Cadbury Castle - Animal Bone Appendix 2

A2.1.0 Introduction

Part of the faunal assemblage from Cadbury Castle had previously been examined for the site report (Hamilton-Dyer and Maltby 2000), but this was limited to a selection of Middle Iron Age pits, the Middle-Late Iron Age 'Rubbish Layers', and associated animal burials from the plateau area of the hillfort. This was due to time constraints and assessments of residuality in the later prehistoric contexts. Residuality has been addressed in the process of phasing additional features, described in Appendix 1. Because work on the stratigraphy and dating of contexts had to proceed in tandem with faunal recording, and the lack of organisation and labelling of the archive, the entire assemblage was recorded. The variable representation of unidentified fragments mentioned below, was also noted by Hamilton-Dyer and Maltby (2000:278), and may result from the various stages in processing that the archive has undergone since the late 1960s. Hamilton-Dyer and Maltby estimated that the entire assemblage would be in the order of 85,000 fragments (2000:278). In the event it contained 103,282 fragments. Some material was un-dateable or possibly affected by residuality, whilst a considerable amount dated to Neolithic or Romano-British and later contexts. This report therefore covers 71,217 fragments dating from the Bronze Age to the end of the Iron Age.

A2.2.0 Methods

The assemblage is discussed here in relation to a series of periods and stratigraphic units. The location of trenches is included in the hillfort map in Chapter 4 Section 1. These were arranged on the ramparts, south west gate and central 'plateau' area. The date ranges utilised are referred to in Chapter 4 Section 1.3. Material discussed here as Late Bronze Age, Early Iron Age, Middle Iron Age and Late Iron Age are derived from across all of the excavated areas of the hillfort. A Middle-Late Iron Age division has been used in order to include a body of data that could only be assigned to the later Iron Age, but not more specifically dated. As such it should be considered in association to the series of 'Rubbish Layers' (also discussed separately as a distinct stratigraphic block), mainly in Sites N and T, in the central plateau area of the hillfort. The 'Rubbish Layers' can only be dated to the Middle-Late Iron Age, due to the nature of the horizontal stratigraphy and limitations in its recording. They also produced a series of cattle burials. A small amount of material could be assigned to what has been referred to here as the 'Massacre' period following the nomenclature of the original report. This has also been dealt with as a separate block and comprises mainly material from Site K in the south west gateway. It relates to the final part of the Late Iron Age, thereby providing a useful, if small, body of data that can be relatively closely assigned.

Associated Bone Groups (ABGs) have been dealt with separately within each period, and are not included in the main fragment counts. Largely complete, or separately noted/boxed skulls, have also been recorded in the database as ABGs, and dealt with alongside them. This is due to the general perception of these being 'special', and because they have been treated as such within the archive. Discussion of their actual role is included below and in Chapter 4. With regard to the Middle Iron Age material, the contents of pit D817 have also been discussed

separately. This is due to the possibility of the material relating to a deposit of ABGs, or at least being a rapid discrete deposit.

Intra-site analysis has not been undertaken here due to time constraints and because, whilst this would be of considerable importance in understanding the use of the site, it did not directly address the main questions posed by this study. Additional analysis of the recorded data will be undertaken in the future.

The analytical methods used are detailed in Appendix 1 and were the same utilised for the South Cadbury Environs Project and Ham Hill assemblages (Appendices 3 and 5). Data was recorded in Access Relational Databases. Calculations and graphs relating to extracted data was carried out using Excel spreadsheets. All measurements are in millimetres. Metrical data is not discussed in depth and additional analysis of these data will be carried out in future.

The age groups referred to below (following Hambleton 2008) are given in Table 2.1:

Table 2.1: Age groups for livestock.

Cattle				
Age category	**Grant Stage**	**Halstead Stage**	**Maltby Stage**	**Higham Age**
Neonate	0-2	A	1	<3 Weeks
Juvenile	3-16	B-C	2-3	1-18 months
Sub-adult	17-37	D-E	4-5	18-40 months
Young adult	38-42	F	6	>40 months
Adult	>43	G	7	>40 months
Old Adult	>43	H-I	7	>40 months
Sheep/goat				
Age category	**Grant Stage**	**Payne Stage**	**Maltby Stage**	**Payne Age**
Neonate	0-1	A	1	0-2 months
Juvenile	2-17	B-C	2-3	2-12 months
Sub-adult	18-28	D	4	1-2 years
Young adult	29-39	E-F	5-6	2-4 years
Adult	>40	G	7	4-6 years
Old Adult	>40	H-I	7	6-10 years
Pig				
Age category	**Grant Stage**	**Hambleton Stage**	**Maltby Stage**	**Payne Age**
Neonate	0-1	A	1	A few weeks
Juvenile	2-14	B-C	2-3	1-14 months
Sub-adult	15-25	D-E	4-5	15-26 months
Young adult	26-35	F	6	27-36 months
Adult	36-41	G	7	>36 months
Old Adult	>42	H-I	8	>36 months
Horse				
Age category	**Suggested Age**			
Neonate	0-2 months			
Juvenile	2-18 months			
Sub-adult	18-42 months			
Young adult	3.5 -5 years			
Adult	5-8 years			
Old Adult	>8 years			

A2.3.0 General Observations

As mentioned above, there is an apparent lack of unidentified fragments across the assemblage. This is however variable, with some contexts producing virtually none, and others (notably those which still needed to be washed) containing what would be a more expected level of unidentifiable material. It is unlikely that this was an issue of recovery due to the consistent presence of small identifiable elements. It can only be concluded that much of the unidentified material was discarded at some point. As a consequence analyses of proportions of unidentifiable material are not undertaken here.

In general terms, the bone in the assemblage is well preserved, with a very high proportion scoring average-good or good (that is, entirely fresh looking). The assemblage is fragmented, with few entire elements (excluding small elements) of any species. However, given the constraints of time, and the needs of the current study, this fragmentation has not been subject to further analysis. These data will be revisited in the future.

A2.4.0 Late Bronze Age

A number of Later Bronze Age contexts were identified, mainly underlying the earliest rampart material in Sites D and K, much of it from layers considered to represent the old ground surface.

A2.4.1 Species representation

The total fragment count (NISP) for all taxa, and MNIs for domesticates, are presented in Table 2.2.

Table 2.2: Species representation for the Late Bronze Age.

Species	NISP	% NISP	% Main	MNI	% MNI
Cow	280	18.06	41.48	9	29.03
S/G	300	19.35	44.44	14	45.16
Pig	95	6.13	14.07	8	25.81
Dog	8	0.52		1	
Horse	17	1.10		1	
Large mammal	283	18.26			
Medium mammal	234	15.10			
Unidentified	333	21.48			
Total main	**1550**				
Red Deer	1				
Bird	1				
Amphibians	1				
Total fragments	**1553**				

This assemblage had 702 fragments identified to species. It relates overwhelmingly to domestic animals, a state of affairs which continues in later periods. The relative proportion of the main domestic species is shown in Figure 2.1.

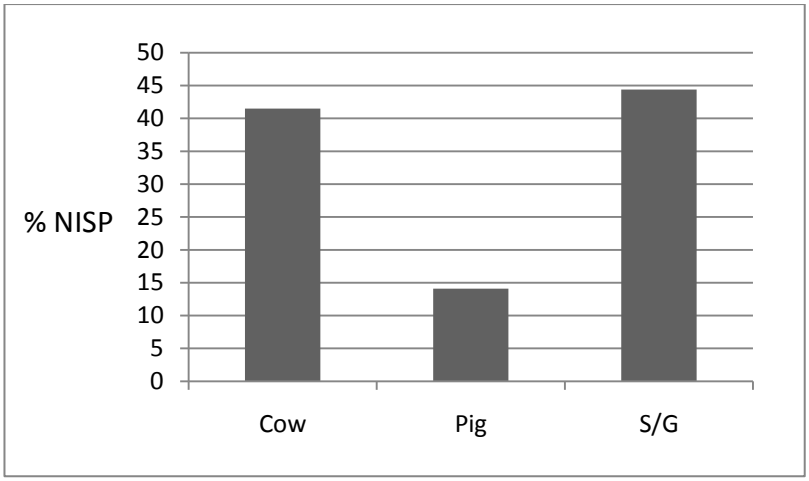

Figure 2.1: Proportion of main domestic species, Late Bronze Age. N = 675.

Cattle and sheep occur in relatively equal proportions in this assemblage, with pig limited, although when the proportions between the MNIs for cattle and pig are considered, this may indicate a different picture, with possibly greater fragmentation of cattle contributing. It should be noted however that the number of fragments recorded as deriving from large as opposed to sheep-sized mammals is greater. The percentage of loose teeth for the three main species is shown in Figure 2.2. The proportions of loose teeth appear to indicate that both cattle and pig bones have undergone greater fragmentation than sheep/goat, and that whilst pig in particular may be over represented, sheep/goat may be under-represented.

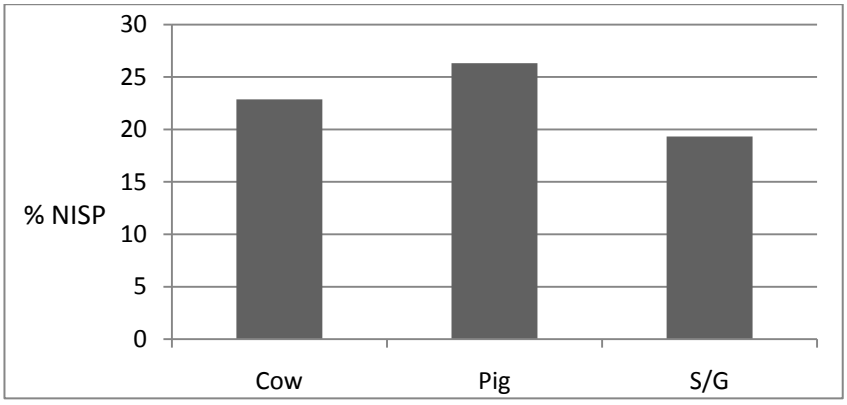

Figure 2. 2: Proportions of loose teeth percentage for the main three domestic species, Late Bronze Age. N = 147

A2.4.2 Taphonomy and butchery

Full analysis of taphonomic markers has not been carried out for reasons given above. However, Table 2.3 gives overall assemblage percentages. Very little burned material was noted, and few fragments indicated having been weathered or gnawed. The number of fragments displaying cut marks was also low.

Table 2.3: Overall incidence of taphonomic markers in the Late Bronze Age assemblage.

Gnawed, Weathered, and Burned fragments		Butchered fragments	
No	**%**	**No**	**%**
11	0.71%	4	0.25%

A2.4.3 Cattle

A2.4.3.1 Element representation

Figures 2.3 and2.4 provide the distribution of cattle elements. This appears to indicate that all areas of the body were being disposed of, and animals were probably arriving on site whole.

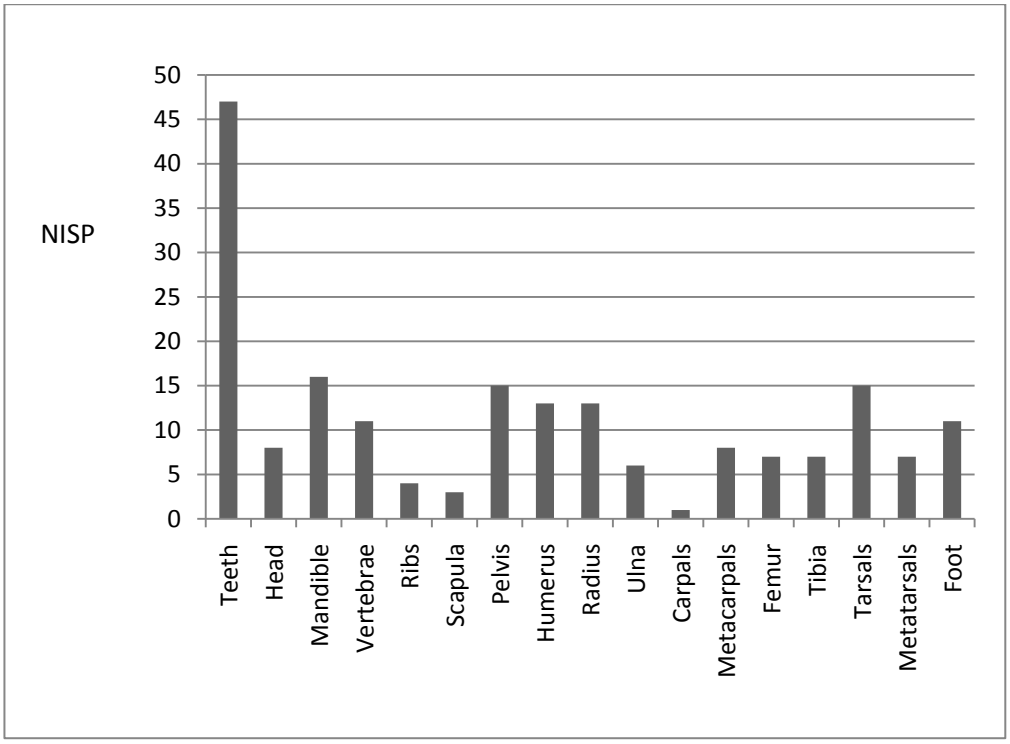

Figure 2.3: Representation of cattle elements, Late Bronze Age, by NISP. N = 192. (Compare with MNI = 9)

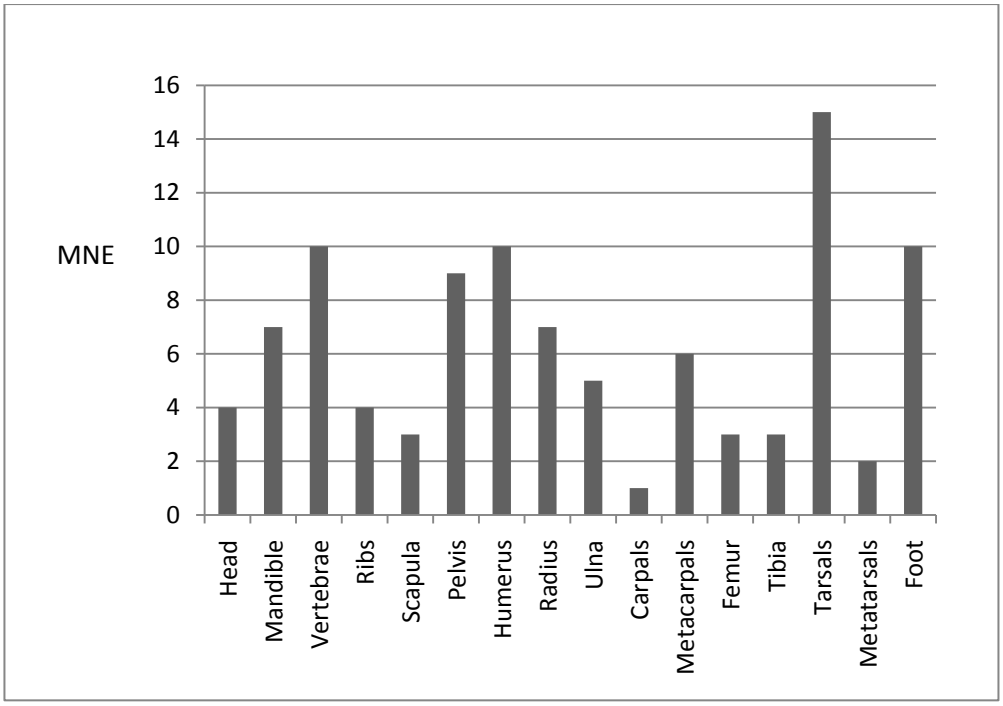

Figure 2.4: Representation of cattle elements, Late Bronze Age, by MNE. N = 99. (Compare with MNI = 9)

A2.4.3.2 Age and herd structure

There is limited information on the age structure of the cattle herd, as a single mandible provided a full MWS of 20. However, the presence of older and younger animals is indicated by loose third mandibular molars indicating a MWS of around 39, one of around 32 and another around 49. A younger individual is indicated by a first mandibular molar that might equate to a MWS of 6-7. There are 20 porous fragments (9.26%). Fusion data is shown in Table 2.4 and similarly indicates the presence of a range of ages of individuals, from less than one year to 3 ½ -4 years minimum.

Table 2.4: Fusion information for cattle, Late Bronze Age

Fusion date	Element	Fused	Unfused
Early Fusing (7-10mths)	Pelvis	8	1
(12-18mths)	Humerus, distal	2	0
(12-18mths)	Radius, proximal	5	0
Later fusing (24-30mths)	Metacarpal, distal	2	0
(27-36mths)	Metatarsal, distal	1	0
(24-30mths)	Tibia, distal	1	0
Late fusing (36-42mths)	Calcaneus	0	2
(42-48mths)	Radius, distal	4	1
(42-48mths)	Ulna	1	0
(42-48mths)	Femur, distal	0	2
(42-48mths)	Tibia, proximal	0	1

A2.4.3.3 Pathology

A limited number of pathological conditions were noted in cattle, and these are presented in Table 2.5 . Both pathologies noted in the innominate may be the result of non-specific or specific infections.

Table 2.5: Pathological conditions recorded in cattle, Late Bronze Age.

Site	Context	Element	Part	Type	Comment
SC/K	618	Axis	Cranial articulation	Vertebral DJD	Moderate
SC/D	663	Pelvis	Iliac ramus	Periostitis	Moderate
SC/K	608	Pelvis	Acetabulum	?	Lytic lesion in centre

A2.4.4 Pig

A2.4.4.1 Element representation

The range of elements in the pig assemblage is shown in Figures 2 5 and 2.6. Although the total number of fragments is low, all areas of the body are represented. The proportion of loose teeth, as noted above is high, and the assemblage fragmented, so little else can be reliably inferred.

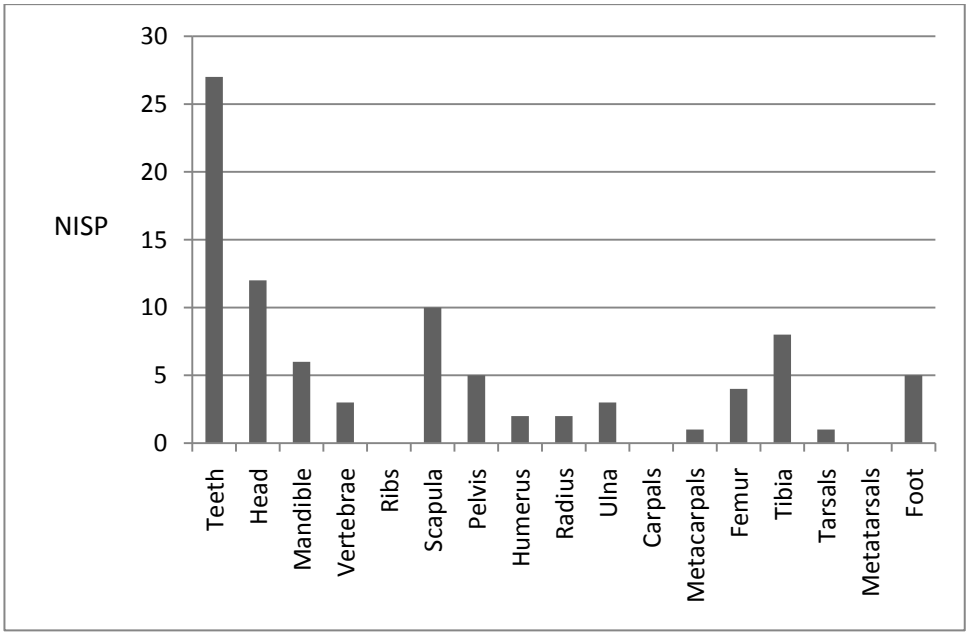

Figure 2.5: Representation of pig elements, Late Bronze Age. N = 89. (Compare with MNI = 8)

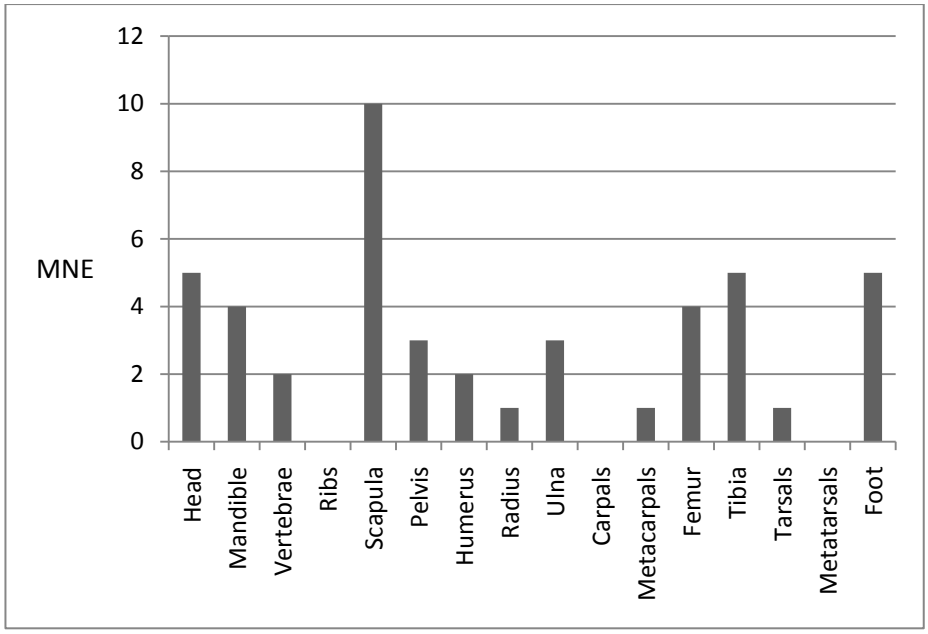

Figure 2.6: Representation of pig elements, Late Bronze Age. N = 46. (Compare with MNI = 8)

A2.4.4.2 Age and herd structure

Aging information from pig mandibles is extremely limited, with only three incomplete jaws with teeth that could be scored. These can be estimated as having come from animals with MWS of around 10, 14 and 43. A single loose mandibular third molar may relate to an animal with a Hambleton Stage of about F. There are 10 examples of porous bone fragments from various areas of the body. This at least indicates a range of age groups. The state of fusion is shown in Table 2.6. This unsurprisingly indicates the preponderance of young individuals.

Table 2.6: Fusion of pig elements, Late Bronze Age.

Fusion date	Element	Fused	Unfused
Early Fusing (12mths)	Scapula , glenoid	3	1
(12mths)	Pelvis, acetabulum	3	2
(12mths)	Humerus, distal	1	0
Later fusing (24mths)	Tibia, distal	0	5
Late fusing (42mths)	Radius, distal	0	1
(42mths)	Femur, proximal	0	2
(42mths)	Femur, distal	0	2
(42mths)	Tibia, proximal	0	2

Four mandibular canines with the root end intact, representing at least three individuals, were recorded. All of these were from females.

A2.4.4.3 Pathology

No pathological pig elements were noted.

A2.4.5 Sheep/Goat

Sheep and goat bone, as mentioned above suffered slightly less fragmentation than cattle and pig. Sheep appear to have been of probably similar importance to cattle. The comparative body size may compensate for the slightly elevated sheep/goat NISP and MNI. There were a limited number of elements that could be considered in determining species between sheep and goats, and in all cases these were sheep. It is possible that goats are present, but this cannot be demonstrated.

A2.4.5.1 Element representation

The distribution of sheep/goat elements is shown in Figure 2.7 and 2.8. All areas of the body are represented.

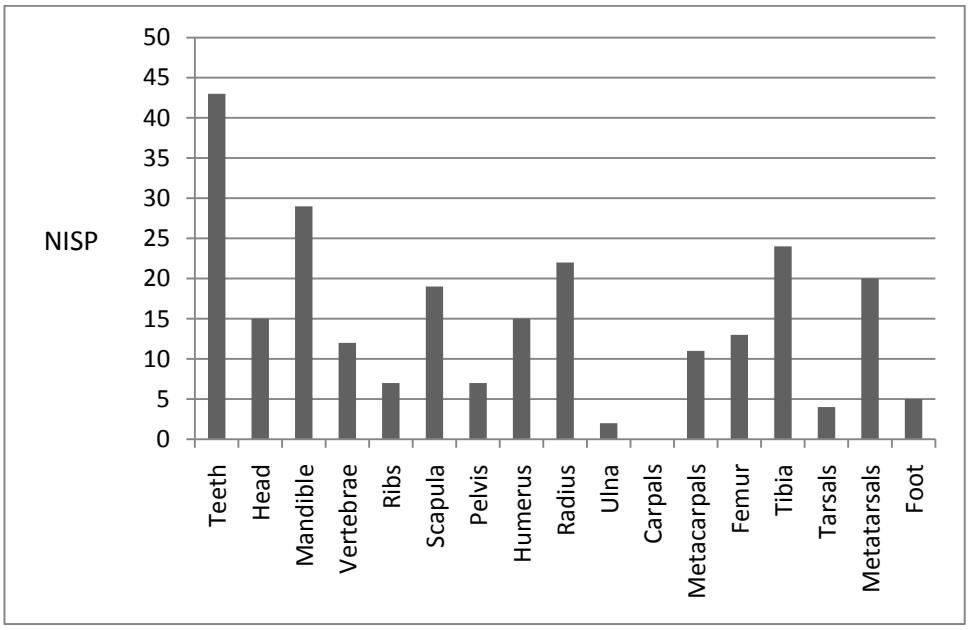

Figure 2.7: Representation of Sheep/Goat elements, Late Bronze Age. N = 248. (Compare with MNI = 8)

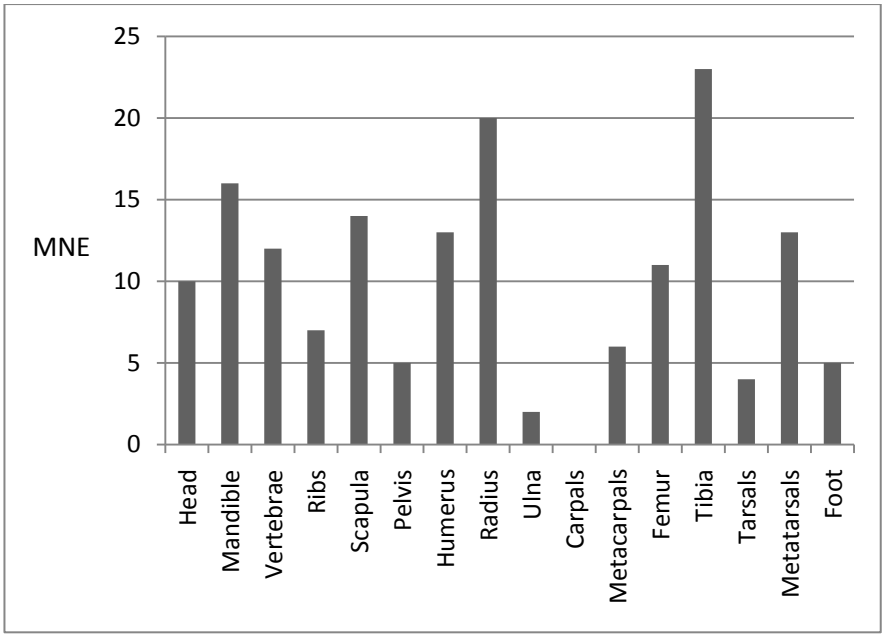

Figure 2.8: Representation of Sheep/Goat elements, Late Bronze Age. N = 161. (Compare with MNI = 8)

A2.4.5.2 Age and herd structure

A total of nine sheep/goat mandibles provide complete tooth wear scores, ranging from MWS 1 to 43, with a further seven which could be assigned, or estimated, to a Payne wear stage. The kill-off curve for these is shown in Figure 2.9.

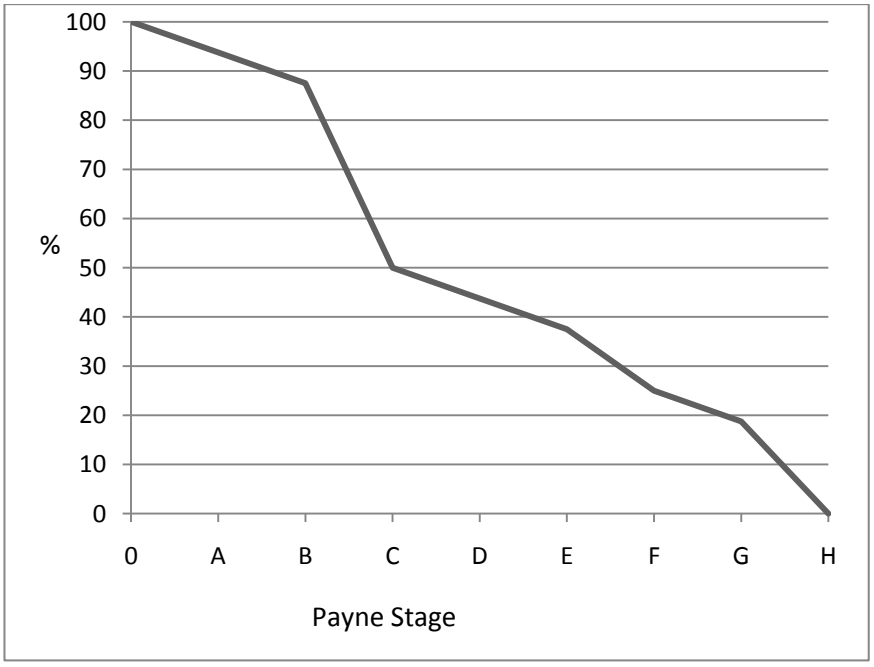

Figure 2.9: Sheep/Goat kill off profile using Payne wear stages, Late Bronze Age. N = 16

Although this is a small number of mandibles, the pattern fits with other sheep/goat kill off patterns from the site for later periods, discussed below. It indicates the presence of neonatal animals, implying that lambing took place in the vicinity. The greatest number of individuals died at stage C (up to one year in age) with a gradual attrition of the population, with individuals dying at all subsequent stages, suggesting the retention and active management of a herd. This is supported by the fusion data in Table 2.7.

Table 2.7: Fusion in sheep/goat, Late Bronze Age.

Fusion date		Element	Fused	Unfused
Early Fusing	(6-8mths)	Scapula, glenoid	5	1
	(6-10mths)	Pelvis, acetabulum	5	2
	(10mths)	Humerus, distal	8	3
	(10mths)	Radius, proximal	9	2
Later fusing	(18-24mths)	Metacarpal, distal	1	3
	(20-28mths)	Metatarsal, distal	2	3
	(18-24mths)	Tibia, distal	8	4
Latest fusing	(30-36mths)	Calcaneus	0	2
	(36-42 mths)	Humerus, proximal	1	5
	(36mths)	Radius, distal	1	3
	(30mths)	Ulna	0	0
	(30-36mths)	Femur, proximal	1	5
	(36-42mths)	Femur, distal	1	6
	(36-42mths)	Tibia, proximal	0	4

A2.4.5.3 Pathology

Only two instances of pathological change were noted (Table 2.8), both related to oral pathology.

Table 2.8: Pathological conditions recorded in sheep/goat, Late Bronze Age.

Site	Context	Element	Part	Type	Comment
SC/D	740	Mandibular 2nd & 3rd molar		Calculus	Moderate
SC/K	608	Mandible	Tooth row	Periodontal disease	Severe

A2.4.6 Dog

A2.4.6.1 Element representation

As there are only eight fragments of dog bone in this assemblage, what can be commented upon is limited. However, most areas of the body appear to be represented with a mandible, loose mandibular tooth, an atlas, lumbar vertebra, rib and scapula representing the axial skeleton, as well as a single femur and tibia.

A2.4.6.2 Age

No porous elements were recorded and where fusion points existed they were all fused, except in the case of the lumbar vertebra where both the cranial and caudal surfaces of the centrum were unfused.

A2.4.6.3 Pathology

A single element displayed pathological change, a case of moderate periodontal disease along the entire tooth row of the mandible.

A2.4.7 Horse

A2.4.7.1 Element representation

The 17 horse elements recorded consist of six foot bones, three metapodial fragments, six loose teeth and a fragment each of radius and humerus. There appears to be a preponderance of head and lower limb fragments, although the numbers give an MNI of 1.

A2.4.7.2 Age

There is scant information on age, apart from the fact that there is no porous bone. There is a single fused distal metapodial (indicating an individual older than 18 or 20 months), and all of the teeth are from the permanent dentition, being either in wear or very worn. There is therefore no evidence of juvenile individuals.

A2.4.7.3 Pathology

No pathological elements were recorded.

A2.4.8 Wild Species

The identified non-domestic portion of this assemblage is limited to three fragments, including a frog bone. The single bird bone is the humerus of a member of the gull family, probably a black headed gull. Wild mammals are entirely represented by a single fragment of red deer antler. This was from the lower part, but did not include the base, so it could not be determined if it had been naturally shed. Neither could any measurements be obtained, but it was noted that it appeared large.

A2.4.9 Discussion of the Late Bronze Age assemblage

This is an assemblage dominated by domestic species. Cattle were evidently an important element of the animal economy. All areas of the body are represented, and although heavily fragmented, as might be expected, it is possible to say that a range of age groups were available from less than one year to 3 ½ -4 years minimum. Pigs were a minor element, and unsurprisingly most of them were killed before reaching full maturity, with juveniles predominating in fusion and limited toothwear data. There is a lack of very young animals but

one old adult is present. It is not clear if farrowing occurred on the hill. The four mandibular canines recorded are all of females, although this may not be representative. All areas of the body are represented, but given the high degree of fragmentation indicated by the numbers of loose teeth, it is difficult to infer too much. Sheep/goat likewise have all areas of the body present, and are more numerous than the other species in this assemblage. They do not however present a clear majority, and given the smaller body size were probably not the predominant economic consideration. Only a few elements were available to consider the proportion of sheep and goat in the assemblage, and all of these were shown to be sheep, although this does not necessarily preclude the presence of goats. The kill off profile is similar to later periods on the site. The presence of neonatal animals, implies that lambing took place in the vicinity. The greatest number of individuals died before the age of one year and there was a subsequent gradual attrition of the population. This suggests the active management of a flock. Where metrics are available, they are of small animals and fall within the same range of sizes as later periods. Only a small amount of oral pathology is noted, which does not enable a calculation of prevalence, or enable comparison with later periods to elucidate husbandry practices.

Dogs were present on the site in the Late Bronze Age; a few elements from various parts of the body were recorded.. Similarly, discussion of the horse assemblage can only be limited. However, the evidence for the individuals being almost exclusively adults, some of them probably fairly mature, is more compelling. Likewise, there may be a degree of selection in the elements represented. It is to be expected that horse would undergo similar fragmentation to cattle, yet there is a lower representation of axial and limb bones, and apparent over representation of head elements. This phenomena is discussed further below, but may indicate either a slightly different treatment of, or different disposal strategy relating to horses.

A2.5.0 Early Iron Age

Whilst some of the Early Iron Age assemblage comes from surfaces sealed beneath the later ramparts of the hillfort, most of the material comes from pits, postholes, and notably, a horizontal layer of refuse, which produced considerable amounts of pottery as well as animal bone. These features were predominantly located on the central plateau of the hill.

A2.5.1 Species representation

A total of 1381 fragments were recorded as having come from Early Iron Age contexts and these are presented in Table 2.9. The proportion of the three main domestic species is shown in Figure 2.10, which both demonstrates a predominance of sheep/goat and highlights the difference between the percentages of the three species when considering NISP and MNI.

Table 2.9 Representation of species, Early Iron Age.

Species	NISP	% NISP	% Main	MNI	% NISP
Cow	265	19.25	27.92	6	17.14
Pig	247	17.95	26.03	7	20
S/G	437	31.76	46.05	22	62.86
Dog	6	0.44		1	
Horse	10	0.73		1	
Large mammal	62	4.51			
Medium mammal	135	9.81			
Unidentified	214	15.55			
Total main	**1376**				
Red Deer	2				
Hare	1				
Bird	2				
Total fragments	**1381**				

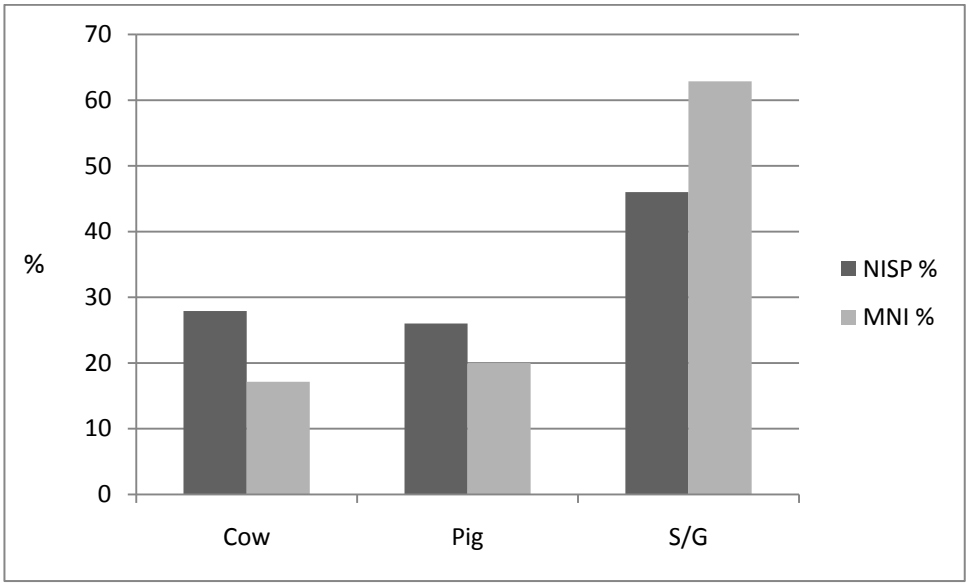

Figure 2.10: Proportion of main domestic species, by percentage of NISP and MNI, Early Iron Age.

The most apparent element is the importance of sheep/goat in this assemblage, with cattle and pig relatively equal. The difference between cattle and sheep/goat is reflected in the proportion of elements identified as large and medium mammal, (cattle- and sheep-sized). The differences between cattle and pig which show a lower percentage of MNI to NISP and sheep/goat which shows an increase, probably relates to a differing rate of fragmentation between the species. Sheep/goat appears to have suffered lesser fragmentation in this assemblage than the other two main species. High fragmentation levels in the refuse layers of the plateau would be unsurprising. This can be further considered with reference to the percentage of loose teeth, shown in Figure 11. The greater proportions of loose cattle and pig teeth supports the contention that their bones suffered greater fragmentation.

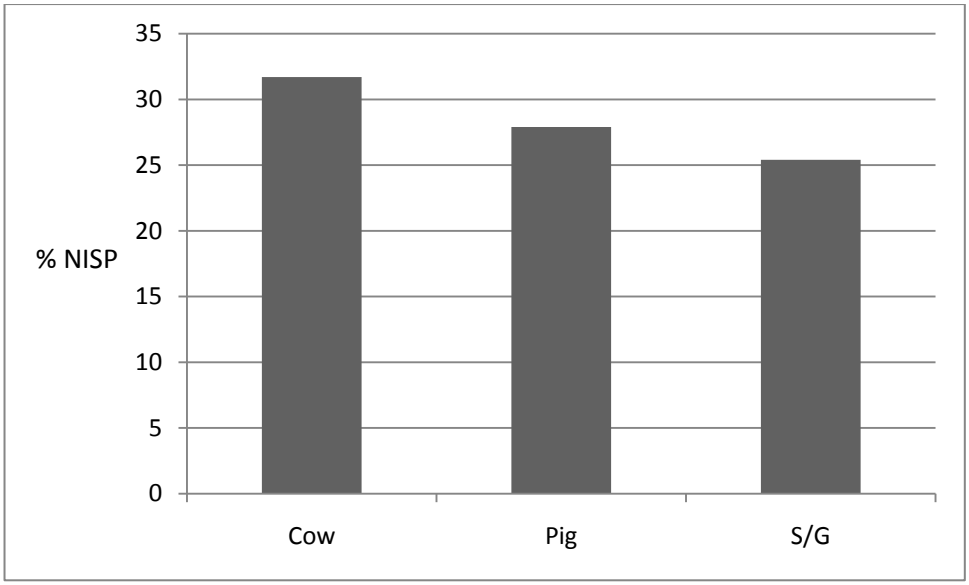

Figure 2.11: Percentages of loose teeth in the main domestic species assemblages. N = 264

A2.5.2 Taphonomy and butchery

Full analysis of taphonomic markers has not been carried out for reasons given above. However, Table 2.10 gives overall assemblage percentages. Butchered fragments are rare in this assemblage, but there is a fair representation of elements that have been subject to burning, weathering or gnawing. This is consistent with having been recovered from a refuse layer.

Table 2.10: Overall incidence of taphonomic markers in the Early Iron Age assemblage.

Gnawed, Weathered, and Burned fragments		**Butchered fragments**	
No	**%**	**No**	**%**
206	14.92	13	0.94%

A2.5.3 Cattle

A2.5.3.1 Element representation

The assemblage of 265 cattle fragments allows a consideration of the elements shown in Figures 2.12 and 2.13.

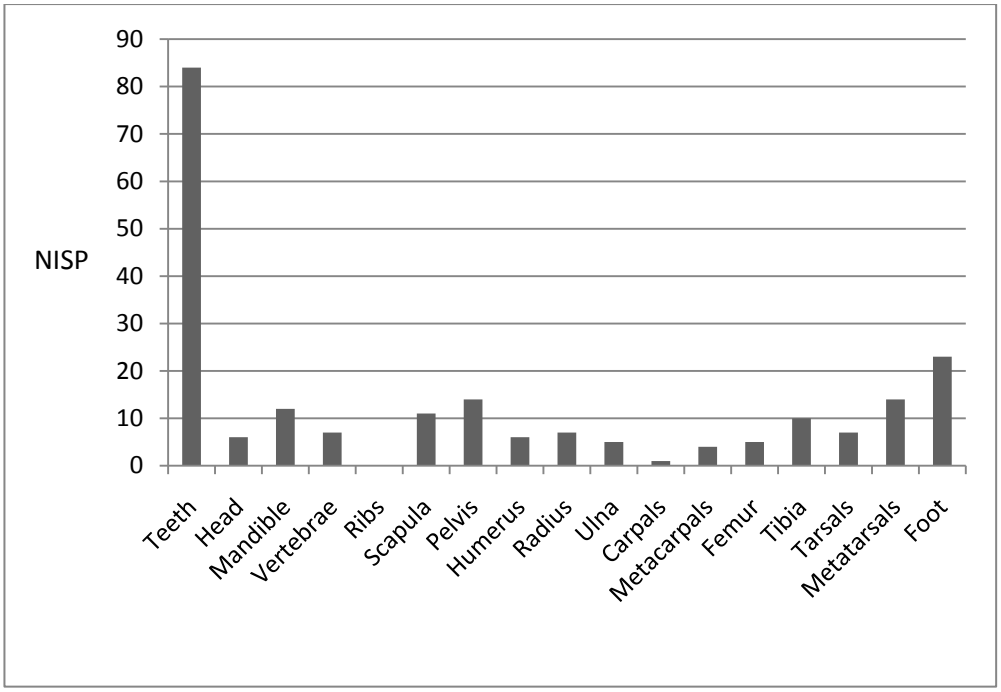

Figure 2.12: Representation of cattle elements, Early Iron Age. NISP. N = 216 (Compare with MNI 6)

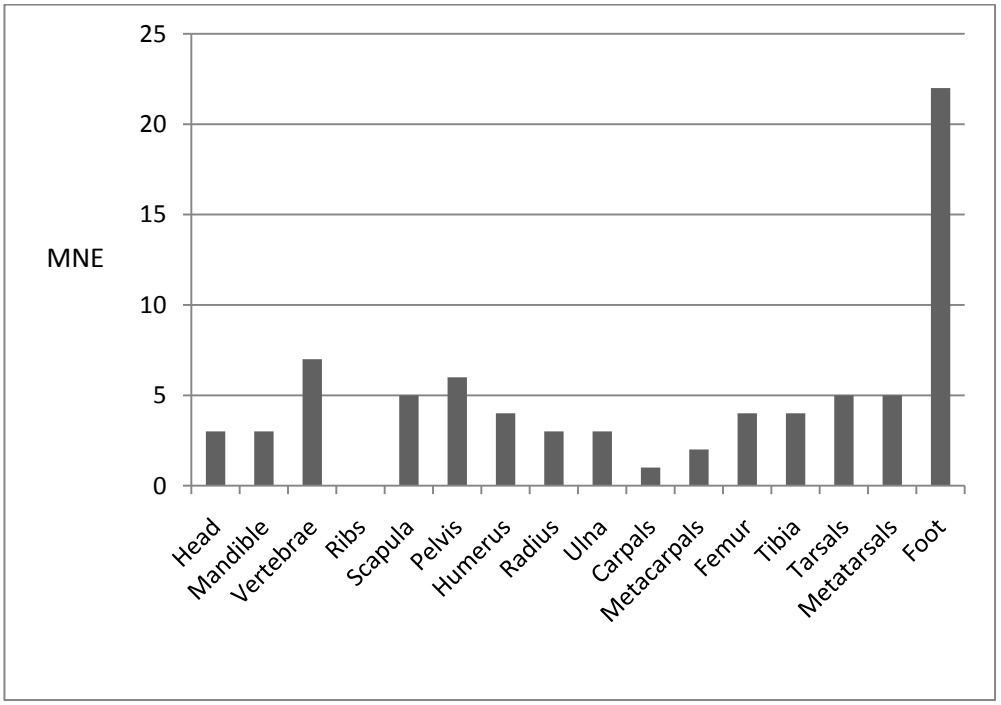

Figure 2.13: Representation of cattle elements, Early Iron Age. MNE N = 77. (Compare with MNI 6)

The assemblage is dominated by loose teeth. Although other elements occur in small numbers, they indicate that all areas of the body are present, and there does not appear to be much preference for particular elements.

A2.5.3.2 Age and herd structure

A single cattle mandible provided a MWS of 32 (Halstead stage E). Three loose third mandibular molars were worn consistent with Halstead wear stages of F, G, and H, whilst loose, probably first mandibular molars, suggest Halstead stages of D, E, E-F, and two at G. Twenty nine fragments were noted as porous and a number of deciduous maxillary teeth noted. Fusion information is shown in Table 2.11.

Table 2.11: Fusion data, cattle, Early Iron Age

Fusion date	Element	Fused	Unfused
Early Fusing (7-10mths)	Pelvis, acetabulum	6	5
(7-10mths)	Scapula, glenoid	3	3
(12-18mths)	Humerus, distal	1	2
(12-18mths)	Radius, proximal	3	2
Later fusing (24-30mths)	Metacarpal, distal	0	0
(27-36mths)	Metatarsal, distal	4	1
(24-30mths)	Tibia, distal	3	2
Late fusing (36-42mths)	Calcaneus	0	1
(42-48mths)	Humerus, proximal	1	1
(42-48mths)	Radius, distal	2	2
(42-48mths)	Ulna	0	1
(42mths)	Femur, proximal	0	1
(42-48mths)	Femur, distal	0	1
(42-48mths)	Tibia, proximal	1	2

The presence of a considerable number of particularly early fusing elements such as the acetabulum and glenoid confirms a fair presence of much younger individuals. A full range of ages is suggested, with perhaps most emphasis on the very young and mature adults.

A2.5.3.3 Pathology

A small number of pathological elements were noted and these are presented in Table 2.12.

Table 2.12: Pathological cattle elements, Early Iron Age.

Site	Context	Element	Part	Type	Comment
SC/B	349	Horn	Shaft	Non-specific infection	
SC/F	345B	Horn	Shaft	Epigenetic?	Linear depression
SC/B	349	Mandibular 3rd molar		Malocclusion	3rd cusp congenitally absent

A2.5.4 Pig

A2.5.4.1 Element representation

A total of 247 fragments were identified as pig. The distribution of those element is shown in Figures 2.14 and 2.15, and indicates that all areas of the body are present in the assemblage, although it is dominated by loose teeth. There are also a relatively large number of foot bones.

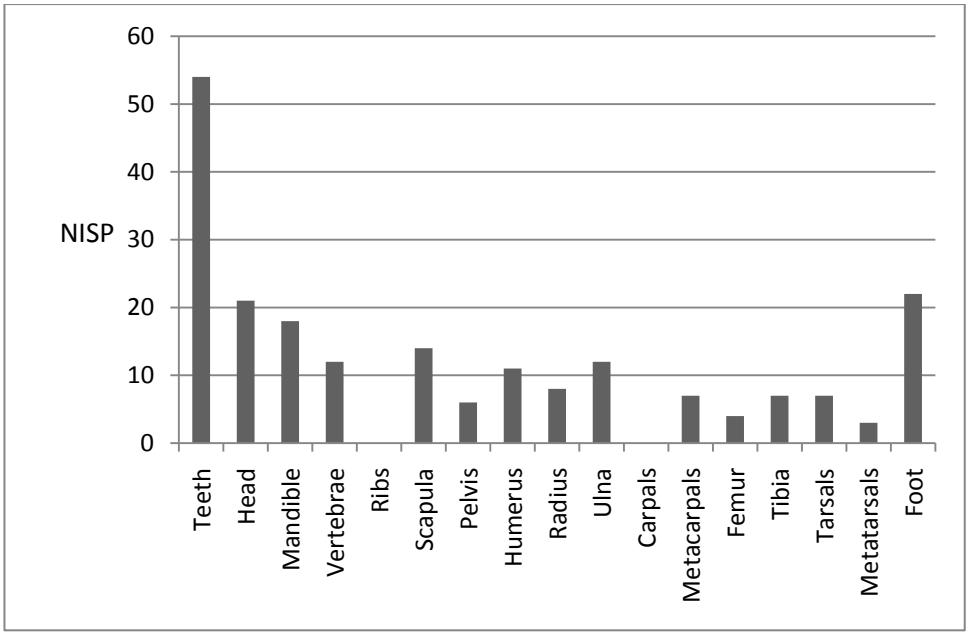

Figure 2.14: Representation of pig elements, Early Iron Age. NISP. N = 206. (Compare with MNI = 7)

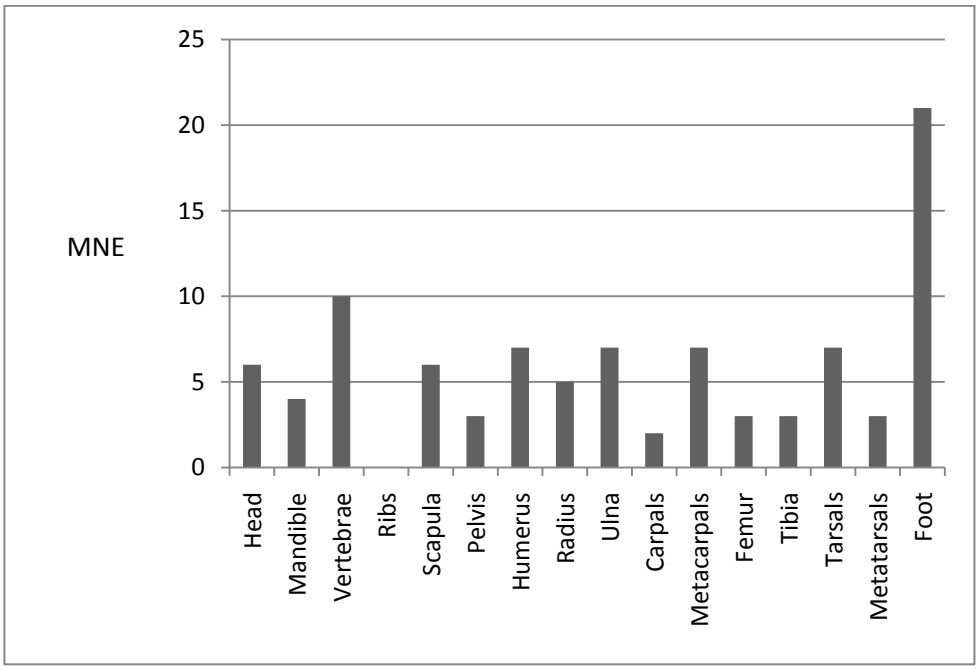

Figure 2.15: Representation of pig elements, Early Iron Age. MNE. N = 94 (Compare with MNI = 7)

A2.5.4.2 Age and herd structure

There were no mandible to which a wear stage could be assigned, but 25 porous elements were recorded. Elements for which a fusion state could be recorded are included in Table 2.13. This selection of elements appears to imply that animals that were retained beyond the age of 24 months were rare. Of eight mandibular canines which could be determined, three were female and five male.

Table 2.13: Fusion state for pig elements, Early Iron Age.

Fusion data	Element	Fused	Unfused
Early Fusing (12mths)	Scapula , glenoid	4	4
(12mths)	Pelvis, acetabulum	1	3
(12mths)	Humerus, distal	0	1
(12mths)	Radius, proximal	6	1
Later fusing (24mths)	Tibia, distal	1	2
(24mths)	Metacarpal, distal	0	2
(27mths)	Metatarsal, distal	0	2
Late fusing (42mths)	Radius, distal	0	1
(24-30mths)	Calcaneus	0	2
(36-42 mths)	Radius, distal	0	1
(42mths)	Femur, proximal	0	3
(42mths)	Femur, distal	0	1
(42mths)	Tibia, proximal	0	2

A2.5.4.3 Pathology

Two teeth were recorded as pathological, and these are included in Table 2.14. Dental enamel hypoplasias are relatively frequent in the later Iron Age on the site, and relate to interruptions in tooth growth due to nutritional and other factors. The example of caries is the only one recorded from Cadbury Castle. It may relate to diet, but in isolation is of limited use.

Table 2.14: Pathological data for pig, Early Iron Age.

Site	Context	Element	Type	Comment
SC/E	3B C	Mandibular 2nd molar	Hypoplasia	
SC/E	3B	Mandibular 3rd molar	Caries	Small

A2.5.5 Sheep/Goat

Elements which can be determined between sheep and goat are limited. Sheep have been positively identified in one skull and six post cranial fragments, whilst three mandibular fragments indicate the presence of goats.

A2.5.5.1 Element representation

A total of 437 sheep/goat elements were recorded, comprising a considerable proportion of the total Early Iron Age assemblage. Many of the elements recorded as medium-sized mammals are also probably sheep/goat. Most of the small number of elements in which a determination could be made between sheep and goat, were sheep. Three mandibles may have come from goats. The distribution of elements is shown in Figures2.16 and 2.17, with elements recorded as medium mammal probably providing for the shortfall in skull, vertebrae and ribs in particular. Although there are a relatively large proportion of loose teeth, all areas of the body are well represented.

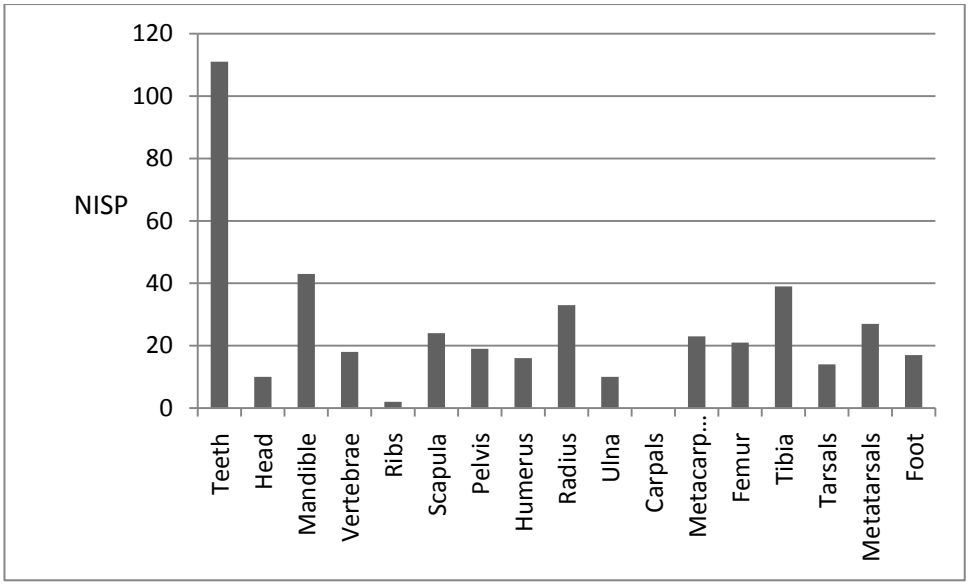

Figure 2.16: Representation of sheep/goat elements, Early Iron Age. NISP. N = 427. (Compare with MNI 22)

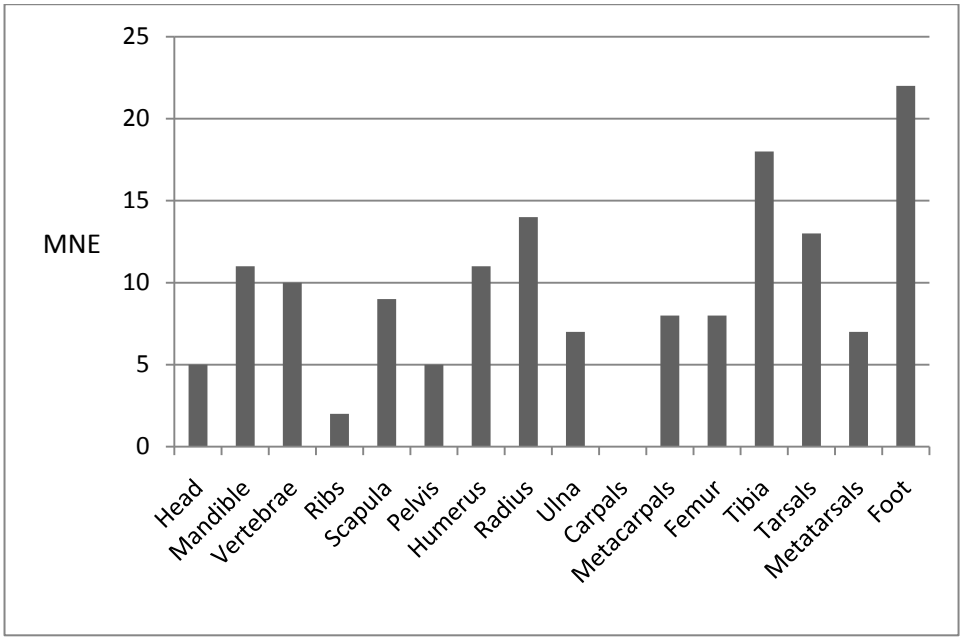

Figure 2.17: Representation of sheep/goat elements, Early Iron Age. MNE. N = 150. (Compare with MNI = 22)

A2.5.5.2 Age and herd structure

A limited number of sheep/goat mandibles produced Grant mandible wear stages of 8, two at 10, 19,36,39 and 43. Consideration of Payne Stages expanded the collection by two, but is still too limited to provide a curve. The data is presented as a histogram in Figure 2.18.

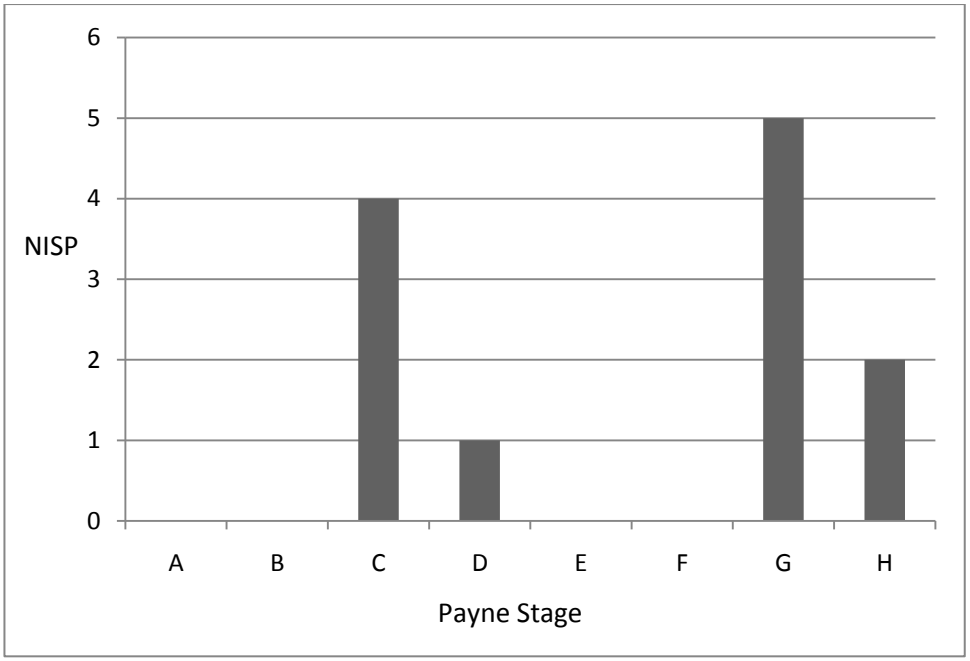

Figure 2.18: Sheep/goat ages from mandibles, by Payne stage, Early Iron Age. N = 11

The peak in mandibles at Stage C reflects a pattern that occurs on this site in all periods, but the number of individuals falling into the adult and old adult categories is interesting. This is supported by the majority of first mandibular molars reflecting mandible wear stages in excess of 20. However, given the greater degree of fragmentation of sheep/goat in this assemblage, one might reasonably expect that the younger porous mandibles would be disproportionately destroyed. In support of this several porous fragments were recorded as being of neonatal size, with several metapodials being unfused along the midline. Fusion (Table 2.15) indicates a range of age groups.

Table 2.15: Fusion in sheep/goat, Early Iron Age.

Fusion date	**Element**	**Fused**	**Unfused**
Early Fusing (6-8mths)	Scapula, glenoid	9	0
(6-10mths)	Pelvis, acetabulum	11	1
(10mths)	Humerus, distal	5	3
(10mths)	Radius, proximal	5	6
Later fusing (18-24mths)	Metacarpal, distal	2	3
(20-28mths)	Metatarsal, distal	0	2
(18-24mths)	Tibia, distal	6	7
Latest fusing (30-36mths)	Calcaneus	1	5
(36-42 mths)	Humerus, proximal	1	5
(36mths)	Radius, distal	1	4
(30mths)	Ulna	0	1
(30-36mths)	Femur, proximal	1	6
(36-42mths)	Femur, distal	2	2
(36-42mths)	Tibia, proximal	6	7

A2.5.5.3 Pathology

A number of elements had pathological conditions recorded. These are included in Table 2.16. This is mainly oral pathology, but includes a well healed tibia shaft, which may have required immobilisation. The single instance of 'penning elbow' is of interest but cannot in isolation inform us of prevalence.

Table 2.16: Pathology in sheep/goat, Early Iron Age.

Site	Context	Element	Part	Type	Comment
SC/S	012	Humerus	Distal	Penning elbow	
SC/T	010	Tibia	Shaft	Fracture	Well healed
SC/F	384A	Mandible	Tooth row	Periodontal disease	Slight
SC/P	116	Mandible	Tooth row	Periodontal disease and malocclusion	Moderate
SC/P	603A	Mandibular 2nd and 3rd molar		Malocclusion	Moderate
SC/E	921A	Mandibular 3rd premolar		Calculus	Severe
SC/E	921A	Mandibular 2nd & 3rd molar		Calculus	Moderate
SC/P	603A	Maxilla	Tooth row	Calculus	Severe

A2.5.4 Dog

A2.5.4.1 Element representation

Only six fragments of dog bone were included in this assemblage, three loose teeth, a metacarpal, radius fragment and an entire thoracic vertebra.

A2.5.4.2 Age

The only information on age comes from the singe thoracic vertebra which has both the cranial and caudal epiphyses of the centrum fused. There was no porous dog bone.

A2.5.4.3 Pathology

No pathology was noted.

A2.5.5 Horse

A2.5.5.1 Element representation

There were ten fragments of horse bone recorded, five loose teeth, a mandible fragment, three metapodial fragments and a fragment of pelvis.

A2.5.5.2 Age

A metatarsal and tibia were fused distally indicating an individual or individuals over 16-20 months and 20-24 months respectively. Four of the teeth were of the permanent dentition and in wear, whilst one maxillary tooth was deciduous but worn. There was no porous horse bone.

A2.5.5.3 Pathology

No pathological changes were noted on horse elements.

A2.5.6 Wild Species

Wild species are represented by a fragment of hare and two red deer fragments, one a piece of antler and an astragalus. The antler is part of the base with two tines attached. It could not be ascertained if it was shed, but has six intersecting chop marks across it. The hare tibia shaft was also butchered with ten parallel light cut marks across the shaft. The two fragments of bird bone were unidentified to species.

A2.5.7 Associated Bone Groups and complete skulls

A horse skull came from a feature in the plateau area that was probably, but cannot from the site records be confirmed to be a pit. It was partly weathered.

A2.5.8 Discussion of the Early Iron Age assemblage

The most apparent element in the Early Iron Age assemblage is the prevalence of sheep/goat, with cattle and pig relatively equally represented in lesser quantities. The proportion of cattle and sheep/goat is reflected in the proportion of elements identified as large and medium mammal, (cattle- and sheep-sized). Whilst cattle and pig which show a lower percentage difference between MNI to NISP, sheep/goat has an increased MNI, probably relating to a differing rate of fragmentation between the species, supported by the proportion of loose teeth of the identified assemblage. This is a different pattern of fragmentation for sheep in comparison to later periods. It may relate to the types of context from which the material came. High fragmentation levels in the refuse layers of the plateau would be unsurprising, but it is unclear why this may have had a greater effect on sheep/goat.

The Early Iron Age cattle assemblage is dominated by loose teeth, but although other elements occur in small numbers, they do indicate that all areas of the body were present. This small assemblage is still able to give an indication of the likely herd structure. Whilst most of the tooth wear information indicates animals in the older sub-adult through to old adult stages, the presence of a considerable number of unfused particularly early-fusing elements such as the acetabulum and glenoid indicates the presence of much younger individuals. A full range of ages is suggested, with perhaps most emphasis on the very young and mature adults. This pattern may be similar to that seen on the site in the later Iron Age and which will be discussed below. Little pathology was noted in cattle. For pigs, all areas of the body are present, although

the assemblage is dominated by loose teeth. The majority of pigs appear to have been killed at a young age and this is not unexpected. There is no toothwear data, but a considerable proportion of the assemblage was porous bone and where fusion information was present appears to imply that few animals were retained beyond the age of 24 months. Three mandibular canines were female, and five male.

In sheep/goat all areas of the body are well represented, although there is an unusually large proportion of loose teeth, mentioned above. The peak in mandibles at stage C reflects a pattern that occurs on this site in all periods, but the number of individuals falling into the adult and old adult categories is interesting. This is supported by the majority of first mandibular molars. However, given the greater degree of fragmentation of sheep/goat in this assemblage, one might reasonably expect that the younger porous mandibles would be disproportionately destroyed, and the youngest individuals were represented by a small collection of porous bone. A selection of pathologies were recorded, mainly oral conditions, but including a well healed fracture which may represent a valued breeding animal, and a case of 'penning elbow'. These are all consistent with the types of disease seen in the later assemblages, but prevalence cannot be calculated. It is apparent that sheep and goats (positively identified on the site for the first time) were becoming much more important in the animal economy. The presence of old individuals may imply the retention of animals for wool production or management of the herd through breeding reliable ewes; the considerable number of individuals under one year at death may also represent a coherent herd management strategy, coupled with utilisation for meat.

Only six fragments of dog bone were recovered including loose teeth, with no evidence for juvenile individuals. Ten horse bone fragments represented various parts of the body. There was no porous horse bone and fusion information indicates an individual or individuals over 16-20 months. Most teeth were permanent and in wear or worn. A single largely intact horse skull was also recorded.

A2.6.0 Middle Iron Age

The Middle Iron Age assemblage consists of 31,398 fragments, plus a further 8,484 fragments from a single pit (D817) which is dealt with separately below in consideration of the likely associated nature of much of the material. The main Middle Iron Age assemblage comes from all areas of the hillfort and a variety of contexts and features, including bank material, ditches, pits and postholes.

A2.6.1 Species representation

The species included in this assemblage are shown in Table 2.17.

Table 2.17: Representation of species, Middle Iron Age. For bird species see section 6.8 below.

Species	NISP	% NISP	% Main	MNI	% MNI
Cow	4038	12.99	20.46	71	12.39
Pig	3807	12.24	19.29	116	20.24
S/G	11890	38.24	60.25	386	67.37
Dog	163	0.52		6	
Horse	392	1.26		6	
Large mammal	2542	8.18			
Medium mammal	4379	14.08			
Unidentified	3883	12.49			
Total main	**31094**				
Red Deer	4				
Roe Deer	6				
Deer	4				
Hare	9				
Fox	1				
Cat	4				
Bird	62				
Small mammal	117				
Amphibians	97				
Total fragments	**31398**				

It is apparent that the main domestic species are heavily dominant in this assemblage, with a large proportion of sheep/goat. Although there is a considerable amount of unidentified material and material identified to large or medium sized mammals, this is actually varied throughout this material, with some contexts containing very little, and probably affected by a previous retention and disposal policy. The predominance of sheep is further emphasised when the percentage between the three main domestic species is considered as in Figure 2.19.

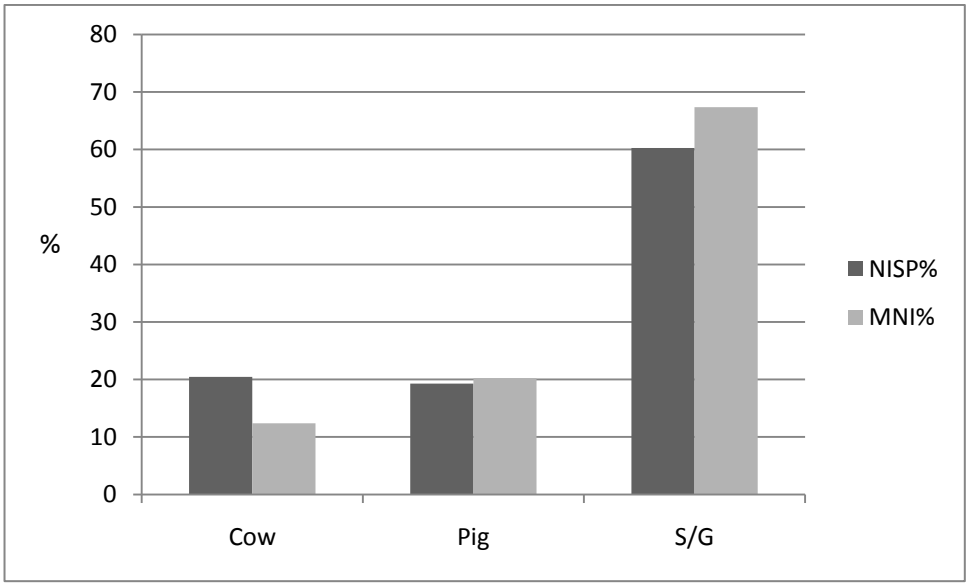

Figure 2.19: Proportion of main domestic species, Middle Iron Age. NiSP = 19375 MNI = 573

Cattle and pig are very definitely numerically inferior, both when considered by NISP and MNI. However, cattle are markedly in the minority when the MNI is considered. As with other

assemblages on the hillfort, the difference appears to be due to a greater degree of fragmentation that cattle has suffered over pig,and especially sheep, and which can be seen when loose teeth percentages for the three main species are considered in Figure 2.20.

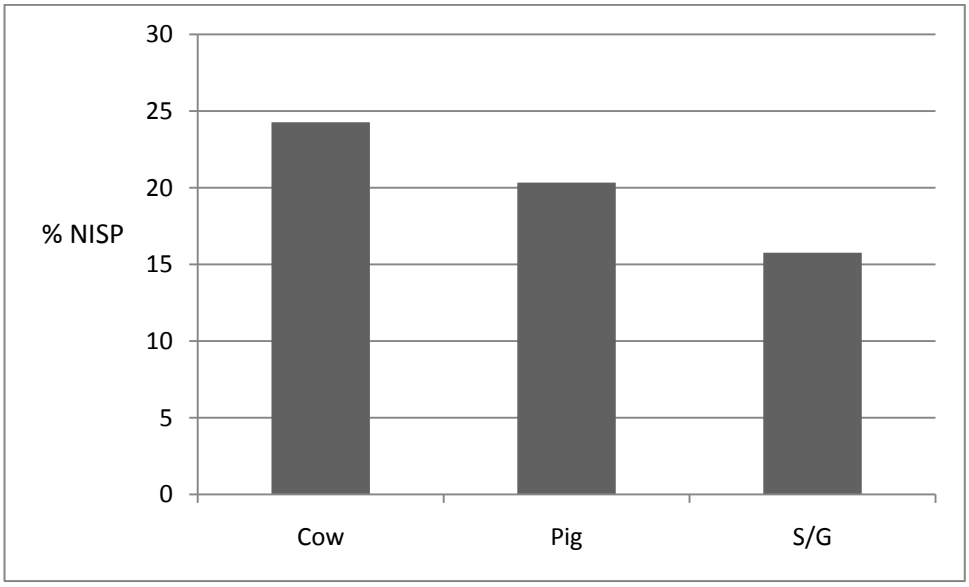

Figure 2.20: Percentage of loose teeth of identified elements, by species, Middle Iron Age. N = 2648

A2.6.2 Taphonomy and butchery

Full analysis of taphonomic markers has not been carried out for reasons given above. However, Table 2.18 gives overall assemblage percentages. Again, there is a fair amount of material that has suffered weathering, burning or gnawing, and a small collection of material displaying cutmarks.

Table 2.18: Overall incidence of taphonomic markers in the Middle Iron Age assemblage.

Gnawed, Weathered, and Burned fragments		Butchered fragments	
No	**%**	**No**	**%**
3797	12.21	532	1.71

A2.6.3 Cattle

A2.6.3.1 Element representation

Cattle element representation is shown in Figures 2.21 and 2.22. Loose teeth numerous in this assemblage, and may relate to a greater degree of fragmentation affecting cattle as alluded to above. All elements are however well represented. The apparently elevated number of fragments from the head and mandible, might indicate primary butchery waste, but the MNE shows that this is a result of fragmentation with a possible under-representation of head elements. The slightly elevated proportion of humerus fragments may be a real artefact of importation of a meat bearing element, but probably relates to the fact that the denser distal area was what produced the MNI.

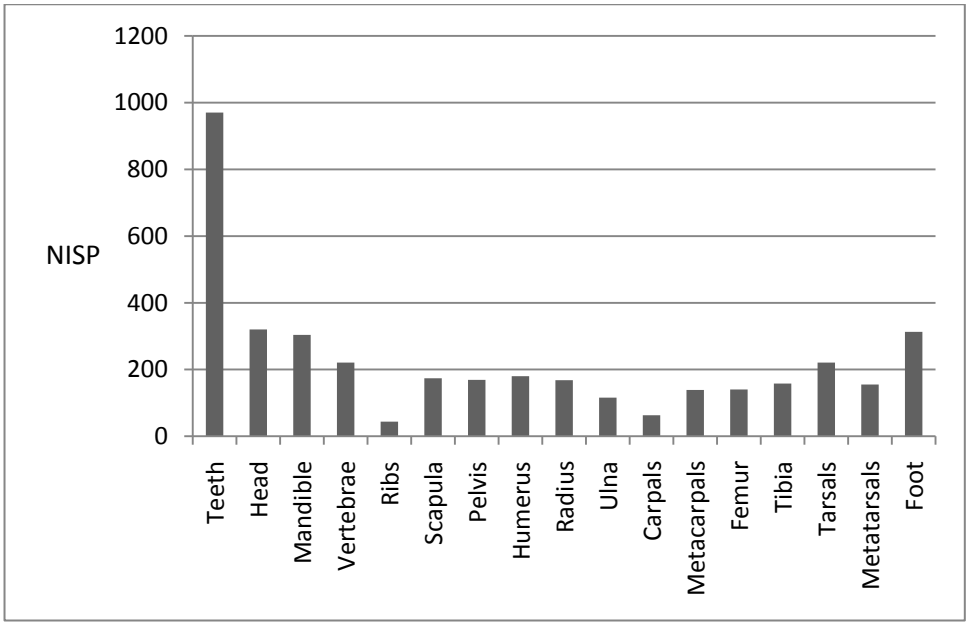

Figure 2.21: Representation of cattle elements, NISP Middle Iron Age. N = 3855 (Compare with MNI 71).

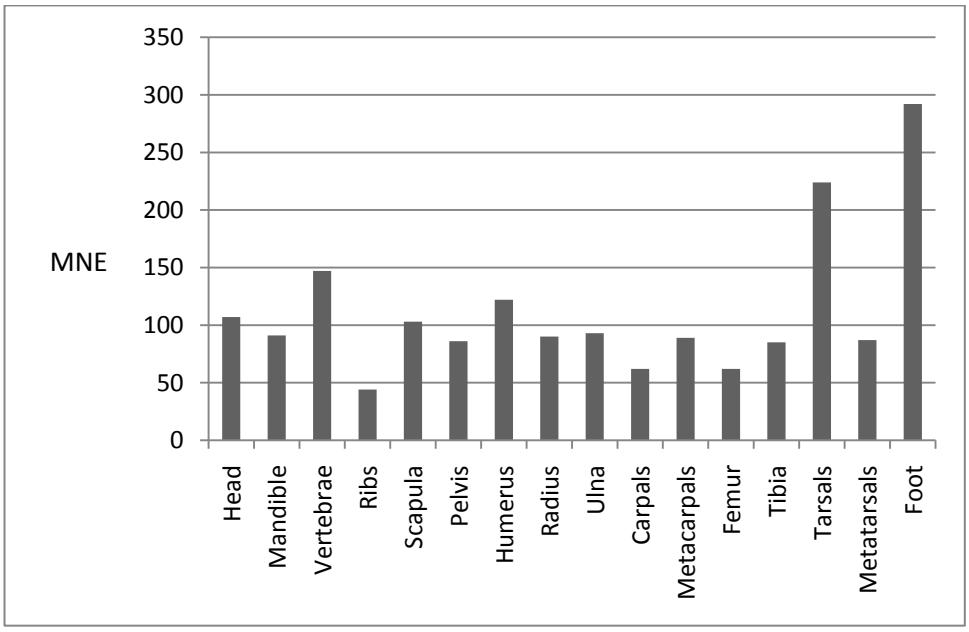

Figure 2.22: Representation of cattle elements, MNE Middle Iron Age.N = 1784 (Compare with MNI 71).

A2.6.3.2 Age and herd structure

The mandible wear stages of mandibles complete enough to produce a MWS or enable an accurate estimate are shown in Figure 2.23.

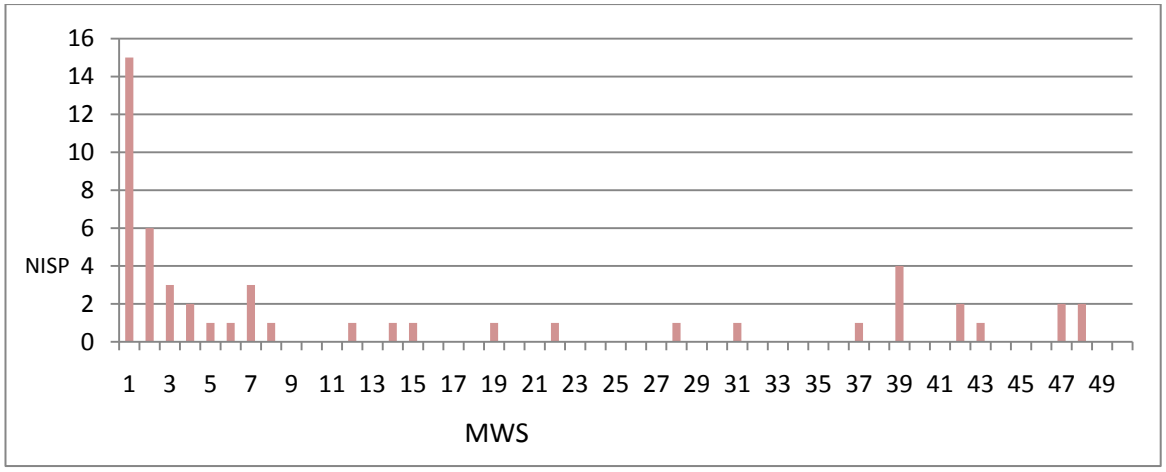

Figure 2.23: Grant Mandible Wear Stages for cattle, Middle Iron Age. N = 51

The assemblage is dominated by very young animals, many of them neonatal. Whilst there are some older calves and a smattering of sub-adults, the second most common category is adults and old adults. In order to consider this further, taking into account the likely fragmentation of larger elements, Figures 2.24, 2.25 and 2.26 show the wear stages of loose fourth deciduous premolars, permanent fourth premolars and third mandibular molars. This does not fully reflect the mandibles that have been lost, but does appear to reflect the pattern of emphasis on very young and older cattle. There is a concentration of Dp4s at Stage a, representing neonates, whilst those at g are young juveniles. The peak at k represents sub-adults. but there are no unworn third molars present which there should be if there were a sizeable number of older sub-adults, which overlaps with stages a-e for P4s, which are also not well represented. They show a peak at stages f-g within the young adult stage. This coincides with the peak at MWS 39 on the main mandible chart. For M3s the emphasis at g, j, and k represents adults and old adults. It does therefore appear to be the case that this population reflects a cattle economy in which a few animals were kept throughout a relatively natural lifespan, and a large number of animals died or were culled soon after birth, with an avoidance of culling juveniles and younger sub-adults.

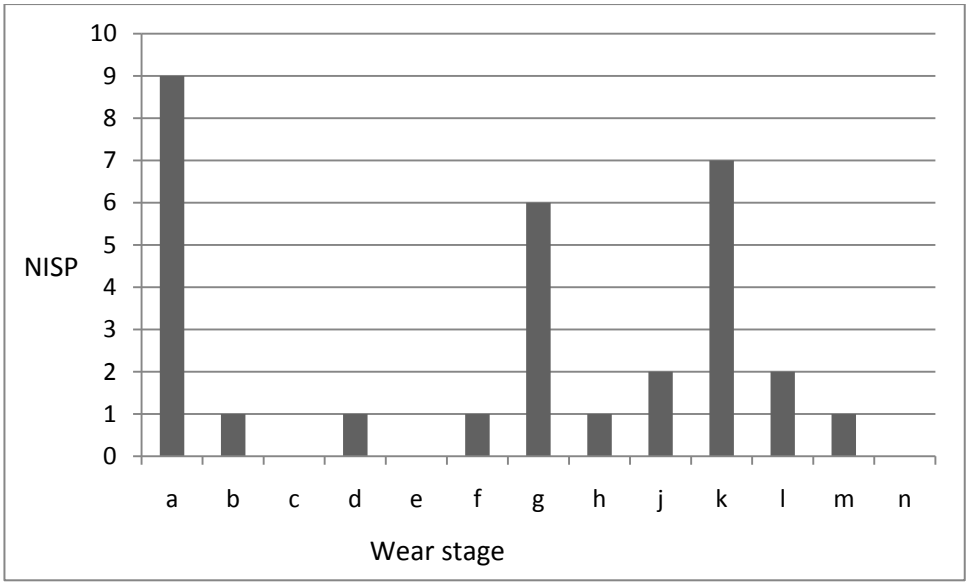

Figure 2.24: Loose Dp4 cattle teeth, Middle Iron Age. N = 31

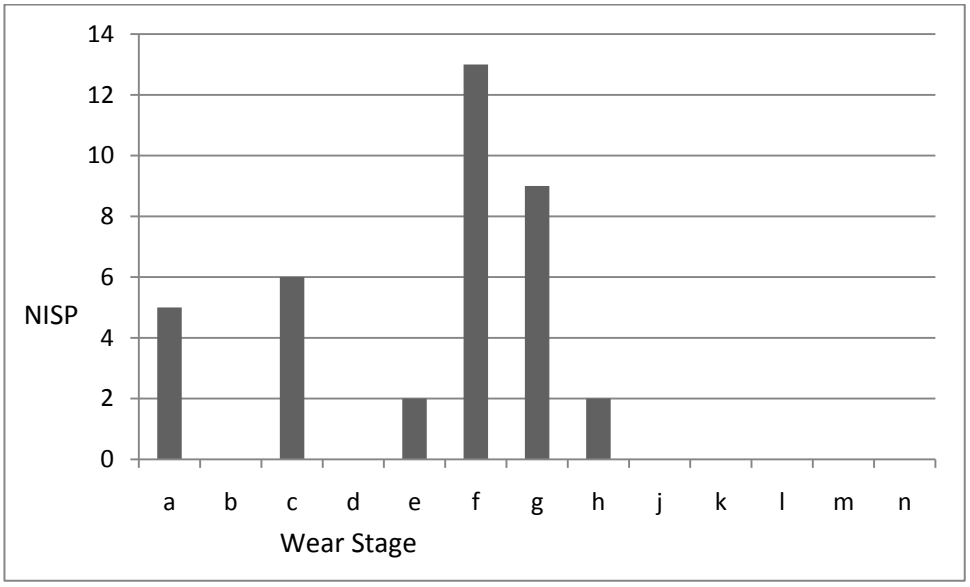

Figure 2.25: Loose P4 cattle teeth, Middle Iron Age. N = 37

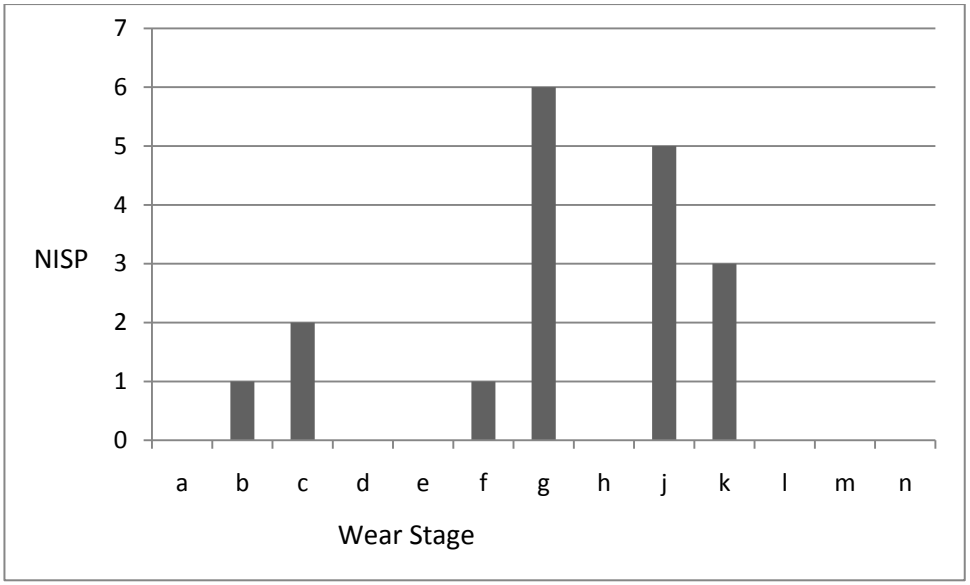

Figure 2.26: Loose M3 cattle teeth, Middle Iron Age. N = 18

The present of the youngest individuals is also attested by 360 porous fragments. Fusion data (Table 2.19) also indicates a fair proportion of unfused earliest fusing elements, but less than might be expected from the toothwear data. However, it does support the smaller number of adult individuals.

Table 2.19 Fusion information for cattle, Middle Iron Age

Fusion date	Element	Fused	Unfused
Early Fusing (7-10 mths)	Scapula	72	15
(7-10mths)	Pelvis	118	14
(12-18mths)	Humerus, distal	51	14
(12-18mths)	Radius, proximal	78	11
Later fusing (24-30mths)	Metacarpal, distal	26	15
(27-36mths)	Metatarsal, distal	26	18
(24-30mths)	Tibia, distal	62	29
Late fusing (36-42mths)	Calcaneus	16	20
(42-48 mnths)	Humerus, proximal	8	18
(42-48mths)	Radius, distal	21	24
(42-48mths)	Ulna	5	11
(42 mnths)	Femur, proximal	23	22
(42-48mths)	Femur, distal	15	20
(42-48mths)	Tibia, proximal	10	16

The proportion of males females and castrates calculated by Howard's Index is shown in Figure 2.27. The combination of males and castrates almost equals the females present. However, the relative dimensions of distal metacarpals and metatarsals are plotted in Figures 2.28 and 2.29 and appear to indicate two clusters. It is assumed that the larger, more robust examples are likely to be males, and the larger group of smaller animals, females, although some of these may indicate steers. Nevertheless this seems to indicate the likely predominance of

female animals. This also appears to support the usefulness of measurement of cattle metatarsals as well as metacarpals in the determination of sex. The measurement of the proximal metacarpal (Figure 2.30) also appears to confirm these trends, but less clearly.

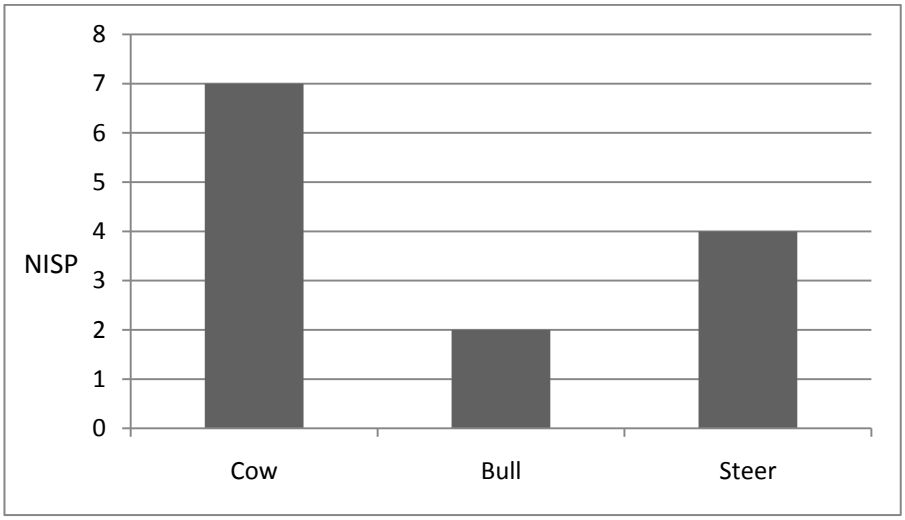

Figure 2.27: Proportion of female, male and castrate cattle, Howard's Index, Middle Iron Age. N = 13.

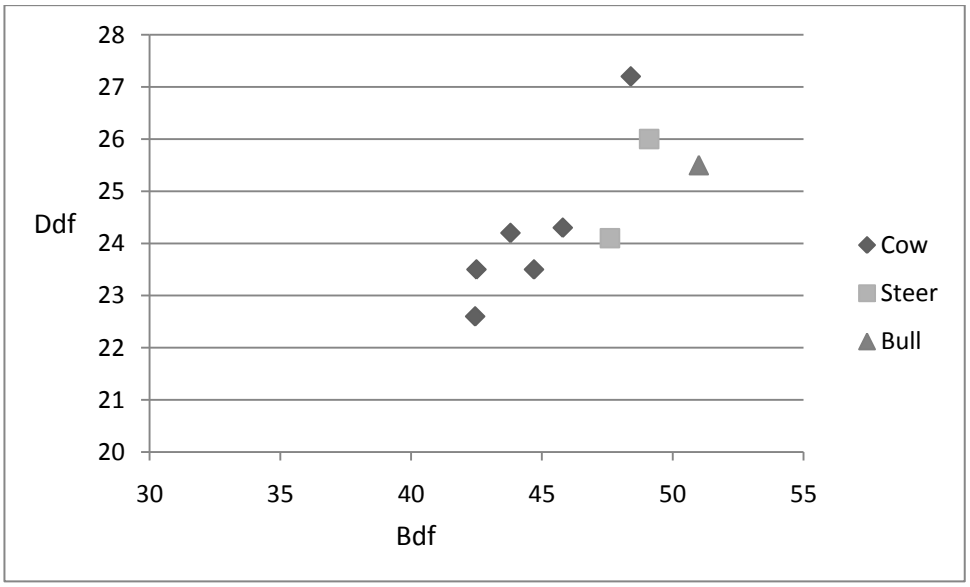

Figure 2.28: Cattle distal metacarpals (sex determined using Howard's Index), breadth compared to depth of distal fusion point, Middle Iron Age. N = 9

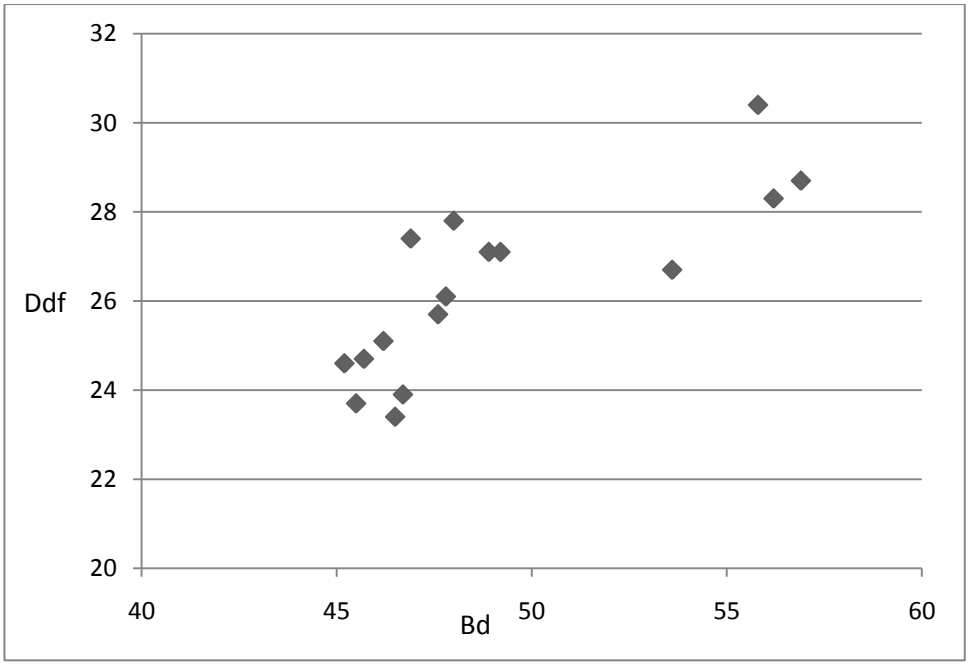

Figure 2.29: Cattle distal metatarsals, Breadth of distal compared to depth of distal fusion point, Middle Iron Age. N = 16

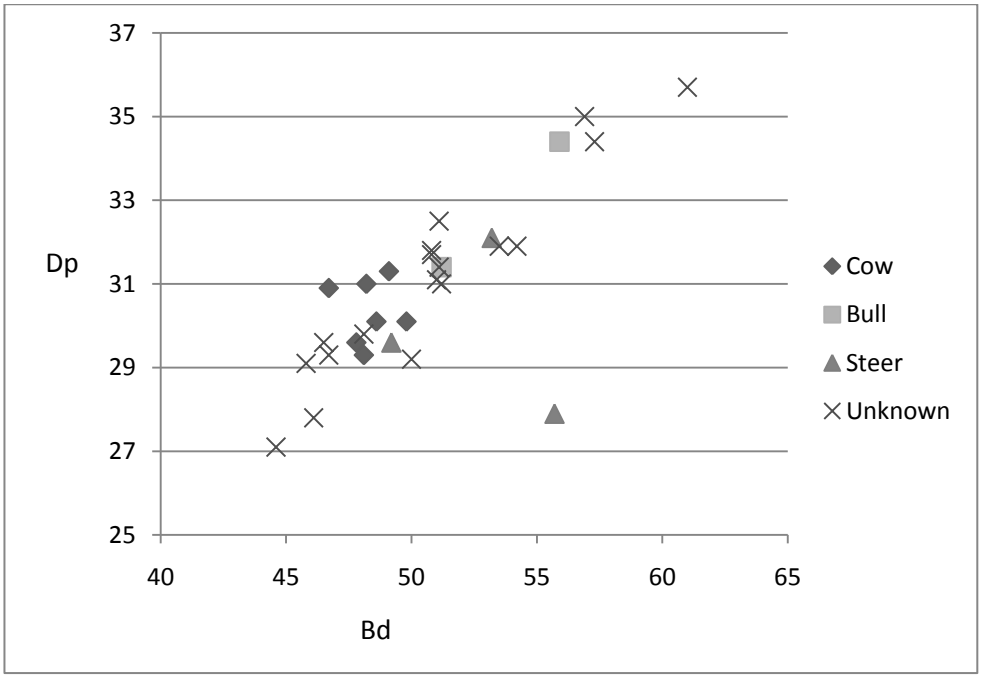

Figure 2.30: Cattle proximal metacarpals, breadth of proximal compared to depth of proximal, Middle Iron Age. N = 29

The dimensions of cattle horn bases have been plotted in Figure 2.31. Female horn bases should be more ovoid, whilst male cattle horn bases should be more even. The scatter indicated includes very few individuals with relatively even breadth and depth dimensions, and those that do are relatively small. This may imply that the vast majority of animals were female.

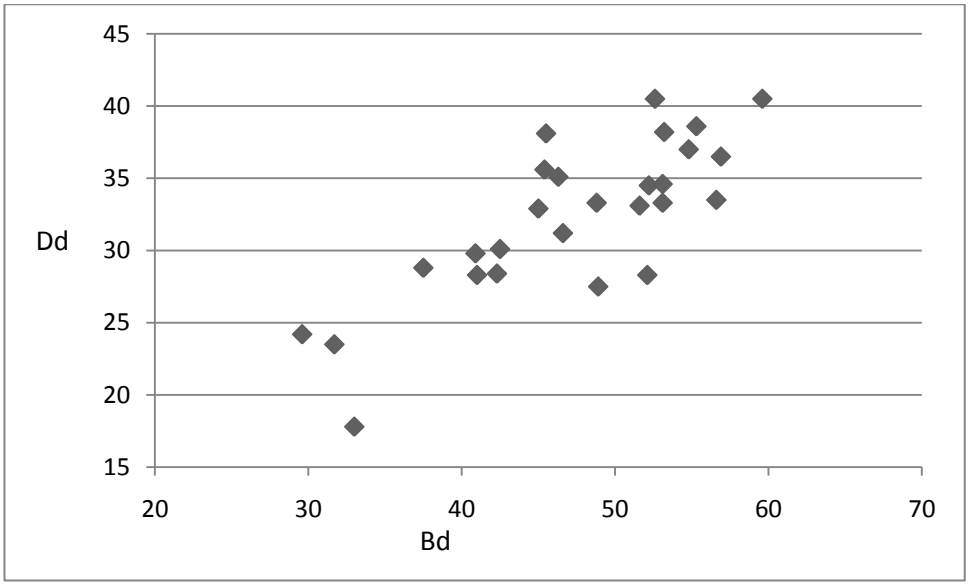

Figure 2.31: Cattle horn dimensions, distal depth compared to distal breadth of the base of the horn core. N = 27

All of these measures appear to show a majority of cows in the assemblage. However, this is not overwhelming and there appear to be a respectable number of males. An elevated number of cows might support the interpretation of the age structure of the herd indicating dairying. If it were mixed or focussed on meat production one might expect the peak in deaths of young cattle to be in the later juvenile or sub-adult wear stages. A couple of bulls would be needed for breeding purposes, but the number of steers from the Howard's Index calculation is of interest. Castrated males are likely to have provided traction.

A2.6.3.3 Pathology

A range of pathological elements were recorded and these are presented in Table 2.20.

Table 2.20: Pathological elements recorded for cattle and large mammal, Middle Iron Age.

Site	Context	Species	Element	Part	Type	Comment
SC/L	108B	COW	Axis	Neural arch	Periostitis	Active
SC/L	013	COW	Lumbar vertebra	Neural arch, lateral articulation	DJD	
SC/K	502	COW	Lumbar vertebra	Neural arch	Periostitis	Active
SC/G	094A D	COW	Lumbar vertebra	Neural arch	DJD	Severe
SC/L	058	COW	Rib	Articulation	?	Broadened surface
SC/K	690	COW	Rib	Articulation	Developmental?	
SC/S	153	COW	Skull	Intercornual protuberance	Lytic lesions	
SC/F	682A	COW	Skull		Lytic lesions	
SC/K	696	COW	Horn	Shaft	Epigenetic/metabolic?	
SC/A	169	COW	Horn	Shaft	Epigenetic/metabolic?	
SC/C	605D	COW	Horn	Shaft	Epigenetic/metabolic?	
SC/D	518	COW	Horn	Shaft	Epigenetic/metabolic?	

SC/D	638	COW	Horn	Base	Epigenetic/metabolic?	
SC/D	737	COW	Horn	Shaft	Epigenetic/metabolic?	
SC/F	345B	COW	Horn	Shaft	Epigenetic/metabolic?	
SC/K	498	COW	Horn	Shaft	Epigenetic/metabolic?	
SC/L	626/627	COW	Horn	Shaft	Epigenetic/metabolic?	
SC/L	626/627	COW	Horn	Shaft	Epigenetic/metabolic?	
SC/P	402C	COW	Femur	Shaft	Enthesophytes	?Trauma
SC/E	988	COW	Femur	Caput	Osteoarthritis	
SC/L	108C	COW	Femur	Caput	Osteoarthritis	
SC/A	17	COW	Humerus	Distal	DJD	
SC/D	624	COW	Humerus	Distal	DJD	
SC/K	690	COW	Humerus	Distal	DJD	
SC/K	965	COW	Humerus	Distal	DJD	
SC/L	058	COW	Humerus	Distal	DJD	
SC/D	725	COW	Radius	Proximal articulation	Degenerative change	
SC/D	624	COW	Metacarpal	Proximal articulation	Osteoma?	
SC/F	646	COW	Metatarsal	Proximal shaft	Periostitis	Healed
SC/C	766	COW	Metatarsal	Proximal articulation	Osteoarthritis	
SC/P	609B	COW	Metatarsal	Proximal articulation	Osteoarthritis	
SC/L	108C	COW	Metatarsal	Distal shaft	Roughening and splaying	Traction?
SC/L	642	COW	Metatarsal	Distal shaft	Roughening	Traction?
SC/K	696	COW	Pelvis	Acetabulum	Degenerative change	
SC/D	629	COW	Pelvis	Acetabulum	Osteoarthritis	
SC/D	517A	COW	Pelvis	Acetabulum	Osteoarthritis	
SC/K	690	COW	Pelvis	Acetabulum	Osteoarthritis	
SC/N	952	COW	Astragalus	Centre	Periostitis	Inactive
SC/C	111B	COW	Calcaneus	Tuber	Osteophytes	Traction?
SC/C	605D	COW	Naviculo-cuboid	Entire distal facet	DJD	
SC/C	766	COW	Naviculo-cuboid	Centre of distal facet	Osteoarthritis	Articulates with Cuneiform
SC/C	766	COW	Cuneiform	Centre of proximal facet	Osteoarthritis	Articulates with Naviculo-cuboid
SC/C	558C	COW	Naviculo-cuboid	Anterior of distal facet	Osteoarthritis	
SC/G	112B	COW	Naviculo-cuboid	Proximal facet	Osteoarthritis	
SC/K	690	COW	1st Phalanx	Proximal articulation	Degenerative change	
SC/C	605D	COW	Mandible	At P4	Periodontal disease	Moderate
SC/P	422D	COW	Mandible	Tooth row	Periodontal disease	Moderate
SC/D	517	COW	Mandible	P4-M2	Calculus	Moderate
SC/P	618	COW	Mandible	P4	Malocclusion. Erupted at angle impacting P3	
SC/G	094B L	COW	P2		Malocclusion and calculus	Severe
SC/W	083	COW	M1		Malocclusion, caries and florid bone on root	Severe
SC/N	752	COW	M2		Malocclusion	
SC/C	766B	LMA	Rib	Shaft	Fracture	
SC/D	520	LMA	Rib	Shaft	Fracture	
SC/D	737	LMA	Rib	Shaft	Fracture	
SC/K	690	LMA	Rib	Shaft	Fracture	
SC/L	208	LMA	Rib	Shaft	Fracture	
SC/L	108B	LMA	Rib	Shaft	Periostitis	Active on ventral surface
SC/C	409A	LMA	Long bone	Shaft	Enthesophytes	? Traumatic
SC/P	110C	LMA	Long bone	Shaft	Osteoma	

Whilst there are some cases of oral pathology and some evidence of non-specific infections, the vast majority of the pathologies are degenerative joint problems and osteoarthritis, as well as some joint changes that may be specific to use in traction. This fits well with the age profile of the population and the presence of steers. Some degenerative change is to be expected in older cows, but the location of the most severe changes in the hip, lower legs and feet may be indicative of animals being used for ploughing and pulling vehicles. When considering fragments identified as coming from large mammals (the greatest likelihood being that they are cattle, rather than horse), a number of fractures have been noted. These can occur to cattle due to the pressure that may need to be brought to bear managing larger animals. A single case of periostitis affecting the ventral surface of the rib may relate to a non- specific respiratory infection. It is interesting that this is the only instance recorded. If housed or managed in damp atmospheres, both cattle and horses are prone to respiratory illness and inflammation. The low level of evidence of such infections may indicate either that animals were not housed or were kept in well ventilated conditions, or in low numbers.

A2.6.4 Pig

A2.6.4.1 Element representation

The elements of pig recorded in the assemblage are shown in Figures 2.32 and 2.33.

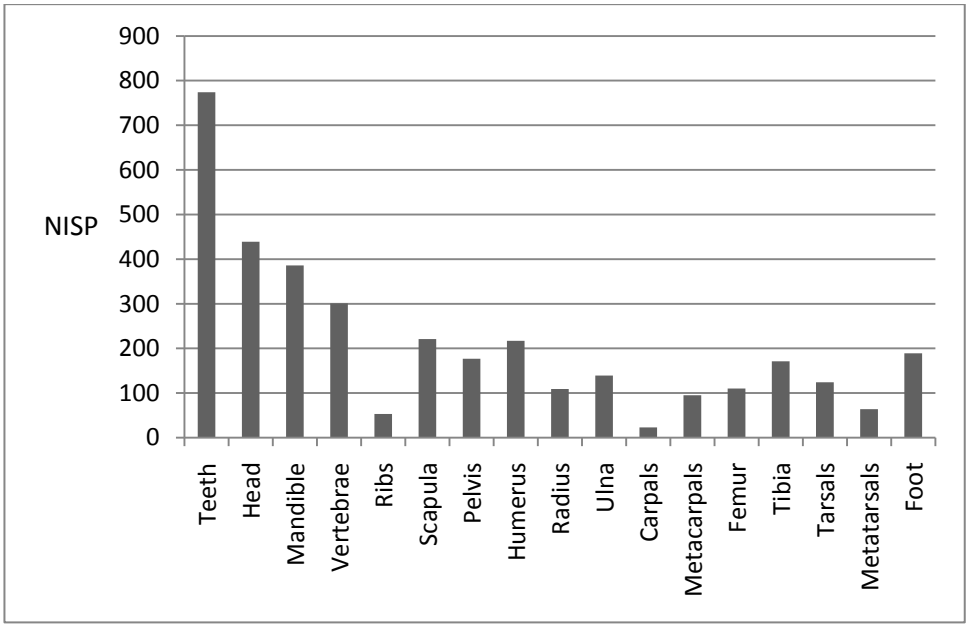

Figure 2.32: Representation of pig elements, NISP, Middle Iron Age. N = 3807. (Compare with MNI = 116)

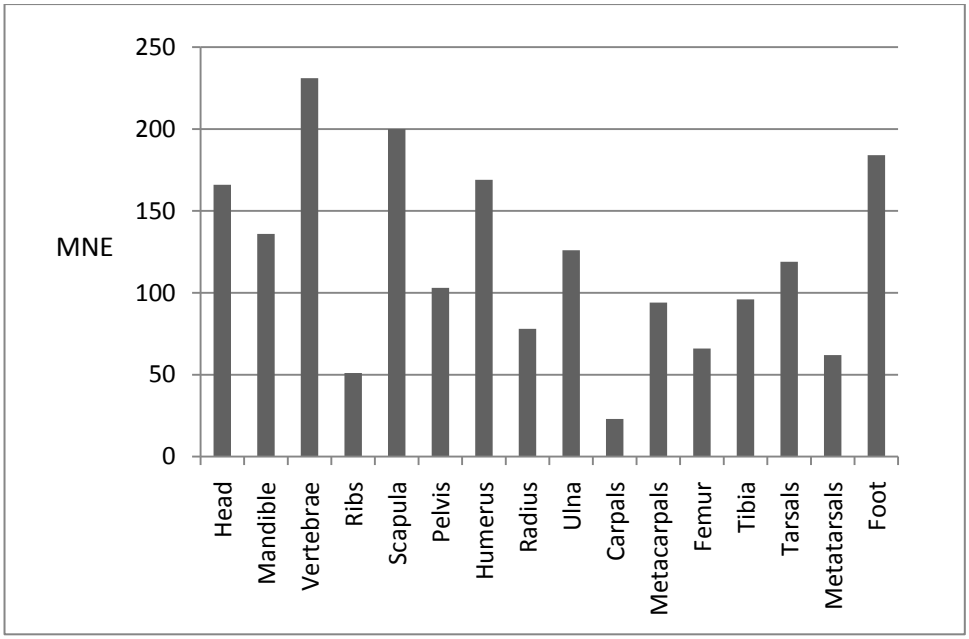

Figure 2.33: Representation of pig elements, NISP, Middle Iron Age. N =1904. (Compare with MNI = 116)

Similarly to cattle, there are a considerable number of loose teeth. However, all areas of the body are well represented, similar to cattle. Heads, axial elements and lower limbs/feet are relatively well represented. There is a slight lack of some long bones which might suggest the presence of primary butchery waste and in the NISP reflects the greater propensity of the skull to fracture. Skull and foot elements are actually under-represented in comparison to denser elements, in particular the humerus. The reduction in head fragments may well relate to greater fragmentation, but the lack of astragali and calcanei, might indicate recovery bias, taphonmic effects or hint at some meat-bearing elements being present where the associated trimmings have been disposed of elsewhere.

A2.6.4.2 Age and herd structure

Mandible wear stages for all pig mandibles that could be assessed for a MWS are shown in Figure 2.34.

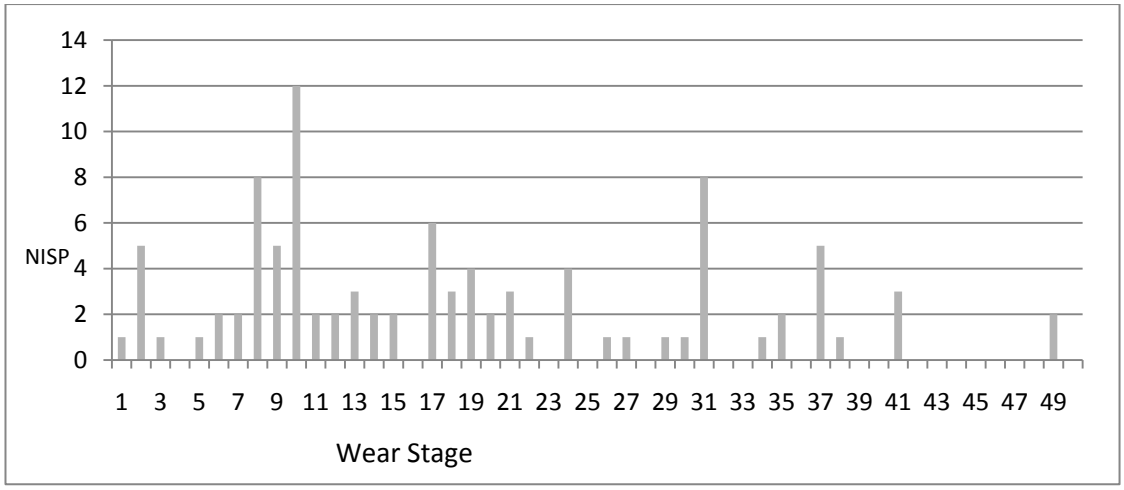

Figure 2.34: Grant Mandible Wear Stages for pig, Middle Iron Age. N = 97

A small number of neonates and very young individuals are present. These may indicate that farrowing took place within the hillfort or in the immediate vicinity. Unsurprisingly for pigs there are very few old adults, with the majority of animals dying or being slaughtered in the late juvenile or early sub-adult stages, under two years of age. There is also no indication of a strong pattern to the age of death that occurs with the other main species. This may indicate that unless animals were being retained for breeding purposes, their slaughter may have been more based on necessity or immediate management of varying resources rather than on a longer term herd management strategy.

Young pigs are also attested by 480 porous fragments. The information from the fusion data (Table 2.21) fits very well with the toothwear data. There are large numbers of unfused early-fusing elements and a clear majority of unfused bones in the later and latest-fusing categories, indicating that animals over c24 months were few.

Table 2.21: Fusion of pig elements, Middle Iron Age

Fusion date	Element	Fused	Unfused
Early Fusing (12mths)	Scapula , glenoid	93	41
(12mths)	Pelvis, acetabulum	78	56
(12mths)	Humerus, distal	52	30
(12 mths)	Radius, proximal	53	26
Later fusing (24 mths)	Metacarpal, distal	18	45
(27 mths)	Metatarsal, distal	6	28
(24mths)	Tibia, distal	30	52
Late fusing (24-30 mths)	Calcaneus	6	41
(42 mths)	Humerus, proximal	2	19
(42mths)	Radius, distal	0	9
(36-42 mths)	Ulna	1	28
(42mths)	Femur, proximal	5	36
(42mths)	Femur, distal	2	24
(42mths)	Tibia, proximal	3	40

The sex of individuals was determined in a total of 91 canines (Figure 2.35). The majority of these were loose teeth but 16 cases occurred within mandibles.

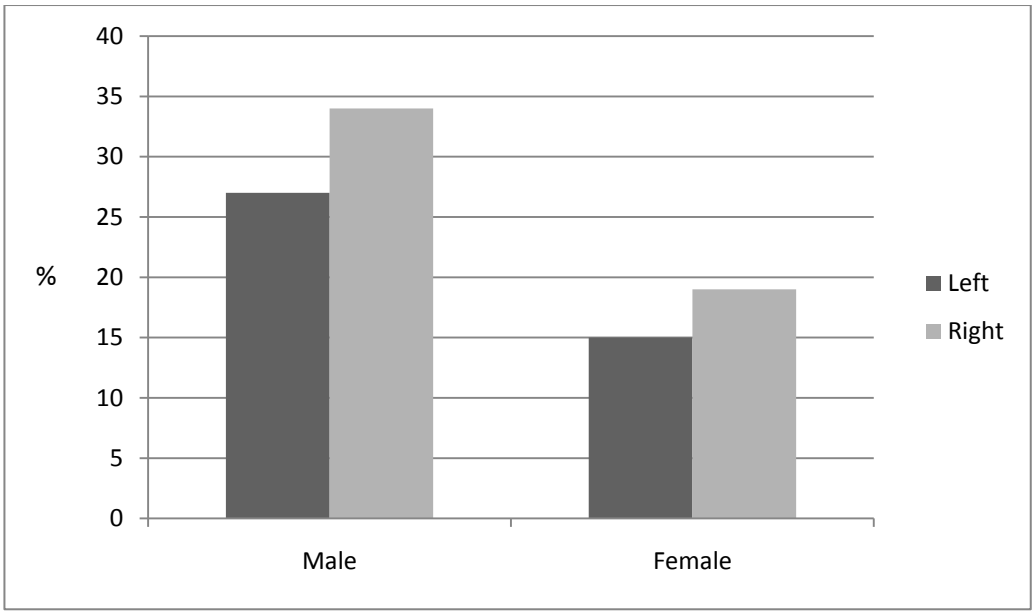

Figure 2.35: Instances of male and female canines, Middle Iron Age. N = 91. 16 in mandible.

Of the 16 canines within mandibles, 8 were assessed as male, 8 as female. Males otherwise considerable outweigh females, but is unlikely to result from fragmentation as only canines over 80% complete were used and the female canine, being closed-rooted should be less subject to fragmentation. The discrepancy cannot be entirely explained by differential culling of females dependent on age, as they would appear as older individuals. One explanation is that surplus male meat animals may have been brought to the hillfort for consumption and disposal.

A2.6.4.3 Pathology

A number of pig elements had pathological conditions recoded and these are shown in Table 22. The post-cranial pig pathologies are all fractures, other traumatic injuries and non-specific infections, which could also be caused by trauma. A considerable number of teeth demonstrated dental enamel hypoplasias, an interruption of the formation of the tooth enamel caused by nutritional or other environmental stress during the formation of the tooth.

Table 2.22: Pathological elements, pig, Middle Iron Age.

Site	Context	Element	Part	Type	Comment
SC/D	513	Skull	Frontal sinus	Periostitis	
SC/L	108B	Femur	Trochanter	Periostitis	
SC/L	208	Fibula	Shaft	Fracture	Well healed
SC/G	094 I	Humerus	Distal shaft	Periostitis	
SC/G	094A FI	Humerus	Distal shaft	Periostitis	
SC/G	094C E	Humerus	Distal shaft and articulation	Periostitis	
SC/B	886	Radius	Proximal shaft	Periostitis?	
SC/W	077	Tibia	Shaft	NSI	
SC/L	058	Pelvis	Illium	Enthesophytes	? Traumatic
SC/T	325E	Scapula	Neck	Enthesophytes	? Traumatic
SC/G	094A D/E	Metatarsal	Shaft	Enthesophyte	?Traumatic
SC/P	553	Lateral metapodial	Shaft	Fracture	
SC/L	058	Second phalanx	Proximal articulation	Enthesophytes	
SC/K	687	Mandible	M2,3	Calculus	Slight
SC/K	696	Mandible		Periodontal disease	Slight
SC/C	766A	Mandible	M2	Hypoplasia	
SC/D	615	Mandible	M3	Hypoplasia	
SC/D	830	Mandible	M3	Hypoplasia	
SC/F	539	Mandible	M3	Hypoplasia	
SC/F	646	Mandible	M1	Hypoplasia	
SC/D	513	Skull	Frontal sinus	Periostitis	
SC/F	658A	Mandible	M3	Hypoplasia	
SC/G	112B	Mandible	M3	Hypoplasia	
SC/K	642	Mandible	M3	Hypoplasia	
SC/P	360A	Mandible	M2	Hypoplasia	
SC/D	516A	Maxilla	P4/M1	Malocclusion	
SC/B	412A	Maxilla	M2	Hypoplasia	
SC/C	766	Maxilla	M3	Hypoplasia	
SC/D	830	Maxilla	M3	Hypoplasia	
SC/G	112B	Maxilla	M3 lateral	Hypoplasia	
SC/N	077	Maxilla	M1	Hypoplasia	
SC/N	802	Maxilla	M2	Hypoplasia	
SC/N	802	Mandibular 3rd Molar		Hypoplasia	
SC/D	824	Incisor		Hypoplasia	
SC/N	077	Maxillary 2nd Molar		Hypoplasia	

A2.6.5 Sheep/Goat

The proportion of sheep to goats could be fully considered for the Middle Iron Age due to the number of available elements. A total of 506 mandibles were complete enough for consideration. Of these 14 (2.77%) displayed element and tooth morphology consistent with goats, although these were all old individuals and consequently may relate to older sheep displaying age related changes in the mandible. Additional elements considered are included in Figure 2.36. In all cases, goats are in a significant minority, and although there may be some over-representation of goats in these measures, it is likely that they represented considerably less than 5% of the flock.

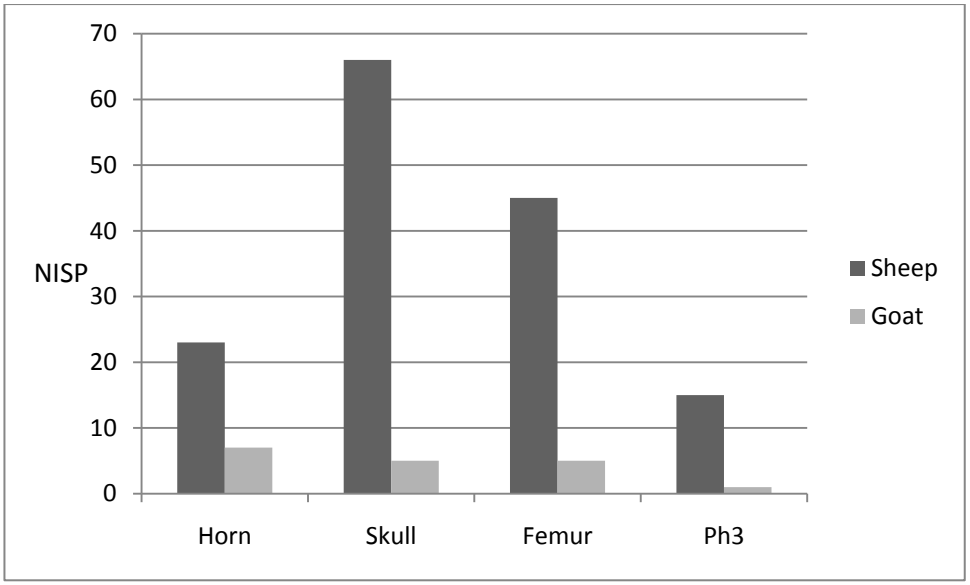

Figure 2.36: A selection of elements for which species was determined between sheep and goat. N = 167

Consideration was also given to the morphology of the astragalus. Of 80 considered, 23 were identified as goat, 28.75%. As this seemed elevated in comparison to other indicators, the metrics were plotted against each other (Figure 2.37). This indicated that the groups overlap almost completely. It was therefore considered that this was not a reliable indicator.

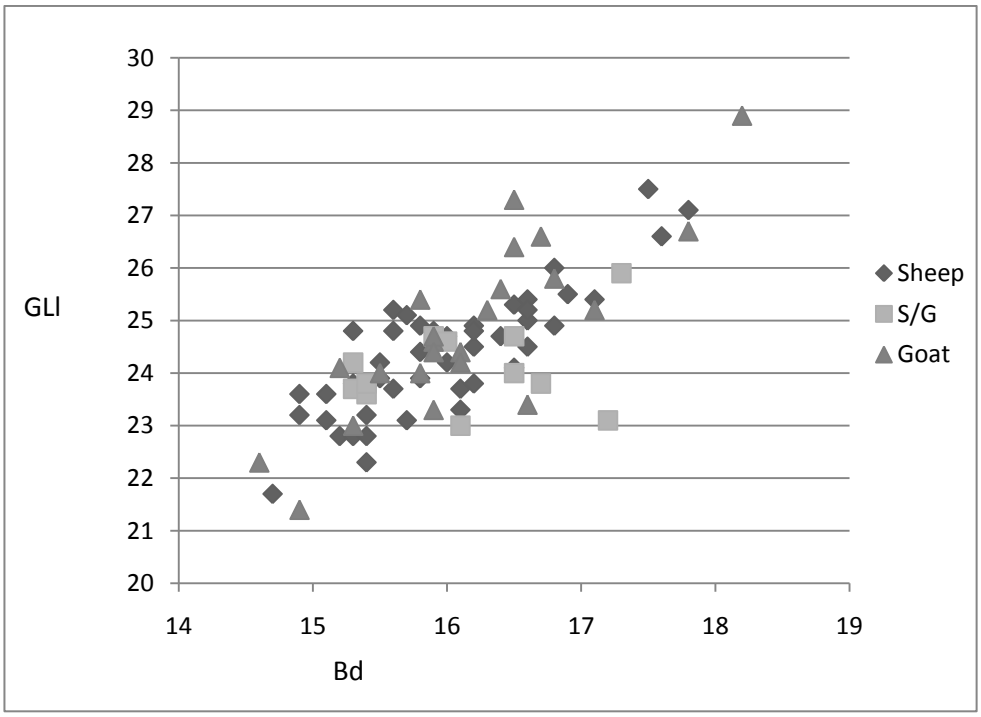

Figure 2.37: Sheep/goat astragalus comparing those identified as sheep, goat or indistinct from morphology, Middle Iron Age. N = 54

Whilst there is variation seen in the trochlea depth and medial-lateral width of the distal metacarpal (Figure 2.38), there is no evident seperation of two groups that could be interpreted as sheep and goats. Variation could be accounted for by sex or mixing of diverse populations.

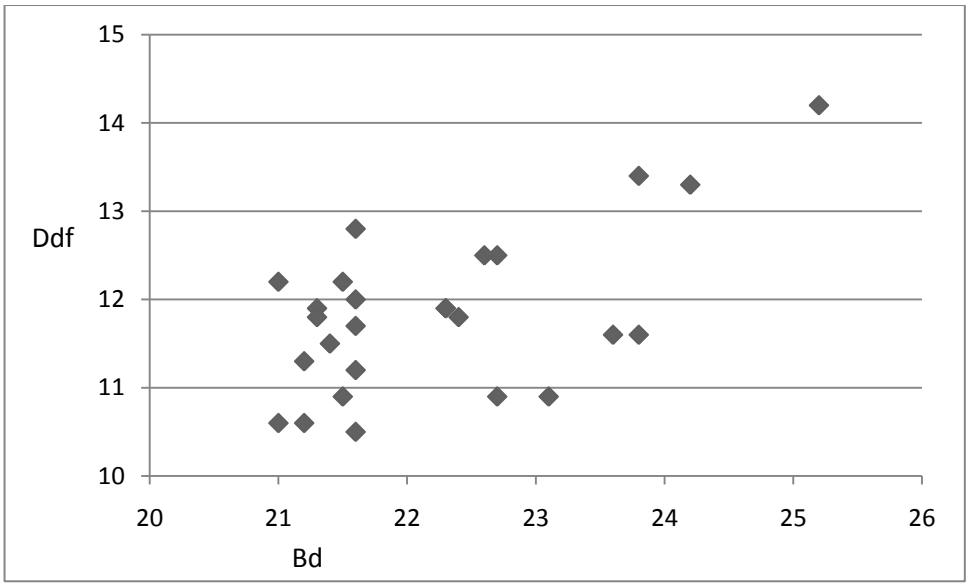

Figure 2.38: Medial condyle of sheep/goat metacarpals, Middle Iron Age N = 25

A2.6.5.1 Element representation

Sheep/goat elements are shown in Figures 2.39 and 2.40. All areas of the body are well represented. The radius and tibia are better represented that the other limb bones, in both the NISP and MNE, and this may be because the shafts are more robust than other elements. However, it appears that animals were arriving at the hillfort entire.

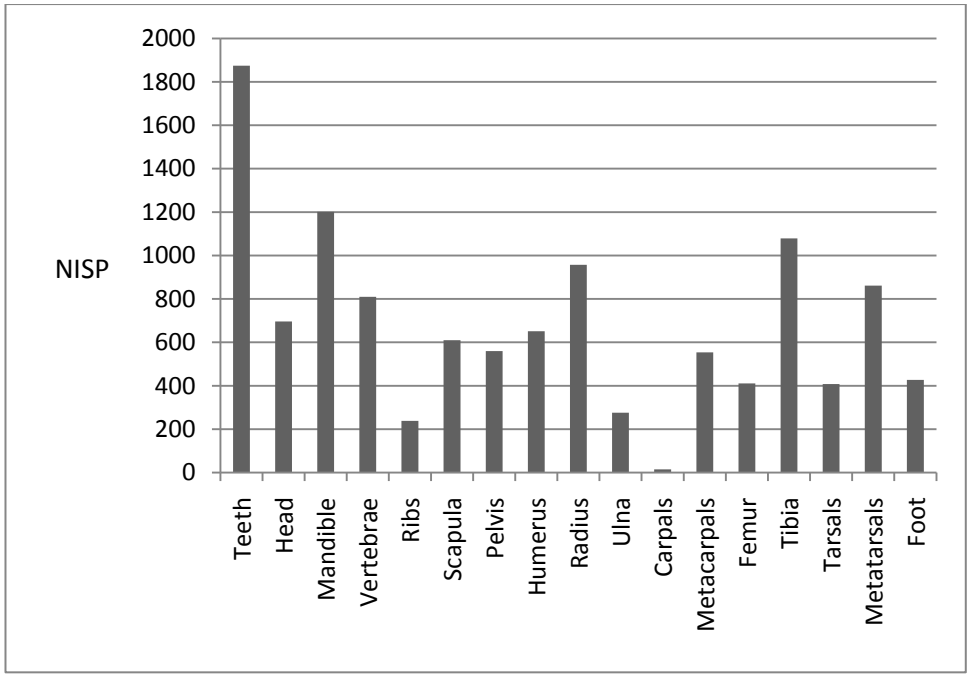

Figure 2.39: Representation of sheep/goat elements, Middle Iron Age. NISP. N = 11628 (Compare with MNI = 386)

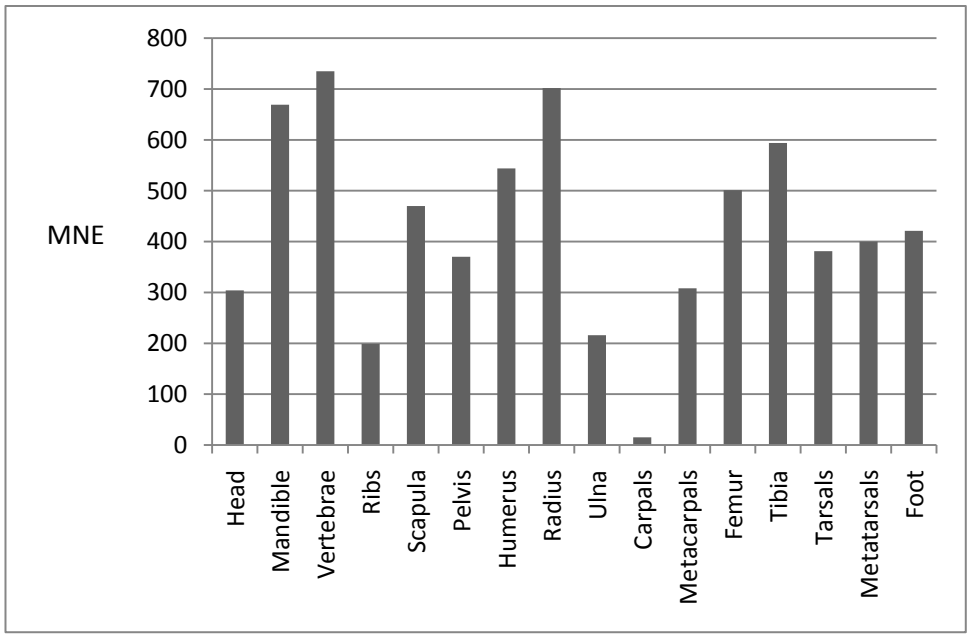

Figure 2.40: Representation of sheep/goat elements, Middle Iron Age. MNE. N = 6829 (Compare with MNI = 386)

A2.6.5.2 Age and herd structure

Mandible wear stages for all the sheep/goat mandibles that could be assessed or reliably estimated are shown in Figure 2.41.

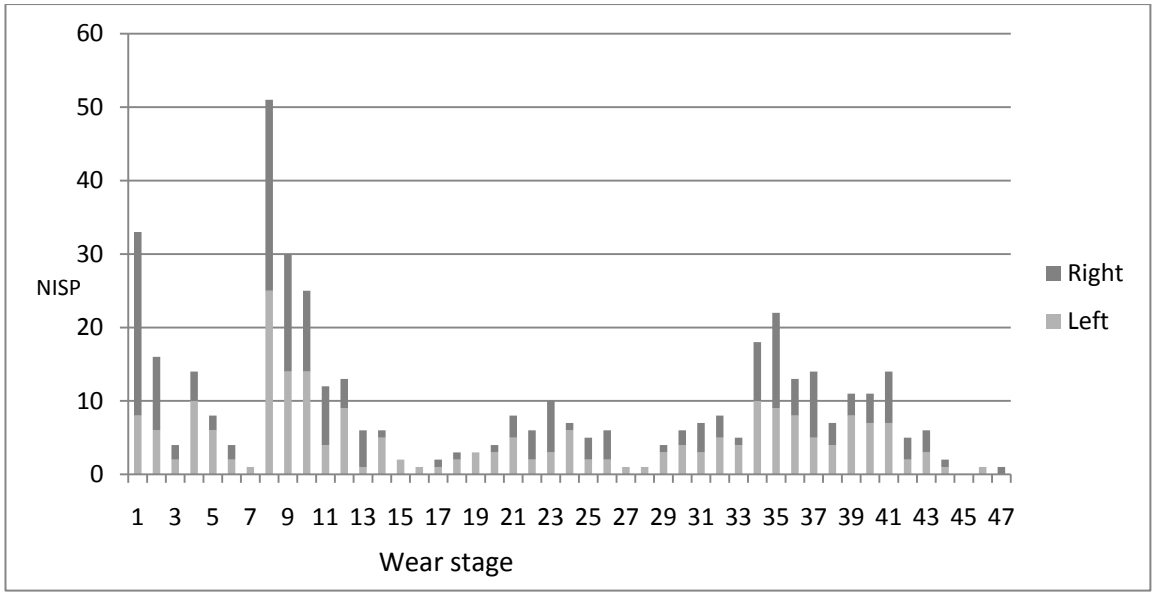

Figure 2.41: Grant Mandible Wear Stages for sheep/goat, Middle Iron Age. N = 437

There are a number of clear peaks in this plot, with evidence of plenty of neonatal or young juvenile individuals which probably indicate that lambing was taking place in the vicinity. The greatest peak is at Stage 8, representing individuals about six months old with elevated but falling numbers in the subsequent phases. This is followed by a minor peak around MWS 23, around 18 months old. A broader peak in deaths occurs around MWS 35 (3 ½ years old) continuing at a reasonable level to MWS 41 (four years) with a small number of animals lasting into their sixth or seventh year. This pattern can be further appreciated by considering the Payne Stage kill off curve in Figure 2.42. This emphasises the considerable number of individuals being removed from the herd during Stage C.

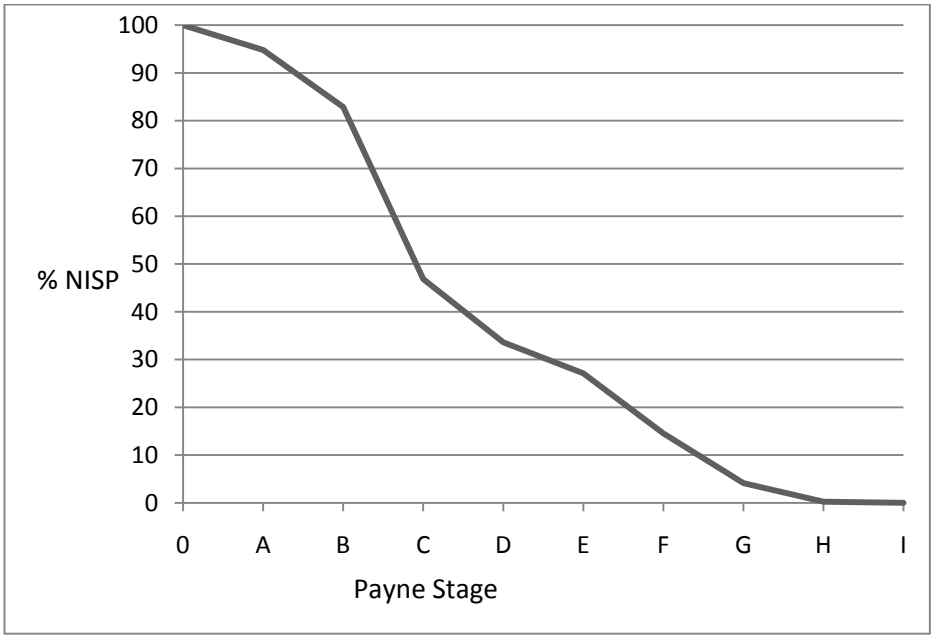

Figure 2.42: Sheep/Goat kill off profile using Payne wear stages, Middle Iron Age. N = 461

The fusion data (Table 2.23) broadly supports this pattern in the greater number of deaths in younger as opposed to older individuals. Combined, the information reflects a strictly organised approach to flock husbandry, in which a defined strategy is being consistently applied. If young animals were being slaughtered at the hillfort or removed purely to manage a ewe flock farmed for secondary products, the steepest point on the curve would probably occur at Stage A or B. However, not all animals were needed to replenish the flock, and retaining males would be problematic unless they were castrated. The presence of a considerable number of older individuals indicates that breeding stock were probably being retained for a number of lambings. The majority of the surplus stock, probably the males, would need to be removed, but because they were retained into the first winter, they were being utilised as a considerable source of meat. Whilst there is a sharp peak at MWS 8, the high numbers being culled at MWS 9-12, may relate to toothwear variation but could also imply that there was not one single event of slaughter, but it was extended through the winter months. It seems unlikely that management would be consistently unsuccessful in overwintering and foddering stock, and it is regarded as more likely that this pattern is a genuine artefact of the management and subsistence strategy.

Table 2.23: Fusion in sheep/goat, Middle Age.

Fusion date		Element	Fused	Unfused
Early Fusing	(6-8mths)	Scapula, glenoid	233	75
	(6-10mths)	Pelvis, acetabulum	389	61
	(10mths)	Humerus, distal	294	100
	(10mths)	Radius, proximal	252	66
Later fusing	(18-24mths)	Metacarpal, distal	47	114
	(20-28mths)	Metatarsal, distal	78	174
	(18-24mths)	Tibia, distal	243	170
Latest fusing	(30-36mths)	Calcaneus	81	102
	(36-42 mths)	Humerus, proximal	31	86
	(36mths)	Radius, distal	68	173
	(30mths)	Ulna	34	83
	(30-36mths)	Femur, proximal	60	117
	(36-42mths)	Femur, distal	48	128
	(36-42mths)	Tibia, proximal	48	111

In seeking to clarify the flock profile, a method for identifying sex, used in cattle, was applied to sheep/goat. The comparison of the dimensions of the breadth of the distal metacarpal with the depth of the distal fusion point is shown in Figure 43. This does seem to indicate clustering of measurements. It is likely that there is minimal skewing of the results from the presence of goats in view of their scarcity. There are two groups, one a definite tight cluster of smaller animals, and a slightly smaller, looser group of larger individuals. It is assumed that the smaller, more gracile individuals are female, as they are in cattle. The looser group of slightly more robust animals may relate to rams, but also possibly to castrates kept for wool.

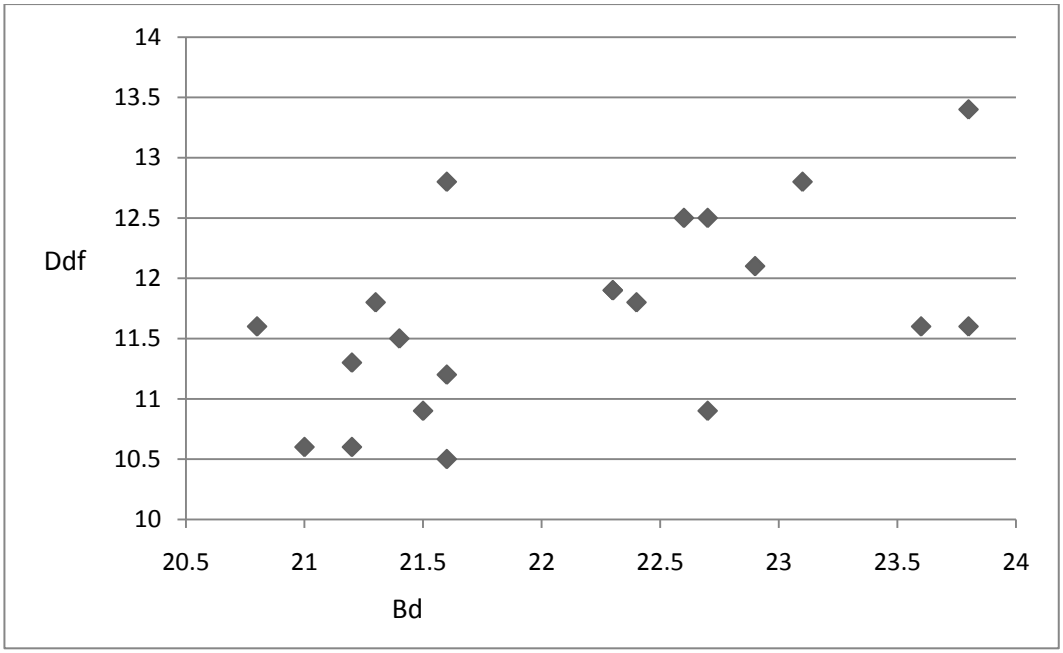

Figure 2.43: Distal sheep/goat metacarpals, comparison of distal breadth and depth of the distal fusion point, Middle Iron Age. N = 21

A2.6.5.3 Pathology

A large number of sheep/goat elements were recorded as having pathological changes which are detailed in Table 2.24. This is dominated by oral problems but also indicates degenerative joint changes, fractures and a small number of non specific infections.

Table 2,24: Pathological elements for sheep/goat, Middle Iron Age.

Site	Context	Element	Part	Type	Comment
SC/B	716	Rib	Shaft	Fracture	Healed
SC/D	521	Lumbar vertebra	Neural arch	Vertebral DJD	
SC/C	818	Humerus	Distal articulation	Degenerative change	
SC/C	656A	Humerus	Distal articulation	Degenerative change	
SC/K	944	Humerus	Distal articulation	Degenerative change	
SC/B	412H	Humerus	Distal articulation	Penning elbow	
SC/C	354C	Humerus	Distal articulation	Penning elbow	
SC/D	513	Humerus	Distal articulation	Penning elbow	
SC/F	440	Humerus	Distal articulation	Penning elbow	
SC/S	209B	Humerus	Distal articulation	Penning elbow	
SC/T	325	Humerus	Distal articulation	Penning elbow	
SC/G	094C E	Humerus	Distal articulation	Penning elbow?	
SC/C	409E	Radius	Proximal articulation	Degenerative change	
SC/E	920	Radius	Proximal articulation	Degenerative change	
SC/C	409E	Radius	Proximal articulation	Penning elbow	
SC/C	605D	Radius	Proximal shaft	Penning elbow	
SC/L	108C	Radius	Proximal articulation	Penning elbow?	
SC/C	061	Radius	Proximal shaft	Periostitis	
SC/G	112C	Tibia	Shaft	Greenstick fracture?	Healed
SC/K	690	Tibia	Distal shaft	NSI	Inactive
SC/L	609/610	Tibia	Shaft	Periostitis	Active
SC/C	605D	Ulna	Coracoid process	Penning elbow	
SC/D	628	Metacarpal	Proximal articulation	Enthesophyte	

SC/K	628	Metatarsal	Shaft	Enthesophytes	
SC/D	737	Metatarsal	Shaft and proximal articulation	Degenerative change and fracture	
SC/C	409E	Radius	Proximal articulation	Degenerative change	
SC/K	642	Metatarsal	Proximal	Ricketts equivalent?	
SC/G	112E	1st Phalanx	Proximal articulation	Degenerative change	
SC/T	318A	1st Phalanx	Proximal articulation	Degenerative change	
SC/P	902C	Calcaneus	Tuberosity	Enthesophytes	
SC/C	809	Naviculo-cuboid	Proximal facet	Degenerative change	
SC/K	690	Scapula	Glenoid	Non-metric variation?	
SC/K	690	Pelvis	Tuber sacrale	Degenerative change	
SC/L	058	Pelvis	Tuber sacrale	Degenerative change	
SC/L	058	Pelvis	Tuber sacrale	Degenerative change	
SC/L	058	Pelvis	Tuber sacrale	Degenerative change	
SC/F	398	Pelvis	Tuber sacrale	Osteoarthritis	
SC/L	404	Pelvis	Illium	Periostitis	
SC/A	23	Mandible	P4-M1	Periodontal disease	Slight
SC/D	521	Mandible	P4-M1	Periodontal disease	Slight
SC/C	766	Mandible	Tooth row	Periodontal disease	Slight
SC/C	204A	Mandible	M1-2	Periodontal disease	Slight
SC/C	204A	Mandible	Tooth row	Periodontal disease	Severe
SC/C	354A	Mandible	P4-M1	Periodontal disease	Slight
SC/D	518	Mandible	P4-M1	Periodontal disease	Moderate
SC/C	409F	Mandible	Tooth row	Periodontal disease	Severe
SC/C	409F	Mandible	Dp2-M1	Periodontal disease	Moderate
SC/D	517	Mandible	P4-M1	Periodontal disease	Moderate
SC/D	624	Mandible	P4-M1	Periodontal disease	Slight
SC/D	629	Mandible	Tooth row	Periodontal disease	Slight
SC/D	737	Mandible	M3	Periodontal disease	Slight
SC/D	737	Mandible	P4	Periodontal disease	Severe
SC/F	644	Mandible	P4-M1	Periodontal disease	Slight
SC/F	439B	Mandible	M1	Periodontal disease	Slight
SC/K	690	Mandible	M1-2	Periodontal disease	Slight
SC/L	208	Mandible	P4-M1	Periodontal disease	Slight
SC/L	648,649	Mandible	P4-M1	Periodontal disease	Severe
SC/N	802	Mandible	P4-M1	Periodontal disease	Moderate
SC/P	422A	Mandible	P4-M1	Periodontal disease	Slight
SC/S	070	Mandible	P3-4	Periodontal disease	Moderate
SC/T	318F	Mandible	M1-2	Periodontal disease	Slight
SC/P	553	Mandible	P4-M1	Periodontal disease and abcess	Severe
SC/P	902C	Mandible	P4-M2	Periodontal disease and malocclusion	Severe
SC/D	629	Mandible	M1,2	Periodontal disease and calculus	Moderate
SC/D	737	Mandible	P4-M1	Periodontal disease and calculus	Moderate
SC/E	920D	Mandible	P3-4	Periodontal disease and calculus	Moderate
SC/P	157	Mandible	P4-M1	Periodontal disease and calculus	Severe
SC/P	360B	Mandible	Tooth row	Periodontal disease and calculus	Moderate
SC/C	354E	Mandible	Tooth row	Calculus	Moderate
SC/B	804C	Mandible	P3-M3	Calculus	Severe
SC/A	151/170	Mandible	Dp4	Calculus	Slight
SC/C	660	Mandible	Dp4,M1	Calculus	Moderate
SC/D	510	Mandible	P3-M3	Calculus	Severe
SC/D	520	Mandible	P3-M3	Calculus	Moderate
SC/D	513	Mandible	P3,4	Calculus	Moderate
SC/D	628	Mandible	Tooth row	Calculus	Moderate
SC/D	518	Mandible	P3-M3	Calculus	Severe
SC/D	629	Mandible	M1,2	Calculus	Slight
SC/D	835	Mandible	Dp3,4	Calculus	Moderate
SC/D	522	Mandible	Dp4 M1	Calculus	Moderate

SC/D	612	Mandible	Dp4-2	Calculus	Slight
SC/D	835	Mandible	Dp2-4	Calculus	Slight
SC/D	835	Mandible	Dp3-4	Calculus	Slight
SC/D	835	Mandible	Dp3-4	Calculus	Moderate
SC/D	835	Mandible	P3-M3	Calculus	Moderate
SC/D	835	Mandible	M1	Calculus	Moderate
SC/D	835	Mandible	M1	Calculus	Slight
SC/D	835	Mandible	P3-M3	Calculus	Severe
SC/E	920D	Mandible	Dp3	Calculus	Severe
SC/F	658A	Mandible	Dp3,4	Calculus	Severe
SC/G	112E	Mandible	P3	Calculus	Severe
SC/K	628	Mandible	Dp2-4	Calculus	Slight
SC/K	628	Mandible	M1	Calculus	Slight
SC/K	642	Mandible	P4,M1,2	Calculus	Slight
SC/K	687	Mandible	Dp4,M1	Calculus	Slight
SC/L	404	Mandible	P3-M2	Calculus	Moderate
SC/L	648	Mandible	M1-3	Calculus	Moderate
SC/P	157	Mandible	Dp3-M1	Calculus	Moderate
SC/P	758E	Mandible	Dp2-M1	Calculus	Moderate
SC/S	153	Mandible	M1-2	Calculus	Slight
SC/S	153	Mandible	P3-M2	Calculus	Slight
SC/T	266	Mandible	Tooth row	Calculus	Moderate
SC/T	328	Mandible	Dp3,4	Calculus	Moderate
SC/G	117C	Mandible	P4-M2	Calculus and malocclusion	Severe
SC/D	839	Mandible	Dp4	Calculus and malocclusion	Moderate
SC/D	835	Mandible	M1-3	Calculus and malocclusion	Moderate
SC/L	108B	Mandible	P4-M1	Calculus and malocclusion	Slight
SC/D	512	Mandible	P4-M1	Malocclusion	

'Penning elbow' appears for the first time at a quantifiable level. It occurred in ten cases, and compared to the 283 distal areas of the humerus that might exhibit change, accounts for 3.53%. This level does not seem to indicate grazing of animals on hard or steep land. However, it should be considered that a large number of animals were dying at an early stage, before changes would have started to occur. There are few examples of non-specific infections or fractures. This implies that these either occurred at very low levels or affected animals were dispatched before a bone response could occur. The number of mandibles displaying calculus or periodontal disease were 9.46% and 6.67% of total mandibles for which the tooth row area was present. These levels are low, but significant given the early age at death of most animals. These issues will be considered further in comparison to the Late Iron Age.

A2.6.6 Dog

A2.6.6.1 Element representation

163 fragments of dog bone were identified, and these are shown in Figures 2.44 and2. 45. There is an unusually representation of vertebrae in this assemblage considered as NISP or MNE. One would normally assume that vertebrae would be subject to a higher degree of fragmentation. However, their presence in this assemblage, may imply that dog remains were deposited largely articulated and may have later been disturbed rather than having been fragmented prior to deposition. There is severe under-representation of foot elements that may be taphonomic, or related to recovery bias.

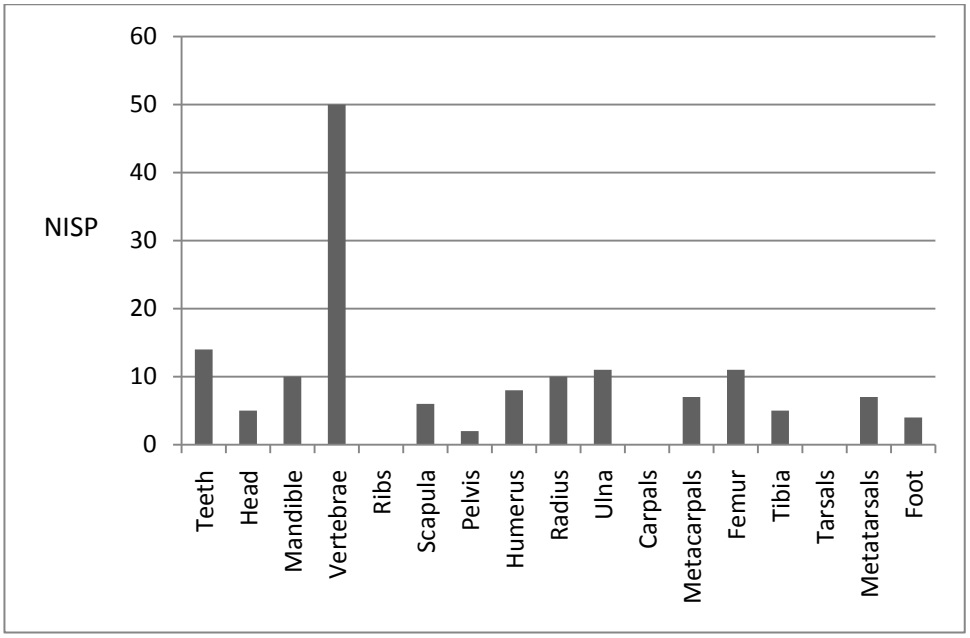

Figure 2.44: Representation of dog elements, Middle Iron Age. NISP. N = 150 (Compare to MNI = 6)

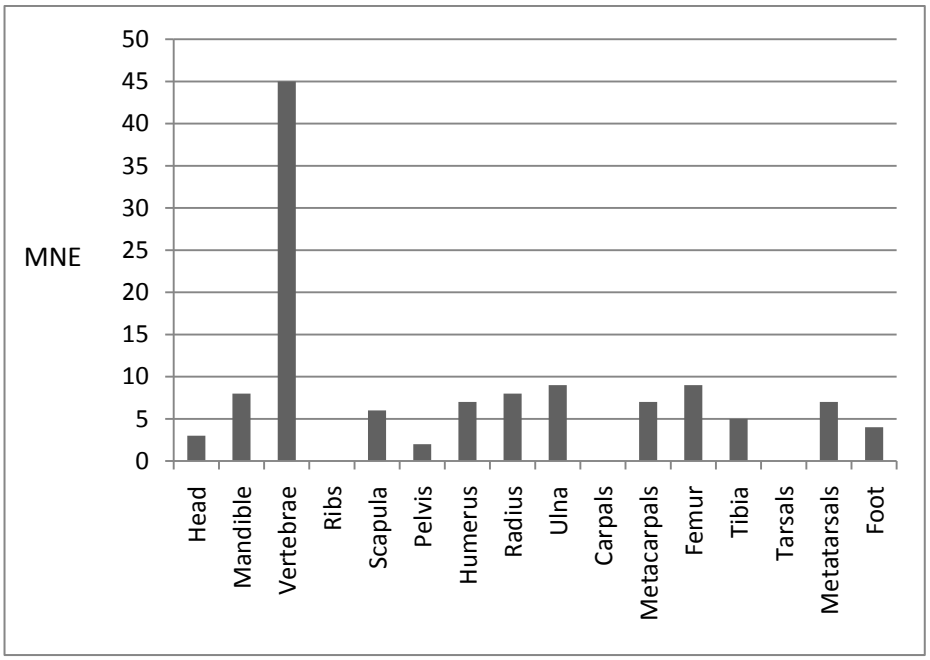

Figure 2.45: Representation of dog elements, Middle Iron Age. MNE. N = 120 (Compare to MNI = 6)

A2.6.6.2 Age

Six fragments of dog bone were recorded as porous. The fusion state of dog bones is shown in Table 2.25. This indicates the presence of both fully mature and younger individuals. No bacula were noted, and the sex of the individuals is not known.

Table 2.25: Fusion states of dog elements, Middle Iron Age.

Fusion date	Element	Fused	Unfused
Early Fusing	Scapula, glenoid	6	0
	Humerus, distal	5	1
	Radius, proximal	5	1
Later fusing	Metacarpal, distal	5	0
	Metatarsal, distal	7	0
	Tibia, distal	4	0
Latest fusing	Humerus, proximal	1	1
	Radius, distal	6	2
	Ulna	6	1
	Femur, proximal	5	2
	Femur, distal	7	3
	Tibia, proximal	3	0

A2.6.6.3 Pathology

Three elements were recorded as having pathological changes and these are given in Table 2.26. Whilst the sample is small, it is notable that two of these cases involve fractures. High proportions of fractures to dogs have been noted at other sites. In both of these cases the fractures are well healed and may indicate that the animal(s) were well cared for. They certainly survived long after the injury.

Table 2.26: Pathological elements for dog, Middle Iron Age.

Site	Context	Element	Part	Type	Comment
SC/W	098	Lumbar vertebra	Spinous process	Fracture	Well healed
SC/S	209	Tibia	Distal articulation	DJD	Slight
SC/G	094A D	Tibia	Proximal shaft	Fracture	Well healed

A2.6.7 Horse

A2.6.7.1 Element representation

A total of 392 elements were recorded for horse in the Middle Iron Age assemblage and the distribution of the elements through the body are shown in Figures 2.46 and 2.47. The assemblage is dominated by loose teeth (48%), and this may indicate a greater degree of fragmentation than other species. However, there is a slight elevation in the number of fragments from the head and mandible and 13 of the 17 vertebral fragments are cervical. Excluding loose teeth, the assemblage is still dominated by head and neck fragments and feet and lower legs (Figure 48). Most elements occur relatively evenly based on a MNI of six individuals (five adults from the right femur, plus a juvenile scapula). The humerus is badly represented, but the apparent bias to heads and feet is reduced, suggesting that fragmentation, robustness of elements and identification of fragmented axial and limb bones may explain this.

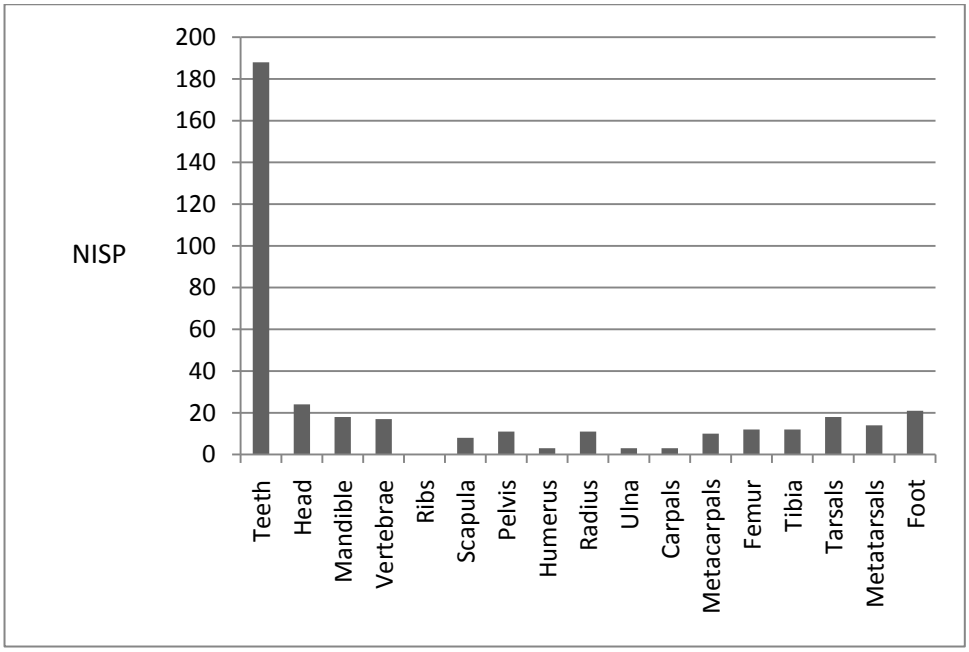

Figure 2.46: Representation of horse elements, Middle Iron Age. NISP. N = 373 (Compare MNI = 6).

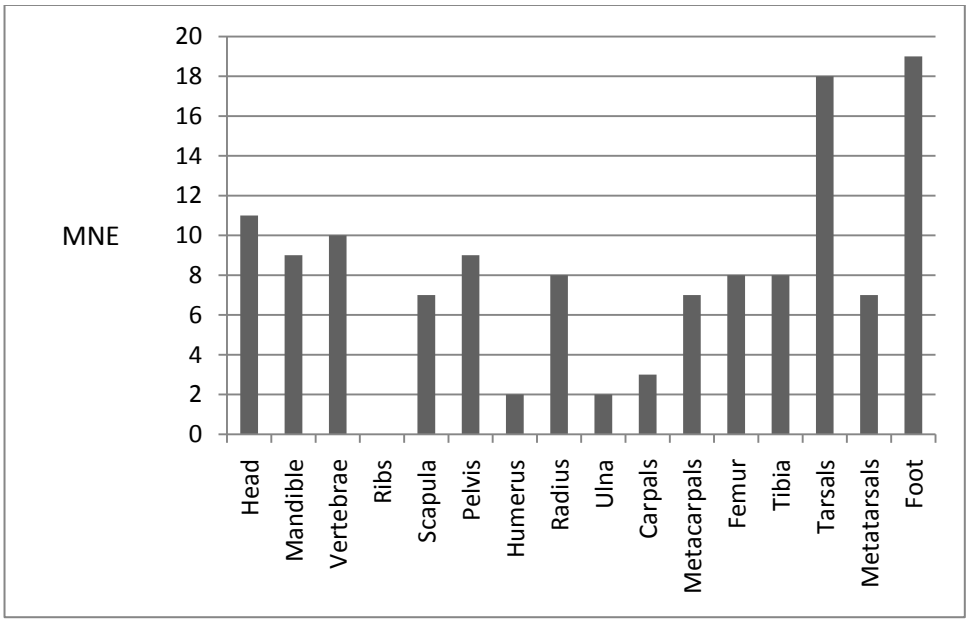

Figure 2.47: Representation of horse elements, Middle Iron Age. MNE. N = 128 (Compare MNI = 6).

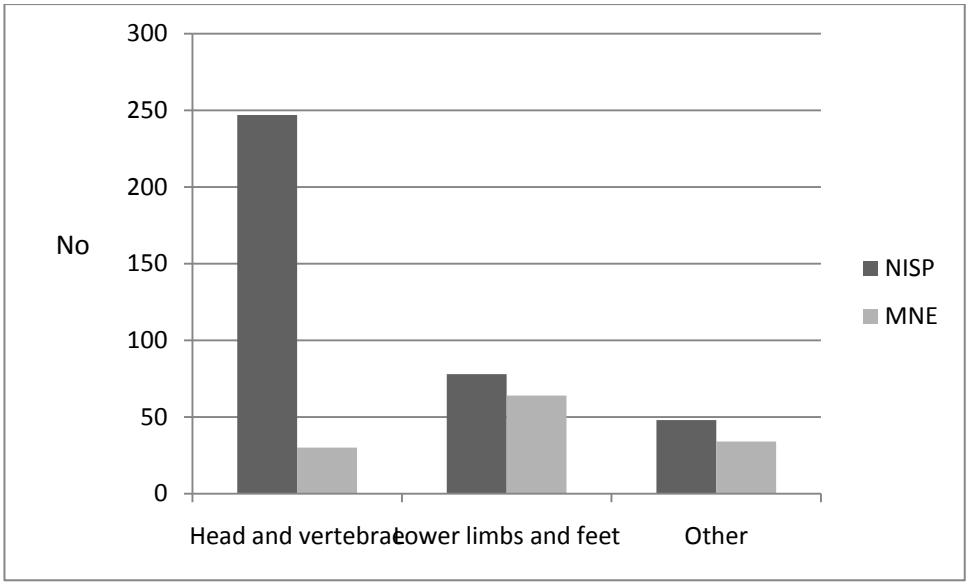

Figure 2.48: Horse elements, excluding loose teeth, by body area, Middle Iron Age. NISP = 373 MNE = 128

A2.6.7.2 Age

Six porous horse bone fragments (3%) were recorded indicating the presence of adult and juvenile individuals. The state of fusion of elements is shown in Table 2.27. This indicates that whilst there are some individuals likely to be under the age of 18 months of age at death, the majority of individuals were skeletally mature. Whilst most teeth were from the permanent dentition, a number of deciduous teeth were noted. Most teeth were worn or very worn, indicating the presence of older individuals.

Table 2.27: Fusion information, horse, Middle Iron Age

Fusion date	Element	Fused	Unfused
Early Fusing (12mths)	Scapula, glenoid	4	0
(18-24mths)	Pelvis, acetabulum	9	0
(15-18mths)	Humerus, distal	1	0
(15-18mths)	Radius, proximal	3	0
Later fusing (15-18mths)	Metacarpal, distal	4	2
(16-20mths)	Metatarsal, distal	5	0
(20-24mths)	Tibia, distal	8	0
Latest fusing (36mths)	Calcaneus	4	2
(36-42mths)	Humerus, proximal	1	0
(42mths)	Radius, distal	7	0
(36-42mths)	Femur, proximal	2	1
(36-42mths)	Femur, distal	2	1
(36-42mths)	Tibia, proximal	2	0

A2.6.7.3 Pathology

A number of pathological conditions were noted in horse bone and are given in Table 2.28. Apart from a single case of non-specific infection, these all relate to degenerative disease of the joint, in particular the lower limb and hip, with the emphasis being on the rear limb joints. This is testimony to the probable age at death of the animals, but indicates that animals were retained even when they had advanced disease that may have affected their movement. The location and type of disease might indicate use of animals for traction.

Table 2.28: Pathological elements for horse, Middle Iron Age.

Site	Context	Element	Part	Type	Comment
SC/P	403A	Femur	Shaft	Periostitis	Active?
SC/L	609/610	Metatarsal	Proximal articulation	DJD	
SC/S	208	Metatarsal	Proximal articulation	Spavin	
SC/A	23	Metatarsal	Proximal articulation	Osteoarthritis	Advanced
SC/D	611	Pelvis	Acetabulum	Degenerative change	
SC/K	696	Pelvis	Acetabulum	Degenerative change	
SC/D	517	Cuneiform	Anterior	Spavin	

A2.6.8 Wild Species

97 fragments of amphibian bone were recorded, exclusively frog, including juveniles. 117 small mammal bones were recorded, about half being rabbit, often from bank contexts and indicating a degree of intrusion. Other species included bank voles and post-cranial elements of small rodents, which may also be intrusive, but equally may represent pit-fall victims. The numbers are however very small, and given the lack of sieving, the hand collected sample is likely to be heavily biased, so further analysis does not appear warranted.

The total numbers of larger wild species and birds are very low. Deer are the most frequently represented, but still only provide a total of 14 fragments, all but two of them antler. Red and roe deer have been identified, but roe deer was also indicated by a small fragment of metapodial and part of a scapula. Most of the antler consists of small fragments of tine, several with cut marks, and may represent the debris from antler working. One red deer antler fragment appears to have been naturally shed, so it is likely in the absence of many other parts of the anatomy that most of the antler was collected rather than the result of hunting. Hare comprises the next most common species, with a total of nine fragments from a minimum number of two individuals, represented by three fragments of pelvis, three tibiae, and single examples of ulna, scapula and astragalus. None have signs of butchery, although one tibia has a helical break akin to fragmentation in other species. Four cat bones were recovered, a left and right radius and an ulna, all fused, from a single context that may represent the remains of a single individual, and a mandible fragment. There is too little evidence to consider whether these animals were wild or domestic. A single fox mandible was noted.

Bird bones comprised 62 fragments. The species identified are shown in Figure 2.49, with the ducks comprising probable teal and pintail types. The gull is probably a kittiwake. This is a very limited selection of species, with the majority, the ravens and buzzards, probably being present in the immediate environment.

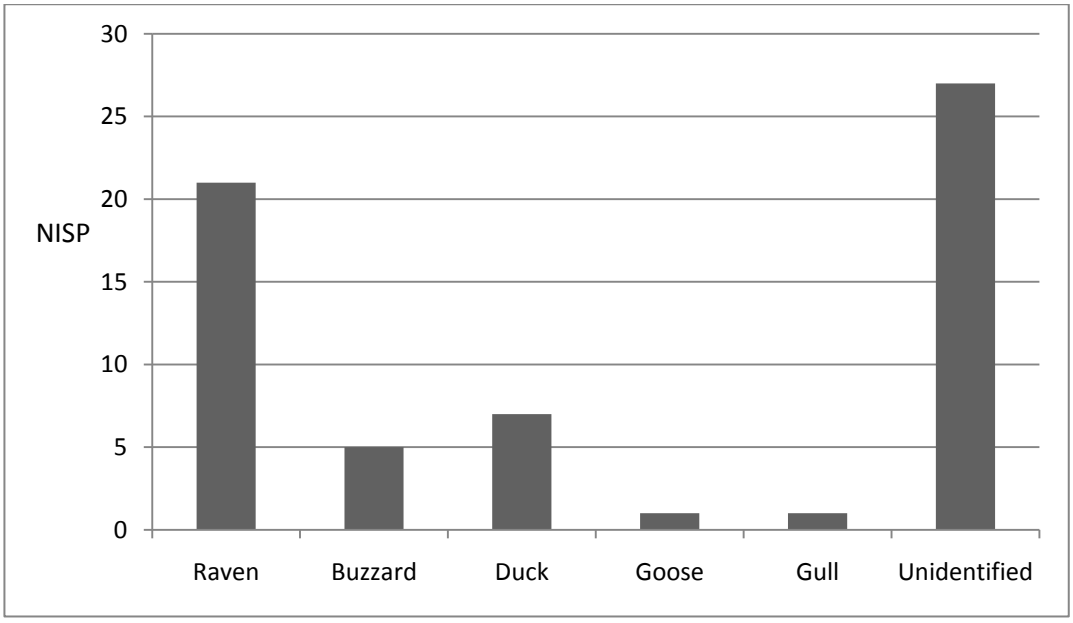

Figure 2.49: Bird species, Middle Iron Age. N = 62.

A2.6.9 Associated Bone Groups and complete skulls

A considerable number of associated bone groups were identified during analysis and are presented in Table 2.29.

Table 2.29: Associated bone groups, Middle Iron Age. Total number of fragments = 608

Site	Context	Species	Part(s)	Age	Other information
B	357	Crow	Partial	Adult	
C	206	Cow	Articulated toe	Adult	Butchery waste?
C	766	Cow	Articulated right leg and part foot	Adult	Butchery waste?
P	156B	Cow	Articulating toe	Adult	Butchery waste?
K	687	Cow	Four articulating right carpals	Adult	Butchery waste?
C	252	Cow	Part Skull	Adult	
C	054D	Cow	Part Skull	Adult	
C	655A	Cow	Part Skull	Adult	
C	655A	Cow	Part Skull	Adult	Not same as previous
C	660B	Cow	Part Skull	Adult	
D	960	Cow	Part Skull	Adult	
C	054C	Cow	Skull, almost entire	Adult	
C	352A	Cow	Skull, almost entire	Adult	
D	513	Cow	Skull, almost entire	Adult	
D	518	Cow	Skull, almost entire	Adult	
L	626/627	Cow	Skull, almost entire	Adult	
P	618A	Cow	Skull, almost entire	Adult	
S	207	Cow	Skull, almost entire	Adult	
T	254C	Cow	Skull, almost entire	Adult	

C	106C	Cow	Skull, entire	Adult	
S	153	Cow	Skull, entire	Adult	
C	655	Cow	Two skulls, almost entire	Adult	
L	58	Cow	Two skulls, almost entire	Adult	
T	254C	Dog	Mandibles, lumbar spine and pelvis	Adult	Butchery waste?
D	737	Dog	Skull entire	Adult	
C	766	Dog	Skull, mandible, entire	Adult	
P	157	Dog	Three articulating lumbar vertebrae	Adult	Butchery waste?
C	766B	Dog	Two articulating lumbar vertebrae	Adult	Butchery waste?
E	988	Horse	Articulating part foot	Adult	Butchery waste?
P	422B	Horse	Articulating part foot	Adult	Butchery waste?
D	737	Horse	Articulating toe	Adult	Butchery waste?
D	510	Horse	Part burial, limbs and scapula	Juvenile	Foetal
C	655B	Horse	Skull, almost entire	Adult	
C	655	Horse	Skull, almost entire, part mandible	Adult	
T	254C	Horse	Skull, partial	Adult	
B	754B	Pig	Part Skull	Porous	Butchery waste?
C	702	Pig	Skull, almost entire 75%	Adult	
D	629	Pig	Two articulating lumbar vertebrae	Adult	Butchery waste?
C	540	Sheep/Goat	Two articulating thoracic vertebrae	Adult	Butchery waste?
L	58	Sheep/Goat	Articulating axis and cervical vertebra	Adult	Butchery waste?
P	618A	Sheep/Goat	Articulating axis and cervical vertebra	Adult	Butchery waste?
E	724	Sheep/Goat	Articulating leg, left	Adult	Butchery waste?
P	062D	Sheep/Goat	Articulating right lower front leg	Adult	Butchery waste?
C	307	Sheep/Goat	Articulating toes	Adult	Butchery waste?
C	409F	Sheep/Goat	Part Skull 50%	Adult	Butchery waste?
D	513	Sheep/Goat	Part Skull 50%	Adult	Butchery waste?
D	835	Sheep/Goat	Skull, almost entire 90%	Adult	
D	835	Sheep/Goat	Three articulating lumbar vertebrae	Adult	Butchery waste?
K	687	Sheep/Goat	Two articulating cervical vertebrae	Adult	Butchery waste?
C	655	Sheep/Goat	Two articulating lumbar vertebrae	Adult	Butchery waste?
G	112E	Sheep/Goat	Two articulating lumbar vertebrae	Adult	Butchery waste?
T	254C	Sheep/Goat	Two articulating lumbar vertebrae	Adult	Butchery waste?

There are evidently a variety of explanations for the selection of part bodies recorded as associated. The types of ABGs are shown in Figure 2.50, arranged by species.

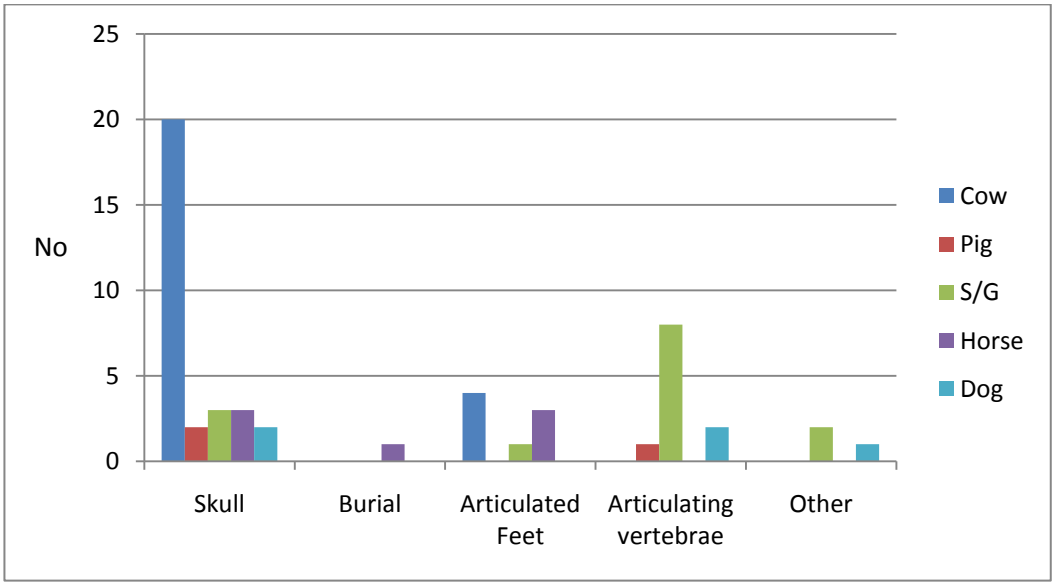

Figure 2.50: Type of ABG by species, general Middle Iron Age. N = 52

Notwithstanding the issues surrounding regarding skulls as 'special' there does appear to be an emphasis on particular species occurring as heads or as articulating feet or portions of spinal column. The only case to fall into the 'burial' category here is significant, not only because of the occurrence of fully articulated burials of cattle elsewhere on the hillfort, but because this comprises a foetal horse. As such it was probably not deliberately deposited, but is of importance in indicating that in-foal mares were present on the hill. Apart from this case, cattle and horses both only occur as skulls or articulated feet. Dogs have a contrasting incidence as heads, articulating vertebrae and limbs. This is most similar to the incidence of sheep ABGs, although those also include a few feet and are dominated by articulating vertebrae. Pigs are represented by a handful of cases and it appears that they were less prone to remaining in large enough portions to be recorded as associated. Given that in the main the articulating feet and vertebrae are collections of a handful of elements in each case, and some of them show direct evidence of butchery, they probably represent butchery waste, as do the few articulating limbs. This would therefore cover the majority of sheep bone. The general sense is that there is little material that fits readily into a 'special' definition, as almost all of the material can be regarded as the necessary result of the general butchery process.

Complete, or near complete skulls may have retained some significance, particularly in cases where multiple skulls were deposited together, or were deposited with other objects of interest. There does seem to be a concentration on cattle and horse, and these cases stand out when considered in contrast to the generally highly fragmented nature of both cattle and horse skulls, and high incidence of loose horse teeth discussed above. The number of entire cattle skulls in particular may do something to redress the relative lack of cattle head elements expected from the general MNI. These skull deposits, therefore, can be argued to be part of the normal result of herd management and slaughter practices. This is not to say that the manner of deposition was not ritualised; the inclusion of skulls in contexts with other objects in a structured fashion appears to reflect a degree of consideration to the disposal. It may be that given the limited herd size, heavy regulation of that herd and the longevity of some of the cattle, as well as the horses, that they attained biographies of their own, and gained from humans a greater perception of personality which was retained after death.

A2.6.10 Discussion of the main Middle Iron Age assemblage

The main domestic species are heavily dominant in this assemblage, with a large proportion of sheep/goat, a predominance further emphasised when the percentage between the three main domestic species is examined. Cattle and pig are numerically inferior to sheep/goat. Cattle appear to have suffered greater fragmentation but all parts of the body were represented. The overall numbers appear to be limited, especially when compared to the sheep/goat portion of the economy. This fits well with cattle providing a specifically managed secondary resource. The cattle assemblage is dominated by very young animals (also contributing to the likelihood of taphonomic effects skewing the representation), many of them neonatal with a smaller group of adult and old adult individuals. Few animals appear to have been kept throughout a natural lifespan, with large numbers dying or culled soon after birth. The majority of older animals may have been cows. This might support the

interpretation of the age structure of the herd as being indicative of a cattle economy focussed around dairying. If it were mixed or focussed on meat production one might expect the peak in deaths of young cattle to be in the later juvenile or sub-adult wear stages.

Males are however well represented, and castrated males are likely to have been valuable in providing traction. The use of animals for this purpose appears to be supported by the proportion of pathologies affecting cattle that either are specific to traction or may relate to it. Close handling of animals may be suggested by a limited number of large mammal rib fractures whilst there is little indication of respiratory diseases which could be caused by housing or overcrowding. The Middle Iron Age cattle economy seems to have had secondary products as a focus, be it dairy or traction. Provision of meat from cattle does not seem to have been a high priority in this sample.

Pig elements are present from all regions of the body. The heads of pigs were subject to considerable fragmentation and there appears to be an under-representation of feet that might imply disposal of those elements for a proportion of individuals elsewhere. A small number of neonates and very young individuals were present and possibly indicate that farrowing took place within the hillfort or in the immediate vicinity. Unsurprisingly for pigs, there were very few old adults, with the majority of animals dying or being slaughtered in the late juvenile or early sub-adult stages, under two years of age. Pigs, unsurprisingly, were kept as a meat animal. However, unlike cattle and sheep/goat, there is less indication of a strong pattern to the age of death than occurs with the other livestock species. This may indicate that unless animals were being retained for breeding purposed, their slaughter may have been more based on necessity or immediate management of varying resources rather than on a longer term herd management strategy.

Evidence of sex seems to imply that a majority of animals deposited were males, and there does not seen to be a valid taphonomic reason for this. If pigs were raised elsewhere and animals not required for breeding (more likely to be males) were brought to the hillfort for consumption (and disposal), this would explain both the balance of males and females and the age groups represented. Pigs appear to have experienced a degree of nutritional stress, probably from having a less well regulated diet. Post-cranial pathologies may all relate to traumatic injury, either inflicted by other pigs or by people. Pigs can be injured when overcrowded. If pigs enjoyed a less integrated management, it might be suggested that, whereas cattle and sheep/goat may have been managed on a larger scale, perhaps communally, pigs may have been a smaller scale, more individualised or household enterprise, killed as and when meat was required, rather than to a prescribed timescale.

Sheep/goat appear to have been arriving at the hillfort entire, as all areas of the body are well represented. Very few of the animals were identified as goats, and they probably never exceeded 5% of the flock on any measure. The sheep/goat assemblage seems to indicate a highly managed flock, with an organised approach to flock husbandry, with the flock run with very particular aims, consistently applied. The greatest proportion of deaths occurs at Payne Stage C, that is animals 6-12 months old. If young animals were being removed purely to manage a ewe flock farmed for secondary products, the steepest point on the curve would

probably occur at Stage A or B. However, not all animals would be needed to replenish the flock, and retaining males would be problematic unless they were castrated. The majority of the surplus stock, probably the males, would need to be removed, but because they were retained into the first winter, they were being utilised as a considerable source of meat. Slaughter was probably extended through the winter months, one of the main purposes being to provide a supply of meat.

The retention of older sheep, probably ewes, may indicate careful planning in the management of the breeding stock. Selection of good mothers with desirable traits probably occurred and they were probably retained for a number of lambings. These older animals also imply a dual purpose with the flock producing wool. A tentative consideration of proportions of the sexes within the flock using metrics seems to indicate a greater number of gracile, presumably female, animals, with a smaller looser group of more robust animals may relate to rams, or castrates kept for wool. Penning elbow occurs in 3.53% of available distal humeri. This level does not seem to indicate grazing of animals on hard or steep land. However, most animals were dying before changes would occur. The scarcity of other pathologies implies that they occurred at very low levels or affected animals were culled. Periodontal disease affected 6.67% of recorded jaws and calculus 9.46%. These levels are low, but significant given the early age at death of most animals.

Dogs may have been deposited in articulation. Both fully mature and younger individuals appear to have been present. Animals of varying sizes were represented and the limited pathological data indicate that they may have attracted more injuries compared to the small livestock. Most horses whose remains were disposed of on the hillfort were fully adult and many were probably fairly old, given the proportion of worn and very worn dentition. However, there were a few porous elements and a limited number of individuals under 18 months old were indicated. The pathologies indicate that these animals may have been used in riding and pulling vehicles. Limb bones are under-represented and they may have been disposed of elsewhere on the hill, or probably were subject to greater fragmentation. The number of loose teeth in the horse assemblage indicates particularly high rates of fragmentation in comparison to other animals, although there are some similarities to the cattle assemblage.

The total numbers of wild species and birds are very low, predominantly frogs and small mammals. Red and roe deer are the most frequently represented wild mammal species, but still only provide a total of 14 fragments, mainly representing the debris from antler working. Hare comprises the next most common species. There are no signs of butchery, although one tibia has a helical break akin to fragmentation in other species. Four cat bones are assumed to be from wild animals. A single fox mandible was noted. The 62 bird fragments include small numbers of seabirds, ducks of teal and pintail types, buzzard and predominantly ravens. The latter species were probably resident in the immediate area.

A2.7.0 Pit D817, Middle Iron Age

Pit D817 is a large pit immediately behind the ramparts on the south side of the hillfort. A series of fills in the pit proper (D817B, C, D, and E) produced a respectable assemblage of bone. In the top of the pit, probably after the contents had settled but before the formation of the tail of the later rampart, a large deposit of bone, recorded as D817, formed. This was a broad lens of bone some 30cm deep in the centre covering the whole of the top of the original pit.

A2.7.1 Species representation

Fragment counts and MNIs for the fills of the pit and the overlying bone deposit are given in Table 2.30.

Table 2.30: Species representation in Pit D817, split between the pit fill proper and the overlying bone deposit.

	Pit Fills D817B,C,D,E			Bone Deposit D817			
Species	**NISP**	**%**	**MNI**	**NISP**	**%**	**MNI**	**%**
Cow	27	18	2	356	9.18	7	10.14
Pig	20	13.3	2	355	9.15	12	17.39
S/G	103	68.7	5	3167	81.67	50	72.46
Dog	1		1	73		4	
Horse	1		1				
Large mammal	95			200			
Medium mammal	76			2412			
Unidentified	27			1566			
Total Main	**350**			**8129**			
Cat	1						
Bird				2			
Small mammals	2						
Total fragments	**353**			**8131**			

The main pit fills produced an assemblage that fits within the main Middle Iron Age distribution of species proportions. The cat bone is of unusual; there are four fragments in the main MIA assemblage. In addition, D817C contained an incomplete cattle skull, which was recorded in the original site records as deliberately placed. Around 50% of it was recorded, but many of the fragments included as large mammal-sized were skull fragments and possibly relate to that single skull.

The very large number of fragments from the single context of the main D817 deposit, appeared to have been deposited as a single event. It was noted during analysis that virtually all of the bone from the deposit had the same appearance, being the same colour and texture. There are also a large number of unfused elements to which loose epiphyses were refitted, and in some cases portions of limbs re-articulated. The D817 deposit therefore may comprise a series of ABGs. In addition, if it reflects a single event, it provides an opportunity to consider a statistically robust assemblage from a particular moment in time.

It can be seen from the species percentages that sheep/goat comprise by far the greatest majority of the bones recorded, at a higher level than the main Middle Iron Age assemblage (Figure 2.51). It is notable that in contrast to the main Middle Iron Age assemblage, the NISP to MNI ratio is reversed for cattle and pig. This reflects the much reduced proportion of loose teeth in the deposit at a combined total of 5.36% (further confirming the likely rapid deposition and burial), whilst the higher NISP to MNI count of sheep/goat is probably a result of the very large number of unfused epiphyses present in the deposit. The complete lack of horse bone is noteable.

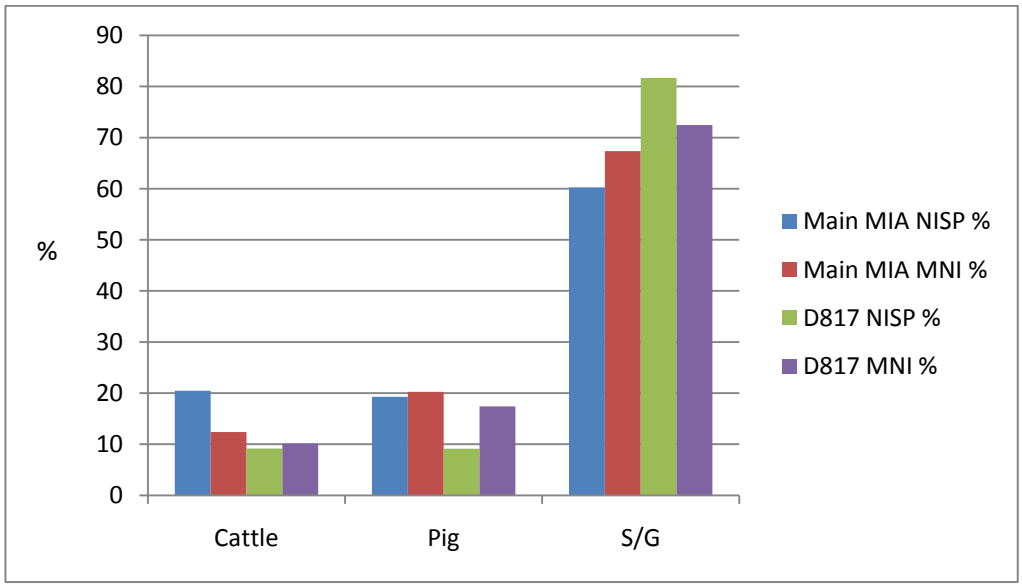

Figure 2.51: Proportions of the three main domestic species in the D817 main bone deposit compared with the main MIA assemblage. MIA NiSP = 19375 MNI = 573. D817 NISP = 878 MNI = 69.

A27.2 Taphonomy and butchery

Full analysis of taphonomic markers has not been carried out for reasons given above. However, Table 2.31 gives overall assemblage percentages. There appears to be a much lesser representation of fragments displaying gnawing, weathering and burning, and butchery, in the main D817 assemblage compared with the rest of the contents of the pit. These percentages are compared with the incidence in the main Middle Iron Age assemblage in Figure 52 and it is clear that the main D817 assemblage has a different taphonomic history from the rest of the Middle Iron Age assemblage. The considerably lower incidence of taphonomic changes supports its rapid deposition and covering. 224 of 234 (95.73%) were weathered. Only 6 fragments were gnawed, and 4 burned, and are consistent with a few fragments noted during recording as having a different patina from the rest of the deposit. These are probably residual.

Table 2.31: Overall incidence of taphonomic markers in the D817 and D817B-E assemblages.

	Gnawed, Weathered, and Burned fragments		**Butchered fragments**	
Deposit	**No**	**%**	**No**	**%**
D 817B-E	23	6.52	23	6.52
D817 Main	234	2.88	16	0.20

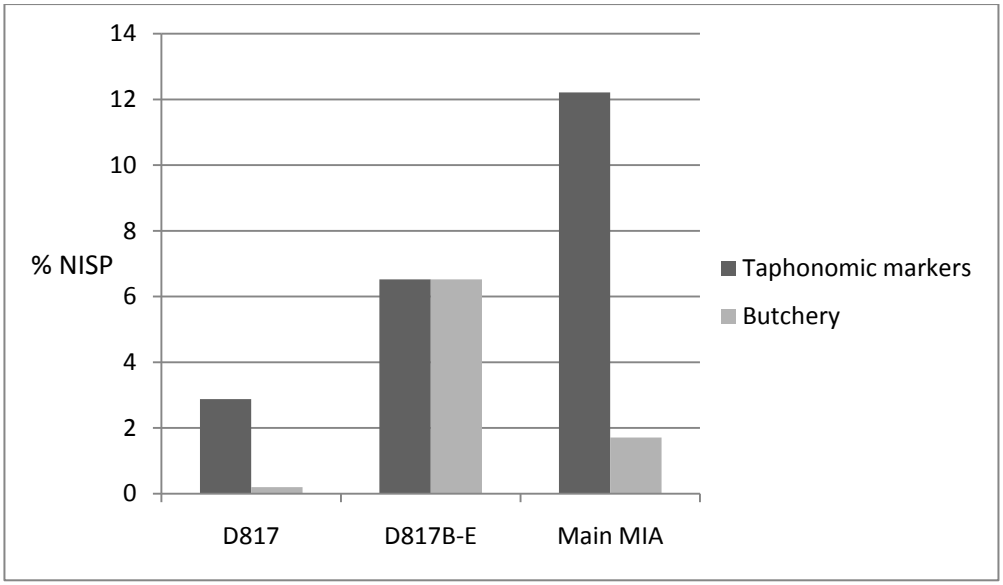

Figure 2.52: Percentage of total fragments displaying taphonomic markers and butchery, comparing the main D817 deposit (N = 250) with the D817B-E contexts (total N = 46) and the main Middle Iron Age assemblage (total N = 4329).

A2.7.3 Cattle

A2.7.3.1 Element representation

The cattle elements included in the deposit are shown in Figures 2.53 and 2.54. Whilst articulating elements and refitting epiphyses were noticed during recording, most of the the elements present represent less than half of what there should be for the MNI.

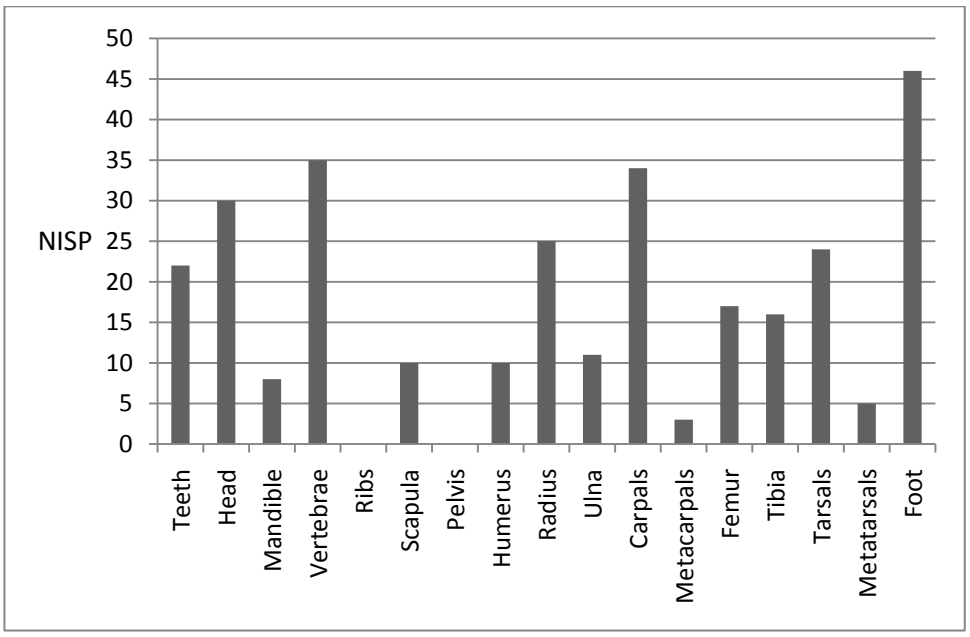

Figure 2.53: Representation of cattle elements, D817 main bone deposit. NISP. N = 296. (Compare to MNI = 7)

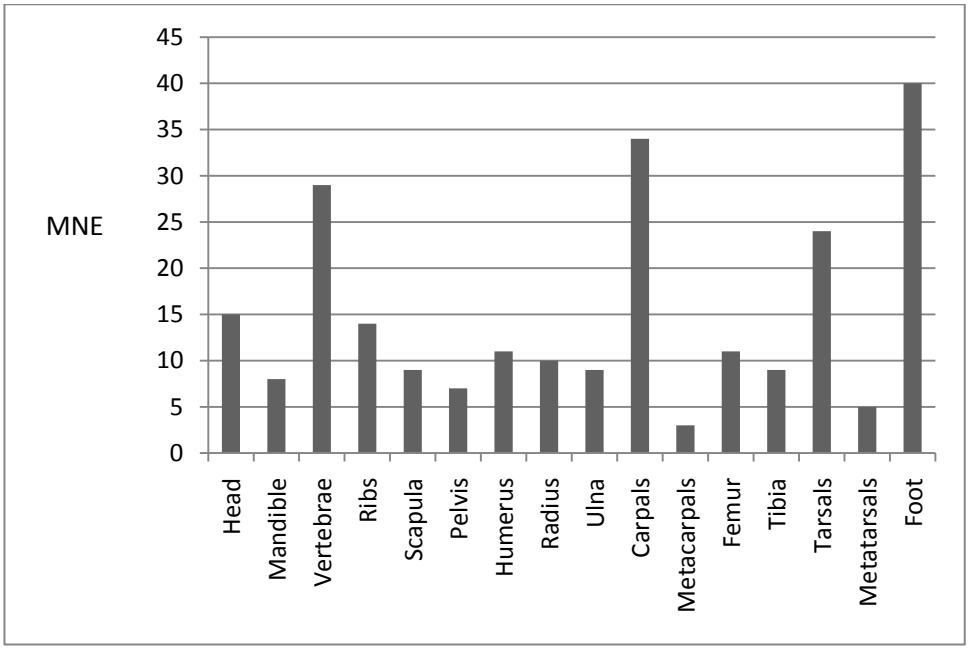

Figure 2.54: Representation of cattle elements, D817 main bone deposit.MNE. N = 238 (Compare to MNI = 7)

A2.7.3.2 Age and herd structure

Five mandibles could have a mandible wear stage assigned and these are shown combined with the main Middle Iron Age distribution in Figure 2.55. The four mandibles scoring MWS 3 comprise two left and two right mandibles and may relate to only two individuals. However, they fit well with the main distribution of cattle ages for the Middle Iron Age, continuing the theme of very young animals combined with a few older ones.

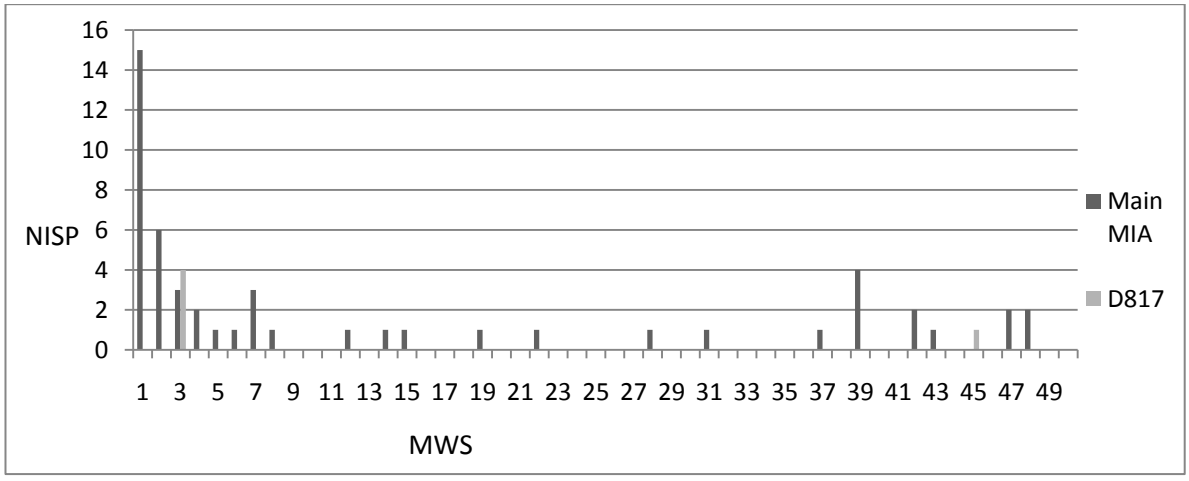

Figure 2.55: Mandible wear stages for cattle in D817 compared to the main Middle Iron Age assemblage. Main MIA N = 51 D817 = 6

The fusion data (Table 2.32) demonstrates the high proportion of unfused early fusing elements, which contrasts with the generally older population shown in the main MIA cattle assemblage (Figure 2.56). This may reflect the specific nature of the deposit.

Table 2.32: Fusion information for cattle, D817

Fusion date	Element	Fused	Unfused
Early Fusing (7-10 mths)	Scapula	3	5
(7-10mths)	Pelvis	4	8
(12-18mths)	Humerus, distal	2	6
(12-18mths)	Radius, proximal	4	9
Later fusing (24-30mths)	Metacarpal, distal	0	3
(27-36mths)	Metatarsal, distal	1	4
(24-30mths)	Tibia, distal	3	5
Late fusing (36-42mths)	Calcaneus	1	6
(42-48 mnths)	Humerus, proximal	1	6
(42-48mths)	Radius, distal	4	9
(42-48mths)	Ulna	2	5
(42 mnths)	Femur, proximal	1	11
(42-48mths)	Femur, distal	2	11
(42-48mths)	Tibia, proximal	1	12

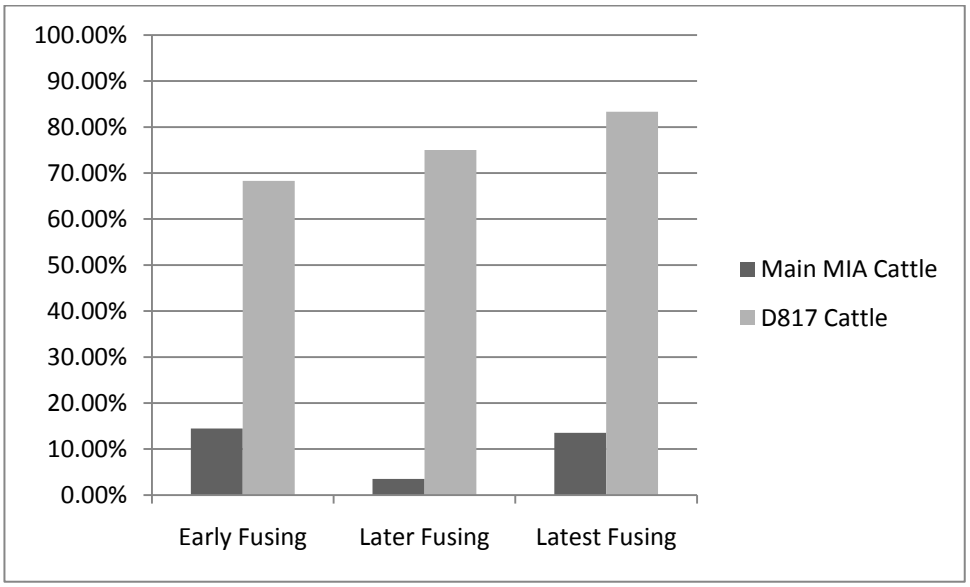

Figure 2.56: Percentage unfused cattle elements D817 compared to the Main MIA cattle assemblage Main MIA N = 778, D817 N = 129

A2.7.3.3 Pathology

A single instance of a non-specific infection (osteomyelitis) of a vertebra was noted in the spinous process of a thoracic vertebra.

A2.7.4 Pig

A2.7.4.1 Element representation

The pig elements recorded are shown in Figures 2.57 and 2.58. Although most of the body is present, with the exception of head fragments, the number of elements are even more under-represented. Similarly to the other main species, re-articulating epiphyses are present, indicating rapid incorporation of material, but in this case the carcases were more partial. Significant portions of the pig carcases must have been removed and deposited elsewhere.

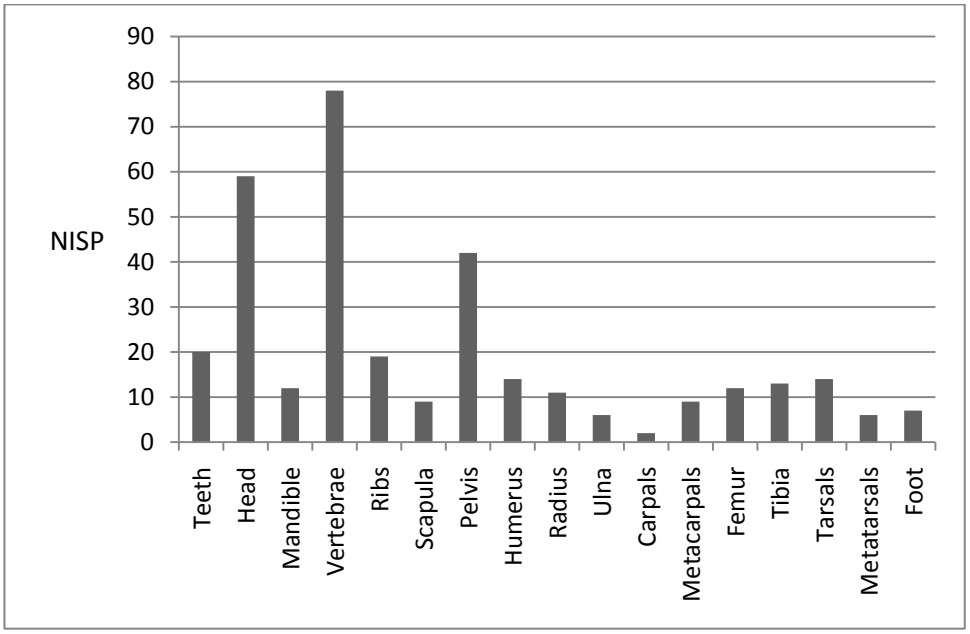

Figure 2.57: Representation of pig elements, D817 main bone deposit. NISP. N = 333

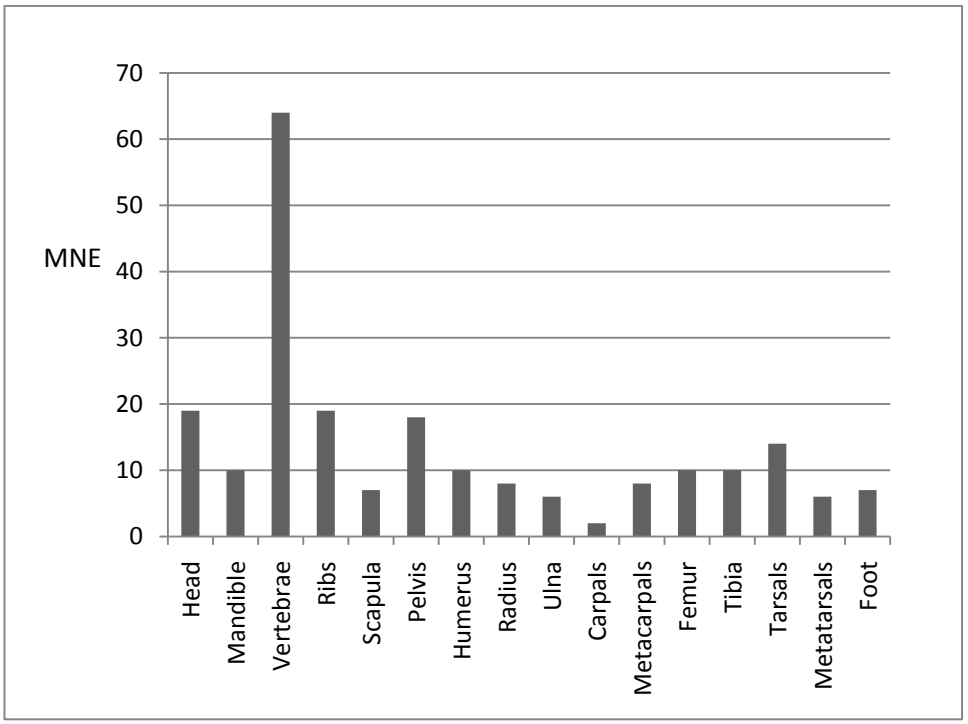

Figure 2.58: Representation of pig elements, D817 main bone deposit. MNE. N = 218

A2.7.4.2 Age and herd structure

Eight mandibles were assigned a mandible wear stage and these are included in Figure 2.59, compared to the mandible wear stages from the main Middle Iron Age assemblage. These animals died slightly earlier than the main assemblage individuals, and this may relate to the circumstances of the formation of the entire deposit.

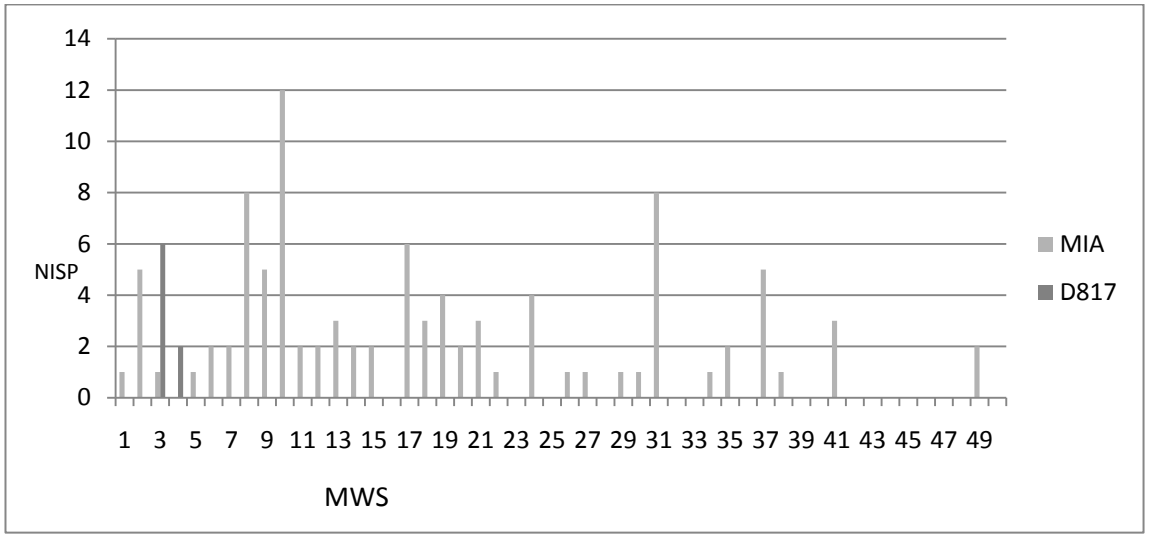

Figure 2.59: Grant mandible wear stages for pig in D817, compared to the main Middle Iron Age assemblage. Main MIA N= 97, D817 N= 8.

There do not appear to be any older individuals included in the deposit. Virtually all of the bone was either porous or related to unfused elements (Table2.33). The differences between the D817 pig fusion and the main MIA assemblage is shown in Figure60. This supports the culling profile given by the toothwear data. Similarly to the cattle assemblage, this appears to be a very specifically selected group of individuals.

Table 2.33: Fusion of pig elements, D817

Fusion date	Element	Fused	Unfused
Early Fusing (12mths)	Scapula , glenoid	0	7
(12mths)	Pelvis, acetabulum	2	37
(12mths)	Humerus, distal	0	10
(12 mths)	Radius, proximal	2	8
Later fusing (24 mths)	Metacarpal, distal	0	9
(27 mths)	Metatarsal, distal	0	6
(24mths)	Tibia, distal	0	12
Late fusing (24-30 mths)	Calcaneus	0	8
(42 mths)	Humerus, proximal	0	11
(42mths)	Radius, distal	0	10
(36-42 mths)	Ulna	0	6
(42mths)	Femur, proximal	0	10
(42mths)	Femur, distal	0	8
(42mths)	Tibia, proximal	1	6

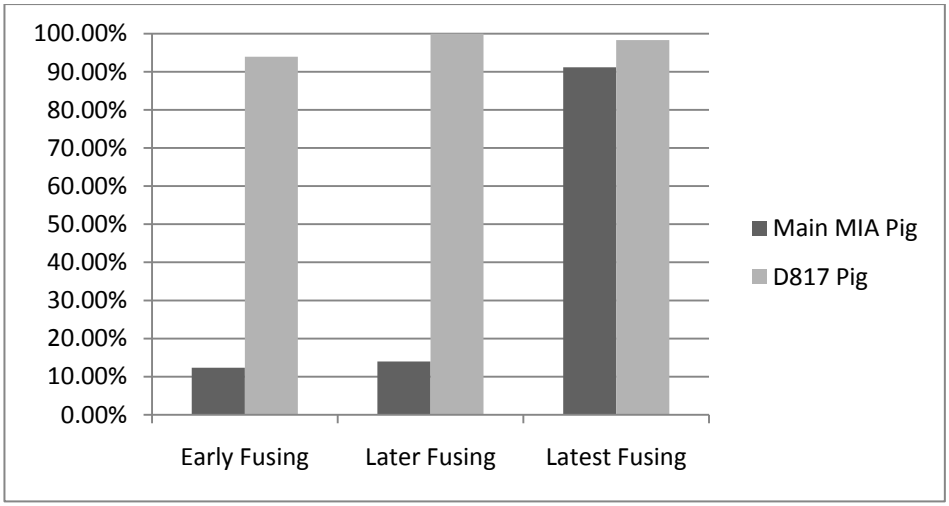

Figure 2.60: Percentage unfused pig elements D817 compared to the Main MIA pig assemblage Main MIA N = 824, D817 N = 153

No canines were recorded, which is unsurprising in such a young group of individuals, but the sex of the individuals is therefore not available for consideration. Metrics are also not available given the juvenile nature of this assemblage. Likewise there was a single example of pathology with a fracture in an unfused lateral metapodial.

A2.7.5 Sheep/goat

The vast majority of the animals included in D817 were sheep, but a small number of goats were included as shown in Figure2.61.

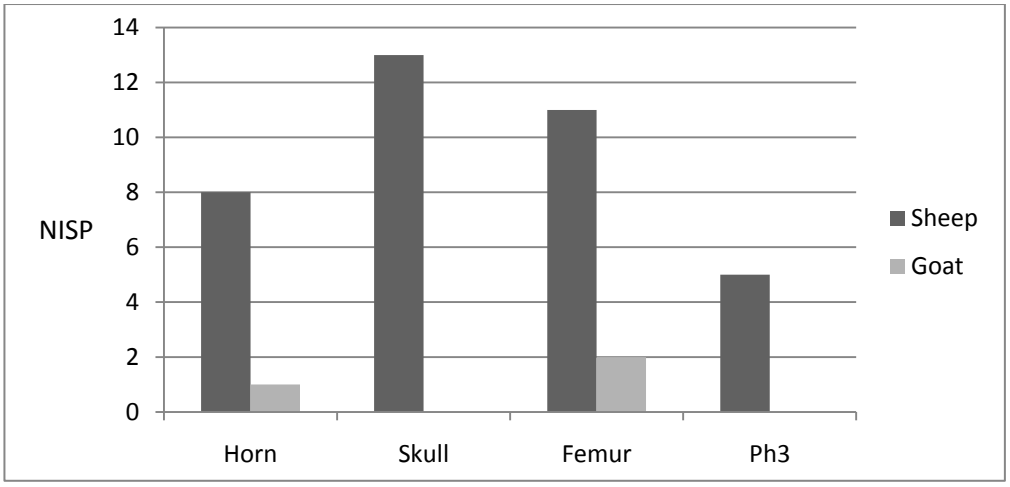

Figure 2.61: Identification of sheep and goat, D817. N = 40

A2.7.5.1 Element representation

Elements of sheep/goat are shown in Figures 2.62 and 2.63. Similarly to cattle, whilst all areas of the body are represented, there are only about half of the bones there should be across all

areas of the body. There is an even lower proportion of the foot bones that should be present. This may be explained if the individuals had been skinned and the feet removed and discarded elsewhere, at least in some cases. There were 12 cases of cut marks on sheep/goat, of which 8 were light cuts transverse across the astragalus.

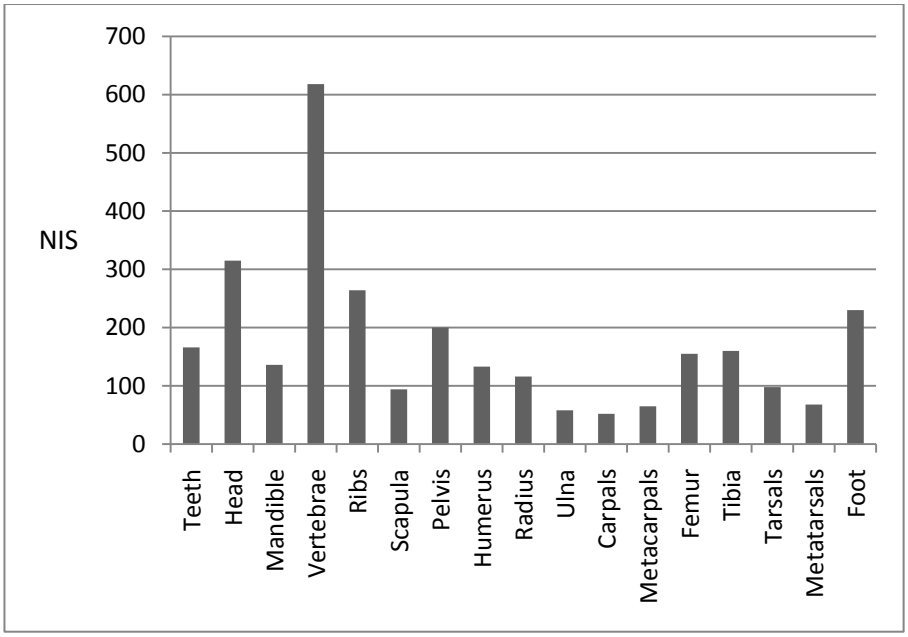

Figure 2.62: Representation of sheep/goat elements, D817 main bone deposit. NISP. N = 2928 (Compared to MNI = 50).

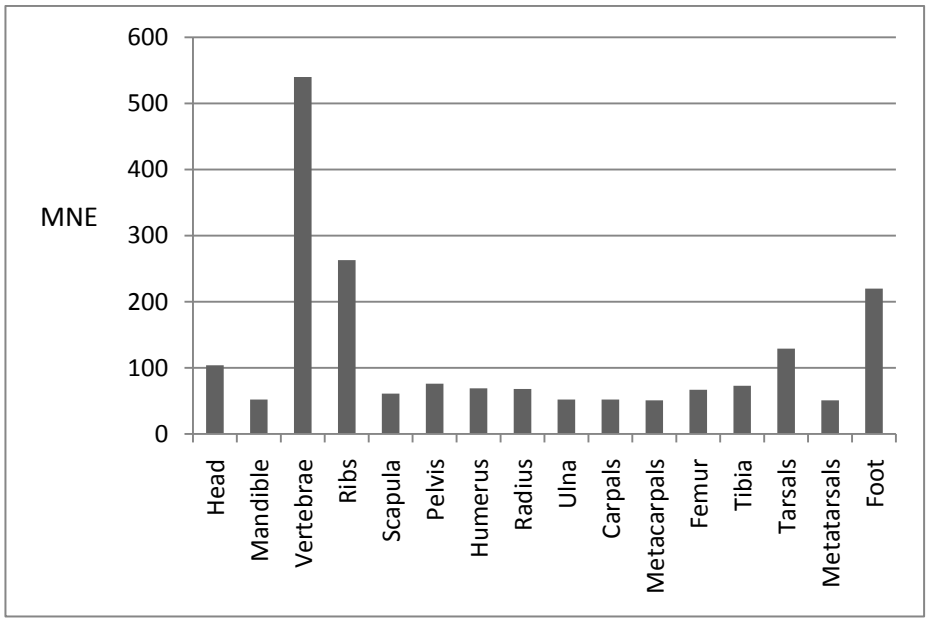

Figure 2.63: Representation of sheep/goat elements, D817 main bone deposit. MNE. N = 1928(Compared to MNI = 50).

A2.7.5.2 Age and herd structure

The mandibles that could be assessed for mandible wear stages are presented in Figure 2.64. There are two notable peaks, one in individuals a few months old with a second at MWS 19-21 at just over a year old. There are then a number of older individuals. This seems to indicate that the individuals died at a particular time of year, with the spread of wear stages in the two peaks possibly explained by the duration of the lambing period as well as variation in toothwesr. This then may reflect a cull strategy or result of a catastrophic event such as a disease outbreak in summer. If the former, it would indicate surplus lambs being removed prior to tupping (mainly unwanted males), with yearlings also being removed at this point (logically females that were not selected as appropriate to breed). An individual of around two years old may have been rejected for further breeding for a variety of reasons with older sheep culled from the herd on the basis of age, infirmity and previous infertility. This must, however, have taken place earlier in the year than might be expected.

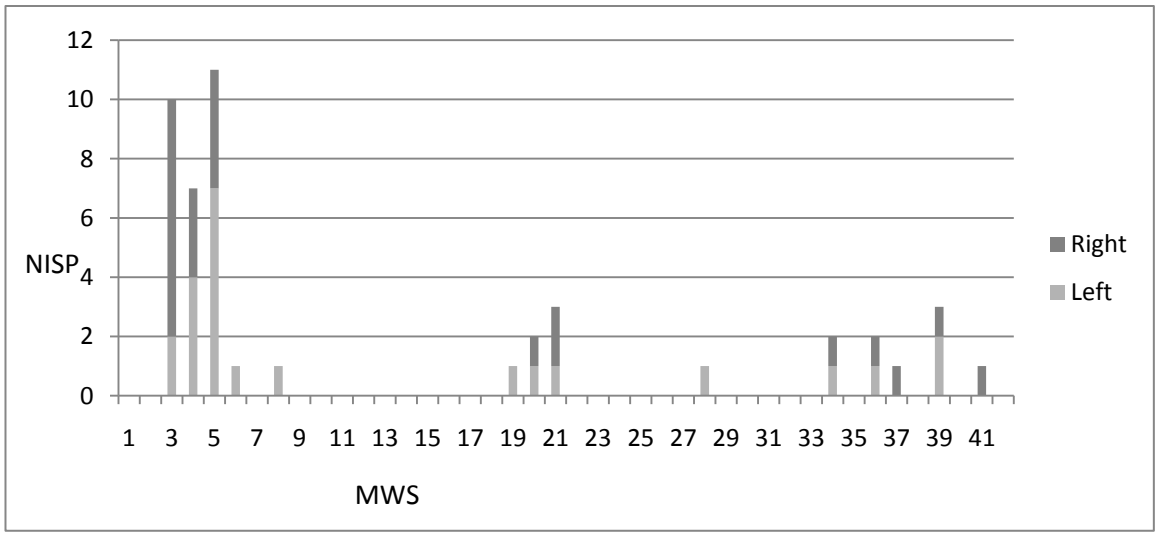

Figure 2.64: Grant Mandible Wear Stages for sheep/goat, D817 main bone deposit. N = 46

Figure 2.65 compares the D817 age profile with that of the main Middle Iron Age assemblage. This is also shown in Figure 2.66 which gives the Payne stage kill-off curve for both. Whilst the D817 material fits well within the pattern from the main Middle Iron Age assemblage, the primary cull, or time of death in younger individuals happens slightly earlier in the D817 material, during Stage B as opposed to Stage C. This may indicate variability in flock management practice, possibly between individuals, although the rest of the curves are extremely similar and indicate that a similar set of constraints and choices were being employed.

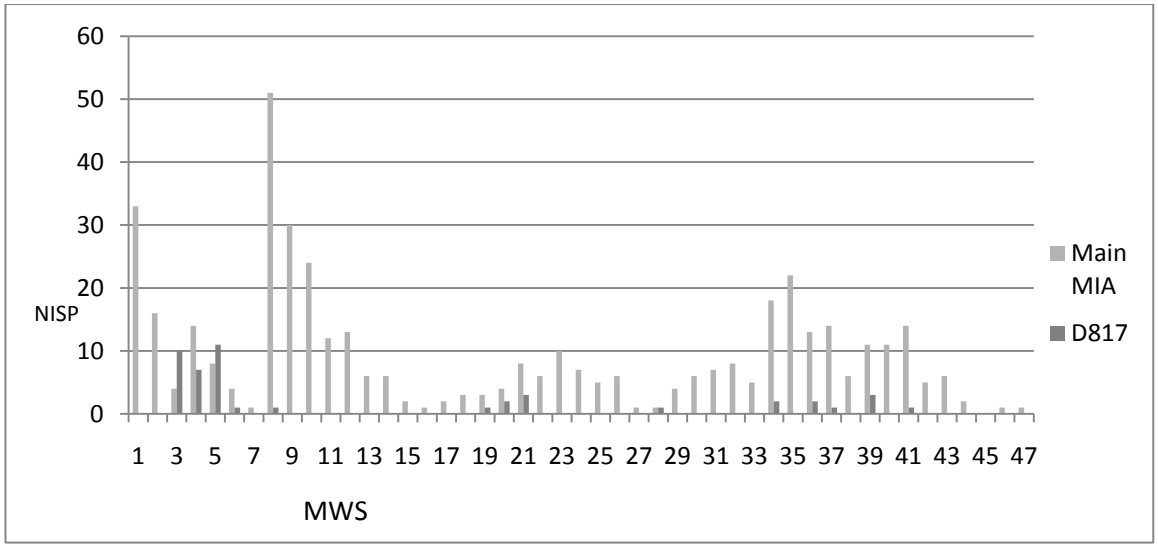

Figure 2.65: Grant Mandible Wear Stages for sheep/goat, D817 main bone deposit compared with the main Middle Iron Age assemblage. Main MIA N = 437, D817 N =46

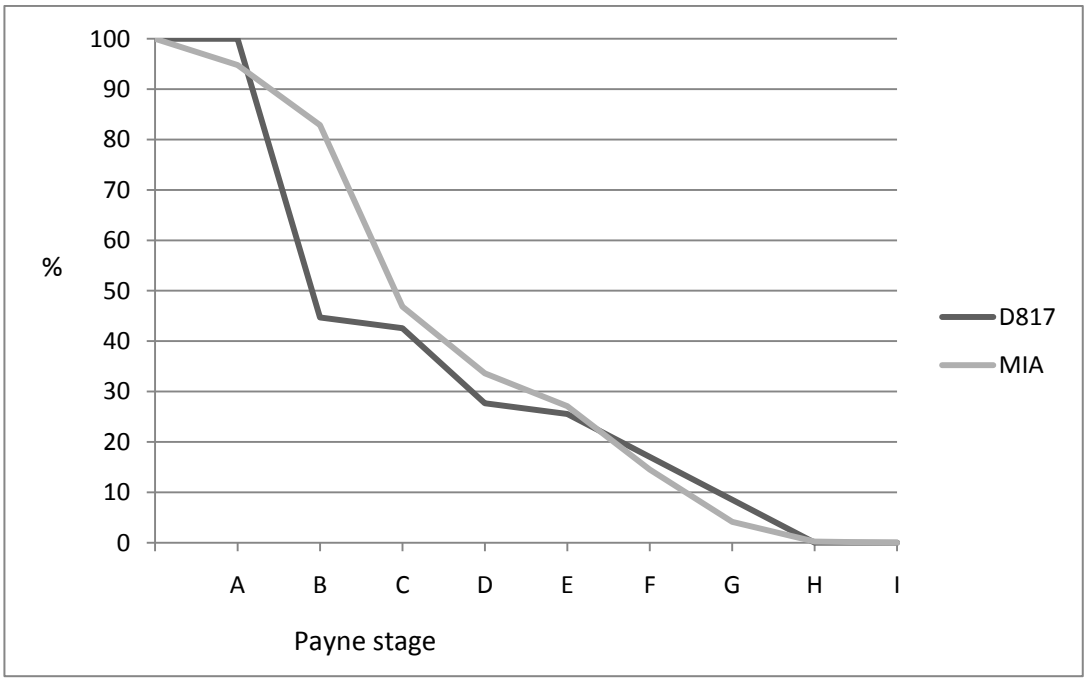

Figure 2.66: Sheep/Goat kill off profile using Payne wear stages, D817 compared to Middle Iron Age. MIA N = 461 D817 N = 47

Fusion data for sheep/goat is given in Table 2.34. Unfused elements are more common than fused in all three of the age categories, and this is shown, in comparison with the main MIA assemblage data in Figure 67. It is clear that there were a larger proportion of the youngest category of individuals in the D817 material and this agrees well with the age profile from the mandibles. Not only does it agree with the earlier peak in deaths, but also reflects the agreement of the proportion of older individuals.

Table 2.34: Fusion in sheep/goat, Middle Age.

Fusion date	Element	Fused	Unfused
Early Fusing (6-8mths)	Scapula, glenoid	27	32
(6-10mths)	Pelvis, acetabulum	45	121
(10mths)	Humerus, distal	31	33
(10mths)	Radius, proximal	30	35
Later fusing (18-24mths)	Metacarpal, distal	15	34
(20-28mths)	Metatarsal, distal	9	42
(18-24mths)	Tibia, distal	17	66
Latest fusing (30-36mths)	Calcaneus	8	38
(36-42 mths)	Humerus, proximal	13	83
(36mths)	Radius, distal	13	68
(30mths)	Ulna	13	34
(30-36mths)	Femur, proximal	16	79
(36-42mths)	Femur, distal	11	92
(36-42mths)	Tibia, proximal	12	80

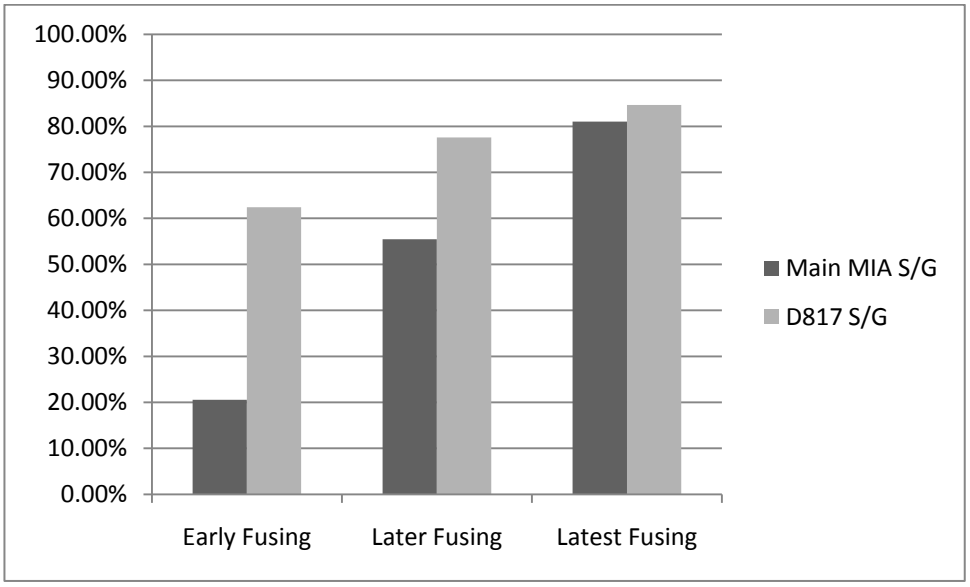

Figure 2.67: Percentage unfused elements D817 compared to the Main MIA sheep/goat assemblage Main MIA N = 2706, D817 N = 1097

A2.7.5.3 Pathology

A number of pathological sheep/goat elements were recorded. These are given in Table 2.35, and include medium-sized mammal fragments, that in this context are very likely to be sheep/goat. The number of fractured ribs is of note. The few cases of degenerative joint disease and the advanced periodontal disease makes sense in a population that contains older individuals. Given the severity of several of these cases, being broken mouthed may have been a contributory factor to these animals becoming part of the assemblage.

Table 2.35: Pathological sheep/goat specimens, D817.

Site	Context	Species	Element	Part	Type	Comment
SC/D	817	S/G	Rib	Shaft	Fracture	Well healed
SC/D	817	S/G	Femur	Caput	Degenerative change	
SC/D	817	S/G	Humerus	Distal articulation	Penning elbow	
SC/D	817	S/G	Metacarpal	Proximal articulation	Degenerative change	
SC/D	817	S/G	Mandible	M1	Calculus	Slight
SC/D	817	S/G	Mandible	M2-3 buccal	Periodontal disease	Severe
SC/D	817	S/G	Mandible	P4-M1 buccal	Periodontal disease	Slight
SC/D	817	S/G	Mandible	Tooth row	Periodontal disease ante-mortem tooth loss	Severe
SC/D	817	S/G	Mandible	Tooth row	Periostitis, ante-mortem tooth loss	Severe
SC/D	817	MMA	Rib	Shaft	Fracture	
SC/D	817	MMA	Rib	Shaft	Fracture	
SC/D	817	MMA	Rib	Shaft	Fracture	
SC/D	817	MMA	Rib	Shaft	Fracture	
SC/D	817	MMA	Rib	Shaft	Fracture	
SC/D	817	MMA	Rib	Shaft	Fracture	
SC/D	817	MMA	Rib	Shaft	Fracture	
SC/D	817	MMA	Rib	Shaft	Fracture	

A2.7.6 Dog

A2.7.6.1 Element representation

Dog elements are displayed in Figures 2.68 and 2.69 by whole bone equivalents plotted against expected values from the MNI. It can be seen that the entire body is not represented, and where elements are present they fall far short of the expected number. It is evident that only partial remains were included in the deposit. However, in keeping with the main MIA assemblage, vertebrae are well represented.

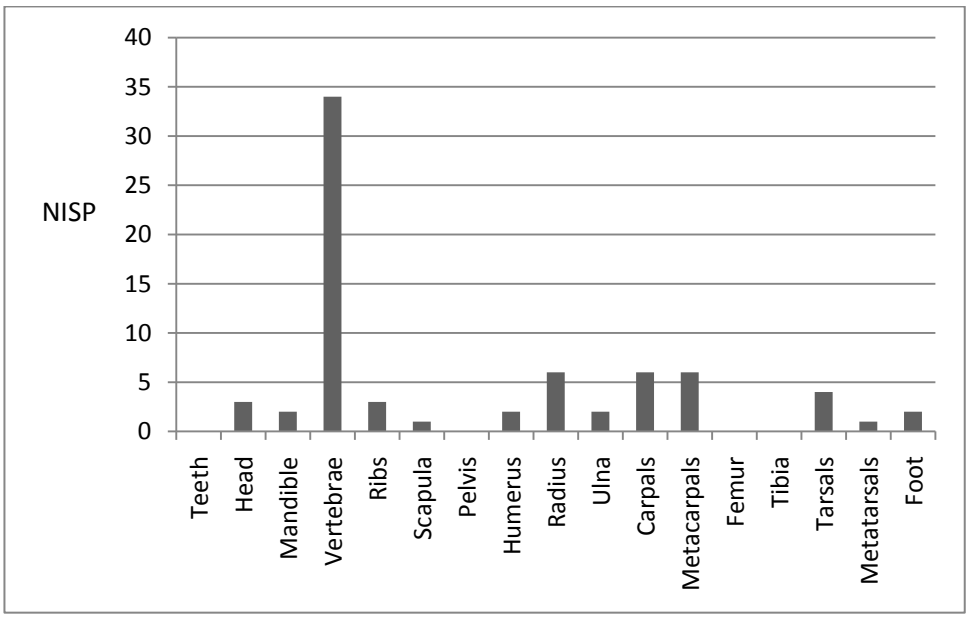

Figure 2.68: Representation of dog elements, D817 main bone deposit. NISP. N = 72

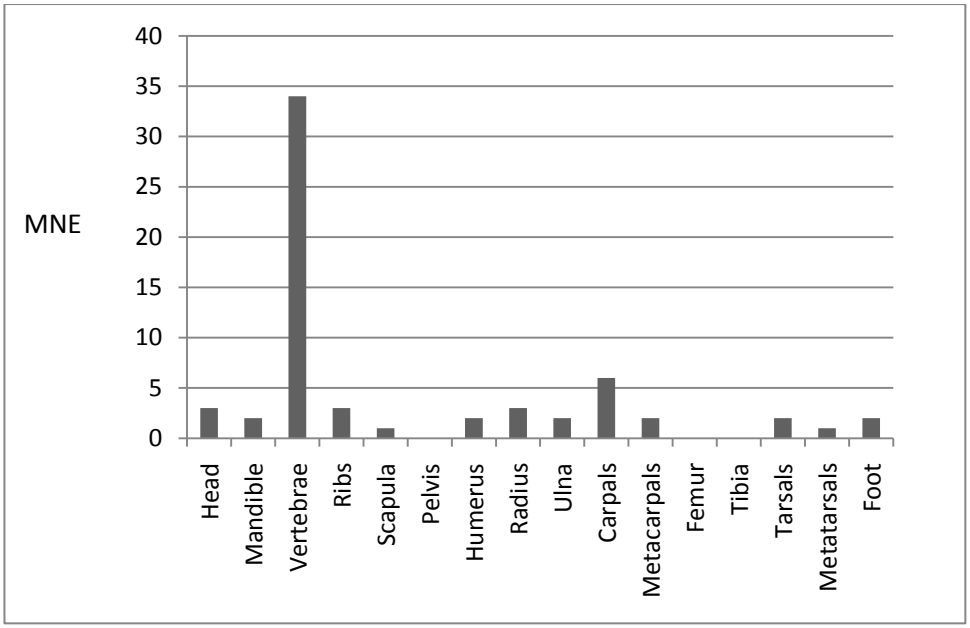

Figure 2.69: Representation of dog elements, D817 main bone deposit. MNE. N = 63

A2.7.6.2 Age

Several porous bone fragments are present, with a minimum of two adult and two juvenile individuals. A large number of elements are unfused, particularly the vertebrae implying that they may relate to a single individual, and there are humeri and radii unfused both proximally and distally. There is no evidence of any of the individuals being fully skeletally mature. Because of the lack of fusion there is little metrical information available, and no pathological elements were noted, unsurprising in young individuals.

A2.7.7 Wild species

The only material from wild species were two wing phalanges, one left, one right, of a large corvid, comparable with a raven. It seems odd that these might be the only elements recovered and it is suggested that they may have been attached to skins with feathers attached but removed from the wing bones.

A2.7.8 Discussion of the D817 deposit

It is clear from the limited written records and a section drawing that shows the bone deposit in the archive, that it was a dense and homogenous dump of material. The presence of refitting epiphyses in large numbers especially for the three main domestic species supports a considerable amount of the material being incorporated into the deposit as one event. There was very little evidence of gnawing and weathering. However, although all areas of the body were represented for all species there wads a considerable shortfall in the elements that should have been present if whole carcases had been deposited.

Cattle and sheep were the most complete, with foot elements being the least well represented. This and a small number of cut marks on astragli seem to imply that these species were skinned and the waste disposed of elsewhere. The distribution of cut marks by element and species is shown in Figure 2.70. Lack of butchery elsewhere on the sheep/goat carcases may indicate that the animals were skinned but not processed further, possibly only utilised for their hides or fleeces. However, they may have been cooked whole. This might be a feasible explanation given the overall scale of the deposit. Pig and especially dog were apparently represented by much more partial carcasses. Whilst there may have been differential retrieval, it seems that as the recovery of loose epiphyses was good, this is unlikely.

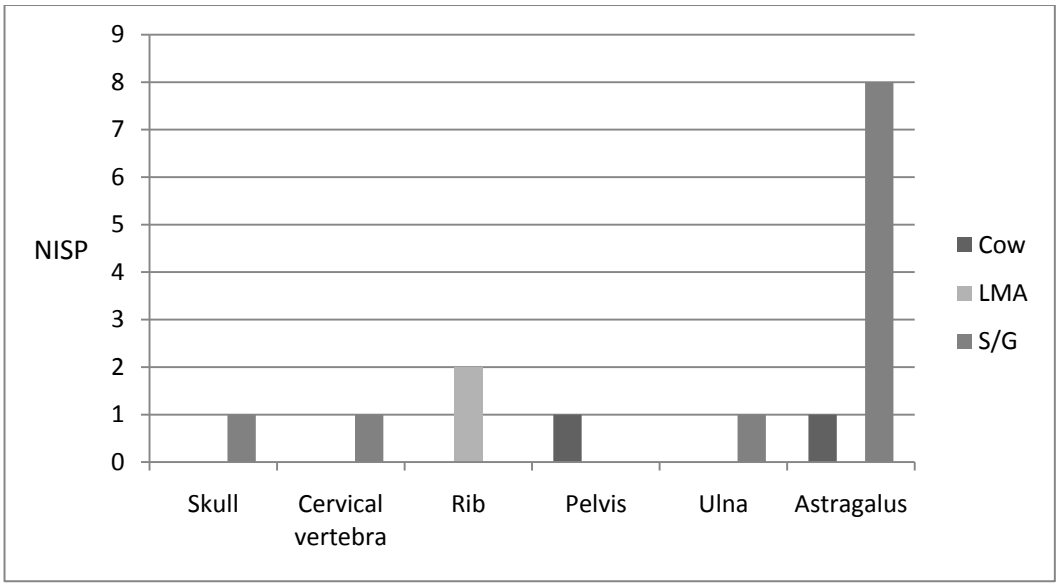

Figure 2.70: Location of butchery on elements by species from D817. N = 15

The structure of the age groups, and sheep/goat in particular, imply a cull at a particular time, possibly mid-late summer. This provides us with a useful snapshot of an event that may be related to flock and herd management, although its timing begs the question as to whether it represents an act of communal consumption. This was the most intense deposit of bones within the excavated areas of the hillfort, and matches, if not exceeds, that of the M-LIA calf burials (discussed below) in number of fragments. Even if only partial carcases were deposited, they were placed in a discrete location in a manner unlike the normal manner of disposal, with the partial remains of four dogs and what may be the remnant of raven wings. As with other deposits which are discussed elsewhere, there is no reason why material that was the result of a practical culling strategy might not be disposed of in a ritualised fashion, or indeed slaughtered in a ritualised fashion. The timing may relate to a festivity associated with a point in the farming year, but equally may relate to a particular event that we are unable to reconstruct.

A2.8.0 Middle-Late Iron Age

The material that has been only dated to the later Iron Age comes from a variety of contexts in Sites D and K. Whilst there are only 659 fragments, this is a useful addition in that if enables a

comparison between the main Middle and Late Iron Age assemblages and the 'Rubbish Layers'.

A2.8.1 Species representation

The fragments identified to this period are shown in Table 2.36.

Table 2.36: Species representation in Middle-Late Iron Age contexts other than the 'Rubbish Layers'.

Species	NISP	% NISP	% Main	MNI	%MNI
Cow	62	9.48	21.99	4	25
Pig	28	4.28	9.93	2	12.5
S/G	192	29.36	68.08	10	62.5
Dog	3	0.46		1	
Horse	4	0.61		1	
Large mammal	60	9.17			
Medium mammal	144	22.02			
Unidentified	161	24.62			
Total main	**654**				
Hare	1				
Bird	4				
Small mammal	1				
Total fragments	**660**				

Although the percentages expressed here may be less reliable that the main Middle and Late Iron Age assemblages due to the sample size, it is still apparent that sheep/goat retains its importance, confirmed again by the relative amount of bone identified as from medium-sized mammals, and with other species limited. The dominance of sheep/goat is indicated further when percentages between the main three domestic species are considered (Figure 2.71).

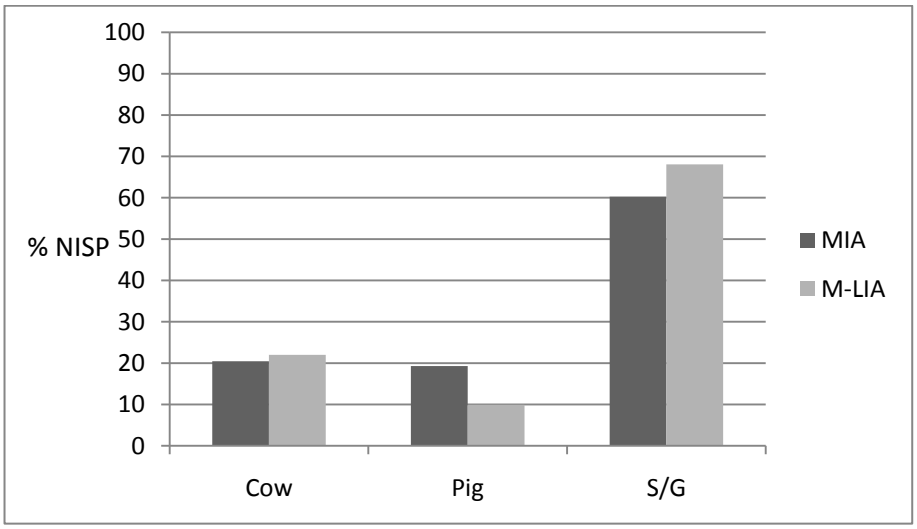

Figure 2.71: Proportions of three main domestic species, Middle-Late Iron Age compared to the main Middle Iron Age assemblage . MIA N = 2648 MIA-LIA N = 282

A2.8.2 Taphonomy and butchery

Full analysis of taphonomic markers has not been carried out for reasons given above. However, Table 2.37 gives overall assemblage percentages.

Table 2.37: Overall incidence of taphonomic markers in the Middle-Late Iron Age assemblage.

Gnawed, Weathered, and Burned fragments		Butchered fragments	
No	**%**	**No**	**%**
52	7.88	8	1.21

A2.8.3 Cattle

A2.8.3.1 Element representation

The elements present in the assemblage are shown in Figures 2.72 and 2.73.This is dominated by loose teeth, although there is a relatively even distribution of elements throughout the body.

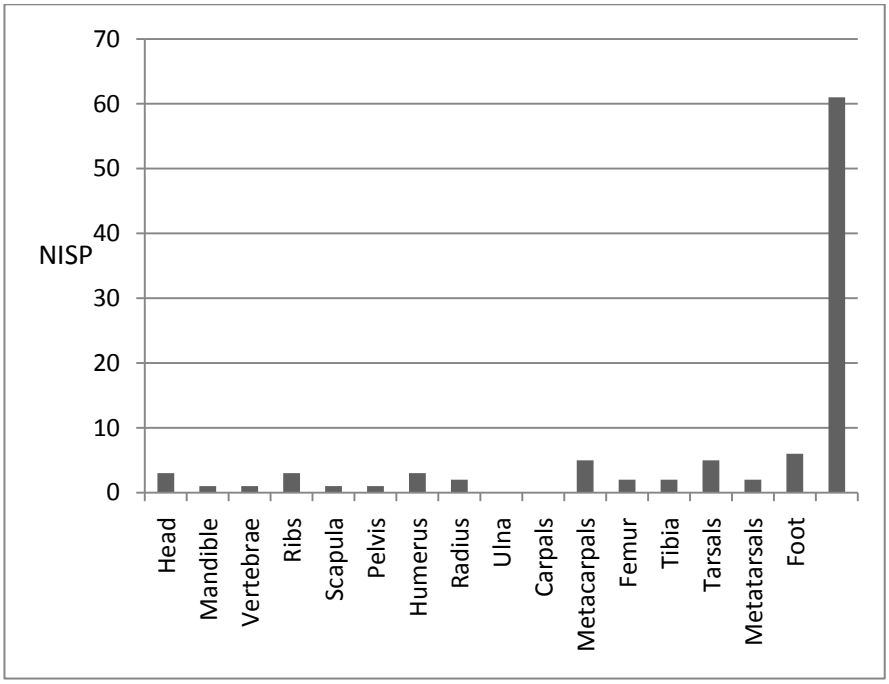

Figure 2.72: Element representation for cattle for Middle-Late Iron Age contexts. NISP. N = 61 (Compare to MNI = 4).

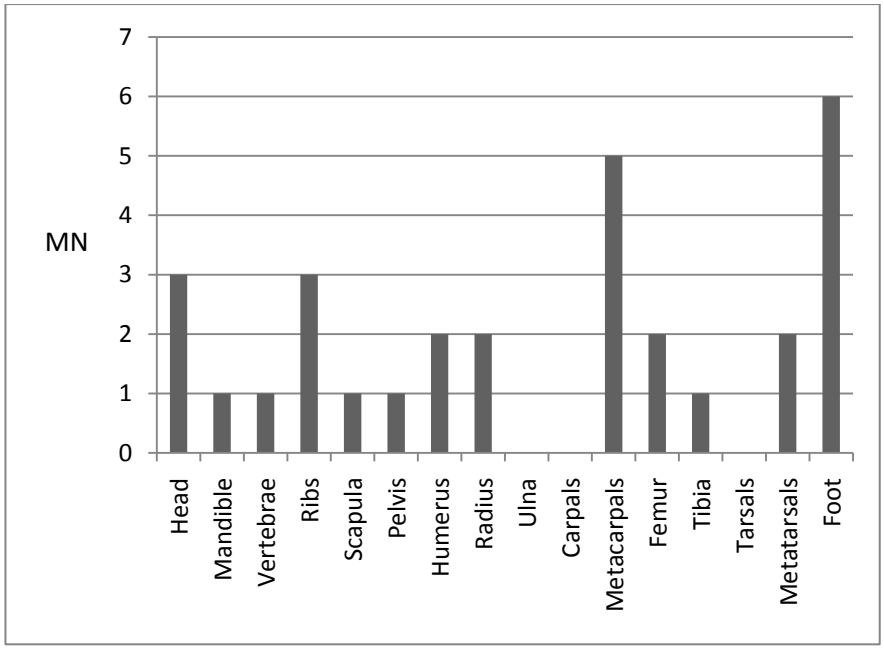

Figure 2.73: Element representation for cattle for Middle-Late Iron Age contexts. MNE. N = 30 (Compare to MNI = 4).

A2.8.3.2 Age and herd structure

There is limited information on the age of cattle from this group of material as there are no mandibles to which a mandible wear stage can be assigned. There are only two porous elements, and a limited number of fragments in which fusion was recorded. These are shown in Table 2.38.

Table2.38: Cattle fusion in formation, Middle-Late Iron Age.

Fusion date	Element	Fused	Unfused
Early Fusing(12-18mths)	Humerus, distal	2	
(12-18mths)	Radius, proximal	1	
Later fusing (24-30mths)	Metacarpal, distal	2	
Late fusing (42-48mths)	Radius, distal		1
(42-48mths)	Tibia, proximal		1

This does not seem to indicate the presence of very young individuals. There are virtually no mandibular teeth, in which the appropriate wear stage could be postulated, but it is clear that there is both deciduous and maxillary dentition represented, and these are both at various stages of wear, from unworn deciduous teeth to worn permanent molars. The probability is therefore that a similar range of age groups of cattle exist in this assemblage. The single metacarpal for which sex could be determined was that of a cow.

A2.8.3.3 Pathology

A single pathological cattle element was recorded and is given in Table 2.39.

Table 2.39: Cattle pathology, Middle-Late Iron Age.

Site	Context	Species	Element	Part	Type	Comment
SC/D	106	Cow	Metacarpal	Proximal shaft	Periostitis	Active
SC/D	723	LMA	Rib	Shaft	Fracture	Non-union

A2.8.4 Pig

A2.8.4.1 Element representation

There were only 28 pig fragments in this phase, but it can be seen from Figures 2.74 and 2.75 that these are relatively well distributed across the body.

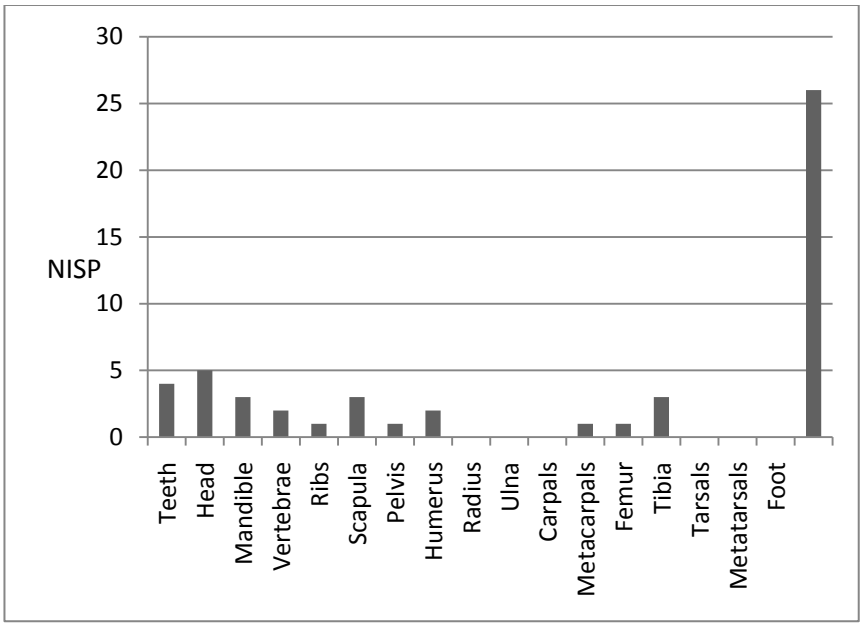

Figure 2.74: Element representation for pig for Middle-Late Iron Age contexts. NISP. N = 26 (Compare to MNI = 2).

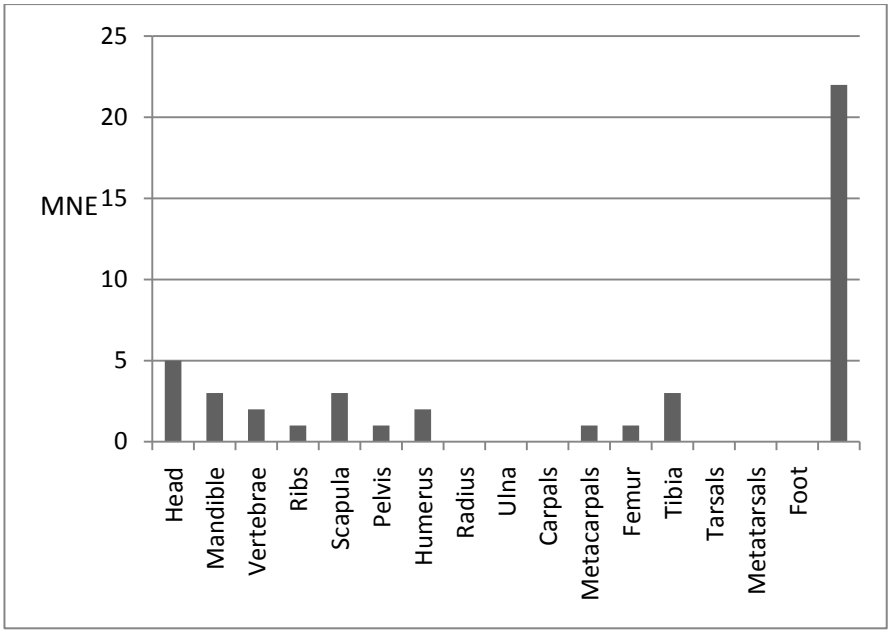

Figure 2.75: Element representation for pig for Middle-Late Iron Age contexts. MNE. N = 22 (Compare to MNI = 2).

A2.8.4.2 Age and herd structure

One mandible provided a mandible wear stage of 32, whilst another can be estimated as *c*37-8 and a third indicates one *c*20-22. There are four porous fragments of bone indicating the presence of younger individuals, and limited fusion data is given in Table 2.40, and imply that pigs were killed as younger individuals, in line with the other assemblages from the site.

Table 2.40: Fusion information for pig, Middle-Late Iron Age.

Fusion date	Element	Fused	Unfused
Early Fusing (12mths)	Humerus, distal	2	
Later fusing (24mths)	Tibia, distal		2
(24mths)	Metacarpal, distal		1

There is no information on the sex of pigs.

A2.8.4.3 Pathology

Two elements were recorded as having pathological change and these are given in Table 2.41.

Table 2.41: Pathology in pig elements, Middle-Late Iron Age

Site	Context	Element	Part	Type	Comment
SC/D	105	Humerus	Distal articulation	Degenerative change	
SC/K	710	Maxilla	M2,3	Hypoplasia	

A2.8.5 Sheep/Goat

192 fragments of sheep/goat were identified, loose teeth representing 18.75%. A very limited selection of elements were available to determine between the species, but in all cases were recorded as sheep. This may well be a function of the small assemblages size, given the low levels of goat represented in other assemblages from the Middle and Late Iron Age.

A2.8.5.1 Element representation

The parts of the body included in the assemblage are shown in Figures 2.76 and 2.77. All areas are present with some emphasis on the lower front limb.

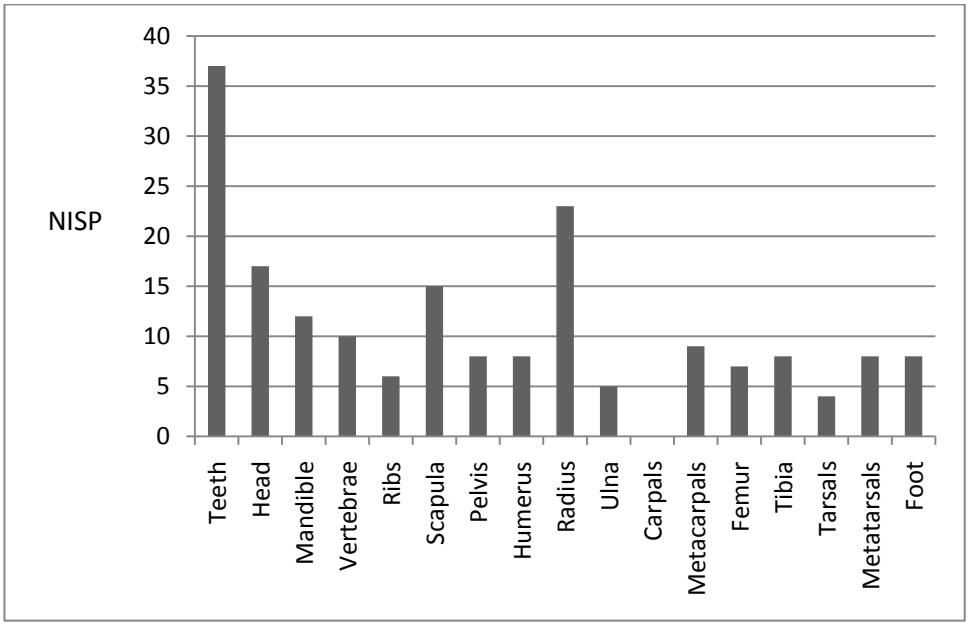

Figure 2.76: Element representation for Sheep/goat for other Middle-Late Iron Age contexts. NISP N = 185 (Compare to MNI = 10).

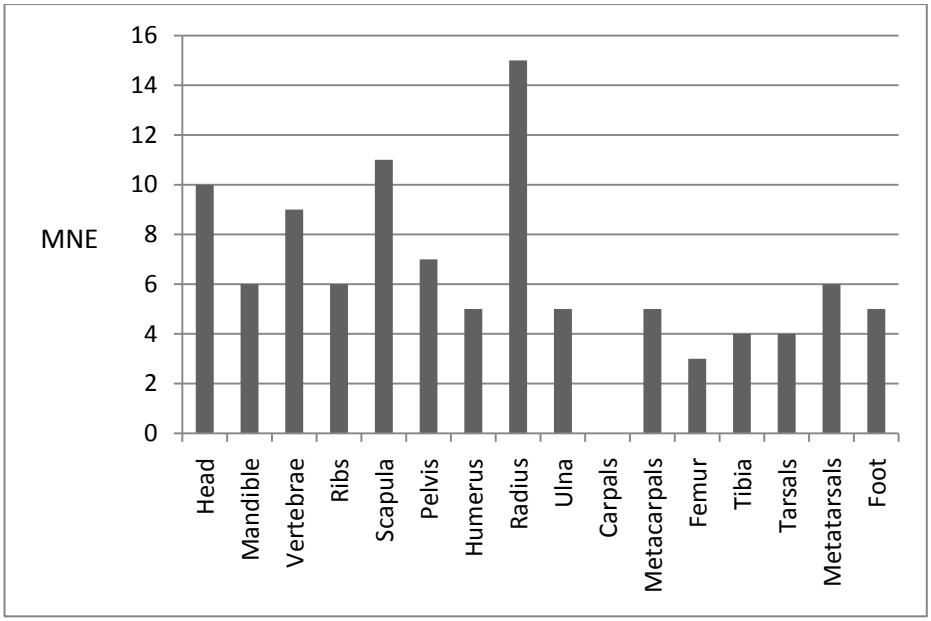

Figure 2.77: Element representation for Sheep/goat for other Middle-Late Iron Age contexts. MNE N =101(Compare to MNI = 10).

A2.8.5.2 Age and herd structure

Three mandibles could be assigned a mandible wear stage of 9, 12 and 24 (Payne Stage C,C,D). Loose mandibular teeth are not well represented, but one probable 1st mandibular molar may come from an individual in Payne Stage G. There are 24 porous fragments and fusion information is shown in Table 2.42. This seems to indicate a preponderance of younger individuals, whilst most maxillary teeth were from the permanent dentition and just in wear with few showing advanced wear.

Table 2.42: Fusion in sheep/goat, Middle-Late Iron Age.

Fusion date		Element	Fused	Unfused
Early Fusing	(6-8mths)	Scapula, glenoid	6	1
	(6-10mths)	Pelvis, acetabulum	7	1
	(10mths)	Humerus, distal	2	1
	(10mths)	Radius, proximal	5	3
Later fusing	(18-24mths)	Metacarpal, distal	0	2
	(20-28mths)	Metatarsal, distal	0	4
	(18-24mths)	Tibia, distal	2	0
Latest fusing	(30-36mths)	Calcaneus	0	2
	(36mths)	Radius, distal	0	5
	(30mths)	Ulna	0	3
	(30-36mths)	Femur, proximal	0	1
	(36-42mths)	Femur, distal	1	1
	(36-42mths)	Tibia, proximal	0	2

A2.8.5.3 Pathology

The only pathological condition recorded for sheep/goat in this assemblage was calculus deposits on teeth, given in Table 2.43.

Table 2.43: Pathological elements for sheep/goat, Middle-Late Iron Age.

Site	Context	Species	Element	Part	Type	Comment
SC/D	409	S/G	Mandible	Dp3,4,M1	Calculus	Severe
SC/K	625A	S/G	Maxilla	Tooth row	Calculus	Moderate
SC/D	723	S/G	Maxilla	P2-3	Calculus	Moderate
SC/D	722	S/G	Maxilla	Tooth row	Calculus	Moderate
SC/D	722	S/G	Maxilla	M1	Calculus	Moderate

A2.8.6 Dog

There were three fragments of dog bone, parts of a mandible, a tibia and a metapodial, the latter two fused distally. No metrical or pathological information was recorded.

A2.8.7 Horse

Four fragments of horse bone were recorded for this phase, a cervical vertebra fragment with a fused caudal epiphysis on the body, a patella and two teeth which were both worn. There was no metrical or pathological information.

A2.8.8 Wild Species

Small mammals were represented by a sole tibia from a vole-sized rodent. A single hare humerus, fused distally, unfused proximally, was the only wild mammal fragment. Only one of four bird bone fragments was identified to species, part of a carpometacarpus, probably from a buzzard.

A2.8.9 Associated Bone Groups and complete skulls

Two groups of material were recorded as ABGs and are shown in Table 2.44. The horse vertebrae (atlas, axis and C3 and 4) were all fused.

Table 2.44 Associated bone groups Middle-Late Iron Age. Total fragments = 13

Site	Context	Species	Part(s)	Age	Other information
K	625	Cow	Skull, almost entire	Adult	
K	710	Horse	Articulated neck	Adult	Butchery waste

A2.8.10 Discussion of the Middle-Late Iron Age assemblage

Sheep/goat retains its importance in this group of material, confirmed by the relative amount of bone identified as from medium-sized mammals. The cattle assemblage is dominated by loose teeth, although there are elements from throughout the body. There is limited information on the age of cattle. The probability is that a similar range of age groups of cattle existed as in the other more closely dated later Iron Age material. The few pig fragments imply that pigs were killed young, in line with the other assemblages from the site. The limited collection of sheep/goat bone likewise reflects the situation in the other assemblages. Dog, horse and wild species are represented only by a handful of fragments, whilst ABGs consist of

an articulated horse neck and a single cattle skull. These would also fit well with the ABGs discussed above for the Middle Iron Age.

A2.9.0 Middle-Late Iron Age 'Rubbish Layers'

The 'Rubbish Layers' comprised a considerable area of horizontal stratigraphy within Sites N and T in the central plateau area of the hillfort. They have not been more closely dated than the Middle-Late Iron Age as the evidence for date from the pottery is ambiguous. Many of the cattle burials previously noted (Hamilton-Dyer and Maltby 2000) were either in direct relation to this material or closely adjacent to it, and are similarly dated, so are dealt with within this section.

A2.9.1 Species representation

The 'Rubbish Layers' produced 3,866 fragments of animal bone, excepting that included in the associated bone groups, which included a further 4,181 fragments. The species represented in the 'Rubbish Layers' themselves are shown in Table 45.

Table 2.45: Species representation in the 'Rubbish Layers', excluding ABGs.

Species	NISP	% NISP	% Main	MNI	% MNI
Cow	877	22.78	25.64	16	20
Pig	823	21.38	24.06	22	27.5
S/G	1721	44.70	50.30	42	52.5
Dog	16	0.42		1	
Horse	47	1.22		1	
Large mammal	149	3.87			
Medium mammal	165	4.29			
Unidentified	52	1.35			
Total main	**3850**				
Fox	13				
Cat	1				
Bird	2				
Total fragments	**3866**				

Sheep/goat are the predominant species in this assemblage, with cattle and pig in similar proportions as secondary species. This is, however, slightly different if MNI proportions are considered and this is shown in Figures 2.78 and 2.79. There are very low proportions of unidentified material in this assemblage, as well as a limited amount of material that can be identified to medium-sized or large-sized mammal. It is assumed that unidentified material has been discarded at some point since the excavation, rather than being absent from these contexts or not recovered.

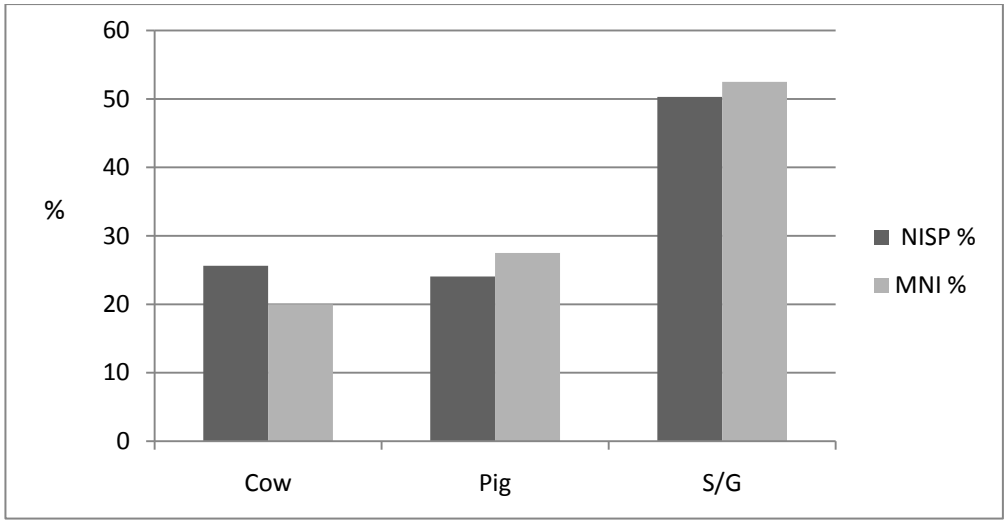

Figure 2.78: Proportion of main domestic species, 'Rubbish Layers'. N = 3421

The degree of fragmentation of cattle is greater than that for pig and sheep/goat, as shown by the loose teeth percentages given in Figure 2.79.

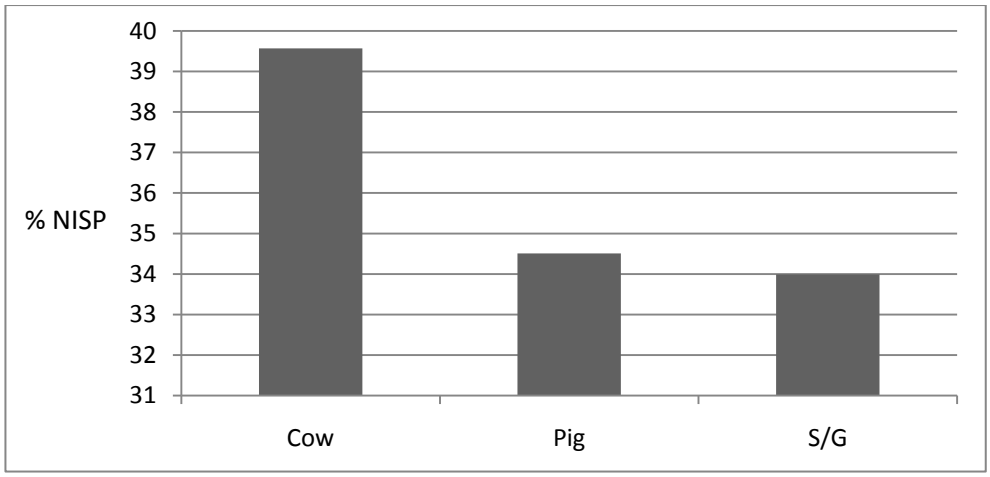

Figure 2.79: Percentages of loose teeth by species, 'Rubbish Layers'. N = 1242

A2.9.2 Taphonomy and butchery

Full analysis of taphonomic markers has not been carried out for reasons given above. However, Table 2.46 gives overall assemblage percentages. These are very similar to the main Middle Iron Age assemblage listed above.

Table 2.46: Overall incidence of taphonomic markers in the 'Rubbish Layers' assemblage.

Gnawed, Weathered, and Burned fragments		Butchered fragments	
No	**%**	**No**	**%**
498	12.88	43	1.11

A2.9.3 Cattle

A2.9.3.1 Element representation

The elements represented in this assemblage are shown in Figures 2.80 and 2.81. Although all elements of the body are present, it is notable that the best represented are the loose teeth and foot bones, and cattle may have suffered disproportionately from fragmentation. Considered by MNE, head elements are under-represented.

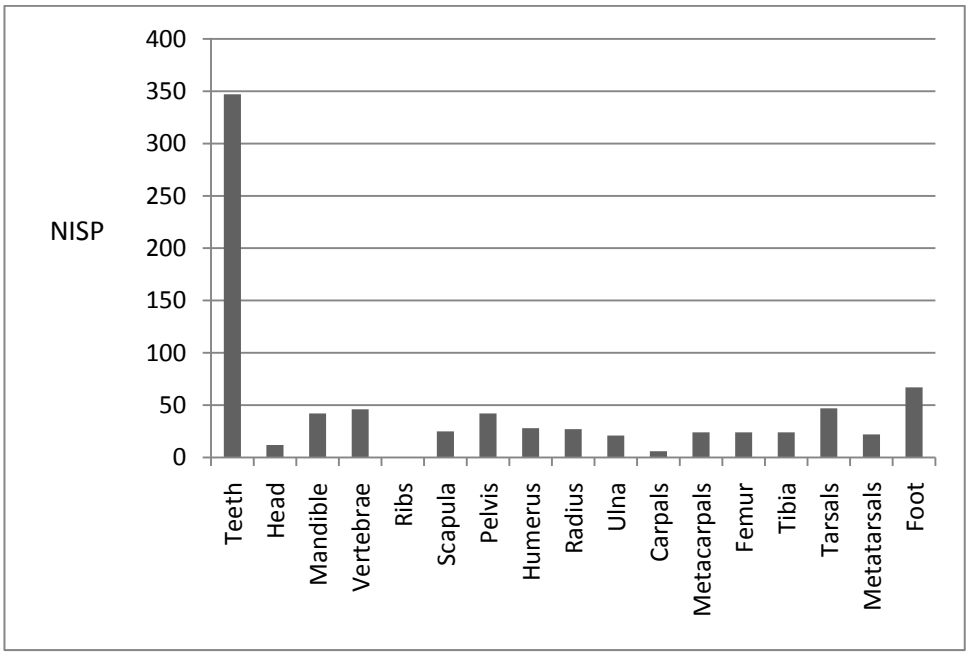

Figure 2.80: Representation of cattle elements, 'Rubbish Layers'. NISP. N =804 (Compare to MNI = 16).

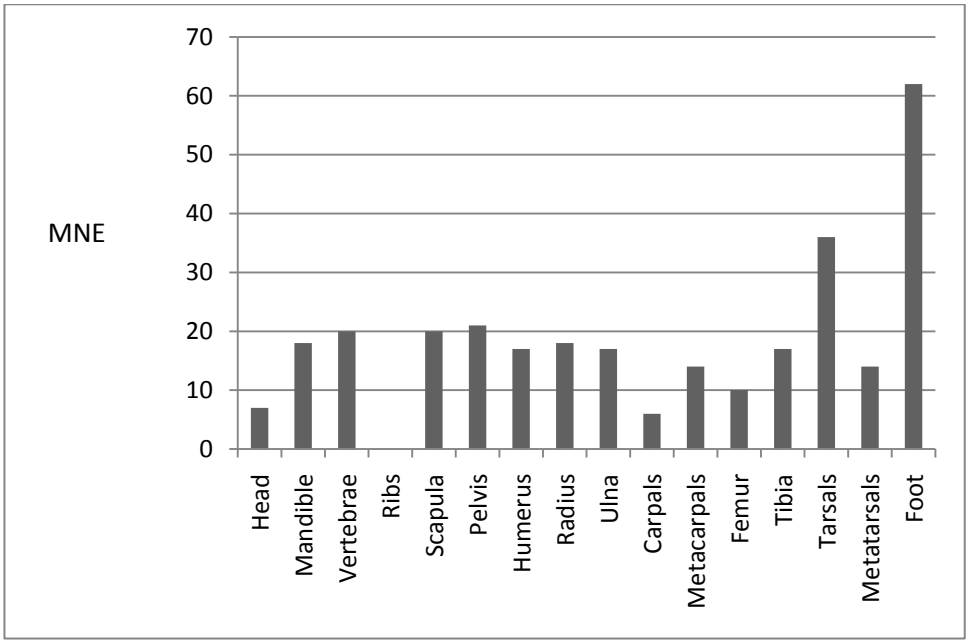

Figure 2.81: Representation of cattle elements, 'Rubbish Layers'. MNE. N =297 (Compare to MNI = 16).

A29.3.2 Age and herd structure

A single mandible could be assessed as having a mandible wear stage of 1. Four other mandibles are from individuals that might fall between MWS 20 and 40. Examining the loose teeth, five deciduous fourth premolars can be assessed as relating to MWS 1, whilst consideration of loose mandibular third molars has most MWS in the high 30s and 40s. This is also reflected in the loose mandibular first molars which are shown in Figure 2.82.

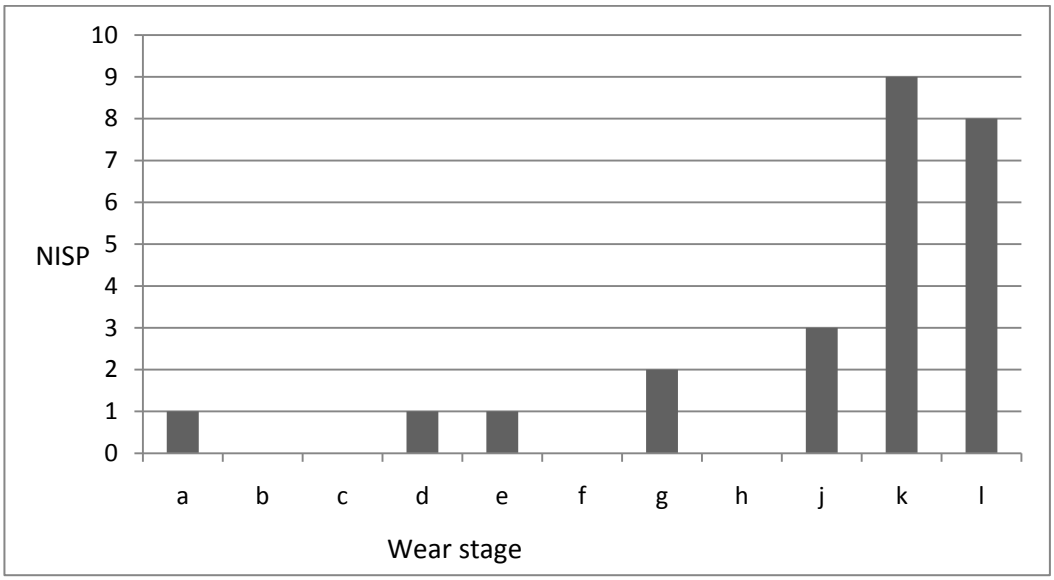

Figure 2.82: Grant wear stages in mandibular first molars. Stages k and l may equate to mandibles with an MWS of 39-42 and 43-46 respectively. N = 25

There were 192 porous fragments, representing a minimum of seven individuals, compared to nine with non-porous bone. Fusion (Table 2.47) indicates that this assemblage is similar to other periods and locations and consists of very young cattle and mature and older adults.

Table 2.47: Fusion information for cattle, 'Rubbish Layers'

Fusion date	Element	Fused	Unfused
Early Fusing (7-10mths)	Scapula	6	9
(7-10mths)	Pelvis	17	12
(12-18mths)	Humerus, distal	5	10
(12-18mths)	Radius, proximal	8	9
Later fusing (24-30mths)	Metacarpal, distal	0	4
(27-36mths)	Metatarsal, distal	4	4
(24-30mths)	Tibia, distal	7	6
Late fusing (36-42mths)	Calcaneus	4	4
(42-48mths)	Humerus, proximal	0	9
(42-48mths)	Radius, distal	4	8
(42-48mths)	Ulna	0	6
(42mths)	Femur, proximal	1	8
(42-48mths)	Femur, distal	2	8
(42-48mths)	Tibia, proximal	2	5

A2.9.3.3 Pathology

A number of elements were noted as having pathological changes (Table 2.48), most of these related in some way to degenerative changes of the joints, particularly the lower leg and foot and the hip. Whilst only two cases were severe enough to enable a clear diagnosis of osteoarthritis, other degenerative changes may relate to earlier phases of this disease or other arthropathies. It is possible that some of these are related to the use of cattle in traction.

Table 2.48: Pathological cattle elements, 'Rubbish Layers'.

Site	Context	Element	Part	Type	Comment
SC/N	601	Pelvis	Acetabulum	Osteoarthritis	
SC/N	028	Femur	Caput	Osteoarthritis	
SC/N	601	Ulna	Shaft	Degenerative change	
SC/N	028	Metatarsal	Distal shaft	Roughening	Traction?
SC/N	601	Metatarsal	Proximal articulation	Degenerative change	
SC/N	852	Metatarsal	Distal Shaft	Roughening	Traction?
SC/N	026A	Metatarsal	Proximal shaft	Osteomyelitis	
SC/T	254C	Cuneiform	Proximal facet	Degenerative change	
SC/T	152	Calcaneus	Tuberosity	Enthesophytes	?traumatic
SC/N	007	1st Phalanx	Distal articulation	Degenerative change	
SC/N	007	1st Phalanx	Proximal articulation	Degenerative change	
SC/N	007	3rd Phalanx	Proximal articulation	Degenerative change	
SC/N	007	3rd Phalanx	Proximal articulation	Degenerative change	
SC/N	852	Mandibular 3rd molar		Malocclusion	Severe
SC/T	254C	Maxillary 4th premolar		Calculus	Moderate

A2.9.4 Pig

A2.9.4.1 Element representation

823 fragments were identified as pig bone and the distribution of those fragments through the body is shown in Figure 2.83 and2. 84. Like cattle, pig displays a high proportion of loose teeth and foot bones, indicating that it similarly was more affected by fragmentation than sheep/goat. However, there is an interesting elevation in the number of head and mandible fragments, indicates the degree of fragmentation in these horizontal layers.

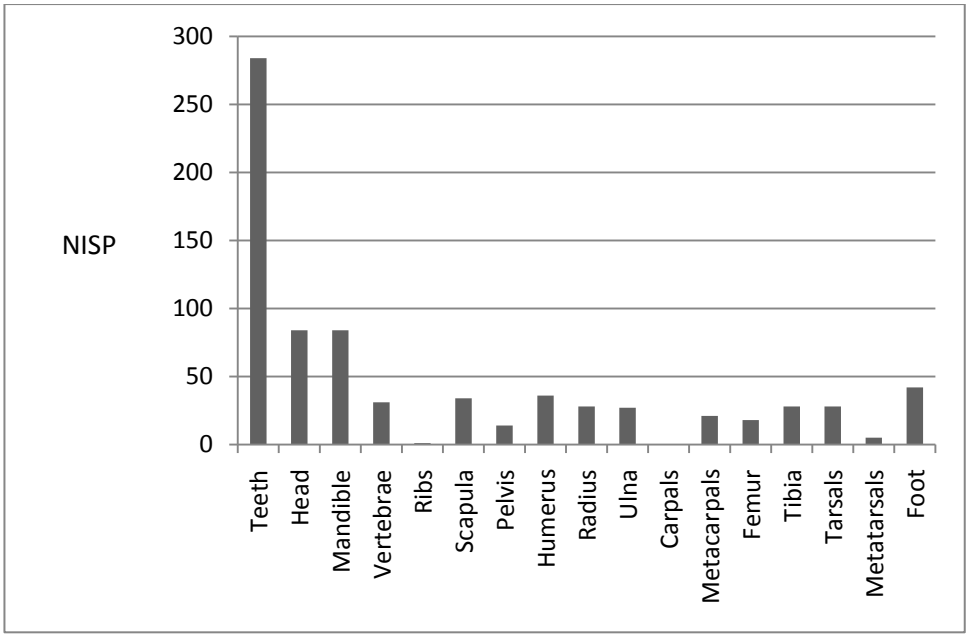

Figure 2.83: Representation of pig elements, 'Rubbish Layers'. NISP. N = 765 (Compare to MNI = 22).

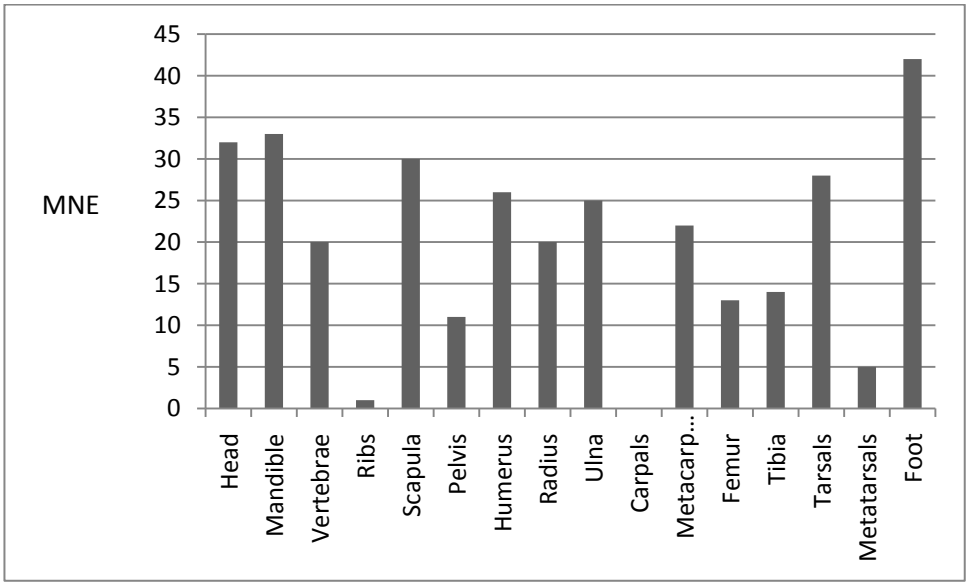

Figure 2.84: Representation of pig elements, 'Rubbish Layers'. MNE. N = 322 (Compare to MNI = 22).

A2.9.4.2 Age and herd structure

The mandible wear stages of pigs from the 'Rubbish Layers' are shown in Figure 2.85. Whilst there are no neonatal animals represented, which may be explained by the degree of fragmentation of pig in this assemblage, the majority of animals died as juveniles and sub-adults under two years of age. The few older animals, three young adults and one adult (over 3 years of age) presumably represent breeding stock. The information from fusion data is given in Table 49. This supports the pattern indicated in the toothwear data.

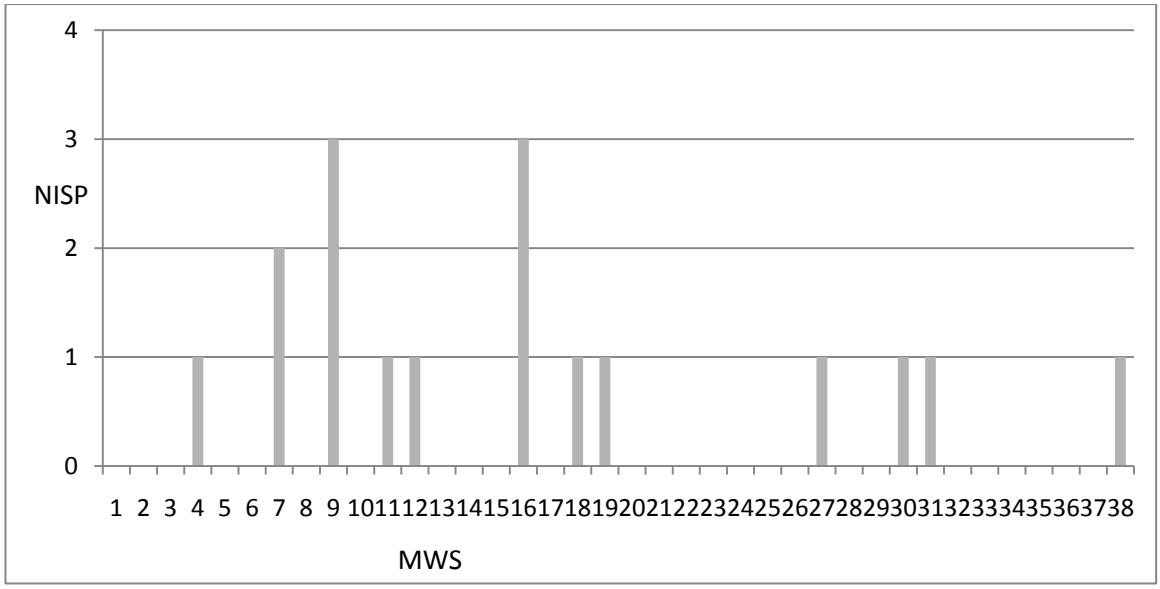

Figure 2.85: Grant Mandible Wear Stages for pig, 'Rubbish Layer'. N = 17

Table 2.49: Fusion of pig elements, 'Rubbish Layers'

Fusion date	Element	Fused	Unfused
Early Fusing (12mths)	Scapula , glenoid	12	6
(12mths)	Pelvis, acetabulum	8	4
(12mths)	Humerus, distal	7	4
(12 mths)	Radius, proximal	14	8
Later fusing (24 mths)	Metacarpal, distal	7	9
(27 mths)	Metatarsal, distal	2	1
(24mths)	Tibia, distal	2	9
Late fusing (24-30 mths)	Calcaneus	2	9
(42 mths)	Humerus, proximal	0	4
(42mths)	Radius, distal	1	6
(36-42 mths)	Ulna	1	7
(42mths)	Femur, proximal	0	6
(42mths)	Femur, distal	1	2
(42mths)	Tibia, proximal	0	5

In considering the sex of individuals, the proportions between canines with male and female morphology is shown in Figure 2.86. Again, most of these came from loose teeth, but four were in the mandible, all male. It is clear that males outweigh females. For this to occur, females would be having to be killed before formation of the canine and therefore not be recorded, or most females were not present in or disposed in the area. Coupled with the lack of very young pigs the preferable explanation seems to be that farrowing occurred elsewhere and surplus young males were brought to the plateau of the hill for consumption or at least disposal.

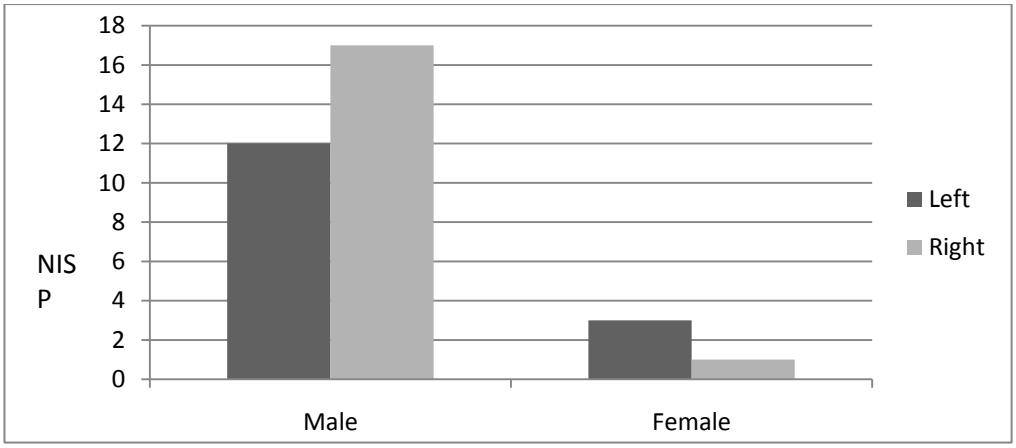

Figure 2.86: Numbers of male and female canines from the 'Rubbish Layers'. N = 33

A2.9.4.3 Pathology

Three pig teeth showed examples of hypoplasia (Table 2.50).

Table 2.50: Pathology noted in pig elements, Rubbish Layer.

Site	Context	Species	Element	Part	Type	Comment
SC/N	601	PIG	Mandible	M3	Hypoplasia	
SC/N	852A	PIG	Mandibular 3rd molar		Hypoplasia	
SC/N	151	PIG	Maxillary 3rd molar		Hypoplasia	

A2.9.5 Sheep/Goat

1,721 fragments were identified as sheep/goat in this series of deposits. Few elements provided information on the proportion of sheep and goats, but ten astragali suggested morphologically that they could possibly come from sheep in comparision to three goat. A single femur appeared to come from a sheep, as did a third phalanx, but a horncore, a metatarsal and two phalanges were probably goat. Proportions of the two species are not possible to ascertain, but the presence of goats is confirmed.

A2.9.5.1 Element representation

The assemblage is, like cattle and pig, dominated by loose teeth, although as noted above, sheep/goat appear to have suffered slightly less fragmentation. The parts of the body represented are shown in Figures 87 and 88. All area of the body are represented, with elevated levels of tibia and particularly radius in the MNE. This may be because the shafts of these elements are reasonably robust, and given the type of deposit, this pattern of elements might be expected.

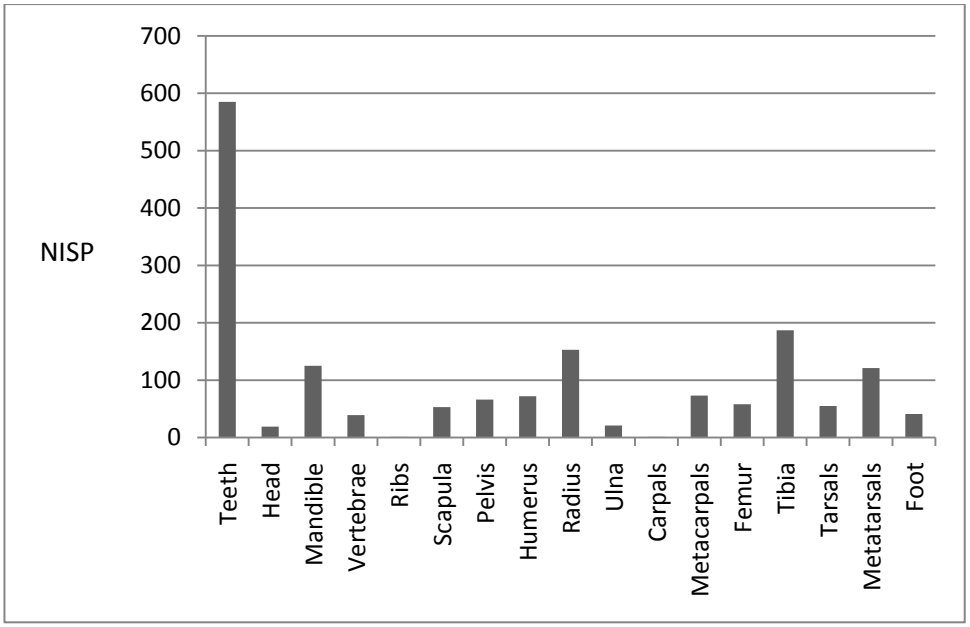

Figure 2.87: Representation of sheep/goat elements, 'Rubbish Layers'. NISP. N = 1670 (Compare to MNI = 42).

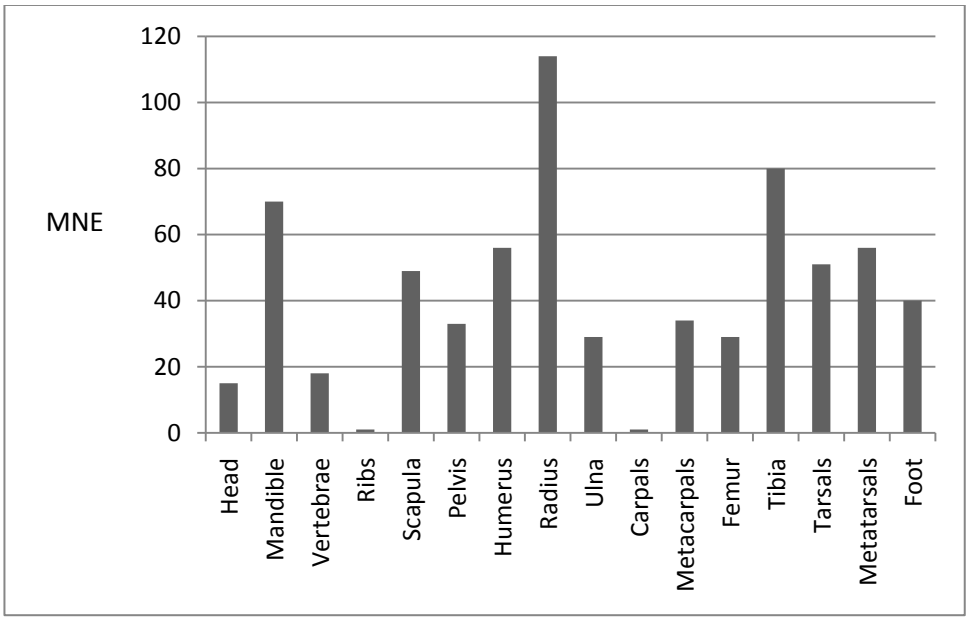

Figure 2.88: Representation of sheep/goat elements, 'Rubbish Layers'. NISP. N = 676 (Compare to MNI = 42).

A2.9.5.2 Age and herd structure

Mandible wear stages for sheep/goat are shown in Figure 2.89.

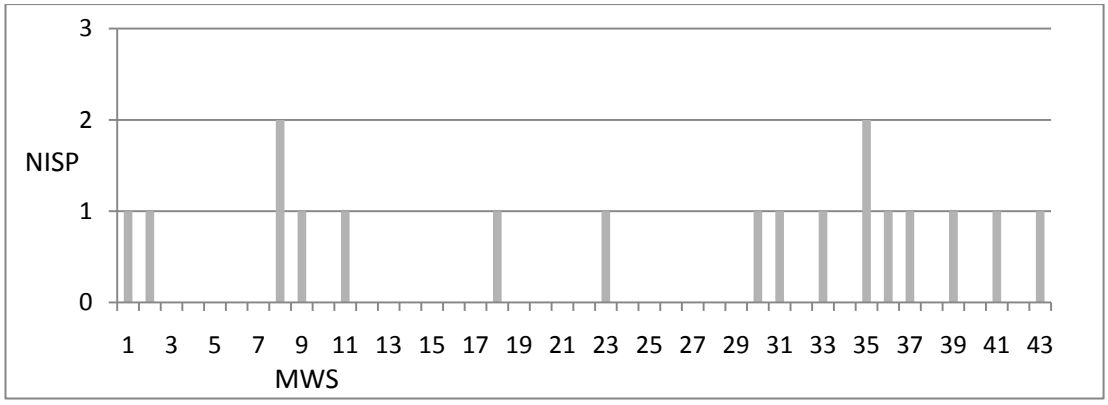

Figure 2.89: Grant Mandible Wear Stages for sheep/goat, 'Rubbish Layers'. N = 18

Whilst this is as small collection of mandibles, there appears to be an emphasis on younger and older individuals. Two neonatal individuals are present, but the predominance of older individuals may be taphonomic, given the pattern of fragmentation discussed above. Additional mandibles have been included in the Payne kill-off curve in Figure 2.90. The curve is similar to other Middle and Late Iron Age assemblages on the site in respect of older individuals, implying that the lack of younger individuals may well reflect the differential fragmentation of porous elements. 148 porous fragments were recorded, and the fusion data (Table 51) also supports the spread of age groups indicated by the toothwear data.

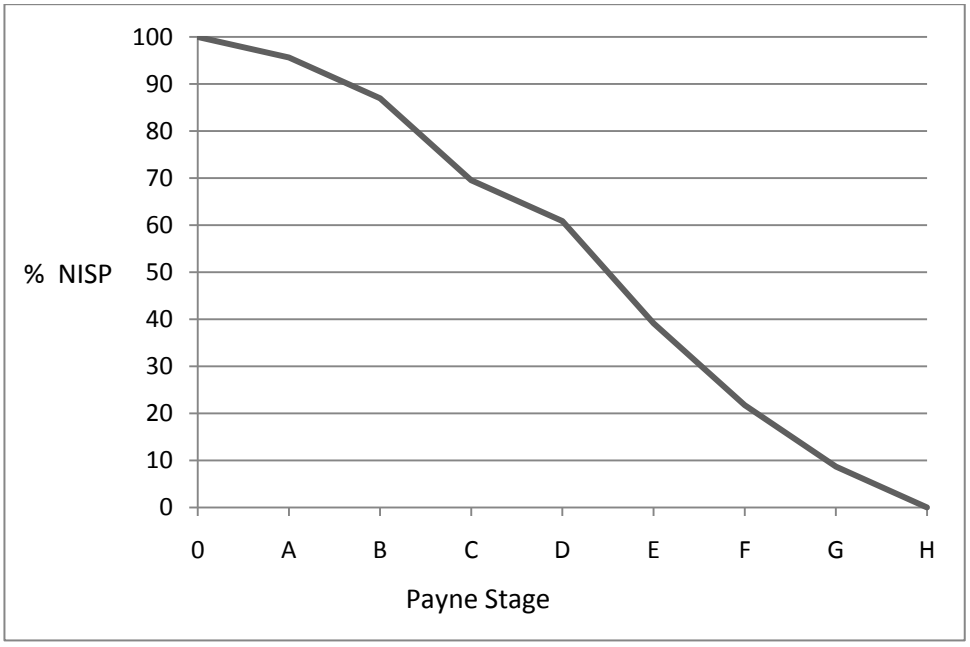

Figure 2.90: Sheep/Goat kill off profile using Payne wear stages, 'Rubbish Layer'. N = 23

Table 2.51: Fusion in sheep/goat, 'Rubbish Layers'.

Fusion date	Element	Fused	Unfused
Early Fusing (6-8mths)	Scapula, glenoid	27	7
(6-10mths)	Pelvis, acetabulum	49	6
(10mths)	Humerus, distal	30	7
(10mths)	Radius, proximal	31	8
Later fusing (18-24mths)	Metacarpal, distal	8	11
(20-28mths)	Metatarsal, distal	13	7
(18-24mths)	Tibia, distal	24	18
Latest fusing (30-36mths)	Calcaneus	8	7
(36-42 mths)	Humerus, proximal	1	5
(36mths)	Radius, distal	9	16
(30mths)	Ulna	3	2
(30-36mths)	Femur, proximal	3	24
(36-42mths)	Femur, distal	4	10
(36-42mths)	Tibia, proximal	2	9

A2.9.5.3 Pathology

A number of pathological specimens were noted (Table 2.52), dominated by the development of calculus and infection resulting from periodontal disease. Animals may have been kept for some time with dental and oral problems for these to have developed to this extent.

Table 2.52: Pathological elements for sheep/goat, 'Rubbish Layers'.

Site	Context	Element	Part	Type	Comment
SC/N	026	Humerus	Distal articulation	Penning elbow	
SC/N	601	Mandible	Inferior margin mandible	Periostitis, ?osteitis and osteomyelitis	
SC/N	601	Mandible	M1-2	Osteitis result of periodontal disease	
SC/N	002	Mandible	Tooth row	Calculus	Slight
SC/N	002	Mandible	Tooth row	Calculus	Severe
SC/T	254C	Mandible	Dp3	Calculus	Slight
SC/T	254C	Mandible	Dp4	Calculus	Slight
SC/T	254C	Maxilla	Tooth row	Calculus	Moderate

A2.9.6 Dog

A2.9.6.1 Element representation

Only 16 fragments of dog bone were recovered. These were from various areas of the body, with three loose teeth, four ribs, five vertebrae, a tibia, radius, astragalus and pelvic fragment. The pelvis had a fused acetabulum, whilst the distal radius and tibia were also fused. There was no porous bone.

A2.9.6.2 Pathology

A single element demonstrated pathological change and is shown in Table 2.53.

Table 2.53: Pathological elements, dog, 'Rubbish Layers'.

Site	Context	Element	Part	Type	Comment
SC/T	254C	Mandible	Tooth row	Periodontal disease	Moderate

A2.9.7 Horse

A2.9.7.1 Element representation

There were 47 fragments of horse recorded from the 'Rubbish Layers'. This is dominated by 25 loose teeth. However there are elements from the feet and lower leg, vertebrae as well as several scapula, tibia and pelvis fragments.

A2.9.7.2 Age

None of the horse bone was porous , and there were no deciduous teeth. Both maxillary and mandibular teeth were permanent and either worn or heavily worn, indicating older individuals.

A2.9.7.3 Pathology

No pathological elements were noted.

A2.9.8 Wild Species

Thirteen fox bones were spread through a number of contexts and represent the remains of a minimum of two individuals. None of these were porous and wherever they could be recorded they were fused. It is possible that they represent intrusive material from burrows, but this sort of disturbance was not recorded, and the fact that they are spread through the 'Rubbish Layers' argues against this. There was however no indication of butchery. A single cat humerus could not be determined between domestic and wild. Two bird bones were recorded. One was a buzzard ulna. The other was an almost entire carpometacarpus which had previously been identified as a White Stork, but which has not been checked.

A2.9.9 Associated Bone Groups and complete skulls

As mentioned above, the area of the 'Rubbish Layers' was recognised during excavation as containing a number of discrete burials of single or multiple largely entire cattle. These are summarised in Table 2.54.

Table 2.54: ABGs associated with the 'Rubbish Layers'. Total number of fragments = 3,868

Site	Context	Species	Part(s)	Age	Other information
N	2	Cow	Burial, almost entire	Juvenile	
N	002A	Cow	Two burials, partial	Juvenile	Elements from a third individual
N	002B	Cow	Burial, partial	Juvenile	
N	7	Cow	Burial, almost entire	Adult	
N	026A	Cow	Two burials, almost entire	Juvenile	Elements from two more individuals
N	026B	Cow	Burial, almost entire	Juvenile	
N	026C	Cow	Burial, almost entire	Juvenile	Elements from second individual
N	026E	Cow	Burial, almost entire	Juvenile	
N	026F	Cow	Burial, almost entire	Juvenile	
N	28	Cow	Burial, almost entire	Adult	
N	028A	Cow	Articulating pelvis and lumbar	Adult	A and B probably same animal

			spine		
N	028B	Cow	Skull and collection of parts	Adult	A and B probably same animal
N	31	Cow	Burial, almost entire	Juvenile	
N	151	Cow	Articulating Atlas and Axis	Adult	
N	176	Cow	Burial, partial	Juvenile	
N	188	Cow	Burial, almost entire	Juvenile	
N	601	Cow	Six burials, partial	Juvenile	
N	601	Cow	Skull, partial, mandibles	Adult	
N	601A	Cow	Burial, partial	Juvenile	
N	601B	Cow	Burial, almost entire	Juvenile	
N	651	Cow	Burial, almost entire	Juvenile	Elements from second individual
N	603A	Cow	Skull	Juvenile	
N	603B	Cow	Burial, partial	Juvenile	
N	604A	Cow	Burial, almost entire	Juvenile	
N	606A	Cow	Burial, almost entire	Juvenile	
N	651A	Cow	Two burials, almost entire	Juvenile	Elements from a third individual
N	659	Cow	Burial, partial	Juvenile	
N	659B	Cow	Burial, almost entire	Juvenile	
N	663	Cow	Burial, partial	Juvenile	Elements from second individual
N	663A	Cow	Burial, partial	Juvenile	Elements from second individual
N	666	Cow	Burial, partial	Juvenile	
N	710	Cow	Three burials, partial	Juvenile	
T	115	Cow	Burial, partial	Juvenile	
T	116	Cow	Burial, almost entire	Juvenile	Elements from second individual
T	152	Cow	Skull, almost entire	Adult	
T	152	Sheep/Goat	Skull, almost entire	Adult	
T	154	Cow	Burial, almost entire	Juvenile	
T	155A	Cow	Burial, almost entire	Juvenile	
T	155B	Cow	Burial, almost entire	Juvenile	Elements from second individual
T	156	Cow	Burial, almost entire	Juvenile	
T	157	Cow	Burial, almost entire	Juvenile	
T	158	Cow	Burial, almost entire	Juvenile	
T	176	Cow	Burial, partial	Juvenile	

The types of ABG associated with the Rubbish deposits are shown in Figure 2.91.

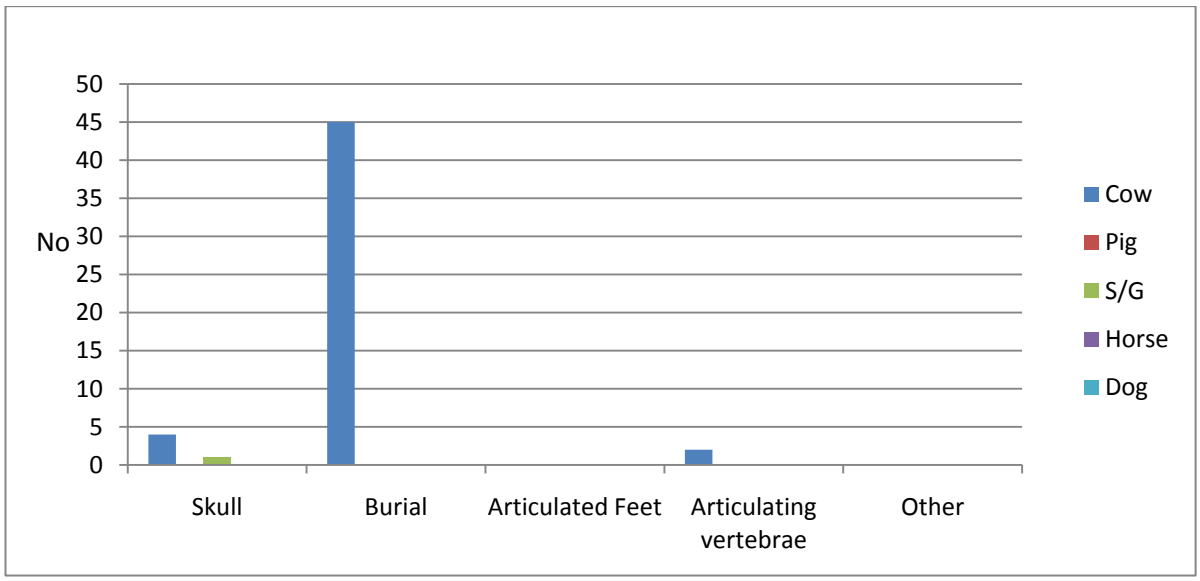

Figure 2.91: Type of deposit recognised as an ABG in the 'Rubbish Layers' and associated contexts, by species. N = 52

It is clear that the area is dominated by the cattle ABGs. Counting these contextually as discreet deposits noted in separate contexts, but taking into account where there are more than one individual comprising a deposit, a minimum of 53 calves, two almost complete adult cows, a partial adult carcase and a skull. The MNI however produces a count of 36 calves and four adult cattle. The even distribution of elements (Figures 2.92 and 2.93) and the reduced degree of fragmentation, indicate the largely complete nature of these burials.

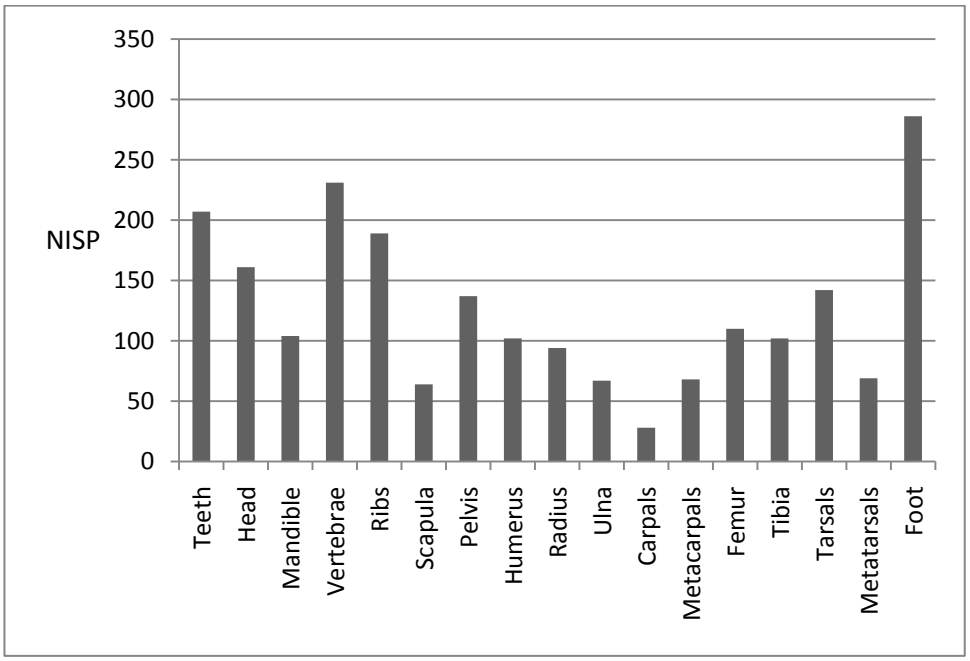

Figure 2.92: Cattle ABG element representation 'Rubbish Layers' NISP. N = 2161 (Compare MNI = 40)

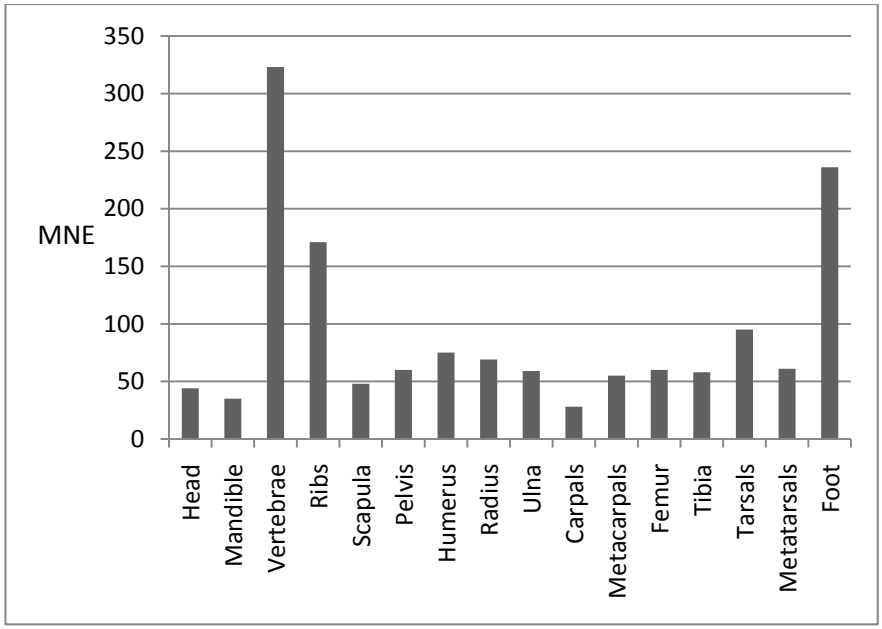

Figure 2.93: Cattle ABG element representation 'Rubbish Layers' MNE. N = 1477 (Compare MNI = 40)

The two adult cattle from N007 and N028 have been previously shown to be older females. All of the others proved to be very young calves, with unfused early fusing epiphyses universal, and six age-able mandibles (mandibles were so fragmented that this was limited) all at MWS 1. Loose teeth from these contexts included a single first molar at stage l, a third molar at stage g, and three unworn deciduous second premolars, 10 unworn deciduous third premolars, 7 deciduous fourth premolars at wear stage a, and one at stage g. The small number of loose teeth from older individuals would be consistent with material residual or incorporated from other deposits, but the vast majority of teeth are consistent with animals that died in the first weeks of life, but after the immediate neonatal period. A number of these burials have proven to contain elements from additional individuals, as if disturbed from earlier similar deposits. This is not entirely borne out by comparison with the cattle included in the 'Rubbish Layers' themselves, although there is evidence of neonatal cattle in that assemblage.

A2.9.10 Discussion of the 'Rubbish Layers'

Sheep/goat again were the predominant species in this assemblage, with cattle and pig in similar proportions as secondary. All species suffered badly from fragmentation in this material and it is not really surprising given the context. It appears that the cattle in the body of the 'Rubbish Layers'were from similar age groups to those from other Middle and Late Iron assemblages, in that very young and old cattle predominate. It is notable that this state of affairs is directly mirrored by the 'calf burials'. Most of the pathological changes noted related in some way to degenerative diseases of the joints, particularly the lower leg and foot and the hip. The proportion of older animals may provide some explanation for the degenerative pathologies presented, but also may relate to the use of animals for traction.

Whilst there are no neonatal pigs represented, which may be explained by the degree of fragmentation, the majority of animals died as juveniles and sub-adults under two years of age. The few older animals, three young adults and one adult (over 3 years of age) presumably represent breeding stock. Males appear to have heavily outnumbered females. Coupled with the lack of very young pigs farrowing may have occurred elsewhere with young males brought to the hillfort for consumption.

A few elements of goat have been identified in this assemblage, although the majority still appear to have been sheep. Elevated levels of tibia and radius, as well as large numbers of loose teeth indicate the extent of fragmentation. There appears to be an emphasis on younger and older individuals . The Payne curve is similar to other Middle and Late Iron Age assemblages on the site in respect of older individuals, implying that the lack of younger individuals may well reflect the differential fragmentation of porous elements. Pathological conditions were dominated by the development of calculus and infection as a result of periodontal disease.

A handful of dog and horse bone was recovered. None of the horse bone is porous, and there are no deciduous teeth. All the evidence indicates older animals. Wild species were again rare. Thirteen fox bones were spread through the 'Rubbish Layers'. These were highly unusual compared to the rest of the later Iron Age assemblage. A single cat humerus is assumed to be

wild, given the lack of evidence to the contrary. Birds were represented by a buzzard ulna, and an almost entire carpometacarpus possibly from a White Stork.

The 'Rubbish Layers' were associated with a remarkable series of burials and part burials of cattle, two of which were adult females, the rest *c* 36-53 neonatal calves. Some of these were recognised as discrete individual or multiple burials, whilst others are concentrations of bones that equate to one or more individuals identified during reanalysis. These are the only true ABGs recorded from the entire site. Where individual cuts were identified, they appeared to lay in shallow scoops, and do not appear to have had other objects placed with them. They had a very uniform appearance and patina. As mentioned above, the cow and calf burials appear to reflect the main trends of the Middle-Late Iron Age cattle herd, with large numbers of neonatal cattle killed compared to a few older individuals. As such they entirely reflect the economic pursuit of a mixture of products that prioritised dairy. However, the method of disposal sets them apart, and draws attention to the possible perception of the importance of the cattle enterprise.

A2.10.0 Late Iron Age

The material dated to the Late Iron Age comes from a variety of contexts, including, pits, postholes and bank material. It was distributed across the across the entire hillfort.

A2.10.1 Species representation

A total of 18,005 fragments were recorded as belonging to the Late Iron Age, and the species represented are given in Table 2.55.

Table 2.55: Species representation, Late Iron Age.

Species	NISP	% NISP	% Main	MNI	% MNI
Cow	2522	14.17	21.35	61	16.67
Pig	2284	12.83	19.34	80	21.86
S/G	7006	39.35	59.31	225	61.47
Dog	108	0.61		5	
Horse	205	1.15		5	
Large mammal	1221	6.85			
Medium mammal	1956	10.99			
Unidentified	2502	14.05			
Total main	**17804**				
Red Deer	11				
Roe Deer	3				
Deer	2				
Hare	6				
Fox	2				
Cat	3				
Bird	34				
Small mammals	107				
Amphibians	33				
Total fragments	**18005**				

The proportion of material that has not been identified to species is respectable, but it is still suspected that the count for unidentified fragments is not fully representative and some material may have been discarded after excavation. The fragment count for medium-sized mammals is greater than for cattle-sized mammals. It is not, however, as great as one might expect if it were following the proportions between the identified species, and it is suspected that some smaller fragments may have also been discarded. The species represented and the general proportions again emphasise the importance in this assemblage of domestic species, in particular the three main livestock species, predominantly sheep/goat. This is further demonstrated when looking at the percentages of the three main species shown in Figure 2.94.

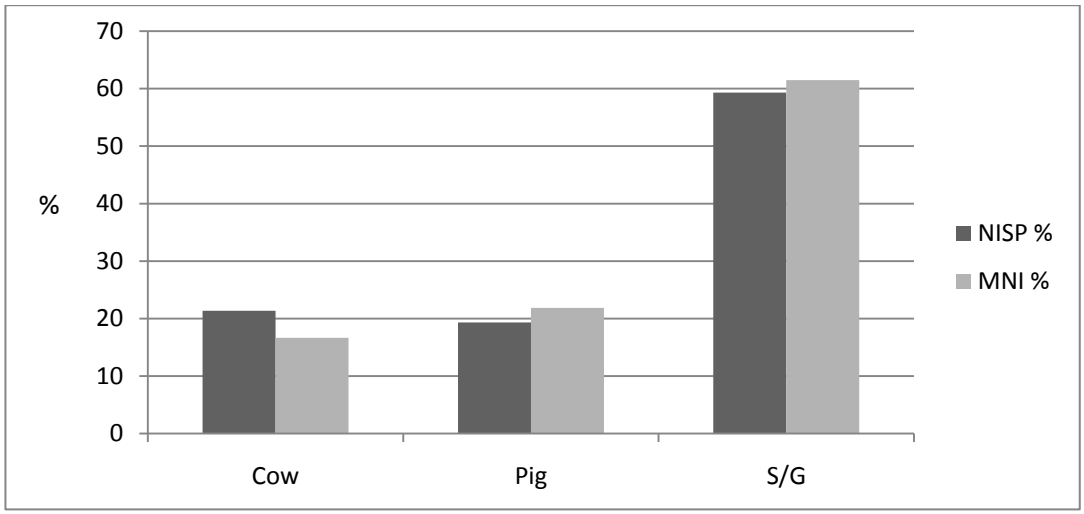

Figure 2.94: Proportion of main domestic species, Late Iron Age. NISP = 11812 MNI = 366

Slight differences between the NISP and MNI calculations between sheep/goat and pig and cattle may indicate that the latter suffered greater fragmentation, and this is also reflected in the proportion of loose teeth by species shown in Figure 95.

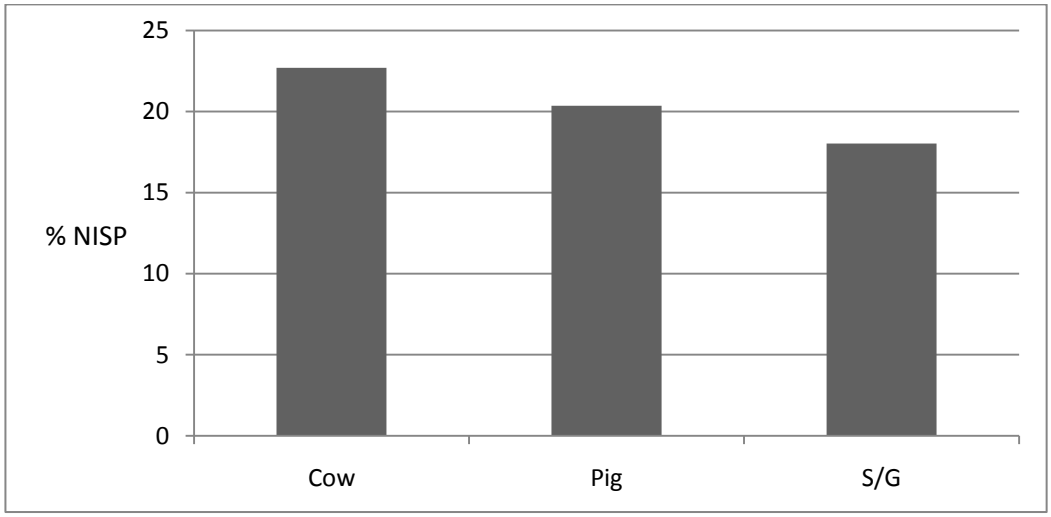

Figure 2.95: Percentage of loose teeth of identified elements, by species, Late Iron Age. N = 2301

A2.10.2 Taphonomy and butchery

Full analysis of taphonomic markers has not been carried out for reasons given above. However, Table 2.56 gives overall assemblage percentages. These levels are similar to the main Middle Iron Age and 'Rubbish Layers' assemblages.

Table 2.56: Overall incidence of taphonomic markers in the Late Iron Age assemblage.

Gnawed, Weathered, and Burned fragments		Butchered fragments	
No	**%**	**No**	**%**
2509	13.94	357	1.98

A2.10.3 Cattle

A2.10.3.1 Element representation

The assemblage of cattle bone consisted of 2,522 fragments; the elements represented are shown in Figures 2.96 and 2.97. The assemblage is again dominated by teeth and foot bones, but the rest of the body is well represented, and relatively evenly represented. Heads are again under-represented compared to other elements. This probably relates to greater fragmentation of the less robust elements.

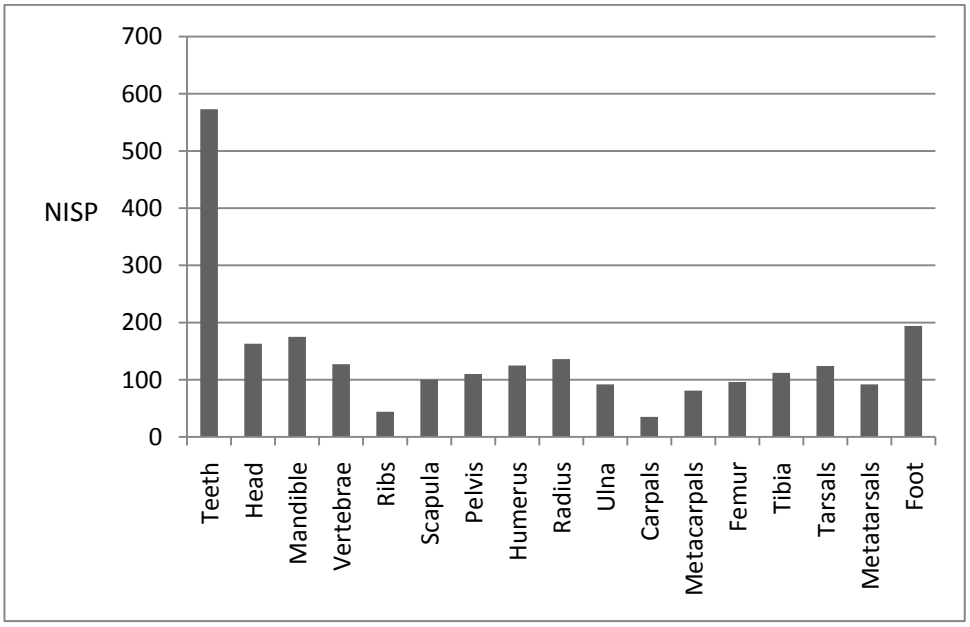

Figure 2.96: Representation of cattle elements, Late Iron Age. NISP. N = 2379 (Compare to MNI = 61).

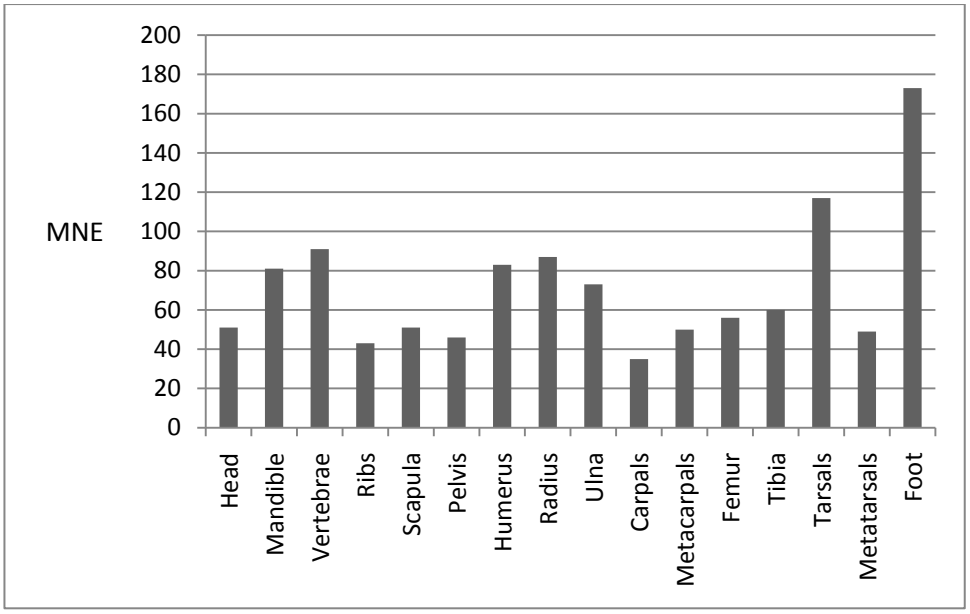

Figure 2.97: Representation of cattle elements, Late Iron Age. MNE. N = 1146

A2.10.3.2 Age and herd structure

A number of mandibles was available for estimation of mandible wear stages and this information is given in Figure 2.98. The emphasis is on very young individuals and sub-adults and adults. This fits with the picture outlined above that may be indicative of dairying as a major purpose. However, the small group of animals at MWS 29-30 may also indicate that some animals were slaughtered at a prime meat weight.

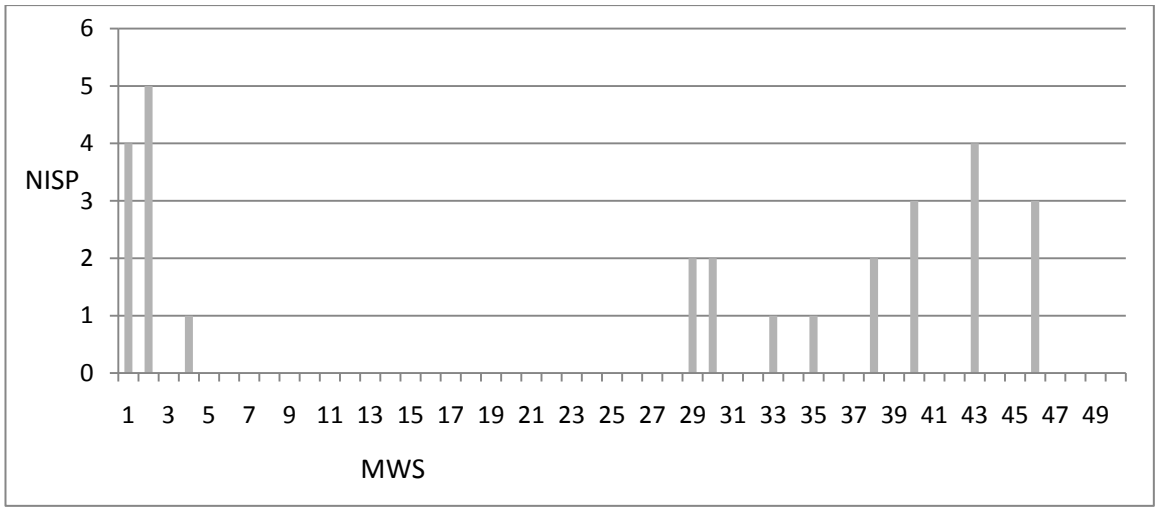

Figure 2.98: Grant Mandible Wear Stages for cattle, Late Iron Age. N = 28

This dichotomy between young and older cattle is replicated when considering the wear stages of fourth deciduous premolars, fourth permanent premolars and third mandibular molars shown in Figures 2.99, 2.100, and 2.101. The numbers of neonates are reflected in the

predominance of Dp4s in the least worn category, whilst only the three examples at stage j relate to animals older than the younger end of the juvenile category.

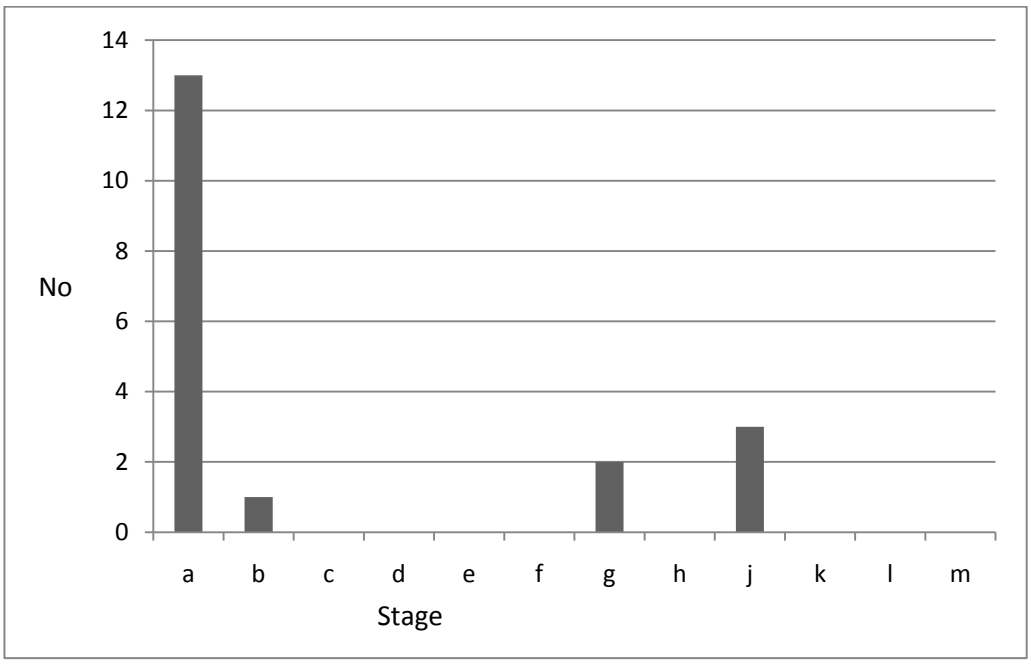

Figure 2.99: Grant mandible wear stages, cattle, Dp4, Late Iron Age. N = 19

Considering the wear on permanent premolars, there is an even scatter of wear stages that reflect animals in the later part of the sub-adult class through the young adult phase. There are four cases that relate to adults. However, the generally low but evenly spread numbers of these age groups appears significant.

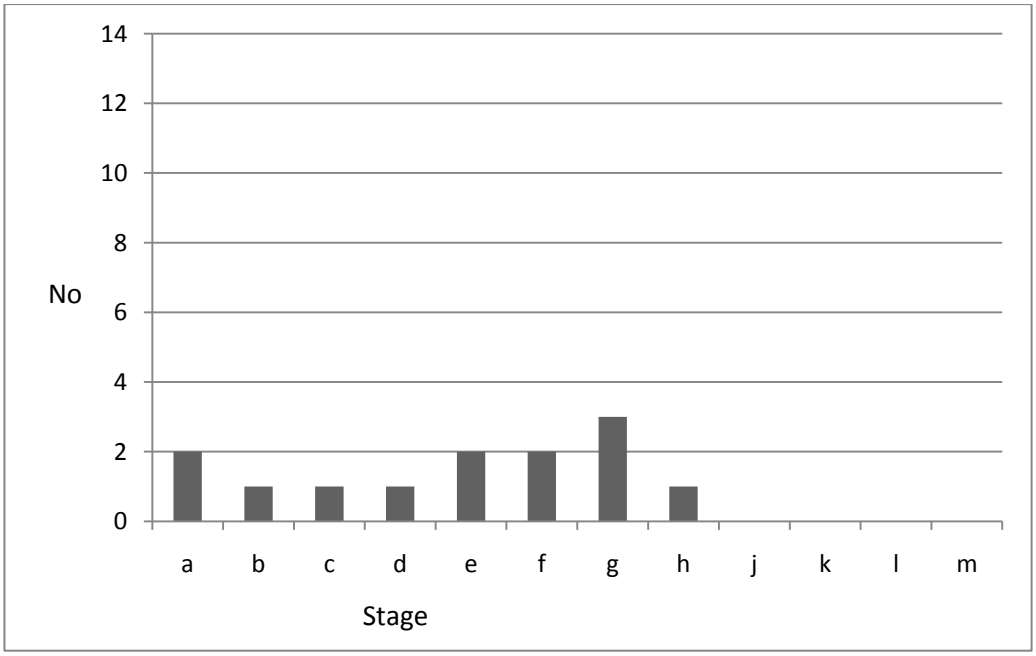

Figure 2.100: Grant mandible wear stages, cattle, P4, Late Iron Age. N = 13

The mandibular molars however, indicate the presence of additional animals in the oldest categories. The peak of M3 wear at stage g indicates a considerable number of fully adult cattle, whilst old adults are also represented. Had larger numbers of sub-adult cattle been present, there should be more third molars with scores reflecting lack of wear. In the event only a single loose M3 falls into this category. In general terms, the loose teeth confirm the general shape of the main MWS histogram, with large numbers of neonatal and young animals dying, a lack of older juveniles and younger sub-adults, limited deaths amongst young adults, another peak in deaths in the fully adult category and a limited number of animals surviving to become old adults. This mixed picture is also supported by the fusion data given in Table 2.57.

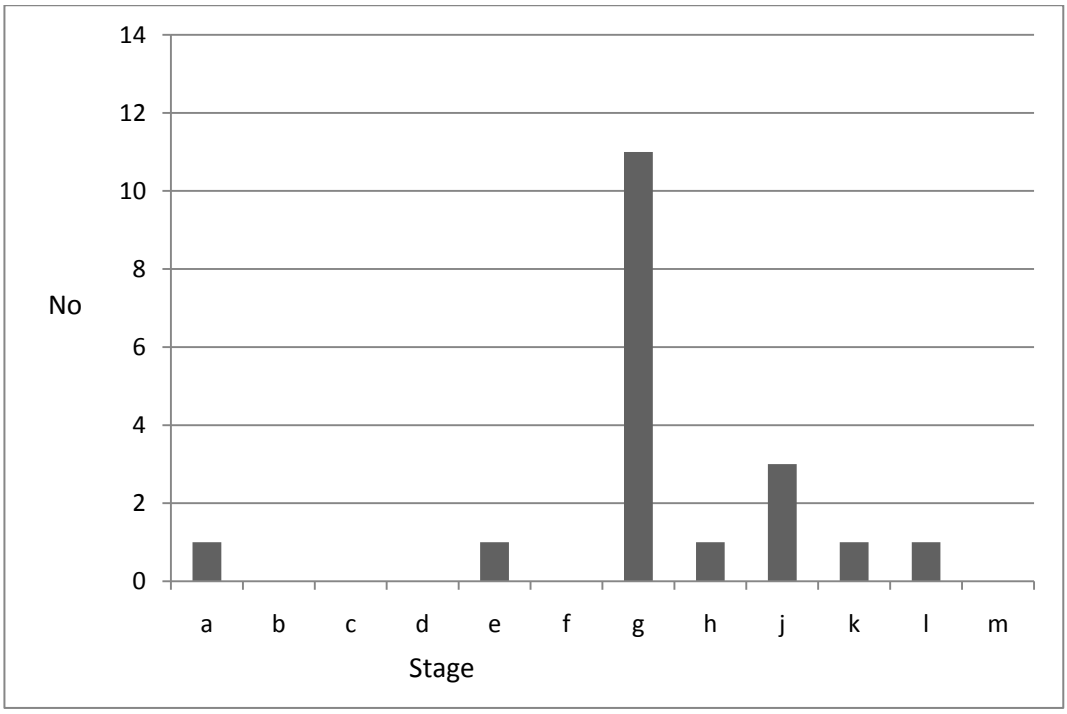

Figure 2.101: Grant mandible wear stages, cattle, M3, Late Iron Age. N = 19

Table 2.57: Fusion information for cattle, Late Iron Age.

Fusion date	Element	Fused	Unfused
Early Fusing (7-10 mths)	Scapula	41	9
(7-10mths)	Pelvis	67	21
(12-18mths)	Humerus, distal	39	17
(12-18mths)	Radius, proximal	69	16
Later fusing (24-30mths)	Metacarpal, distal	12	10
(27-36mths)	Metatarsal, distal	13	16
(24-30mths)	Tibia, distal	36	27
Late fusing (36-42mths)	Calcaneus	6	16
(42-48 mnths)	Humerus, proximal	8	19
(42-48mths)	Radius, distal	11	23
(42-48mths)	Ulna	8	15
(42 mnths)	Femur, proximal	13	18
(42-48mths)	Femur, distal	10	17
(42-48mths)	Tibia, proximal	60	17

Only six metacarpals could be assessed for sex using Howard's Index, a probably unrepresentative sample. However of those six, three belonged to bulls, two to cows and one a steer. Whilst the proportion between the three groups is not necessarily particularly helpful, it indicates that castrates were present. The dimensions of horncore bases were considered, and are shown in Figure 2.102. These represent a reasonable linear progression that is related to overall size, and all of the examples appear to be ovoid in shape rather than more even, and therefore are more likely to relate to females.

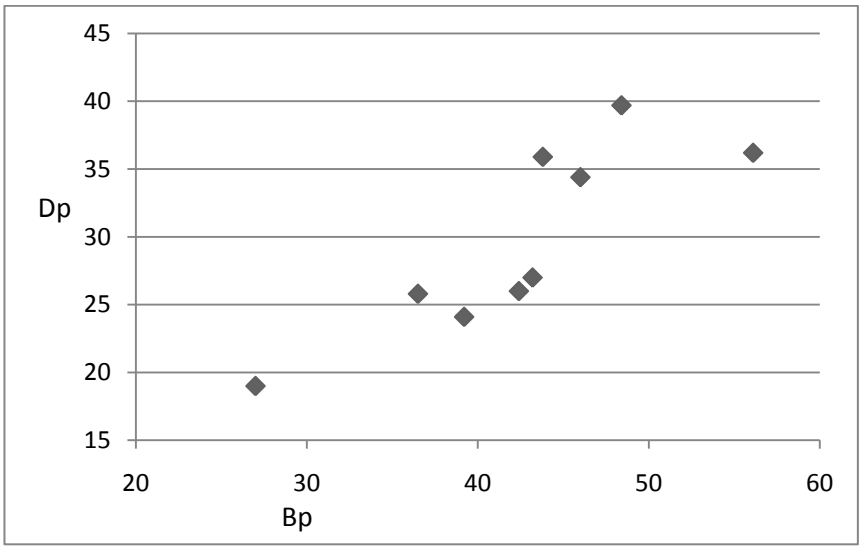

Figure 2.102: Dimensions of cattle horncore bases, depth compared with breadth of the base. N = 9.

Other elements that might reflect the proportions of males and females are limited. Figure 2.103 give the results for the distal metatarsal. This clearly indicates two groups, which probably relate to males and females, but given that there are two of each it does not assist greatly.

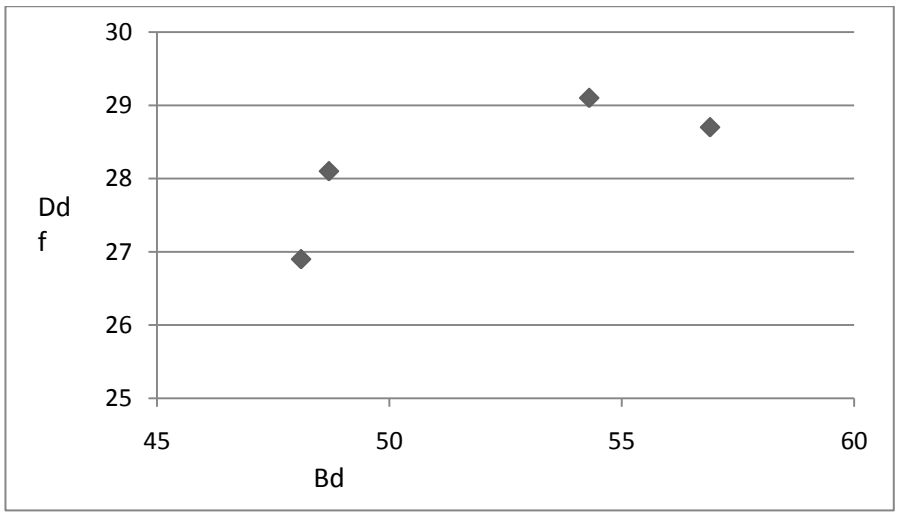

Figure 2.103: Dimensions of distal cattle metatarsals, Late Iron Age. N = 4

A2.10.3.3 Pathology

Several cases of pathological change were noted and these are given in Table 2.58.

Table 2.58: Pathological elements for cattle, Late Iron Age.

Site	Context	Element	Part	Type	Comment
SC/C	102	Horn	Shaft	Epigenetic/metabolic?	
SC/C	558	Horn	Shaft	Epigenetic/metabolic?	
SC/D	507	Horn	Shaft	Epigenetic/metabolic?	
SC/F	310	Horn	Shaft	Epigenetic/metabolic?	
SC/F	306B	Horn	Base	Epigenetic/metabolic?	
SC/P	803	Horn	Shaft	NSI	
SC/P	953C	Horn	Shaft	Epigenetic/metabolic?	
SC/W	055	Femur	Trochanter	?Button osteoma	
SC/D	508	Humerus	Distal articulation	Degenerative change	
SC/L	118B	Humerus	Distal articulation	Degenerative change	
SC/A	18A	Radius	Proximal shaft	Degenerative change	
SC/C	653	Radius	Proximal articulation	Degenerative change	
SC/D	202	Radius	Proximal articulation	Periostitis	
SC/L	206	Radius	Proximal shaft	Degenerative change	
SC/K	402	Tibia	Distal articulation	Degenerative change	
SC/K	756	Metacarpal	Shaft	NSI?	
SC/C	560	Metatarsal	Distal shaft	Roughening	Traction?
SC/C	560	Metatarsal	Shaft	Periostitis	
SC/F	310	Metatarsal	Proximal shaft	Degenerative change	
SC/P	905C	Metatarsal	Shaft	Periostitis	
SC/P	608B	Scapula	Blade	Periostitis	
SC/C	012	Pelvis	Acetabulum	Degenerative change	
SC/C	409	Pelvis	Ischium	Periostitis	
SC/P	432C	Pelvis	Acetabulum	Periostitis	
SC/P	608A	Pelvis	Iliopubic eminence	Periostitis	
SC/P	432C	1st Phalanx	Distal articulation	Degenerative change	

The majority of cases involve either degenerative changes to hip, limbs and feet or non-specific infections. The degree of degenerative disease is not surprising if many of animals were relatively old, but may also reflect their use in traction, or retention of bulls into older age groups for breeding purposes. Whilst some infections occurred in limbs and may be as a result of trauma, three cases occurred in the pelvis, and a fourth on the scapula, which may be indicative of systemic infection, although the aetiology cannot be diagnosed.

A2.10.4 Pig

A2.10.4.1 Element representation

A total of 2,284 fragments of pig bone were recorded and these are shown in Figures 2.104 and 2.105. The distribution is again dominated by loose teeth, heads and mandibles, and small foot bones. Considered by MNE this is relatively even.

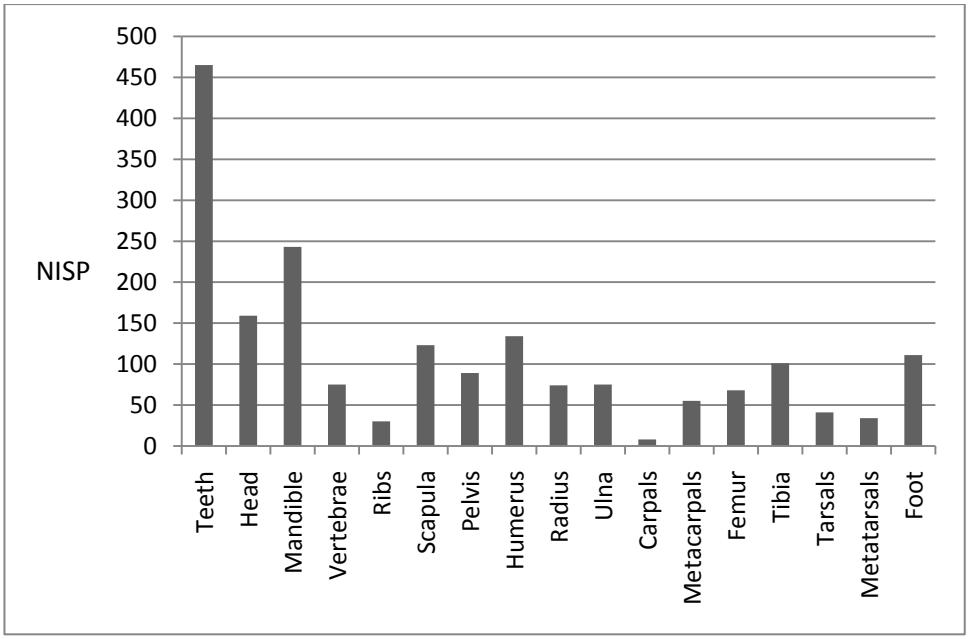

Figure 2.104: Representation of pig elements, Late Iron Age, NISP. N = 1885 (Compare to MNI = 80).

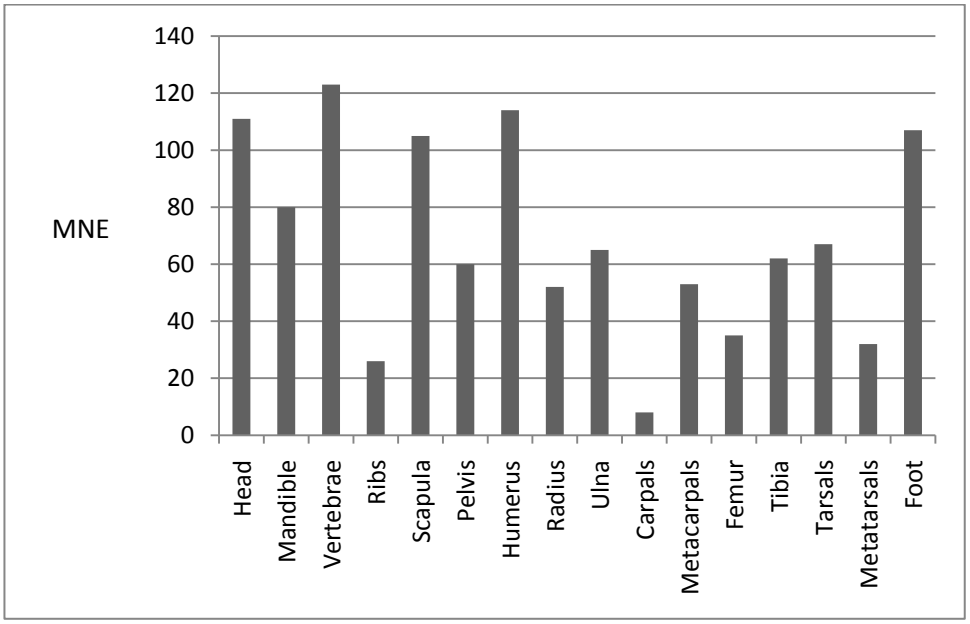

Figure 2.105: Representation of pig elements, Late Iron Age, MNE. N = 1100 (Compare to MNI = 80).

A2.10.4.2 Age and herd structure

A considerable number of mandibles were available to have a mandible wear stage assigned or estimated and this is shown in Figure 2.106. The relatively high number of the youngest animals, may imply that pigs were farrowing in or near the hillfort. Notable peaks in deaths subsequently occur in juveniles of 8-9 months of age which may equate to a point at which they have gained a considerable proportion of their eventual weight, and between MWS 27 and 31,reflecting young adults, possibly being used for breeding purposes, but only producing a few litters before being slaughtered. The single old adult represented is likely to be a

breeding animal. The ages indicated in the toothwear are reflected in the fusion data shown in Table 2.59.

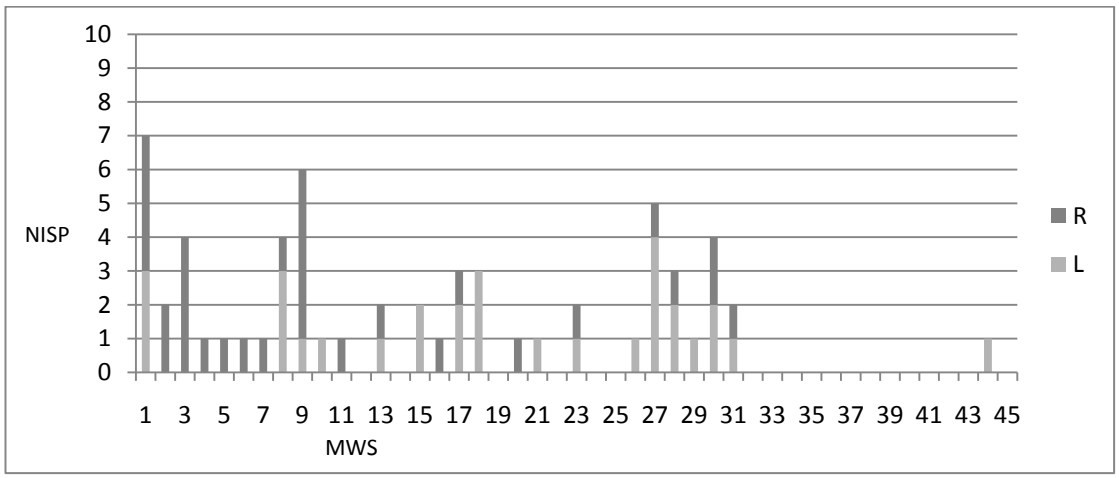

Figure 2.106: Grant Mandible Wear Stages for pig, Late Iron Age. N = 61

Table 2.59: Fusion of pig elements, Late Iron Age

Fusion date	Element	Fused	Unfused
Early Fusing (12mths)	Scapula , glenoid	42	18
(12mths)	Pelvis, acetabulum	37	34
(12mths)	Humerus, distal	41	13
(12 mths)	Radius, proximal	39	13
Later fusing (24 mths)	Metacarpal, distal	9	18
(27 mths)	Metatarsal, distal	3	16
(24mths)	Tibia, distal	27	27
Late fusing (24-30 mths)	Calcaneus	4	27
(42 mths)	Humerus, proximal	3	12
(42mths)	Radius, distal	0	11
(36-42 mths)	Ulna	1	19
(42mths)	Femur, proximal	0	22
(42mths)	Femur, distal	1	24
(42mths)	Tibia, proximal	1	18

Examination of pig canines, shown in Figure 2.107, appears to indicate that the great majority of animals disposed of on the hillfort were male. Of the limited number of canines still in the mandible, two were female and 10 male, which seems to support the preferential deposition of male pigs on the hill. As discussed above, females should still be represented even if they are being retained for breeding purposes, so it is suggested that more male than female animals were being imported for consumption and deposition on the hill.

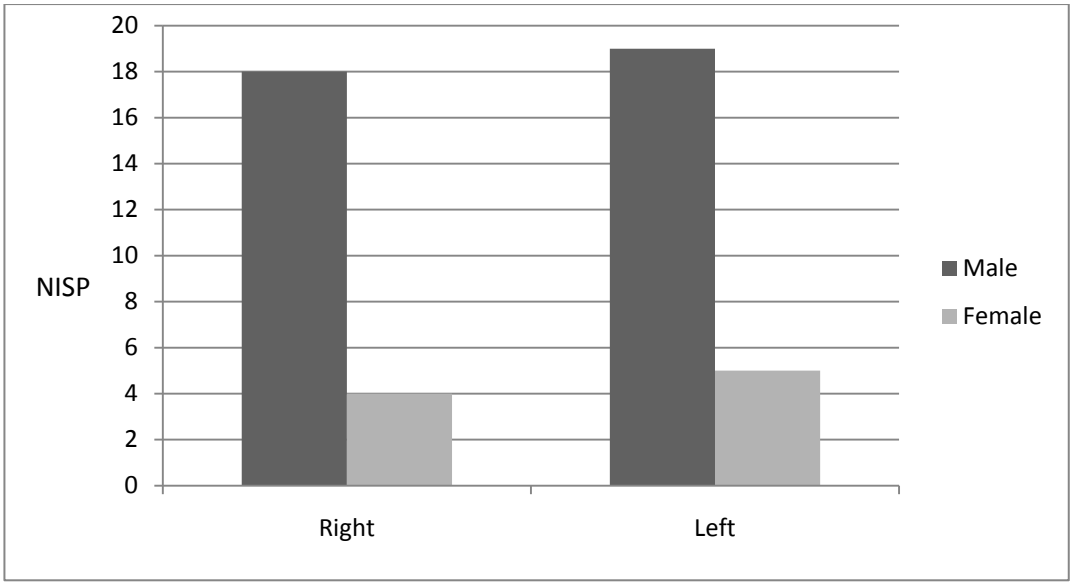

Figure 2.107: Proportion of male and female canines, pig, Late Iron Age. N = 46. 12 in mandible.

A2.10.4.3 Pathology

A number of pathological elements were noted and these are given in Table2.60. Several cases of dental enamel hypoplasia indicate a degree of interruption in growth due to nutritional or other environmental stress. Several fractures have been recorded, as well as three cases of non-specific infections. The elements effected are primarily limbs, and indicate that pigs were subject to possibility of trauma. This may have been inflicted by other pigs, and may have implications for how they were being kept.

Table 2.60: Pathological elements for pigs, Late Iron Age.

Site	Context	Element	Part	Type	Comment
SC/T	317AB	Humerus	Distal articulation	Enthesophytes	? Trauma
SC/G	112A	Radius	Proximal shaft	Periostitis	
SC/K	880	Tibia	Shaft	Periostitis	
SC/C	711	Tibia	Distal shaft	NSI	
SC/K	517	Ulna	Distal shaft	Non-metric trait?	
SC/C	5	Lateral metapodial	Shaft	Fracture	Non-union
SC/D	707	Lateral metapodial	Shaft	Fracture	Well healed
SC/C	558	2nd Phalanx	Shaft	Osteomyelitis	
SC/C	702	Mandible	Gonial angle	Fracture	Well healed
SC/A	27	Mandible	M3	Hypoplasia	
SC/D	603	Mandible	M2	Hypoplasia	
SC/E	960C	Mandible	M2	Hypoplasia	
SC/F	608	Mandible	M2	Hypoplasia	
SC/P	808A	Mandible	M3	Hypoplasia	
SC/W	050	Mandible	M3	Hypoplasia	
SC/P	808A	Maxilla	M3	Hypoplasia	
SC/F	444	Mandibular 3rd Molar		Hypoplasia	
SC/C	012	Incisor		?Developmental	Misaligned root

A2.10.5 Sheep/Goat

7,007 fragments were identified as sheep/goat. In consideration of the proportion of goats to sheep four metapodials were identified as goat on morphological grounds, and eight mandibles of 231 available (3.46%). Proportions between the two for other elements where diagnostic areas were present are shown in Figure 2.108. It is apparent that goats are very much in the minority in this assemblage.

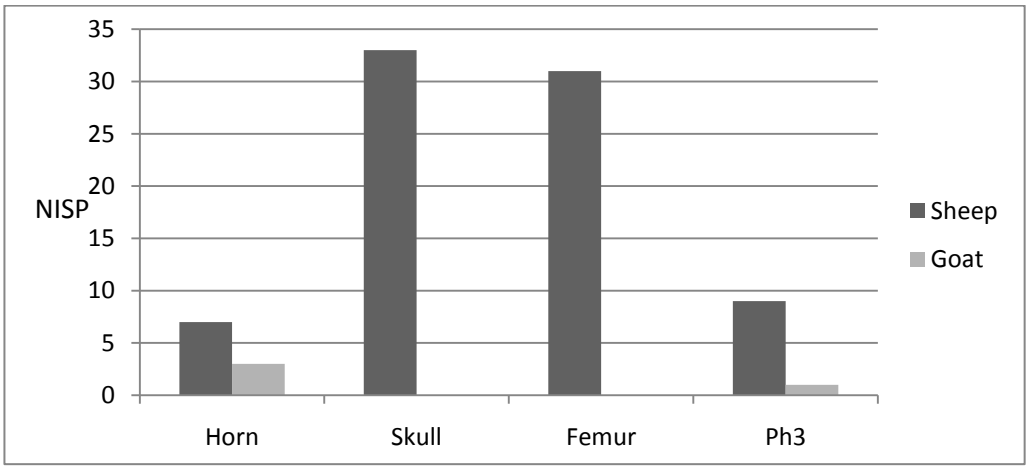

Figure 2.108: Proportions of sheep to goat, Late Iron Age. N = 84

Figure 2.109 gives the dimensions of astragali grouped by their morphological characteristics. This shows no separation between the groups and therefore this method is regarded as over representing goats.

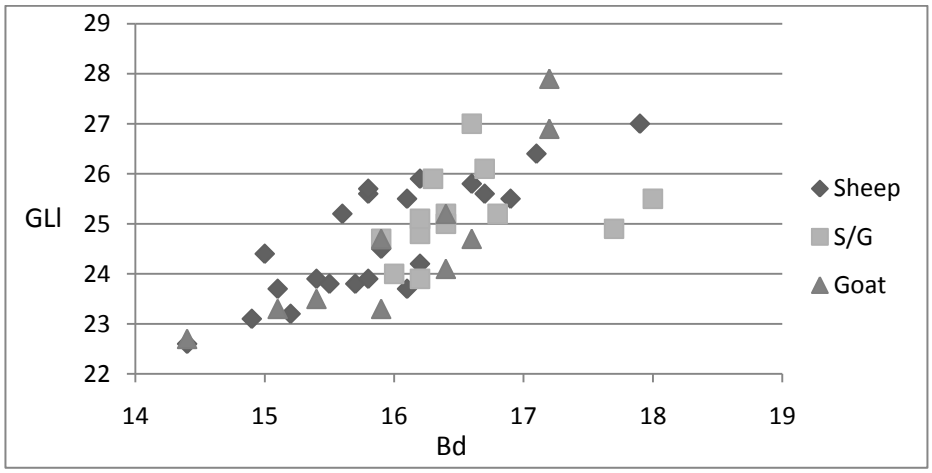

Figure 2.109: Sheep/goat astragalus comparing those identified as sheep, goat or indistinct from morphology, Late Iron Age. N = 33

Considering the metrical differences between in the distal metacarpal (Figure 2.110), it can be seen that two distinct groups occur. The six larger individuals are likely to be goats, representing 33% of the total measureable sample which seems high.

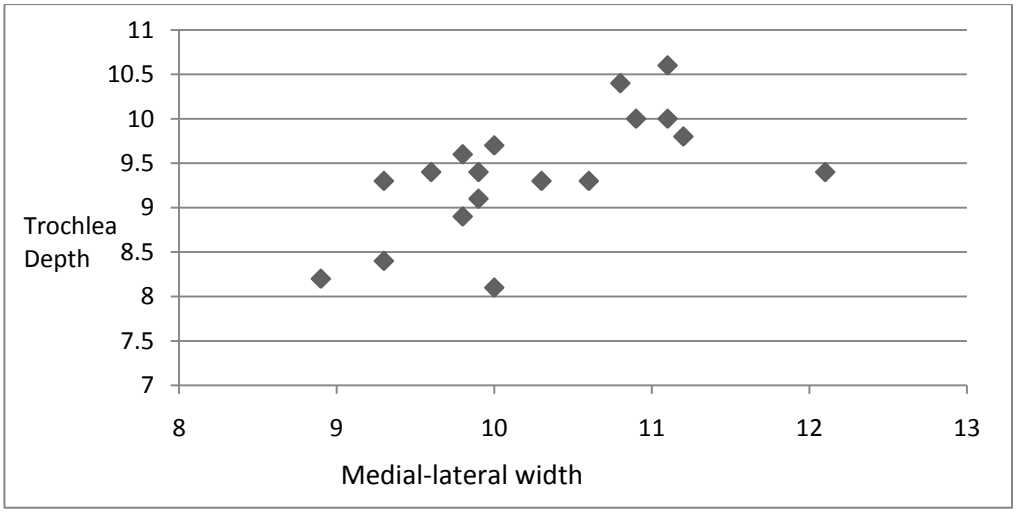

Figure 2.110: Sheep/goat distal metacarpals, Late Iron Age. N = 18

In addition two cases of hornless sheep were recorded.

A2.10.5.1 Element representation

The distribution of sheep/goat elements are shown in Figures 2.111 and 2.112. Whilst loose teeth are the most frequent element, these are not overly dominant, with good representation of all areas of the body. The slightly elevated presence of radius and tibia may reflect the robustness of the shafts of those two elements. There is no real indication of differential deposition of body parts.

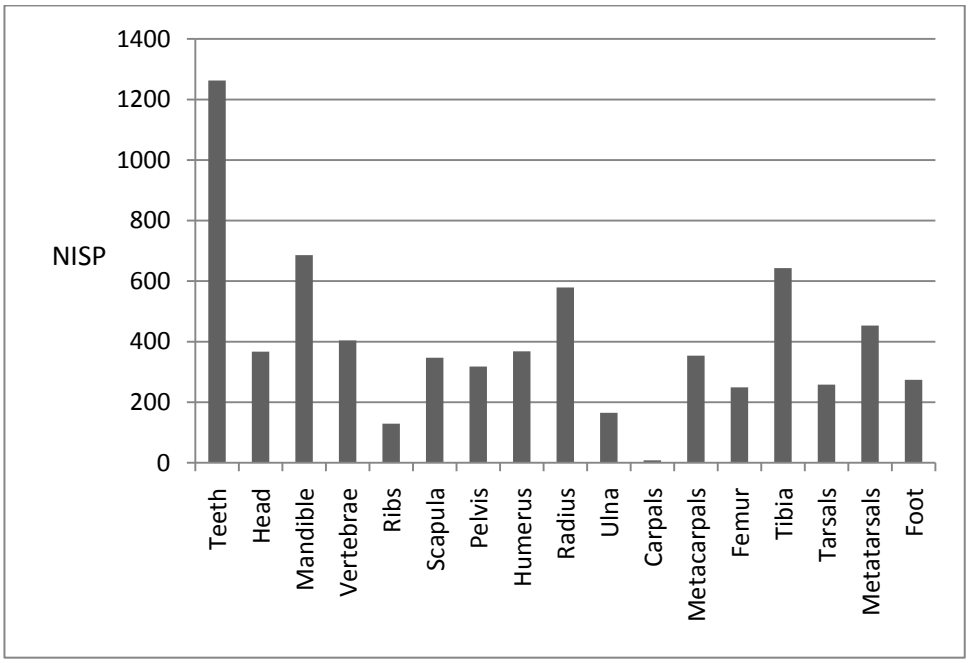

Figure 2.111: Representation of Sheep/goat elements, Late Iron Age. NISP. N = 6865 (Compare to MNI = 225).

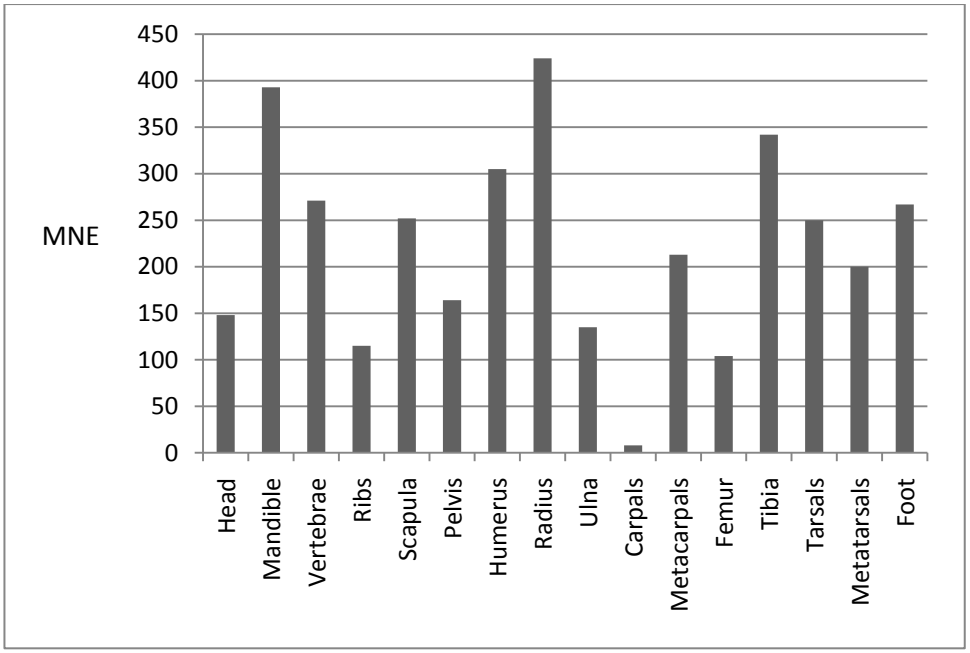

Figure 2.112: Representation of Sheep/goat elements, Late Iron Age. MNE. N = 3591(Compare to MNI = 225).

A2.10.5.2 Age and herd structure

A considerable number of mandibles could be assigned or estimated for a mandible wear stage and this is shown in Figure 2.113, and for Payne stages in Figure 2.114. The presence of a number of cases at MWS 1 might indicate that lambing occurred in and around the hillfort. The most significant peak in deaths occurs between MWS 8 and 12 (Stage C), relating to animals a few months old. This appears to be a matter of planned herd management. This may have taken place at the same time of year, in which case the spread of ages may reflect the length of the lambing period, or may have occurred over the winter months as a method of providing meat to the community. An additional peak around MWS 22 may represent animals just over a year old that have been removed from the flock prior to tupping. There are a considerable number of older animals and may represent natural losses in a ewe or mixed flock, but it is notable that few individuals are retained into very old age, those individuals that survive probably being prized breeding stock.

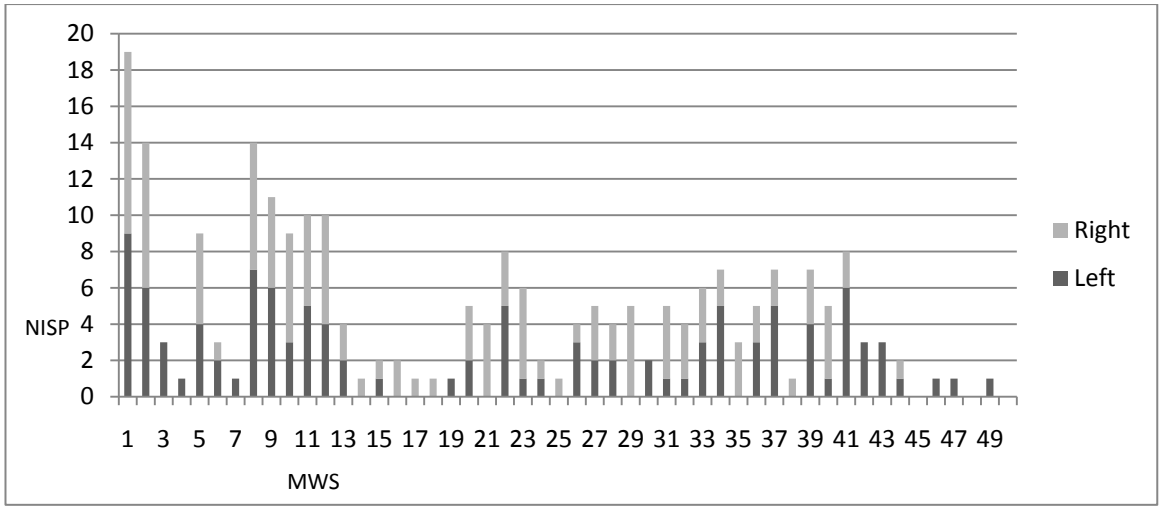

Figure 2.113: Grant Mandible Wear Stages for sheep/goat, Late Iron Age. N = 231

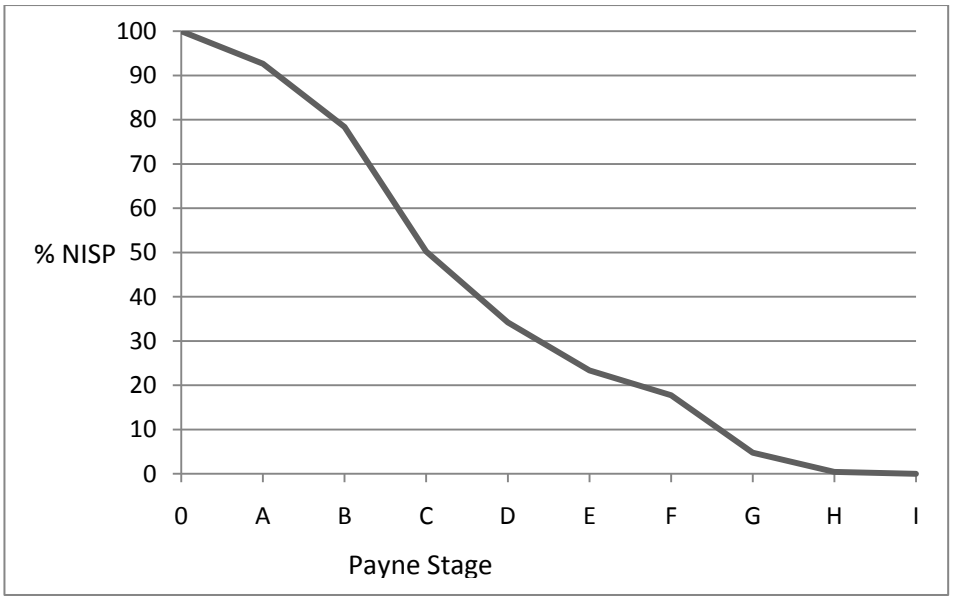

Figure 2.114: Sheep/Goat kill off profile using Payne wear stages, Late Iron Age N = 231

Figure 115 shows the estimated proportion of animals being removed in each year of life, and clearly demonstrates the number of animals dying or being removed from the flock in the first year of life. The fusion data (Table 2.61) is entirely consistent with these patterns.

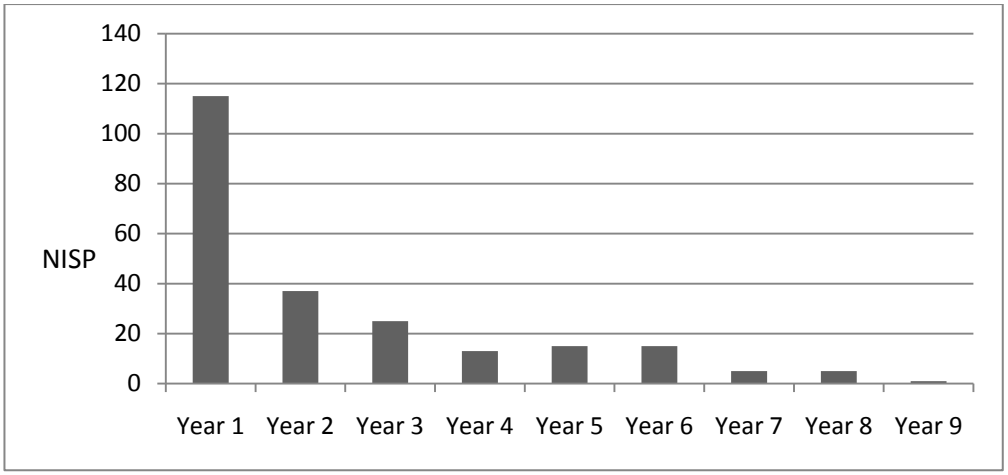

Figure 2.115: Payne wear stages for Late Iron Age sheep/goats showing estimated number of deaths by end of year. Assignment to year is not entirely reliable at 4+ years. N = 23

Table 2.61: Fusion in sheep/goat, Late Iron Age.

Fusion date	Element	Fused	Unfused
Early Fusing (6-8mths)	Scapula, glenoid	120	51
(6-10mths)	Pelvis, acetabulum	200	54
(10mths)	Humerus, distal	158	62
(10mths)	Radius, proximal	138	42
Later fusing (18-24mths)	Metacarpal, distal	43	73
(20-28mths)	Metatarsal, distal	44	79
(18-24mths)	Tibia, distal	124	116
Latest fusing (30-36mths)	Calcaneus	68	72
(36-42 mths)	Humerus, proximal	22	50
(36mths)	Radius, distal	39	106
(30mths)	Ulna	20	56
(30-36mths)	Femur, proximal	31	81
(36-42mths)	Femur, distal	21	68
(36-42mths)	Tibia, proximal	24	62

Opportunities to consider the sex ratios in the flock are very limited, but Figure 2.116 gives the results of a comparison in the distal breadth and depth of the distal fusion point in sheep/goat metacarpals. The tighter group which are slightly broader in relation to depth, cluster, which may reflect more robust animals or males/castrates, with smaller, spread examples, that may be females. A single large outlier, is the same as an outlier on the sheep vs. goat metric assessment, and probably represents a goat.

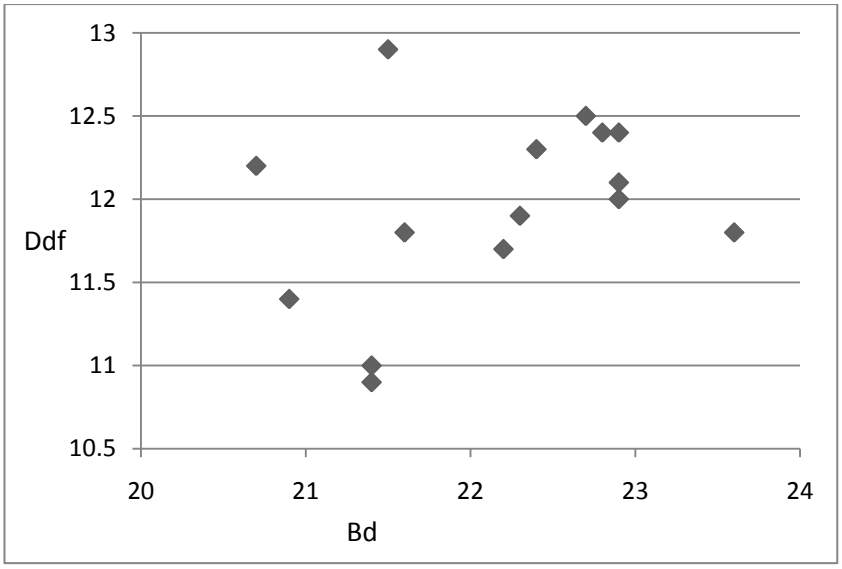

Figure 2.116: Distal sheep/goat metacarpals, distal breadth compared with depth of the distal fusion point, Late Iron Age. N = 15

A2.10.5.3 Pathology

A number of elements were recorded as having pathological changes and these are given in Table 2.62. There are a few traumatic injuries noted, and some non-specific infections, but the most common post-cranial pathology involves the development of degenerative changes such as 'penning elbow' which occurs in 6.92% of distal articulations of the humerus. Periodontal disease and calculus are also well represented and the rates at which these occur are discussed further below.

Table 2.62: Pathological elements, sheep/goat, Late Iron Age.

Site	Context	Species	Element	Part	Type	Comment
SC/K	858	S/G	Axis	Body	?	Lytic lesion
SC/K	403	S/G	Lumbar vertebra	Neural arch	Congenital?	Asymmetrical
SC/P	824	S/G	Thoracic vertebra	Cranial articulation of body	Vertebral degeneration	
SC/P	824	S/G	Thoracic vertebra	Body	Vertebral degeneration	
SC/C	554	S/G	Humerus	Distal Articulation	Penning elbow	
SC/C	558	S/G	Humerus	Distal Articulation	Penning elbow	
SC/C	560	S/G	Humerus	Distal Articulation	Penning elbow	
SC/C	255B	S/G	Humerus	Distal Articulation	Penning elbow	
SC/D	507	S/G	Humerus	Distal Articulation	Penning elbow	
SC/D	603	S/G	Humerus	Distal Articulation	Penning elbow	
SC/D	607	S/G	Humerus	Distal Articulation	Penning elbow	
SC/F	263	S/G	Humerus	Distal Articulation	Penning elbow	
SC/F	306	S/G	Humerus	Distal Articulation	Penning elbow	
SC/F	311	S/G	Humerus	Distal Articulation	Penning elbow	
SC/F	311	S/G	Humerus	Distal Articulation	Penning elbow	
SC/L	609/610	S/G	Tibia	Shaft	Periostitis	
SC/K	501	S/G	Metacarpal	Distal shaft	Periostitis	Slight
SC/C	554A	S/G	Metacarpal	Shaft	Fracture	?healed
SC/C	403	S/G	Metatarsal	Shaft	Fracture	Well healed

SC/C	560	S/G	Pelvis	Ilium	Periostitis	
SC/C	554C	S/G	Pelvis	Tuber sacrale	Displaced	
SC/F	477C	S/G	Pelvis	Tuber sacrale	Periostitis	
SC/K	402	S/G	Mandible	P4-M1	Periodontal disease	Slight
SC/K	403	S/G	Mandible	Tooth row	Periodontal disease	Slight
SC/K	403	S/G	Mandible	Tooth row	Periodontal disease	Slight
SC/K	741	S/G	Mandible	P4-M1	Periodontal disease	Severe
SC/C	5	S/G	Mandible	P4,M1	Periodontal disease	Slight
SC/C	403	S/G	Mandible	Tooth row	Periodontal disease	Moderate
SC/C	558	S/G	Mandible	P4-M1	Periodontal disease	Slight
SC/C	554C	S/G	Mandible	Dp3,4	Periodontal disease	Slight
SC/D	507	S/G	Mandible	P4-M1	Periodontal disease	Severe
SC/F	263	S/G	Mandible	Dp4	Periodontal disease	Slight
SC/P	826A	S/G	Mandible	P2-3	Periodontal disease	Slight
SC/P	826A	S/G	Mandible	P4-M2	Periodontal disease/ calculus	Slight
SC/L	002	S/G	Mandible	Dp3,4	Periodontal disease/ calculus	Moderate
SC/B	258	S/G	Mandible	P4	Calculus	Slight
SC/F	311	S/G	Mandible	Dp3-M1	Calculus	Slight
SC/F	310C	S/G	Mandible	P3-M3	Calculus	Moderate
SC/L	002	S/G	Mandible	P2-M3	Calculus	Slight
SC/D	507	S/G	Mandible	P3-4	Calculus	Slight
SC/L	452	S/G	Mandible	P4/M1	Calculus	Slight
SC/P	432C	S/G	Mandible	Dp2,3,4	Calculus	Slight
SC/P	432C	S/G	Mandible	P3-M2	Calculus	Slight
SC/P	905B	S/G	Mandible	P4-M3	Calculus	Slight
SC/C	255C	S/G	Mandible	M1-2	Malocclusion	Moderate
SC/B	258	S/G	Mandible	Dp3,4,M1	Malocclusion	Slight
SC/P	826	S/G	Mandible	P3-M1	Malocclusion	Moderate
SC/D	711	S/G	Mandible	P3-4	Periodontal disease and major malocclusion	Slight
SC/P	905A	S/G	Mandible	P2	Antemortem tooth loss	
SC/P	402A	S/G	Mandible	Buccal	NSI	
SC/D	722	S/G	Maxilla	Tooth row	Calculus	Slight
SC/D	722	S/G	Maxilla	M1	Calculus	Moderate
SC/D	723	S/G	Maxilla	P2-3	Calculus	Severe
SC/F	477	S/G	Maxilla	P2-M3	Calculus	Moderate
SC/P	826	S/G	Maxilla	Tooth row	Calculus	Moderate
SC/P	359C	S/G	Mandibular 1st molar		Malocclusion and advanced caries	Extreme
SC/C	711	MMA	Rib	Shaft	Fracture	Well healed
SC/D	202	MMA	Long Bone	Shaft	Periostitis	

A2.10.6 Dog

A2.10.6.1 Element representation

108 dog fragments were recorded representing a minimum number of five individuals. The representation of elements is shown in Figures 2.117 and 2.118. The considerable number of vertebrae might suggest that a limited number of entire individuals may have been deposited.

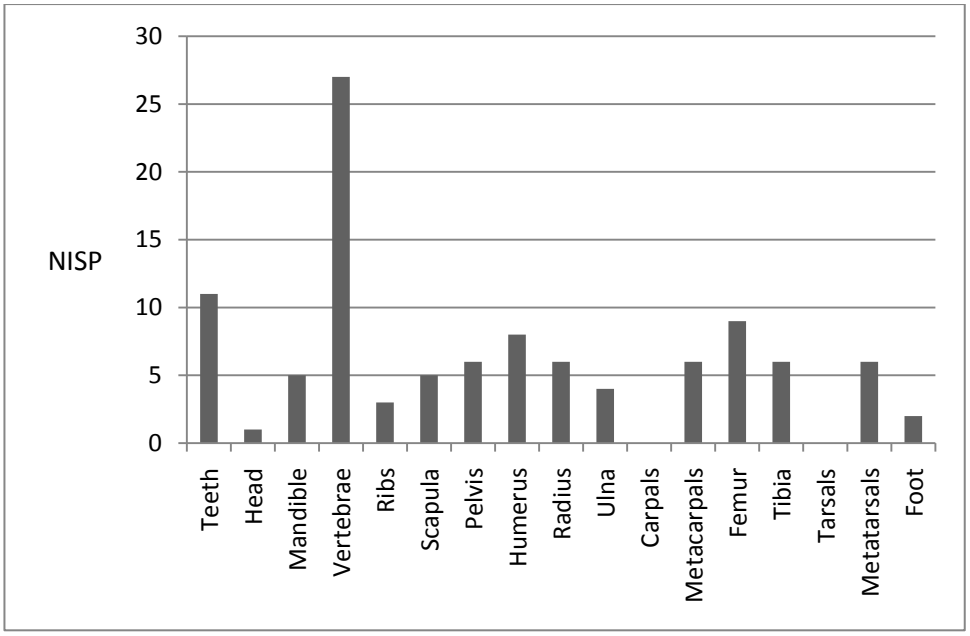

Figure 2.117: Representation of Dog elements, Late Iron Age. NISP. N = 105

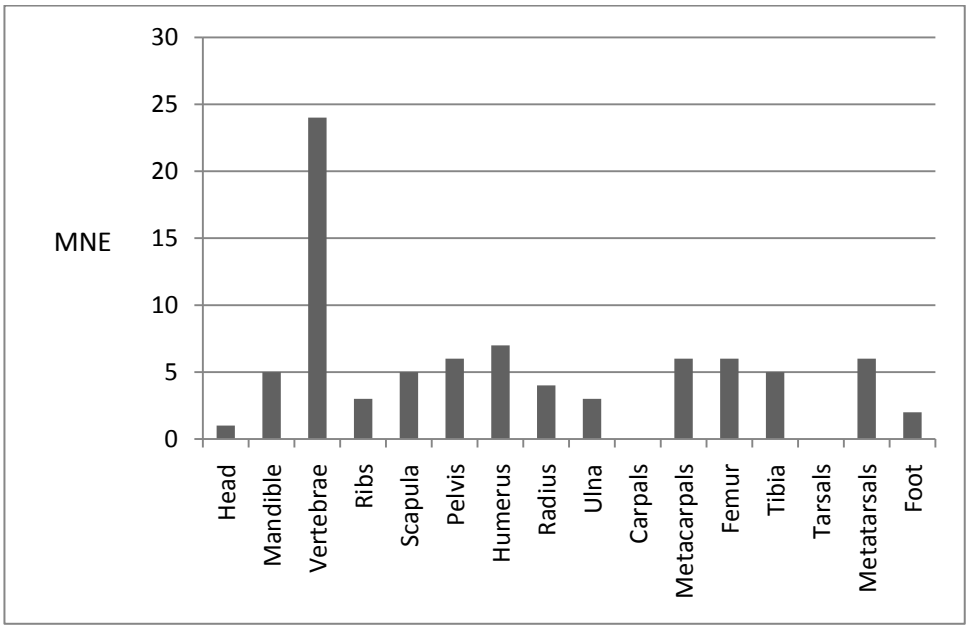

Figure 2.118: Representation of Dog elements, Late Iron Age. MNE. N = 83

A2.10.6.2 Age

Six elements were porous. Fusion information is given in Table 2.63 and appears to indicate a spread of age groups present. No bacula were noted so the presence of males cannot be confirmed.

Table 2.63: Fusion information for dog, Late Iron Age

Fusion date	Element	Fused	Unfused
Early Fusing	Scapula, glenoid	5	0
	Pelvis, acetabulum	5	0
	Humerus, distal	3	2
	Radius, proximal	3	1
Later fusing	Metacarpal, distal	6	0
	Metatarsal, distal	4	1
	Tibia, distal	3	2
Latest fusing	Humerus, proximal	4	0
	Radius, distal	3	1
	Ulna	1	0
	Femur, proximal	2	4
	Femur, distal	2	4
	Tibia, proximal	2	1

A2.10.6.3 Pathology

Two instances of pathological change were recorded and these are included in Table 2.64. The slight degenerative change in the distal tibia may indicate an older individual, whilst the case of osteomyelitis may relate to traumatic injury.

Table 2.64: Pathological elements, dog, Late Iron Age.

Site	Context	Element	Part	Type	Comment
SC/P	953A	Femur	Shaft	Osteomyelitis	
SC/P	826A	Tibia	Distal articulation	Degenerative change	

A2.10.7 Horse

A2.10.7.1 Element representation

A total of 205 horse bones were recorded, the vast majority of which were loose teeth that can be seen in Figures 2.119 and 2.120. Discounting loose teeth, there is a lack of limb bones, scapula and pelvis, there appears to be a bias towards disposal of heads, necks and lower limbs (Figure 2.121) on the hillfort. They could represent primary butchery waste, with the rest of the body being consumed or disposed of elsewhere.

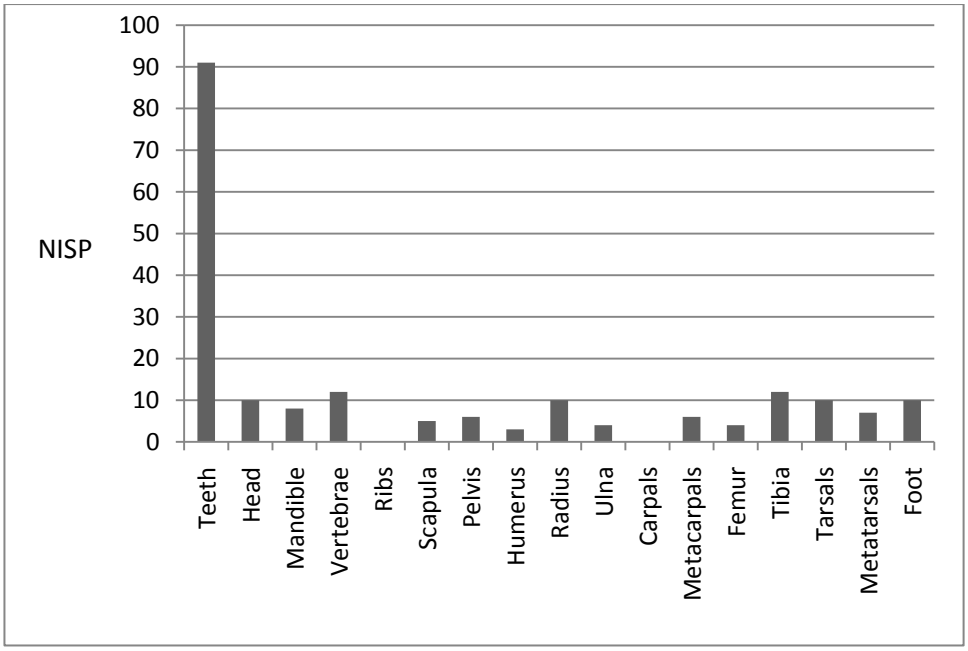

Figure 2.119: Representation of horse elements, Late Iron Age. NISP. N = 198

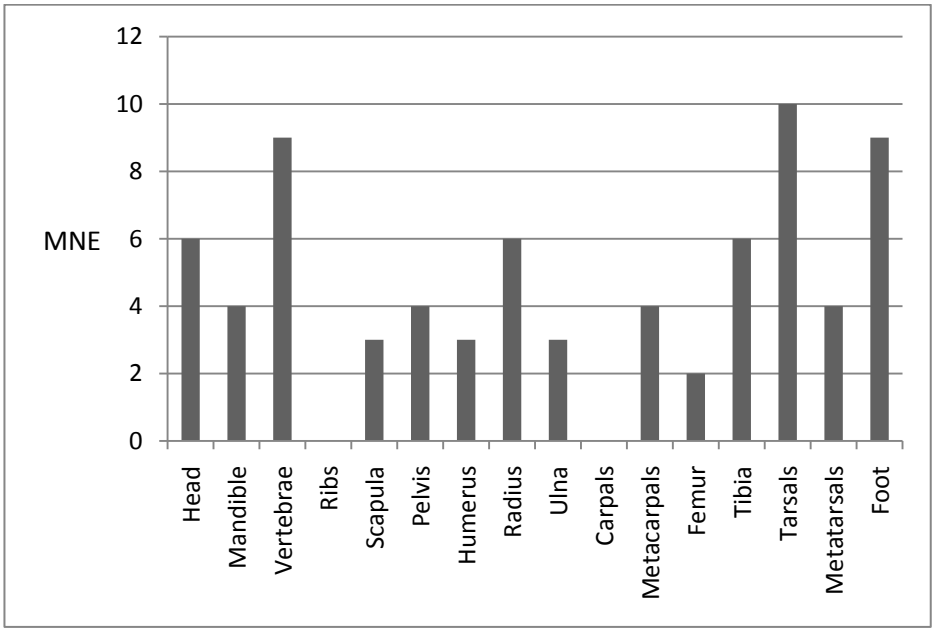

Figure 2.120: Representation of horse elements, Late Iron Age. MNE. N = 73

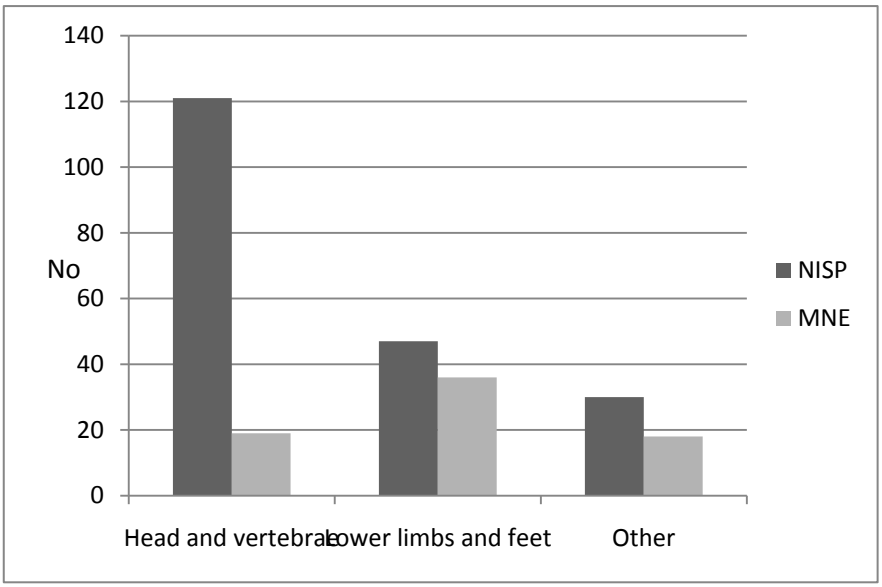

Figure 2.121: Summary of horse body areas represented, Late Iron Age. NISP and MNE demonstrating the degree of fragmentation of head elements, but nevertheless indicating a greater proportion of head and neck, and lower limbs and feet, than the rest of the body. NISP = 198 MNE = 73

A2.10.7.2 Age

Two bones were porous, and two teeth were deciduous. Most of the teeth were worn or very worn, indicating a higher proportion of older individuals. Fusion data was extremely limited, but is given in Table 2.65. It indicates a high proportion of skeletally mature individuals with the youngest identified being younger than 15-18 months at death.

Table 2.65: Fusion information for horse, Late Iron Age

Fusion date	Element	Fused	Unfused
Early Fusing (12mths)	Scapula, glenoid	5	0
(18-24mths)	Pelvis, acetabulum	3	0
(15-18mths)	Radius, proximal	4	1
Later fusing (15-18mths)	Metacarpal, distal	2	0
(16-20mths)	Metatarsal, distal	1	0
(20-24mths)	Tibia, distal	5	0
Latest fusing (36-42mths)	Humerus, proximal	3	0
(42mths)	Radius, distal	4	0
(36-42mths)	Femur, proximal	2	0
(36-42mths)	Femur, distal	0	0
(36-42mths)	Tibia, proximal	1	1
(42mths)	Ulna	1	0

A2.10.7.3 Pathology

A number of elements with pathological changes were recorded. These are given in Table 2.66, with a slight emphasis on degenerative joint change.

Table 2.66: Pathological elements, horse Late Iron Age.

Site	Context	Element	Part	Type
SC/A	24	Femur	Supracondyloid fossa	Osteomyelitis
SC/L	609/610	Metatarsal	Proximal articulation	Osteoarthritis
SC/P	402A	Metatarsal	Proximal articulation	Spavin
SC/F	310-312	Astragalus		Osteoarthritis
SC/B	142	Tooth		Malocclusion and developmental defect

A2.10.8 Wild Species

107 small mammal bones were recorded, most of which were rabbit bones, indicating intrusion in various contexts. In addition field voles and wood mice were recorded. The 33 amphibian bones only supplied indications of the presence of frogs. Deer supplied the largest number of examples of larger wild mammals. All of the unidentified deer and roe deer elements were antler, as were nine out of eleven elements of red deer. There were in addition a piece of pelvis and fragment of tibia. There was no evidence to indicate whether the antlers had been naturally shed, but several of them had cut marks which indicate that they were probably intended for antler working. Six hare bones (pelvis, tibia, radius and ulna) representing a minimum of two individuals were also recorded, none of which displayed porous bone, and all of which was fused apart from the peripheral areas of one pelvic fragments. No butchery was noted. Two fox fragments, a mandible and ulna were also recovered, neither of which was juvenile. Three cat bones, a part maxilla, a radius and humerus were also non-porous, although the distal of the radius was unfused. There was no indication of butchery on the hare, fox or cat bone.

A total of 34 bird bones were recorded. The distribution by species is shown in Figure 2.122. Domestic fowl makes its first appearance but was evidently not economically important. The small number of corvids and buzzards are likely to have been living in the vicinity of the site.

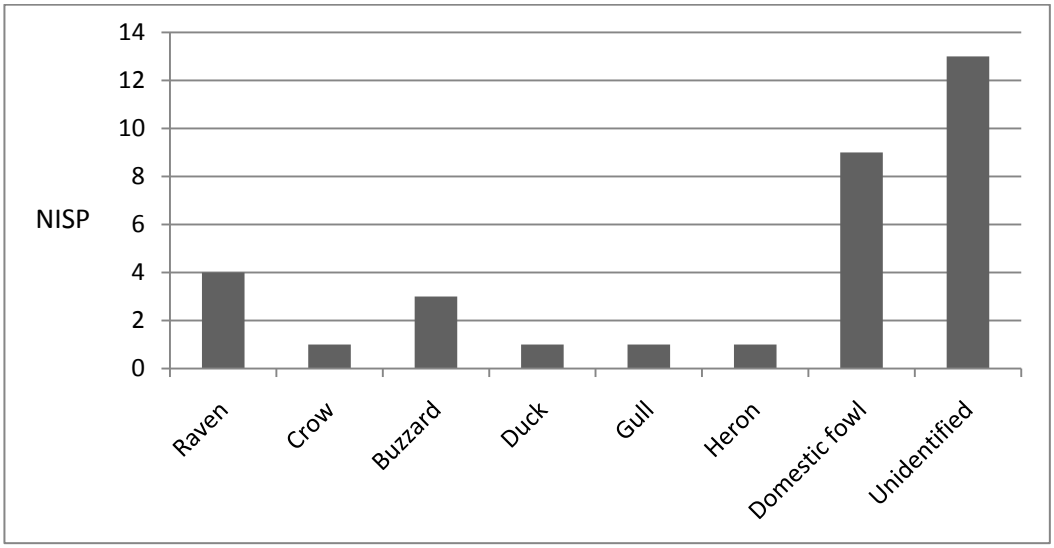

Figure 2.122: Bird bone fragments, Late Iron Age. N = 34

A2.10.9 Associated Bone Groups and complete skulls

A number of associate groups of bone were identified and these are given in Table 2.67.

Table 2.67: Associated bone groups, Late Iron Age. Total number of fragments = 662

Site	Context	Species	Part(s)	Age	Other information
C	106C	Cow	Skull, entire	Adult	
F	306	Cow	Three skulls, entire	Adult	
F	310	Cow	Two skulls, one almost entire one fragmentary	Adult	
F	306B	Cow	Skull, partial	Adult	
K	620E	Cow	Skull, entire	Adult	
L	002C	Cow	Skull, fragmentary	Adult	
P	432C	Cow	Two skulls, entire	Adult	
P	808A	Cow	Articulated foot	Adult	Butchery waste
C	702	Pig	Skull, almost entire	Juvenile	Butchery waste
C	702	Pig	Skull, almost entire	Juvenile	Butchery waste
C	409F	S/G	Half skull	Adult	Butchery waste
D	202	S/G	Skull, almost entire	Adult	
F	609	S/G	Articulated foot	Adult	Butchery waste
I	13	S/G	Articulated foot	Adult	Butchery waste
K	741	S/G	Skull, almost entire	Adult	
P	826	S/G	Half skull	Adult	Butchery waste
F	306	Horse	Four fragmentary skulls plus femur and Ph1	Adult	
F	304B	Horse	Articulated foot	Adult	Butchery waste
N	8	Horse	Skull, almost entire	Adult	
P	432C	Horse	Maxilla	Adult	
F	477	Dog	Skull, mandible and two articulated vertebrae	Adult	
N	601	Fox	Part body, tibia from second	Adult	

The type of deposit is shown by species in Figure 2.123, and it can be seen that the entire ABG assemblage is dominated by skulls and feet. The only partial body belongs to the only wild species included. Butchery waste, including skinning, is a reasonable explanation for much of the material, especially small groups of foot bones, although many of the admittedly limited butchery marks recorded on this material, occurred on cattle and horse skulls.

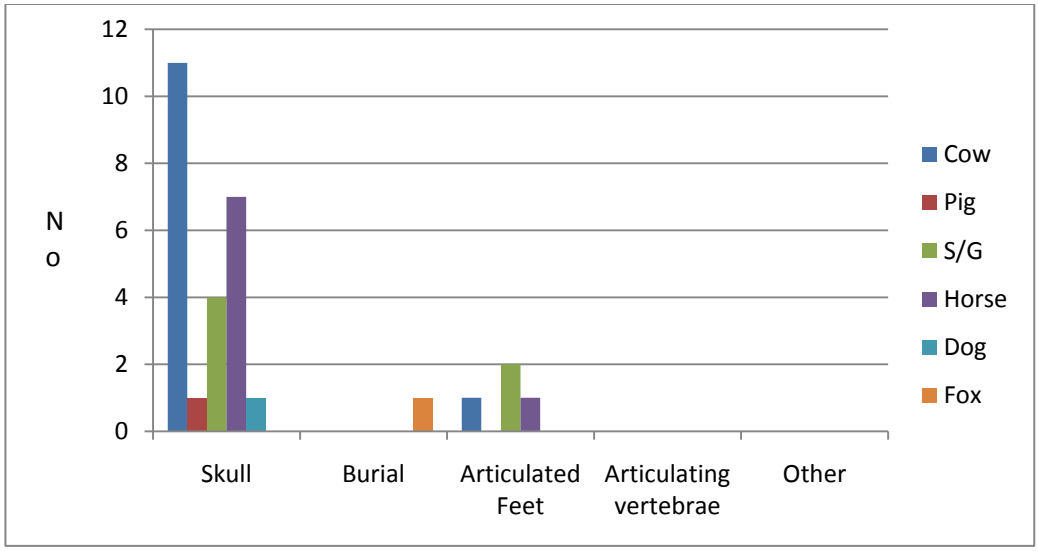

Figure 2.123: Types of ABG by species, Late Iron Age. N = 29

A2.10.10 Discussion of the Late Iron Age assemblage

The species represented and the general proportions again emphasise the importance in this assemblage of domestic species, in particular the three main livestock species, predominantly sheep/goat. The Late Iron Age cattle assemblage again suggests that heads were slightly under-represented, the inflated NISP being an indicator of the degree of fragmentation. The emphasis is again on very young individuals and sub adults and adults. and may indicate that dairying was a major purpose. However, there is, in contrast to the Middle Iron Age, a small group of animals in Halstead stage D that may also indicate that some animals were slaughtered at a prime meat weight. Castrates were present as well as bulls and cows. Use in traction was also probable. The degree of degenerative disease may reflect the age profile, but may also relate to use in traction. Whilst some infections occurred which may be indicative of systemic infection, the aetiology cannot be firmly located. It does indicate, however, that disease may not have affected the animals to an extent that it caused concern or they may have been retained even if they were not in perfect condition, possibly because they were valued breeding stock or good calvers. This highlights the possible differences in perceptions of health and disease.

Pigs were being kept as a meat animal and the ages at death reflect this. Pigs may have been farrowing in or near the hillfort and were again largely killed once they had attained most of their meat weight. If younger adults represent breeding stock, they probably only produced a few litters before being slaughtered. Males apparently outweigh females and this coupled with the over representation of meat bearing bones may indicate that male animals were reared elsewhere and brought into the hillfort for slaughter, consumption or disposal. Females may have been kept and disposed of elsewhere. Dental enamel hypoplasias again indicate a degree of nutritional or other environmental stress. Several fractures and non-specific infections were recorded. The elements affected are primarily limbs, and indicate that pigs were subject to trauma. This may have been inflicted by other pigs, and may have implications for how they were being kept.

Goats were very much in the minority in the Late Iron Age sheep/goat assemblage with a handful of elements identified. Animals died at or around birth, indicating the proximity of lambing to the point of deposition. The peak in deaths was again before the end of the first year of life. The regime of the Middle Iron Age does not appear to have changed. The pathological evidence supports the retention of older individuals in the flock. There were a few traumatic injuries noted, and some non-specific infections, but the most common post-cranial pathology was degenerative disease including penning elbow, which occurs in 6.92% of distal articulations of the humerus. Periodontal disease also occurred which also relates to age as well as diet.

The dog assemblage may have been deposited as whole or partial carcases and includes a number of individuals of different ages of a variety of statures. The Late Iron Age has a very fragmented horse assemblage, that probably relates to a small number of individuals. These were generally skeletally mature individuals although the youngest identified was younger than 15-18 months at death. Several incidences of pathological change were related to joint

disease, including osteoarthritis and spavin, and this may reflect the age of the individuals in the assemblage. The entire 'ABG' assemblage is dominated by heads and feet. The only partial body belongs to a fox. Butchery waste is a reasonable explanation for much of the material, especially small groups of foot bones. The proportions of skulls is similar to that in the Middle Iron Age and similar observations apply.

Most of the wild species were small mammals. Red and roe deer supplied the largest number of larger wild mammals, with virtually all deer elements, antler. There was no evidence to indicate whether the antlers had been naturally shed, but several of them had cut marks which indicate that they were probably intended for antler working. Six hare bones were also recorded and three cat bones are assumed to be wild. There was no indication of butchery on the hare, fox or cat bone. A total of 34 bird bones were recorded including small numbers of domestic fowl. A small number of corvids and buzzards are likely to have been living in the vicinity of the site.

A2.11.0 The 'Massacre' Period

The 'Massacre' Period material relates to a series of deposits in the south west gate area of the hillfort, in Site K, that relate to the very end of the Iron Age. These were considered separately partly because of their association with a series of deposits of disarticulated human remains, but also because they apparently date to the mid first century AD.

A2.11.1 Species representation

This is a surprisingly small assemblage of material given the volume and extent of the excavated contexts that they come from. As such the low numbers of fragments may be a result of the perceived reduction in activity in the hillfort at the end of the Iron Age, or the particular circumstances of the formation of the deposits. The species recorded are shown in Table 2.68. Like many other assemblages from the hillfort the number of unidentified fragments is suspiciously low and some material may have been discarded after excavation.

Table 2.68: Species representation in 'Massacre' Period contexts.

Species	NISP	% NISP	% Main	MNI	% MNI
Cow	29	12.78	17.06	2	18.18
Pig	26	11.45	15.29	2	18.18
S/G	115	50.66	67.65	7	63.64
Dog	1	0.44		1	
Horse	3	1.32		2	
Large mammal	13	5.73			
Medium mammal	29	12.77			
Unidentified	11	4.45			
Total main	**227**				
Roe Deer	1				
Small mammal	4				
Amphibians	1				
Total fragments	**233**				

Although this is a small assemblage, it is interesting to note that sheep/goat are still in a clear majority with other species in similar proportions to other assemblages on the hillfort. The proportions of the main three domesticates are shown in Figure 124. Cattle and pig appear to be of even less importance.

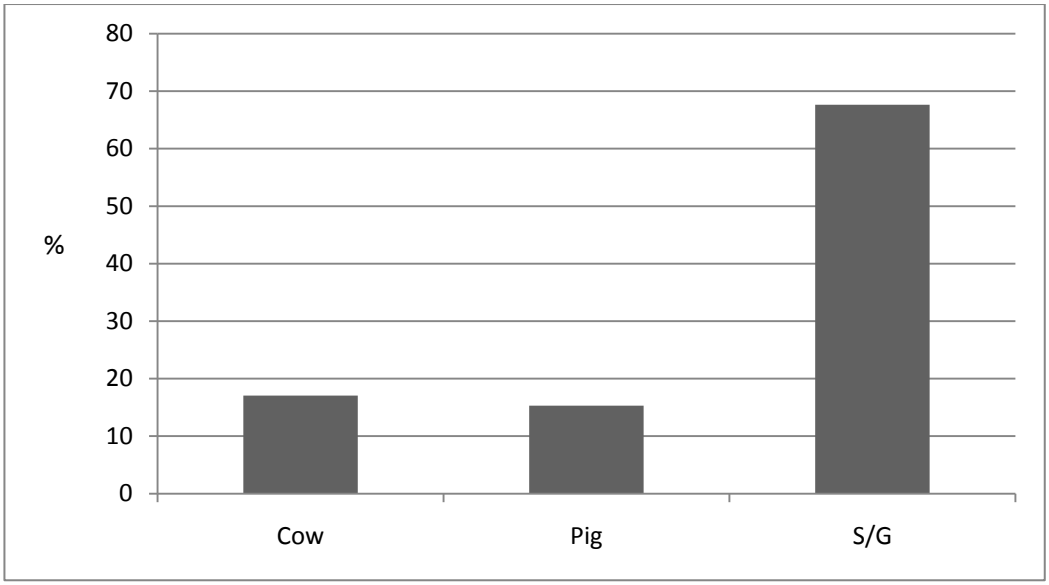

Figure 2.124: Proportion of main domestic species in 'Massacre' Period deposits. N = 170

A2.11.2 Taphonomy and butchery

Full analysis of taphonomic markers has not been carried out for reasons given above. However, Table 2.69 gives overall assemblage percentages. The amount of weathered, gnawed and burned material is greater than earlier assemblages and this may be a result of the smaller sample size or the particular nature of the deposits. Some of them contained heavily burned and fragmentary human remains.

Table 2.69: Overall incidence of taphonomic markers in the 'Massacre' Period assemblage.

Gnawed, Weathered, and Burned fragments		Butchered fragments	
No	**%**	**No**	**%**
49	21.03	4	1.72

A2.11.3 Cattle

A2.11.3.1 Element representation

Although the number of cattle fragments is small they represent all parts of the body, as can be seen in Figures 2.125 and 2.126. There are a relatively limited number of loose teeth.

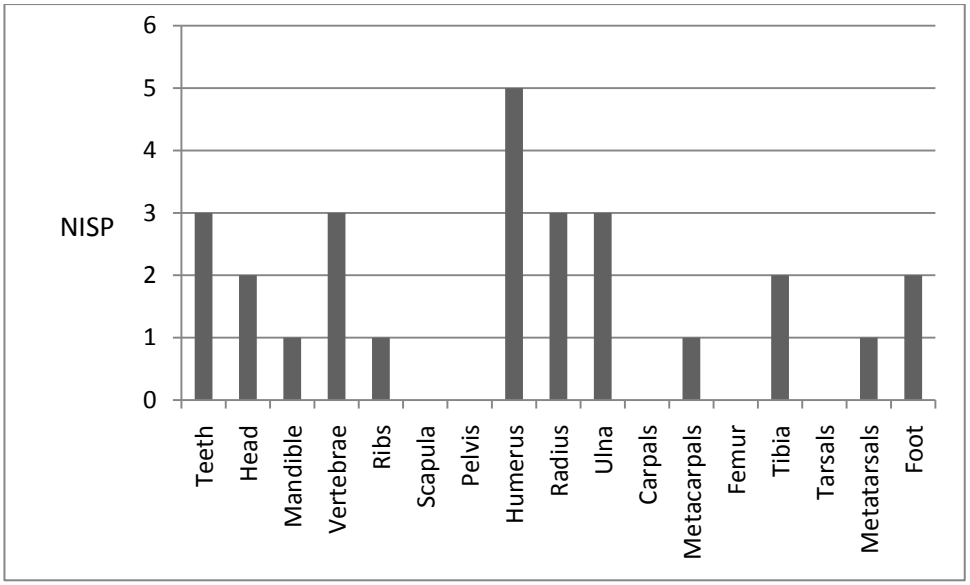

Figure 2.125: Element representation for cattle, 'Massacre' Period. NISP. N = 27 (Compare MNI = 2).

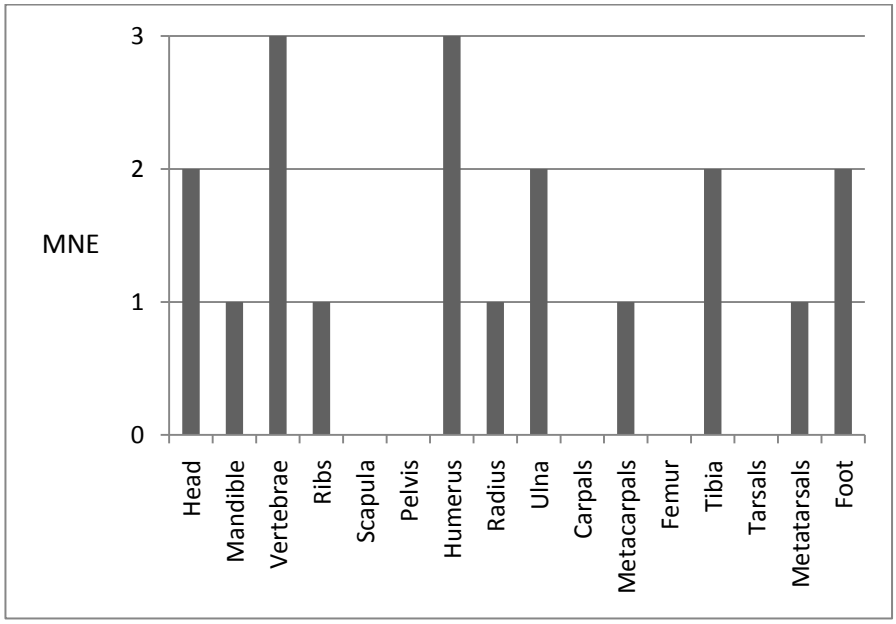

Figure 2.126: Element representation for cattle, 'Massacre' Period. NISP. N = 19 (Compare MNI = 2).

A2.11.3.2 Age and herd structure

There were no mandibles which could have a wear stage estimated. There were also only two fragments of porous bone, and whilst most epiphyses were fused (for example three distal humeri), there was a radius that was unfused distally, and a range of ages may have been present.

A2.11.3.3 Pathology

A single pathological humerus was noted with minor degenerative change to the distal articulation.

A2.11.4 Pig

A2.11.4.1 Element representation

This is a small collection of pig bones and although there is some evidence of most parts of the body being represented in Figures 2.127 and 2.128, the elements here tend to be the more robust ones.

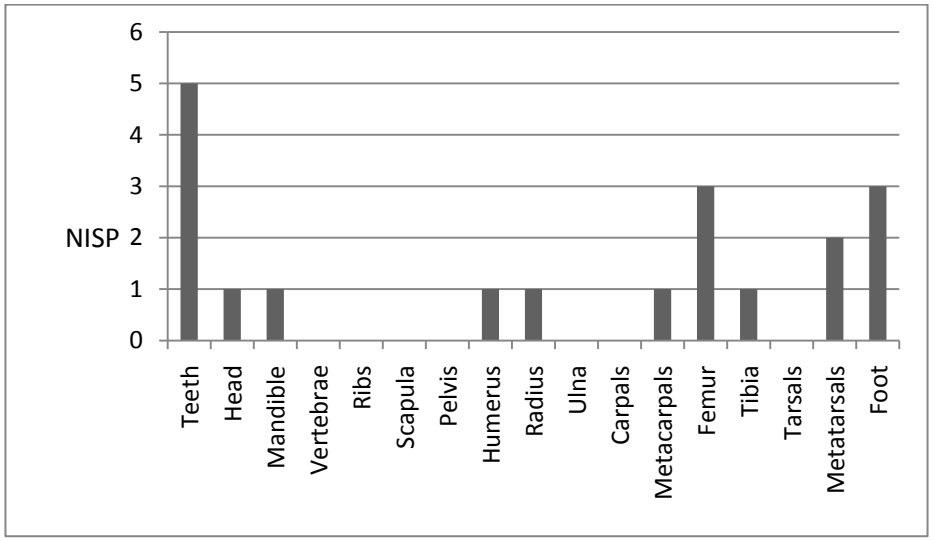

Figure 2.127: Elements for pig, 'Massacre' Period. NISP. N = 19 (Compare MNI = 2).

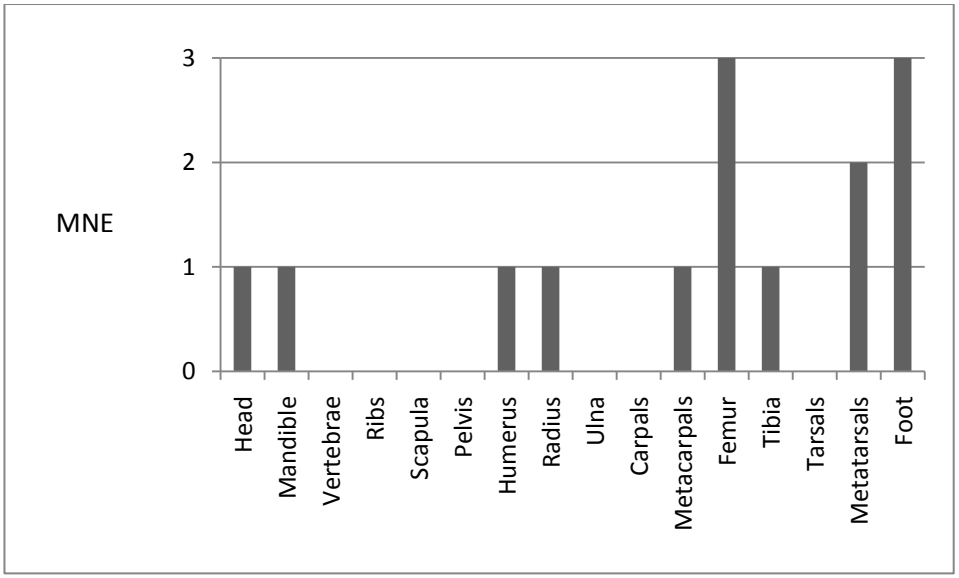

Figure 2.128: Elements for pig, 'Massacre' Period. MNE. N = 14 (Compare MNI = 2).

A2.11.4.2 Age and herd structure

Although there are no mandibles to which a wear stage can be assigned, there are three porous fragments and several unfused metapodials and lateral metapodials, indicating the presence of younger animals. The single canine indicates a male. There is no metrical or pathological data.

A2.11.5 Sheep/Goat

A2.11.5.1 Element representation

Most areas of the body are well represented (Figures 2.129 and 2.130)with relatively few loose teeth.

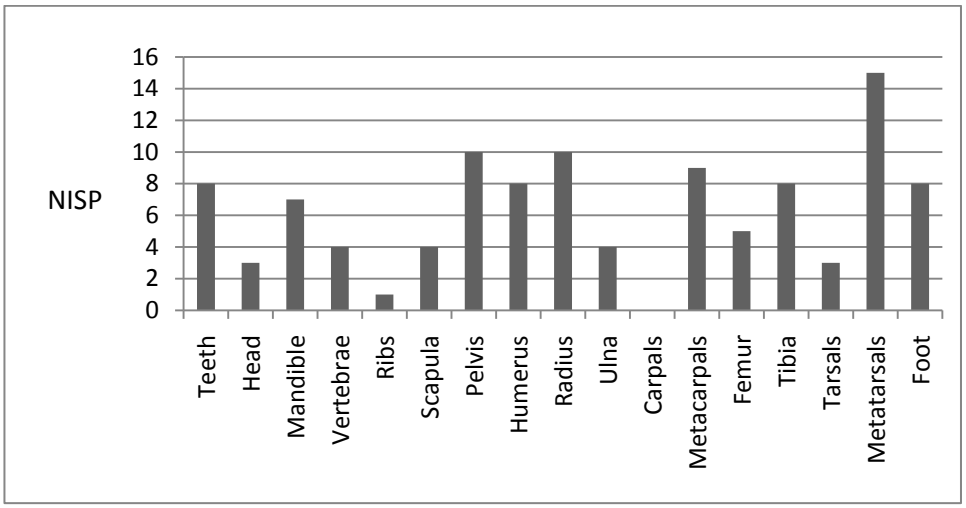

Figure 2.129: Representation of sheep/goat elements, 'Massacre' Period. NISP. N = 107 (Compare MNI = 7).

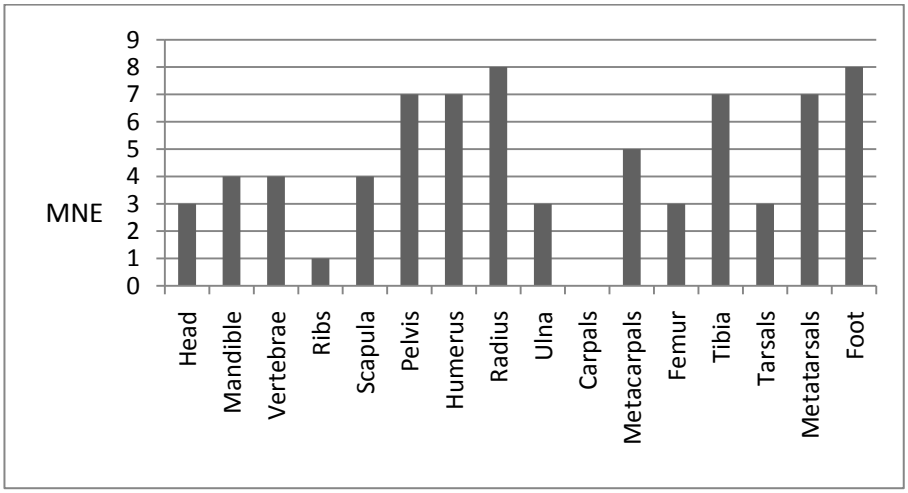

Figure 2.130: Representation of sheep/goat elements, 'Massacre' Period. MNE. N = 74 (Compare MNI = 7).

A2.11.5.2 Age and herd structure

Four mandibles could be assigned a wear stage, 3,9,20, and 40 with the Payne stages B, C, D, and G respectively. There are 18 fragments of porous bone, and the fusion state where elements could be recorded is given in Table 2.70. This indicates a considerable number of younger individuals were present, which is probably broadly analogous with the earlier assemblages.

Table 2.70: Fusion state in sheep/goat, 'Massacre' Period.

Fusion date	Element	Fused	Unfused
Early Fusing (6-10mths)	Pelvis, acetabulum	4	0
(10mths)	Humerus, distal	5	1
(10mths)	Radius, proximal	5	1
Later fusing (18-24mths)	Metacarpal, distal	3	0
(20-28mths)	Metatarsal, distal	3	2
(18-24mths)	Tibia, distal	1	4
Latest fusing (30-36mths)	Calcaneus	1	2
(36-42mths)	Humerus, proximal	0	1
(36mths)	Radius, distal	0	3
(30mths)	Ulna	0	1
(30-36mths)	Femur, proximal	0	3
(36-42mths)	Femur, distal	0	2
(36-42mths)	Tibia, proximal	0	1

A2.11.5.3 Pathology

No pathological elements were noted.

A2.11.6 Dog

Dog was represented by a single small fragment of non-porous skull.

A2.11.7 Horse

Horse was represented by a small fragment of maxilla and two left radius fragments representing two different individuals. Both of these were fused distally.

A2.11.8 Wild Species

Wild species were limited to a single frog bone, a small fragment of unidentified bird carpometacarpus, and a roe deer tibia, unfused proximally.

A2.11.9 Associated Bone Groups and complete skulls

A single horse skull was recorded from the 'Massacre' period (Table 2.71). This had a worn permanent dentition.

Table 2.71: Associated Bone Groups from 'Massacre' Period contexts. Total fragments = 18

Site	Context	Species	Part(s)	Age
K	591	Horse	Skull, almost entire	Adult

A2.11.10 Discussion of the 'Massacre' Period

This is a small assemblage, so it is it is interesting to note that sheep/goat are still in a clear majority, with other species in similar proportions to other assemblages on the hillfort. All parts of the body of cattle, pig and sheep/goat are represented. There are a relatively limited number of loose teeth. Age information was very limited but for sheep/goat at least is similar to the proceeding period. Horse, dog and wild species were represented by only a handful of fragments. A single almost entire horse skull is the only 'special' deposit noted. This had a worn permanent dentition. The value in this very limited assemblage is that it would fit perfectly well within the main Late Iron Age assemblage and seems to confirm that the patterns of exploitation throughout the Middle and Late Iron Age continued into the first century AD.

A2.12.0 Inter-period analysis

Figure 2.131 gives the percentage proportion between the three main domestic species for all of the periods included in this report with the addition of the Middle Iron Age D817 pit and excluding ABGs. Despite some variations from the general pattern that are apparent in particular assemblages, such as D817 and the 'Rubbish Layers', and the differing size of the assemblages included, it is clear that a combination of related trends occur. The Late Bronze Age assemblage is one in which cattle are more important, with sheep a close second and a generally low proportion of pigs. In the Early Iron Age sample there is a reduction of the importance of cattle, and increase in the importance of pigs and little change in the overall position of sheep/goat. This is further illustrated by Figure 2.132 which shows the relationship between the reduction of cattle numbers and the concomitant increase in sheep/goat. The step change comes between the Early Iron Age and the Middle Iron Age, with maintenance of the almost equal cattle and pig numbers but a dramatic increase in the proportion of sheep. The proportions of stock in the main Middle Iron Age assemblage and the main Late Iron Age assemblage are almost identical. The only difference between them is in a general matter of scale, with a reduction in the amount of activity represented. This agrees with previous assessments of the use and occupation of the hillfort.

The proportion of sheep/goat in D817 is far greater than in any other collection of material, which may reinforce the special character of the deposit. The Middle-Late Iron assemblage has similarities with the Middle and Late Iron Age assemblages. However there is a reduction in the amount of pig represented. This contrasts with the Middle-Late Iron Age 'Rubbish Layers' which, although they have the similar dominance of sheep/goat, have greater proportions of cattle and pig. It is possible that this represents differential deposition between the ''Rubbish Layers' and the rest of the later Iron Age assemblage.

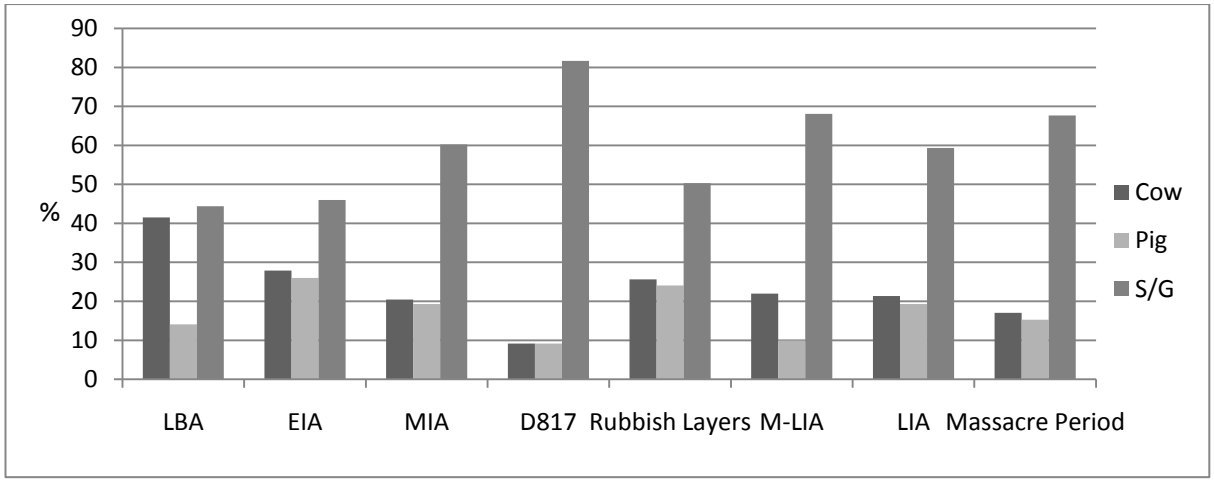

Figure 2.131: Proportion of main domestic species by period.

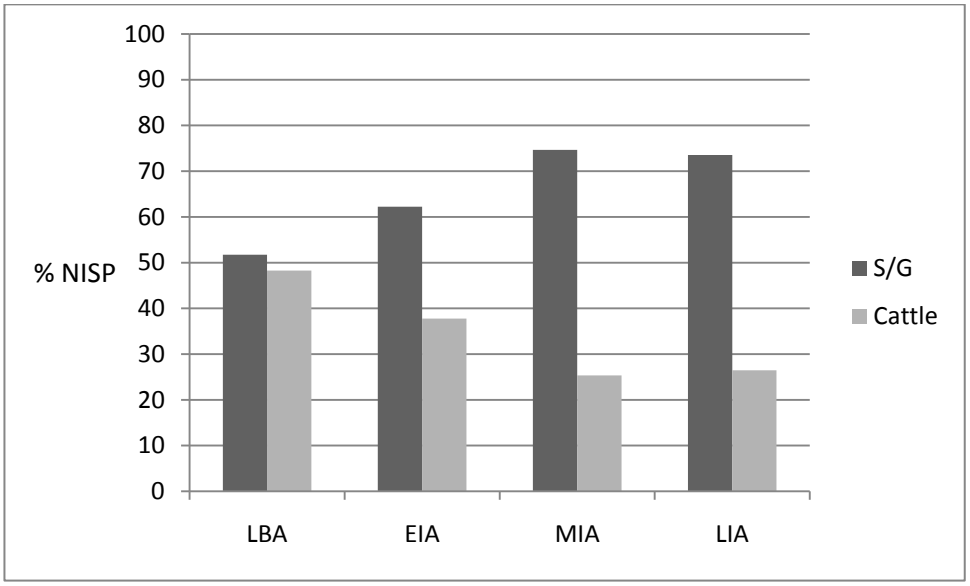

Figure 2.132: Proportion of sheep/goat to cattle (percentage of combined sheep/goat and cattle NISP) by period.

Figure 2.133 shows the percentages in each assemblage of loose teeth attributed to the main domestic species. The general pattern is that, the larger the species, the more vulnerable to fragmentation it was likely to be. However, it can be seen that processes appear to have affected species differently in the Bronze Age and Earlier Iron Age that must be explicable by differing treatment of the particular animal remains during those periods. This may betray different attitudes to the remains of those species or different patterns of utilisation. In the Middle and Late Iron Age material, there is little difference between the main assemblages, but the proportion of loose teeth is generally elevated for all species in the 'Rubbish Layers'.

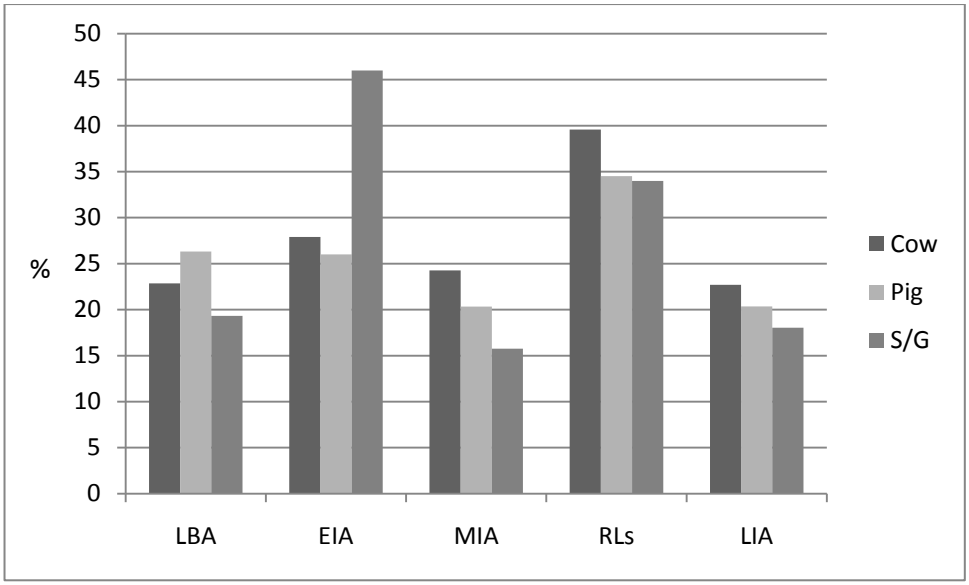

Figure 2.133: Percentage of loose teeth of fragments identified to species, by period.

The treatment of particular species is further illustrated in Figure 2.134. This emphasises the very different treatment or disposal of sheep in the Early Iron Age. This increased fragmentation may be a result of the material mainly coming from horizontal stratigraphic units.

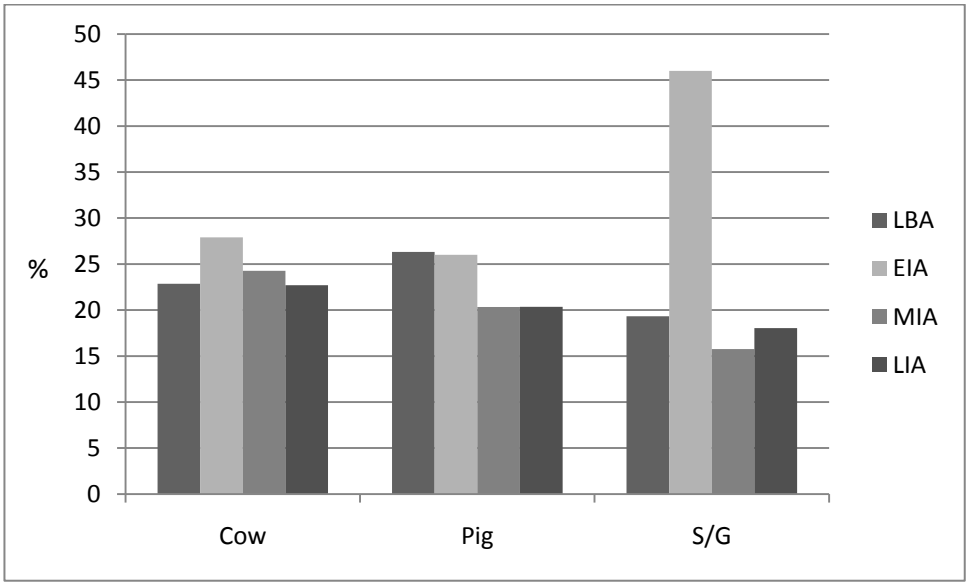

Figure 2.134: Percentage of loose teeth of fragments identified to species from the Bronze Age to the end of the Iron Age, arranged by species.

A2.12.1 Sheep and Goat

The Late Bronze Age and Early Iron Age assemblages are not really large enough to give a comparative idea as to the proportions of sheep and goats within them. No goat bone was identified in the Late Bronze Age assemblage, although this does not mean that it was not

present. A number of goat fragments were however positively identified in the Early Iron Age assemblage. A more reliable assessment can be made of the Middle and Late Iron Age material, and Figure 2.135 shows the proportions of sheep and goat identified in those two main assemblages. It is apparent that goats comprised a very small proportion of the flock, but also possibly that the importance of goats reduced in the Late Iron Age. The identified percentage in a suite of elements reduced from 10.74% in the Middle Iron Age to 5.26% in the Late Iron Age. Although the percentages are generally small, and there are some issues with the reliability of certain methods, discussed above, the halving of the proportion of goats in the Late Iron Age appears significant, and may reflect an increasing specialisation within an established system.

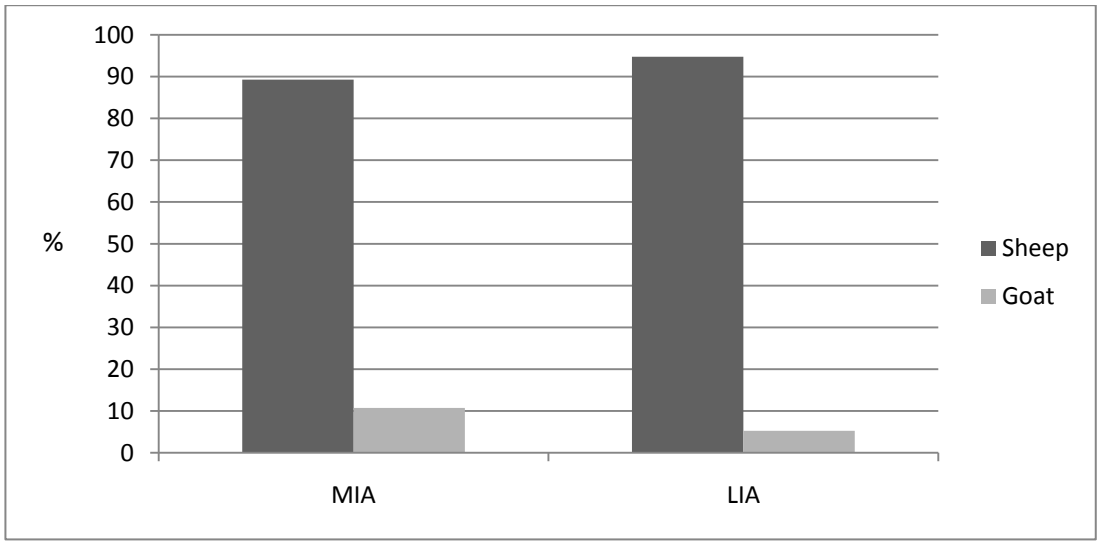

Figure 2.135: Proportion of sheep to goat where identifiable in post cranial elements excluding astragalus, by percentage.

The distribution of values for the medial condyle of metacarpals is given in Figure 2.136. There appears to be a separation of larger and smaller values especially in the Late Iron Age, although it is present in the Middle Iron Age. By this measure, the majority of animals fall into the smaller 'sheep' category in the Middle Iron Age, with a slightly smaller proportion in the Late Iron Age, contradicting the morphological data. However, the effects of sex are not known for this measure and if there was a difference in the age of death between sheep and goats, one or the other may be under-represented. In either case, sheep could be underestimated in both assemblages if goats were retained longer, and many sheep were culled whilst juvenile, leaving a smaller pool of fused distal metacarpals.

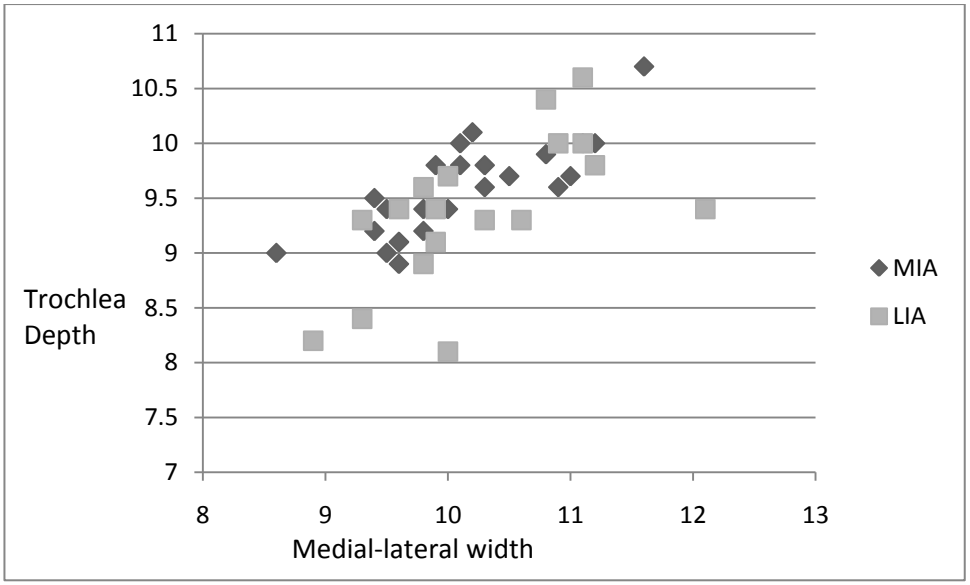

Figure 2.136: Medial condyle measurements for sheep/goat metacarpals, Middle Iron Age and Late Iron Age. N = 42

There is also an interest in considering the homogenity of flocks and their stabilty over time. The metrical data is subject to unknown effects of sex on the individuals, and measureable elements are limited for several time periods. However, Figure 2.137 shows the greatest length and distal breadth at the fusion point of sheep/goat metacarpals for the Middle Iron Age, demonstrating a close grouping of limited variation in size. The single available examples available from the Late Bronze Age and Early Iron Age sit within this cluster. This may imply that the flock was relatively stable over a long duration.

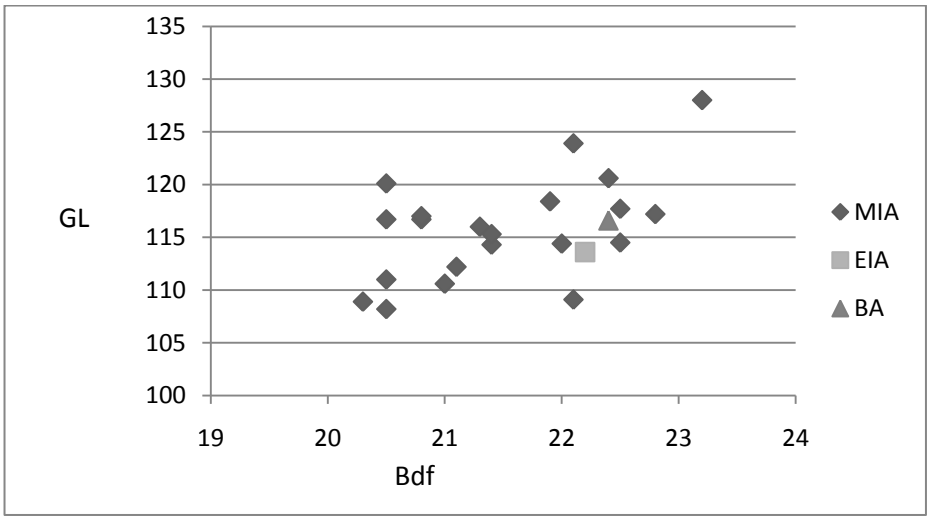

Figure 2.137: Sheep/goat metacarpals, greatest length compared to breadth of distal fusion point, Late Bronze Age-Middle Iron Age. N = 28

Continuity can also be clearly seen in the comparison of the Middle and Late Iron Age results as shown in Figure 2.138. The Late Iron Age distribution almost entirely overlies the Middle Iron Age; however, there are some outliers that may represent new stock. The single case that

is distanced from the cluster is the same individual that is an outlier on the medial condyle plot (Figure138), and may represent a goat.

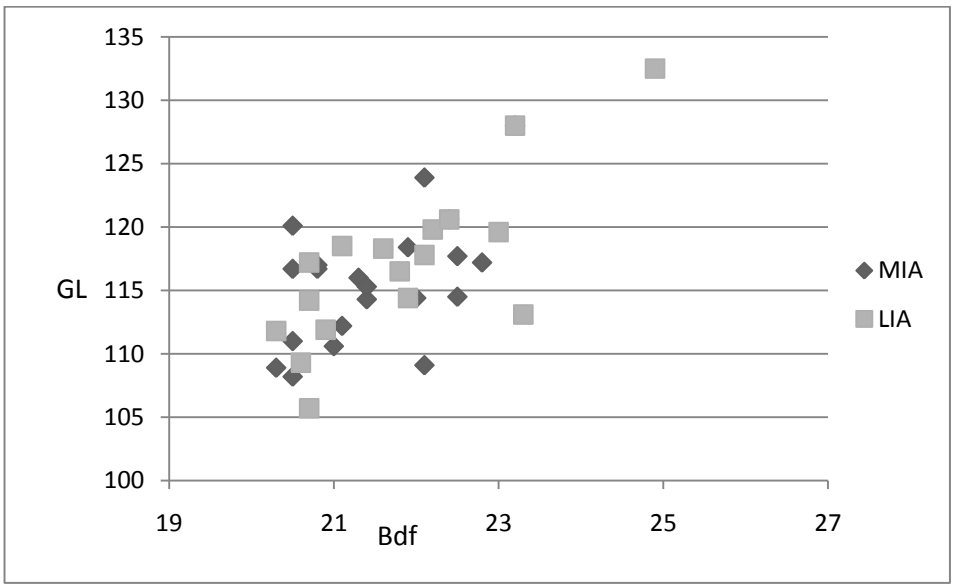

Figure 2.138: Sheep/Goat metacarpals greatest length compared to breadth of distal fusion point, Middle Iron Age and Late Iron Age. N = 32

Whilst the information is limited for the Late Bronze Age and Early Iron Age, strong organisation of flock management was demonstrated in both the Middle and Late Iron Age. Moreover, that management stragegy appears to have remained almost identical across both of the periods. In Figure 2.139 the Payne curves are given for the Middle and Late Iron Age, converted to percentages of deaths to enable comparison. The kill-off curves are almost identical.

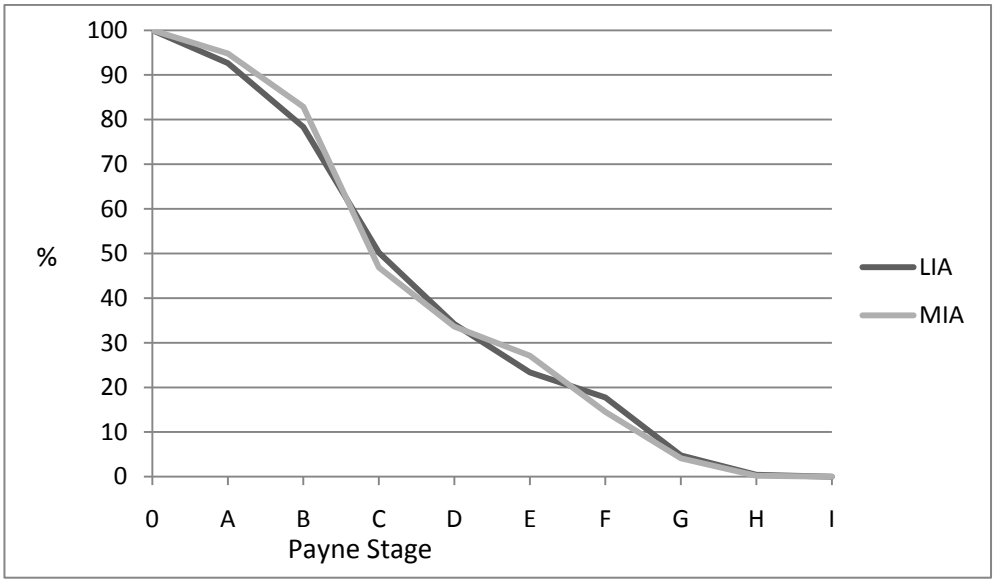

Figure 2.139: Payne stages for sheep/goat, Middle and Late Iron Age main assemblages, by percentage. N = 692

The pattern in the later Iron Age was probably not far removed from what had gone before in herd management terms, only in scale. Figure 140 shows all of the periods on one Payne curve. Given the much smaller assemblage, the curve for the Bronze Age is not far removed from the Middle and Late Iron Age curves. The Early Iron Age is the result of only a handful of available mandibles, whilst the Middle-Late Iron Age 'Rubbish Layers' may diverge due to fragmentation issues already discussed. The similarity in the fusion data for sheep/goat between the Middle and Late Iron Age can also be seen in Figure 2.141.

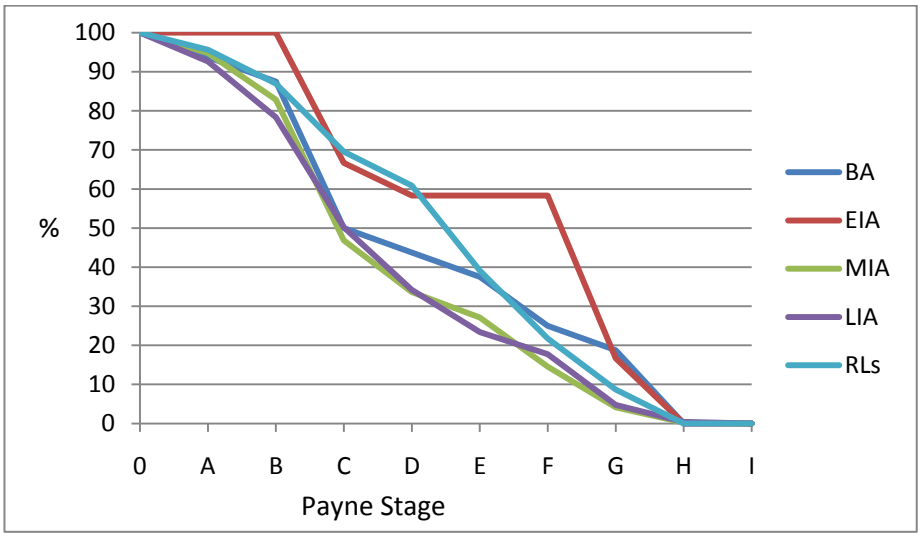

Figure 2.140: Payne kill-off curves for sheep/goat by period. BA N = 16, EIA N = 11, MIA N= 461, 'Rubbish Layers' N = 23, LIA N = 231. Total N = 742

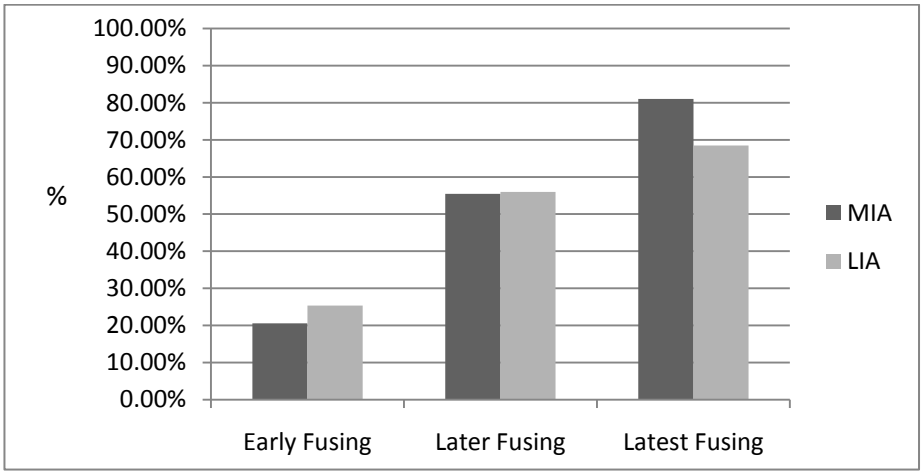

Figure 2.141: Percentage of unfused elements in the three groups for sheep/goat Middle and Late Iron Age.

By way of approaching other aspects of flock composition, the relative dimensions of the distal metacarpal was considered to see if it could give any indication of the sex of animals in a similar way as in cattle. Figure 2.142 show the Middle and Late Iron Age data overlain. It can be seen that there is a large main cluster, similar in both periods, with a very small number of outlying larger animals. More work needs to be done on this (to deal with the possible

influence of goats), but it may suggest that the flock may have been largely female with a very limited number of rams /castrated males.

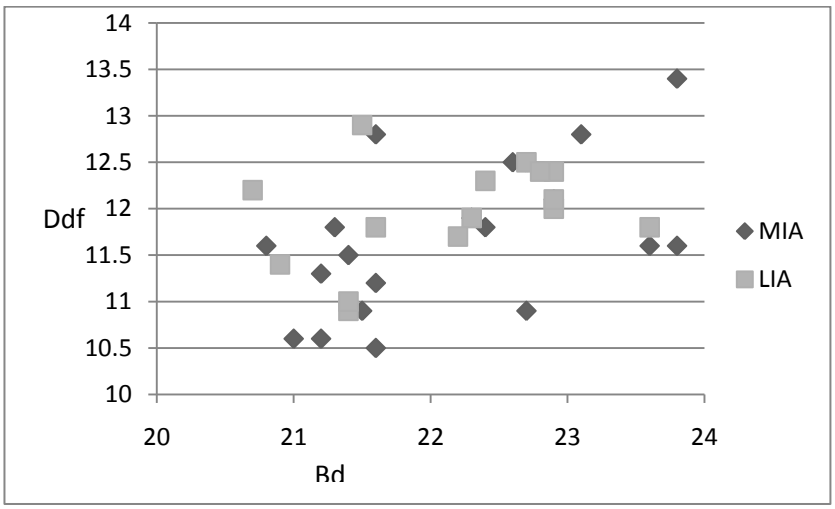

Figure 2.142: Distal metacarpals in sheep/goat, distal breadth compared to depth of the distal fusion point, Middle and Late Iron Age. N = 36

The only slight indication of change in husbandry or management between the Middle and Late Iron Age may come with slight alterations in the prevalence of disease. Although the numbers are small, there does appear to be a change in the proportions of sheep displaying changes to the distal humerus consistent with penning elbow, increasing from 3.53% of distal sheep/goat humeri available for study in the Middle Iron Age assemblage to 6.92% in the Late Iron Age assemblage. There is also a very slight posible shift in the prevalence of periodontal disease, which decreases in the Late Iron Age to 5.08% from 6.67%. This appears to be corroborated by changes in mandibular calculus from 9.46% of jaws recorded as having a tooth row in the Middle Iron Age to only 4.30% in the Late Iron Age. Both 'penning elbow' and periodontal disease are effectively degenerative and will have a link to the age at death of the individual. Changes in the rate at which they occur might therefore be regarded as related to changes in the numbers of animals surviving into older age groups. However, the trends in these two cases are in opposite directions, and as we have seen there is virtually no difference in the age profile of animals between the two periods. It may be reasonable to suggest therefore that the changes may be related to changes in husbandry practice rather than in herd management strategy. If 'penning elbow' is related to increased strain on the joint, this may reflect alterations in pasturing arrangements, whilst periostitis can be linked to pasture quality and overgrazing. If the change in the proportion of periodontal disease is real, and appears to be supported by the reduction in recorded calculus, the two factors together may indicate some changes to pasturing to avoid overgrazing which may have involved use of different terrain.

A2.12.2 Cattle

Cattle appears to have been particularly important in the Late Bronze Age, but this began to reduce in the Early Iron Age. That decline increases in the Middle Iron Age. Prior to that we

have limited information on herd structure. There is limited data from metrics, but as can be seen from Figure 2.143, Late Bronze Age and Early Iron Age animals fall immediately against the central cluster of radius dimensions for the Middle Iron Age. Although there are some outliers in that period, this may be explicable through sex differences and enhanced by the effects of castrates being present. There is little reason to believe that the population radically altered between the periods.

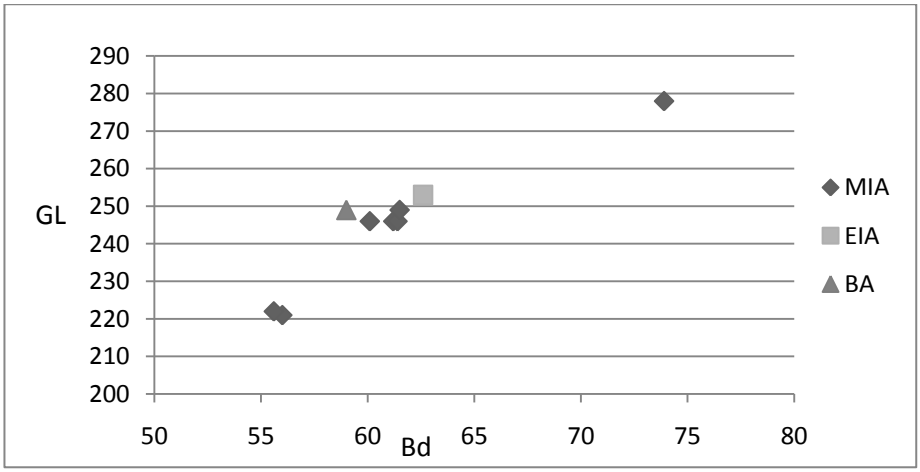

Figure 2.143: Cattle radius, greatest length compared to distal breadth, Late Bronze Age, Early Iron Age and Middle Iron Age. N = 9

It seems clear that the primary purpose of the herd in the Middle Iron Age was in the generation of secondary products, dairy andt partly traction. This can be seen in Figure 2.144 to have changed slightly between the Middle and Late Iron Age, with comparitively fewer very young animals being slaughtered and probably slightly greater use of prime meat beasts in the later period.

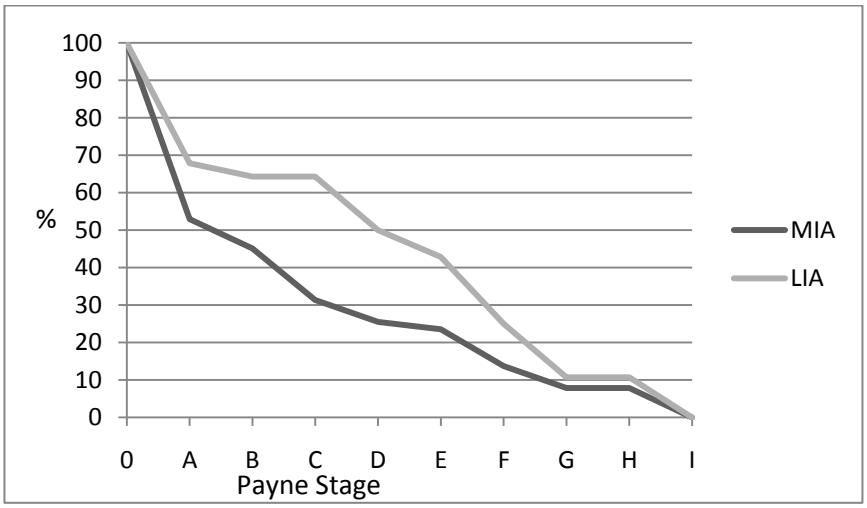

Figure 2.144: Halstead kill-off curve for cattle, corrected to percentages comparing the main Middle and Late Iron Age assemblages. N = 79

Figure2.145 gives the distal dimensions of cattle metatarsals. This was carried out because of the absence of enough distal metacarpals, but for the Middle Iron Age, seems to indicate that

the large proportion of the older individuals were female, with a few examples of bulls and steers. The Late Iron Age cases fall into two small groups that mirror the Middle Iron Age , but the numbers are too small to show us much with regard to proportions of males and females.

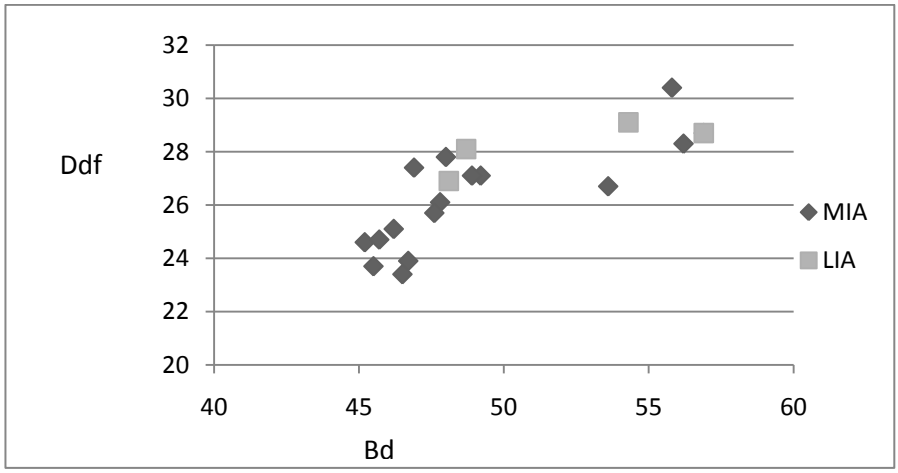

Figure 2.145: Cattle metatarsals, Distal breadth compared to depth of the distal fusion point,main Middle and Late Iron Age assemblages. N = 20

In order to address this, the proximal metcarpal was also used, as shown in Figure 2.146, and which gives the measurements of metacarpals for which Howard's Index could be calculated (Middle and Late Iron Age pooled to provide a larger 'background' sample), compared to the measurements of partial metacarpals. Whilst there are some males that overlap with the larger probable females, most cases fall into the two ends of the distribution. When the 'unknown' metacarpals are compared to this, for both Middle and Late Iron Age, the vast majority of animals fall into the smallest, and probably female part of the range, whilst a handful of individuals fall into the obviously male end of the spectrum. This does seem to support the dominance of female individuals in both periods.

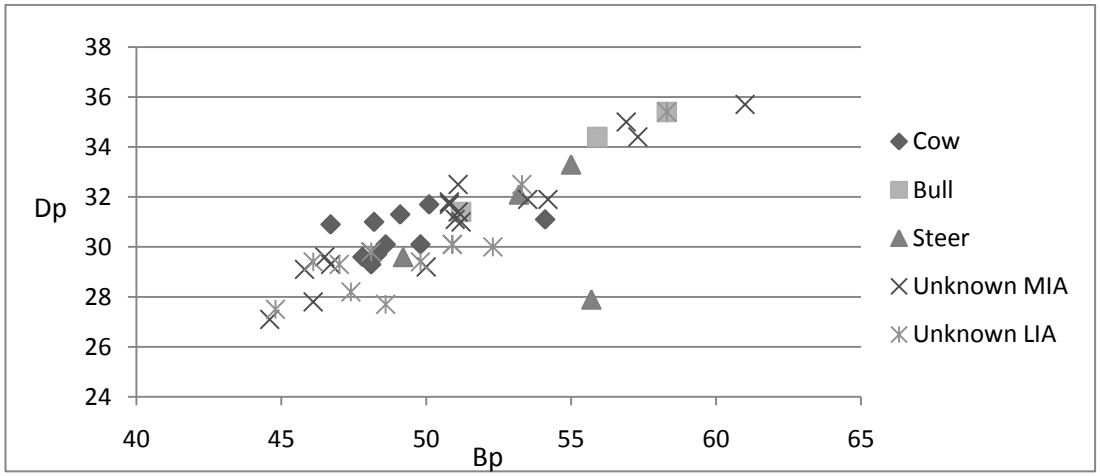

Figure 2.146: Cattle metacarpals, proximal breadth compared to proximal depth for elements determined to cow, bull or steer using Howard's Index, with the addition of unknown Middle and Late Iron Age proximal metacarpals. N = 46

The other change that can be noticed betwen the two periods is the reduction in cases of osteoarthritis. Although the assemblage is smaller, cases of pre-arthritic degenerative joint changes in cattle goes from 11 to 10 cases between the Middle and Late Iron Age, but those of the more advanced osteoarthritis from 11 cases in the Middle Iron Age to none in the Late Iron Age. Other changes noted in the metapodials which may relate to traction reduce from three cases to one, but this cannot be seen as reliable. It may be that there was a reduction in use of animals for traction in the later period, but it is more likely to relate to the change in the age profile of the population, either preventing the most advanced joint changes because the oldest animals are rarer or the deliberate management of animals that have begun to show signs of joint stiffness and lameness. There was however a considerable increase in non-specific infections in the Late Iron Age, which may be indicative of changing husbandry practice, increased stress or changing perception of acceptable degrees of cattle health.

A2.12.3 Pig

Pig was a very minor component of the Late Bronze Age assemblage. This changed quite considerably in the Early Iron Age, and of the three main species, pig then remained the most stable in percentage terms through the entirety of the Iron Age. This is further illustrated by the relative percentage of cattle and pig across the periods given in Figure 2.147. The desirability of pig as livestock seems to have changed very considerably at the end of the Bronze Age, and it is possible that the manner in which pigs were kept and managed was settled at that time.

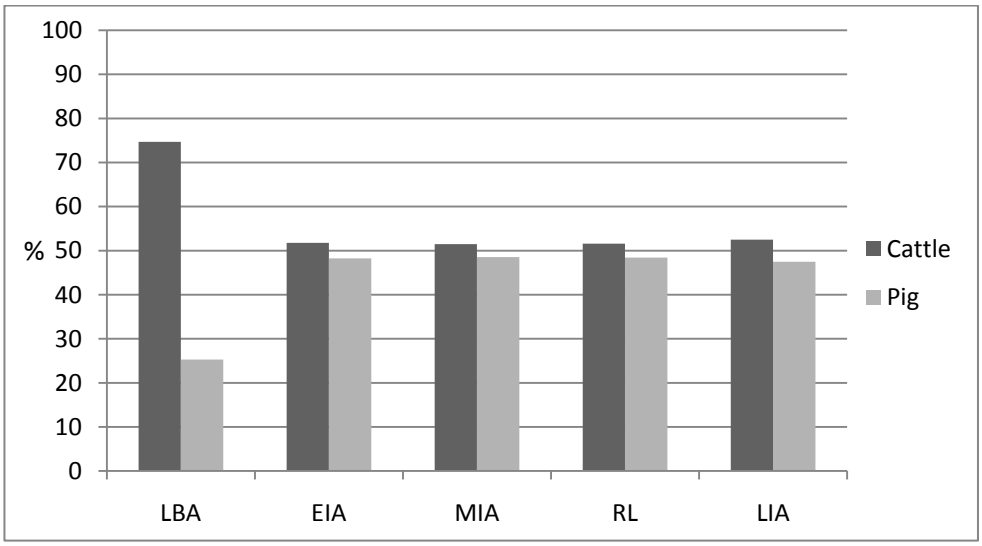

Figure 2.147: Relative proportions of cattle and pig (percentage of total cattle and pig NISP) by period.

Pigs do not appear to have changed greatly in size over time. Figures 2.148 and 2.149 show considerable overlap in the size of mandibular third molars and the robustness of the astragalus in the Middle and Late Iron Age. There are a couple of outliers in both elements in the Middle Iron Age, but none in the Late Iron Age, which may indicate that the population was still slightly heterogenous in the Middle Iron Age, but had become relatively settled in the Late Iron Age.

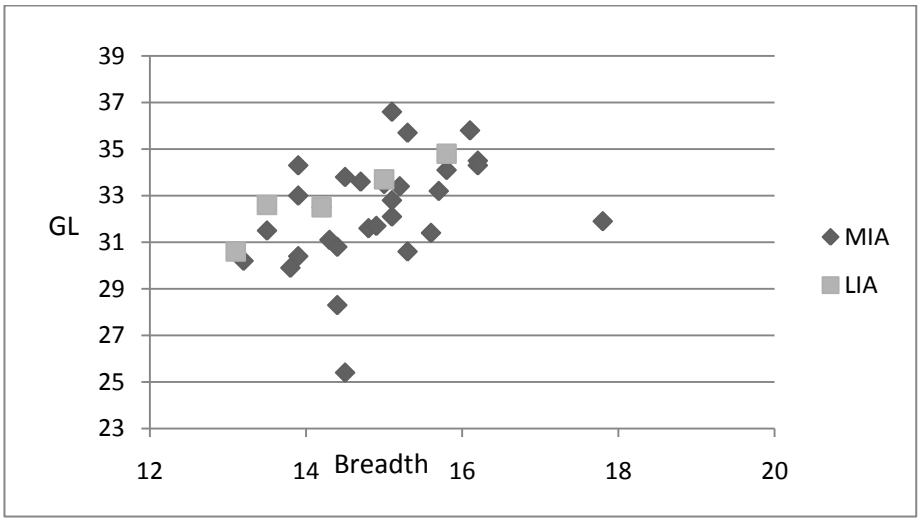

Figure 2.148: Third mandibular molar length and breadth, main Middle and Late Iron Age assemblages. N = 30

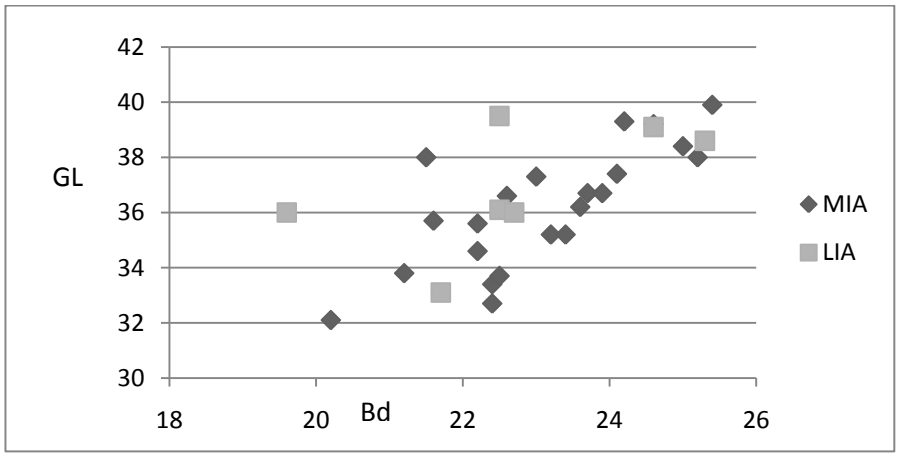

Figure 2.149: Length and distal breadth of pig astragali, Main Middle and Late Iron Age assemblages. N = 27

In order to further examine any possible changes in the husbandry of pigs, scores were considered using Halstead wear stages. These are shown in Figure 2.150 converted into percentages to aid comparison. The curve is generally the same, with large numbers of younger animals, but there is a difference between the Middle and Late Iron Age because there are more individuals in the youngest category, and a younger age at which the vast majority of the population are dead. This may be an artefact of the lack of neonatal deaths and may be taphonomic or relate to the presence of farrowing close to the point of deposition in the Late Iron Age, but not in the Middle Iron Age. There are slight indications that the pig population may have been under slightly greater nutritional or health stress in the later period with an increase in the rate of dental enamel hypoplasias increasing. Just considering the third

mandibular molar in jaws, 17.7% exhibited linear hypoplasias in the Middle Iron Age sample whilst this rises to 25% in the Late Iron Age assemblage.

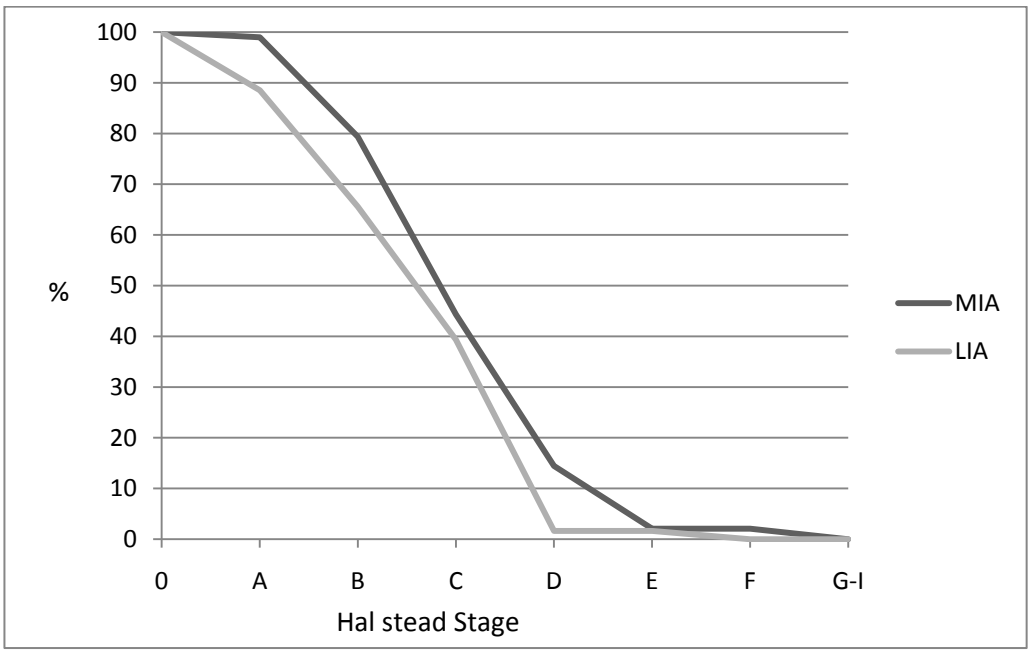

Figure 2.150: Halstead stage curve for pig comparing the Middle and Late Iron Age assemblages. N = 158

This change in the age of death profile may not be unconnected to an increase in the proportion of animals in the Late Iron Age that are male, as shown in Figure 2.151. Four canines could be sexed for the Late Bronze Age, all of them representing females. Early and Middle Iron Age proportions of males and females are broadly similar, with males in the majority suggesting they were brought in, but there is a considerable increase in the proportion of males to females in the Late Iron Age.

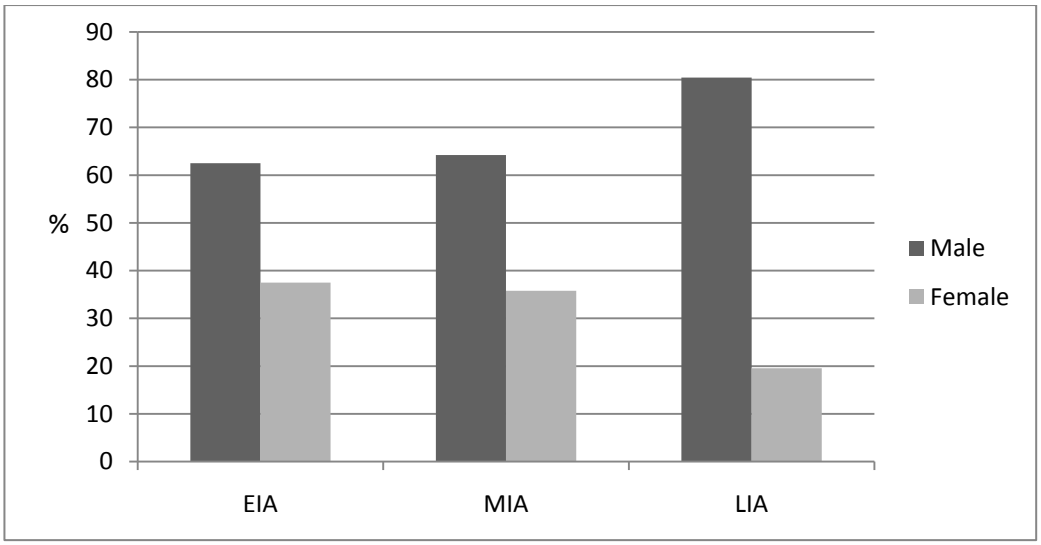

Figure 2.151: Percentages of male and female pigs, Early Middle and Late Iron Age.

A2.12.4 Dog and Horse

The percentages of dog and horse are extremely low in all phases of the site. The percentages of identified fragments are shown in Figure 2.152 for all periods demonstrating the consistently low numbers, but also showing the consistent relationship between the two.

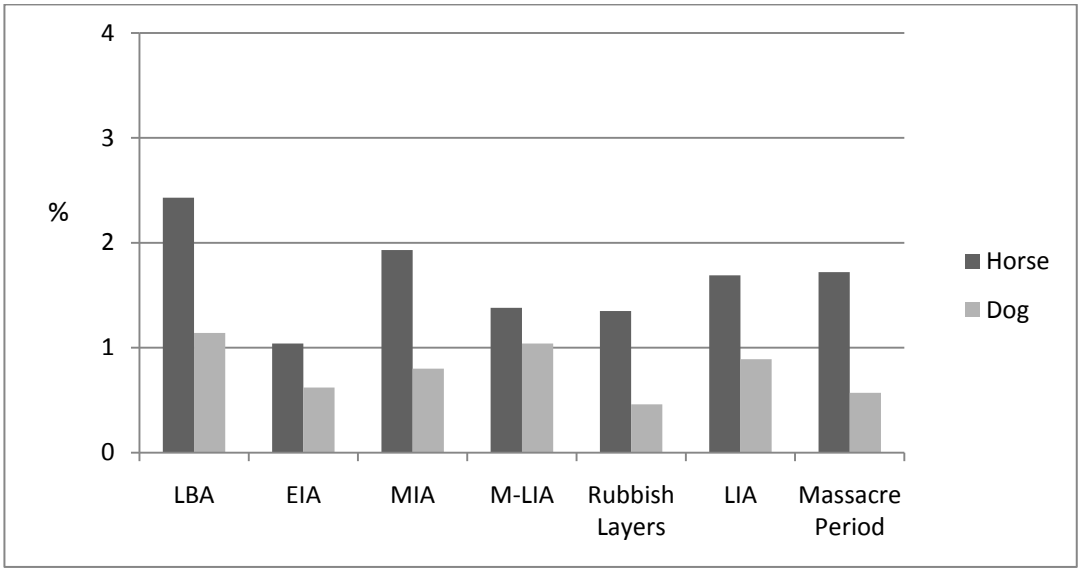

Figure 2.152: Percentage of dog and horse of total domestic species by period.

Dogs appear to have been of variable size in the Middle and Late Iron Age, whilst horse demonstrates some variation within a small stature. Figure 2.153 shows that Late Iron Age horses in particular were not large or robust, but an animal from the 'Rubbish Layers' was larger, and the Late Bronze Age example was within a similar distribution.

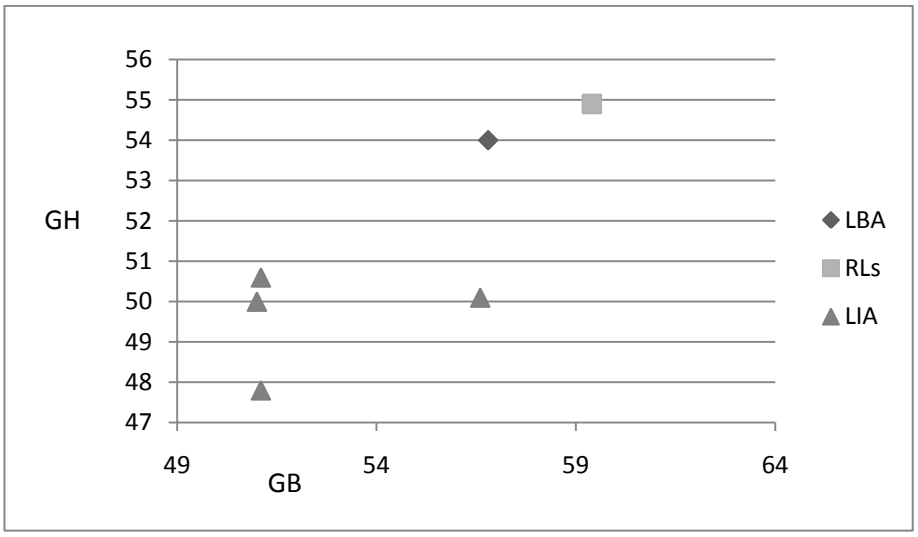

Figure 2.153: Dimensions of horse astragalus, greatest height by greatest breadth comparing Late Bronze Age, main Late Iron Age and Middle-Late Iron Age from the 'Rubbish Layers'. LBA N = 1, 'Rubbish Layers' N = 1, LIA N = 4.

A2.12.5 Wild Mammals

Wild mammals form a consistently extremely small percentage of the identified assemblage as can be seen from Figure 2.154. The range of species is also very limited as can be seen in Table 2.71. Whilst red or roe deer are represented in most periods, this is ordinarily in the form of antler, much of which shows signs of working. There is no evidence that wild species were being hunted in any number, or at least they were not being deposited on the hillfort. Apart from cut marks on antler, very few fragments show any evidence of butchery.

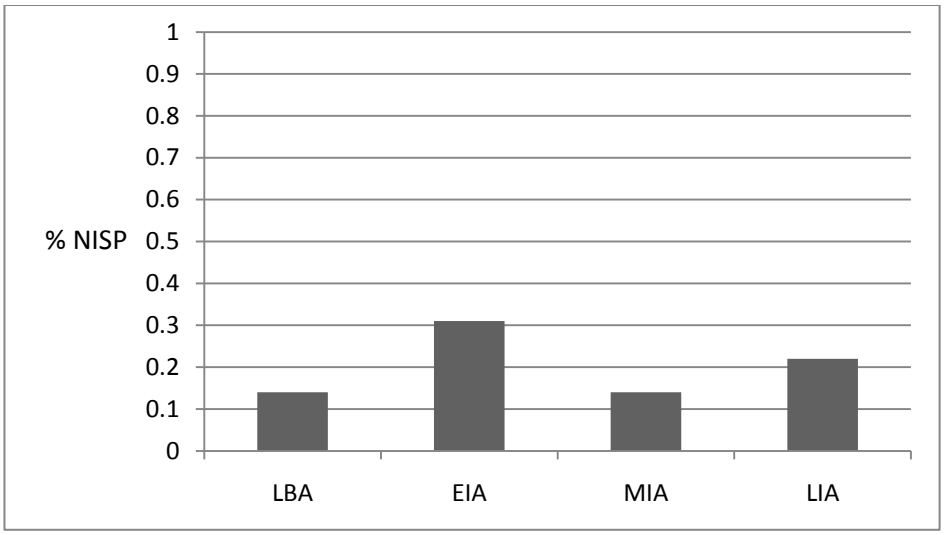

Figure 2.154: Percentage wild mammals of fragments identified to species. N = 59

Table 2.71: Wild mammals by period.

Species	LBA	EIA	MIA	M-LIA (Inc RLs)	LIA	Massacre
Red Deer	1	1	4		11	
Roe Deer			6		3	1
Deer		1	4		2	
Hare		1	9	1	6	
Fox			1	13	2	
Cat			4	1	3	

With such small numbers it is difficult to identify any patterns. However, Figure 2.155 does seem to indicate that contrary to the general reduction in fragments in line with the smaller assemblage, there is an increase in deposition of red deer antler in the Late Iron Age. This may be related to the types of craft activities being carried out in the different periods.

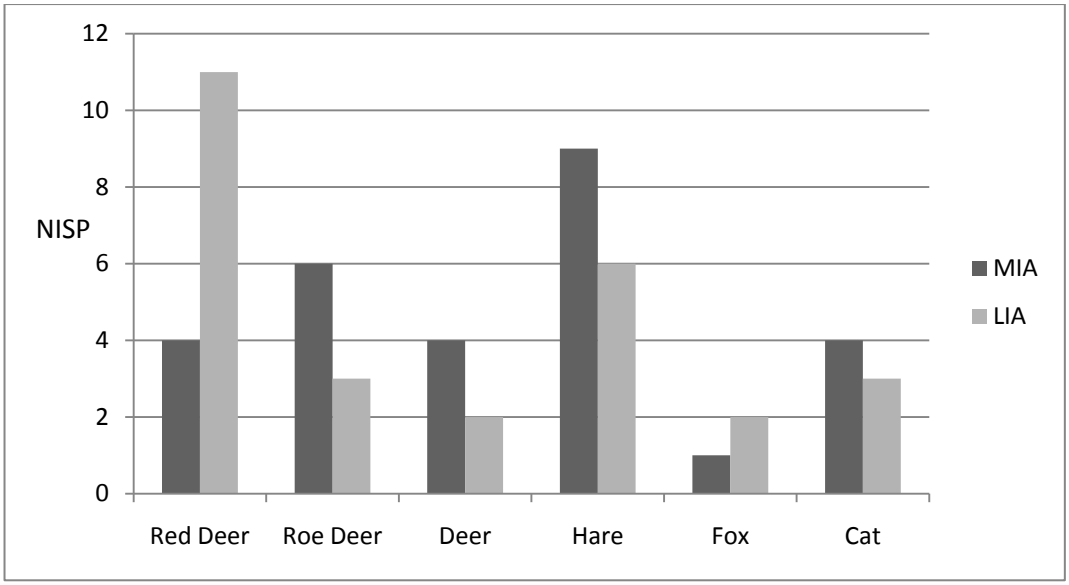

Figure 2.155: Numbers of wild species in Middle and Late Iron Age. N = 55

Figure 2.156 gives the number of bird fragments by species (or group of species) and by period to the Middle and Late Iron Age. The noticeable change is a reduction in raven bones in the Late Iron Age and the first appearance of domestic fowl. Other species occur at such low levels that they cannot add much other than a matter of interest. It is notable however that very few of the species would not have been common in the local environment, whilst the other species may have been incidental strays.

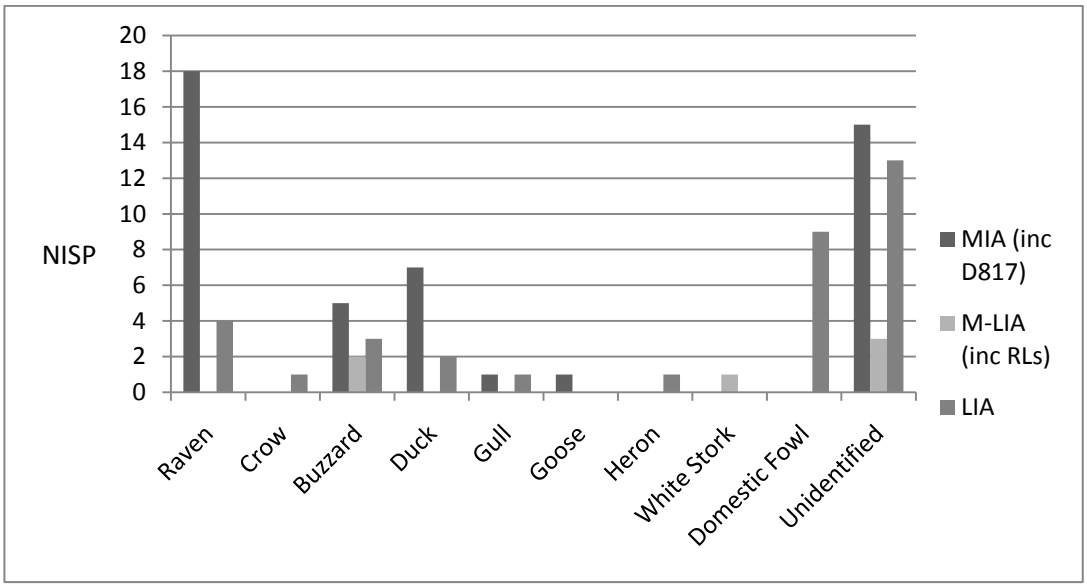

Figure 2.156: Number of identified specimens for birds, shown by period. N = 87

The Late Bronze Age and Early Iron Age contexts only yielded a gull humerus *cf*. Black Headed Gull and two unidentified bird bone fragments respectively. The Middle Iron Age duck species include four *cf*. teal and two *cf*. northern pintail, whilst the Late Iron Age only produced two fragments of probable wigeon.

A2.12.6 Associated Bone Groups and complete skulls

The associated bone groups add considerably to our understanding of not only the economic models explored above but the perception of animals. Recording and consideration here has included complete or largely complete skulls as these have been considered within this category elsewhere, and were perceived and recorded separately during the excavation. There were no ABGs identified from the Late Bronze Age and Early Iron Age contexts. There are however a large number of examples of different types of ABGs that occur in different locations depending on the species involved throughout the Middle and Late Iron Age. Figure 2.157 shows the distribution of species by period. Cattle are by far the best represented, especially in the 'Rubbish Layers' calf burials, but also in other strategraphic units. This is even more marked in Figure 2.158 which displays the same data having removed all possible butchery waste.

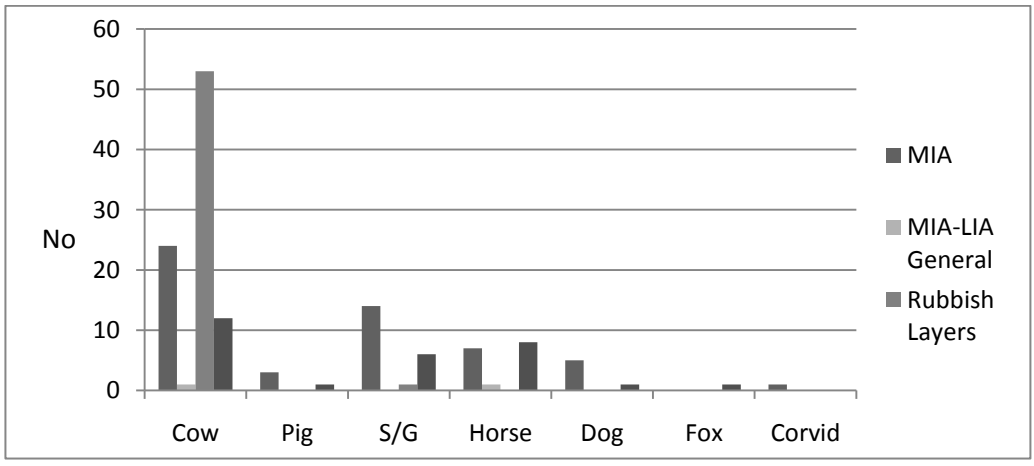

Figure 2.157: Species represented in ABGs by period, including those potentially butchery waste. Total N = 136

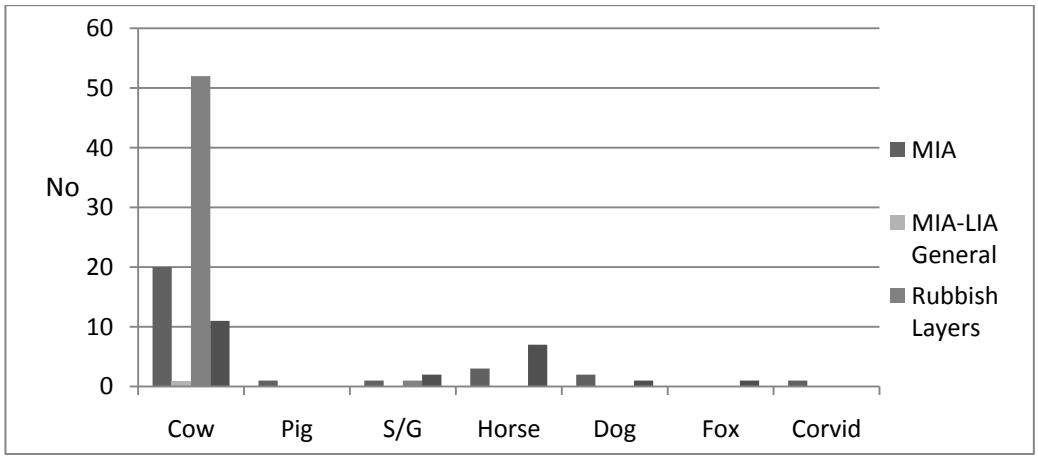

Figure 2.158: Species represented in ABGs by period, excluding those potentially butchery waste. Total N = 104

Figures 2.159-163 show the types of ABG by species and period. It is very clear that articulated cattle burials are entirely confined to the 'Rubbish Layer' sequence of deposits. These forms of ABGs do not occur in pits, not even as articulated limbs. Pits only contained skulls or articulated feet or vertebrae, and this holds true through the whole of the later Iron Age. Horses occur throughout the period as heads and feet, whilst sheep/goat are represented mainly by material that is most sensibly explained as butchery waste. Pigs are very much in a minority and could be explained in the same way. Interestingly, for both cattle and horse, the areas that are represented in the ABGs is that which may be slightly lacking in the general assemblages that are contemporary. This begs the question of how 'special' we should perceive them to be. There is also a notable correlation between the age groups of animals represented, especially cattle. Most of the skulls are older animals with worn teeth, whilst the entire burials are mainly neonatal calves which mirror the main age profile. It is interesting that for horse, the parts of the body that have been recorded for ABGs mirror that found in the main Middle and Late Iron Age assemblages, emphasising the degree to which there is a lack of post-cranial material.

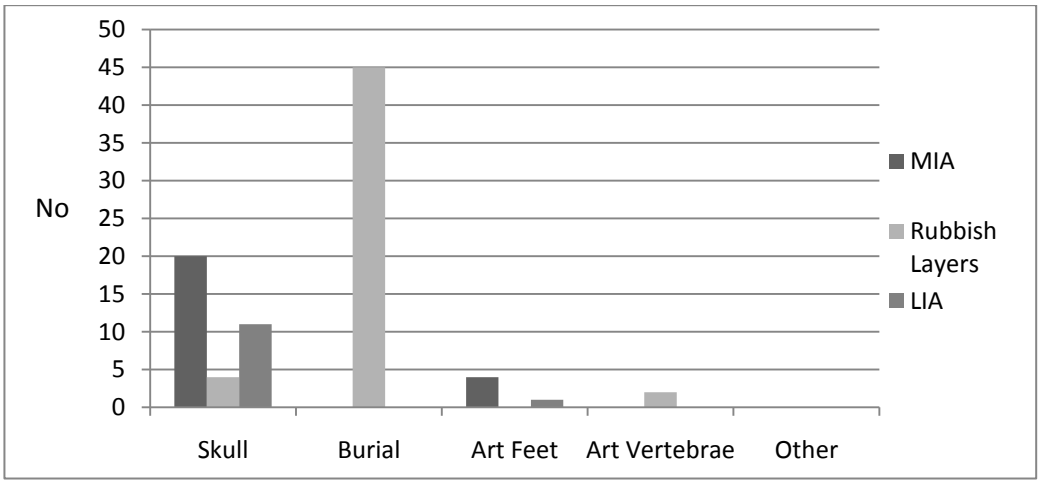

Figure 2.159: Cattle ABGs by type and period. Total N = 87

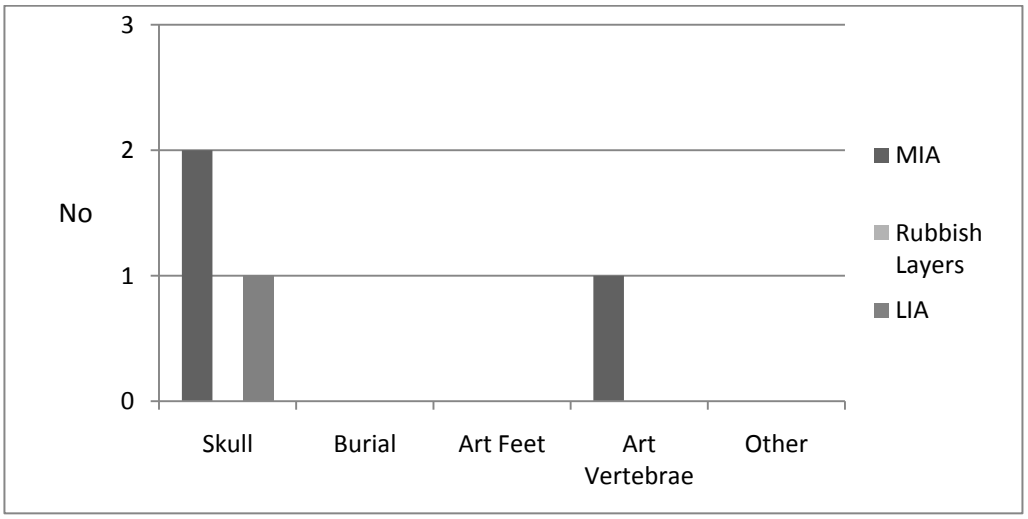

Figure 2.160: Pig ABGs by type and period. Total N = 4

However, we may not be able to regard these as entirely the result of discarded waste from slaughter and butchery. Many of the deposits are associated with other objects that make them stand out, or in such concentration that they are of note. The animal burials have a very specific method of deposition. Nevertheless it is clear that we cannot also entirely remove these cases from the economic sphere. It is suggested that deposition may well be structured, but that there are pragmatic choices underlying the behaviour. One likely explanation is the ritualisation of slaughter, in which the timing and selection of animals is entirely pragmatic, but for reasons of belief have become ritualised. This does not detract from their economic meaning but actually serves to enhance it, by placing emphasis on a series of events that were viewed as significant by the people carrying them out. The concentration on cattle may have served to emphasise their importance in producing dairy products and also dealt with the fact that many animals lived long lives, developed their own relationships and biographies and may have been seen as retaining an identity after death. If the calf burials were becoming related to a more formalised ritual practice, if they are indeed directly in association with a precursor to the mid first century shrine building, they may indicate a development of the belief that effectively turned necessary herd management practices into a sacrificial rite.

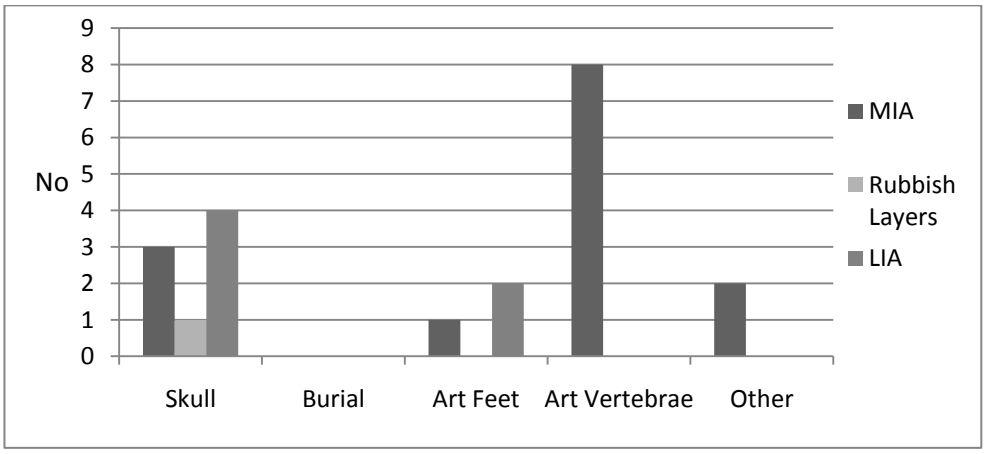

Figure 2.161: Sheep/goat ABGs by type and period. Total N = 21

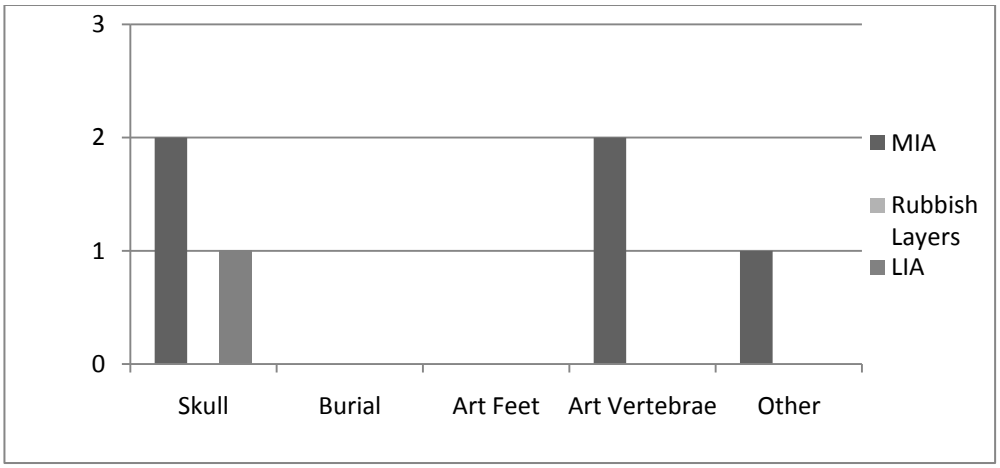

Figure 2.162: Dog ABGs by type and period. Total N = 6

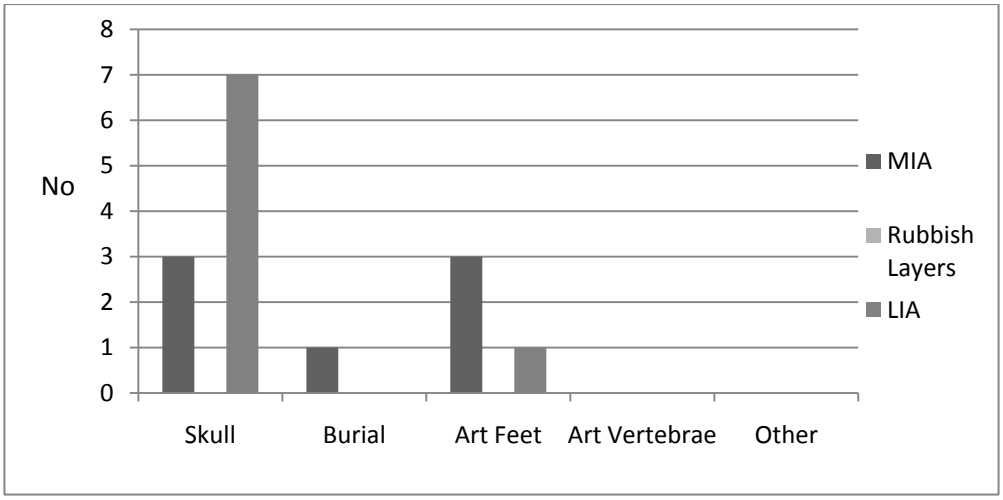

Figure 2.163: Horse ABGs by type and period. Total N = 15