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**Evaluation of bioarchaeological remains from 9-17 Well Lane, Beverley,
East Yorkshire (site code: WLB98)**

by

by John Carrott, Allan Hall, Deborah Jaques, Harry Kenward,
Frances Large, Helen Speight, and Darren Worthy

Summary

Excavations at 9-13 Well Lane, Beverley revealed medieval and post-medieval deposits containing well-preserved plant and invertebrate remains and vertebrate assemblages. The presence of butchers, tanners and hornworkers in this area during the early post-medieval period is indicated from the bone assemblages. Bone of domestic mammals, consistent with butchery waste, was produced from the medieval material.

On the basis of the plant and invertebrate remains, the deposits do not appear to have formed in permanent running or standing water, although the area was probably intermittently wet. This part of medieval Beverley was probably used for the dumping of foul-smelling and industrial waste materials.

Further work is recommended on all of the material examined and on a selection of further sediment samples, leading to publication.

Keywords: EVALUATION; WELL LANE; BEVERLEY; WALKER BECK; MEDIEVAL; POST-MEDIEVAL; PLANTS; VERTEBRATES; BONE; FISH; INVERTEBRATES; INSECTS; TANNING;

Authors' address:

Palaeoecology Research Services
Environmental Archaeology Unit
Department of Biology
University of York
PO Box 373
York, YO10 5YW

Prepared for:

Northern Archaeological Associates
15 Redwell Court
Harmire Road
Barnard Castle
County Durham
DL12 8PN

Answerphone: (01904) 433846

Fax: (01904) 433850

Website: www.york.ac.uk/inst/eau

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Introduction

Excavations were undertaken during 1998 by Northern Archaeological Associates on land formerly occupied by Nos. 9-17 Well Lane, Beverley, East Yorkshire. The site is situated just west of the former Walker Beck, a stream which ran through the centre of the town, creating a wide marshy valley probably subject to seasonal flooding (Mackey 1998). The excavation revealed a large pond or pit, many clay-lined pits, various dumps and several layers of peat-like deposits.

Six General Biological Analysis samples ('GBAs' *sensu* Dobney *et al.* 1992), from two of the three trial trenches excavated, were submitted for an evaluation of their bioarchaeological potential. The samples were from deposits associated with the earliest phases encountered by the excavators; deep deposits of 'peat' and silt from the late 11th through to the mid 13th century.

Three boxes (each approximately 16.5 litres in volume) of hand-collected animal bone, recovered from Trenches B and C, were also submitted.

Methods

Sediment samples

The material was initially inspected in the laboratory and described using a standard *pro forma*. The subsamples were processed for extraction of plant and invertebrate macrofossils following procedures of Kenward *et al.* (1980; 1986).

All invertebrate macrofossils were recorded semi-quantitatively using the scale described by Kenward *et al.* (1986) and Kenward (1992). Records were made on a paper *pro forma* for later transferal to a computer database (using Paradox software) for analysis and long-term storage.

Vertebrate remains

All of the bone, with the exception of the unstratified material, was recorded in detail. Subjective records were made of preservation, angularity (i.e. the nature of the broken surfaces), and colour. Quantities and identifications were noted where appropriate. Additionally, semi-quantitative information concerning fragment size, dog gnawing, burning, butchery and fresh breaks, was recorded for each context. Fragments not identified to species were, where possible, grouped into the categories of: large mammal (assumed to be horse, cow or large cervid); medium-sized mammal (assumed to be sheep, pig or small cervid); and unidentifiable. The unstratified material (Contexts 205, 212 and 213), was briefly scanned. Measurements were taken, where appropriate, in accordance with those detailed by von den Driesch (1976), with additional measurements following those outlined by Dobney *et al.* (forthcoming).

Results

Sediment samples

Context information provided by the excavator is in square brackets.

Mid 13th century

Context 135 Trench B [blanket layer of black peat penetrated by driven stakes and roots, below 134] **Sample 135AA/T** (2 kg processed)

Laboratory description: mid-dark brown to mid-dark grey to black, crumbly and slightly layered, clay silt with fine and coarse woody herbaceous detritus. Stones in the size range 6-20 mm and a large piece (c.10 cm) of limestone were present, as were: wood, 'straw', and bone (some of which was burnt). Streaks of rotted orange organic matter were also noted.

Plant macrofossils: the large residue of about 1200 cm³ contained a large proportion of undisaggregated silt pellets amongst which were chalk sand and gravel, wood and bark fragments and a modest range of rather well-preserved identifiable plant remains. Madder root and weld seeds were recorded and with them were many of the same plants seen in the other deposits, notably the 'disturbed ditch' group in Context 224.

Invertebrate remains: the flot contained insect remains which were rather poorly preserved, being both rotted and fragmented. They represented a small and rather bland group of species which were mostly typical of occupation sites. There were a few aquatics, but insufficient to stand as evidence of a waterlain origin. A substantially larger subsample would perhaps provide enough remains for a clearer picture of depositional conditions to be obtained.

Vertebrate remains: several fish fragments were identified from the residue, including a split gadid vertebra. Additionally, a cat phalange and a caprovid radius fragment were also present.

Late 12th - mid 13th century

Context 224 Trench C [blanket layer of black peat with grey silty patches below clay platform 220] **Sample 224AA/T** (2 kg processed)

Laboratory description: moist, light-mid brown to light-mid grey, crumbly (working soft and sticky), clay silt with fine herbaceous detritus. Stones were present in the size ranges 2-6 mm and 20-60 mm. Also present were: white flecks, seeds, charcoal, twigs.

Plant macrofossils: there was a modest-sized residue of about 700 cm³ of which about half by volume comprised chalk gravel and sand and undisaggregated silt, the organic fraction mainly consisting of wood fragments with a few twigs and a variety of seeds and fruits of plants seen in the other deposits—notably the 'disturbed ditch' group (such as celery-leaved crowfoot *Ranunculus sceleratus* L., persicarias *Polygonum persicaria* L. and *P. lapathifolium* L. and the goosefoots in *Chenopodium* Section *Pseudoblitum*). Traces of madder root were present and there were moderate numbers of seeds of weld.

Invertebrate remains: insect remains in the flot were abundant and well-preserved, and other invertebrates were present in appreciable numbers. Aquatic and waterside taxa were well-represented, with numerous *Daphnia ephippia* (water flea resting eggs), and at least six species of water beetles. Open ground was indicated by a few taxa, but these may have originated as background fauna. There were small numbers of a range of species typically found together in and around buildings, but it was not clear whether these were brought in dumped material or originated as background fauna.

Vertebrate remains: the bones recovered from this sample included a gadid vertebra and three unidentifiable fragments.

Mid - late 12th century

Context 229 Trench C [blanket layer of black peat below 228] **Sample 229AA/T** (2 kg processed)

Laboratory description: moist, mid-dark grey/brown to just grey in places, crumbly (working softish), slightly clay silt with some fine and coarse woody herbaceous detritus. Stones in the size range 2-60 mm were present and included some angular limestone and a few rounded quartz pebbles. Wood, twigs, and bone were present.

Plant macrofossils: the modest-sized residue of approximately 700 cm³ consisted of about equal proportions of organic and inorganic material, though a good proportion of the residue was slightly concreted ashy sediment which had not fully disaggregated. The inorganic fraction mainly comprised chalk gravel with some sand, the organic included modest numbers of twig fragments up to about 20 mm by 5 mm. Identifiable plant remains were well represented and mostly well-preserved, with a mixture of taxa from disturbed habitats of various kinds, but most notably the kind of disturbed wetland communities found in ditches and by streams close to habitation. There were traces of seeds of the dyeplant dyer's rocket or weld, *Reseda luteola* L.; this could just as easily have been a component of the local ruderal flora as a plant actually used in dyeing.

Invertebrate remains: the flot contained a moderately large assemblage of insects and a few other invertebrates. There were a few aquatics, including one *Daphnia* resting egg and several of another water flea, several ostracods and two beetles. Such a group

seems more typical of still water (perhaps only temporary), than of a stream, and indeed there was no evidence from the invertebrates for flowing or permanent water. A few species suggested disturbed open ground, such as seems to have been normal around dwellings in the past. Among these were the ground beetle *Pterostichus melanarius* (Illiger), the nettle-feeding weevil *Cidnorhinus quadrimaculatus* (Linnaeus), and the nettlebug *Heterogaster urticae* (Fabricius). The last of these is to the north of its present established range; it has been found frequently in York and elsewhere, and is regarded as indicative of raised temperatures in the past.

The deposit thus seems to have formed in the open where there was at least temporary water. However, it undoubtedly included at least a little material from occupation, since a range of house fauna taxa was present, among them the human flea (*Pulex irritans* Linnaeus). A larger subsample would probably permit clarification of the interpretation of this material.

Vertebrate remains: six unidentified bone fragments and one herring (*Clupea harengus* L.) vertebra were present in the residue.

Context 228 Trench C [blanket layer of dark brown peat below 224] **Sample 228AA/T** (2 kg processed)

Laboratory description: moist, mid grey brown, brittle to crumbly (working soft), humic clay silt with fine and coarse woody herbaceous detritus. Minor components of the sediment were a light grey slightly sandy silt and a light brown/grey clay, and some black rotted organic matter. Stones in the size ranges 2-20 mm and >60 mm were present (including limestone, flint, and ?rotted chalk flecks). Twigs and ?charcoal were also present.

Plant macrofossils: of the modest-sized residue of about 700 cm³, some 15% was sand and gravel (mostly chalk), the rest undisaggregated silt with some wood fragments and a diverse range of somewhat eroded and silt-covered seeds and fruits from weeds and disturbed wetland taxa, with a few buds from trees (willows, *Salix*), perhaps likely to have been growing nearby. There were hints of a grassland component consistent with the presence of hay or stable manure, but it was not particularly striking.

Invertebrate remains: the flot contained numerous, well-preserved insects and abundant *Daphnia ephippia* (water flea resting eggs). The latter indicate deposition in at least temporary water, and there were several species of beetles and bugs able to exploit such habitats. The presence of a case of a caddis fly, and a reed beetle (Donaciinae) perhaps support the hypothesis that there was either more permanent water or flooding from the nearby stream. Traces of species typically associated with human occupation (synanthropes) may indicate dumping of waste, but they may equally have originated as background fauna. A substantially larger subsample (perhaps 5 kg) would probably produce a group of insects and other invertebrates which would clarify the origin of this deposit.

Vertebrate remains: a single, well-preserved ?cod (cf. *Gadus morhua* L.) opercular was identified from the residue.

Late 11th - mid 12 th century

Context 152 Trench B [blanket layer of fresh brown woody peat below 151] **Sample 152AA/T** (1 kg processed)

Laboratory description: moist, mid brown, brittle (working soft), humic, slightly clay silt with fine and coarse woody herbaceous

detritus. The sediment was slightly darker and lighter in places where oxidation had occurred. Wood was present, twigs were common and sand grains were visible.

Plant macrofossils: the small residue of about 200 cm³ consisted almost entirely of organic debris with just a few pellets of undisaggregated humic silt. The residue had a large component of slender 'twiggy' fragments, which proved to be dyer's greenweed, *Genista tinctoria* L., a plant widely used in the past as a source of yellow dye. There were also a few small fragments from the roots of madder, *Rubia tinctorum* L. (another certain dyeplant). Other plants recorded here which may have been used by humans were seeds of flax (*Linum usitatissimum* L.) and (charred) leaf fragments of saw-sedge (*Cladium mariscus* (L.) Pohl). Otherwise, the rather small assemblage of generally well-preserved plant remains comprised taxa from disturbed habitats and wetland of various kinds, some of them consistent with conditions close to a ditch or stream close to habitation. The rather frequent grains of the heath grass, *Danthonia decumbens* (L.) DC. in Lam. & DC. are part of a possible short turf group whose presence here is perhaps difficult to explain unless they arrived in turves used for roofing (as, presumably, was the saw-sedge); the presence of some small lumps of peaty sediment with fine rootlets may also have originated in turves.

Invertebrate remains: modest numbers of invertebrate fossils were present in the flot, and preservation was only moderately good. There were some aquatics and waterside species and a trace of taxa likely to have originated in occupation areas. Although the implications of this group are not clear, a large subsample would probably produce an interpretable assemblage.

Vertebrate remains: A single chicken radius was identified from this sample.

Context 150 Trench B [blanket layer of mixed brown peat and silt (black horizon at base), below 149] **Sample 150AA/T** (2 kg processed)

Laboratory description: moist, dark brown to almost black, crumbly clay silt with fine and coarse woody herbaceous detritus. Some mid brown clay silt was present as a minor component of the sediment. White flecks and wood were common, leather and twigs were present.

Plant macrofossils: the large residue of about 700 cm³ consisted chiefly of wood (to 90 mm) and other organic material, which made up about 80% of the whole. The remainder was chalk in the form of gravel-, grit- and sand-sized clasts. Weeds of various kinds were the most prominent of the rather large number of plant taxa represented, along with various plants of waterside habitats, some likely to have been growing close to or in a ditch. *Genista tinctoria* L. twig fragments were again recorded, along with traces of *Rubia* root and root bark. Noticeable amongst the coarser debris were numerous fragments of a leguminous pod, perhaps *G. tinctoria* L. (though not identified with certainty as such). As in the case of the sample from Context 152, some small clasts of peaty sediment with fine rootlets and some of the identifiable plant remains, may have originated in turves.

Invertebrate remains: the flot consisted of more than 50 cc of plant fibres. Only part could be examined; there were few beetles (perhaps a few tens in the whole flot). All were aquatics, of which three species were noted. There was also a single cladoceran ephippium (water flea resting egg). Fly puparia were very abundant, and probably

were species which would breed in decaying plant matter, rather than being aquatics. The only other invertebrate seen was a single earthworm egg capsule. It is possible that a much larger subsample would provide a clearer view of how this deposit formed, and under what conditions, but the time required to process and sort the material would be substantial.

Hand-collected vertebrate remains

In total, 304 fragments were recovered by hand collection, of which 153 were identified to species. The range of identified species recovered from the excavations, together with total number of fragments, is shown in Table 1, and measurements are presented in Table 2.

Preservation of material from both trenches was mostly good, with only two contexts (219 and 224) containing some slightly battered material. Overall, colour was mostly recorded as dark brown, although some fragments from Context 219 were ginger/brown and those from Context 152 were beige in colour. The bone from Context 152 was well-preserved but had not taken on the dark staining usually characteristic of water-logged material. Dog-gnawed bone was noted throughout the assemblage, although few bones in total were affected. Evidence of butchery included cattle vertebrae from Context 224 split both transversely and longitudinally. The cattle and caprovid horncores (mainly from Context 129 and 147) showed evidence of removal from the skull, most having been chopped at the base of the core.

Early post-medieval

Material of this date was recovered from the fills (129 and 147) of a large pond or pit in

Trench B. The remains of caprovids and cattle were the most numerous. Examination of the range of skeletal elements for these two species showed that horncores, cranial fragments, mandibles and metapodials were the most frequently encountered elements, indicating primary butchery waste. The eleven horncores (9 of which were from sheep) suggest a somewhat specialised deposit of hornworkers' waste. Unstratified material, containing fragments recovered from Contexts 212 and 213 (Trench C, 15/16th Century deposits), included similar material, notably cattle and caprovid horncores and caprovid mandibles and metapodials. This type of waste suggests the presence of butchers, tanners and hornworkers in the vicinity.

Single fragments of pig, cat, dog, goose and chicken were also noted.

Medieval

This period was represented by a small assemblage recovered from fourteen contexts (seven from each trench). Mammals included the usual domestic species: cattle, caprovid (including two goat horncores), from Contexts 219 and 230), and pig, with horse, dog and chicken remains also present. Most of the goose remains were identified as larger species of grey geese (*Anser* spp.), therefore it was not possible to determine whether they represented domestic or wild individuals. A plover (*Pluvialis* sp.) tarsometatarsus was recorded from Context 228, and from the same deposit, two raptor (Accipitridae) bones were tentatively identified as marsh harrier (*Circus aeruginosus* (L.)). Insufficient reference material precluded a more certain identification. As their name suggests, marsh harriers favour marshland and margins of slow-flowing streams and rivers. During the 11th and 12th Centuries the Walker Beck,

situated close to the site at Well Lane, flowed through a wide marshy valley, an ideal habitat for the marsh harrier.

Remains of wild mammals included a fallow deer (*Dama dama* (L.)) mandible (Context 134) and one hare (*Lepus* sp.) pelvis fragment.

Fish remains were not numerous but included a number of ?cod (cf. *Gadus morhua* L.) fragments and gadid skull and vertebra fragments.

Discussion

The examined deposits were all described by the excavators as containing, or consisting of, 'peat', but are not peats in the strict sense, as many of them consist largely of dyeplant material. The material from Context 152 differs from that present in the other subsamples examined, in being rather less woody and containing the highest proportion of dyeplants (the bulk of the fine twigs are dyers' greenweed, *Genista*), and probably represents dyebath waste. The other deposits probably formed by gradual accumulation of occupation debris and dumped waste products.

On the basis of evidence from plant and invertebrate remains, the deposits do not appear to have formed in permanent running or standing water, although conditions were probably intermittently wet. The area appears to have had a relatively undisturbed phase, with a slow flow of water, in order for a flush of nitrophile taxa (*Bidentetea*) to become established in the vegetation community adjacent to the watercourse.

Most of the vertebrate material was well-preserved and set within a tight dating framework. The state of preservation of the

bones did not suggest the presence of redeposited or residual material.

The early post-medieval material was primarily butchery refuse, with the horncores perhaps being indicative of craft activities. The concentration of metapodials may also indicate tanners' waste, as skins were often delivered to the tanner with the lower limbs still attached. The close proximity of the site to the market place may account for the concentrations of such refuse. Evidence for continued use of this area of the town for tanning activity is also suggested by later, 18th century, deposits.

The medieval bone assemblages are rather small for any detailed interpretation but also appear to represent butchery waste rather than domestic or kitchen refuse.

Together, the evidence from the bioarchaeological remains give the overall impression that this part of medieval Beverley was used for the dumping of foul-smelling waste materials and for various industrial processes.

Recommendations

Given the tight dating of the deposits, the good state of preservation and the presence of plants likely to have been used in dyeing, all the material should be kept and a more complete record made of the plant taxa present using the subsamples already processed.

Larger subsamples should be processed to recover more substantial invertebrate assemblages, which will cast further light on depositional conditions, local environment, and the origin and nature of the dumped material.

Few large bone assemblages of medieval and early post-medieval date have been recovered in this region, and those that have, remain largely unpublished. This period is therefore poorly represented in the archaeological record of the city. Further analysis of the vertebrate remains is recommended as it would provide more information on human activity in this area of Beverley. It is very likely that further excavations would also produce a moderately large, well-preserved bone assemblage. Together with information from other sites in Beverley (for example, at Eastgate and Lurk Lane (Scott 1991, 1992)), this material would provide important data for comparison and synthesis.

The implementation of an extensive and systematic programme of on-site sieving would possibly produce a moderate fish assemblage.

Storage requirements

The remaining sediment, residues, flots and extracted invertebrate remains and bone should all be preserved to permit further study.

Archive

All material is currently stored in the Environmental Archaeology Unit, University of York, along with paper and electronic records pertaining to the work described here.

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Table 1. Total numbers of hand-collected vertebrate remains from medieval and early post-medieval deposits from Trenches B and C, Well Lane, Beverley.

Species		15/16th Century (Trench B)	M11/13th Century (Trench B)	M12/14th Century (Trench C)	Total
<i>Lepus</i> sp.	hare	-	-	1	1
<i>Canis</i> f. domestic	dog	1	1	-	2
<i>Felis</i> f. domestic	cat	1	-	-	1
<i>Equus</i> f. domestic	horse	-	1	-	1
<i>Sus</i> f. domestic	pig	1	7	6	14
<i>Dama dama</i> (L.)	fallow deer	-	1	1	1
<i>Bos</i> f. domestic	cow	20	6	8	34
Caprovid	sheep/goat	37	18	16	71
<i>Anser</i> sp.	goose	1	1	4	6
Accipitridae	raptor	-	-	2	2
<i>Gallus</i> f. domestic	chicken	1	2	8	11
<i>Pluvialis</i> sp.	plover sp.	-	-	1	1
Gadidae	cod family	-	1	3	4
cf. <i>Gadus morhua</i> L.	?cod	-	-	2	2
cf. <i>Melanogrammus aeglefinus</i> (L.)	?haddock	1	-	-	1
<i>Sub-total</i>		63	38	52	153
Unidentified bird		1	-	-	1
Unidentified fish		-	1	1	1
Unidentified		34	31	84	149
<i>Sub-total</i>		35	32	85	151
Total		97	69	136	304

Table 2. Measurements (in millimetres) of hand-collected vertebrate remains from medieval and early post-medieval deposits from Trenches B and C at Well Lane, Beverley (after von den Driesch (1976) and Dobney et al. (forthcoming)).

Caprovid horncore

Date	Context	41	42	BC	43
Mid 13th C	134	40.93	30.46	120	-
Mid 13th C	134	-	17.01	-	90
Mid 13th C	134	39.32	23.77	98	-
15/16th C	129		34.31	-	205
15/16th C	129	34.05	24.04	95	124
15/16th C	147	30.45	22.43	86	109
15/16th C	147	25.73	18.89	66	90
15/16th C	147	-	16.69	-	-

Caprovid metacarpal

Date	Context	GL	SD	Bp	Dp	Bd	Dd	Dem	Dvm	Dim
Mid 13th C	134	101.64	12.3	19.77	14.4	22.93	13.58	9.14	13.43	11.39
Mid 13th C	135	-	11.41	-	-	22.66	13.75	8.75	13.13	11.29
15/16th C	147	122.68	12.07	23.21	16.38	25.67	16.65	11.02	16.61	13.91
15/16th C	147	115.49	13.08	23.15	17.43	23.74	15.54	9.72	15.55	12.65
15/16th C	147	125.61	11.63	22.17	16.58	24.04	-	-	-	-
15/16th C	147	102.4	11.61	20.53	14.79	22.97	9.03	13.74	-	-
15/16th C	147	-	-	21.63	15.47	-	-	-	-	-

Caprovid metatarsal

Date	Context	GL	Bp	Dp	SD	Bd	Dd	Dem	Dvm	Dim
Mid 13th C	134	-	-	-	11.92	23.47	15.74	8.78	14.68	12.75
Mid 13th C	135	-	-	-	11.84	23.87	15.33	8.68	14.44	12.38
15/16th C	147	135.24	20.71	-	12.28	24.51	-	9.62	15.85	12.87
15/16th C	147	138.36	20.26	22.4	12.34	24.53	16.81	10.16	16.69	13.31
15/16th C	147	-	18.43	-	9.94	-	-	-	-	-

Caprovid radius

Date	Context	GL	Bp	BFp	SD	Bd	BFd
Mid 12th C	149	-	29.36	25.73	14.88	-	-
15/16th C	129	141.59	27.9	25.72	15.51	25.84	24.57

Caprovid tibia

Date	Context	Bd	Dd
Mid 13th C	135	26.03	20.4
15/16th C	147	25.73	-

Caproid humerus

Date	Context	BT	HT	HTC	SD
15/16th C	147	28.35	17.22	13.24	13.55

Caproid astragalus

Date	Context	GLI	DI	Bd
15/16th C	147	27.91	15.18	18.03

Cattle horncore

Date	Context	41	42	BC	43
Mid 12th C	148	53.96	44.48	160	182
Mid 13th C	135	37.26	28.1	105	102
15/16th C	129	51.42	45.17	164	-

Cattle metacarpal

Date	Context	Dp	Bd	Dd	Dem	Dvm	Dim
Mid 13th C	134	-	62.67	33.84	26.78	34.09	31.62
15/16th C	147	33.14	-	-	-	-	-

Cattle metatarsal

Date	Context	Bd	Dd	Dem	Dvm	Dim
14thC	219	46.84	-	19.03	-	21.61
15/16th C	147	58.89	31.37	23.63	31.4	28.81

Cattle calcaneum

Date	Context	GL	C	C+D	DS
15/16th C	147	132.01	26.78	49.26	41.69

Other species

Scapula

Date	Context	Species	GLP	SLC
Late 11th C -mid 12th C	152	pig	29.55	20.9
Mid 13th C	134	dog	20.98	16.55

Femur

Date	Context	Species	SD	Bp
Mid 13th C	135	pig	-	50.74
15/16th C	129	cat	7.67	20.24

Metacarpal 3

Date	Context	Species	GL	Bp	Bd
Mid -Late 12th C	228,229,230	pig	77.54	17.92	18.1

Metatarsal

Date	Context	Species	GL	GLI	LI	Bd	Dd
Mid 13th C	135	horse	259.9	254	249	47.54	37.56

Birds

Scapula

Date	Context	Species	Dic
Mid -Late 12th C	229	fowl	11.02

Humerus

Date	Context	Species	Bp
Mid -Late 12th C	228	goose	32.59

Ulna

Date	Context	Species	GL	SC	Bp	Dip	Did
Mid -Late 12th C	228	fowl	69.51	4.08	8.28	12.25	9.72

Coracoid

Date	Context	Species	GL	Lm	BF	Bb
14th C	222	fowl	45.78	43.7	11.28	12.84

Carpometacarpus

Date	Context	Species	GL	Bp	Did
Mid 13th C	135	goose	87.37	20.88	10.73

Femur

Date	Context	Species	Bp	Dp	GL	SC	Bd	Dd
Mid -Late 12th C	228	fowl	14.03	10.08	71.6	5.88	-	-
Mid -Late 12th C	228	fowl	13.75	9.46	71.1	5.54	12.94	11.5

Tibiotarsus

Date	Context	Species	GL	La	SC	Bd	Dd	Dip
Mid -Late 12th C	228	fowl	98.65	96.12	4.77	9.93	10.29	17.16
Mid -Late 12th C	228	fowl	-	-	4.98	9.75	10.76	-
Mid -Late 12th C	228	raptor	-	-	5.05	10.08	-	-
15/16th C	129	goose	144.8	138.66	8.24	17.84	17.1	25.52
15/16th C	129	fowl	105.72	102.39	5.55	11.79	11.7	19.73

Tarsometatarsus

Date	Context	Species	GL	Bp	SC	Bd
Mid -Late 12th C	228,229,230	fowl	81.76	13.66	6.57	14.14
Mid -Late 12th C	228,229,230	raptor	94.24	11.42	4.36	13.06
Mid -Late 12th C	228	goose	89.5	19.14	8.19	21.02
Mid -Late 12th C	228	plover sp.	41.88	6.21	1.93	5.83

