*	*5*	*16*	*41*	*2*	*2*	*2*	*2*	*2*	*2*	-	-	-	-	-	-	-	-	

PITS:

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
dP_4	-	-	-	-	-	-	-	-	-	-	1	-	-	8	4	-	2	1	1	-	-	-	-	-	
M_1	2	-	-	-	-	-	1	-	4	4	-	1	-	-	1	1	-	-	-	-	-	-	-	-	
$M_{1/2}$	-	-	-	-	-	1	2	-	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
M_2	1	-	-	-	-	1	-	1	1	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
M_1+M_2	3	-	-	-	-	2	3	1	6	12	-	1	-	-	1	1	-	-	-	-	-	-	-	-	(total = 30)
%M_1+M_2	*10*	-	-	-	-	*7*	*10*	*3*	*20*	*40*	-	*3*	-	-	*3*	*3*	-	-	-	-	-	-	-	-	

Table 10. Pits and ditches compared: eruption and wear stages of the teeth of the younger sheep at Barrington. Wear stages follow Payne (1987).

	PITS		DITCHES	
	Cattle	Sh/G	Cattle	Sh/G
Deciduous teeth	11	37	8	27
Adult teeth	30	50	37	101
% juveniles	27	43	18	21
Unfused limb bones (metaphysis or epiphysis)	3.5	24	6.5	15
Fused limb bones	19.5	19.5	22	22
% juveniles	15	55	23	41

Table 9.

The pits and ditches at Barrington compared: numbers and percentages of juvenile and adult cattle and sheep/goat teeth and limb bones.

Plate 1

Plate 2

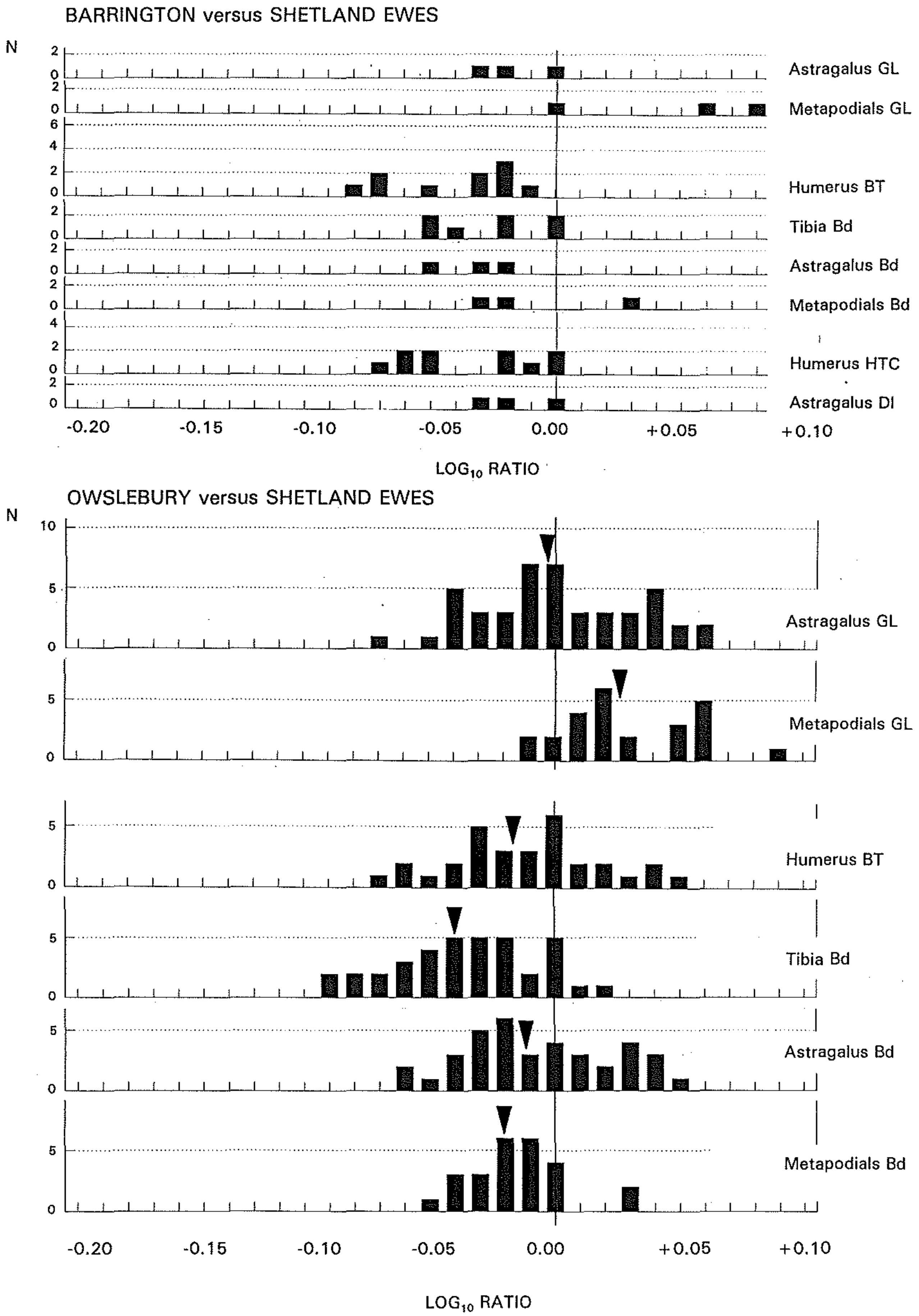

Figure 1

Barrington sheep measurements (above) and Owslebury Roman sheep measurements (below) compared with those of 26 modern Shetland ewes - Log ratio diagram. Note: the means for larger samples are represented by an inverted triangle. The following measurements are pooled: [metacarpal GL + metatarsal GL], [metacarpal Bd + metatarsal Bd]. Data from Owslebury were kindly supplied by Mark Maltby, (see also Maltby, 1987).

Appendix

Measurements in tenths of a millimetre of mammal and bird bones and mammal teeth from Barrington, organised by taxon and part of skeleton. Eruption and wear stages of individual teeth follow Grant (1982) for pig and cattle and Payne (1987) for caprines. Measurements taken are as in Davis (1987 figure 25; equid teeth), Davis (1992), von den Driesch (1976) and Payne & Bull (1988). Note that "A" = medial W. Cond.; "B" = lateral W. Cond.; "1" = medial W. Troch., and "4" = lateral W. Troch. of Payne (1969). M_3WC (in pigs) = width of central pillar. "Box" refers to the AMLab box numbers. The Barrington animal bones are in boxes 950206 - 950215.

SHEEP

Context	Trench	Box	Element	Taxon	Fusion	GL	Bd	Dd	BT	HTC	SD	A	B	1	4
301.1	12	950214	Humerus	Sheep	F				253	127					
375	14	950210	Humerus	Sheep	F				237	117					
409	14	950207	Humerus	Sheep	F				226	114					
435.1	14	950207	Humerus	Sheep	F				227	115					
628.1B	12	950209	Humerus	Sheep	F				259	133					
317.1	12	950210	Humerus	Sheep/Goat	F				246	118					
543.1	12	950207	Humerus	Sheep/Goat	F				255	128					
559	15	950206	Humerus	Sheep/Goat	F				246						
611.1	15	950209	Humerus	Sheep/Goat	F					131					
640.1	12	950212	Humerus	Sheep/Goat	F				222	118					
640.1	12	950212	Humerus	Sheep/Goat	F				254	135					
5-6	10	950211	Radius	Sheep/Goat	F	1307									
162	11	950215	Metacarpal	Sheep	F	1105	216				107	100	102	94	88
305.2	12	950214	Metacarpal	Sheep	F	1321	252				131	118	116	109	107
317.1	12	950210	Tibia	Sheep/Goat	F		222								
315.1	12	950214	Tibia	Sheep/Goat	F		223								
120	10	950208	Tibia	Sheep/Goat	F		227								
162	11	950215	Tibia	Sheep/Goat	F		236								
639.1	12	950212	Tibia	Sheep/Goat	F		238								
115	10	950208	Tibia	Sheep/Goat	F		247								
559.1	15	950206	Tibia	Sheep/Goat	F		251								
601.2	15	950209	Calcaneum	Sheep/Goat	F	493									
435.1	14	950207	Astragalus	Sheep		244	156	138							
629/A.1	12	950209	Astragalus	Sheep		250	161	135							
120	10	950208	Astragalus	Sheep		266	168	145							
305	12	950214	Metatarsal	Sheep	F	1381	215	148			100				

CATTLE

Context	Trench	Box	Taxon	M_3	M_3L	M_3WA
579.3	16	950206	Cattle	c	366	161
316.A.1	12	950214	Cattle	e		157
368	14	950210	Cattle	e	364	156
631.8	12	950212	Cattle	g		162
306.1	12	950214	Cattle	j	345	157
368	14	950210	Cattle	j	391	180
174	11	950213	Cattle	k	348	167
628.1B	12	950209	Cattle	k		166
317.3	12	950210	Cattle	l		156
317.2	12	950210	Cattle	h		152

Context	Trench	Box	Element	Taxon	Fusion	GL	Bd	Dd	BT	HTC	SD	BatF	A	B	1	4
629/A.1	12	950209	Humerus	Cattle	F				653	314						
638.4	12	950212	Humerus	Cattle	F				675	292						
627.2	12	950209	Metacarpal	Cattle	F	1806	524				269	490	254	244	225	207
611.1	15	950209	Metacarpal	Cattle	F	1840	512				288	498	245	235	218	203
624	15	950209	Tibia	Cattle	F		482									
316.A.1	12	950214	Tibia	Cattle	F		534									
306.1	12	950214	Tibia	Cattle	F		542									
611.1	15	950209	Tibia	Cattle	F		543									
40	4	950211	Tibia	Cattle	F		557									
5	10	950211	Tibia	Cattle	F		574									
304.1	12	950214	Tibia	Cattle	F		626									
162	11	950215	Tibia	Cattle	F		650									
638.4	12	950212	Tibia	Cattle	F	3049	557									
628.1B	12	950209	Astragalus	Cattle			356									
629/A.1	12	950209	Astragalus	Cattle			437	384								
120 20-30	10	950208	Astragalus	Cattle		592	369									
5	10	950211	Astragalus	Cattle		595	382	334								
317.2	12	950210	Astragalus	Cattle		605	388	329								
174	11	950213	Astragalus	Cattle		633	383	356								
409	14	950207	Astragalus	Cattle		647	387	348								
624	15	950209	Calcaneum	Cattle	F	1264										
628.1B	12	950209	Calcaneum	Cattle	F	1392										
527.1	12	950207	Metatarsal	Cattle	F		469					428	229	213	208	188
7.1	10	950211	Metatarsal	Cattle	F		529					475	258	253	226	207
15A	10	950211	Metatarsal	Cattle	F	2237	513				246	494	245	234	226	206

PIG

Context	Trench	Box	Taxon	DP_4	DP_4L	DP_4W	M_1	M_1L	M_1WA	M_1WP	M_2	M_2L	M_2WA	M_2WP	M_3	M_3L	M_3WA	M_3WC
306.1	12	950214	Pig												a	327	152	150
5	10	950211	Pig												a	337	161	149
611.1	15	950209	Pig												a	324	145	145
559.1+2	15	950206	Pig								f	199	130	140	c	347	150	155
579.4	16	950206	Pig	b	194	80												
143	10	950215	Pig	f	176		c	168	94	102								
176	10	950213	Pig	l	160	81	f	163	91	100	a	209	117	114				
315.1	12	950214	Pig				e	162	100	104	d	191	124	132				

Context	Trench	Box	Taxon	$M_{1/2}$	$M_{1/2}L$	$M_{1/2}WA$	$M_{1/2}WP$
579.3	16	950206	Pig	b	186	103	115

Context	Trench	Box	Element	Taxon	Fusion	GL	Bd	BT	HTC
318	12	950210	Humerus	Pig	F			272	186
21	1	950211	Tibia	Pig	F		257		
162	11	950215	Tibia	Pig	F		264		
176/3	10	950213	Astragalus	Pig		344			

EQUID

a) Teeth:

1) Context 111 Trench 10 Box 950208

Tooth	L_1	L_2	L_3	W_a	W_b	W_c	W_d
P_3	277	169	130	157	155	140	65
P_4	268	149	118	156	152	133	58
M_1	253	143	82	151	134	125	27
M_2	254	134	92	143	132	122	35
M_3	316	122	103	134	120	109	34

2) Context 160 Trench 11 Box 950215

Tooth	L_1	L_2	L_3	W_a	W_b	W_c	W_d
P_2	280	-	112	97	138	148	68
P_3	226	147	84	138	147	137	39
P_4	229	146	80	146	147	125	36

3) Context 162 Trench 11 Box 950215
[NB: this is the P_2 with a bevelled corner]

Tooth	L_1	L_2	L_3	W_a	W_b	W_c	W_d
P_2	302	135	161	111	138	135	82

b) Bones:

Context	Trench	Box	Element	Taxon	Fusion	GL	Bd	Dd	SD
631.2C	12	950212	Metacarpal	Horse	F			343	
409	14	950207	Metacarpal	Horse	F		494	361	
315.1	12	950214	Metacarpal	Horse	F	2015	452	346	303
611.2	15	950209	Metatarsal	Equid	F	2610	484	377	288
162	11	950215	Metapodial	Equid	F		372		
114	10	950208	Phalanx 1	Equid	F				306
162	11	950215	Phalanx 1	Equid	F				241

HARE

Context	Trench	Box	Element	Taxon	Fusion	GL	SD
102/1	10	950208	Femur	Hare	F	1232	95

DOG

Context	Trench	Box	Taxon	P_3L	P_3W	P_4L	P_4W	M_1L	M_1W	M_1-M_3L	Ht behind M_1
5	10	950211	Dog	62	32			133	53		128
120	10	950208	Dog	89	44	104	54	189	75	287	182

Context	Trench	Box	Element	Taxon	Fusion	GL	Bd	SD
531	12	950207	Femur	Dog	F	1603	281	116
531	12	950207	Tibia	Dog	F	1673	203	
531	12	950207	Calcaneum	Dog	F	409		

PEREGRINE FALCON

Context	Trench	Box	Element	Taxon	La	Bd	Dd
425.1	14	950207	Tibiotarsus	*Falco peregrinus*	874	126	92