

# THE ANIMAL BONE

*By Lena Strid*

## INTRODUCTION

A small assemblage of faunal remains was retrieved from the archaeological work in the Combe Down Stone Mines. Most of the assemblage derived from waste stone layers and tipping contexts within the complex, but some intrusive bones were recovered from deposits originating from roof collapses or from entry via shafts. Generally, the on-site policy was not to retrieve animal bones which were known to have originated from surface deposits, but due to the nature of the stratigraphy, precise dating of these features can be difficult.

The mines date from the 17th century, and were in use until the early 20th century. The main stone quarrying period took place between 1730 and 1860. Since parts of the mine have been accessible since the cessation of mining, there is also potential for some finds to be later intrusions.

## METHODOLOGY

The bones were identified at Oxford Archaeology using a comparative skeletal reference collection, in addition to osteological identification manuals. All the animal remains were counted and weighed, and where possible identified to species, element, side and zone. For zoning, Serjeantson (1996) was used, with the addition of mandible zones by Worley (forthcoming). Sheep and goat were identified to species where possible, using Boessneck *et al.* (1964) and Prummel and Frisch (1986). They were otherwise classified as 'sheep/goat'. Ribs and vertebrae, with the exception of atlas and axis, were classified by size: 'large mammal' representing cattle, horse and deer; 'medium mammal' representing sheep/goat, pig and large dog; and 'small mammal' representing small dog, cat and hare.

The condition of the bone was graded on a 6-point system (0-5). Grade 0 equating to very well preserved bone, and grade 5 indicating that the bone had suffered such structural and attritional damage as to make it unrecognisable (see table 1).

Modern breaks were disregarded when calculating the total number of fragments. The minimum number of individuals (MNI) was calculated on the most frequently occurring bone for each species, using Serjeantson's (1996) zoning guide, and taking into account left and right sides. For the calculation of the number of identified fragments per species (NISP) all identifiable fragments were counted, although bones with modern breaks were refitted. The weight of bone fragments has been recorded in order to give an idea of their size and to facilitate an alternative means of quantification.

For ageing, Habermehl's (1975) data on epiphyseal fusion was used. Three fusion stages were recorded: 'unfused', 'in fusion', and 'fused'. 'In fusion' indicates that the epiphyseal line is still visible. Tooth wear was recorded using Grant's tooth wear

stages (Grant 1982), and correlated with tooth eruption (Habermehl 1975). In order to estimate an age for the animals, the methods of O'Connor (1988) were used.

Sex estimation was carried out on morphological traits sheep horn cores and pig mandibular canine teeth, using data from Hatting (1983) and Schmid (1972).

Measurements were taken according to von den Driesch (1976), using digital callipers with an accuracy of 0.01 mm. Large bones were measured using an osteometric board, with an accuracy of 1 mm. Withers' height of horse was calculated using May (1985).

## **THE ASSEMBLAGE**

The assemblage comprised 83 bones, of which 95% could be identified to species (see table 1). Apart from a single hare bone, all bones derived from domestic species. The faunal remains give the impression of a mix of kitchen waste and dumped material.

The bones were in a very good condition, over 85 % being grade 0 or 1 (see table 2). Rodent gnaw marks occurred on a hare tibia, but there was no evidence of gnawing by dogs. No bones were burnt.

Two articulated skeletons were recorded: one juvenile pig in context 188 (Byfield Mine Area 9) and one cat in context 479 (Byfield Mine Area 21). The pig was mostly complete, but lacked the metapodials and phalanges as well as the left femur. While the phalanges are small and easy to miss during excavation, the metapodials are usually of a sufficient size to be collected. This opens the possibility that the feet were removed from the carcass before deposition or that body parts were scavenged afterwards (although the lack of gnaw marks argues against this scenario). The first permanent molars were fully erupted, but unworn, indicating an age at death of 4-8 months. The lack of butchering marks in combination with its young age suggest that the pig died shortly after birth, and was dumped in the mine.

The cat skeleton consists mainly of the upper front half of the body. Cut marks were absent, and it is likely that the bones represent a natural mortality. Apart from the distal humerus, all epiphyses were unfused, suggesting it died at c. 8.5 months of age.

Cattle is represented by an atlas and three fragmented hind limb bones. Butchery marks were recorded on the atlas, which was split axially, and the femur, which had transverse cutmarks from filleting mid-shaft. Axial splitting of the carcass was a standard butchery procedure in the 17th -19th centuries. Epiphyseal fusing was recorded on the two tibiae, from animals of over 2.5 years old and less than 3.5-4 years of age respectively. Judging from surface structure, the other two bones were from sub-adults or adults.

The sheep/goat remains consist of a horn core fragment from a male sheep and a neurocranium fragment potentially from the same individual, as well as a radius fragment.

The disarticulated pig remains comprise a humerus fragment and a mandible from a boar. The third molar had erupted but only the enamel was worn, which indicates that the pig was 1.5-2 years old when it died.

The horse bones were found in three separate contexts and are therefore not likely to be from a single individual. With the exception of the skull in context 12164, all elements present derive from the front limb. The bones were all fused, indicating an age at death of more than 3.5-4 years. Measurements taken on limb bones in context 12162 confirm that the bones are from horse, rather than donkey or mule (Johnstone 2004). The calculated withers' heights (see table 3) suggest that one horse was a pony, and one a small horse. The articulated phalanges in context 12162 show exostoses laterally and medially: the first phalanx on the posterior side of the bone, and the second phalanx on the anterior side. These are likely to be ossification of muscle attachments, and indicates muscle strains. The lateral metapodials were fused to the metacarpal shaft. These pathologies are commonly seen among work horses and are linked to muscular stress in connection with traction (Siegel 1975:38, in McQuade 1998:24). Some lipping was recorded on the coracoid process of the scapula in context 12163, suggesting wear on the joint. Although only parts of the horses were recovered, there was no evidence of butchery on those bones which were present.

A single hare tibia was collected from context 728. The absence of other bones suggests it represents the remains of a meal. After discarding, the bone had lain on the ground for a while, as evidenced by several rodent gnaw marks.

## **SUMMARY/CONCLUSION**

The faunal remains from Combe Down stone mine comprise food remains as well as dumped materials. The food remains, such as leg of hare, parts of long bones from cattle, sheep and pig, and medium mammal ribs, would have been left there by the quarry men. The lack of gnaw marks, apart from rodents, is consistent with the nature of the site. Dogs would not have roamed loose there. The dumped materials consist of a juvenile pig, a sub-adult cat and at least three adult horses. The pig might have died from a disease, so not been considered suitable for eating and subsequently dumped in the mine.

The horse bones on the other hand are likely to have been remains of old pit ponies. With the exception of the bones from context 12164, which probably derived from the surface through a roof collapse, the location of the other contexts containing horse bones were well away from access routes to the outside. While horses frequently worked in the mines, one would not expect their bones to remain there. Horse carcasses were generally extensively used in the 18th and 19th centuries: hides for leather, mane and tails for furniture stuffing, meat for pet food, fat for oil rendering and bone for buttons and glue making (Gordon 1893:186-189). The dumping of these bodies in the mine is therefore rather perplexing, since there would probably have been enough monetary value attached to a horse carcass to make it worthwhile transporting it out of the mine. Perhaps the remains in contexts 12162 and 12163 represent pit ponies unofficially butchered and dumped in abandoned parts of the mine complex?

Whether the cat was deliberately dumped in the mine or died a natural death there is unknown.

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	Cattle	Sheep/ goat	Sheep	Pig	Horse	Cat	Hare	Medium mammal	Indetermi nate
Horn core			1						
Skull		1		1	1	1			
Mandible				3		1			
Atlas	1			1					
Vertebrae				16		1			
Rib				5				1	
Scapula				2	1	2			
Humerus				3	3	1			
Radius		1		2	3	1			
Ulna				2		2			
Carpal bone				1					
Metacarpal					2				
Pelvis				2					
Femur	1			1		1			
Tibia	2			2		1	1		
Fibula									
Calcaneus				2					
Astragalus				2					
Phalanx 1					1				
Phalanx 2					1				
Indeterminate									3
<b>TOTAL (NISP)</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>45*</b>	<b>12</b>	<b>14**</b>	<b>1</b>	<b>1</b>	<b>3</b>
MNI	1	1		2	1	1	1		
Weight (g)	441	26	106	818	3968	33	2	2	4

Table 1. Combe Down mine assemblage: Anatomical distribution of all species, including NISP, MNI and weight.

\*: Including 43 fragments from articulate skeleton.

\*\* : Articulate skeleton.

	0	1	2	3	4	5
	22.9%	62.7%	8.4%	4.8%	1.2%	

Table 2. Combe Down mine assemblage: Bone preservation.

<b>Context</b>	<b>GL</b>	<b>Estimated withers' height</b>	
12013	206.0	125.7 cm	
12162	245.0	149.0 cm	

*Table 3. Greatest length of horse metacarpals and estimated withers' height. The minimum height for horse is 144.3 cm. Below this, they are ponies.*