Animal Bone

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This report focuses on the Neolithic pit deposits and the Bronze Age animal burials; the small amounts of Romano-British, medieval and post-medieval material are not included and the undated features are discussed only briefly.

Animal bone was recorded to species and element. The completeness of each element, its condition and fusion status and the presence of any gnawing, butchery marks or burning was sketched or described. Measurements follow von den Driesch (1976), and the bones were sided for minimum number of element and minimum number of individuals analyses. Mandible wear stages were determined or estimated from mandibles with molar tooth rows, following Grant (1982) and Silver (1969), and withers heights were determined from Matolcsi's indices outlined in von den Dreisch and Boessneck (1974).

Preservation of the bone from all periods was variable but the vast majority was in poor condition. Erosion of the bone surface will have obscured taphonomic information such as butchery and gnawing marks.

Neolithic

917 fragments of animal bone were recovered from eight pits at site 3 and six pits at site 5, and most pits contained relatively few fragments of identified animal bone (Table AB1). 300 fragments were recovered from coarse (4mm) samples, of which only 7 (2%) could be identified, mainly sheep/goat and pig tooth fragments with a pig carpal and second phalange. Only 15% of hand recovered bones could be identified, due to fragmentation and poor condition. Burning may also have contributed to this effect; 452 of the 746 unidentified bone fragments were small burnt pieces, the majority calcined.

Differences in deposits were noted between sites 3 and 5 and between individual pits. Some careful placement of bones in conjunction with other artefacts means that separate discussion of bone deposition and economic interpretation is warranted, in order to address the research questions of typicality of deposit and the extent of ritual activity.

Deposition practice

No gnawing marks were observed. Although this may be due in part to the eroded nature of the bone surface, other surface modifications such as butchery marks were not entirely obliterated, and where bone condition was fair no evidence of gnawing was noted. It is possible that these bones had not been exposed to scavengers on the ground surface for any length of time, and indeed the bones represented include the less robust elements such as distal femora.

Site 3 contained a far higher proportion of bone elements than antler fragments (90:3), and antler was found in only one pit. At site 5 the opposite is true (22:34); overall only very small amounts of bone were found and two pits contained antler but no bone (Table AB1).

Although pig and/or cattle are found in most pits, different pits contained a predominance of different species; cattle in 3007 and pig in 3005, 3020, 3119 and 3328. Deposit type differed by site as well as by pit, with careful placement of a few bones in association with other find types at site 5, and a greater number of bones from single animals or limbs at site 3.

Pit 6057 in site 5 for example contained a basal deposit of pot sherds with a pig scapula fragment placed over them. A similar deposit was observed in nearby undated pit 6157 which was filled first by a pottery sherd (Iron Age), followed by sheep/goat articulated limbs and skull, then a piece of quern. This strongly suggests that in this area some bones were deliberately placed in pits rather than dumped, perhaps in a similar way to the apparent placement of pottery, flint and stone. There does not seem to be any emphasis on particular bone elements in the pits at site 5, where a range of bones was found.

No particular bone elements dominate at site 3 either, but some articulated parts and numerous conjoining bones that could have come from the same individual were found. Only two of these bones appear from the context information to have been found in articulation, although relationships can be overlooked during excavation. Pits 3020 and 3119 each contained numerous, predominantly left sided pig bones from at least two individuals. 3020 contained left hind limb bones from pelvis to tibia, and elements from two left forelimbs, scapula to radius/metacarpal. Some pig vertebrae were also present. The fill of pit 3119 was less coherent but also contained parts of a left pig forelimb from scapula to ulna, and pit 3328 contained a pig ribcage, mandible, ulna, foot bones and antler tine.

At Old Sarum site 3, only four of eighteen pig long bones were right sided. This pattern, although based on small numbers, differs from others in the region, for example the West Kennet palisade enclosures contained more right sided elements than left (Edwards and Horne 1997: 119), while other sites do not show any bias (Albarella and Serjeantson 2002: 43).

Table AB1 Species represented (NISP) at sites 3 and 5, with numbers of unidentified fragments

Site 3	*Pit 3000*	*Pit 3005*	*Pit 3007*	*Pit 3010*	*Pit 3020*	*Pit 3119*	*Pit 3197*	*Pit 3328*	*Total*
Pig	-	5	-	-	19	22	-	26	72
Cattle	1	-	7	-	1	1	-	-	12
Sheep/goat	-	-	-	-	-	3	-	-	3
Red deer	2	-	-	-	-		-	1	3
Roe deer	-	-	-	-	-		-	-	0
Rodent	-	-	-	-	-		-	-	0
Unidentified	24	58	6	88	140	117	1	31	503
Total	*27*	*67*	*13*	*88*	*160*	*143*	*1*	*58*	*593*
Site 5	*Pit 6056*	*Pit 6061*	*Pit 6065*	*Pit 6076*	*Pit 6093*	*Pit 6100*			
Pig	3	4	3	-	-	1			11
Cattle	1	1	1	-	-	1			4
Sheep/goat	1	-	-	-	-	-			1
Red deer	21	-	1	-	6	-			28
Roe deer	-	-	-	1	3	-			4
Rodent	-	2	-	-	-	-			2
Unidentified	30	94	40	95	9	6			274
Total	*56*	*101*	*45*	*96*	*18*	*8*			*324*

Animal husbandry practice

The most common species is pig or deer (Table AB2), except in MNE counts where pig and cattle predominate. MNE counts are probably the most reliable in this analysis as they reduce the distortion caused by fragmentation without over-representing species with very few bones. The predominance of cattle and especially pig with very few or no sheep/goat bones is typical of Neolithic species proportions in this area, attested by such other sites as Durrington Walls and West Kennet (Harcourt 1971a, Edwards and Horne 1997). It is also true to a lesser extent of Marden, the Stonehenge Environs sites and Windmill Hill (Harcourt 1971b, Maltby 1990 and Grigson 1999).

Table AB2 Species represented for all Neolithic pits using NISP, MNE and MNI counts (excludes teeth and rodent)

	NISP	*% NISP*	*MNE*	*% MNE*	*MNI*	*% MNI*
Cattle	14	11	10	22	2	25
Pig	72	58	30	65	2	25
Deer	35	28	4	9	3	38
Sheep/goat	4	3	2	4	1	13

Table AB3 Fusion ageing of pig and cattle bone

	*Age of fusion**	*Fused*	*Unfused*	*Total*	*% fused*
Pig					
Metapodial p	before birth	5		5	100
Second phalange p	12	1	3	4	25
Scapula	12	-	1	1	-
Humerus d	12	-	1	1	-
Radius p	12	-	1	1	-
Pelvis acetabulum	12	-	1	1	-
Tibia d	24	-	1	1	-
Metapodial d	24–27	-	5	5	-
Ulna p	36–42	-	2	2	-
Radius d	42	-	2	2	-
Femur p	42	-	1	1	-
Tibia p	42	-	1	1	-
Cattle					
Metapodial p	before birth	1	-	1	100
First phalange p	13–15	1	-	1	100
Second phalange p	18	2	-	2	100
Tibia d	24–30	1	1	2	50
Metapodial d	24–36	1	-	1	100
Femur p	42	1	-	1	100
Femur d	42–48	1	1	2	50

Key: p = proximal epiphysis; d = distal epiphysis; * modern figures in months, from Silver 1969

Deer are represented only by antler, which was presumably collected, since three shed pieces and no deer bone elements were found, meaning that their flesh may not have been consumed. In fact, there is no evidence for the hunting of any wild animals; the size of the cattle and pig do not suggest aurochs or wild boar (see below).

Four pits at site 3 and three pits at site 5 produced small mammal bones in the environmental sample flots, which suggests that some pits may have been left open for long enough to act as pitfall traps for small animals. It is possible that the animals nested here after pits were filled, but unlikely that they would be found in so many of the deposits, although some later prehistoric features are recorded as having been subject to bioturbation (see context record for 3177/3197).

The pig bones all originate from animals of approximately or under one year of age at death, while the cattle derive from mainly mature individuals: one under two and a half years at death and another over four years (Table AB3). Although based on a very small sample, the results are consistent and probably accurate, since all mandible wear stages (mainly estimated from the eruption status of the fourth deciduous premolar due to the fragmented nature of the assemblage) gave an age at death for pigs of under 2 years. The results concur with others from Neolithic sites in the region, for example at Windmill Hill few pigs lived beyond 2 years and cattle rarely died before 3-4 years (Grigson 1999: 220-221), and a similar pattern was found at the West Kennet palisade enclosures (Edwards and Horne 1997: 119). The pigs at

Durrington Walls were immature and the cattle were mainly mature with some calves (Albarella and Serjeantson 2002: 35). Bones from Coneybury are mostly from mature breeding cows, although calves are also in evidence (Matlby 1990: 248), and it is unfortunate that no evidence of the sex of Neolithic cattle was found at Old Sarum.

Table AB4 Measurements (mm) of Neolithic cattle bones

Context	*Bone*	*Glpe*	*Bp*	*Bd*	*GLl*	*GLm*	*Basal circumference*
3002	Femur*	-	102.1	-	-	-	-
3008	Astragalus	-	-	-	75.2	68.4	-
3008	Tibia	-	-	70.3	-	-	-
3018	First phalange	57.2	25.3	-	-	-	-
6060	Second phalange	34.0	25.4	-	-	-	-
6063	Horn core	-	-	-	-	-	212

Key: * = loose epiphysis

The measurements of cattle from Old Sarum (Table AB4) fall well within the range for domestic animals in the Neolithic at Windmill Hill, Marden and Durrington Walls; one basal horncore circumference matches well with that described by Grigson (1999: 239) as probably belonging to a young domestic male. None approach the sizes defined by Grigson (1999: 239-242) as belonging to the aurochs, *Bos primigenius*.

A pig second phalange with increased bone growth around the proximal epiphysis was recovered. This individual may have been lame and so would have been easier to catch if the pig population were feral. No male pigs were identified but one female canine was present, although a female would not necessarily have been easier to catch, especially if she had young.

Cooking and consumption practice

Butchery marks were very few, and some may have been lost during erosion of the bone surface, although as several articulated parts were present perhaps butchery was not intensive. Cuts across a cattle astragalus and pig proximal radius indicate disarticulation, and one cut along the side of a pig vertebral body suggests defleshing of the spine prior to deposition. Helical fractures on a cattle femur and tibia indicate some breakage of the bone around the time of death, and therefore possibly marrow extraction. Marrow extraction was also taking place at late Neolithic Durrington Walls (Albarella and Serjeantson 2002: 41), although burning patterns suggested the roasting of large joints of meat at Durrington, an activity for which there is no evidence at Old Sarum. Few larger bone fragments or complete bones at old Sarum were burnt, but 452 fairly small, mainly calcined fragments were found, suggesting that bones were not simply scorched during cooking but were either subject to very high temperatures which caused them to fragment, or not exposed to fire at all.

At Durrington Walls and West Kennet some lower limb bones were under-represented, explained by Albarella and Serjeantson (2002: 43) as the result of primary butchery of the older carcasses taking place elsewhere, and the meat-bearing elements being deposited on site (also see Edwards and Horne 1997: 124). At Old Sarum this is not the case, and in fact many cattle forelimb bones are absent (Table AB5). Differential survival cannot be the only cause of this pattern as the femur survives poorly yet is present while the humerus is absent, and pigs are represented by a mixture of robust and fragile bones. Numbers are too small for definite conclusions, but such a pattern would be produced if large joints of cattle meat were taken to another site for consumption. It is suggested that consumption activity at Old Sarum differed to that at Durrington Walls and West Kennet.

Table AB5 Pig and cattle bone element representation using NISP and MNE counts (teeth and ribs omitted)

Element	*NISP*		*MNE*	
	Cattle	*Pig*	*Cattle*	*Pig*
Cranium/horn core	1	7	1	1
Mandible	1	2	1	2
Atlas	-	2	-	2
Scapula	-	5	-	2
Humerus	-	3	-	2
Radius	-	3	-	2
Ulna	-	7	-	2
Pelvis	-	2	-	2
Femur	2	1	1	1
Tibia	5	2	2	2
Fibula	-	1	-	1
Astragalus	1	1	1	1
Metapodials	2	7	2	4
First phalange	1	2	1	2
Second phalange	1	3	1	3
Third phalange	-	1	-	1
Total	14	49	10	30

Bronze Age

Pit and posthole features in site 3, although undated, probably relate to roundhouse occupation in the Bronze Age. Two truncated shallow pits were found to contain the articulated remains of cattle skeletons, and are discussed separately below.

Table AB6 Species represented (NISP) at site 3 undated pits and postholes

Species	*No. fragments*
Cattle	12
Horse	5
Pig	4
Sheep/goat	4
Unidentified	103
Total	130

Very little identified bone was found in the pits and postholes (Table AB6), and it is mainly the robust elements which have survived, especially teeth and phalanges. The presence of horse bone make these features more likely to be post-Neolithic. One worked bone 'toggle' was recovered in pit 3268, a ring of bone perforated once through two opposing sides.

Animal burials

Cut 3344 contained most of the right hand side of a cow lying on its right hand side, head roughly south. The left-sided elements had probably been truncated and most were missing. The elements remaining in articulation were a scapula, humerus, radius, ulna, metacarpal, carpals, femur, patella, tibia, metatarsal, first phalange, sesamoids, ribs and vertebrae. All bone epiphyses were completely fused, giving at an age at death of more than three and a half years, using Silver's (1969) figures. Ten long bones and seven ribs of a foetal artiodactyl (probably sheep/goat from the bone size and advanced state of ossification) were also recovered from between the ribcage and hind limb of the mature animal.

Burial 3346, also with the head to the south, was lying on its left side and most of the right side elements had been truncated, together with some of the left-sided elements. The

bones remaining in articulation were an almost complete spinal column, occipital condyles, an upper premolar, ribs, scapula, humerus, radius, ulna, carpals, pelvis and femur. This animal was a similar age to that in 3344, at least three and a half years at death.

Corresponding measurements of bones from the two burials only exist for the scapulae, as surface damage limits the number of measurements that can be accurately taken. The greatest breadth of the glenoid process (GLP) was similar in both; 65.4mm in 3345 and 64.2mm in 3347. Measurements taken on slightly abraded bone from 3344 gave a withers height of a little over 1.1m, comparable in size to Neolithic cows at Windmill Hill (Grigson 1999: 214). Although the individuals could not be sexed using the pelvic bones, which were incomplete, the metatarsal in 3344 was slender, and measurements from it compared better with the withers height obtained from the humerus and radius when multiplied by the indices for cows, rather than bulls (Table AB7).

Table AB7 Measurements of cattle bone from undated burial 3345 (Matolcsi 1970)*

	Greatest length (mm)	Multiplication factor*	Withers height (m)
Humerus	269	4.14	1.11
Radius	257	4.4	1.13
Metatarsal	216	5.62 (male) 5.28 (female)	1.21 (male) 1.14 (female)

Undated Pits

Other material was found in several undated pits, possibly later prehistoric in date, the majority in pits 6157 (N= 678) and 6175 (N= 155). Both of these contained bones from several individuals, often complete. In pit 6175, 5 sheep/goats with a preponderance of metapodials, a lower cattle hind limb and dog skull were found, and in pit 6157, 6 sheep/goats (minimum numbers again from metapodial counts), the left side long bones of at least two cattle and a pig pelvis and skull. Mandible wear stages and fusion data age eight sheep/goat mandibles to between 17 and 24 months, indicating a deliberate cull of animals at this relatively young age, perhaps for meat.

The bones had been butchered to disarticulate the carcass and extract marrow and one distal sheep/goat femur had been burnt, perhaps where the animal had been jointed leaving this part of the bone exposed during cooking. The remains of 14 vertebral bodies from one sheep/goat spine, with some transverse processes removed during butchery, indicates that some segments of butchered carcass were deposited together, and that these deposits might represent the remains of everyday consumption or butchery. At least one sheep/goat was lame as is in evidence from extra bone growth on three foot bones.

Discussion

The deposits of animal bone in Neolithic pits are not similar in scale or character to those from large ceremonial sites such as Durrington Walls or Marden, where feasting seems to have taken place, and wild animals are regularly found. Instead the bone deposits at Old Sarum are very small in scale and probably deliberately placed, with an absence of some meat-bearing cattle bones, which argues against feasting, and the presence of articulated parts or numerous bones from single pigs.

Species proportions in individual pits are divergent, although like most Neolithic sites, pig and cattle dominate overall. Pigs are very much better represented than other species if shed antler is omitted from the analysis, with similar proportions to West Kennet. There may

be some selection of which side of animals was deposited in pits, which also seems to be the case (although a different side is predominant) at West Kennet.

As well as individual pit contents, the two sites investigated here appear to differ from each other, both in the scale of bone deposition and the species selected, perhaps indicating different functions or phases of activity in the two areas.

Despite the differences between Old Sarum and other Neolithic sites in the area, similar animal husbandry appears to have been practised, with pigs killed before reaching their second year, and cattle generally surviving into maturity. It remains to be seen whether this pattern is representative of 'ritual' activity or the everyday economy, but some of the deposits at Old Sarum, like West Kennet, seem to lack a functional explanation and do not fit easily into the definitions of feasting seen at Durrington Walls and Marden.

Pit deposits continue to be made into the later prehistoric period, but it is unfortunate that so much material is undated, since these undated deposits are very different in content to the pits containing Neolithic pottery. It is likely that they are from a later phase of activity rather than a different type of Neolithic activity.

The Bronze Age animal burials are interesting, and similar burials, although of different species, occur in later Bronze Age contexts at locations as far apart as Runnymede Bridge, Berkshire, and Caldecot, Gwent, for example. Other animal burials known at Horton, Berkshire, of a probable but as yet unconfirmed middle Bronze Age date, include cattle buried in pits just large enough to contain them, and presumably dug for the purpose of receiving the carcass (Paul McCulloch pers. comm.). They are, however, found in a range of positions rather than simply on their sides, and all of these examples are from near palaeochannels, different geographically to Old Sarum, which lies on higher, drier ground.

At Caldecot the buried dog was advanced in age and suffered from several ailments or physical traumas that had affected the bone (McCormick 1997: 230). The horse skeleton at Runnymede Bridge had also suffered 'a degree of stiffness or disability' caused by exostoses on the proximal metatarsal (Done 1991: 334).

While it might therefore be concluded that this type of animal burial followed the death or slaughter of an individual in poor health that had been in close human contact, the cattle burials at Old Sarum show no evidence of disability. Of course, they may have been suffering from illnesses or pathological conditions that do not mark the bone, and it is not possible to determine exactly why they died. However, their closeness in age, together with the similar location and method of burial could imply a formalised or perhaps ritualised method of depositing these animals, different from the majority of the herd which were presumably eaten. The association of a neonatal sheep/goat with an adult cow is also unusual and perhaps corroborates this interpretation.

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