7.1 Assessment of Animal Bone

Robin Bendrey

Introduction

7.1.1 All fieldwork events conducted at Saltwood have produced animal bone assemblages in varying quantities. At the time of assessment, the assemblages from the two fully excavated areas were chosen for assessment, to provide as holistic a view as possible of the animal bone assemblage *in toto* from all periods represented at Saltwood. These areas comprised the late prehistoric/ Romano-British and later occupation area at the west end of the site (under event code ARC SLT98), and the relatively small amount of material recovered from the excavation of the central Anglo-Saxon cemetery (under event code ARC SLT98C) the latter including a horse burial. The bone assemblages were retrieved by both hand-recovery and sieving. The condition of the recovered bone is generally very poor.

Methodology

7.1.2 The small size of the mammal bone assemblage negated the need to sub-sample, and so all the bone has been catalogued for this assessment.

7.1.3 The hand-recovered bone was identified with the aid of a comparative osteological reference collection. Bone identified to species (**Table 48**) was recorded using the diagnostic zones of Dobney and Rielly (1988). Bone not identified to species was awarded an animal-size category (e.g. sheep-sized), or labelled indeterminate. The criteria of Boessneck (1969) and Payne (1985) were used to differentiate between sheep and goat remains. If this was not possible the fragments were labelled sheep/goat. Only sheep bones were identified from the hand-recovered remains (seven of 53 ovicaprid fragments). All sheep/goat bones have been considered as sheep for the purposes of the assessment. The assemblage has also been weighed.

7.1.4 The bone from the bulk-sieved samples was recorded in the same way as the hand-recovered material, except that the total bone material derived from each sieved sample was weighed instead of the individual fragments.

Table 48: Quantification of hand-recovered mammal bone by taxon

Taxon	Number of fragments	Bone weight (g.)	Mean frag. Weight (g.)	Context frequency
Cattle, *Bos* sp. domestic	192	6297.5	32.8	66
Sheep, *Ovis* sp. domestic	53	366.5	6.9	25
Pig, *Sus* sp. domestic	36	254.5	7.1	20
Horse, *Equus caballus* sp. domestic	23	1485	64.6	19
Dog, *Canis* sp. domestic	89	363	4.1	5
cf. Red deer, *Cervus elaphus* L.	1	2	2.0	1
Cattle-sized	491	1120	2.3	48
Sheep-sized	103	91	0.9	25
Indeterminate	270	74.5	0.3	20
Totals	**1258**	**10054**	**8.0**	**100**

Quantifications

7.1.5 Basic fragment counts and bone weights have been used to quantify the material from the western occupation area. Context frequency (for the hand-recovered bone) and sample frequency (for the bulk samples) have been used to compare the material from the two recovery-methods. Using absolute and relative frequencies allows assessment of the occurrence of the different taxa independent of varying fragmentation, bone weights and context/sample size (O'Connor, 1988, 77-8).

7.1.6 The assemblage from the central cemetery has not been quantified in tabular form due to its small size, but is described in the text.

Table 49: Comparative distribution of mammal bone by period

(number of fragments (N.) compared to context frequency (c.f.))

Period		LIA/RO	RO	RO/EM	RO/MD	EM	EM/MD	MD	MODERN
Cattle	N.	16	79	24	18	3	4	46	2
	c.f.	5	25	4	4	2	2	22	2
Sheep	N.	13	13	6	4	-	3	14	-
	c.f.	5	6	2	3	-	1	8	-
Pig	N.	4	17	2	2	-	1	9	1
	c.f.	3	5	2	2	-	1	6	1
Horse	N.	2	12	5	2	-	-	2	-
	c.f.	2	9	4	2	-	-	2	-
Dog	N.	85	1	-	3	-	-	-	-
	c.f.	3	1	-	1	-	-	-	-
cf. Red deer	N.	-	1	-	-	-	-	-	-
	c.f.	-	1	-	-	-	-	-	-
Cattle-sized	N.	91	234	50	6	-	19	91	-
	c.f.	5	19	2	4	-	1	17	-
Sheep-sized	N.	65	16	2	5	-	2	13	-
	c.f.	4	8	1	3	-	2	7	-
Indeterminate	N.	62	144	-	3	-	-	61	-
	c.f.	7	7	-	1	-	-	5	-
Totals	**N.**	**338**	**517**	**89**	**43**	**3**	**29**	**236**	**3**
	c.f.	**14**	**36**	**5**	**8**	**2**	**3**	**30**	**2**

7.1.7 A breakdown of phased hand-recovered mammal bone from the western occupation area is presented in **Table 48**, whilst **Table 49** shows the distribution of this material by period. Cattle dominates the assemblage by number of fragments, bone weight and context frequency. Dog is the second most common by number of fragments, the majority of which derived from a single articulating skeleton (context C751). The context frequency is a more accurate reflection of its importance. Sheep is the second most common species by context frequency, followed by pig – a rank order of importance that is also shown by the number of fragments. Horse provides more bone weight, but a larger mean fragment weight, double that of the similar sized cattle, suggesting that it did not undergo the same level of butchery ad so may not have had importance as a food-animal. A single fragment of burnt deer antler was identified from context C315. The specimen is probably from red deer (there is some surface pearling evident), although fallow deer has been recorded from Roman deposits in Kent (Bendrey, forthcoming b). This specimen has been labelled as 'cf. red deer' for the assessment.

Table 50: Comparative analysis of recovery techniques

	Hand-recovered context frequency		Bulk-sieved sample frequency	
Taxon	**absolute**	**relative**	**absolute**	**Relative**
Cattle, *Bos* sp. domestic	66	0.66	7	0.16
Sheep, *Ovis* sp. domestic	25	0.25	17	0.40
Pig, *Sus* sp. domestic	20	0.20	9	0.21
Horse, *Equus caballus* sp. domestic	19	0.19	-	-
Dog, *Canis* sp. domestic	5	0.05	-	-
cf. Red deer, *Cervus elaphus* L.	1	0.01	-	-
Goat, *Capra* sp. domestic	-	-	1	0.02
Fox, *Vulpes vulpes* L.	-	-	1	0.02
Totals	**100**	**1.00**	**43**	**1.00**

7.1.8 Comparison of the hand-recovered bone with the bulk-sieved bone (**Table 50**) in the same area reveals differences in the representation of the main domestic animals. Cattle are over represented in the hand-recovered material compared to the bulk-sieved material, and the reverse is true for sheep. This observed bias is an expected product of the different methods of recovery (Payne 1975). The occurrence of pig is roughly the same. Goat and fox have also been identified from the samples.

Provenance

7.1.9 Animal bone within the western occupation area was recovered from a wide range of context types, with no apparent bias.

7.1.10 The phased bone material from the central cemetery consists of a poorly preserved equid skeleton from context C1327 (grave C??), and a small sheep-sized fragment from the Bronze Age barrow ditch (context C1036). The equid skeleton from the cemetery has been positively identified to horse, *Equus caballus*, on the basis of the morphology of the enamel patterns of the teeth (Baxter, 1998; Eisenmann, 1986).

Conservation

7.1.11 The assemblage is characterised by very poor preservation. Bone material is generally porous and brittle, with the bone from the central cemetery being particularly friable, and is therefore likely to have low collagen content. The exception to this is the dog skeleton from the western occupation area, which is very well preserved. The low mean fragment weight of the unidentified portion of the assemblage highlights the fragmentary condition of the bone. The cattle-sized, sheep-sized and indeterminate material represent a relatively small number of highly fragmented bones. The poor conditions for preservation may have over-emphasised the importance of cattle due to the greater taphonomic destruction of the bones of the smaller species.

7.1.12 The potential for detailed research of the assemblage is much constricted by the poor preservation, which reduces the amount and quality of data available. The largest samples of bone derive from the Late Iron Age/ Romano-British, Romano-British and medieval periods.

7.1.13 Further analysis would not conflict with long term storage. The material is already suitably packaged for long-term storage.

Comparative material

7.1.14 Comparable material from Kent for the assemblages from Saltwood is quite limited. There are a couple of published Roman sites that have produced assemblages of animal bone, including Canterbury Castle (King, 1982) and Mount Roman Villa (Bendrey, 1999). Other sites are in the process of being studied or published, including Ickham (Powell, forthcoming), and Monkton (Bendrey, forthcoming b). Saxon material is more restricted than the Roman, including a published bone assemblage from Linacre Garden, Canterbury (Driver, 1990). Medieval material is better represented, with a number of large assemblages (Bendrey, forthcoming a; Driver, 1990; Wall, 1980). Within the CTRL project there are few notable assemblages, with the exception perhaps of Little Stock Farm (URS 2001), which comprises predominantly prehistoric remains with some medieval, and a very small Anglo-Saxon assemblage and a larger medieval one from Mersham (Bendrey, 2000).

Potential for further work

7.1.15 The data available from the assemblages is restricted by the poor preservation of the bone. The larger pieces of animal bone possess some potential for radiocarbon determinations, which should be made on well surviving non-residual material.

7.1.16 The animal bone assemblage from the western occupation area has the potential to provide evidence of the diet and economy as represented by the animal bones. Evidence relating to age-at-death and size of the animals is present, though limited. Of particular interest are a few fragments of burnt pig in a cremation deposit from context C49.

7.1.17 The potential of the animal bone from the central cemetery is restricted to the data that can be gathered from the horse skeleton. This will provide details on the age and size of the horse, and cultural information related to the burial of a horse in the Anglo-Saxon cemetery.

7.1.18 Further work will focus on quantification and analysis of the larger assemblage from the western occupation area. This analysis will be in conjunction with an examination of the assemblage recovered from more recent investigations to the east of Stone Farm Bridleway (ARC SFB99 and SFB01), the majority of which is considered to represent early medieval remains (Crockett pers. comm.).

Bibliography

Baxter, I, 1998, 'Species identification of equids from Western European archaeological deposits: methodologies, techniques and problems', in S Anderson and K Boyle (eds), *Current and Recent Research in Osteoarchaeology Oxford*, 3-17 (Oxford)

Bendrey, R, 1999, 'Faunal Remains', in M Houliston, *Excavations at the Mount Roman Villa, Maidstone, 1994*, Archaeologia Cantiana **119**, 137-41

-- , 2000, Assessment of the Mammal Bone from Mersham, Kent (ARC MSH 98), unpublished Canterbury Archaeological Trust assessment report

-- , forthcoming (a), 'The Mammal Bone', in K Parfitt, *Excavations off Townwall Street, Dover, 1996*, Canterbury Archaeological Trust Occasional Paper (Canterbury)

-- , forthcoming (b), 'The Animal Bone', in J Rady, A Hicks, I Riddler and S Pratt, *Roads to the Past: The Monkton Landscape Prehistoric, Roman, Anglo-Saxon and Medieval sites along the duelling of the A253*, Canterbury Archaeological Trust Occasional Paper (Canterbury)

Boessneck, J, 1969, 'Osteological Differences between Sheep (*Ovis aries* Linné) and Goat (*Capra hircus* Linné)', in D Brothwell and E Higgs (eds), *Science in Archaeology*, 331-58 (London)

Dobney, K, and Reilly, K, 1988, 'A method for recording archaeological animal bones: the use of diagnostic zones' *Circaea* **51**, 79-96

Driver, J C, 1990, 'Faunal Remains', in J C Driver, J Rady and M Sparks, *Excavations in the Cathedral Precincts, 2 Linacre Garden, 'Meister Omers' and St Gabriels Chapel*, The Archaeology of Canterbury **4**, 228-57 (Maidstone)

Eisenmann, V, 1986, 'Comparative Osteology of Modern and Fossil Horses, Half-Asses, and Asses', in R H Meadow and H-P Uerpmann (eds), *Equids in the Ancient World*, 67-116 (Wiesbaden)

King, A, 1982, 'The Animal Bones', in P Bennett, S S Frere and S Stow, *Excavations at Canterbury Castle*, The Archaeology of Canterbury **1**, 193-205 (Maidstone)

O'Connor, T P, 1988, Bones from the General Accident site, Tanner Row, *The Archaeology of York* **15.2** (London; Council for British Archaeology)

Payne, S, 1975, 'Partial recovery and sample bias', in A T Clason (ed.) *Archaeozoological Studies*, 7-17 (Elsevier)

-- , 1985, 'Morphological Distinctions between the Mandibular Teeth of Young Sheep, *Ovis*, and Goats, *Capra*', *Journal of Archaeological Science* **12**, 139-47

Powell, A, forthcoming, 'The Animal Bone', in Ickham

Union Railways (South) Limited, 2002, *Archaeological Excavation at Little Stock Farm (ARC LSF99), near Mersham, Kent*, unpublished assessment report produced by Wessex Archaeology

Wall, S M, 1980, 'The animal bones from the excavation of the hospital of St Mary of Ospringe', *Archaeologia Cantiana* **96**, 227-66