The animal bone from Upper Well Street, Coventry

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March 2009

Introduction

The animal bones were recovered from area C, outside the medieval city walls. The majority (95%) came from pits adjacent to the city ditch, others from the ditch itself, and some from separate layers (table 1). Contexts dated from the 12th to 18th centuries, although 97% of the assemblage was recovered from phase 2 deposits, dated to the 15th – 16th centuries (table 2). All phases will be considered in the types of species represented, but only those from phase 2 will be discussed further.

Although much domestic refuse was disposed of in pits found in the backyards of tenements in medieval Coventry (Holmes, Forthcoming), the use of extramural areas for the deposition of waste is also well documented in other towns of this period (Wilson, 1996), and a proportion of the animal bones from Upper Well street appear to have been general waste deposits. However, there were also a number of 'industrial' deposits recovered from pits F518, F521 and F531 at the edge of the ditch, marked by the presence of a large number of sheep / goat metapodia from four contexts (5016, 5038, 5043 and 5053) dated to phase 2. As these deposits are not directly comparable with domestic refuse, they will be analysed separately.

Methodology

The bones were identified using a restricted count based on that of Davis (1992). Bones were recorded if the fragment contained part of the epiphysis or metaphysis (i.e. ends of the bone). Ribs, parts of the skull and vertebrae were not identified to species, with exceptions of the zygomatic arch and occipital areas of the skull, 1st and 2nd cervical vertebrae and sacrum. Fragments that could not be identified to species were recorded as: large mammal (cattle or horse size); medium mammal (sheep or pig size); small mammal (rabbit to rodent size); bird; and fish. Where fragments could not or were not identified to anatomical element they were grouped to: ribs; vertebrae; skull; and unidentified (anything not in the previous sets). The bones of sheep and goat are very similar, and an attempt was made to distinguish between the two species where possible, using characteristics defined by Payne (1985) and Prummel and Frisch (1986).

Further data relating to the taphonomic factors affecting the assemblage were recorded, including: condition (after Lyman, 1994) on a scale of 1-5, where 1 the bone was excellently preserved to 5, it was unrecognisable; butchery type and location, using templates by Lauwerier (1988) and Sykes (2007) as well as further descriptions where necessary; zones present on a score of 1-8 (Serjeantson, 1996); burning – either singed (brown), burnt (black), or cremated (white or grey); gnawing by dogs or rodents; signs of bone working; pathological changes; and the presence of fresh breakage.

Aspects of the assemblage concerning data for re-construction of past animal populations was also recorded: tooth wear (Grant, 1982); fusion (Amorosi, 1989; Silver, 1969); and measurements taken using criteria given by Von den Driesch (1976) as well as additional measurements on the pelvis (Greenfield, 2006), metapodia (Davis, 1992) and teeth (Albarella and Payne, 2005).

A number of fragments were available from environmental samples, which were recorded in a separate table, so quantification of the assemblage as a whole was not affected when comparing areas of the site not sampled. Due to the highly fragmented nature of this material, it was only recorded if identified to species or anatomy.

Condition and taphonomy

The bones were in good condition. Signs of butchery came from contexts 1, 1/2 and 2, reflecting some form of processing, but all other taphonomic evidence came from phase 2. Only 3 fragments were burnt, suggesting minimal exposure of the assemblage to fire, 6 fragments exhibited signs of canid gnawing, indicating that the bones were quickly buried, restricting their access to dogs. Only 6 fragments had broken post depsitionally and could be conjoined to make 3 larger fragments, which suggests that the bone survived fairly well in the burial medium, with minimum movement. However, 5% of the material (41 fragments) showed signs of fresh breakage, which would have occurred during and after excavation and suggests a degree of friability.

Non specific refuse deposits

Species representation

The species present are summarised in table 3. As noted above, very few bones came from phases 1, 1/2, 3 or 4, and those that were present came from the main domestic animals. A larger number came from phase 2, containing the main domesticates, of which cattle and sheep / goat were each present as approximately a third of the assemblage and pig, goose and chicken were recovered in smaller, but similar proportions. There were also a number of wild species present, including hare, duck, wader sp. and pheasant. It is probable that beef, mutton and pork were most commonly eaten by the population, supplemented by chicken and goose, with wild species forming an even smaller proportion of the diet.

Horse and cat remains were also recovered, but it is unlikely that the latter species formed part of the diet. Horse meat, although prohibited from consumption during this period, may have been eaten on occasion, as the remains of horse are found in most urban sites. However, there was no evidence for butchery of horse in this assemblage, which may indicate that it was not eaten, merely disposed of outside the town walls, another common occurrence during this period (Wilson, 1994).

Environmental samples from phases 2 and 3 also contained animal bone (table 4). Although cattle and sheep / goat were present in phase 2 samples, smaller animals were more abundant, as may be expected from such an assemblage, where recovery bias is reduced. As well as similar wild species being found to that of the hand collected material, magpie, partridge and oyster were also present, and presumably also formed part of the diet of the inhabitants of medieval Coventry. Rat and amphibian species were also recovered, and are more informative of the environment of the area, rather than the diet of the population. Amphibians indicate a damp area, that may be expected given the proximity of a ditch within the site, and rats are commonly found near areas of human habitation.

Fragment representation and butchery

Table 5 shows the presence of different anatomies for cattle, sheep/goat and pigs from the phase 2 assemblage. Bones from all parts of the cattle carcass were present, but no sheep / goat or pig foot bones (phalanges) or pig lower leg bones (metapodia) were recovered. The absence of the former may be a result of recovery bias, exemplified by the presence of phalanges from both these species in the sieved material. In all species the main meat bearing bones of the upper limbs (scapula, humerus, radius, pelvis, femur and tibia) were present in slightly greater numbers than bones from the head,

vertebrae, lower legs and feet (figure 1). The high proportion of sheep / goat head bones is due to the presence of two sheep skulls and seven sheep / goat mandibles in context 5052.

Evidence for butchery was present on bones of chicken, goose, cattle, pig and sheep / goat, in the form of cuts with a knife, and heavier blows with a chopper type implement, in areas typical of the disarticulation and jointing of a carcass for ease of cooking.

Summary

The species recovered were similar to those from other domestic sites in Coventry (Locock, 1999), the absence of wild mammals such as deer, rabbit and hare, and the restricted number of wild birds suggests a limited range of species available, rather than the more impressive species diversity seen at higher status sites near the priory (Holmes, Forthcoming), Whitefriars (Holmes, 1981) and Cox street (Locock, 1999).

Skin processing waste deposits

An unusually large number of sheep / goat metapodia and phalanges were recovered from pits F531, F521 and F518, which are typical of the waste from skin processing (Albarella, 2003; Shaw, 1996). Indeed, pit F531 itself, and others in the vicinity were similar in size, shape and grouping to those recorded from other skin processing complexes (Albarella, 2003; Serjeantson, 1989; Shaw, 1996), as suggested in Hancox and Cuttler (Hancox and Cuttler, 2004). Figures 2a-c illustrate the frequency of anatomical elements recovered from these pits for the main domestic animals. Horn cores dominated the cattle assemblage, and mandibles were the most common pig bones represented (figures 2b and c), but the sheep / goat assemblage was dominated by bones from the lower legs (metacarpals, metatarsals and phalanges) from a minimum number of 48 animals (table 6).

Metapodia are useful for distinguishing visually between sheep and goat species (Prummel and Frisch, 1986), and in this assemblage a ratio of 146 sheep to 3 goat identifications was made, which was reflected in the analysis undertaken in figure 3, using a method detailed by Payne (1969), which shows a large grouping of measurements most likely to represent sheep (63) to a much smaller group of goat metacarpals (2). The presence of a greater proportion of goat horn cores (4:3 sheep: goat respectively), however, is typical of the over-representation of goat horn cores in the archaeological record (Bartosiewicz, 1999), and this phenomenon has been explained as the reflection of a trade in the importation of goat skins from Europe (Albarella, 2003; Noddle, 1994).

This type of assemblage has been well documented, and similar deposits have been recorded from 15-16th century Leicester (Baxter, 1998), where a large deposit of sheep / goat metapodia and phalanges were recovered from a minimum of 28 individuals that were generally mature at death; post conquest deposits at Skeldergate, York (O'Connor 1984) containing cattle horn cores, goat horn cores and metapodia; 18th century deposits from Walmgate, York (O'Connor 1984), where a large number of sheep metapodia and phalanges were recovered from a minimum number of 1289 animals; the Green, Northampton (Harman, 1996) where sheep skulls, metapodia and phalanges and cattle horn cores were also recovered from a tanning complex spanning the 15th to 18th centuries, and in an earlier excavation also dated to the 15th – 16th centuries on Upper Well street (Chaplin, 1966), where a larger number of cattle horn cores were recovered, along with sheep / goat metapodia.

In the medieval period the feet of sheep were commonly removed with the skins (Shaw, 1996; Wilson, 1996), and butchery marks were present on many of the sheep / goat metapodia on this site and at Northampton (Harman, 1996) and Walmgate (O'Connor, 1984) in the form of knife cuts indicative of disarticulation of the lower leg, to remove it with the skin. It has been suggested that by

leaving the feet attached to the skin they acted as pegs, to aid drying, and to produce neatsfoot oil essential for conditioning the leather. The relative absence of calcanei and carpals (figure 2a) suggests that the limbs were removed below the hock or knee. Metapodia from sheep or goats were more often recovered than cattle, which may be explained by their having little meat or marrow value compared to those of cattle which contain marrow, useful for stews and soups, and are also a main component of the bone working industry (Serjeantson, 1989).

A small group of horn cores was also recovered from these contexts (7 cattle, 4 sheep, 3 goat and 1 sheep / goat). Horns were occasionally left on skins and hides and, although the tanner or tawyer may have sold them to a horner for further processing, they could have been discarded as waste by either of these tradesmen (Albarella, 2003; Serjeantson, 1989). Large numbers of horn cores recovered from pits elsewhere in Well street (Chaplin, 1966), and at Skeldergate (O'Connor, 1984) were interpreted as waste from a horn worker. However, horn cores recovered from the tanning pits of 's-Hertogenbosch-Gertru, have been interpreted as being discarded by the tanning trade (MacGregor, 1989; Prummel, 1978), and investigations into tanning complexes throughout England from the post Roman to post medieval periods by Shaw (1996) and Albarella (2003) points to the presence of large numbers of horn cores from cattle, sheep and goats as a good indicator of skin processing waste, the horn possibly being removed by the tanner or whittawyer, and sold on to the horner.

One tibia had been sawn through, which is a method of butchery indicative of bone working which, combined with evidence for offcuts of bone apparently used for button production (see elsewhere this report), also indicates the presence of a bone working trade in the vicinity, or at least a company or person that were using this site as a dump for their waste.

Although there were clear waste deposits from the skin processing industry predominant within these contexts, a number of other species were present (table 7), and, when taken in combination with the element representation of cattle and pig, suggests that domestic refuse was deposited along with the tanning waste in these pits. This is not unusual, and was also recorded at Leicester, Northampton, Skeldergate and 's-Hertogenbosch-Gertru.

Summary

The combination of large depositions of sheep / goat metapodia, phalanges and horn cores and cattle horn cores from this excavation and that previously carried out in the vicinity, with the structural evidence typical of a tannery complex, is strong support for this area of the town being used for industrial processing.

Animal husbandry

The phase 2 assemblages will be assessed together in order to provide the best sample of mortality and metrical data. It may be that sheep / goats were selected at a certain age for the best skin production, but when the fusion of metapodia and phalanges from this assemblage was compared with that of the non-specific refuse, it was similar, so these bones will also be included.

Cattle

There was evidence for neonatal mortalities in the cattle assemblage, and a further small proportion that died before reaching each age stage (figure 4). This may be indicative of a small scale veal trade, whereby male calves were surplus to requirement in an underlying dairy economy. Another conclusion may be that these animals were excess to requirement from a herd used for beef or traction, the large cull of animals before 36 – 42 months suggests that many of the cattle reaching

Coventry were produced specifically for beef, as this is the age when animals are at the greatest meat yield for feeding and husbandry cost (Noddle, 1990). The presence of mature animals, however, does suggest that some animals were used for secondary products, i.e. traction or milk production. Only one mandible was complete enough for wear stages to be calculated, which was from a very old individual with a mandible wear stage of 58 – an animal in the senile age class (Hambleton, 1999), which was almost certainly valuable for breeding, traction or milking.

There was little metrical data available, although three horn cores were complete enough to imply that two of the animals present were a short horn breed (GL c.100mm) and the other a medium horned breed (GL c.165mm) (Armitage, 1976). The larger sample of horn cores from the earlier excavation on Well street (Chaplin, 1966) were all from short horned animals.

Only one pathology was noted, on a 1st cervical vertebra, in the form of exostosis on the caudal aspect of the articular surface.

Sheep / goat

The large sheep / goat assemblage produced mortality data indicating an aged population (figure 5), where the majority were alive until at least 36 months, when there was a significant cull of animals, though over 60% were still alive into maturity. This was reflected in the tooth wear data (figure 6), where all but two of the mandibles gave wear stages of between 34 and 40, which could be more accurately aged than the fusion data, being from 5 animals between 3 and 4 years, and 9 animals between 4 and 6 years old (Hambleton, 1999). This type of husbandry indicates the use of sheep for secondary products such as wool or dairy production. Metapodia are one of the most sexually polymorphic bones, and their large numbers in the assemblage mean that investigation into the ratio of males and females can be attempted, and a more accurate description of the precise use of sheep / goats made. A plot of the slenderness index (shaft width / length) against length for metatarsals and metacarpals was generated as described by Davis (2000) (figures 7 and 8), where ewe metapodia are short and slender, rams short and robust, and wethers long and slender. When compared with the data from a set of animals of known sex (Davis, 2000), the animals from this assemblage appeared to be predominantly female, with the inclusion of a small group of wethers. This would indicate that wool and / or milk could be the predominant products, or both – as ewes producing milk could also be shorn, and ewes may be preferential to rams for their wool as they are also valuable for breeding purposes.

A number of shoulder heights could also be calculated using indices by Teichert (in von den Driesch and Boessneck, 1974), giving a range of 486 – 640mm (figure 9) which indicates the presence of animals smaller and larger than those calculated for Leicester (Baxter, 1998), with one smaller than those from Walmgate, York, the remainder being within the York range (O'Connor, 1984). The small group of bones is comparable to those recorded in the earlier excavations on this site (Chaplin, 1966).

Pathologies were noted, notably as massive exostoses to five 1st and one 2nd phalanges, exostosis to the distal end of a metacarpal, and proximal end of a metatarsal, probably the result of chronic infection, and a massive exostosis on the midshaft section of a metatarsal, projecting dorsally in medial and lateral aspects, indicative of a trauma to the leg. Similar pathologies were recorded from Walmgate, and may reflect the maturity of animals selected for their skins.

Pig

The pig assemblage was relatively small, nonetheless, there was evidence for one neonatal animal, a large cull of animals in their first year and no animals older than 2 years (figure 10). This was refined

by the tooth wear data, where animals died between mandible wear stages of 18 and 21, indicative of those between 14 and 21 months old. The culling of pigs before maturity is a normal occurrence, as pigs grow quickly and produce a good meat yield before they are full grown. However, the animals in this assemblage appear to have died at very young ages, maybe some were even eaten as sucking pig (animals that died before reaching 1 year old) or were breeding mortalities. Because of the immature nature of the bones, none were complete enough for metrical analysis.

Other animals

Of the domestic animals, cats were represented by a radius and two ulna, which were all immature, as was the dog calcaneus recovered from an animal less than 15 months old. All horse bones, however, were fused, and came from scapula, pelvis, calcaneus, metapodia and phalanx. A fallow deer metapodia was from an animal less than 29 months of age, and a red deer calcaneus from an animal over 26 months. An unfused hare femur was also recovered.

Birds

All bones from wild bird species (duck, pheasant, turdus sp., woodcock and wader sp.) were fused, as were all goose bones, but a ratio of 14:5 fused: unfused domestic fowl bones were recorded, indicating that they may have been bred nearby.

Summary

Animals were probably brought to Coventry on the hoof, as all body parts were present in the assemblage as a whole. It is likely that pigs and chickens were bred within the town, as the presence of neonatal and very young fatalities would indicate. The aged sheep / goat population suggests that they were important for secondary products in the rural economy, and the predominance of ewes indicates that this may be either milk and / or wool production. Cattle were generally juvenile at the time of death, suggesting that animals were bred specifically for beef production, perhaps influenced by a demand from the urban population.

Further evidence for the use of animals, particularly sheep and cattle came from the deposition of horn cores and metapodia typical of waste from skin and hide processing from both this excavation and that undertaken in the 1960s, suggesting that this area of medieval Coventry was a place used for the processing of hides themselves, as evidenced by the pit complex found alongside the Upper Well Street assemblage. The likelihood that both heavy (i.e. the processing of cattle hides) light leather trades (sheep / goat skins) were carried out on the site is also noted, and is something seen at other sites, such as Skeldergate, York and ‘s-Hertogenbosch-Gertru, Netherlands.

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Table 1: Distribution of bones by feature type

	Phase				
Feature	1	1/2	2	3	Total
Pit	10	2	817	1	830
Layer	1		2		3
Ditch			39		39

Table 2: Number of bones identified to species by phase

Phase	Date	N
1	12-14th c.	13
1/2	12-16th c.	9
2	15-16th c.	929
3	L16-17th c.	2
4	17-18th c.	1

Table 3: Species representation of non specific deposits (restricted count)

	Phase					
Species	1	1/2	2	%	3	4
Cattle	4	4	69	31		1
Sheep / Goat	3	3	58	32*	1	
Sheep		2	14			
Goat	1		1			
Pig	5		26	12		
Horse			6	3		
Dog					1	
Cat			2	1		

Chicken			17	8		
Gallus sp.			1	-		
Goose			24	11		
Duck			2	1		
Hare			1	-		
Wader			1	-		
Pheasant			1	-		
Total identified	13	9	223		2	1
Unidentified						
Mammal	28	13	74		2	4
Large mammal	19	14	159		8	4
Medium mammal	46	14	206		6	2
Small mammal			1		1	
Bird		1	18			
Fish						
Total	106	51	681		19	11

* including sheep and goat counts

Table 4: Species representation from samples (restricted count)

	Phase	
Species	2	3
Cattle	4	
Sheep / goat	9	
Cat	1	2
Chicken	1	
Gallus sp.	2	
Hare / rabbit		2
Rat	1	
Amphibian	3	
Magpie	1	
Woodcock	1	
Partridge	1	
Bird	9	
Oyster	4	

Table 5: Fragment representation phase 2 (restricted count)

Carcass part	Element	Cattle	Sheep / goat	Pig
Head	Skull		2	
	Horn Core	4		
	Mandible	1	11	1
	Occipitale		7	1
	Zygomaticus			
Vertebrae	1st Cervical	2	2	2
	2nd Cervical	3	1	
	Sacrum			
Upper fore limb	Scapula	3	3	2
	Humerus P		1	
	Humerus D	3	3	1
	Radius P	4	8	
	Radius D	2	6	

	Ulna		3	
Upper hind limb	Pelvis	4	4	3
	Femur P	1		
	Femur D	2	2	
	Tibia P	4	3	1
	Tibia D	3	3	2
	Calcaneus		1	
Lower leg	3rd Carpal	1	1	
	Metacarpal P	3		
	Metacarpal D	2		
	Metatarsal P	2	2	
	Metatarsal D	1	1	
Feet	1st Phalanx*	5		
	2nd Phalanx*	1		
	3rd Phalanx*	1		1
Total		52	64	14

* counts adjusted for frequency

Table 6: Minimum numbers (MNI) of sheep / goat metapodials

		Pit / context			
		F518/	F531/	F531/	F521/
Element	Side	5016	5038	5043	5053
Metacarpal proximal	Left	18	18		1
	Right	18	17	1	1
Metacarpal distal	Left	20	17	1	2
	Right	16	16	1	1
Metatarsal proximal	Left	24	17	2	1
	Right	22	12	2	1
Metatarsal distal	Left	26	12	2	
	Right	19	9	2	1
MNI		26	18	2	2

Table 7: Species representation from contexts 5016, 5038, 5043 and 5053 (restricted count)

Species	Total
Cattle	60
Sheep / Goat	430
Sheep	146
Goat	3
Pig	22
Cat	1
Chicken	17
Gallus sp.	2
Goose	10
Duck	4
Red deer	1

Fallow deer	1
Woodcock	5
Turdus sp.	4
Total	706
Unidentified Mammal	37
Large mammal	227
Medium mammal	340
Small mammal	3
Bird	24
Fish	15
Total	1352

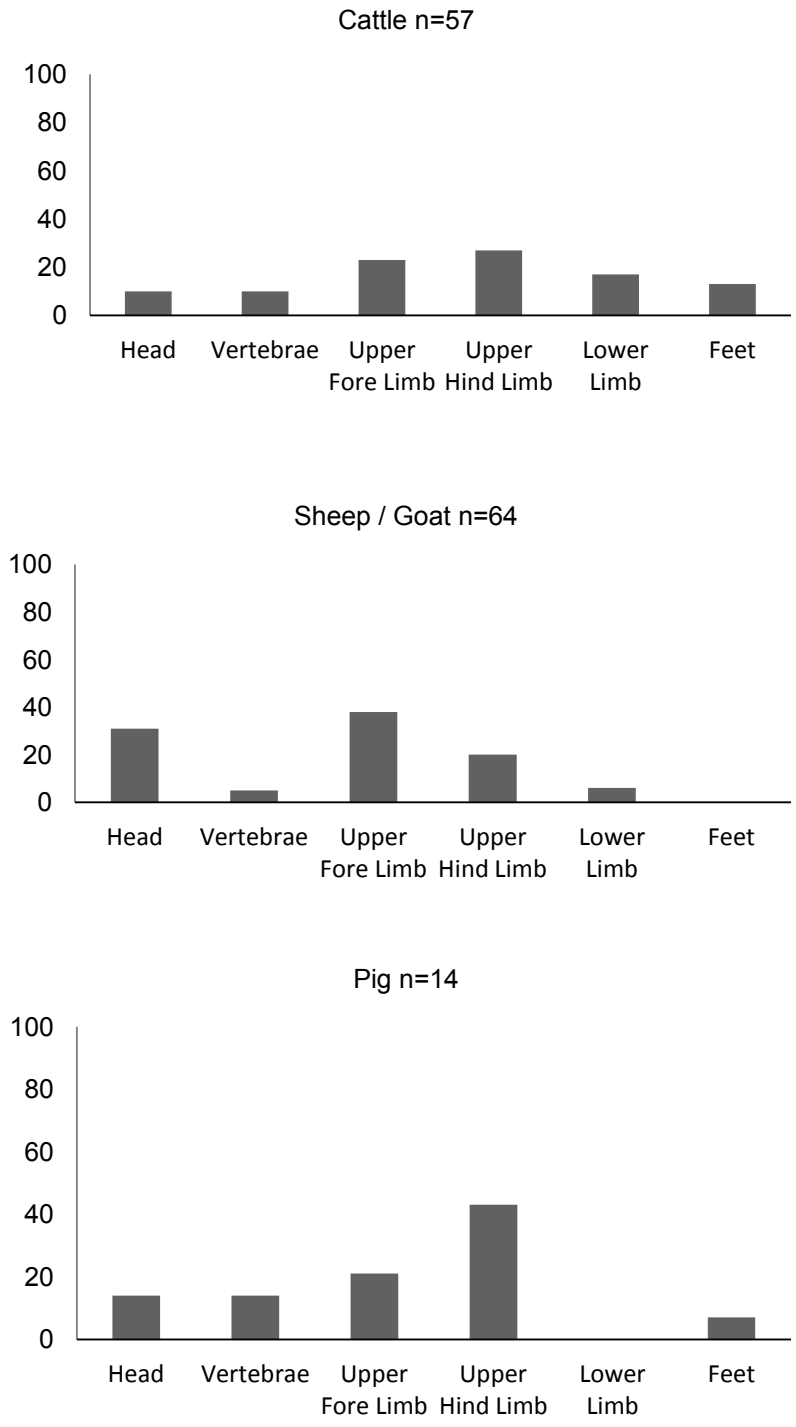

Figure 1: Carcass part representation phase 2.

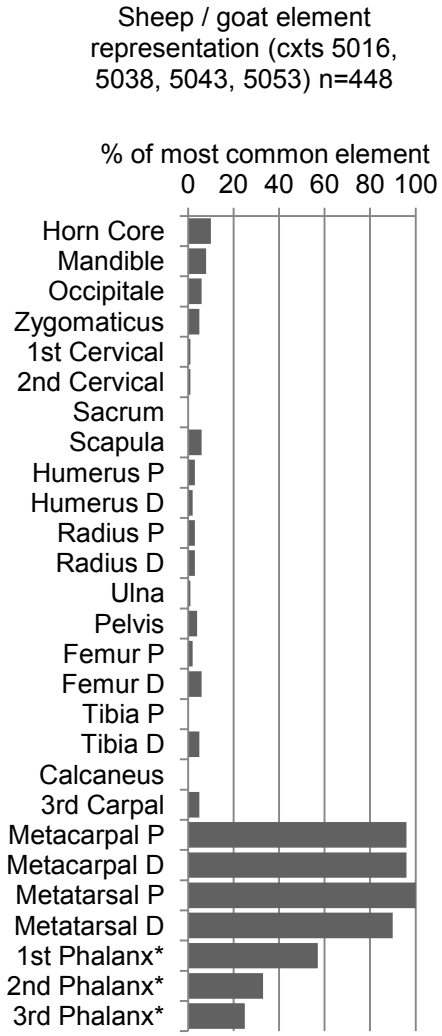

Figure 2a: Sheep / goat element representation (restricted count)

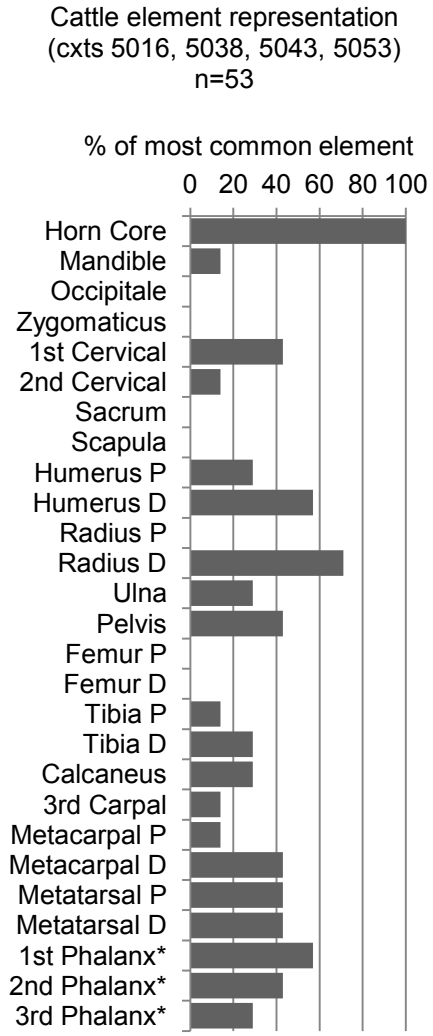

Figure 2b: Cattle element representation (restricted count)

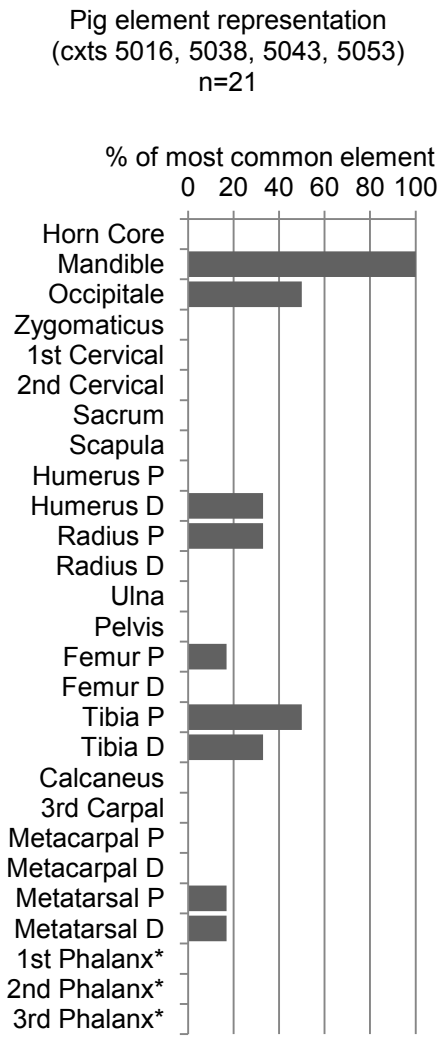

Figure 2c: Pig element representation (restricted count)

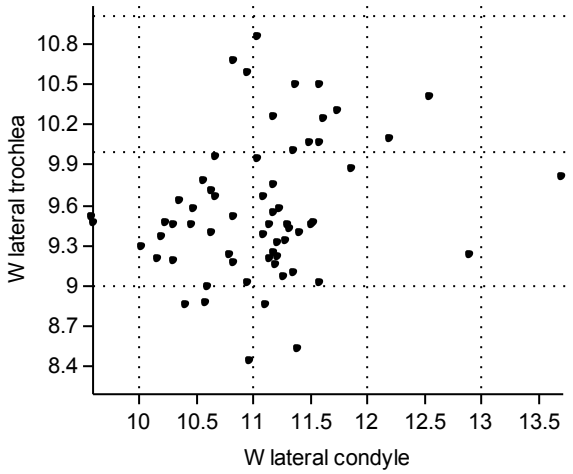

Figure 3: Sheep and goat distinction using metacarpals (Payne 1969). W=width

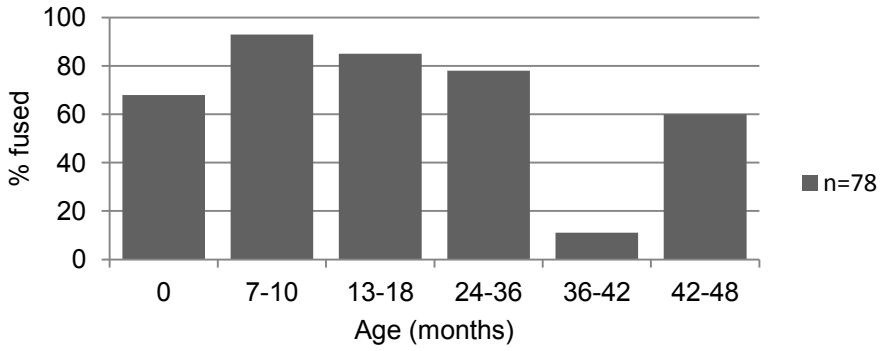

Figure 4: Cattle fusion data (phase 2)

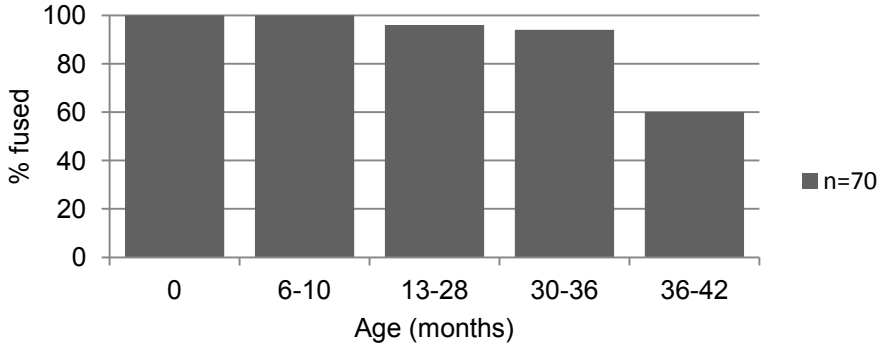

Figure 5: Sheep / goat fusion data (phase 2)

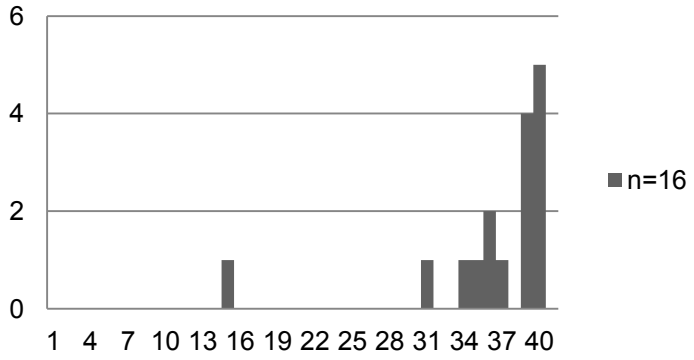

Figure 6: Sheep / goat mandible wear stages (phase 2) using Grant (1988)

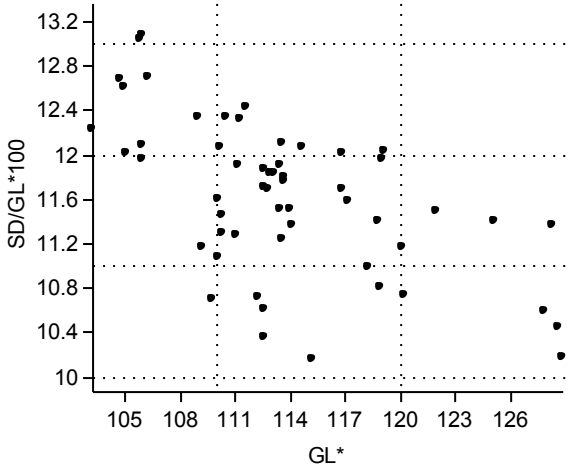

Figure 7: Sheep / goat metacarpal slenderness (Davis, 2000)

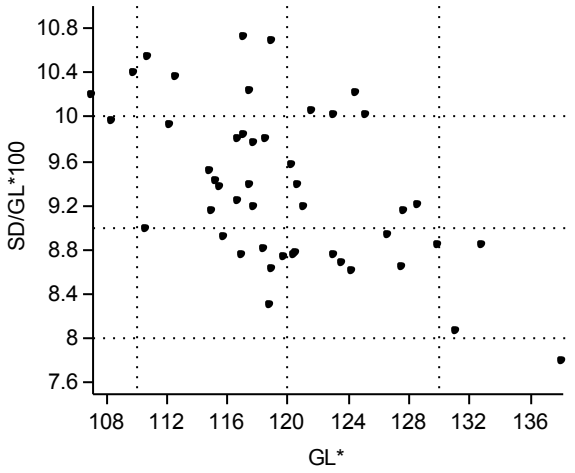

Figure 8: Sheep / goat metatarsal slenderness (Davis, 2000)

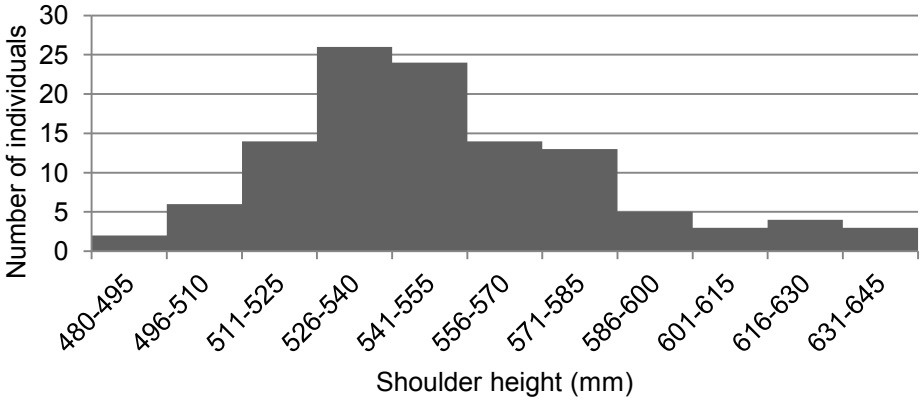

Figure 9: Sheep / goat shoulder heights