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ANIMAL BONES FROM EXCAVATIONS AT WICKHAM GLEBE, HAMPSHIRE, 1976 - 1980

Jennie Coy

LIST OF CONTENTS

NOTE The above lists the contents of the text. There is a series of supporting archive tables which are part of this report and these are listed on the next page.

LIST OF SUPPORTING ARCHIVE TABLES

INTRODUCTION

Material and Methods

The 11,121 bones of mammal, bird, and fish that were studied in detail and for which there was full recording of fragmentation, butchery, measurement, and bone condition, are put into their phase and period divisions in Table 1. In addition to these, all the animal bones from contexts phased to Phases 6 or 7, 7, 7 or 8, and 8 were scanned and 300 bones from the two former divisions was measured and included in the Post-medieval measurement archive, as they are most likely to date from occupation during Phase 6.

The bone-bearing contexts which contributed to these phase results are listed in archive table A1 so that any effects of rephasing can be easily determined. Details of the individual fragments that were coded are stored in the computer archive associated with their context numbers.

Phase 6 (17th to 18th Century A.D.), as can be seen from Table 1, produced almost half the recorded bones. There was also a good sample from Phase 4 (Late Medieval) so that detailed comparisons between Phases 4 and 6 are useful to show up contrasts between Periods II and III - medieval and post-medieval.

A lack of measurable material from Phase 4, however, means that only the post-medieval material provides a really useful metrical sample.

The bone had been very well-retrieved with a comprehensive policy of bulk sampling and subsequent sieving and sorting of flots and residues for retrieval of seeds and small bones. The layers for which sieved material was recorded are marked in Table A1. In order not to bias the record the small fragments of common ungulates found during sieving were not recorded although all these samples have been kept and the presence or absence of particular elements formed an important check on retrieval throughout. Results from sieved samples for bird, fish, and microfauna are given, however, and it is to be hoped that the consistency of the sampling strategy makes comparisons between phases viable. Further details of the role of sieving are given in a later section.

The methods used for the bone analysis were the normal ones used in the Faunal Remains Unit, University of Southampton, and identifications were made as accurately as possible using the extensive modern comparative collections and supporting literature. These results are therefore comparable with those from other sites studied at F.R.U.

Arrangement of Report and Archive

The minimum of data is included with this text. All supporting data, that should be regarded as part of the report, is in Archive Tables A1, A2 etc and these are listed in the list of contents.

Computer-readable primary records and processed records are available at the Faunal Remains Unit (F.R.U.), University of Southampton, - both in computer-readable and printout form. A list of what these records comprise and some explanatory notes are included in Table A 51.

TABLE 1 FULLY-RECORDED ANIMAL BONES BY PHASE AND PERIOD

	common ungulates	other mammals	birds	fish	other	TOTALS
PERIOD I Pre-manorial						
Ph 1 Late Saxon	263	5	35	-	-	303
Ph 1A Med (Pre-manor)	19	27	-	-	-	46
PERIOD I TOTALS	282	32	35	-	-	349
Ph 1 or 2 (not included in Periods)	45	2	-	-	-	47
PERIOD II Medieval manor						
Ph 2 Med (timber-framed)	127	8	52	42	-	229
Ph 3 Med (masonry)	557	41	109	54	-	761
Ph 4 La med alteration	1207	88	517	458	-	2270
Ph 2 or 3	98	8	8	-	-	114
Ph 3 or 4	266	12	88	11	19	396
PERIOD II TOTALS	2255	157	774	565	19	3760
Ph 4 or 5 (not included in Periods)	332	3	11	17	5	368
PERIOD III POST-MED MANOR						
Ph 5 North range	622	34	60	25	1	742
Ph 6 Po-med complex	4739	174	502	53	6	5474
Ph 5 or 6	307	24	33	17	-	381
PERIOD III TOTALS	5668	232	595	95	7	6597

Both the archive attached to this report and the computer archive are assembled in a standard way so that comparisons with other F.R.U. results are possible. Considerable time was allocated to the assembly of these data along the lines of the Cunliffe Report, at the expense of detailed interpretations which may not be appropriate at this time (D.O.E. 1983).

THE SPECIES EXPLOITED

Domestic Ungulates

The common domestic ungulates horse, cattle, sheep, goat, and pig form the major bulk of these collections. By fragment numbers (Table 1) they represent the majority of bones fragments in all phases except the Pre-Manor collection 1A which is biassed by a dog burial.

The proportion of common domestic ungulates in the major assemblages ranges from 53% in the Phase 4 collection to 87% in Phase 6. Some less important collections without important sieved contexts are almost entirely common domestic ungulates.

The relative proportions of the three commonest species - cattle, ovicaprids, and pig - are given in Table 2. This table is based on the bones which could be identified to species or to 'sheep or goat'. It is very unlikely that many of the latter are goat as only a small handful of goat bones were found in the whole collection. These are omitted from Table 2 and all sheep and sheep/goat bones called 'sheep' as this is their most likely derivation. In the basic computer archive, however, only the bones with the distinctive anatomical features of that species are called 'sheep'.

Table 3 illustrates the high species diversity and incidence of wild species in some phases, both of which lower the relative importance of the common domestic ungulates. Care must be taken in the interpretation of these tables : whereas Table 1 gives figures for common domestic ungulates, Table 3 separates fragment numbers of all exploited domestics from all exploited wild species. Anyone wishing for more detailed analyses of the figures is recommended to use the Archive tables. Tables A3 - A14 give the detailed results by phase for the anatomical elements of the common domestic ungulates recorded.

Cattle

Cattle are not always the major species represented, somewhat surprising in view of the high status of other finds. They only provide the majority of the ungulate fragments in Phases 1,3, and 4 and some collections that go across Phases: often their majority is slender (Table 2). Sheep are the major species represented overall, most noticeably in Phase 6, and pig bones are present in almost equal quantity to those of sheep in Period II.

The contextual section below, however, must play an essential part in the interpretation of these samples. The incidence of specialised deposits must be taken into account before simplistic models of economic change are invoked.

TABLE 2 SPECIFIC PROPORTIONS IN DIFFERENT CONTEXT

Phase	cattle		sheep		pig		totals
	frags	%	frags	%	frags	%	
Phase 1	55	62	21	24	12	14	88
Phase 2	7	22	14	44	11	34	32
Phase 3	89	41	74	34	53	25	216
Phase 4	199	47	117	27	109	26	425
Phase 2 or 3	13	38	11	31	11	31	35
Phase 3 or 4	29	37	33	42	17	21	79
PERIOD II (recalculated)	337	43	249	32	201	25	787
Phase 5	94	35	131	49	41	15	266
Phase 6	732	26	1593	57	477	17	2802
Phase 5 or 6	74	45	59	36	31	19	164
PERIOD III (recalculated)	900	28	1783	55	549	17	3232

TABLE 3 SPECIES DIVERSITY IN THE DIFFERENT PHASES

Phase	no.sp.	domestic		wild		?		totals
		frags	%	frags	%	frags	%	frags
Phase 2	21	63	27	57	25	109	48	229
Phase 3	25	260	34	107	14	392	52	759
Phase 4	38	647	29	561	25	1041	46	2249
Phase 2/3	9	42	38	7	6	63	56	112
Phase 3/4	15	101	27	34	9	237	64	372
PERIOD II (recalculated)	49	1113	30	766	21	1842	49	3721
Phase 5	15	301	41	62	8	377	51	740
Phase 6	36	3069	56	298	5	2091	39	5458
Phase 5/6	16	453	69	46	7	159	24	658
PERIOD III (recalculated)	42	3823	56	406	6	2627	38	6856

Table A43 provides a summary of the major measurements of cattle. Obviously the relative paucity of cattle material limits this comparison and in order to provide some standard deviations and coefficients of variation from the results the Period II and Period III results have been combined after being compared.

The comparison shows up no striking differences in size between the cattle of Periods II and III, in that most Period II results fall within the range of the larger Period III collection. There are a few exceptions to this where the Period II results are smaller than anything found in Period III but none where they are larger. This is a suggestion that if there had been enough Period II cattle bones to make a real comparison they might show up as having a distribution which consistently contained some smaller individuals.

The average size of the cattle bones exceeds those recently studied for medieval Winchester Western Suburbs (mostly 12th and 13th Century). The overall range for both the medieval and post-medieval material at Wickham is a very large one and the standard deviations and coefficients of variation are also consistently higher throughout than those at Western Suburbs (Coy n.d.1). Table 4 provides some comparisons of Wickham cattle size with those from other medieval and post-medieval collections from nearby locations in Hampshire. At the top in each case the very large sample from mid-Saxon Southampton (Hamwic) is put for comparison. The Hamwic sample shows a very wide range and it illustrates the danger of comparing small samples as range increases with increasing size of sample. It also shows that the maximum sizes for the Mid-Saxon Period were often large (Bourdillon & Coy 1980).

Very few measurements are available from the Mary Rose material which dates from 1545 (Coy, in preparation) but these are added here and fit within the Wickham Period III ranges apart from the acetabulum measurements from pelvis where the Wickham measurements are all larger. The latter may be pure chance as these 6 Wickham measurements for pelvis are very high compared with those from other sites and may just be from a few individuals at the upper end of the range. Southampton medieval figures are from a variety of sites (Bourdillon 1983). These size distribution comparisons can only be regarded as interim as much bigger samples from both Southampton and Winchester will be published in the next few years.

Are such results what we would expect from post-medieval layers of such a Manor House ? Large sizes for cattle should not surprise as cattle should by then not only have recovered from any diminution in size seen in the medieval period (Bourdillon 1979) but should also have been showing some results of the stock improvements that we know were taking place (Armitage 1977). What is surprising is that there is no evidence for gradual increase through the successive phases and that there are both small and large individuals around throughout giving very large ranges. Introduction of new breeding stock, however, could be expected to give just these results - an increase in genetic variability, reflected by the wider ranges, and heterosis or hybrid vigour, reflected by the large individuals.

What would be good to know is whether these results give evidence of there being different populations of cattle which had been exploited at Wickham. Attempts were therefore made to separate out subsets of the distributions for the most frequent measurements. But the frequency for each measurement is too low to show anything apart from a suspicion of bimodal distributions

Key to Sites used in Tables 4,6 and 7

1 Southampton, Hamwic, mid-Saxon

2 Winchester Western Suburbs,F.P.13, ?Saxo-Norman
3 Winchester Western Suburbs,F.P.14-15,12th-13th C
4 Southampton, Medieval A, 12th-13th C
5 Southampton, Medieval B, 14th-15th C
6 Wickham,Period II,med

7 Wickham, Period III, post-med
8 Southampton,post-med C, 16th C
9 Mary Rose,post-med,1545 (for cattle only)
10 Poole,post-med,16th C (for sheep only)

TABLE 4 SIZE COMPARISONS FOR CATTLE

SCAPULA (All measurements are in mm)

Minimum length at neck SLC

site	N	range	mean
1	73	34.0 - 62.3	45.4
2	2	34.0,43.7	
3	7	42.0 - 49.9	45.4
4	6	42.4 - 53.1	47.5
5	3	42.9,55.6,61.1	
6	2	45.2,54.1	
7	8	46.9 - 58.3	52.7
8	3	51,52.1,54.9	
9	3	51,52,57	

Greatest length articulation GLP

site	N	range	mean
1	91	49.8 - 83.0	61.9
2	3	57,57.3,59.7	
3	3	53.7,55.7,64.5	
4	9	51.2 - 69.8	58.7
5	3	55.8,65.3,74.2	
6	1	61.9	
7	7	57.6 - 76.3	69.0
8	3	66.8,69.4,70.1	
9	3	67,67,71	

HUMERUS

Smallest breadth diaphysis SD

site	N	range	mean
1	-	-	-
2	3	27.9,28.2,29.8	
3	1	30.0	
4	-	-	-
5	-	-	-
6	2	29.2,32	
7	10	30.7 - 51.6	35.9
8	-	-	-

Breadth of trochlea BT

site	N	range	mean
1	72	59.1 - 84.2	68.1
2	6	59.0 - 71.0	65.0
3	4	49.5 - 70.0	
4	3	61.1,69.9,70	
5	1	75.8	
6	3	57.8 - 74.6	
7	9	65.4 - 98.0	74.9
8	1	80.0	

PELVIS

Length acetabulum inc lip LA

site	N	range	mean
1	36	52.8 - 70.4	59.4
2/3	5	60.0 - 66.6	62.9
4	5	46.6 - 60.0	-
5	2	61,72 (no results for 6)	
7	6	74.6 - 78.9	77.1
8	2	58,66	
9	4	70,71(2),73	

TIBIA

Distal Breadth Bd

site	N	range	mean
1	111	49.1 - 67.9	56.8
2	-	-	-
4	8	51.3 - 62.5	54.3
5	5	49.2 - 62.3	57.0
7	7	50.7 - 70.4	59.7
8	4	60.6,65.4,66,66.5	
9	-	-	-

ASTRAGALUS

Greatest lateral length GLl

site	N	range	mean
1	167	49.2 - 71.5	60.9
2	11	55.5 - 62.8	59.8
3	15	52.5 - 64.0	58.9
4	8	52.6 - 63.8	58.8
5	3	59.9,61.3,65.4	
6	4	60.7,62.3,64.3,67.4	
7	9	63.2 - 70.8	66.5
8	1	68.2	

WITHERS HEIGHTS (In metres)

(Matolsci and Fock)

site	N	range	mean
1	77	1.02 - 1.38	1.15
2	3	1.06,1.08,1.16	
3	1	1.16	
4	9	0.98 - 1.19	1.09
5	6	1.03 - 1.26	1.14
6	1	1.09	
7	2	1.16,1.17	
8	9	1.09 - 1.40	1.22

- probably sex distinction - which held for both medieval and post-medieval measurements. There is no evidence of plough animals as there was recently at Winchester Western Suburbs (Coy n.d.1). Although these metapodial measurements show a wide range they come within that plotted for City of London rubbish c.1500 A.D. and do not include bones comparable with the upper end of the range for the palace rubbish c.1520 A.D. from Baynard's Castle (Armitage 1982).

One regrettable absence is evidence for horn core shape of the cattle as these may, as at excavations at Reading Waterfront (Coy n.d.2), provide evidence of breed improvement.

The most reliable evidence we may have for the nature of cattle exploitation at Wickham may be the scale and pattern of butchery and some attempt to come to grips with this as potential evidence for home-killing or the importation of dressed carcases has been made in the contextual sections, by study of the anatomical distributions Tables (A3 - A14), and by the calculation of the percentage of head and foot bones (Table A49). The results do not provide convincing evidence for the bringing in of dressed carcases and the values for head plus foot bones, ranging from 31 to 41 % in the main samples, are not remarkably different from those at mid-Saxon Hamwic or Late Saxon Winchester Western Suburbs where small-scale butchery has been suggested (Bourdillon & Coy 1980, Coy n.d.1).

There is evidence from the earliest phases onwards for splitting of the carcase down the midline (often somewhat off-centre) a practice that was introduced in the early medieval period in many places (see, for example, butchery discussions in Coy n.d.1).

Sheep

The importance of this species in the diet at Wickham is difficult to ascertain. Although some phases contain very high proportions of sheep bones these are often the result of specialised deposits; notably those of sheep distal limbs in the well, F171 in Phase 6, discussed in the contextual section. That these are biases can be deduced from the results in Table 5 which shows that the high values for feet, and to some extent tibia, are not associated with corresponding increases in other sheep elements. The percentage of bones from head and feet (in these cases mostly feet) is 56% of sheep fragments for Phase 4, 62% for Phase 5, and 53% for Phase 6 (Archive Table A49). This contrasts with a much lower value for the rest of the deposits (25 - 44%). This argues against the bringing to the site of dressed carcases rather than sheep on the hoof. Phases 2 and 3 therefore seem to show a slightly greater concentration on meat-bearing bones of sheep, which would be expected if carcases utilised were dressed but this cannot be said of Period III. The specialised deposits of sheep distal limbs markedly influence the results for sheep, especially in the results for Phase 6, and suppress the results for cattle.

To what extent this represents an increasing interest in sheep for food at Wickham itself is important to consider. These results do show considerable anatomical bias in favour of nether limbs so that this could be considered as carcase preparation. But the scale of the preparation is impossible to deduce without an estimate of the length of time that particular contexts were used for disposal. The deposit of sheep lower limbs could

TABLE 5 SHEEP ELEMENTS IN DIFFERENT PHASES

Phase	N	% mandible	% humerus	% radius	% tibia	% metapodial	% phalanx
3	68	3	7	18	40	3	4
4	101	6	8	14	12	30	6
5	124	4	3	14	14	21	27
6	1,444	9	5	8	10	29	14
5/6	55	5	13	20	25	11	0

Note Loose teeth excluded from number of fragments 'N'
Phases with fewer than 50 sheep fragments excluded

suggest either the preparation of dressed carcases from their own stock for use elsewhere or the preparation for cooking of a number of whole carcases brought in.

The metapodials themselves will repay further study in the future and provide a useful parallel to material of a similar date described for Walmgate, York (O'Connor 1984). Apart from a group of skulls in a Phase 6 pit (F20) there are no corresponding concentrations of cranial bones or heads but this is not surprising as they have considerable value as delicacies.

The sheep measurements are given in Archive Table A44 with the very few measurements of goat available. They include very useful samples of metapodial measurements and some analysis is possible for these. Apart from them, measurements are insufficient to give big enough samples for detailed phase comparisons although there are enough bones in Phase 6 to form useful Period III sets.

Measurements taken from the few skulls are given but horn core measurements are, as for cattle, sadly lacking. Whether this demonstrates the use of beheaded carcases or the complete use of skull products is difficult to deduce.

The measurements for Periods II and III have been totalled separately so that comparison is possible. Generally the smaller sample from II fits within the range for III with very occasionally a smaller one below the III minimum. There is only one Period II measurement higher than a Period III maximum. Despite this the ranges for Period II are wide and there are occasional very small individuals. There is only one case of a measurement mean from Wickham which is lower than a comparable mean for the Winchester Western Suburbs 12th and 13th Century material. Otherwise all Wickham means are greater, sometimes considerably so. Table 6 shows some comparisons between Wickham sheep and other medieval and post-medieval material from Hampshire and some relatively small animals found in a 16th Century context at Poole, Dorset (Coy n.d.3). The standard deviations and coefficients of variation for Wickham are larger than the Winchester ones as a result of the wider range of sizes, mostly at the large end of the range but occasionally at the small end too - some being extraordinarily tiny!

This is comparable in some ways with what was said for cattle above and again cross-breeding could have caused some of this. There is however an important difference (although this may only be possible to see in sheep because of the larger sample). When distributions are examined more closely (e.g.for measurements with over 100 results such as some for metapodials) the main core of the distribution is quite narrow and the width of variation is caused by one or two, often very small, individuals which serve to draw out the range. These figures could usefully be examined in depth and it is hoped to encourage a comparative statistical study of this material as a student project.

Pig

The role of pig in the diet, as suggested above, is considerable in Period II but closer examination of the results for these pigs makes the arbitrary division made in Table 3 between 'domestic' and 'wild' species vulnerable to attack because of the likelihood of wild boar. The Table 3 division into 'domestic' and 'wild' should be regarded as only a rough guide.

The pig measurements in Table A45 show some large pig bones

TABLE 6 SIZE COMPARISONS FOR SHEEP

SCAPULA (All measurements are in mm)

Minimum length at neck SLC

site	N	range	mean
1	194	14.4 - 25.0	20.1
2	9	16.5 - 20.2	18.3
3	18	16.7 - 22.0	18.6
4	6	16.3 - 20.8	18.6
5	6	17.8 - 20.5	19.0
6	2	17.5,19.3	
7	28	16.9 - 23.0	20.0
8	35	16.8 - 22.9	18.8
10	7	15.5 - 21.1	17.9

Greatest length articulation GLP

site	N	range	mean
1	192	25.6 - 36.8	32.3
2	7	28.7 - 32.1	30.8
3	10	27.4 - 35.7	30.3
4	7	26.4 - 32.1	29.6
5	5	28.8 - 35.7	31.3
6	-	-	-
7	15	27.8 - 37.0	32.6
8	31	27.9 - 36.8	31.1
10	2	25.9,28.1	

HUMERUS

Smallest breadth diaphysis SD

site	N	range	mean
1	5	14.1 - 17.3	
2	1	15.5	
3	16	12.5 - 15.5	14.0
4	2	14.6,14.8	
5	1	13	
6	4	13,13.4,13.6,13.9	
7	44	12.2 - 18.6	14.9
8	17	12.7 - 15.8	14.2
10	16	12.3 - 15.1	13.8

Distal breadth Bd

site	N	range	mean
1	209	24.9 - 36.2	28.7
2	27	24.7 - 32.3	28.4
3	38	24.8 - 31.1	28.1
4	8	24.6 - 29.6	27.8
5	23	26.4 - 31.5	28.2
6	6	25.8 - 31.5	28.3
7	62	25.4 - 34.8	29.4
8	33	24.2 - 32.0	28.3
10	20	25.2 - 32.4	28.1

TIBIA

Distal Breadth Bd

site	N	range	mean
1	267	21.8 - 30.0	25.9
2	28	18.7 - 27.5	24.6
3	44	22.0 - 27.8	24.3
4	16	23.8 - 26.3	24.5
5	11	24.0 - 26.2	25.2
6	8	21.3 - 25.3	23.5
7	69	18.8 - 30.1	25.5
8	20	20.5 - 26.9	24.4
10	8	22.1 - 25.3	23.7

ASTRAGALUS

Greatest lateral length GLl

site	N	range	mean
1	56	22.9 - 31.1	28.1
2	6	25.0 - 27.8	26.8
3	28	24.3 - 30.0	26.8
4	5	24.9 - 28.1	27.0
5	1	22.5	
6	-	-	-
7	5	27.4 - 33.0	30.0
8	2	25.1,26.1	
10	2	26.4,27.6	

WITHERS HEIGHTS (In metres)

(Teichert prehistoric and early historic figures)

site	N	range	mean
1	184	0.50 - 0.71	0.61
2	17	0.51 - 0.61	0.56
3	17	0.51 - 0.58	0.56
4	22	0.52 - 0.59	0.55
5	24	0.51 - 0.63	0.55
6	3	0.49,0.65,0.66	
7	115	0.52 - 0.72	0.62
8	76	0.47 - 0.62	0.54

in Period III. There is a strong likelihood that some of the Period III pig bones are from wild boar, Sus scrofa , unless pig sizes increased for some other reason. Unfortunately the sample is too small to attempt any deep analysis of the distributions. It is only possible to say that Period III ranges virtually all include some large individual measurements which exceed the maxima both for Saxon Southampton (where the pigs were reckoned to have been domestic) and for Late Saxon and 12th - 13th Century Winchester Western Suburbs, where a few bones were suspected to have been from wild boar.

The actual bones are mature and robust enough to have come from wild boar.

For pig, as for all the domesticates, there are few jaws. What ageing evidence there is is given in the contextual sections as are the references to immature individuals.

Deer

All three likely medieval species are present, the red deer, Cervus elaphus, and roe deer, Capreolus capreolus, are poorly represented, but the fallow deer, Dama dama, is an economically important meat source. The details of deer finds are given along with those of other wild species in Tables A15 - A26.

Red deer bones total only 10 and come from Phases 2, 4 and 6. Roe bones total 22 and come from Phases 1, 3, 4, and 6. The individual finds are detailed in the contextual sections. Fallow bones number 139 (excluding antler) and first appear in Phase 3, after which they are found scattered throughout food remains in every Phase.

The introduction of the fallow deer after the Norman conquest is now generally accepted both in zoological and archaeological circles (for a fuller discussion see Bourdillon & Coy 1980). Its appearance at Wickham matches its 12th-13th Century appearance at Winchester, Western Suburbs (Coy n.d.1). Fallow deer were kept in deer parks and would have provided a convenient source of fresh, high quality meat and it is therefore debatable to what extent this can be regarded as a 'wild' species but like rabbit it has been included as such in Table 3.

The small stock of measurements provided by this sample forms a useful addition to the Wessex database and these are available in Table A46. With one exception (a large scapula) the measurements are all within the range of a comprehensive series of modern fallow (Chaplin personal communication). Size is not a totally reliable criterion for separation of fallow bones from those of red deer and anatomical criteria were used for the separation. The Wickham material was anatomically fairly uniform and the larger bones often a very good match with the skeletons of well-fed New Forest fallow bucks in their prime. Such good anatomical matching is not always the case for archaeological material of fallow and there is no doubt that in some collections there are anatomical variations which might be worthy of further analysis.

Rabbit and Hare

The detailed results for these species are in Tables A15 - A26.

Bones of the rabbit, Oryctolagus cuniculus, occur throughout and there is even a single bone associated with the Saxon Phase 1. It is likely, however, that this species was introduced after the Norman conquest and was kept in warrens to provide a ready source of meat. Most of the finds of rabbit (132 bones in all) were, like the fallow bones above, distributed evenly through the food remains of domestic ungulates. Because of this the measurements are given in Table A47. lthough currently there are plenty of collections of rabbit bones from archaeological sites many of them are from intrusive skeletons brought in by the burrowing activities of rabbits and most bone reports do not therefore give measurement ranges.

The bones of hare, where they could be specified, were those of the brown Hare, Lepus capensis. Altogether there were 26 bones, scattered through all medieval and post-medieval Phases.

Dog and Cat

The evidence for these species is sparse. Apart from a partial skeleton in the pre-manor layers of Period I there were 2 fragments of dog in Phase 4 and one in Phase 6.

The pre-manor dog has a total skull length of 203 mm. This is slightly larger than a dog from Mid-Saxon Hamwic but within the range given for Anglo-Saxon dogs in Britain. The humerus gives an estimated stature of 0.57m compared with the range given by Harcourt (1975) for Saxon dogs of 0.30 - 0.64m. This was an adult dog with all its permanent teeth in wear and major long bones fused. There was no evidence of its sex but the baculum of dogs is easily missed during excavation.

Despite the lack of dog bones, there was a high incidence of dog-gnawing in all periods. It was recorded for 6% of all bones in Period I, 9% in Period II, and 13% in Period III. On some bones of small species, including fish, there were occasionally small tooth marks, probably from puppies or cats.

Similarly cat produced only 10 bones. This does not mean that cats and dogs were not important for specific functions. It may even mean that they were regarded as so important that their bodies were disposed of specially. Keene has recently stated that the remains of cats are rare on medieval excavations (Keene 1985). This is certainly true for Wickham but does not seem to be true for Winchester Western Suburbs where there is a consistent presence throughout late Saxon and early medieval contexts (Coy n.d.1).

Other Carnivores

The mandible of a marten (cf the pine marten, Martes martes) in Phase 4 and the tooth of a fox, Vulpes vulpes, in Phase 6 provide merely a suspicion that these species were hunted. The skins of both species are highly regarded.

Domestic Fowl and Related Species

The overall figures for the number of bird fragments by phase is given in Table 1 and details of all the avian finds by phase in Tables A27 - A35. Of the 1,415 bird bones at Wickham, 478 were identified as definitely or probably domestic fowl and another 23 as the related species peacock, Pavo cristatus; pheasant, Phasianus colchicus; and turkey, Meleagris gallopavo. The bird component of the diet is generally highest in Period II where birds are represented by up to 23% of the fragments. If fish are excluded from these calculations, however, as they often are from archaeological bone reports, the representation of bird would be much higher (Table 1). There are many finds of immature fowl.

There is a detailed measurement archive for domestic fowl in Table A48. The Wickham fowl are variable but with some very large individuals at the upper end. Table 7 compares ranges for a few significant measurements with those from Winchester and Southampton. Sex distinction characteristics were recorded (as described in Coy 1983i) and while figures are insufficient for statistical analysis it should be said that cocks, capons, and hens (including laying birds) are all represented.

Peacock appears as early as Phase 2 and was probably, therefore, a medieval introduction here. It is also present in material from Phases 4 and 6.

Pheasant and turkey appear only in phase 6 and it is likely that they were introduced in post-medieval times. The identification of these three species - all related to and therefore anatomically similar to the domestic fowl and the blackcock (which was not positively identified) was carried out using extensive modern comparative material at F.R.U. and at Tring, and the criteria noted by Erbersdobler (1968), Lowe (1933), and Bate (1934).

It would be interesting if these species could be supported by local documentary evidence. The most reliable and often quoted reference to turkey in the British diet is in Cranmer's 'A Dietarie' in 1541 (Gurney 1921). This post-medieval find at Wickham is the second one for this time known for Wessex, the first was from material also phased to the 17th or 18th Century from Christchurch, Dorset (Coy 1983ii).

Goose and Duck

The details of goose and duck finds are given in Tables A27 - A35 inclusive. Goose , predictably, makes an appearance in the Saxon material but is low in frequency in Period II and even lower in Period III. Of the 52 bones classified as goose (and this includes one or two tentative identifications) there is only one bone which is unlikely to have been from a large domestic form or its wild ancestor the greylag goose, Anser anser. This is a goose furcula or wishbone in Layer 711, Phase 4, which is a very good match for the Brent goose, Branta bernicla, but is probably not anatomically distinct enough to merit identification to species.

The 53 bones of duck are from a variety of species and are discussed in more detail in the contextual sections. The distribution of the duck species between the phases is shown in Table 8.

Of note is a tibiotarsus which seems to be of a recognizably

TABLE 7 SIZE COMPARISONS FOR FOWL

HUMERUS (All measurements in mm)
Greatest length GL

site	N	range	mean
1	37	55.0 - 75.5	65.3
2	5	61.4 - 65.1	63.0
3	7	61.4 - 70.8	66.5
4	8	63.0 - 74.6	69.9
5	3	62.8,62.9,72.4	
7	3	73.7,81,84.9	
8	20	65.1 - 82.0	73.0

HUMERUS
Distal breadth Bd

site	N	range	mean
1	54	13.0-16.6	14.3
2	11	13.2 - 16.2	14.3
3	12	13.0 - 16.5	14.5
4	8	13.9 - 15.9	14.9
5	4	13.2 - 14.6	14.1
7	10	13.4 - 18.3	15.7
8	18	13.2 - 19.0	15.7

CORACOID
Greatest length GL

site	N	range	mean
1	32	47.3 - 60.3	51.6
2	6	47.7 - 49.5	48.5
3	4	47.0 - 52.0	49.5
4	6	47.0 - 55.1	51.4
5	4	47.0 - 60.2	52.6
6	4	46.1 - 59.5	54.0
7	-	-	-
8	9	51.5 - 60.5	57.0

CARPO-METACARPUS
Greatest length GL

site	N	range	mean
1	15	33.5 - 42.5	36.7
2	2	31.8,31.9	
3	6	32.0 - 40.8	36.3
4	-	-	-
5	-	-	-
6	5	35.7 - 43.9	40.8
7	5	37.4 - 45.3	40.1
8	-	-	-

FEMUR
Greatest length GL

site	N	range	mean
1	50	66.0 - 84.2	73.8
2	14	66.9 - 80.7	71.0
3	5	69.8 - 76.0	74.6
4	8	65.0 - 75.8	72.7
5	5	73.3 - 90.7	81.5
6	3	77.1,82.6,87.4	
7	4	73.4 - 88.2	82.5
8	24	62.1 -102	81.9

FEMUR
Distal breadth Bd

site	N	range	mean
1	74	12.2 - 17.0	13.8
2	16	12.5 - 15.7	13.7
3	12	12.8 - 16.5	14.4
4	11	11.0 - 16.8	13.9
5	5	14.5 - 17.6	15.7
6	3	15.2,16.7,17.1	
7	6	13.6 - 17.8	15.5
8	24	13.2 - 20.4	16.0

TIBIOTARSUS
Greatest length GL

site	N	range	mean
1	15	74.8 - 119	101
2	10	91.5 - 111	98.4
3	3	101,105(2)	
4	4	87.6 - 101	93.8
5	5	95.6 - 128	109
6	3	101,112,125	
7	4	97.9 - 128	119
8	27	103 - 149	120

Smallest breadth corpus SC

site	N	range	mean
1	69	4.9 - 7.8	5.9
2	15	5.0 - 6.5	6.0
3	10	5.2 - 6.2	5.8
4	6	5.6 - 6.4	6.0
5	6	5.4 - 7.2	6.3
6	8	5.1 - 6.8	6.0
7	12	5.1 - 8.0	6.4
8	36	5.8 - 8.8	6.8

domestic form as early as Phase 2 (from Context 1113). This is not unique for Wessex as a similar find was made in Saxon material from Winchester as yet unpublished. Another is described for Saxon Northampton (Coy 1981). Those labelled 'domestic' could not be matched with any wild species and were larger than those in the second category, 'dd/mallard', which had no anatomical differences that could be discovered from the wild mallard, Anas platyrhynchos, and fitted its size range.

Apart from Wessex comparisons and comparative collections at F.R.U. and Tring the ranges given by Woelfle (1967) and Gejvall and Boessneck (1979) were used for all the duck identifications. The third category of ducks in Table 8, 'medium', represents unidentified ducks which are smaller in size than the mallard but larger than the teal or garganey. These might represent some common species of wild duck such as wigeon, Anas penelope, but duck species are very difficult to distinguish anatomically except on certain bones. Those labelled to species - the teal, Anas crecca; goldeneye, Bucephala clangula; and long-tailed duck, Clangula hyemalis; are all very good matches with modern comparative material of these species. The first is common in the region but the others seem unlikely in the South and it is suggested that if these identifications are correct they could have been post-medieval introductions. The former successfully breeds in nest boxes.

Pigeons

There are two size groups normally recognizable in the bones of pigeons. The larger group represents the wild wood pigeon, Columba palumbus, and large domestic pigeons. It is not always possible to be certain which is which in the Wickham material, although those which could be matched with modern or 19th Century material matched wood pigeon.

The smaller group represents the wild stock dove, Columba oenas; the wild rock dove, Columba livia; and its domestic descendant the dovecote pigeon or its feral derivative. These four are anatomically very close but a careful study of the bones from Wickham and comparative material of the stock dove, rock dove, and various domestic pigeons, suggests that anatomical criteria on some bones (not all of them described in Fick 1974), and the size ranges, make dovecote pigeons a likely source for much of this smaller group.

Pigeon bones were scarce, only found in Phases 4 and 6, and the majority of those found were of young birds - a fact which reinforces the suggestion that they may have been dovecote birds as these would be taken as squabs for eating. In Phase 4 the only adult pigeon bone which could be identified with any accuracy probably came from a wood pigeon. Most of the rest were immature bones. In Phase 6 there was another adult bone identified to wood pigeon but also a number of bones which fell into the 'small' group discussed above.

Five bones bore distinctive anatomical features which best matched comparative material either of wild rock dove, Columba livia, or 19th Century dovecote pigeon; another three matched these in size. It is suggested that these may all have come from dovecote pigeons and that a dovecote was in use at least in this Phase.

Such evidence, however, should really be supported by documentary evidence or by proof that the birds were used for

TABLE 8 DUCK BONES IN THE DIFFERENT PHASES

	domestic	dd/mallard	medium	teal	goldeneye	long-tailed	TOTAL
phase 1			1				1
phase 2	1	1					2
phase 3		1					1
phase 3/4		2			1		3
phase 4	1	5	1		1		8
phase 4/5	1						1
phase 5				1			1
phase 6	2	21	9	1	1		34
phase 6/7				1			1
phase 7					1	1	2
TOTALS	5	30	11	3	4	1	54

food. The scattering of odd bones through the food deposits at Wickham does suggest this. In contrast, the presence of large numbers of whole or partial skeletons on sites (not seen at Wickham) would indicate disuse of a building when it would readily be invaded by nesting individuals of the feral descendants of dovecote pigeons which would not differ anatomically from their ancestors (Goodwin 1983).

Other Food Birds

Details of all other bird finds are also in Tables A27-A35 inclusive. There is one bone of swan, Cygnus, sp. in Phase 4 and one belonging to Phase 5 or 6. Woodcock, Scolopax rusticola, first appears in Phase 2 and is then present in all phases. There are a few finds of the common snipe, Gallinago gallinago, in Phases 3 and 6.

Other species of sporting bird are the partridge, probably the grey partridge, Perdix perdix, which appears in all Phases from Phase 2 and a variety of waders and other birds which might be commonly found in Hampshire, some of them in marshy places. Two very poorly -preserved fragments which could be from moorhen, Gallinula chloropus, were in Phases 1 and 6; coot, Fulica atra, and green plover, Vanellus vanellus, in Phase 4; black-tailed godwit, Limosa limosa, a species of small sandpiper, Calidris sp., and curlew, Numenius arquata, in Phase 2 with a further and very small specimen of the latter in Phase 6. Oystercatcher, Haematopus ostralegus, was in deposits of Phase 5 or 6 and golden plover, Pluvialis apricaria, in Phase 7. There were a number of other fragments which were probably from waders or, in one or two cases, gulls but which could not be specifically identified.

All these species could have been found nearby and the specimens found being few it cannot be said that there is any evidence here for systematic gathering or shooting of large quantities of wild birds but the wide range of game species and the distribution of their bones amongst the food remains in the deposits does suggest that they were caught (or bought) for the pot.

The various species of thrush (Turdus sp) were presumably also eaten.

Fish

The number of fish bones by Phase is shown in Table 1 with details in Table A36 - A42 inclusive. Only Periods II and III provided fish bones and the former produced most. Most of the fish evidence in fact came from a few features and the details are given in the contextual sections below.

Although the number of fish bones identifiable to species was relatively few it is interesting that at least 11 species were represented: two of them freshwater - the perch, Perca fluviatilis, and at least one other species as yet unidentified; two which can be fresh or saltwater catches - the common eel, Anguilla anguilla, and salmon or trout, Salmo sp.; and the rest indubitably of marine origin - the conger eel,Conger conger; herring, Clupea harengus; whiting, Merlangius merlangus; hake, Merluccius merluccius; ling, Molva molva; flatfish of plaice/flounder group, Pleuronectidae; and bass, Dicentrarchus labrax.

The marine fish are represented as early as Phase 2 by

herring, hake and flatfish. Although the largest fish represented (two bones from ling which were probably at least 6kg in weight) were from Phases 5 and 6, there was otherwise no real difference between the estimated weights of fish from medieval and post-medieval layers. Neither was there any clear evidence of a differential presence of fish elements which might provide evidence for the use of preserved fish. Both jaws and shoulder girdle (cleithrum) were represented in the ling and conger eel - the other marine species provided too little evidence.

There was considerable movement of fresh and preserved fish around the South Coast, even in the medieval period, as has been discussed elsewhere (Coy, 1982), and it is likely that fish played a much more important role at Wickham than these few fragments suggest.

SMALL MAMMALS AND AMPHIBIANS

The bones under the heading 'other' in Table 1 represent the microfauna, mostly found during sieving, which is not regarded as having any economic significance. Bones of a small bat were found in a layer related to Phase 1 or 2. Bones of the black rat, Rattus rattus, were in Phases 3, 4 and 6. Similar finds have been made in various Wessex medieval and post-medieval assemblages. Vole bones appear occasionally and, where identifiable too species, are those of the short-tailed vole, Microtus agrestis. Mouse remains from Phase 4 were not diagnostic to woodmouse or house mouse.

There were several finds of amphibian. Only the common frog, Rana temporaria, was identified and details of contexts are given in the sections below.

CONTEXTUAL DISCUSSIONS

Period I Animal Bones

Only two of the Phases included here contained animal bones and one of these contained a sample of fewer than 100 bones.

Phase 1

The 303 bones here were associated with Late Saxon material and came from postholes, ditches or gulleys. Most contexts contained very small samples of the bones of the common domestic ungulates and fowl but in the pit, Feature 211, there were about 200 fragments, mostly from Context 1019. This context included the bones of roe deer. Context 1056 from the same feature contained a fragment of goat horn core and a rabbit bone. Rabbit, as explained above, is normally considered to have been introduced after the Norman Conquest so that this bone may be intrusive. The feature also contained the remains of a charred cattle skull and 3 examples of axial (midline) splitting of cattle vertebrae, evidence of piglet, two hens, and a half-grown domestic fowl.

Axial butchery is usually a later development and such evidence here might argue for a later date for those particular bones.

Feature 217, context 1140, contained several bones of wild birds, one from a medium-sized duck (see duck notes above) and the others waders. There was also part of a sheep skull split midline.

In the fill of posthole F332 (contexts 1357 & 1358) there were several bones of goose, quite a rarity on this site but often associated with Saxon occupation. These are radii, ulnae, sternum, and tibiotarsi which may all have belonged to the same bird. One radius shows possible chopping distally.

Although sieving was carried out there are no fish bones from these contexts.

The overall picture here is of some possible contamination with post Norman invasion material, if not of post-medieval material. The emphasis is on cattle, unlike most of the assemblages described below. The detailed identifications of common ungulates are in Table A3, other mammals in A16, and birds in A27.

Phase 1A

Only 46 bones are listed for the four contexts included in this pre-manor phase. They are mostly from gullies and the species represented are cattle, sheep, pig, dog, and 2 bones from the hind foot of a brown hare.

The partial skeleton of the large dog discussed in the earlier section on dogs was in the ditch F345, context 1348.

Details of the common ungulate bones are in Table A4, and other mammals in A16.

Period II Animal Bones

Phase 2

Sadly there are only 229 bones from this early medieval phase. Only F183 (context 961) and F241 (context 1104) contain samples of more than 40 fragments.

The first of these produced 47 fragments from pig, rabbit, fowl, goose, woodcock and hake. The second produced 64 fragments from cattle, ovicaprid, pig, fowl, woodcock, thrush (in this case probably song thrush, Turdus philomelos), herring, eel, plaice or flounder. Feature 182 contained a cat femur only. Feature 240 included a tibial fragment of red deer. Otherwise finds were sparse but horse was represented by two loose teeth (one from a horse of about 8 years); context 1113 contained a bone of domestic duck, an important find as discussed in the earlier section on this species; and context 996 the first finds for the site of peacock - bones from two individuals.

These sparse finds are therefore of some zoological importance and the dietary variety shown is wide. We may presume that rabbit was by this time a part of the diet.

Bones of immature animals are present. Context 924 contained a calf metapodial; 961, 996, and 1104 bones of small piglets; and 924 and 944 bones of immature domestic fowl.

For the common domesticates the emphasis is on sheep and pig, with cattle in third place (Table 2). The butchery on the domesticates is variable and on such a sample it is difficult to detect any pattern except to say that evidence of butchery is considerable. Small ungulate ribs tend to be cut through in an anterio-posterior direction and all three ovicaprid tibiae are cut across the shaft, one possibly by sawing. This may be how the lower limbs were cut off in this period and contrasts with the results from Phase 6. There is also one case of an ovicaprid

vertebra that seems to show midline axial splitting. One goose coracoid is also chopped across. The eel, herring, and flatfish bones are all from sieved samples.

The common ungulates are detailed in Table A6, other mammals in A18, birds in A28, and fish in A36.

Phase 3

There are 761 bones belonging to this phase. A higher percentage of them belong to the common domestic ungulates than in the previous phase (73% compared with 55% from Table 1). Of these, cattle is in the majority with sheep very strongly represented and pig in third place (Table 2). Most of the larger samples contain bones of cattle, sheep, pig, and domestic fowl. Of the rarer domesticates, horse is represented by a toe bone in F246, context 974: goose is also present there and in contexts 910 and 1069. As for Phase 2 there is no goat.

Although there is a slightly higher percentage from other mammals than in Phase 2, bird and fish representation is down in percentages of fragments (Table 1). But the actual variety of wild species - mammal, bird, and fish - is slightly greater than that involved in Phase 2 (Table 3).

These wild species include the first finds of fallow deer, which is in 5 contexts. Roe deer is in 4; rabbit in 7; and hare in 6. In context 910 is a humerus and pelvis of what was probably a black rat, although confirmation of this species from cranial remains must wait until Phase 4. Although there are odd finds of fish (especially conger eel) and bird in some contexts, some of the bones being from quite small species, the major bird and fish finds are from sieving in contexts 821 and 910, which add partridge, woodcock, snipe, waders, thrushes (in this Phase at least song thrush and blackbird, Turdus merula, are represented), herring, flatfish, perch, and bass to the species list. Contexts 782, 974, and 984 also contain samples of more than 40 fragments but all the others are relatively small and contain a narrow spectrum of species.

Overall there do not seem to be any specialised deposits illustrating particular activities and with such small samples it is not possible to sort out any differences in usage between different areas or features. Details of each context are available in the computerised context listings and catalogues (Table A51) but the major points on usage are made below by area.

In Area II context 739 there is evidence of midline splitting on a large mammal thoracic vertebral fragment which is probably cattle. In context 843 is a very straight mandible of pig which is at wear stage 43 (Grant 1975, 1982). Despite its appearance this jaw is probably from a domestic pig as it has a length of lower third molar of only 34mm. In several contexts in this area there are odd cattle and sheep ribs cut through in an anterio-posterior direction.

In Area III there is evidence of small piglet bones in more than one context and a jaw of a young pig with milk premolars in wear in context 910. The great variety of wild species in contexts 821 and 910 has already been alluded to. The rabbit and hare bones in the latter are mostly feet and some are immature. This evidence of wide variety and succulence, the single bone in context 915 is from conger eel, does provide evidence of a rich and varied diet.

Area V also provides evidence of piglet in F94, context 728, and context 1086, and a young pig with milk premolars just in wear in F100, context 742. Older pigs of comparable age (Grant numerical value c.21) are in contexts 928 and 960.

There is also a little evidence both for calf and for midline splitting of the skeleton in cattle. A calf mandible in context 984 has a Grant numerical value of 3.

The only consistent butchery that may relate to sheep is the anterio-posterior cutting through of small ungulate ribs. There is only one jaw with ageing evidence in the whole Phase - that of an old sheep in context 782 with the first molar at Grant stage m denoting very heavy wear.

Context 782 shows quite a breadth of species including a fallow deer footbone, rabbit, partridge, blackbird and unidentifiable fish fragments. There is also immature fowl. Context 974 (Feature 246) as well as calf contains one or two unidentifiable fragments which might be from deer. Context 984, as well as the calf jaw already mentioned, contains the metatarsus of a capon. The other contexts in this area have small samples . Of note are two fallow deer tibiae (in 990 and 1027) which are cut through proximally and show blademarks as if this was done with a flexible blade such as a very heavy knife. Context 1027 also contains a calf maxilla and evidence of midline butchery.

This area in Phase 3 therefore shows slight evidence of the preparation of food for the kitchen by the presence of nether limbs of several species, and a few jaws, but the majority of bones are from other parts of the body and would have been meat-bearing. What this really indicates again is a lack of specialisation.

Area VI produced very few bones of note apart from evidence of midline splitting of cattle in F297, context 1267.

Details of the bones from this phase are in Tables A7, A19, A29, and A37.

Phase 4

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There are 2,270 bones in this phase and the representation of the common domestic ungulates is back to about half the total bones again as in Phase 2 (53% from Table 1). The rest, as for Phase 2, is mostly bird and fish. This phase has the highest number of exploited species at Wickham, being even more marked in this respect than Phase 6 (Table 3). It is though the largest collection after Phase 6 and size of sample up to this size seems to be positively correlated with the number of species. This is a common phenomenon for archaeozoological samples and the Phase 2 sample is something of an exception to the rule having 21 species in a total of 229 bones ! A bigger sample from Phase 2 might have been even more exciting.

The species additional to those already met with in Period II are goat, dog, cat, marten, mouse finds in the garderobe, and a wider variety of birds and fish. As for the phase above an area by area discussion is given below.

The only significant sample in Area I is the garderobe, F10, where context 939 contained 191 bones whose variety quite outweighs their small number. The cattle, sheep, and pig finds here show no particular specialisation in body part. At least one piglet is represented. There was a toe bone each of fallow

deer and of goose, and a variety of elements of rabbit and domestic fowl, including remains from very young fowl. Partridge, green plover, blackbird, pigeon, jackdaw (Corvus monedula), herring, mouse, and black rat are also represented, the last by diagnostic cranial fragments. The garderobe bones are mostly a fairly dark brown with deposits of 'cess' on most of them.

In Area II there is only a sample of 100 bones from Context 781. The species represented are cattle, including evidence of calf and a good example of butchery through the neck of the femur; sheep, including the frontal bone of a hornless individual; pig, which included a jaw at Grant stage 21 with the third molar unworn; red deer, two individual fallow deer, domestic fowl, and goose.

Most contexts in Area III produced the common domestic species but one group, some of which relate to the flooring of the late medieval kitchen, contained fish bones. These were the beamslot deposits 801,802,805,806,812-4; context 861; and the exciting deposit of 705 bones in Context 744 in which domestic fowl, fallow deer, rabbit, domestic duck or mallard, possible goldeneye duck, woodcock, wader, pigeon, thrush family, sparrow, freshwater fish, trout, common eel, herring, whiting, and flatfish are represented. Most of this deposit consisted of very small splinters and long thin bones predominated as if they had indeed fallen between floor boards. The accompanying pins confirm this.

There are at least 6 individual fowl represented in context 744, mostly immature, and the fine bones like broken furculae, fibulae, scapulae, and radius predominate. Nearly 200 further bird fragments have obviously been subjected to the same chance method of selection being mostly ribs, sternal ribs, furcula fragments, scapulae, radii, and long bone fragments. Moat of these are unidentifiable but, in addition to the species listed above, there are scapulae which could belong to a kestrel-sized and a larger bird of prey. Similarly the majority of the few bones of small ungulate are rib and long bone fragments. The results from this deposit strongly bias the results from Phase 4 as a whole but they are no less valid than other finds in that they point to evidence that may normally disappear . Although sieving was carried out for this context the majority of these bones appear to have been retrieved normally.

Of the beamslot deposits mentioned above, 802 and 806 also contain small, long, thin bones and pins like context 744 and may be originally of similar origin. As well as unidentifiable fishbones there were bones of rabbit, hare, pigeon, and flatfish in some of the beamslot deposits. Other small collections in a variety of contexts in Area III produced odd bones of hare, red deer, and fallow, and F196 context 988 the mandible of marten. In context 917 was a horse tooth estimated as being from an animal of about 18 years.

The area V small deposits produced, apart from the usual common domesticates, bones of rabbit, peacock (F89), partridge, possible brent goose, and coot. There are only two collecctions in the area with more than 40 bones. The first, from F169, was quite rich and contained a horse tooth from an animal about 9 years old, a fallow deer ankle, roe, rabbit, swan, peacock, woodcock and pigeon. The second, the fill of a possible fire pit F223, produced remains of cattle, ovicaprid, pig, roe deer metacarpus, rabbit, and goose. There were also a number of unidentifiable ungulate long bone fragments which may also be

from deer - some of them are fallow deer size.

The area VI deposits are varied and inconclusive. The richest is that from context 1188 which contained a very difficult mix of large ungulate bones representing very large and very small cattle, red deer, and fallow deer. Some of the large ungulate bones were immature : calf, and possibly immature red deer, are present. There was a tooth from a horse of about 16 years and a fragment of tibia from a horse larger than large pony size (i.e. more than about 14 hands). Other species identified from this context are roe deer, hare, fowl, peafowl, goose, corvid (probably the carrion crow, Corvus corone), and flatfish and yet there are only 219 fragments. There was some rare ageing evidence for sheep - again a mature individual with a numeric value for molar wear in the forties. Context 1261 contained a more precisely ageable one with a value of 44.

There are 223 fragments from context 1262 which cover the common domesticates, red and fallow deer, fowl, goose, three kinds of duck (a definite domestic specimen like the one mentioned in Phase 2 above, mallard ?, and a medium-sized species), pigeon, and unidentifiable fragments of fish. There was also a trace of marine shellfish - cockles and mussels - in this context. In some ways the material bore resemblances to the previous context and there was evidence for calf, piglet, and immature deer.

The fill of a fireplace, F268, contained a specialised deposit of sheep fore and hind metapodials in context 1155 which represent a minimum of 8 individuals with withers heights of 0.54 to 0.66m. It is of course conceivable that these were from mutton 'hams' but there is no butchery evidence and the preparation of fresh carcases could be just as likely. The other bones are few and are from cattle, sheep, goat (a single metacarpus), fowl, and pigeon. There is evidence of piglet and slight evidence of deer.

The only other deposits of interest in the area are contexts 1296 and 1346 which contain hare, Feature 279 which includes a puppy and a cat bone, and context 1316 (F298) which has evidence of blackbird and ling.

Area VIII, context 1474 produced a metacarpal fragment of fallow deer.

Context 1852 in Area IX was unusual. In a collection of 66 fragments there were three bones of horse from two individuals (one a horse smaller than a 14 hand pony), 5 tibial and metapodial fragments of a minimum of 2 fallow deer, and evidence of both dog and cat.

The butchery in Phase 4 is varied but there is a lot of 'chopping' right through the shaft of some bones, i.e., the use of a firm implement like a cleaver rather than a knife or saw. An attempt was made to record the incidence of midline, or axial, butchery of the vertebral column and of paramedian butchery, where the cut is made axially but to the side of the vertebral body (Coy n.d.1).

There is a consistent presence for the first kind throughout the features of Phase 4 but also some evidence for paramedian butchery as occurred in Late Saxon Winchester. The characteristic blademarks noted there, however, were very rare. When paramedian butchery seemed to have occurred it is possible that cuts were made on both left and right sides of the vertebral body but usually there was little or no evidence of this and it could only be deduced because the transverse processes of the other side were missing.

The details of finds in Phase 4 for common ungulates are in Table A8, other mammals in A20, birds in A30, and fish in A38.

Phase 2 or 3

There are 114 fragments from 5 contexts assigned to Phase 2 or 3 and included in the Period II summaries. Only two contain any bones worth mention here. In context 556, cattle, sheep, pig, roe deer, fallow deer, cat, rabbit, fowl, black rat?, and partridge are represented, making it the earliest collection with fallow deer if it were indeed Phase 2. Context 997 contained a small collection of the common ungulates, rabbit and fowl. A bone of carrion crow was in context 1292.

Details of the Phase 2/3 deposits are in Tables A9, A21, and A31.

With the problem of finding any secure differences between Phases 2 and 3 from the animal bones, it is not possible to provide any evidence at present which would help the phasing of these contexts.

Phase 3 or 4

The 396 fragments assigned to Phases 3 or 4 and included in the Period II totals provide evidence of 15 species. Contexts mostly contain small samples and only contexts 822 and 1002 produced more than 40 bones. The former contained possible evidence for the goldeneye duck (see earlier discussion about this identification). In addition to the common ungulates, there are finds of roe deer, fallow deer, peacock, partridge, woodcock, common snipe, waders, and thrushes, as well as remains of the short-tailed vole from sieving (context 1303).

Details are given in Tables A10, A22, and A32 but in addition to these records there are 10 unidentifiable fishbones scattered throughout, and a bone of plaice or flounder and a partial skeleton of a large frog in context 1128.

Period III Animal Bones

In general terms the three collections discussed in detail below show a greater consistency than the various collections already discussed for Period II. Most of the material is from Phase 6 and the other samples are small.

In all three the representation of the common domestic ungulates is between 80 and 90% (Table 1). But these figures are biassed , as will become clear, by a number of specialised deposits, especially for sheep. Because of these the sheep component of Phase 6, and to some extent Phase 5, is raised. In fact, apart from these deposits, the representation of cattle is probably as high in many features as it was in Phase 4. The role of pig does not seem to be quite so important (Table 2). Species diversity, despite the relatively smaller numbers of bones of bones of rarer species present, is almost as high for Phase 6 as for Phase 4.

Phase 5

The 742 bones in Phase 5 come from 15 species, all of which have been met already. After the common domestic ungulates, fallow deer, domestic fowl, rabbit, and hare show the highest frequencies, occurring in a large number of contexts in small amounts. Calf, piglet, and small immature fowl are represented in a wide spread of contexts in Phase 5.

Most of the contexts involved have very small collections of bones, only three of them contain more than 100 fragments. Some account will be given of the most interesting ones by area.

The Area I postholes and construction trenches produced a femur of a small and immature horse and a tooth of one in excess of 20 years. As explained fallow, fowl, rabbit, and hare must have been quite commonly eaten. There were also fragments of goose, woodcock, ling, and hake; and a skull of short-tailed vole in context 605. Context 570 produced a slightly specialised deposit of 54 bones consisting mainly of lower limb bones from a minimum of 2 cattle, 3 sheep, and a fallow deer. The same context has evidence of calf and immature fowl and examples of midline butchery of cattle vertebrae.

Area II produced common ungulates and a fragment of horse rib.

Area III was more exciting with a collection of 99 fragments from the fill of a square well (F97) which includes a butchered femur of fallow deer as well as tibia, metatarsus, and metacarpus; a horse molar; and remains of common domesticates, rabbit, fowl, teal, unidentifiable fish, and common frog. The last is most likely to have fallen in but the others were largely proved to be food remains. Context 600 produced 123 bones with again a tibia and two metatarsii of fallow deer and remains of the common ungulates, rabbit, fowl, and unidentifiable fish. Both in this context and in the well there does not seem to be any specialisation in body parts for the common domesticates, there are bones of the head and distal limbs as well as ribs and meat-bearing long bones. The high frequencies for radius and tibia and low value for vertebrae seen in these and many other contexts is probably largely a preservational bias

Area V produced goose and partridge in F181 and a specialised deposit of sheep metapodials and associated toes in F165 . Like the deposit in Area I these are all from mature animals but this time these were virtually the only bones present.

There were some bones from Area VII, the largest samples being in contexts 1388 and 1390. The former is mostly, but not exclusively, cranial fragments, teeth and distal limbs. It includes fallow deer and hare as well as the common domesticates. The latter, although only 50 bones in number, represents cattle, sheep, pig, fallow, hare, fowl, goose and unidentifiable fish.

The detailed results for Phase 5 are in A12, A24, A33, and A40.

Phase 6

This phase contained 5,458 fragments and is the largest sample on the site. The majority are from the common domestic ungulates (87% from Table 1). Although there are few fragments of other mammals, of birds, and of fish, there are 36 species represented.

Many contexts only contain bones of the common domestic ungulates, although there is a high frequency which also contain some trace of fallow deer. The variety is concentrated into a few contexts which have preserved material which might otherwise not survive: contexts such as beamslots, cesspits, and floors.

Table 3 also shows that the bones of this phase are more identifiable so that only 39% were not assignable to 'domestic' or 'wild' compared with a higher proportion for most other phases. In confirmation of this, Phase 6 has the lowest value for the site (24%) for the percentage of small ungulate bones unidentifiable to anatomy (Table A50).

For Area I only context 405 from the cobbled area contained any quantity of bones and these are from domestic ungulates, roe deer, hare, fowl, pheasant, and conger eel. Context 456 contained a pigeon bone.

The most important deposit from Area II is from the beamslots. F63, context 616, produced 596 bones. Most of these are very small fragments (with ancient breaks) from sheep or bird long bones. There is a small amount of cattle and pig bone, some from immature animals, and a larger amount of identifiable sheep bone. There is evidence also of roe deer, rabbit, domestic fowl, partridge, golden plover, a partial skeleton of woodcock, snipe, mallard, a medium-sized duck, starling, and house sparrow. The bias against the larger species and the preservation of this range are probably both due to the nature of the context.

The similar context for 633 produced only 23 fragments but these represent cattle, sheep or goat, rabbit, fowl, and woodcock.

Another deposit in II, from cellar fill (context 22) consists of 584 bones. The most interesting of these are from context 458 but there may be later contamination in here. The bones confirm that this may be so as there are some very large sawn cattle bones which look more like 19th century material. There are jaws of at least 5 mature sheep or goats which range from 35 to 42 in Grant wear stage of the teeth (Grant 1975). A number of them show periodontal disease. There is in these jaws a tendency for the joining of the third molar cusps to be delayed. The reason for this is not clear and it could be that these are also later specimens.

This is the largest collection of mandibles of any species found anywhere at Wickham.

Hare, fowl, pigeon, and frog are also represented. In context 536 there is a small ungulate long bone fragment which has been gnawed and partially digested by a dog. In context 546 there is slight evidence for sawing on a cattle vertebra, again this might mean later contamination. There is evidence for midline splitting of the carcase in both cattle and sheep, some of it off-centre.

The smaller contexts from Area II contain remains from the common domestic species. For cattle there is evidence of calf and of midline splitting of the carcase (again off-centre). There is a sheep or goat jaw with a numerical value of 37, and a horse tooth, probably from an animal about 20 years old. Several of the contexts contain remains of fallow deer and context 706 also produced red deer, cat, and domestic fowl.

In Area III most of the contexts studied produced a very few fragments of the major domestic ungulates, those from the cobbled areas are particularly uninteresting, although context 580 contained evidence of fallow, rabbit, hare, and bird. About half the Area III contexts though produced some evidence for the fallow deer and a few, evidence for domestic fowl and rabbit.

A tooth from a horse of at least 14 years comes from context 484 and evidence for lamb in 581 and 622. This is a contrast to the usual mutton. In Feature 64, brick wall footings of the East Wing, there is a very small collection of cattle, sheep, and fowl bones, virtually all of which are from feet. Likewise context 660, from the drive, contains only foot bones. Small caches of such material suggest that primary butchery was going on at times.

Of the more useful contexts, 716 produced fowl, flatfish, and piglet; 730 was very varied with 14 fragments containing evidence for deer, piglet, rabbit, partridge, mallard, and fish; and context 945 contained 130 bones from cattle, sheep, pig, fallow deer, cat, rabbit, hare, fowl, and a corvid. All parts of the body are represented and the bones are from butchered food remains. Cattle is the most important species here and at least four adult animals and a calf are involved. There is decisive chopping through of some of the bones, midline splitting of the carcase, and evidence of sawing. A cattle and a fallow deer tibia had been chopped through distally in a similar manner.

There was little bone from Area IV, the moat, and the interesting collection from Feature 20, cut into its side, could well be contaminated with later material. It contains the remains of 2 horses, one a large animal comparable in size with a modern racehorse, 5 sheep skulls, and two examples of very precise sawing butchery comparable with the suspected contamination in context 458.

Some interesting material came from Area V. Context 462 produced over 500 bones with the best representation so far of lamb. Calf and piglet are also present. Otherwise the collection is from all parts of the body of the common ungulates, including a tooth from a 6 to 10 year old horse. There is also evidence of cat, rabbit, hare, fowl, goose, rat, teal, medium-sized ducks, partridge, curlew, pigeon, thrush family, conger eel, and flatfish as well as a number of unidentifiable bird and fish fragments. There is a quite large lower third molar of pig (35.7mm).

This larger collection may give an overall view of animal usage at this time but it is difficult to say how representative it might be without looking into its likely derivation in more detail. There is a slight bias towards the lower limbs and toes of sheep.

Feature 224 (a floor surface) also covers a large number of species: the 88 fragments cover the same species as the context discussed above and, in addition, finds of pheasant and salmonid. Some of the fish represented were large sea fish. Feature 106 contained a bone of the common buzzard, Buteo buteo, - the only one found on the site. The circular brick well, Feature 155, contained a few fragments from a horse as large as a modern racehorse but nothing else of note. Context 832 contained a bone of common toad.

The brick well, feature 171, produced a very specialised

collection of 213 bones which include 100 sheep metapodials and toe bones. The range of size of the sheep represented is big with the smallest suggesting a withers height of 0.52m and the largest one of 0.67m. This deposit forms a major contribution to the Phase 6 bias shown for metapodials in Table 5. Most of the sheep feet are from layer 930. The sheep represented are mostly of a good age and some showed age-related ossification of the tendons. The only butchery noted on the bones was probably skinning marks but there was slight evidence for standardised butchery of the sheep pelvis.

The presence of the hind and fore feet of at least two dozen sheep is difficult to interpret as we do not know the length of time that the disused well was used as a rubbish pit or how long it took to build up layer 930. If this were one event it would signify the preparation of a large number of carcases perhaps for sale or for preservation. Alternatively it could suggest the preparation of whole carcases for mutton from time to time. Toes are represented to some degree. Mixed in with the sheep lower leg bones are some bones of cattle, including a number of calf bones, and vertebrae which show midline butchery. There is also a little evidence of pork from pigs at the large end of the Wickham range, fallow deer, possible immature red deer, and fish.

If the sheep legs are ignored, there is overall a slight bias towards proximal tibia here which would suggest the use of haunches of meat of the major species.

Area VI for this Phase produced some very interesting bones. The contents of the cesspit (Feature 269) which probably date from c.1740-1770 are in some ways the most exciting collection of animal bones on the whole site. Of the 228 bones, 107 were from identified birds, forming a difficult group to identify as those of domestic fowl, peacock, pheasant, and turkey were intermingled. The bones from two partial skeletons of very young fowl matched very well modern comparative material from the game fowl breed but some of the adults (not necessarily hens) were small enough to suggest that they represent a smaller breed of fowl. Several different breeds of fowl may well have been kept at this time. There is also at least one castrated bird. The absence of butchery on the bird bones and the presence of partial skeletons suggests that, unlike the scanty remains of the other species, the bird bones may have been from birds bred nearby and which, for some reason, were not fit for human consumption.

Goat, fallow deer, rabbit, goose, partridge, ducks, pigeon, and rat are also represented as well as the common domestic ungulates. All areas of the post-cranial skeleton are there, including bones of the lower limbs.

The fill of the circular oven, Feature 266, produced nothing of note and the only two contexts which are worth discussion are context 1235 which produced herring and the 302 fragments from context 1233. The latter was a useful collection of the common domesticates which showed butchery throughout and all parts of the skeleton including skull fragments and jaws. The sheep fraction in fact contained a slight bias towards head fragments and the ageing data revealed mature sheep with numerical values for toothwear around 40. The context also contained evidence of ling, cockles, and mussels.

Context 1295 produced common toad from sieving.

The bones from Area VII were not notable and only context

1387 contained a sample of more than 40; it also contained a trace of oyster shell.

Area VIII contained some interesting collections. The largest - 520 bones from context 1444 - contained a collection of cattle and sheep bones with a bias towards metapodials and jaws. The sheep jaws produced the biggest ageable sample on the site and gave numerical values ranging from 35 to 50.

Feature 412, layer 1456, contained a burial of a large immature pig and a few bones from at least two foetal pigs. That this comes from a burial is sure as virtually all the bones of the body are present, including loose epiphyses and tongue bones. The animal is about 15mm shorter in the femur and at about the same stage of epiphyseal fusion as a zoo-bred wild boar aged about two and a half years which measured about 0.9m at the shoulders. The presence of the foetal bones and the shorter legs suggest that these are all from domestic animals.

Area IX produced a specialised deposit in Layer 1800 which consisted mainly of sheep lower limbs. The material was very similar to that in the disused well in Area V above. Apart from the common domesticates, horse, fallow deer, hare, duck (possibly goldeneye), and pigeon are represented in this area.

The detailed results for Phase 6 are in Tables A13, A25, A34, and A41.

Phase 5 or 6

Most of the 381 bones which could only be assigned as above were small assemblages in the various areas discussed for Phase 6. About half of them came from the moat. Only contexts 498 and 863 contained samples of more than 100 bones and added some species diversity; the former with evidence of fallow deer, roe deer, rabbit, short-tailed vole, common eel, and flatfish and the latter with fallow, rabbit, domestic fowl, goose, partridge, oystercatcher, and pigeon. There was evidence for goat in Feature 278.

Material not Assigned to Periods

Phase 1 or 2

There are 48 bones from 7 contexts assigned to Phase 1 or 2 which are not included in the Period discussions and summaries. The only bones of note are two of a small bat, a good match for the pipistrelle, Pipistrellus pipistrellus. Other bones are from cattle, sheep, and pig. From context 934 there are several bones of calf, some off-centre axial butchery of cattle vertebrae, and two pig jaws (from different animals) one of which had been butchered for the removal of the tongue and separation of the jaw joint.

Some of the cattle and pig bones in these contexts were surprisingly large for this period, and could be intrusive.

The details of common ungulate bones are given in Table A5, and other mammals in A17.

Phase 4 or 5

There are 368 bones which cannot be put into Period here. Two of the samples are quite interesting and provide good evidence for the utilisation of calves' heads (Context 1226) and two occurrences of the bones of large cod (Contexts 1226 and 1243).

Scanned Material

None of the scanned material is recorded in the archive tables attached to this report as they were only selectively recorded.

Phase 7 and 6 or 7

The bones from another 47 contexts relating to these phases were scanned for material of interest. It was decided not to fully record this material because of the small use which could be made of such results and the likelihood of 19th Century contamination. Where the material appeared likely from its context, associations, and nature to represent material deriving from Phase 6, measurements were taken in order to increase the sample for analysis. Altogether 300 bones were brought in in this way. In addition any tooth wear data are in the computer archive. Phase 7 material contained bones of large horse, cattle (including calf), sheep, pig, fallow deer, rabbit, fowl, immature turkey, wood pigeon, partridge, and rat; with wood mouse (Apodemus sylvaticus) and short-tailed vole from sieving.

Phase 8

Similarly the modern material was scanned for anything of note but nothing was recorded.

General Comments on Results from Sieving

Some comments have already been made in the introduction about sieving . To have included all the small fragments picked out from the residues of the sieving programme would at least have doubled the number of fragments recorded. They were all examined, however, and their nature used alongside the results from normal retrieval to assess the nature of the total sample and the retrieval practices. Some of the bones were then recorded in detail where they gave information on the rarer species or where they were large and measureable bones which would normally have been found by trowelling (obviously any random bulk sample is likely to contain a few of these).

Because of the very specialised nature of some of the fine deposits, like the collection of fine bones probably fallen through a floor in Phase 4, normal excavation was sometimes more careful than usual and very small bones were retrieved which did not necessarily come from the sieving programme, although sieves may have been used to clean them up. These complications make it unproductive to prepare a detailed comparison of the species and elements retrieved by the two methods and it is hoped that the detailed taphonomic section above, prepared for the excavator to

use in conjunction with the other evidence, fills this gap.

It is overwhelmingly clear, however, that a true picture of the occurrence of some small species and of the utilisation of fish would not have been gained without the sieving programme and the results here can be stated with more confidence than would have been possible for an unsieved site. For the future, detailed comparisons will be made more reliable if all the sites so considered have been subjected to a similar method of analysis.

CONCLUSIONS

One of the surprises about these results is the very large role that mutton and pork seem to have played in the diet during the medieval phases (Table 2). The results for Period III may be considered to be somewhat biassed by specialised deposits of sheep distal limbs of animals that might have been eaten elsewhere. Although calf and , to some extent, piglet may have played a part in the diet it is not until Phase 6 that lamb makes an appearance. Some of the piglets are small and these and the pig foetal bones in Phase 6 may be regarded as evidence for the breeding of pigs nearby. Some are larger and they and the calves would have provided succulent eating.

There is not really enough ageing evidence for the sheep to make a more detailed analysis worthwhile, except perhaps in the future in comparison with material from Winchester and other Wessex locations. There should then be enough medieval and post-medieval material to make more use of analyses of tooth wear (Grant 1975 & 1982, Coy and Maltby). The overall picture is one of sheep with a very wide size range and which is definitely classed as mutton. This fits the breeding and wool-producing pattern which we would expect, with ewes being kept to a good age for breeding and both ewes and wethers for wool. The detailed toothwear records made confirms this and the vast majority of the sheep long bones in both main periods, including the late fusing ones, are fused. Most of the sheep evidence is from metapodials and these fuse at about 2 years but many of these show signs of age-related ossifications of the tendons showing that they were much older.

Pig husbandry may be to some extent complicated by the use of wild boar meat but this is only a suggestion as metrical evidence is poor and wild boar may well have been taken young. The big pigs are also virtually all in Phase 6 so that an alternative view could be that this phase provides evidence of pig improvement. The discussion of the pig burial in that Phase suggests that that is a domestic animal but one should keep an open mind, especially about the earlier phases when wild pigs were more likely to have been around.

Horses are not well represented but there is more in Phase 6 than elsewhere and the ageing evidence shows animals which were of a likely age for ploughing.

The sizes of the domestic stock have been discussed in some detail in the measurement sections for the common species. Some of the 17th and 18th Century animals are large and a few samples may repay more detailed study at a future date when comparable material from Winchester is available. A few bones of post-medieval sheep were not at first glance easily distinguishable

from those of fallow deer and compared best with material of improved sheep in the collections - notable a skeleton of a Jacob sheep. But obviously we can have no idea what these animals looked like compared with modern breeds from their bones alone.

The importance of the Phase 6 collections of sheep metapodials has been stressed and these would be useful for further work. Knowledge of this period with its important and far-reaching changes in livestock is now sought by archaeozoologists and agricultural geneticists alike. The degree to which the old breeds of British livestock have recently become a going concern and their genetic input into breeding actively encouraged has been quite astounding and evidence from archaeology plays a supporting role in learning what happened in stock selection during the last two centuries when the alteration of breeds and depletion of the gene pool occurred. Parallel changes are happening in agriculture today with the use of continental breeds.

The evidence for slaughter, carcase-preparation, and butchery is not clear-cut, probably because the practices were not clearcut or varied from phase to phase.

The importance of recognising the different kinds of butchery - for example, the implement used and the exact position of the cuts to halve the carcase - are probably quite important if we are to prove carcase distribution from site to site at this time. Obviously this can be done in conjunction with what documentation there might be.

The enormous variety of edible species can come as no surprise to anyone who has explored medieval and 17th and 18th Century menus. As is often the case though, even when fish ponds are known to have been located nearby, the fish turn out to be mostly from the sea. The presence of a number of marine species, some of them large, may be indicative of the ease with which food was moved about in England, from at least medieval times, and should warn us not to conclude that the other wild species were necessarily hunted locally.

The consistency though with which fallow deer and rabbit bones were dispersed throughout the deposits of other food remains suggests that these were familiar and favoured foods and it is likely that they could have originated from nearby deer parks and warrens.

There is a suggestion from the well deposits in Phase 6 and the unusual bones of ducks that a number of colourful and attractive birds were kept on the premises, including more than one type of domestic fowl. The possible finds of dovecote pigeons is hardly surprising - it is only surprising that the bones were so few. There is no evidence for falconry, either as good bone evidence from hawks or falcons, or from a high density of favourite quarry.

The anatomical work for this site has been interesting but not easy and some small samples have needed concentrated work. The mixture of a variety of sizes of horse, small and large cattle, red deer, and fallow deer and the constant vigilance for the bones of wild boar and immature deer, means that the archive is quite detailed, with extra information being sometimes included for bones just recorded as 'large ungulate'.

Some food sources which may have been exploited at Wickham would provide little evidence for the archaeologist. Two examples which immediately spring to mind are the immatures of the species discussed above and the marine shellfish, of which a

few traces were recorded for Phase 6.

In the archive there is quite a lot of evidence which reveals where joints and associated bones were discarded. There are also details about colour, states of preservation, and dog-gnawing (surprisingly high compared with the lack of dog bones) which provide evidence for redeposition and mixing. Such results could be used in conjunction with other evidence to sort out more detailed depositional histories in the future.

The mixture of small fragments from a wealth of species and the way in which this evidence is spread around the site can only give us a fragmentary glimpse of the surrounding wealth of food species. The scattering is probably at least partly the result of the activities of scavenging animals - dogs, cats, rats, crows, and buzzards at least. Only where bones have escaped such attentions, such as beneath the floorboards, are we given real insight into the richness of the diet at Wickham.

Thus the feature controls the finds as it always does for bones. The depositional quirks of a beamslot, a kitchen floor, a disused well, or a cesspit are therefore a vital consideration when we attempt to draw conclusions from the results.

What remains for the archaeozoologist is a result of circumstance. We are only getting a glimpse of what went on. Certainly the way we excavate also determines our results and Wickham results provide a fine example of the value of a systematic bulk sampling and sieving strategy. It is to be hoped that when we come to compare it with other sites of the same periods the comparison can be a meaningful one because they have been sampled with the same care.

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REFERENCES
(This includes references in the archive)

ARMITAGE P.L. (1977) The mammalian remains from the Tudor site of Baynard's Castle, London: a biometrical and historical analysis. Unpublished Ph.D. thesis, University of London

ARMITAGE P.L. (1982) Studies on the remains of domestic livestock from Roman, medieval, and early modern London: objectives and methods. In Environmental archaeology in the urban context (eds. A.R. Hall and H.K. Kenward) Council for British Archaeology Research Report 43, pp 94 - 106

BACHER A. (1967) Vergleichend morphologische Untersuchungen an Einzelknochen des postkranialen Skeletts in Mitteleuropa vorkommender Schwane und Ganse. Dissertation, Institut fur Palaoanatomie, Munchen

BATE D. M. A. (1934) The domestic fowl in pre-Roman Britain. The Ibis 390-5

BOURDILLON J. (1979) Town life and animal husbandry in the Southampton area as suggested by the excavated bones. Proceedings of the Hampshire Field Club & Archaeological Society 36, 181-91

BOURDILLON J. (1983) Animals in an urban environment. M.Phil thesis, University of Southampton

BOURDILLON J. & COY J. (1980) The animal bones. In Saxon Southampton: excavations at Melbourne Street 1971-6 (ed. P.Holdsworth). Council for British Archaeology Research Report 33, 79-121

COY J. P. (1981) The bird bones. In Excavations in Chalk Lane, Northampton, 1975-1978 (J.H.Williams & M.Shaw). Northants Archaeology 16, microfiche pages 200-210

COY J. P. (1982) The role of wild fauna in urban economies in Wessex. In Environmental archaeology in the urban context (eds. A.R. Hall and H.K. Kenward) Council for British Archaeology Research Report 43, pp 107-116

COY J. P. (1983i) Birds as food in prehistoric and historic Wessex. In Animals and Archaeology: volume 2 shell middens, fishes and birds (eds J. Clutton-Brock and C. Grigson) British Archaeological Reports

COY J. P. (1983ii) The animal bone. In Excavations in Christchurch 1969 to 1980 (K.S.Jarvis). Dorset Natural History and Archaeological Society Monograph 5, 91-7

COY J. P. (n.d.1) Animal bones from Saxon, medieval and post-medieval phases (10 - 18) of Winchester Western Suburbs. Report to the Ancient Monuments Laboratory, August 1984

COY J. P. (n.d.2) A preliminary study of the animal bones from sites A, B, and C, Reading Abbey (WAC site 12, 1981) with recommendations for future study, especially of the cattle horn

cores. Report to the Ancient Monuments Laboratory August 1983

COY J. P. (n.d.3) Animal bones from Poole, Dorset, medieval and post-medieval layers from sites PM2,PM3,PM7,PM9,PM10 and PM11. Report to the Ancient Monuments Laboratory, April 1985

COY J. P. (in preparation) Animal bones from the Mary Rose. Paper to be read at the Fifth International Conference for Archaeozoology 1986

COY J. & MALTBY J. (n.d.) Archaeozoology in Wessex. Report to the Science Panel of the Department of the Environment, Ancient Monuments Board 1983

DEPARTMENT OF THE ENVIRONMENT (1983) The publication of archaeological excavations. D.O.E. Advisory Note 40

DRIESCH VON DEN A. (1976) A guide to the measurement of animal bones from archaeological sites. Peabody Museums, Harvard University

DRIESCH VON DEN A. AND BOESSNECK J. (1974) Kritische Anmerkungen zur Widerristhohenberechnung aus Langenmassen vor- und fruhgeschichtlicher Tierknochen Saugetierkundliche Mitteilungen 22, 325-348

ERBERSDOBLER K. (1968) Vergleichend morphologische Utersuchungen an Einzelknocheen des postcranialen Skeletts in Mitteleuropa vorkommender mittelgrosser Huhnervogel. Dissertation, Institute fur Palaoanatomie, Munchen

FICK O. K. W. (1974) Vergleichend morphologische Untersuchungen an Einzelknochen europaischer Taubenarten. Dissertation, Institut fur Palaoanatomie, Munchen

GEJVALL, N-G. & BOESSNECK J. (1979) Eketorp - Befestigung und Siedlung auf Oland/Schweden: Die Fauna. Almqvist & Wiksell, Stockholm.

GOODWIN D. (1983) Pigeons and Doves of the World British Museum (Natural History)

GRANT A. (1975) The animal bones. In Excavations at Portchester Castle, Volume 1: Roman (ed B. Cunliffe) Society of Antiquaries, Research Report 32, pp 437 -450

GRANT A. (1982) The use of tooth wear as a guide to the age of domestic ungulates. In Ageing and sexing animal bones from archaeological sites (ed R. Wilson, C. Grigson & S. Payne). British Archaeological Reports (British Series) 109, pp91 - 108

GURNEY J. H. (1921) Early annals of ornithology Witherby, London. Reprinted 1972 by Paul Minet, Chicheley, Bucks.

KEENE D. (1985) Survey of Medieval Winchester Winchester Studies Vol. 2. Oxford University Press

LOWE P. R. (1933) The differential characters in the tarso-metatarsi of Gallus and Phasianus as they bear on the problem of the introductiopn of the pheasant into Europe and the British

Isles. The Ibis for April 1933, 332-343

O'CONNOR T. (1984) Selected groups of bones from Skeldergate and Walmgate. The Archaeology of York. Volume 15: the Animal Bones, fascicule 1. York Archaeological Trust/ C.B.A.

PRUMMEL W (1984) Withers height for cattle. In Animals and Archaeology 4 Husbandry in Europe (eds C. Grigson and J. Clutton-Brock). British Archaeogical Reports (International Series) 227, pp

WOELFLE E. (1967) Vergleichend morphologische Untersuchungen an Einzelknochen des postcranialen Skelettes in Mitteleuropa vorkommender Enten, Halbganse und Sager. Dissertation, Institut fur Palaoanatomie, Munchen

TABLE A1 LAYER NUMBERS WITH ANIMAL BONES

(Underlining denotes sieved samples also scanned)

Period	Phase	Date	Layers
I	1	LS	488,550,897,925,942,1000,1001,1013,1019 1040,1056,1059,1076,1140,1357,1358
	1A	Med	1131,1132,1319,1348
-	1 or 2	Med	934,1317,1318,1405,1411,1491,1495
II	2	Med	924,936,938,944,961,967,996,1033,1064 1077,1104,1105,1106,1112,1113,1118,1119 1130,1134,1136,1137
	2 or 3	Med	556,583,997,1102,1292
	3	Med	728,739,742,782,807,819,820,821,840,843 854,858,886,887,898,910,915,916,927,928 932,933,946,947,960,974,984,990,998,1003 1020,1027,1052,1054,1069,1074,1086,1103 1124,1187,1267,1284,1297,1298,1305,1312 1315,1328,1354,1355,1356
	3 or 4	Med	542,596,766,768,771,822,826,838,846,885 899,902,953,965,970,972,975,976,977,978 982,986,993,1002,1007,1011,1022,1028,1057 1072,1078,1088,1128,1213,1239,1272,1303
	4	Med	643,690,711,717,718,719,724,731,735,744 777,778,781,783,784,787,801,802,805,806 809,812,813,814,817,818,824,827,839,841 861,882,883,884,888,905,908,909,911,917 935,939,941,949,988,1026,1029,1049,1050 1053,1063,1098,1153,1155,1188,1251,1253 1261,1262,1264,1269,1280,1296,1301,1314 1316,1344,1346,1474,1490,1852
-	4 or 5	M/PM	573,1226,1232,1243

III	5	PM	418,419,431,477,486,564,565,570,574,586 588,589,590,598,600,605,640,647,672,734 737,753,758,760,896,903,1388,1389,1390 1392,1394,1395,1397
	5 or 6	PM	473,475,496,498,533,545,552,557,582,584 585,624,863,1234
	6	PM	405,442,448,452,453,454,455,456,457,458 459,462,463,464,467,469,472,481,484,491 506,507,508,511,514,524,536,537,546,558 568,569,578,579,580,581,591,593,595,597 607,613,616,622,627,629,631,633,634,635 638,642,655,660,664,665,681,684,688,691 702,703,706,710,712,714,716,730,733,751 756,757,780,790,792,804,810,825,828,830 832,842,847,864,867,871,878,879,892,904 906,920,921,930,943,945,951,952,999,1045 1116,1142,1160,1161,1162,1163,1171,1172 1175,1183,1184,1190,1204,1210,1217,1223 1228,1229,1233,1235,1237,1244,1245,1248 1249,1250,1260,1295,1300,1382,1385,1386 1387,1425,1427,1435,1444,1450,1455,1456 1457,1459,1463,1465,1484,1800,1801,1803 1805,1806,1808,1811,1812,1816,1819,1824 1826,1827,1832,1837,1840,1841,1845,1851

NOTE All bones put into later phases - 6 or 7, 7, and 8 were scanned and measurable bones from the first two are included in the measurement archive for Period III.

KEY TO TABLE A1

Period	Phase	
		Premanorial activity
I	1	Late Saxon
	1A	Medieval (pre-manor)
		Medieval Manor
II	2	Medieval timber-framed buildings
	3	Medieval masonry buildings
	4	Late medieval alterations
		Post-Medieval Manor
III	5	North range
	6	Post-medieval manorial complex
	7	Post-medieval manorial complex (scan only)
IV	8	19th Century and modern (not studied)

TABLE A2 BONES KEPT OUT FOR PHOTOGRAPH AND FURTHER STUDY

LAYER	
405	unidentified fish bone
812	" " "
863	" " "
960	" " "
1292	" " "
1172	turkey bones
1245	" "
711	peacock bones
718	" "
996	" "
1172	" "
1188	" "
1172	pheasant bones
1245	pathological fowl
939	black rat
1201,1208	very small sheep cannon bones
1188	SPECIMEN 6 pathological cattle vertebra
458	SPECIMEN 9 sawn bones
790	SPECIMEN 10 Fallow buck antler
930	SPECIMEN 11 2 sheep cannon bones to show size range
1245	SPECIMEN 12 taphonomic oddity, cattle limb

TABLE A3 COMMON DOMESTIC UNGULATES IN PHASE 1

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	1	1	-	-	-	2
cranium	-	16	1	-	1	8	1	27
hyoid	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	1	-	-	1
mandible	-	-	1	-	1	-	-	2
vertebra	-	8	3	-	-	3	-	14
rib	-	8	-	-	-	3	31	42
sternum	-	1	-	-	-	-	-	1
scapula	-	-	-	-	-	1	-	1
humerus	-	2	2	-	1	2	-	7
radius	-	4	3	-	1	1	1	10
ulna	-	-	-	-	1	-	-	1
pelvis	-	2	3	-	-	-	3	8
femur	-	2	-	-	2	1	1	6
patella	-	-	-	-	-	4	-	4
tibia	-	2	4	-	1	-	-	7
fibula	-	-	-	-	-	-	-	0
carpal/tarsal	-	3	-	-	-	-	-	3
metapodial	-	1	1	-	1	-	-	3
phalanx	-	3	-	-	-	-	-	3
loose teeth	-	2	2	-	2	-	-	6
l.b.fragments	-	-	-	-	-	29	23	52
fragments	-	1	-	-	-	46	16	63
TOTAL	0	55	21	1	12	98	76	263

TABLE A4 COMMON DOMESTIC UNGULATES PHASE 1A

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	-	-	-	-	-	0
cranium	-	-	-	-	-	-	1	1
hyoid	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	1	-	-	1
mandible	-	-	-	-	1	-	-	1
vertebra	-	1	-	-	-	-	1	2
rib	-	-	-	-	-	3	-	3
sternum	-	-	-	-	-	-	-	0
scapula	-	-	-	-	-	1	-	1
humerus	-	-	-	-	-	-	-	0
radius	-	-	-	-	-	-	-	0
ulna	-	1	-	-	-	-	-	1
pelvis	-	-	-	-	-	1	-	1
femur	-	-	1	-	-	-	-	1
patella	-	-	-	-	-	-	-	0
tibia	-	-	1	-	-	-	-	1
fibula	-	-	-	-	-	-	-	0
carpal/tarsal	-	-	-	-	-	-	-	0
metapodial	-	-	-	-	-	-	-	0
phalanx	-	-	-	-	-	-	-	0
loose teeth	-	1	-	-	-	-	-	1
l.b.fragments	-	-	-	-	-	1	4	5
fragments	-	-	-	-	-	-	-	0
TOTAL	0	3	2	0	2	6	6	19

TABLE A5 COMMON DOMESTIC UNGULATES PHASES 1 OR 2

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	-	-	-	-	-	0
cranium	-	-	2	-	-	-	-	2
hyoid	-	-	-	-	-	-	-	0
maxilla	-	1	-	-	-	-	-	1
mandible	-	2	-	-	2	1	-	5
vertebra	-	2	-	-	-	1	-	3
rib	-	3	-	-	-	-	1	4
sternum	-	-	-	-	-	-	-	0
scapula	-	-	3	-	1	-	-	4
humerus	-	-	-	-	1	-	-	1
radius	-	-	1	-	-	1	-	2
ulna	-	-	-	-	2	-	-	2
pelvis	-	-	2	-	-	-	-	2
femur	-	1	2	-	1	-	-	4
patella	-	-	-	-	-	-	-	0
tibia	-	-	2	-	-	-	-	2
fibula	-	-	-	-	-	-	-	0
carpal/tarsal	-	-	-	-	1	-	-	1
metapodial	-	-	2	-	-	-	-	2
phalanx	-	1	-	-	-	-	-	1
loose teeth	-	1	-	-	1	-	-	2
l.b.fragments	-	-	-	-	-	7	-	7
fragments	-	-	-	-	-	-	-	0
TOTAL	0	11	14	0	9	10	1	45

TABLE A6 COMMON DOMESTIC UNGULATES PHASE 2

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	-	-	-	-	-	0
cranium	-	-	-	-	-	-	-	0
hyoid	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	0
mandible	-	1	-	-	-	-	-	1
vertebra	-	-	2	-	1	2	3	8
rib	-	-	1	-	1	3	24	29
sternum	-	-	-	-	-	-	-	0
scapula	-	1	1	-	-	2	1	5
humerus	-	-	-	-	-	-	1	1
radius	-	-	2	-	-	1	1	4
ulna	-	1	-	-	-	2	-	3
pelvis	-	1	-	-	-	-	-	1
femur	-	1	1	-	-	1	1	4
patella	-	-	-	-	-	-	-	0
tibia	-	-	3	-	-	1	-	4
fibula	-	-	-	-	1	-	-	1
carpal/tarsal	-	-	-	-	-	-	-	0
metapodial	-	1	2	-	4	-	-	7
phalanx	-	-	-	-	1	-	-	1
loose teeth	3	1	2	-	3	-	-	9
l.b.fragments	-	-	-	-	-	7	21	28
fragments	-	-	-	-	-	13	8	21
TOTAL	3	7	14	0	11	32	60	127

TABLE A7 COMMON DOMESTIC UNGULATES PHASE 3

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	1	-	-	-	-	1
cranium	-	-	4	-	3	-	3	10
hyoid	-	-	2	-	-	-	-	2
maxilla	-	1	2	-	1	-	-	4
mandible	-	3	2	-	8	1	1	15
vertebra	-	7	1	-	3	8	8	27
rib	-	20	-	-	1	7	47	75
sternum	-	-	-	-	-	-	-	0
scapula	-	3	2	-	3	4	2	14
humerus	-	4	5	-	3	2	-	14
radius	-	6	12	-	5	1	2	26
ulna	-	5	-	-	1	1	-	7
pelvis	-	3	2	-	-	-	-	5
femur	-	5	2	-	3	3	1	14
patella	-	-	-	-	-	-	-	0
tibia	-	7	27	-	3	8	3	48
fibula	-	-	-	-	4	-	-	4
carpal/tarsal	-	5	1	-	1	-	-	7
metapodial	-	4	2	-	5	-	1	12
phalanx	1	3	3	-	1	-	-	8
loose teeth	-	13	6	-	8	-	-	27
l.b.fragments	-	-	-	-	-	49	106	155
fragments	-	-	-	-	-	46	36	82
TOTAL	1	89	74	0	53	130	210	557

TABLE A8 COMMON DOMESTIC UNGULATES PHASE 4

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	-	-	-	-	-	0
cranium	-	2	5	-	13	17	9	46
hyoid	-	2	1	-	-	-	1	4
maxilla	-	-	1	-	1	-	-	2
mandible	1	11	6	-	9	3	-	30
vertebra	-	22	7	-	9	20	7	65
rib	-	37	3	-	2	49	161	252
sternum	-	-	-	-	-	-	1	1
scapula	-	8	3	-	8	-	7	26
humerus	-	13	8	-	7	1	13	42
radius	-	6	14	-	3	3	1	27
ulna	-	4	1	-	3	-	1	9
pelvis	-	13	3	-	2	7	6	31
femur	-	18	-	-	7	1	3	29
patella	-	-	-	-	-	-	-	0
tibia	2	8	12	-	8	3	2	35
fibula	-	-	-	-	5	-	-	5
carpal/tarsal	-	15	1	-	1	1	-	18
metapodial	-	14	30	1	5	-	-	50
phalanx	-	7	6	-	2	-	-	15
loose teeth	3	19	16	-	24	-	-	62
l.b.fragments	-	-	-	-	-	107	224	331
fragments	-	-	-	-	-	44	83	127
TOTAL	6	199	117	1	109	256	519	1207

TABLE A9 COMMON DOMESTIC UNGULATES PHASE 2 OR 3

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	-	-	-	-	-	0
cranium	-	1	2	-	-	2	-	5
hyoid	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	1	-	-	1
mandible	-	1	2	-	3	-	-	6
vertebra	-	1	-	-	1	4	-	6
rib	-	-	-	-	-	1	10	11
sternum	-	-	-	-	-	1	-	1
scapula	-	3	-	-	-	2	-	5
humerus	-	1	1	-	-	-	-	2
radius	-	1	2	-	-	-	-	3
ulna	-	1	-	-	-	-	-	1
pelvis	-	-	-	-	-	-	1	1
femur	-	-	-	-	-	-	-	0
patella	-	-	-	-	-	-	-	0
tibia	-	1	2	-	2	-	-	5
fibula	-	-	-	-	-	-	-	0
carpal/tarsal	-	-	-	-	-	-	-	0
metapodial	-	1	-	-	-	-	-	1
phalanx	-	1	-	-	1	-	-	2
loose teeth	-	1	2	-	3	-	-	6
l.b.fragments	-	-	-	-	-	11	18	29
fragments	-	-	-	-	-	5	8	13
TOTAL	0	13	11	0	11	26	37	98

TABLE A10 COMMON DOMESTIC UNGULATES PHASES 3 OR 4

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	-	-	-	-	-	0
cranium	-	1	3	-	3	-	-	7
hyoid	-	-	1	-	-	-	-	1
maxilla	-	-	-	-	-	-	-	0
mandible	-	-	1	-	-	-	-	1
vertebra	-	4	-	-	-	1	10	15
rib	-	3	-	-	-	7	50	60
sternum	-	-	-	-	-	-	3	3
scapula	-	-	-	-	-	3	3	6
humerus	-	2	3	-	2	-	1	8
radius	-	3	6	-	3	-	2	14
ulna	-	1	2	-	1	-	-	4
pelvis	-	1	4	-	-	-	-	5
femur	-	3	2	-	-	1	1	7
patella	-	-	-	-	-	-	-	0
tibia	-	1	5	-	2	1	2	11
fibula	-	-	-	-	2	-	-	2
carpal/tarsal	-	2	-	-	-	-	-	2
metapodial	-	1	3	-	1	-	-	5
phalanx	-	1	-	-	-	-	-	1
loose teeth	-	6	3	-	3	-	-	12
l.b.fragments	-	-	-	-	-	24	39	63
fragments	-	-	-	-	-	16	23	39
TOTAL	0	29	33	0	17	53	134	266

TABLE A11 COMMON DOMESTIC UNGULATES PHASES 4 OR 5

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	1	-	-	-	-	1
cranium	-	19	6	-	1	-	17	43
hyoid	-	1	2	-	-	-	-	3
maxilla	-	-	2	-	-	-	-	2
mandible	-	7	7	-	2	-	-	16
vertebra	-	8	3	-	-	4	-	15
rib	-	15	2	-	-	6	15	38
sternum	-	-	-	-	-	-	-	0
scapula	-	2	2	-	1	2	1	8
humerus	-	3	4	-	1	1	-	9
radius	-	2	4	-	-	-	1	7
ulna	-	-	2	-	-	-	-	2
pelvis	-	-	3	-	-	-	-	3
femur	-	-	1	-	-	-	-	1
patella	-	-	-	-	-	-	-	0
tibia	-	1	2	-	1	1	-	5
fibula	-	-	-	-	-	-	-	0
carpal/tarsal	-	1	1	-	-	-	-	2
metapodial	-	3	2	-	3	-	-	8
phalanx	-	7	-	-	-	-	-	7
loose teeth	-	2	4	-	2	-	-	8
l.b.fragments	-	-	-	-	-	5	81	86
fragments	-	-	-	-	-	10	58	68
TOTAL	0	71	48	0	11	29	173	332

TABLE A12 COMMON DOMESTIC UNGULATES PHASE 5

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	1	-	-	-	-	1
cranium	-	2	2	-	1	7	-	12
hyoid	-	-	-	-	-	-	-	0
maxilla	-	1	1	-	-	-	-	2
mandible	-	6	5	-	4	-	-	15
vertebra	-	10	2	-	1	9	1	23
rib	1	12	2	-	-	13	54	82
sternum	-	-	-	-	-	-	-	0
scapula	-	6	4	-	5	7	1	23
humerus	-	4	4	-	1	-	-	9
radius	-	2	17	-	2	1	4	26
ulna	-	2	-	-	1	-	-	3
pelvis	-	1	5	-	1	2	-	9
femur	1	6	1	-	-	1	2	11
patella	-	-	-	-	-	-	-	0
tibia	-	1	18	-	2	-	2	23
fibula	-	-	-	-	3	-	-	3
carpal/tarsal	-	4	2	-	2	1	-	9
metapodial	-	19	26	-	2	3	5	55
phalanx	-	8	34	-	1	1	-	44
loose teeth	2	10	7	-	15	-	-	34
l.b.fragments	-	-	-	-	-	54	104	158
fragments	-	-	-	-	-	68	12	80
TOTAL	4	94	131	0	41	167	185	622

TABLE A13 COMMON DOMESTIC UNGULATES PHASE 6

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	5	-	-	-	-	5
cranium	1	16	77	-	21	15	3	133
hyoid	-	5	2	-	1	-	-	8
maxilla	1	8	19	-	6	-	-	34
mandible	2	63	126	-	23	2	-	216
vertebra	5	84	36	-	69	57	14	265
rib	2	96	17	-	37	132	266	550
sternum	-	-	-	-	4	-	-	4
scapula	1	32	48	-	12	19	9	121
humerus	2	28	75	-	27	6	4	142
radius	-	29	113	-	27	3	2	174
ulna	1	25	23	-	10	2	-	61
pelvis	1	32	44	-	11	13	8	109
femur	4	27	56	-	18	9	5	119
patella	-	2	-	-	1	-	-	3
tibia	3	36	151	-	32	8	11	241
fibula	-	1	-	-	19	-	-	20
carpal/tarsal	2	36	22	-	11	-	-	71
metapodial	1	61	423	1	35	2	1	524
phalanx	2	42	207	-	6	-	-	257
loose teeth	14	109	149	-	107	-	-	379
l.b.fragments	-	-	-	-	-	449	641	1090
fragments	-	-	-	-	-	105	108	213
TOTAL	42	732	1593	1	477	822	1072	4739

TABLE A14 COMMON DOMESTIC UNGULATES PHASES 5 OR 6

	horse	cattle	sheep	goat	pig	c-size	s-size	TOTAL
horn core	-	-	1	-	-	-	-	1
cranium	-	-	2	-	4	2	-	8
hyoid	-	1	-	-	-	-	-	1
maxilla	-	1	1	-	2	-	-	4
mandible	-	4	3	-	1	-	-	8
vertebra	-	8	3	-	1	6	-	18
rib	-	15	2	-	1	12	33	63
sternum	-	-	-	-	-	-	-	0
scapula	-	3	1	-	3	4	1	12
humerus	-	2	7	-	1	-	1	11
radius	-	5	11	-	1	-	-	17
ulna	-	2	1	-	1	-	1	5
pelvis	-	2	1	-	-	-	1	4
femur	-	2	2	-	2	-	-	6
patella	-	-	-	-	-	-	-	0
tibia	-	6	14	-	1	-	1	22
fibula	-	-	-	-	-	-	-	0
carpal/tarsal	-	5	-	-	-	-	-	5
metapodial	-	6	6	1	1	-	1	15
phalanx	-	6	-	-	-	-	-	6
loose teeth	-	6	4	-	12	-	-	22
l.b.fragments	-	-	-	-	-	32	38	70
fragments	-	-	-	-	-	3	6	9
TOTAL	0	74	59	1	31	59	83	307

KEY TO OTHER MAMMALIAN SPECIES

Normally these archive tables use the first three letters of the common name but there are exceptions where this would be misleading. For further details of the species involved please see the text.

RED Red deer, *Cervus elaphus*

FAL Fallow deer, *Dama dama*

ROE Roe deer, *Capreolus capreolus*

RAB Rabbit, *Oryctolagus cuniculus*

HAR Brown hare, *Lepus capensis*

DOG Domestic dog

CAT Domestic cat

MAR Pine marten, *Martes martes*

FOX Fox, *Vulpes vulpes*

RAT Black rat, *Rattus rattus*

VOL Vole. Where identified-the short tailed vole, *Microtus agrestis*

MOU Mouse. Either *Apodemus* sp or *Mus musculus*

BAT A good match with pipistrelle bat, *Pipistrellus pipistrellus*

TABLE A15 OTHER MAMMALIAN BONES PHASE 1

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	-	-	-	-	-	-	-	-	-	-	-	-	0
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	0
mandible	-	-	-	-	-	-	-	-	-	-	-	-	-	0
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	0
rib	-	-	-	-	-	-	-	-	-	-	-	-	-	0
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
humerus	-	-	-	-	-	-	1	-	-	-	-	-	-	1
radius	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ulna	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	-	-	-	1	-	-	-	-	-	-	-	-	-	1
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	-	-	1	-	-	-	-	-	-	-	-	-	-	1
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
metapodial	-	-	2	-	-	-	-	-	-	-	-	-	-	2
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	0
loose teeth	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTALS	0	0	3	1	0	0	1	0	0	0	0	0	0	5

TABLE A16 OTHER MAMMALIAN BONES PHASE 1A

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	-	-	-	-	-	-	-	-	-	-	-	-	0
skull	-	-	-	-	-	1	-	-	-	-	-	-	-	1
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	0
mandible	-	-	-	-	-	2	-	-	-	-	-	-	-	2
vertebra	-	-	-	-	-	3	-	-	-	-	-	-	-	3
rib	-	-	-	-	-	4	-	-	-	-	-	-	-	4
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
humerus	-	-	-	-	-	1	-	-	-	-	-	-	-	1
radius	-	-	-	-	-	2	-	-	-	-	-	-	-	2
ulna	-	-	-	-	-	2	-	-	-	-	-	-	-	2
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	-	-	-	-	-	1	-	-	-	-	-	-	-	1
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	-	-	-	-	-	1	-	-	-	-	-	-	-	1
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	-	-	-	1	-	-	-	-	-	-	-	-	1
metapodial	-	-	-	-	1	8	-	-	-	-	-	-	-	9
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	0
loose teeth	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTALS	0	0	0	0	2	25	0	0	0	0	0	0	0	27

TABLE A17 OTHER MAMMALIAN BONES PHASES 1 OR 2

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	-	-	-	-	-	-	-	-	-	-	-	-	0
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	0
mandible	-	-	-	-	-	-	-	-	-	-	-	-	-	0
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	0
rib	-	-	-	-	-	-	-	-	-	-	-	-	-	0
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
humerus	-	-	-	-	-	-	-	-	-	-	-	-	1	1
radius	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ulna	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	-	-	-	-	-	-	-	-	-	-	-	-	1	1
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	-	-	-	-	-	-	-	-	-	-	-	-	-	0
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
metapodial	-	-	-	-	-	-	-	-	-	-	-	-	-	0
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	0
loose teeth	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	2	2

TABLE A18 OTHER MAMMALIAN BONES PHASE 2

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	-	-	-	-	-	-	-	-	-	-	-	-	0
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	0
mandible	-	-	-	1	-	-	-	-	-	-	-	-	-	1
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	0
rib	-	-	-	-	-	-	-	-	-	-	-	-	-	0
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
humerus	-	-	-	3	-	-	-	-	-	-	-	-	-	3
radius	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ulna	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	-	-	-	-	-	-	1	-	-	-	-	-	-	1
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	1	-	-	-	-	-	-	-	-	-	-	-	-	1
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
metapodial	-	-	-	2	-	-	-	-	-	-	-	-	-	2
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	0
loose teeth	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTALS	1	0	0	6	0	0	1	0	0	0	0	0	0	8

TABLE A19 OTHER MAMMALIAN BONES PHASE 3

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	1	-	-	-	-	-	-	-	-	-	-	-	1
skull	-	-	-	1	-	-	-	-	-	-	-	-	-	1
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	0
mandible	-	-	-	-	1	-	-	-	-	-	-	-	-	1
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	0
rib	-	-	-	-	-	-	-	-	-	-	-	-	-	0
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	1	1	-	-	-	-	-	-	-	-	-	2
humerus	-	-	-	-	-	-	-	-	-	1	-	-	-	1
radius	-	-	1	-	1	-	-	-	-	-	-	-	-	2
ulna	-	-	-	2	-	-	-	-	-	-	-	-	-	2
pelvis	-	-	-	-	2	-	-	-	-	1	-	-	-	3
femur	-	1	-	1	-	-	-	-	-	-	-	-	-	2
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	-	3	2	2	1	-	-	-	-	-	-	-	-	8
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	1	-	-	-	-	-	-	-	-	-	-	-	1
metapodial	-	-	1	2	5	-	-	-	-	-	-	-	-	8
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	0
loose teeth	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	7	2	-	-	-	-	-	-	-	-	9
TOTALS	0	6	5	16	12	0	0	0	0	2	0	0	0	41

TABLE A20 OTHER MAMMALIAN BONES PHASE 4

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	-	-	-	-	-	-	-	-	-	-	-	-	0
skull	-	2	-	-	-	-	-	-	-	1	-	-	-	3
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	1	-	1
mandible	-	-	-	2	-	-	-	1	-	-	-	2	-	5
vertebra	-	-	-	1	-	-	-	-	-	1	-	-	-	2
rib	-	-	-	-	-	-	-	-	-	1	-	-	-	1
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
humerus	-	-	-	-	1	-	1	-	-	-	-	-	-	2
radius	-	2	2	5	2	-	-	-	-	-	-	-	-	11
ulna	-	1	1	2	-	-	-	-	-	-	-	-	-	4
pelvis	-	1	-	1	-	-	-	-	-	-	-	-	-	2
femur	2	1	-	6	-	-	1	-	-	-	-	-	-	10
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	2	5	-	5	1	1	-	-	-	-	-	-	-	14
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	3	-	-	-	-	-	-	-	-	-	-	-	3
metapodial	1	5	1	2	-	1	-	-	-	-	-	-	-	10
phalanx	-	2	-	-	-	-	-	-	-	-	-	-	-	2
loose teeth	3	-	-	1	1	-	-	-	-	-	-	-	-	5
other	-	-	-	-	-	-	-	-	-	-	-	13	-	13
TOTALS	8	22	4	25	5	2	2	1	0	3	0	16	0	88

TABLE A21 OTHER MAMMALIAN BONES PHASE 2 OR 3

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	-	-	-	-	-	-	-	-	-	-	-	-	0
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	0
mandible	-	-	-	-	-	-	1	-	-	-	-	-	-	1
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	0
rib	-	-	-	1	-	-	-	-	-	-	-	-	-	1
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
humerus	-	-	-	-	-	-	-	-	-	-	-	-	-	0
radius	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ulna	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	1	-	-	-	-	-	-	-	1	-	-	-	2
femur	-	-	-	3	-	-	-	-	-	-	-	-	-	3
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	-	-	-	-	-	-	-	-	-	-	-	-	-	0
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
metapodial	-	-	1	-	-	-	-	-	-	-	-	-	-	1
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	0
loose teeth	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTALS	0	1	1	4	0	0	1	0	0	1	0	0	0	8

TABLE A22 OTHER MAMMALIAN BONES PHASE 3 OR 4

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	-	-	-	-	-	-	-	-	-	-	-	-	0
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	0
mandible	-	-	1	-	-	-	-	-	-	-	1	-	-	2
vertebra	-	-	1	-	-	-	-	-	-	-	-	-	-	1
rib	-	-	-	-	-	-	-	-	-	-	-	-	-	0
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	1	-	-	-	-	-	-	-	-	-	-	-	1
humerus	-	-	-	-	-	-	-	-	-	-	-	-	-	0
radius	-	-	1	-	-	-	-	-	-	-	-	-	-	1
ulna	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	-	-	-	-	-	-	-	-	-	-	-	-	-	0
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	-	-	-	-	-	-	-	-	-	-	-	-	-	0
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	1	-	-	-	-	-	-	-	-	-	-	-	1
metapodial	-	1	-	-	-	-	-	-	-	-	-	-	-	1
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	0
loose teeth	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	-	-	-	-	-	-	-	5	-	-	5
TOTALS	0	3	3	0	0	0	0	0	0	0	6	0	0	12

TABLE A23 OTHER MAMMALIAN BONES PHASE 4 OR 5

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	-	-	-	-	-	-	-	-	-	-	-	-	0
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	0
mandible	-	-	-	-	-	-	-	-	-	-	-	-	-	0
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	0
rib	-	-	-	-	-	-	-	-	-	-	-	-	-	0
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
humerus	-	-	-	-	-	-	-	-	-	-	-	-	-	0
radius	-	1	-	-	-	-	-	-	-	-	-	-	-	1
ulna	-	1	1	-	-	-	-	-	-	-	-	-	-	2
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	-	-	-	-	-	-	-	-	-	-	-	-	-	0
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	-	-	-	-	-	-	-	-	-	-	-	-	-	0
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
metapodial	-	-	-	-	-	-	-	-	-	-	-	-	-	0
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	0
loose teeth	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTALS	0	2	1	0	0	0	0	0	0	0	0	0	0	3

TABLE A24 OTHER MAMMALIAN BONES PHASE 5

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	3	-	-	-	-	-	-	-	-	-	-	-	3
skull	-	-	-	1	-	-	-	-	-	-	1	-	-	2
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	0
mandible	-	-	-	-	-	-	-	-	-	-	-	-	-	0
vertebra	-	-	-	1	-	-	-	-	-	-	-	-	-	1
rib	-	-	-	1	-	-	-	-	-	-	-	-	-	1
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	-	2	-	-	-	-	-	-	-	-	-	2
humerus	-	-	-	-	-	-	-	-	-	-	-	-	-	0
radius	-	-	-	3	3	-	-	-	-	-	-	-	-	6
ulna	-	-	-	2	1	-	-	-	-	-	-	-	-	3
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	-	2	-	-	-	-	-	-	-	-	-	-	-	2
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	-	2	-	1	1	-	-	-	-	-	-	-	-	4
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	1	-	-	-	-	-	-	-	-	-	-	-	1
metapodial	-	9	-	-	-	-	-	-	-	-	-	-	-	9
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	0
loose teeth	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTALS	0	17	0	11	5	0	0	0	0	0	1	0	0	34

TABLE A25 OTHER MAMMALIAN BONES PHASE 6

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	6	-	-	-	-	-	-	-	-	-	-	-	6
skull	-	1	-	-	-	-	-	-	-	-	-	-	-	1
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	0
mandible	-	2	-	3	-	-	-	-	-	-	-	-	-	5
vertebra	-	-	-	1	-	-	-	-	-	-	-	-	-	1
rib	-	-	-	1	-	-	-	-	-	-	-	-	-	1
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	5	-	7	-	-	-	-	-	-	-	-	-	12
humerus	-	1	-	9	1	-	1	-	-	-	-	-	-	12
radius	1	6	-	6	3	-	-	-	-	-	-	-	-	16
ulna	-	1	2	5	-	-	2	-	-	-	-	-	-	10
pelvis	-	2	-	5	1	-	-	-	-	1	-	-	-	9
femur	-	1	-	17	-	-	1	-	-	1	-	-	-	20
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	-	23	2	5	2	-	-	-	-	2	-	-	-	34
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	9	-	-	2	-	-	-	-	-	-	-	-	11
metapodial	-	25	-	4	2	-	-	-	-	-	-	-	-	31
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	0
loose teeth	-	1	-	-	-	1	-	-	1	-	-	-	-	3
other	-	-	-	-	1	-	1	-	-	-	-	-	-	2
TOTALS	1	83	4	63	12	1	5	0	1	4	0	0	0	174

KEY TO BIRD SPECIES

Most of the abbreviations used are the first 3 letters of the common names, with a few obvious exceptions. For further details of the exact species involved please see the text.

FOW Domestic fowl

PEA Peacock, *Pavo cristatus*

PHE Pheasant, *Phasianus colchicus*

TUR Turkey, *Meleagris gallopavo*

PAR Partridge, *Perdix perdix*

SWA Swan, *Cygnus* sp.

GOO Domestic and wild geese

DUC Domestic and wild ducks

WOO Woodcock, *Scolopax rusticola*

SNI Common snipe, *Gallinago gallinago*

WAD Waders & others. All other *Gruiformes* and *Charadriiformes*

BUZ Buzzard, *Buteo buteo*

PGN Pigeons, *Columba* sp.

COR Corvids, *Corvus* sp.

THR Thrushes, *Turdus* sp.

PAS Other species of passerine inc sparrow, starling

UNB Bird bones not identified to species

TABLE A26 OTHER MAMMALIAN BONES PHASE 5 OR 6

	RED	FAL	ROE	RAB	HAR	DOG	CAT	MAR	FOX	RAT	VOL	MOU	BAT	TOTAL
antler	-	-	-	-	-	-	-	-	-	-	-	-	-	0
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	0
mandible	-	1	-	-	-	-	-	-	-	-	1	-	-	2
vertebra	-	-	-	1	-	-	-	-	-	-	-	-	-	1
rib	-	-	-	-	-	-	-	-	-	-	-	-	-	0
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	1	-	-	-	-	-	-	-	-	-	-	1
humerus	-	-	-	2	-	-	-	-	-	-	-	-	-	2
radius	-	-	-	1	1	-	-	-	-	-	-	-	-	2
ulna	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	-	2	-	-	-	-	-	-	-	-	-	-	-	2
patella	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tibia	-	4	-	-	-	-	-	-	-	-	-	-	-	4
fibula	-	-	-	-	-	-	-	-	-	-	-	-	-	0
carpal/tarsal	-	5	-	-	-	-	-	-	-	-	-	-	-	5
metapodial	-	3	-	1	-	-	-	-	-	-	-	-	-	4
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	0
loose teeth	-	-	-	1	-	-	-	-	-	-	-	-	-	1
other	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTALS	0	15	1	6	1	0	0	0	0	0	1	0	0	24

TABLE A27 BIRD BONES PHASE 1

	FOW	PEA	PHE	TUR	PAR	SWA	GOO	DUC	WOO	SNI	WAD	BUZ	PGN	COR	THR	PAS	UNB	TOTAL
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
sternum	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	4
furcula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
coracoid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
humerus	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
radius	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3
ulna	1	-	-	-	-	-	3	-	-	-	2	-	-	-	-	-	2	8
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	3	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	4
tib-tar	1	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	3
carp-met	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
tar-met	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	9
TOTALS	10	0	0	0	0	0	9	1	0	0	2	0	0	0	0	0	13	35

TABLE A28 BIRD BONES PHASE 2

	FOW	PEA	PHE	TUR	PAR	SWA	GOO	DUC	WOO	SNI	WAD	BUZ	PGN	COR	THR	PAS	UNB	TOTAL
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
sternum	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
furcula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	1	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	3
coracoid	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
humerus	3	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	4
radius	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
ulna	7	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	9
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
tib-tar	-	-	-	-	1	-	-	1	-	-	1	-	-	-	-	-	1	4
carp-met	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	3
tar-met	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
other	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	14	16
TOTALS	19	3	0	0	1	0	4	2	3	0	1	0	0	0	2	0	17	52

TABLE A29 BIRD BONES PHASE 3

	FOW	PEA	PHE	TUR	PAR	SWA	GOO	DUC	WOO	SNI	WAD	BUZ	PGN	COR	THR	PAS	UNB	TOTAL
skull	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
vertebra	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
sternum	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
furcula	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
scapula	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
coracoid	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	3
humerus	1	-	-	-	1	-	-	-	-	1	1	-	-	-	3	-	1	8
radius	6	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	9
ulna	5	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	6
pelvis	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
femur	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	3
tib-tar	9	-	-	-	-	-	4	-	-	-	-	-	-	-	1	-	1	15
carp-met	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
tar-met	3	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	5
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
other	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	49
TOTALS	34	0	0	0	2	0	9	1	1	1	3	0	0	0	6	0	52	109

TABLE A30 BIRD BONES PHASE 4

	FOW	PEA	PHE	TUR	PAR	SWA	GOO	DUC	WOO	SNI	WAD	BUZ	PGN	COR	THR	PAS	UNB	TOTAL
skull	3	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	5
vertebra	7	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	10
sternum	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
furcula	23	-	-	-	-	-	2	1	1	-	4	-	-	-	-	-	5	36
scapula	27	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	7	36
coracoid	8	-	-	-	1	-	-	-	-	-	-	-	1	1	-	-	-	11
humerus	11	1	-	-	-	-	-	-	1	-	-	-	3	-	1	-	-	17
radius	29	-	-	-	-	-	5	1	-	-	-	-	-	-	-	-	-	35
ulna	14	-	-	-	1	-	2	-	-	-	-	-	-	-	1	-	-	18
pelvis	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
femur	8	-	-	-	-	-	3	1	1	-	-	-	3	1	1	-	2	20
tib-tar	11	1	-	-	-	-	7	2	-	-	1	-	-	-	1	2	7	32
carp-met	5	1	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	9
tar-met	16	-	-	-	-	-	2	1	-	-	1	-	-	-	-	1	1	22
phalanx	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	6	9
other	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	238	252
TOTALS	180	3	0	0	2	1	28	8	5	0	7	0	8	2	4	3	266	517

TABLE A31 BIRD BONES PHASE 2 OR 3

	FOW	PEA	PHE	TUR	PAR	SWA	GOO	DUC	WOO	SNI	WAD	BUZ	PGN	COR	THR	PAS	UNB	TOTAL
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
sternum	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
furcula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
coracoid	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
humerus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
radius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ulna	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
tib-tar	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
carp-met	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tar-met	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTALS	6	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	8

TABLE A32 BIRD BONES PHASE 3 OR 4

	FOW	PEA	PHE	TUR	PAR	SWA	GOO	DUC	WOO	SNI	WAD	BUZ	PGN	COR	THR	PAS	UNB	TOTAL
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
vertebra	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	2
sternum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
furcula	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
coracoid	3	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	4
humerus	4	-	-	-	1	-	-	1	2	1	1	-	-	-	-	-	-	10
radius	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
ulna	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	3
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	5	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	7
tib-tar	2	-	-	-	1	-	-	1	-	-	2	-	-	-	-	-	1	7
carp-met	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
tar-met	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	48
TOTALS	21	1	0	0	3	0	0	3	4	1	3	0	0	0	2	0	50	88

TABLE A33 BIRD BONES PHASE 5

	FOW	PEA	PHE	TUR	PAR	SWA	GOO	DUC	WOO	SNI	WAD	BUZ	PGN	COR	THR	PAS	UNB	TOTAL
skull	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
sternum	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
furcula	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
coracoid	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
humerus	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
radius	4	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	5
ulna	3	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	1	6
pelvis	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
femur	3	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	1	6
tib-tar	7	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	8
carp-met	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
tar-met	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	21
TOTALS	27	0	0	0	1	0	4	1	1	0	0	0	0	0	1	0	25	60

TABLE A34 BIRD BONES PHASE 6

	FOW	PEA	PHE	TUR	PAR	SWA	GOO	DUC	WOO	SNI	WAD	BUZ	PGN	COR	THR	PAS	UNB	TOTAL
skull	1	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	4
vertebra	2	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	2	7
sternum	7	-	1	1	-	-	-	-	-	-	-	-	1	-	-	-	3	13
furcula	12	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	13
scapula	13	-	-	-	-	-	1	4	-	-	-	-	-	-	-	-	-	18
coracoid	7	-	-	-	1	-	1	4	-	-	1	-	1	-	-	2	-	17
humerus	25	-	2	1	4	-	-	7	3	2	2	-	4	-	1	-	1	52
radius	24	-	-	-	-	-	3	1	-	-	-	-	-	2	-	-	1	31
ulna	19	1	-	-	-	-	5	3	1	-	1	-	2	2	-	-	3	37
pelvis	6	-	-	1	-	-	1	3	-	-	-	-	-	-	-	-	-	11
femur	21	-	3	1	1	-	1	4	3	-	-	-	2	-	1	-	-	37
tib-tar	27	-	-	1	2	-	2	4	1	-	-	-	3	-	1	-	5	46
carp-met	5	-	-	1	-	-	1	1	-	-	-	1	1	1	-	-	-	11
tar-met	11	1	1	1	-	-	2	1	2	-	2	-	1	-	-	-	-	22
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	6
other	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	176	177
TOTALS	181	2	7	8	8	0	18	34	12	2	7	1	15	5	3	2	197	502

KEY TO FISH SPECIES

Most abbreviations are the first 3 letters of the common name, with obvious exceptions. For further details of the species involved please see the text.

Freshwater Species

PER Perch, *Perca fluviatilis*

FW Other freshwater species

Freshwater and Marine Species

EEL Common eel, *Anguilla anguilla*

SAL Salmon or trout, *Salmo* sp.

Marine Species

CON Conger eel, *Conger conger*

HER Herring, *Clupea harengus*

WHI Whiting, *Merlanguis merlangus*

HAK Hake, *Merluccius merluccius*

LIN Ling, *Molva molva*

GAD Cod family, *Gadidae*

P/F Flatfish, probably all *Pleuronectidae* e.g. plaice, flounder

BAS Bass, *Dicentrarchus labrax*

UNF Fish bones unidentified to species

TABLE A35 BIRD BONES PHASE 5 OR 6

	FOW	PEA	PHE	TUR	PAR	SWA	GOO	DUC	WOO	SNI	WAD	BUZ	PGN	COR	THR	PAS	UNB	TOTAL
skull	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
vertebra	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
sternum	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
furcula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
scapula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
coracoid	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
humerus	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
radius	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
ulna	2	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	5
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
femur	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
tib-tar	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2	3
carp-met	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
tar-met	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	5
phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4
other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	10
TOTALS	7	0	0	0	1	1	2	0	0	0	1	0	3	1	0	0	17	33

TABLE A36 FISH BONES PHASE 2

	PER	FW	EEL	HER	SAL	CON	WHI	HAK	LIN	GAD	P/F	BAS	UNF	TOTAL
cranial	-	-	-	-	-	-	-	-	-	-	-	-	-	0
parasphenoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
premaxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
dentary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
articular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyomandibular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
suboperculum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ceratohyal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
branchiostegal	-	-	-	-	-	-	-	-	-	1	-	-	-	1
cleithrum	-	-	-	-	-	-	-	1	-	-	-	-	-	1
supracleithrum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
anal pterygio	-	-	-	-	-	-	-	-	-	-	-	-	-	0
precaudal vert	-	-	1	23	-	-	-	-	-	-	1	-	-	25
caudal vert	-	-	-	9	-	-	-	-	-	-	6	-	-	15
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	0
dorsal ray	-	-	-	-	-	-	-	-	-	-	-	-	-	0
fragment	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL	0	0	1	32	0	0	0	1	0	1	7	0	0	42

TABLE A37 FISH BONES PHASE 3

	PER	FW	EEL	HER	SAL	CON	WHI	HAK	LIN	GAD	P/F	BAS	UNF	TOTAL
cranial	-	-	-	-	-	1	-	-	-	-	-	-	-	1
parasphenoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
premaxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxillary	1	-	-	-	-	-	-	-	-	-	-	1	-	2
dentary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
articular	-	-	-	-	-	1	-	-	-	-	-	-	-	1
hyomandibular	-	-	-	-	-	1	-	-	-	-	-	-	-	1
suboperculum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ceratohyal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
branchiostegal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
cleithrum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
supracleithrum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	1	-	-	1
anal pterygio	-	-	-	-	-	-	-	-	-	-	1	-	-	1
precaudal vert	-	-	-	1	-	-	-	-	-	-	-	-	-	1
caudal vert	-	-	-	-	-	-	-	-	-	-	-	-	-	0
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	0
dorsal ray	-	-	-	-	-	-	-	-	-	2	-	-	-	2
fragment	-	-	-	-	-	-	-	-	-	-	-	-	44	44
TOTAL	1	0	0	1	0	3	0	0	0	2	2	1	44	54

TABLE A38 FISH BONES PHASE 4

	PER	FW	EEL	HER	SAL	CON	WHI	HAK	LIN	GAD	P/F	BAS	UNF	TOTAL
cranial	-	-	-	-	-	-	-	-	-	-	-	-	-	0
parasphenoid	-	-	3	-	-	-	-	-	-	-	-	-	-	3
premaxillary	-	-	-	-	-	-	1	-	-	-	-	-	-	1
maxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
dentary	-	1	-	-	-	-	-	-	-	-	-	-	-	1
articular	-	-	-	-	1	-	-	-	-	-	-	-	-	1
hyomandibular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
suboperculum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ceratohyal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
branchiostegal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
cleithrum	-	1	-	-	-	-	-	-	-	-	-	-	-	1
supracleithrum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
anal pterygio	-	-	-	-	-	-	-	-	-	-	2	-	-	2
precaudal vert	-	-	-	1	-	-	-	-	-	-	-	-	-	1
caudal vert	-	-	-	-	1	-	-	-	-	-	4	-	-	5
vertebra	-	-	-	-	-	-	-	-	1	-	-	-	-	1
dorsal ray	-	-	-	-	-	-	-	-	-	-	-	-	-	0
fragment	-	-	-	-	-	-	-	-	-	-	-	-	442	442
TOTAL	0	2	3	1	2	0	1	0	1	0	6	0	442	458

TABLE A39 FISH BONES PHASE 4 OR 5

	PER	FW	EEL	HER	SAL	CON	WHI	HAK	LIN	GAD	P/F	BAS	UNF	TOTAL
cranial	-	-	-	-	-	-	-	-	-	-	-	-	-	0
parasphenoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
premaxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
dentary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
articular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyomandibular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
subopercular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ceratohyal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
branchiostegal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
cleithrum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
supracleithrum	-	-	-	-	-	-	-	-	-	1	-	-	-	1
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
anal pterygio	-	-	-	-	-	-	-	-	-	-	-	-	-	0
precaudal vert	-	-	-	-	-	-	-	-	-	4	-	-	-	4
caudal vert	-	-	-	-	-	-	-	-	-	1	-	-	-	1
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	0
dorsal ray	-	-	-	-	-	-	-	-	-	-	-	-	-	0
fragment	-	-	-	-	-	-	-	-	-	-	-	-	11	11
TOTAL	0	0	0	0	0	0	0	0	0	6	0	0	11	17

TABLE A40 FISH BONES PHASE 5

	PER	FW	EEL	HER	SAL	CON	WHI	HAK	LIN	GAD	P/F	BAS	UNF	TOTAL
cranial	-	-	-	-	-	-	-	-	-	-	-	-	-	0
parasphenoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
premaxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
dentary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
articular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyomandibular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
suboperculum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ceratohyal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
branchiostegal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
cleithrum	-	-	-	-	-	-	-	-	1	-	-	-	-	1
supracleithrum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
anal pterygio	-	-	-	-	-	-	-	-	-	-	-	-	-	0
precaudal vert	-	-	-	-	-	-	-	-	-	-	-	-	-	0
caudal vert	-	-	-	-	-	-	-	1	-	-	-	-	-	1
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	0
dorsal ray	-	-	-	-	-	-	-	-	-	-	-	-	-	0
fragment	-	-	-	-	-	-	-	-	-	-	-	-	23	23
TOTAL	0	0	0	0	0	0	0	1	1	0	0	0	23	25

TABLE A41 FISH BONES PHASE 6

	PER	FW	EEL	HER	SAL	CON	WHI	HAK	LIN	GAD	P/F	BAS	UNF	TOTAL
cranial	-	-	-	-	-	-	-	-	-	-	-	-	-	0
parasphenoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
premaxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
dentary	-	-	-	-	1	2	-	-	1	-	-	-	-	4
articular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyomandibular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
suboperculum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ceratohyal	-	-	-	-	-	1	-	-	-	-	-	-	-	1
branchiostegal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
cleithrum	-	-	-	-	-	1	-	-	-	-	1	-	-	2
supracleithrum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
anal pterygio	-	-	-	-	-	-	-	-	-	-	1	-	-	1
precaudal vert	-	-	-	-	-	-	-	-	-	-	-	-	-	0
caudal vert	-	-	-	1	-	-	-	-	-	-	2	-	-	3
vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	0
dorsal ray	-	-	-	-	-	-	-	-	-	-	-	-	-	0
fragment	-	-	-	-	-	-	-	-	-	3	-	-	39	42
TOTAL	0	0	0	1	1	4	0	0	1	3	4	0	39	53

TABLE A42 FISH BONES PHASE 5 OR 6

	PER	FW	EEL	HER	SAL	CON	WHI	HAK	LIN	GAD	P/F	BAS	UNF	TOTAL
cranial	-	-	-	-	-	-	-	-	-	-	-	-	-	0
parasphenoid	-	-	-	-	-	-	-	-	-	-	-	-	-	0
premaxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
maxillary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
dentary	-	-	-	-	-	-	-	-	-	-	-	-	-	0
articular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
hyomandibular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
subopercular	-	-	-	-	-	-	-	-	-	-	-	-	-	0
ceratohyal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
branchiostegal	-	-	-	-	-	-	-	-	-	-	-	-	-	0
cleithrum	-	-	1	-	-	-	-	-	-	-	-	-	-	1
supracleithrum	-	-	-	-	-	-	-	-	-	-	-	-	-	0
pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	0
anal pterygio	-	-	-	-	-	-	-	-	-	-	-	-	-	0
precaudal vert	-	-	-	-	-	-	-	-	-	-	-	-	-	0
caudal vert	-	-	-	-	-	-	-	-	-	-	-	-	-	0
vertebra	-	-	-	1	-	-	-	-	-	-	1	-	-	2
dorsal ray	-	-	-	-	-	-	-	-	-	-	-	-	-	0
fragment	-	-	-	-	-	-	-	-	-	-	-	-	14	14
TOTAL	0	0	1	1	0	0	0	0	0	0	1	0	14	17

KEY TO MEASUREMENTS

Measurements are given in millimetres and were taken with a vernier calliper to the nearest 0.1 mm according to the Ancient Monuments Laboratory's computer-based methods (Jones et al n.d.). They are largely based on the measurements taken by von den Driesch (v.d. Driesch 1976) and her abbreviations are used here.

Withers height estimates are included where possible and given in metres. Those from cattle metapodials were calculated using the mean values of Fock (Boessneck and v.d.Driesch 1974) otherwise methods were those recommended in that paper. The use of Matolsci's indices for the calculation of cattle withers heights from the other major limb bones is given for interest only so that comparisons can be made with other sites where these values were calculated. There are probably serious discrepancies between these and the Fock values (Prummel 1984).

All total lengths and important measurements are given but other measurements are only included in the summary if at least 5 examples are available in a grouping. Individual Phase results have not been given because no differences were observed in these small samples but a split between Period II and III (Medieval and Post-Medieval) has been made even though there appears to be some similarity between the two. This in itself is an important result and this seemed the best way to demonstrate it. Period II includes results from Phases 2,3,4,2/3 and 3/4; Period III from Phases 5,6,7, 5/6 and 6/7.

For groups of n=10 or more, standard deviations and coefficients of variation are calculated.

Abbreviations used in the measurement summary are:

	n	no. of specimens measured
	$\overline{X}$	mean (mm)
*	s	standard deviation (mm)
	v	coefficient of variation $(s/\overline{X})x100$ (%)

A few of the measurements taken are not actually in v.d.Driesch's manual but are standard measurements for other bones so that her abbreviations are used. In other cases however the reference is in a footnote , titles are reckoned to be self-explanatory, or a diagram is given.

Measurements for the commoner species only are included here. Where results are too few to warrant inclusion these can be referred to in the measurement printout or in their computer-based form.

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* In line with AML printouts and earlier work in Southampton the formula for standard deviation of the samples uses the denominator (n - 1).

TABLE A43 MEASUREMENTS OF CATTLE BONES

PER.	n	range	$\bar{X}$	s	CV
MANDIBLE M3 in wear					
Premolar Row (v.d.Driesch measurement 9)					
III	3	45.6,48.3,52.1			
Depth before M1 (15b)					
III	4	41.6,45,48.9,49.9			
SCAPULA					
Minimum Length at Neck SLC					
II	2	45.2,54.1			
III	8	46.9 - 58.3	52.7		
total	10	45.2 - 58.3	52.1	4.7	9.1
Greatest Length Articulation GLP					
II	1	61.9			
III	7	57.6 - 76.3	69.0		
total	8	57.6 - 76.3			
Length of Glenoid LG					
II	4	50,53.7,61,73.5			
III	8	50.1 - 70.6	58.6		
total	12	50.0 - 73.5	58.9	7.5	12.7
Breadth of Glenoid BG					
II	4	39,43.8,45.1,64.4			
III	9	39.9 - 52.1	47.0	5.1	10.8
total	13	39.0 - 64.4	47.4	7.0	14.8
HUMERUS					
Smallest Breadth Diaphysis SD					
II	2	29.2,32			
III	10	30.7 - 51.6	35.9	6.9	19.2
total	12	29.2 - 51.6	35.0	6.6	18.9
Breadth of Trochlea BT					
II	3	57.8 - 74.6			
III	9	65.4 - 98.0	74.9		
total	13	57.8 - 98.0	72.6	9.6	13.2

PER.	n	range	$\bar{x}$	s	CV
Distal Breadth		**Bd**			
II	2	79.8,83.6			
III	6	72.3 - 112.7	83.8		
total	9	71.6 - 112.7	82.0	12.4	15.1
RADIUS					
Proximal Breadth		**Bp**			
II	1	81.9			
III	6	70.0 - 100.1	81.9		
total	7	70.0 - 100.1	81.9		
Proximal Depth		**Dp**			
II	2	35.2,43.2			
III	8	35.0 - 53.5	40.6		
total	10	35.0 - 53.5	40.3	5.6	13.9
ULNA					
Breadth Coronoid Process		**BPC**			
II	2	44.5,52.1			
III	5	38.8 - 59.3	48.2		
total	7	38.8 - 59.3	48.2		
METACARPUS					
Greatest Length		**GL**			
III	1	191 (Fock WH 1.17m)			
Proximal Breadth		**Bp**			
II	1	57.6			
III	16	49.6 - 62.3	55.9	4.1	7.3
total	18	49.6 - 62.3	56.2	4.0	7.1
Proximal Depth		**Dp**			
II	1	36.4			
III	15	28.7 - 40.2	34.4	3.4	9.9
total	17	28.7 - 40.2	34.7	3.3	9.4
Smallest Breadth Diaphysis		**SD**			
II	3	27.6,29.1,35.5			
III	11	26.6 - 42.2	32.0	4.4	13.7
total	14	26.6 - 42.2	31.7	4.2	13.3

PER.	n	range	$\bar{X}$	s	CV
Greatest Distal Breadth		**Bd**			
II	3	47.8,50.1,63.1			
III	10	50.2 - 63.3	57.0	4.7	8.3
total	13	47.8 - 63.3	56.2	5.5	9.8
Maximum Distal Depth		(usually max medial depth distal condyle)			
II	2	28.8,35.3			
III	7	27.9 - 32.4	30.5		
total	9	27.9 - 35.3	30.9	2.3	7.4
Maximum Breadth Distal Diaphysis		**DFB**			
II	3	43.4,45.1,59.9			
III	10	48.3 - 56.3	52.3	2.9	5.5
total	13	43.4 - 59.9	51.6	4.6	9.0
Bd/DFB (above)		(an index of distal splaying)			
I	3	1.05,1.10,1.11			
II	9	1.06 - 1.15			

PELVIS

Length of Acetabulum inc lip		**LA**			
III	6	74.6 - 78.9	77.1		

FEMUR

Distal Breadth		**Bd**			
III	3	95.4,98.6,113.4			
Depth of Caput		**DC**			
II	1	45.0			
III	5	41.4 - 51.2	43.5		

TIBIA

Smallest Breadth Diaphysis		**SD**			
II	1	37.8,41.1			
III	5	35.3 - 47.9	42.6		
Distal Breadth		**Bd**			
III	7	50.7 - 70.4	59.7		

PER.	n	range	$\bar{X}$	s	CV
Distal Depth		**Dd**			
III	4	37.7,38.8,41,48.3			

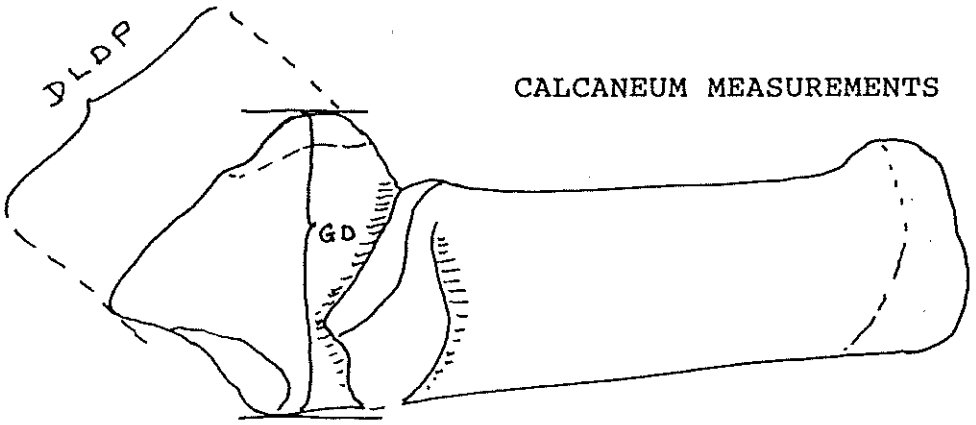
ASTRAGALUS

Greatest Length Lateral		**GLl**			
II	4	60.7,62.3,64.3,67.4			
III	9	63.2 - 70.8	66.5	2.6	3.9
total	13	60.7 - 70.8	65.6	2.9	4.4
Distal Breadth		**Bd**			
II	6	35.2 - 44.5	40.9		
III	12	38.4 - 53.8	43.9	4.4	10.0
total	18	35.2 - 53.8	42.9	4.2	9.8
Lateral Depth		**Dl**			
II	4	32.1,34,34.1,37.6			
III	8	33.9 - 44.2	37.9		
total	12	32.1 - 44.2	36.7	3.3	9.1

CALCANEUM

Greatest Length		**GL**			
II	1	134			
III	4	105,116,121,157			
Greatest Breadth		**GB**			
II	3	44,47.2,48.2			
III	8	37.3 - 58.1	47.1		
total	11	37.3 - 58.1	47.0	6.2	13.2
Greatest Depth		(see diagram below)			
II	5	43.9 - 56.2	49.9		
III	9	46.4 - 62.0	53.7		
total	14	43.9 - 62.0	52.3	5.5	10.5
Diagonal Length of Distal Process		(see diagram below)			
II	3	47.4,48,53			
III	12	43.5 - 57.7	49.4	4.3	
total	15	43.5 - 57.7	49.4	4.0	8.0

PER.	n	range	$\bar{X}$	s	CV
CENTROQUARTAL					
Greatest Breadth		GB			
II	4	46.2,47.5,48.3,63.7			
METATARSUS					
Greatest Length		GL			
II	1	201 (Fock WH 1.09 m)			
III	1	213 (Fock WH 1.16 m)			
Proximal Breadth		Bp			
II	3	42.1,42.7,47.8			
III	13	39.0 - 50.9	44.6	4.0	8.9
total	16	39.0 - 50.9	44.5	3.7	8.4
Proximal Depth		Dp			
II	1	46.5			
III	12	36.5 - 50.2	43.2	4.4	10.2
total	13	36.5 - 50.2	43.5	4.3	9.9
Smallest Breadth Diaphysis		SD			
II	2	21.5,25			
III	12	20.9 - 32.4	26.0	3.4	13.6
total	14	20.9 - 32.4	25.7	3.4	13.1
Distal Breadth		Bd			
II	3	49.7,56.3,59.6			
III	16	47.7 - 62.6	52.0	4.3	8.2
total	19	47.7 - 62.6	52.5	4.4	8.4
Maximum Distal Depth					
II	2	29.5,31.1			
III	9	28.0 - 34.2	29.4		
total	11	28.0 - 34.2	29.6	1.8	6.1



CALCANEUM MEASUREMENTS

TABLE A44 MEASUREMENTS OF SHEEP AND GOAT BONES

PER.	n	range	$\bar{X}$	s	CV
SHEEP SKULL					
Akrokranion - Bregma (Von den Driesch Measurement 9)					
III	4	54.7,54.8,59.3,60.8			
Greatest Breadth Occiput (27)					
III	5	50.7 - 57.4	54.1		
Greatest Breadth Foramen Magnum (29)					
III	5	19.9 - 22.7	21.6		
Height Foramen Magnum (30)					
III	5	19.5 - 22.6	20.8		
Greatest Mastoid Breadth (26)					
III	4	70.5,79.3,79.9,80.2			
Least Breadth Parietal (31)					
III	4	34.4,38.4,39.2,42.7			
Greatest Neurocranium Breadth (33)					
III	4	34.4,38.4,39.2,42.7			
SHEEP/GOAT MANDIBLE (M3 in wear)					
Premolar Row (9)					
II	2	17.9,27.8			
III	22	17.0 - 23.6	20.3	1.7	8.4
Molar Row (8)					
II	2	35.8,39.3			
III	23	39.3 - 51.3	45.9	2.8	6.1
Depth Before M1 (15b)					
II	3	21.3,22.1,22.4			
III	23	15.3 - 26.2	20.6	2.2	10.7
Cheek Tooth Row (7)					
II	2	58.2,61.9			
III	19	58.2 - 73.0	65.6	4.6	7.0

PER.	n	range	$\bar{X}$	s	CV
SHEEP SCAPULA					
Minimum Length at Neck SLC					
II	2	17.5,19.3			
III	28	16.9 - 23.0	20.0	1.6	8.0
Greatest Length Articulation GLP					
III	15	27.8 - 37.0	32.6	2.9	8.9
Length of Glenoid LG					
III	19	22.3 - 29.4	25.6	2.2	8.6
Breadth of Glenoid BG					
III	19	17.1 - 23.9	20.3	2.3	11.5
SHEEP HUMERUS					
Smallest Breadth Diaphysis SD					
II	4	13,13.4,13.6,13.9			
III	44	12.2 - 18.6	14.9	1.6	10.7
Breadth of Trochlea BT					
II	7	23.6 - 28.7	26.2	2.0	7.6
III	57	23.2 - 32.4	27.2	2.2	8.1
Distal Breadth Bd					
II	6	25.8 - 31.5	28.3	2.5	8.8
III	62	25.4 - 34.8	29.4	2.5	8.5
SHEEP RADIUS					
Greatest Length GL					
III	2	137,164			
Teichert WH 0.55 m and 0.66 m respectively					
Proximal Breadth Bp					
II	2	28.7,30.6			
III	43	25.3 - 34.9	30.2	2.5	8.3
Proximal Depth Dp					
II	3	14.1,15,15.6			
III	36	13.1 - 17.9	15.4	1.4	9.3

PER.	n	range	$\bar{X}$	s	CV
Breadth at Ulnar Scar					
II	4	15,15.8(2),18.6			
III	32	13.7 - 20.2	17.0	1.8	10.5
Breadth Proximal Facet BFp					
II	1	25.4			
III	24	19.4 - 31.9	27.8	2.9	10.4
SHEEP ULNA					
Breadth Coronoid Process BPC					
III	9	15.8 - 18.8	17.3	1.1	6.6
SHEEP METACARPUS					
Greatest Length GL					
II	3	99.7,133,135			
III	55	110 - 147	129	7.5	5.8
Teichert WH	Period II	0.49,0.65,0.66			
	Period III	0.54 - 0.72	0.63	0.04	5.8
Proximal Breadth Bp					
II	6	21.3 - 26.0	24.1		
III	115	19.2 - 27.9	24.1	1.5	6.2
Proximal Depth Dp					
II	7	15.9 - 18.5	17.3		
III	115	10.7 - 20.1	17.4	1.2	7.1
Smallest Breadth Diaphysis SD					
II	15	13.1 - 16.1	15.0		
III	138	11.1 - 17.6	14.9	1.1	6.7
Distal Breadth Bd					
II	3	24.7,28.4,29.3			
III	65	22.7 - 29.5	26.7	1.6	5.8
Maximum Distal Depth (max medial depth distal condyle)					
II	2	15.0,18.0			
III	37	14.4 - 18.4	16.3	8.4	5.2

PER.	n	range	$\bar{X}$	s	CV
GOAT METACARPUS					
Proximal Breadth		Bp			
III	2	24.9,26.5			
Proximal Depth		Dp			
III	2	17.8,18.6			
Smallest Breadth Diaphysis		SD			
II	1	18.6			
III	1	17.3			
SHEEP/GOAT OS COXA					
Length of Acetabulum inc lip		LA			
II	1	28.6			
III	10	25.6 - 32.8	29.1	2.5	8.7
SHEEP FEMUR					
Proximal Breadth		Bp			
III	1	39.6			
Distal Breadth		Bd			
II	1	36.4			
III	3	35.1,35.8,37.9			
Distal Depth		Dd			
II	1	45.3			
III	2	41.6,44			
SHEEP TIBIA					
Proximal Breadth		Bp			
III	2	35.2,37.8			
Proximal Depth		Dp			
III	1	37.2			

PER.	n	range	$\bar{X}$	s	CV
SHEEP/GOAT TIBIA					
Smallest Breadth Diaphysis	SD				
II	6	12.0 - 14.0	12.9		
III	65	10.8 - 17.4	14.7	1.3	9.0
Distal Breadth	Bd				
II	8	21.3 - 25.3	23.5		
III	69	18.8 - 30.1	25.5	1.5	5.9
Distal Depth	Dd				
II	7	16.8 - 20.3	18.6		
III	60	15.9 - 22.8	19.7	1.4	6.8
SHEEP/GOAT ASTRAGALUS					
Greatest Length Lateral	GLl				
III	5	27.4 - 33.0	30.0		
Distal Breadth					
III	4	15.2,18,21.6,22.4			
Lateral Depth	Dl				
III	4	15.8,16,18.4(2)			
SHEEP CALCANEUM					
Greatest Length	GL				
III	12	47.7 - 61.4	53.6	3.8	7.1
Teichert WH		0.54 - 0.70	0.61	0.05	7.4
Greatest Breadth	GB				
III	7	15.7 - 19.7	17.8		
Greatest Depth	(see diagram for cattle)				
III	11	19.9 -24.2	21.5	1.5	7.1
Diagonal Length of Distal Process	(see diagram for cattle)				
III	12	18.5 - 21.7	19.8	1.2	5.9

PER.	n	range	$\bar{X}$	s	CV
SHEEP METATARSUS					
Greatest Length		GL			
III	46	113 - 154	136	9.0	6.6
Teichert WH		0.52 - 0.70	0.62	0.04	6.5
Proximal Breadth		Bp			
II	7	18.5 - 22.4	21.0		
III	119	16.7 - 23.2	21.1	1.3	6.2
Proximal Depth		Dp			
II	6	18.4 - 22.6	20.9		
III	97	18.0 - 23.7	21.0	1.3	5.9
Smallest Breadth Diaphysis		SD			
II	6	11.2 - 14.8	13.0		
III	131	9.5 - 14.5	12.8	1.0	7.7
Distal Breadth		Bd			
II	1	24.8			
III	57	22.5 - 28.8	25.4	1.5	5.9
Maximum Distal Depth		(Medial Maximum Distal Condyle)			
II	2	14.5,17.1			
III	46	14.4 - 18.8	16.4	1.1	6.7

TABLE A45 MEASUREMENTS OF PIG BONES

PER	n	range	$\bar{X}$	s	CV
MAXILLA					
Length M3 (30)					
II	1	27.5			
MANDIBLE					
Premolar Row inc P1 (9)					
III	1	58.2			
Premolar Row minus P1 (9a)					
III	2	33.6,34.3			
Molar Row (8)					
II	1	67.6			
III	1	61.8			
Length M3 (10)					
II	3	29,32,34.2			
III	2	32.3,35.7			
Depth Before M1 (15b)					
II	1	38.8			
III	1	38			
SCAPULA					
Diagonal Height DHA					
III	2	177,178			
Minimum Length at Neck SLC					
II	4	18.7 - 25.9			
III	3	20.9 - 29.2			
Greatest Length Articulation GLP					
III	3	43.2,43.9,44.1			
Length of Glenoid LG					
III	3	33.5,36.4,37.4			

PER	n	range	$\bar{X}$	s	CV
Breadth of Glenoid		BG			
II	1	27.9			
III	3	31.8,32.8,33.1			
HUMERUS					
Smallest Breadth Diaphysis		SD			
II	2	14.8,15.8			
III	4	14.1,15.5,20.1,20.4			
Breadth of Trochlea		BT			
III	4	28.9,32.2,34.8,35.8			
Distal breadth		Bd			
II	2	36.5,37.2			
III	4	35.5,40.4,48.2(2)			
RADIUS					
Proximal Breadth		Bp			
II	3	25.2,27,31.6			
III	9	26.3 - 33.6	29.1	2.6	9.1
Proximal Depth		Dp			
II	3	18,19.2,20.2			
III	8	17.3 - 24.6	20.8	2.3	11.2
Smallest Breadth Diaphysis		SD			
II	3	15.1,15.7,19.3			
III	7	16.0 - 21.2	18.0		
ULNA					
Breadth Coronoid Process		BPC (mature but not nec. fused)			
II	1	19.6			
III	6	21.0 - 25.1	22.6		

METACARPALS	III		IV	
	n	range	n	range
	-	-----	-	-----
Greatest Length GL				
III	1	78.1		
Proximal Breadth Bp				
II	1	16.3	1	15.7
III	3	17.7,18,22.2	1	16.2
Distal Breadth Bd				
III	1	22.1		
Smallest Breadth Diaphysis SD				
III	1	15.4		

PER	n	range	$\bar{X}$	s	CV
---	-	-----	-	-	--
OS COXA					
Smallest Breadth Shaft Ilium SB					
III	4	13,16,16.3,16.7			
Smallest Height Shaft Ilium SH					
III	4	25.4 - 30.2			
Maximum Length Acetabulum on Rim					
III	5	31.2 - 42.5	37.3		
Breadth of Acetabulum on Rim (at right angles to above)					
III	2	36,39.6			
FEMUR					
Smallest Breadth Diaphysis SD					
III	1	21.5			
PATELLA					
Greatest Length GL					
III	1	39.3			
Greatest Breadth GB					
III	1	24.2			

TABLE A46 MEASUREMENTS OF FALLOW DEER (Dama dama)

PER.	n

ANTLER AND SKULL

Measurements of Coronet		circum(39)	max diam	min diam
III	1	151	50.1	47.5

Circumference immediately above Coronet (41)		
II	1	102
III	1	126

Measurements of Pedicel		min circum(40)	max diam	length
II	1	78		
III	1	98	31.6	38

PER.	n	range	$\bar{X}$	s	CV

MANDIBLE

Molar Row		(8)
III	1	56.3

SCAPULA

Minimum Length at Neck		SLC	
II	1	21.2	
III	6	19.4 - 25.0	22.5

Greatest Length Articulation		GLP
III	3	38.6,41,46

Length of Glenoid		LG
III	3	29.8,32.1,34.4

Breadth of Glenoid		BG	
III	5	24.8 - 30.9	26.9

HUMERUS

Breadth of Trochlea		BT
III	2	33.6,33.8

PER.	n	range	$\bar{X}$	s	CV
Distal Breadth		Bd			
III	2	38.9,39.5			
RADIUS					
Greatest Length		GL			
II/III	1	198			
Proximal Breadth		Bp			
II	1	35.6			
III	5	36.6 - 39.6	38.2		
Proximal Depth		Dp			
II	1	19.4			
III	6	20.2 - 21.6	20.8		
Breadth at Ulnar Scar					
II	1	18.9			
III	4	19.5,22,22.5,23.6			
Breadth Proximal Facet		BFp			
II	1	33.2			
III	4	26.5,35.5,35.7,36.4			
Greatest Breadth Distal End		Bd			
III	6	31.7 - 37.5	34.7		
ULNA					
Breadth Coronoid Process		BPC			
III	1	20.3			
METACARPUS					
Greatest Length		GL			
III	1	194			
Proximal Breadth		Bp			
III	4	25.5,25.6,27,28.2			
Proximal Depth		Dp			
III	4	17.9(2),19.3,20.4			

PER.	n	range	$\bar{X}$	s	CV
Smallest Breadth Diaphysis SD					
III	3	14.2,14.3,17.1			
Distal Breadth Bd					
III	1	28.8			
OS COXA					
Minimum Width Ischium					
III	1	8.8			
Minimum Height Ischium					
III	1	30.1			
Length of Acetabulum inc lip LA					
III	1	43.8			
FEMUR					
Greatest Length GL					
III	1	237			
Greatest Length from Caput GLC					
Proximal Breadth Bp					
III	1	59.3			
Greatest Depth Caput DC					
III	1	25.8			
Smallest Breadth Diaphysis SD					
II	1	20.4			
III	1	20.5			
Distal Breadth Bd					
III	1	48.8			
Distal Depth Dd					
III	1	65.1			

PER.	n	range	$\bar{X}$	s	CV
TIBIA					
Proximal Breadth		Bp			
III	2	54.8,55.3			
Proximal Depth		Dp			
III	2	54.8,56.6			
Smallest Breadth Diaphysis		SD			
II	3	20,20.4,21.5			
III	17	18.8 - 23.8	21.0	1.3	6.3
Distal Breadth		Bd			
II	3	31.5,31.8,33			
III	20	29.7 - 36.2	33.0	1.9	5.8
Distal Depth		Dd			
II	3	24.4,26.4,27.1			
III	18	22.8 - 28.3	25.6	1.7	6.6
ASTRAGALUS					
Greatest Length Lateral		GLl			
II	2	36.8,37.8			
III	8	34.3 - 38.0	36.9	1.2	3.2
Distal Breadth					
II	3	23,24.3,25			
III	8	21.6 - 25.2	23.9	1.0	4.4
Lateral Depth		Dl			
II	2	19,20.6			
III	7	20.2 - 21.0	20.3		
CALCANEUM					
Greatest Length		GL			
II	1	86.2			
III	6	73.3 - 82.7	78.4		
Greatest Breadth		GB			
III	9	23.8 - 27.3	26.1	1.3	4.8

PER.	n	range	$\bar{X}$	s	CV
Greatest Depth		(see diagram for cattle)			
II	1	31.1			
III	9	26.2 - 30.3	28.1	1.5	5.3
Diagonal Length of Distal Process		(see diagram for cattle)			
II	1	29.5			
III	8	25.6 - 29.4	27.2	1.3	4.7

METATARSUS

Greatest Length		GL			
II	1	218			
III	4	204,211,218,229			
Proximal Breadth		Bp			
II	1	26			
III	12	22.5 - 28.4	25.4	1.6	6.2
Proximal Depth		Dp			
II	1	27.6			
III	10	25.5 - 30.8	27.7	1.7	6.1
Smallest Breadth Diaphysis		SD			
II	3	14.4,15.6,18.4			
III	12	15.5 - 18.0	15.9	1.1	7.1
Distal Breadth		Bd			
II	3	27.2,29.4,31			
III	5	27.5 - 31.2	29.5		
Maximum Distal Depth		(Medial Maximum Distal Condyle)			
II	2	18.5,20.1			
III	4	18,18.7,19.5,19.6			

TABLE A47 MEASUREMENTS OF RABBIT BONES

PER.	n	range	$\bar{X}$	s	CV
MANDIBLE					
Length from Angle (1)					
III	1	55			
Cheektooth Row (2)					
III	1	15.1			
Length to Back M3 (3)					
III	1	32.5			
Length Diastema (4)					
III	1	18.2			
Height Vertical Ramus (5)					
III	1	39.3			
Height Vertical Ramus in projection (5a)					
III	1	36.3			
SCAPULA					
Minimum Length at Neck SLC					
II	1	4.7			
III	9	4.4 - 5.0	4.6	0.2	4.4
Greatest Length Articulation GLP					
II	1	10.5			
III	9	8.5 - 10.7	9.6	1.0	10.9
Breadth of Glenoid BG					
II	1	7.0			
III	7	6.7 - 8.0	7.4		
HUMERUS					
Greatest Length GL					
II	1	64.7			
III	2	61.1,63.9			

PER.	n	range	$\bar{X}$	s	CV
Greatest Length from Caput GLC					
II	4	76.3,77.3,78.2,80.1			
III	4	75.4,76.1,77.4,77.6			
Smallest Breadth Diaphysis SD					
II	5	6.0 - 7.0	6.2		
III	5	6.2 - 7.2	6.8		
Distal Breadth Bd					
II	4	12.2,13.1(2),13.7			
III	6	12.6 - 14.0	13.4		
Depth of Caput DC					
II	3	6.6(2),6.8			
III	6	6.0 - 7.0	6.7		
TIBIA					
Proximal Breadth Bp					
II	3	13.3,14.2,14.7			
III	3	13.3,13.7,14.2			
Proximal Depth Dp					
II	1	14.5			
III	3	13.4,14.3(2)			

TABLE A48 MEASUREMENTS OF DOMESTIC FOWL BONES

Per.	n	range	$\bar{X}$	s	CV
SKULL					
Greatest Breadth		GB			
III	1	30.3			
Greatest Height		GH			
III	1	22.0			
CORACOID					
Greatest Length		GL			
II	4	46.1,52.3,58.1,59.5			
Medial Length		LM			
II	4	44.7,49.5,56.4,57.7			
Basal Breadth		Bb			
II	4	12.7,15.2,15.6,16.1			
III	4	12.6,14.1,14.8,18.6			
Breadth Basal Articular Facies		BF			
II	4	9.7,11.8,13.1,13.5			
III	4	10.1,10.6,13.1,14.7			
SCAPULA					
Greatest Length		GL			
II	1	74.4			
Diagonal Breadth Cranial		DiC			
II	6	10.8 - 13.6	12.4		
III	2	12,13.5	12.0		
HUMERUS					
Greatest Length		GL			
III	3	73.7,81,84.9			
Proximal Breadth		Bp			
II	1	20.0			
III	4	19.9,22.4(2),22.8			

Per.	n	range	$\bar{X}$	s	CV
Distal Breadth		Bd			
II	1	14.0			
III	10	13.4 - 18.3	15.7	1.8	11.6
Smallest Breadth Corpus		SC			
II	1	6.6			
III	5	5.6 - 8.8	7.0		

RADIUS

Greatest Length		GL			
II	3	48.9,62,75.7			
III	3	56.9,64.4,66.9			
Minimum Breadth Corpus		SC			
II	4	2.4,3,3.2,3.8			
III	10	2.6 - 3.8	3.4	0.4	10.8
Distal Breadth		Bd			
II	4	5.5,6.2,6.5,6.6			
III	8	6.5 - 8.1	7.3	6.0	8.2

ULNA

Greatest Length		GL			
II	5	71.7 - 79.7	76.9		
III	3	59.2,60.8,67.5			
Proximal Breadth		Bp			
II	5	8.5 - 10.6	9.7		
III	3	7.8,8.3,8.5			
Minimum Breadth Corpus		SC			
II	6	4.5 - 5.3	4.8		
III	10	3.5 - 5.4	4.4	0.6	14.8
Distal Diagonal		Did			
II	6	10.0 - 10.8	10.3		
III	10	8.4 - 10.7	9.6	0.8	8.2

Per.	n	range	$\bar{X}$	s	CV
CARPOMETACARPUS					
Greatest Length		GL			
II	5	35.7 - 43.9	40.8		
III	5	37.4 - 45.3	40.1		
Proximal Breadth		Bp			
II	5	11.0 - 13.3	12.4		
III	5	11.6 - 13.6	12.3		
Diagonal Distal		Did			
II	4	6.6,7.9,8.3(2)			
III	4	7.4,7.8,8.1,8.6			
Maximum Width both Shafts			(Erbersdobler 1968)		
II	4	9.2,10,10.6,10.7			
III	4	9,10.1,10.2,11.4			
PELVIS AND SYNSACRUM					
Length Synsacrum		LV			
III	1	80.3			
Length of Pelvis to Spina		LS			
III	1	101			
Diameter Acetabulum		DiA			
II	1	9.9			
III	3	9.5,10.1(2)			
FEMUR					
Greatest Length		GL			
II	3	77.1,82.6,87.4			
III	4	73.4,80.4,87.9,88.2			
Medial Length		LM			
II	3	71.3,77.5,81.1			
III	3	69.4,76,81.9			
Proximal Breadth		Bp			
II	6	13.9 - 18.2	16.6		
III	5	14.1 - 19.9	16.9		

Per.	n	range	$\bar{X}$	s	CV
Proximal Depth		Dp			
II	4	9.1,10.1,11.9,12.4			
III	5	10.9 - 13.2	11.8		
Smallest Breadth Corpus		SC			
II	5	6.8 - 8.1	7.3		
III	5	6.2 - 7.5	7.3		
Distal Breadth		Bd			
II	3	15.2,16.7,17.1			
III	6	13.6 - 17.8	15.5		
Distal Depth		Dd			
II	3	12.6,14.3,14.8			
III	4	11.7,12.9,13.6,15.4			
TIBIOTARSUS					
Greatest Length		GL			
II	3	101,112,125			
III	4	97.9,125,127,128			
Axial Length		LA			
II	3	98.8,109,120			
III	5	95.6 - 122	116		
Proximal Diagonal		Dip			
II	5	18.3 - 22.7	21.0		
III	9	17.0 - 24..3	21.7	2.4	11.2
Proximal Breadth		(Bacher 1967)			
II	3	11.6,13.3,14.8			
III	9	11.0 - 15.9	14.1	1.6	11.5
Smallest Breadth Corpus		SC			
II	8	5.1 - 6.8	6.0	0.6	10.5
III	12	5.1 - 8.0	6.4	0.8	13.9
Distal Breadth		Bd			
II	5	9.9 - 12.0	10.9	2.2	20.3
III	6	9.4 - 13.3	11.9		
Distal Depth		Dd			
II	4	9.9,10.2,12.5,13.1			
III	6	9.6 - 14.6	12.7		

Per.	n		range	$\bar{X}$	s	CV
TARSOMETATARSUS		(sex assessments on basis of spur)				
Greatest Length			GL			
III	2	hens	67.2,71.8			
Proximal Breadth			Bp			
II	1	capon	13.8			
II	1	hen	12.5			
II	1	?	12.6			
III	27	hens	11.3,12.7			
Smallest Breadth Corpus			SC			
II	1	cock	7.8			
II	1	hen	6.3			
II	1	capon	7.4			
III	1	capon	6.8			
III	5	hens	5.2 - 6.8	6.2		
Distal Breadth			Bd			
II	1	cock	14.2			
III	3	hens	10.9,12.3,13.9			
III	2	?	14.4,16.3			
Spur Length (cocks only) measured on posterior surface						
II	1		16.5			

TABLE A49 NUMBER AND PERCENTAGE OF HEAD AND FOOT BONES

(Loose teeth are excluded)

Phase	cattle		sheep		pig	
	frags	%	frags	%	frags	%
Phase 1	53	47	19	37	11	36
Phase 2	6	50	12	25	8	62
Phase 3	76	24	68	32	45	49
Phase 4	180	31	101	56	85	36
Phase 2/3	12	42	9	44	8	62
Phase 3/4	23	22	30	27	14	29
Phase 5	84	41	124	62	25	40
Phase 6	623	41	1444	53	370	32
Phase 5/6	68	25	55	36	19	42

TABLE A50 PROPORTION OF BONES UNIDENTIFIABLE TO ANATOMY

Phase	large ungulate		small ungulate		both
	n	% unident	n	% unident	% unident
Phase 2	37	54	85	34	40
Phase 3	219	43	337	42	43
Phase 4	455	33	746	41	35
Phase 3/4	82	49	184	34	38
PERIOD II	823	37	1352	40	39
Phase 5	261	47	357	32	39
Phase 6	1554	36	3143	24	28
Phase 5/6	133	26	174	25	26
PERIOD III	1948	36	3674	25	29

TABLE A51 LIST OF COMPUTER ARCHIVE FILES

key to locations: WD - Winchester District Offices
FRU - Faunal Remains Unit, University of Southampton
JPC - Stored by the writer

Printout Available

Full listings by species	FRU
Full listings by context	FRU
CONMET catalogues by phase	FRU & WD
CONLIS " "	FRU & WD
Phase Table 1s and SPLIST	FRU
Overall ditto	FRU & WD
MET catalogue by site	FRU

Computer files		Convention
Original data files	FRU & JPC	WG1.JPC etc
Fully-recorded total	FRU, WD, JPC	WGFULL.TOT(or.SPEor.CON)
Scan only	FRU, WD, JPC	WGSCAN.*
Full + scan (for MET)	FRU	WGALL

Paper Archive

All correspondence, notebooks, analysis notes, rough drafts FRU