Report 3854

Report on the Animal Bones from an Iron Age and Romano British Site at Baldock, Hertfordshire

by

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This report summarises the main results from the detailed examination of a large collection of animal bones covering some four centuries of occupation of a site at Baldock, Hertfordshire.

The bones were examined and recorded using the standard procedures described by Chaplin (1971) and dimensions of bones were measured as described by Von den Driesch. In this report the data is generally grouped into 3 phases. Phase I covers all pre Conquest deposits. Phase II covers from the Conquest (43 A.D.) to c. 150 A.D. and Phase III from 150 A.D. to the 5th century. Some deposits are considered separately. This phasing has no known significance except that this division provided the best broad accommodation for individually dated deposits. Only reliably dated deposits have been covered in this report.

Results.

The great majority of the bones were from domestic cattle, sheep, pig and horse. There were very few bones of goat. Individual bones of dog and dog skeletons were present. There were very few bones of cat. Of wild species there were two separate pits T 50 and T 37 dated AD 120-200 and AD 140-160 which contained hare bones - in the latter, a semi complete skeleton. Bones considered to be from a fox rather than a dog were found together with two carcasses of immature Red deer in the well feature JD3 dated 1st-4th century. Artefactual pig bones are considered to be from a wild pigs rather than a domestic one. Red and Roe deer are represented by antler fragments in several contexts but these occurrences probably reflect the use of antler as a raw material rather than use of the deer for food. A small number of fish, amphibian, bird and small mammal bones were also present.

The minimum mumber of each of the species and their occurrence is given in Table 1.

Further data is presented separately for each species.

SHEEP

The minimum number of animals determined from the principal bones of the body is given for each phase in Table II. Throughout consideration of the sheep data for phase II is divided into two groups, that from a single deposit T X 4 and that from all other deposits. This has been done as it is considered that feature T X 4 represents a "special circumstance" and aggregation of that data with that from other deposits could be misleading. Feature T X 4 is a large pit closely dated as c. 65 A.D.

The fused or unfused condition of the epiphyses of the principal long bones in each phase is detailed in Table 3.

TABLE 1 Baldock. The occurrence and minimum number of each species recorded at Baldock.

SPECIES	PHASE 1	PHASE 2 inc TX4	PHASE 2 TX4 only	PHASE 3
Sheep	39	470	98	118
Cattle	22	234	5	67
Pig (domestic)	14	92	9	28
Pig (wild)	-	1	-	-
Horse	4	13	-	12
Goat	-	2	-	1
Hare	-	-	~~(2)~~ (2)	-
Dog	1	14	-	23
Cat	-	2	-	1
Roe Deer	-	1	-	1*
Red Deer	-	1	~~(2)~~ (2)	4*
Fox	-	-	~~(1)~~ (1)	-

* Species represented only by antler fragments.

( ) Species found in a deposit with a date range overlapping phases 2 & 3

TABLE 2 Baldock,Sheep. The minimum number of animals determined from the principal bones of the body in each phase.

BONE	PHASE I	PHASE II exc TX4	PHASE II TX4 only	PHASE III
Skull Fragments	6	60	91	17
Mandible	39	390	80	118
Scapula	15	91	71	43
Humerus	23	159	83	74
Radius	20	127	64	63
Ulna	6	35	73	11
Metacarpal	19	167	97	55
Pelvis	6	63	65	20
Femur	10	47	76	22
Tibia	27	165	75	76
Astragalus	6	38	30	20
Calcaneum	9	40	58	17
Metatarsal	17	180	98	69

TABLE 3 Baldock, Sheep. Condition of the epiphyses of the principal long bones.

	PHASE 1		PHASE 2 ex TX4		PHASE 2 TX4 only		PHASE 3	
	Fused	Unfused	Fused	Unfused	Fused	Unfused	Fused	Unfused
Scapula d.	17	1	66	8	115	9	18	1
Innominate	7	0	43	5	88	4	12	1
Humerus d.	19	0	110	11	134	11	47	5
Radius p.	18	2	53	6	113	7	27	4
Group A Total	61	3	272	30	450	31	104	11
Tibia d.	19	5	67	21	133	9	43	9
Metacarpal d.	3	5	46	46	159	16	14	5
Group B Total	22	10	113	67	292	25	57	14
Metatarsal d.	2	1	30	41	152	20	15	6
Group C Total	2	1	30	41	152	20	15	6
Ulna	1	1	14	13	73	6	3	3
Femur p.	1	4	12	13	78	29	3	2
Calcaneum	6	4	16	21	85	11	9	12
Radius d.	1	4	10	20	89	27	6	5
Group D Total	9	13	52	67	325	73	21	22
Humerus p.	3	1	12	20	57	45	0	5
Femur d.	1	5	11	15	99	37	3	8
Tibia p.	0	2	8	5	66	46	8	5
Group E Total	4	8	31	40	222	128	11	18

TABLE 4 Baldock. Frequency of the eruption and wear groupings of the Sheep teeth.

GROUP	PHASE 1	PHASE 2 & 3- exc T X 4	T x 4 only-
1	-	26	1
2	-	90	3
3	9	124	17
4a	-	17	1
4b	-	9	6
4c	-	72	44
4d	-	52	15
4e	3	22	-
4a-e	3	172	66

The eruption of the permanent teeth and their subsequent wear provide further data on the age at which the sheep were killed. The cheek teeth (premolars 2 - 4 and molars 1 - 3) erupt in sequence. Each piece of jaw was assigned to one of 4 age related groups according to the teeth which were present and the stage of their eruption and wear.

Group 1 comprises animals in which the deciduous premolar 4 is present and molar 1 is erupting.

Group 2 animals have molar 1 erupted and molar 2 is erupting.

Group 3 animals have molar 2 erupted and molar 3 is erupting.

Group 4 animals have molar 3 erupted and the full complement of permanent premolar and molar teeth is regarded as present.

Group 4 is then subdivided into five sub groups. Four (a-d) are based on visual assessment of the amount of wear shown by the molars and premolars, described as unworn, slightly worn, moderately worn and heavily worn. The fifth group (4e) comprises jaws without teeth but which can be assigned to this group because of the nature of the alveoli. The number of jaw fragments which could be assigned in this way are recorded for each phase of the site in Table 4.

There were few measurable bones from the pre Conquest phase of the site and all are within the range of measurements of those from later phases. There is no significant difference in size between bones from phases 1 and 2 and those from deposit TX4. The range in size , the mean value and standard deviation of various dimensions of individual bones are given in Table 5 for all deposits combined. The values of these dimensions appear to be normally distributed and therefore it is valid to record these as mean, range and standard deviation rather than as individual values.

TABLE 5 Dimensions of principal bones of sheep for all phases of Baldock.

BONE DIMENSION	SAMPLE SIZE	RANGE	MEAN	S.D.
MANDIBLE				
Length of tooth row	47	55.9-85.2	65.8	5.3
Length of Molar 3	50	18.7-26.9	20.7	1.7
SCAPULA				
G L P	106	24.5-37.3	30.2	2.1
S L C	96	14.7-21.1	18.4	1.6
HUMERUS				
Maximum overall length	14	126 -148	137.9	7.4
HWDE	173	22.6-32.5	27.5	2.0
RADIUS				
Maximum overall length	33	127 -165	148.8	12.1
HWPE	94	22.3-34.1	29.0	2.2
HWDE	93	22.1-31.3	26.6	1.5
HSW	29	13.2-17.7	15.6	1.1
METACARPAL				
Maximum overall Length	180	108.5-155.0*	123.6	6.4
HWPE	295	18.0-25.1*	20.7	1.4
HWDE	194	20.3-29.1*	23.7	1.5
HSW	184	10.9-17.1*	13.2	1.0
FEMUR				
Maximum width of proximal end	42	35.7-46.0	42.3	2.5

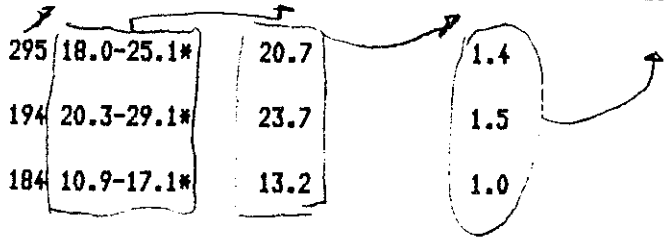

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TABLE 5 CONTINUED

BONE DIMENSION	SAMPLE SIZE	RANGE	MEAN	S.D.
TIBIA				
Maximum overall length	29	182.0 -225.0	204.3	10.2
MWPE	39	34.8-43.6	38.1	2.0
MWDE	130	20.6-30.5	23.9	1.5
MSW	31	11.5-15.8	13.6	1.0
CALCANEUM				
Maximum overall length	92	44.1-57.1	51.6	3.1
ASTRAGALUS				
Lateral length	76	23.2-31.5	26.2	1.8
METATARSAL				
Maximum overall length	147	113.5-165.0	134.6	7.4
MWPE	138	16.3-21.1	18.4	1.1
MWDE	157	20.1-28.5	22.4	1.4
MSW	145	9.2-14.9	11.7	0.9

* A single exceptionally large example - see text.

CATTLE

The minimum number of cattle from each phase is given in Table 1 and for each of the principal bones of the body for each phase in Table 6. The fused or unfused condition of the epiphyses of the limb bones is given in Table 7. The bones are grouped according to the age range in which the epiphysis becomes fused to the shaft.

The eruption and wear of the lower premolar and molar teeth are useful indications of the age at which the cattle were killed. The larger size of the cattle mandible compared to a sheep mandible results in very few cattle mandibles surviving intact with their complete set of teeth. As however the teeth erupt in a known sequence most jaw fragments can be assigned to an age group. Six groups based on the eruption sequence have been distinguished as follows:-

Groups 1, 3 and 5 have respectively Molar 1, molar 2, molar 3 in the process of erupting. Groups 2, 4 and 6 have respectively molar 1, molar 2, molar 3 erupted. Where the tooth is actually erupting the age of the animal can be fixed quite closely. The presence of an erupted tooth gives only an open age range expressed as "older than". Group 6 is subdivided into four further age groups based on the amount of wear shown by the teeth. Group 6 covers all fragments in which molar 3 has erupted and includes jaw fragments lacking teeth but which have appropriate alveoli. In group 6a molar 3 is unworn and is clearly recently erupted. Groups 6b, 6c and 6d show respectively slight, medium and heavy wear of molars and premolars. The frequency of each of these groups for the pre Conquest and post

Conquest phases is given in Table 8 and calculations from this related to the killing of the cattle are given in Table 9.

There were very few cattle bones from period 1 which could be measured. Details of these are given in Table 12. There were more measurable bones from periods 2 and 3 and the dimensions of these are given in Table 10. There was no significant difference in size between those from period 2 and those from period 3. When bones are complete various indices can be calculated from the different dimensions. Various indices of the dimensions of metacarpals and metatarsals are of value in determining the likely sex of the bone and for this reason the dimensions and indices of metacarpal and metatarsal bones are given in full in Tables 11 and 12.

The cattle were all horned. Horn cores were not well preserved and few survived to their full length. All were small horns with cores ranging in length from 83-160 mm.

Two frontal bones from phase 2 pit dated c.80AD(TT feature 5) showed that these animals had been killed by pole-axeing. Two specific deposits both pits (TZ feature 46) dated phase 2, 70-95 AD and TT feature 49, dated phase 2, 55-85 AD) contained an unusually high proportion of cranial, mandible and lower limb bones which suggests that they are associated with either slaughter, butchery or processing of butcher's waste.

Chop and saw marks on some cattle horn cores indicate that some were deliberately removed presumably to facilitate processing of the horn.

With the exception of some of the waste bones such as the metapodials all cattle bones were highly fragmented. Very few bones however showed any cutting or chopping marks.

TABLE 6 Baldock. The minimum number of individuals determined for each of the principal bones of the body of cattle in each phase.

BONE	PHASE 1	PHASE 2	PHASE 3
Cranium	10	114	37
Mandible	22	234	67
Scapula	11	88	39
Humerus	13	89	50
Radius	11	81	31
Ulna	3	29	20
Metacarpal	16	103	61
Pelvis	12	62	34
Femur	7	47	25
Tibia	7	65	55
Astragalus	10	65	39
Calcaneum	10	70	42
Metatarsal	12	103	56

TABLE 7 Baldock, Cattle. Number of fused or unfused epiphyses of principal bones in each phase.

EPIPHYSES & GROUP	PHASE 1		PHASE 2		PHASE 3	
	No. fused	No. unfused	No. fused	No. unfused	No. fused	No. unfused
Scapula A	16.	0.	34.	0.	29.	0.
Pelvis A	14.	0.	42.	0.	25.	0.
Total Group A	30.	0.	76.	0.	54.	0.
% Total Group A	100.%	0.%	100.%	0.%	100.%	0.%
Humerus d. B	15.	0.	73.	4.	38.	1.
Radius p. B	15.	0.	54.	1.	36.	0.
Total Group B	30.	0.	127	5.	74.	1.
% Total Group B	100.%	0.%	96.2%	3.4%	98.7%	1.3%
Metacarpal d. C	8.	5.	52.	17.	40.	9.
Tibia d. C	5.	3.	47.	14.	42.	13.
Total Group C	13.	8.	99.	31.	82.	22.
% Total Group C	61.9%	38.1%	76.6%	23.4%	78.8%	21.2%
Metatarsal d. D	8.	4.	48.	20.	38.	8.
Femur p. D	1.	5.	20.	13.	9.	5.
Calcaneum D	2.	2.	12.	10.	6.	5.
Total Group D	11.	11.	80.	43.	53.	18.
% Total Group D	50.%	50.%	65.%	35.%	74.6%	25.4%
Humerus p. E	0.	0.	8.	4.	5.	2.
Radius d. E	4.	1.	15.	10.	16.	3.
Femur d. E	1.	0.	15.	6.	11.	3.
Tibia p. E	0.	2.	7.	5.	4.	5.
Ulna E	1.	0.	2.	4.	4.	0.
Total Group E	6.	3.	47.	29.	40.	13.
% Total Group E	66.7%	33.3%	61.8%	38.2%	75.5%	24.5%

TABLE 8 Baldock. Frequency of the eruption and wear groupings of the cattle teeth.

	AGE GROUP									
	1	2	3	4	5	6	6a	6b	6c	6d
PHASE 1	0	1	4	3	3	2	-	-	-	-
PHASES 2 & 3	3	7	24	36	58	116*	7	15	61	19

*Includes all 6a-d plus 14 which cannot be classified further.

TABLE 9 Killing pattern of cattle as determined from the eruption and wear groups of the teeth in Phases 2 & 3.

	AGE GROUP									
	0	1	2	3	4	5	6a	6b	6c	6d
No. killed in age group	-	3	-	24	-	58	7	15	61	19
% killed in age group	-	1.6	-	12.8	-	31.0	3.7	8	32.6	10.2
No. killed older than age group	230	227	220	196	160	102	95	80	19	0
% killed older than age group	100	98.7	95.6	85.2	69.6	44.3	41.3	34.8	8.2	0

TABLE 10 Baldock Dimensions of cattle bones from Phases 2 & 3.

BONE & DIMENSION	NO.	SIZE RANGE	MEAN VALUE	STANDARD DEVIATION
Mandible LTR(A)	19	126.6-139.0	131.3	3.4
Molar M3 Length	25	32.1-40.3	35.7	2.3
Scapula GLP	14	53.7-71.2	61.3	5.1
SLC	11	37.7-53.6	45.1	5.3
Humerus BT	12	64.0-74.1	69.6	3.5
Radius TL	2	252-255	-	-
MWPE	32	66.0-95.2	74.2	7.4
MWDE	15	56.9-83.7	67.1	7.8
MSW	1		37.7	
Metacarpal TL	23	172-204	186.5	10.4
MWPE	109	45.5-72.4	53.5	5.4
MWDE	83	46.7-69.1	55.1	4.9
MSW	22	26.6-40.2	32.4	3.3
Tibia MWDE	27	52.2-68.5	59.7	4.7
Astragalus LL	81	53.0-72.3	61.7	4.1
Calcaneum TL	7	117.5-125.1	121.6	2.5
Metatarsal TL	22	181 -234	212.2	13.2
MWPE	97	35.9-58.9	43.1	3.8
MWDE	79	46.5 -65.6	51.8	4.8
MSW	24	21.1-33.4	27.3	3.1

TABLE 11 Baldock. Dimensions and indices of individual cattle metacarpals from periods 2 & 3.

	Dimension or index					
Ref.	GL	MWPE	MWDE	MSW	MWDE/L	MSW/L
1	176	52.2	-	28.6	-	16.2
2	175	49.5	50.1	26.6	28.6	15.2
3	174	55.9	-	33.4	-	19.1
4	188	52.7	51.6	32.4	27.4	17.2
5	204	67.6	66.4	40.2	32.5	19.7
6	188	52.4	52.4	29.0	27.8	15.4
7	200	55.1	56.3	31.0	28.1	15.5
8	188	51.7	52.1	29.6	27.7	15.7
9	190	56.3	59.7	32.4	31.4	17.0
10	200	55.1	55.9	31.5	27.9	15.7
11	182	52.2	52.8	29.7	29.0	16.3
12	176	56.8	58.1	32.5	33.0	18.4
13	184	55.6	57.5	32.5	31.2	17.6
14	195	55.4	57.0	32.0	29.2	16.4
15	191	60.5	63.0	35.5	32.9	18.5
16	178	51.3	54.2	29.6	30.4	16.6
17	180	-	52.7	29.8	29.2	16.5
18	192	63.3	69.1	38.5	35.9	20.0
19	173	56.9	63.7	33.8	36.8	19.5
20	200	61.6	65.7	34.6	32.8	17.3
21	172	54.7	59.5	30.6	34.5	17.7
22	180	57.1	63.1	33.2	35.0	18.4
23	204	70.2	-	37.0	-	18.1

TABLE 12 Baldock. Dimensions of individual cattle bones from Period 1

Bone	Dimensions			
	GL	MWPE	MWDE	MSW
Metacarpal	-	51.9	-	-
Metatarsal		41.5	50.2	
Astragalus		62.2 59.5 61.0		
Radius	246	75.6 67.2 69.9 68.3	61.5	27.8
	Width of head		Width of neck	
Scapula	59.8		42.1	

PIG

The minimum number of individuals present for each of the principal bones of the body for pigs is shown in Table 13 for each period of the site. Pig bones were present in almost every deposit of significant size. As with the bones of other species they were generally fragmentary with few chop, saw or cut marks on them.

The largest number of individuals was obtained from the mandible and the stage of eruption or wear of the lower cheek teeth indicates the ages at which the pigs were killed. Age groups are distinguished based on the sequence of eruption of the deciduous and permanent teeth and their subsequent wear. The following stages were used:-

Group 0 is a technical requirement and indicates the fact of birth. Group 1 has deciduous premolar 4 erupted. Group 2 has permanent premolar 2 erupting. In group 3 molar 1 is erupting and in group 4 is erupted. Groups 5 and 6 have molar 2 erupting and erupted respectively and 7 and 8 have molar 3 likewise. Group 8 is subdivided according to the amount of wear shown by molar 3. 8a is unworn, 8b has light wear and 8c moderate wear. There were no heavily worn examples.

The numbers of each are given in Table 14 and an analysis of the killing pattern in Table 15.

There were comparatively few measurable fragments from the post Conquest phases and very few from pre Conquest deposits. The majority of bones are thought to be from domestic pigs but a few larger specimens are in view of their size probably from wild pigs. These were found in the following deposits JF10 (phase 1 c.60 AD), JB30 (phase 2, c.120 AD), JF102 (phase 3, 4th -5th century

TABLE 13 Baldock. The minimum number of individuals determined for each of the principal bones of the body of pigs in each phase.

Bone	Phase 1	Phase 2	Phase 3
Cranium	12	42	14
Mandible	14	92	28
Scapula	9	45	8
Humerus	11	43	17
Radius	4	28	10
Ulna	6	28	8
Metacarpal	-	7	-
Pelvis	4	20	5
Femur	2	16	3
Tibia	3	37	14
Astragalus	2	19	4
Calcaneum	2	22	5
Metatarsal	-	6	-

TABLE 14 Baldock. Frequency of the erruption and wear groupings of the Pig teeth.

	Age Group										
	1	2	3	4	5	6	7	8*	8a	8b	8c
Phase 2 & 3	4	1	4	9	7	15	28	16	7	4	5

* includes all 8a-d animals.

TABLE 15 Baldock. Killing pattern of pigs in Phases 2 & 3 determined from the erruption and wear groups of the teeth

	Tooth erruption or wear group.											
	0	1	2	3	4	5	6	7	8a	8b	8c	Total Killed
NO. Killed in age group	-	4	1	4	9	7	15	28	7	4	5	84
% killed in age group		5	1	5	11	8	18	33	8	5	6	100%
No. killed older than age group	84	80	79	75	66	59	44	16	9	5	0	
% killed older than age group	100	95	94	89	79	70	52	19	11	6	0	

TABLE 16 Baldock. Dimensions of Pig bones from pre and post conquest deposits.

Bone & Dimensions	No	Range	Mean	S.D.
Mandible Phases 2 & 3				
Length of tooth row	1		100.5	
Length of Molar 3	14	28.2-36.1	32.7	2.5
Scapula Phases 2 & 3				
G.L.P.	17	31.0-38.5	33.2	2.2
S.L.C.	11	20.0-27.8	22.7	2.0
Possible wild boar				
G.L.P.	1		38.5	
S.L.C.	1		27.8	
Humerus				
Distal width phase 1	4	36.0-38.8	37.7	
Distal Width phases 2 & 3	17	32.6-41.5	36.8	2.5
Possible wild boar				
Distal width	2	43.0-44.9		
Radius				
MWPE phases 2 & 3	14	23.6-30.3	27.8	2.0
Ulna				
Width across process phases 2 & 3	9	18.1-24.2	20.9	
Possible wild boar	1		35.7	
Tibia				
MWDE phase 1	1		30.0	
MWDE phase 2 & 3	5	27.7-30.8	29.9	1.3
Possible wild boar				
phase 2 MWPE	1		53.0	
Astragalus				
Lateral length phase 1	2	38.9-40.2	39.6	
Lateral length phase 2 & 3	11	36.0-41.5	39.2	2.5
Possible wild boar phase 3	1		52.0	

AD), JB30 (phase 1, pre 100 AD) and TD ditch 8 (phase 3, 3rd - 4th century).

Bone dimensions are given for both phases in Table 16.

HORSE

Horse bones were present in most of the larger deposits mixed with the bones of other domestic species. In general there was nothing to indicate whether they were part of the food or general refuse. In some instances a number of related bones were present suggesting that a portion of a carcase was involved or that a previously buried carcase had been disturbed and found its way into the deposit. In some cases physical problems of excavation made it difficult to assess how the bones had been disposed.

In TD20 (early to mid third century) there was the greater part of an old horse. In TY feature 12 (phase 3 c.200 AD) there was the hindquarters, lumbar and thoracic vertebrae and ribs and some teeth of an immature horse. A few forelimb bones are probably not from this individual. This animal has all Group A epiphyses fused and Group B epiphyses not fused. It would therefore be between two and three years of age. In well TV21 (pre 315AD) there were the bones of at least seven adult horses and in another well JA feature 5 (1st - late 3rd century) bones from at least six horses were present. In both wells it is almost certain that complete or substantially complete horses were involved. In TV21 there are no signs of butchery or gnawing on the bones whereas in JA5 there is substantial gnawing on many of the bones such as would have been caused by dogs. A number of horse bones show pathological lesions and these are noted separately.

The minimum number of animals determined for each of the principal bones of the body are given for each phase in Table 17.

The age at which the epiphyses of the limb bones fuse to the shaft fall into two groups, Group A fuses in the range 15-24 months and Group B in the range 36-42 months. Details of these groups are given in Table 18 together with the number of fused and unfused examples from each phase.

Most of the teeth present are from the permanent dentition and many are well worn indicating that they are from aged individuals.

Dimensions of the horse bones for Phases II and III are given in Table 19. There were very few measurable fragments from Phase I and all of these fall within the range of those from the later phases.

Although a mean and standard deviation is given for the range of values for each dimension, caution is necessary in their use. Although for example a plot of individual values of metatarsal length appear to be normally distributed a similar plot of metacarpal lengths is markedly bimodal whilst that of tibia and radius length are apparently trimodal. In studying further these horses it is suggested that reference should be made to the full set of original measurements and that these be considered in relation to their archaeological context.

TABLE 17 Baldock. Horse. The minimum number of animals determined from the principal bones of the body in each phase.

	Minimum No. of Animals		
Bone	Phase1	Phase2	Phase 3
Skull	0	5	2
Mandible	4	9	12
Scapula	0	3	10
Humerus	0	4	8
Radius	2	13	12
Ulna	1	3	3
Metacarpal	0	7	7
Pelvis	4	2	8
Femur	4	6	7
Tibia	4	8	6
Astragalus	1	9	5
Calcaneum	0	3	4
Metatarsal	0	4	6

TABLE 18 Baldock. Age criterea from the fusion of the epiphyses of the horse limb bones.

Age at fusion	Bone and Epiphyses	Phase 1		Phase 2		Phase 3	
		No. unfused	No. fused	No. unfused	No. fused	No. unfused	No. fused
15-24 months							
	Humerus d.	0	0	0	3	0	14
	Radius p.	0	2	0	6	0	8
	Metacarpal d.	0	0	0	6	0	16
	Metatarsal d.	0	0	0	3	0	13
	Tibia d.	0	2	0	7	1	17
	Total	0	4	0	25	1	68
36-42 months							
	Humerus p.	0	0	0	1	0	7
	Radius d.	0	2	0	5	0	8
	Ulna p.	0	0	0	0	0	8
	Femur p.	0	2	0	1	2	4
	Femur d.	0	2	0	3	3	8
	Tibia p.	0	2	0	5	0	7
	Calcaneum	0	0	0	1	2	6
	Scapulats	0	0	0	2	0	15
	Total	0	8	0	18	7	63

TABLE 19 Baldock. Dimensions of Horse bones from Phases II & III.

Bone & Dimensions	No.	Size Range	Mean	S.D.
Mandible LTR	2	162.0-171.0	-	-
Length of M3	5	27.0-36.0	31.4	3.2
Scapula GLP	25	75.1-94.1	84.0	6.5
SLC	18	54.1-67.2	58.7	4.6
Humerus TL	8	258.0-289.0	272	13.3
MWPE	5	77.2-91.0	82.0	5.8
BT	20	61.0-75.2	68.4	4.1
MSW	9	28.9-36.3	32.4	2.9
Radius TL	30	288.0-346.0	313.0	19.3
MWPE	32	65.5-83.5	76.3	4.9
MWDE	35	61.9-77.6	69.3	4.6
MSW	30	29.6-40.7	35.1	3.3
Metacarpal TL	28	181.0-229.0	211.1	11.7
Lateral Length	28	176.0-220.0	204.1	11.0
MWPE	30	40.1-53.4	47.2	2.9
MWDE	33	38.7-50.8	46.2	2.6
MSW	25	26.6-35.6	31.7	2.2
Femur TL	4	348.0-386.0	374.7	17.9
MWPE	4	102.0-114.0	106.8	5.3
MWDE	11	76.5-90.5	83.5	4.7
MSW	3	38.4-43.0	40.5	2.3
Tibia TL	15	310.0-348.0	324.3	15.6
MWPE	11	81.2-95.4	88.0	4.9
MWDE	31	54.1-71.9	66.1	4.2
MSW	13	33.7-43.8	37.6	3.6
Astragalus TH	26	49.1-60.8	54.9	3.4
Calcaneum TL	11	95.6-107.2	101.1	3.9
METATARSAL TL	32	225-277	254·2	12·0
LL	30	227-269	247·6	10·4
MWPE	31	40·5-52·2	47·1	3·0
MWDE	32	41·9-51·9	45·5	2·6
MSW	33	23·0-34·9	29·0	3·0

DOG

Dog bones were found in many of the deposits. In many only a few bones are present but in others detailed below complete or semi complete skeletons were recovered and in others only part of the animal was buried. There is considerable variation in the size and types of dog present and this material would merit more detailed consideration in any study of dogs from Romano-British sites.

JE feature 12. This pit dated 100-150 AD contained an articulated dog skeleton. It is a very small dog estimated to be about 24 cms. at the wither - one of the smallest known from a Roman site in Britain. The sagittal crest was very weakly developed and the teeth are very crowded. The right upper second premolar had been lost in life and the alveolus healed over. All epiphyses were fused indicating a mature animal. The full dentition was present but the teeth showed little sign of wear. In addition a single cranium of another dog was present.

TY feature 27. This pit dated 60-100 AD contained the cranium, mandible and the cervical vertebrae of one individual. All the teeth were erupted and were moderately worn.

TJ feature 15. This pit dated c. 60 AD contained the shattered cranium and five cervical vertebrae of one individual but no mandible.

TT feature 20. A Flavian period pit containing the partially complete skeletons of three individuals. One mature animal is estimated to have a withers height of 31 cms. The shafts of its radius and ulna are very strongly curved. No cranium or mandible of this animal is present. The other two dogs are immature with none of the epiphyses fused indicating that they are less than six months old. The skulls are shattered but in one fragment of

mandible premolars 3 and 4 are just erupting from the bone, suggesting an age of 4-6 months.

JA Feature 12. This deposit dated 120-160 AD contained a complete skeleton though the skull is shattered. All the epiphyses of the long bones are fused. The permanent teeth are all present but show little wear. The height of this fully grown individual is estimated at 31 cms.

JD Feature 54. In this well dated to c. 60 AD were the shattered skeletons of four dogs. The epiphyses of all the limb bones were fused. One femur had a mended fracture.

TX Feature 6. A largely complete skeleton of a dog was found in this pit dated 120-200 AD. All the epiphyses of the limb bones are fused and the teeth are heavily worn. Premolars 2, 3 and 4 in both sides of the lower jaw and the upper jaw were lost in life and the alveoli had grown over. This elderly dog had healed injuries involving the left cheek (fracture) and right nasal bone (broken) and a fracture of the fibula at its base. The withers height of this dog is estimated to have been 41 cms. based on a femur length of 134.9 mm.

JA feature 5. A well deposit dated 1st - late 3rd century contained a semi complete skeleton of a large dog estimated from the length of its tibia and femur to have been about 60 cms. at the wither.

TT feature 19. This well dated c.180 AD contained a complete articulated skeleton though the skull was fragmented. The tibia is very twisted. The proximal epiphysis of one humerus is not fused indicating that the animal was about a year old. The withers height i is estimated using the femur and tibia index as 31 cms. Also present are two semi complete skeletons of young dogs aged 3-4 months. None of the epiphyses of the limb bones were fused. In one individual lower molar 1 was erupting but in the other this had not commenced.

TT feature 89. This pit dated c. 55-85 AD contained a semi complete skeleton of a tall, lightly framed dog. All the epiphyses of the limb bones are fused and there is no sign of wear on the permanent teeth. The length of the tibia (177 mm.) indicated a withers height of around 53 cms.

TV feature 13. This ditch dated c. 95 AD contained the complete skeleton of a large dog. It had a very well developed sagittal crest. The teeth are heavily worn. The withers height estimated from the femur/tibia index is 58 cms.

TJ pit 23 contained the complete skeleton of an immature dog aged 5-6 months. This deposit is dated 90-160 AD.

There is additionally a complete skull from the undated deposit TT64 and from TT48 a pit dated c.200 AD.

The maximum length of the humerus, radius, femur and tibia is given where applicable for the above animals and also for others in Table 20. Bones from the same individual are tabulated on the same line. Unfortunately most of the dog skulls were severely damaged. Dimensions for three largely intact ones are given in Table 21.

WEASELS

Skeletal remains of weasels (Mustela nivalis) were found in pit TX11 (55-70 A.D.), pit TZ10 (60-80 A.D.) and well TT 19 (c.180 A.D.). The appearance of the bones suggests that they are more or less contemporary with the deposits in which they were found and not later intrusions.

Special Deposits

Deposits whose contents differed from the general pattern have with two exceptions been noted above.

TABLE 20 - Baldock: Dimensions of dog limb bones

Deposit	Humerus	Radius	Femur	Tibia
JE12	78.8	71	86.3	80
TY28	134.8	-	-	-
TT20	97.6	90.5	103.9	98.1
JA12	100.1	89.2	109	102.6
TV13	175	178	191	193
TT49	160	156	-	-
JA5	88	-	200	194
TT19	94.3	88.5	104.9	98.8
JA8	140.2	138.3	152.6	156
TD56	-	153	-	-
TD56	-	172	-	-
JB33	-	66.4	-	-
TD54	-	-	173	-
TD55	-	-	149.9	146.9
TZ47	-	-	143.2	145.9
TY4	-	-	-	68.4
JA3	-	-	-	117.5
JA3	-	-	-	113.3
TX6	-	-	-	132.6
JA5	-	-	-	194

N.B. All dimensions on the same line are from the same individual.

TABLE 21 - Baldock: Dimensions of dog crania

Dimension	Deposit		
	TX6	TT64	TT48
1 Total length	142.2	187.5	146.8
3 Basal length	132.3	167.0	132.5
8 Nasal length	72.0	87.1	69.8
13 Median palatal length	74.9	91.5	74.1
36 Breadth at canine alveoli	32.2	≃ 37.5	31.5
35 Least palatal breadth	29.1	37.0	29.2
Length of cheek teeth row	50.4	61.9	51.6
Length of premolar 4	15.1	18.3	18.1

Dimensions after Von den Driesch.

The contents of the well JF10 (c.60 A.D.) are unusual in that the great majority of the bone is heavily burnt and difficult to identify. However, none of the limb extremities - the metapodials and phalanges of the cattle are burnt at all, it is the well fleshed limb bones etc. that are charred. This would suggest that the animals were killed and dressed out on the spot, the waste bones thrown into the well and the rest of the animals cooked over open fires, the remains thrown back into the fire and subsequently the debris tipped into the well. This situation is considered further in the discussion.

Deposit TX4 contained the only significant collection of bird remains from any of the deposits. This comprised the remains of twelve fowls represented by both their skulls and limb bones.

Discussion

The most striking feature of the bones from most deposits at Baldock is its degree of fragmentation. Despite the great volume of bone the number of complete or semi complete bones is extremely low compared to most other Romano-British sites which we have examined. In this respect it most resembles the bone which we have seen from large scale town midden accumulations. This in itself is significant suggesting that most of the deposits at Baldock represent the general refuse accumulation of a township where meat was purchased and consumed as small joints by individual households. A further implication of this fragmentation is that for cattle the meat was probably sold mostly off the bone and the bones subsequently broken up and also sold for culinary use.

Against that background the bone from certain deposits clearly has a different origin. Two pits, TZ46 (70-95 A.D.) and TT49 (55-85 A.D.) contain an unusually high proportion of the head and lower limb bones of cattle. These bones are in terms of butcher's meat of little value and are often treated as waste. The head, however, can be further processed for food or raw material. The horns were frequently detached from the skull and would probably have gone to a nearby horn worker to be processed. There is clear evidence of the horn cores being cut from the skull in several deposits throughout the post conquest period although no accumulations of horn workers or bone workers debris were found. From the head the tongue would almost certainly be separated and the remainder cooked up and processed to make potted meats. Cattle skulls would also be very suitable for feeding dogs. The lower limb bones, the cannon bones (metapodials) and toes (phalanges

can also be cooked for stock but were most probably boiled up to extract fat and gelatin.

The bone in these two pits is thought to be the debris from this further processing of the waste parts of the carcasses and is likely to have been carried out on a butcher's premises.

In two wells, TV21 (pre 315 A.D.) and JA5 (1st-late 3rd century) were the carcasses of 7 and 6 horses respectively. In both wells the animals are aged and it is presumed that they were deliberately slaughtered and that the wells were available for their disposal. There is no reason, given the age of these animals, to suppose that they were other than "put down". In TV21 there are no marks on any of the bones but in JA5 there is a substantial amount of gnawing on many of the bones. It is likely that the latter animals were fed to a pack of dogs as in present day kennel practice and the remains put down the well. In both wells the animals could have been killed over a period of time.

The well JD3 dated to 1st and 4th century contained the semi complete skeletons of two young Red deer aged approximately six months together with bones of 2 hares and a fox as well as some bones of pig, horse, cattle and sheep. It is strange that this well should contain the two recently weaned red deer calves. At this age (c.6 months) and time of year (nominally January) they would be expected to be in company with the female herd. Equally if these animals had been hunted one would have expected them to have been cut up and used for food. Also unusual is the presence of hare and a fox.

Although Red deer will scavenge and will also under cover of darkness feed close into dwellings especially if winter crops are being grown this does not explain how they came to be in the well. At Rudston (Chaplin & Barnetson) Red deer were also present in a

well in circumstances suggesting that they had fallen victim to the conditions of the well head. It may be that soil conditions in the vicinity of the Baldock well encouraged the natural growth of wild plants attractive to deer in winter such as holly, bramble, ivy, or damp loving plants. Perhaps the well head was a natural trap. There is no evidence at Rudston or Baldock to support the idea that these particular wells had a religious significance.

The other unusual deposit is JF10, a well dated around 60 A.D. Bones from this are mainly cattle, sheep and pig and are mostly heavily charred. The lower limb bones of the cattle are not charred whilst the humerus, radius, femur, tibia and other parts of the carcass are. This suggests that perhaps the animals were killed and cut up at one time for a purpose. The waste bones were immediately disposed of into the well, the carcasses cut up and the meat cooked. If the whole carcass had been spit roasted and served barbecue style it is unlikely that the bones would have become heavily charred and then fragmented. It is most likely that this is the debris from small portions cooked and eaten and the bones thrown back into the fire. The question is in what circumstances did this occur so that the debris from the meal was disposed of down a well. Surely an open cooking fire would not have been cleaned up! This burnt material comprises food bones from 8 cattle, 7 sheep and 2 pigs including a wild boar.

This is not normal domestic food debris and it is suggested that this might be the food debris from a large body of people. If it were from a Roman military unit this would explain the tidying up of the site and the cutting up of the carcasses after cooking.

The most unusual deposit on the site is the pit TX4 dated to c. 65 A.D. This pit contained the bones of 98 sheep, 5 cattle

9 pigs and 12 fowls. The sheep bones were not fragmented and were largely intact. The age structure of the sheep was quite different from other deposits. This deposit is remarkable mainly for the sheep, other species are incidental. From Table 2 it will be seen that for the site as a whole the minimum number of individuals determined from different bones varies considerably. In Phase I this ranged from 6-39, in Phase II from 38 - 390 and Phase III from 11 - 118. In TX4 however the range is from the astragalus with 30 and the radius with 64 to 98 from the metatarsal. This indicates that compared to the rest of the site very little of the carcasses was selectively dispersed.

It will be seen from Table 4 that in the bones from Phases II and III for the site as a whole four age cohorts are clearly present whilst in TX4 only two cohorts are significantly represented. The presence of group 3 and 4 animals which represent the adult breeding stock and the recruitment to this suggests the slaughter of a breeding flock. The almost complete absence of group 1 and 2 animals, the lambs of the year and the overwintered lambs suggests that these were not around at the time. The presence of group 3 animals with a dental composition which occurs in the range 18-24 months suggests that this slaughter took place during the winter which would tally with the absence of the lambs of the year and yearling cohorts.

These sheep were apparently not jointed and dispersed as was normally the case on this site. The evidence indicates that the flesh was removed from the bones, an unusual practice when preparing sheep meat. This suggests that it may have been intended for preserving - perhaps by salting, smoking or drying and was to be packed to be as light and compact as possible.

There is no evidence earlier or later on the site for such

practices. Given the approximate date of this deposit - 65 A.D.- and the disturbed conditions in the area associated with the Boudiccan rebellion and its aftermath it is tempting to connect the two. Could this perhaps be associated with a Roman military unit provisioning itself with meat and fleeces. Perhaps this ties in with deposit JF10 and possibly the four dogs in well JD54. Whatever the explanation something very unusual took place here about the time of the Boudiccan revolt and TX4 is associated with it and probably represents the events of only a few days unlike other deposits.

In attempting to establish the economy and practices associated with the Baldock settlement it has been necessary to examine each deposit in its own right and then to group this with others to try and build up a wider picture that is not over generalised. Careful analysis and comparison indicates that a broad approach in terms of site area and date is not misleading. It is therefore possible to discuss the economy of the site in three date ranges, Phase I - Pre Conquest; Phase II - Post Conquest to 150 A.D. and Phase III 150 A.D. onwards. The choice of the Conquest and 150 A.D. as break points is an arbitrary one but it does give the maximum grouping into phases of individually dated deposits. Throughout the discussion data from TX4 is not included in the Phase II figures.

In each phase the food economy is based on sheep, cattle and pigs. The horse and dog are not regarded as food animals on this site and wild animals, birds, fish etc. are insignificant.

In Table 12 the significance of each species in terms of numbers and potential meat yield can be seen for each phase. The picture is very consistent over all three phases. Despite considerable quantitative differences between phases cattle provided

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TABLE 2 Baldock - Approximate Carcass yields of Domestic Livestock

	Minumum Nos.	Est. dressed Carcass Wt. (lbs.)	Total Wt. Yield (lbs.)	% Yield
Phase I				
Cattle	22	300	6600	79.8
Sheep	39	25	975	11.8
Pig	14	50	700	8.5
			8275	
Phase II (ex.TX4)				
Cattle	229	300	68700	83.6
Sheep	372	25	9300	11.3
Pig	83	50	4150	5.1
			82150	
Phase II TX4 ONLY				
Cattle	5	300	1500	34
Sheep	98	25	2450	55.7
Pig	9	50	450	10.2
			4400	
Phase III				
Cattle	67	300	20100	82.2
Sheep	118	25	2950	12.1
Pig	28	50	1400	5.7
			24450	

approximately 80% of the meat, sheep 11% and pigs around 6%. This is based on the number of animals slaughtered. Consumption is however another matter. Some of the meat produced appears to have been exported from the site as there is a considerable discrepancy between the number of animals slaughtered as determined from the waste bones recovered in comparison with that represented by the meat bones. An indication of the quantities involved can be obtained by comparing the number of individuals represented by the waste (mandible), fore limb meat (humerus) and hind limb meat (femur) given in Table 23. Although considerable allowance must be made for possible differential handling and subsequently of preservation and recognition these figures suggest that this site was a net exporter of meat particularly of hind quarter joints with the bone in and that there was a significant increase in this trade for sheep after the Conquest.

The extent to which the inhabitants of Baldock were engaged in the production of the meat they consumed cannot be determined. However, what they ate indicates some aspects of the husbandry which produced it.

The sheep were slender limbed mostly horned animals but with some naturally polled ones (13%). All the sheep from pit TX4 were however horned. There was no indication of any change of size or type of sheep throughout the Roman period and the few measurements of sheep bones from the pre Conquest deposits do not suggest any difference in size of these compared to the later ones.

The bone dimensions when plotted appear in general to be normally distributed and thus to be from an homogenous sample. There is no indication of the sex of the animals.

The age at which the animals are killed can be determined by reference to the fused or unfused condition of the epiphyses of the

TABLE 23 Baldock - Comparison of the minimum number of individuals determined from waste and major meat bones of the fore and hind limb

	Mandible	Humerus	Femur
Sheep			
Phase I	39	23	10
II	390	159	47
TX4	80	83	76
III	118	74	22
Cattle			
Phase I	22	13	7
II	234	89	47
III	67	50	25
Pig			
Phase I	14	11	2
II	92	43	16
III	28	17	3

of the long bones and the eruption and degree of wear of the teeth. The approximate age at which this occurs is known for modern stock but the age at which these events occur may not be the same in all breeds or in the ancient pupulations. These are however stages in the maturation of the animal and give an index if not an absolute age for the stages at which the animals were killed. In Table 3 the age at which each group of epiphyses fuse are as follows:-

Group A 0-10 months; Group B 18-24 months; Group C 20-28 months; Group D 30-36 months and Group E 36-42 months. Calculations from the data in Table 3 indicating the pattern of killing are summarised for each phase in Table 24.

In Phase I allowance must be made when using the percentages for the comparatively small samples involved compared with later deposits. The pattern is however clear. Very few animals are killed (or die) under a year old. About 25% are killed in their second and 25% in their third year. Very few are killed in their fourth year so that about one third are killed as elderly animals.

In Phase II about 10% are killed in their first year with further killing of 27% and 19% respectively in the second and third year. The remainder - some 43% - are killed as elderly animals.

In PhaseIII killing is at 10% in the first and second year and 31% in the third and around 38% as elderly animals. In TX4 by contrast some 63% are killed as elderly animals emphasising the different nature of that deposit.

The picture is a very rational one. Probably these sheep are small and comparatively slow growing so that lamb carcasses would be small. Meat is clearly taken selectively from animals reared into their second and third years and to a much lesser

Table 24 Baldock - Killing Pattern of Sheep

Age in Months	No. fused	No. Unfused	% Unfused	% Killed in Age Range	% Killed less than
Phase I					
A O-10 m.	61	3	4.7%	4.7%	4.7%
B 18-24 m.	22	10	31%	26.3%	31%
D 30-36m.	9	13	59%	28%	59%
E 36-42m.	4	8	67%	8%	67%
F 42m. +				33%	100%
Phase II					
A O-10 m.	272	30	9.9%	9.9%	9.9%
B 18-24 m.	113	67	37.2%	27.3%	37.2%
D 30-36 m	52	67	56.3%	19.1%	56.3%
E 36.42 m	31	40	56.3%	O	56.3%
F 42 m. +				43.7%	100%
Phase II TX4					
A O-10 m.	450	31	6.4%	6.4%	6.4%
B 18-24 m.	292	25	7.9%	1.5%	7.9%
D 30-36 m.	325	73	18.3%	10.4%	18.3%
E 36-42 m.	222	128	36.6%	18.3%	36.6%
F 42 m. +				63.4%	100%
PHASE III					
A O-10 m.	104	11	9.6%	9.6%	9.6%
B 18-24 m.	57	14	19.7%	10.1%	19.7%
D 30.36 m.	21	22	51.2%	31.5%	51.2%
E 36-42 m.	11	18	62.1%	10.9%	62.1%
F 42 m. +				37.9%	100%

extent from those in their fourth year. Thereafter the sheep meat is only from elderly individuals. It is probably that the majority of second and third year animals are castrated males kept for the higher quality of their wool and growth for meat. The older animals are probably females culled from the breeding flock. The second and third year cohorts in the food debris is very interesting and it is probably very significant that these cohorts are weakly represented (12%) from the TX4 deposit. If these are largely castrated males rather than females of prime breeding age these would represent two very important commodities - prime meat and high grade wool. In general the finest fleeces are obtained from young castrated male sheep. These animals are being killed at the end of the year so that in the case of a second year animal there has been one prime clip and there is a new full fleece on its back, and the third year animal has been clipped twice.

It seems probable that in both pre Roman and Roman times the sheep husbandry was organised to produce quality graded wool as well as meat in addition to the regular wool clip from older breeding animals that were selectively culled when old for meat.

As with the sheep both the eruption and wear of the teeth and the fusion of the epiphyses of the limb bones can be used to determine at what stage the cattle were killed.

The small sample from the pre Conquest deposits shows no cattle killed in groups A and B (7-10 months and 12-18 months respectively) but an apparent (caution because of sample size, see Table 7) killing of about 40% by the end of Group C, (24-30 months) with probably the remainder living to a maturity well beyond group D, (36-48 months) The small sample of lower jaws that could be aged gives an almost certainly misleading impression that most were killed as young animals less than 24-30 months of age.

In Phases II and III the jaws show that about 65% of the cattle were killed at over 24-30 months mostly as aged individuals. In both phases there is no significant killing in groups A and B (up to 18 months) but just over 20% are killed in the range between groups B and C 18 to 24-30 months. This would correlate with the first phase of killing found in the jaw samples. There is some further killing up to group D at 24-36 months especially in Phase II but little thereafter so that from group E at 36-48 months some 62% of cattle in Phase II and 75% in Phase III are still alive.

It would appear that over all three phases of Baldock some 60-75% of the cattle meat comes from elderly animals and only between 25 and 40% from prime meat age animals. This suggests that some animals presumably castrated males were kept into their third and fourth years before being slaughtered implying a demand for quality meat. The high proportion of elderly animals suggests that these were kept as breeding stock, milking cows and working beasts and were only used for meat on a residual basis. Clearly there was a limited demand or availability for prime beef.

There is no indication that horses formed a significant part of the diet. Most of the horses were aged and from their disposal it is likely that they were killed at the end of their useful working life. Some would have been chronically lame to judge from the condition of their foot bones and probably long ceased active work. Wear marks on the teeth show that some had worn a bitted bridle over a long period and had been used for riding. It is possible that some of these older animals were kept as brood mares.

The measurements of the limb bones are very varied and there is no homogeneity in the sample. Factors used to estimate the withers' height of the horses from different bones give the following results:-

Bone	Size Range mm.	Factor	Calculated Withers/Height Range	Withers/Height in Hands
Humerus	258-289	5	1290-1445	12.3½-14.2
Radius	288-346	4.34	1250-1502	12.2 - 15.0
Metacarpal	181-229	6.41	1160-1468	11.2 - 14.3
Femur	348-386	3.51	1221-1355	12.1 - 13.2
Tibia	310-348	4.36	1352-1517	13.2 - 15.1
Metatarsal	225-277	5.33	1199-1476	12.0 - 14.3

These indicate animals ranging in size from 11.2 hands (1160mm) to 15.1 hands (1517mm).

There are comparatively few pig bones from Phase I and these give no certain indication of the utilisation or husbandry of the pig except that pigs contributed about 8.5% of the available meat only a little less than sheep. In Phases II and III they contributed 5.1% and 5.7% of the meat, about half that from sheep. In Phases II and III approximately half of the pigs were killed at less than a year of age and only 19% were older than about 18-30 months.

The pigs from Baldock represent the selective killing of animals at optimum stages of their growth with very little pig meat coming from aged animals. Clearly the pig husbandry was organised for the optimum production of prime meat.

There is a considerable range of dogs present at Baldock ranging from a small lap dog to larger animals suitable for hunting.

Wild animals are sparsely represented at Baldock and with the exception of a few pigs, thought to be wild pigs, the wildlife made almost no contribution to the diet. Portions of Red

deer and Roe deer antler are thought to represent raw material and may not have come from local animals.

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