

Reports from the Environmental Archaeology Unit, York 95/11, 10pp.

**An evaluation of biological remains from excavations
at Thirsk Castle, North Yorkshire (site code: TC94)**

by

Don Brothwell*, John Carrott, Keith Dobney, Allan Hall, Michael Issitt,
Deborah Jaques, Cluny Johnstone, Frances Large, Annie Milles and Guy Roberts

Summary

Ten samples of sediment, a small animal bone assemblage, and the bones from six badly eroded and disturbed human burials, were submitted for evaluation of their potential for bioarchaeological analysis.

The sediment samples contained only tiny numbers of small bone fragments and charred plant remains of no interpretative value. The animal bone assemblage was too small to be of interpretative value. The human remains were too poorly preserved to provide more than basic information. Although the bones recovered from this evaluation were of little interpretative value, the possibility of recovering a regionally and nationally important Anglian bone assemblage must be considered should further excavation be undertaken in the vicinity.

Keywords: Thirsk Castle; North Yorkshire; Anglian; burials; human remains; vertebrate remains; charred plant remains.

Authors' address:

Environmental Archaeology Unit
University of York
Heslington
York YO1 5DD
(* Department of Archaeology, Micklegate House,
Micklegate, York YO1 1JZ)

Telephone: (01904) 433843-51
Fax: (01904) 433850

Prepared for:

MAP Archaeological Consultancy Ltd.
39 Greengate
Malton
North Yorkshire YO17 0EL

27 January 1995

An evaluation of biological remains from excavations at Thirsk Castle (site code: TC94)

Introduction and methods

Ten samples of sediment ('GBAs' *sensu* Dobney *et al.* 1992), some human skeletal remains, and a single box of hand-collected animal bone, were submitted for an evaluation of their potential for bioarchaeological analysis.

All of the sediment samples were inspected in the laboratory and a description of their lithology recorded using a standard *pro forma*. None of the samples were deemed likely to produce worthwhile quantities of uncharred plant or invertebrate macrofossils and so none were processed as GBAs. Instead, a 1 kg voucher was retained from seven of the samples and all the remaining sediment was sieved to 500:µm (apart from Sample 2, Context 2005 which was sieved to 1 mm) to recover small bones, charred plant remains, and finds (the latter to be returned to the excavator). The residues were dried prior to examination and are recorded as 'BSXS' residues in the text below.

The very small assemblage of hand-collected animal bone came from a total of fifty-five contexts. Of these, thirty-four were dated to between the Anglo-Saxon and post-medieval periods, eighteen being Anglo-Saxon. The remaining contexts were described by the excavator as either modern or mixed/disturbed and have been excluded from this evaluation.

The human bone assemblage represented six inhumations. The material was received in a washed condition, but without any evidence that the bones had received conservation. From site photographs and notes, provided by the excavator, the skeletons were in varying states of incompleteness.

Charred plant and invertebrate remains were examined from the residues resulting from sieving.

None of the samples were thought suitable to be examined for the eggs of parasitic nematodes.

Results

The results of the investigations are presented in context number order, with information provided by the excavator in brackets.

The BSXS samples

Context 2003 [Layer butting rampart bank for castle, therefore post-dates castle construction in 11th century. Land unit used for gardens/pasture after destruction of castle]

Sample 1

Dry, mid to dark grey-brown, indurated to brittle (working unconsolidated), silty sand. Root voids were abundant and pot, ?mortar and small and medium-sized stones (6 to 60 mm—some ?flint core) were present in the sample.

The residue consisted of mostly pebbles, gravel and sand, with some slag, fragments of pottery, charcoal (to 10 mm), uncharred ?modern plant remains (one *Atriplex* sp. seed and seed fragments of *Sambucus* sp., probably elderberry, *S. nigra* L.), small bone and modern roots.

The bone component of the residue comprised one mole (*Talpa europaea* L.) femur, one caprine phalanx II proximal epiphysis (unfused) and twenty-nine unidentified fragments.

Context 2005 [as for context 2003 above]

Sample 2

Dry, mid to dark brown, indurated (working crumbly, then unconsolidated), sand. Very small and small stones (2 to 20 mm), ?modern brick/tile fragments, patches of whitish sediment, and modern rootlets were also present.

The residue was mostly sand with some gravel and pebbles, slag, mortar, pottery, charcoal (to 10 mm), a few grains and seeds (one charred barley

(*Hordeum* sp.), two charred oat (cf. *Avena* sp.) and one modern uncharred *Atriplex* sp.), small bone and modern roots and grass.

The bone component of the residue consisted of one amphibian bone, one 'rat-sized' rib, one tooth enamel fragment from a large artiodactyl and seventy unidentified fragments.

Context 2015 [Fill of feature 2014, subcircular cut]
Sample 6

Dry, mid to dark greyish brown, brittle to crumbly (working plastic), silty clay sand. Calcareous material (?very rotted mortar), worm/root channels and a modern millipede were present in the sample.

The residue was mostly sand with some gravel and stones (red sandstone and pebbles). Small bone, slag, pottery, an iron concretion, charcoal (to 15 mm), wood (very rotted ?modern root), a single charred grain (*Avena* sp.) and ?modern roots were also noted.

The bone component of the residue comprised two long-bone shaft fragments, one vertebra of a small mammal, and twelve unidentified fragments.

Context 3007 [Layer which contained several pieces of Anglian pottery from grave 3020]
Sample 3

Just moist, mid slightly greyish-brown, just consolidated to unconsolidated (working just plastic), silty clay sand. Very small to medium-sized stones (2 to 60 mm), white flecks, rotted wood (probably root), fine roots and a live centipede were present in the sample.

The residue was mostly pebbles (to 50 mm), gravel and sand with some small bone, shellfish (oyster and other, indeterminate, fragments), charcoal (to 10 mm), coal (to 10 mm), modern leaves and grass, two charred grain fragments (?*Avena* sp.), a ?modern land snail (*Discus rotundatus*) and a modern centipede.

The bone component of the residue consisted of three amphibian bones, one ?black rat distal tibia and six unidentified fragments.

Context 3014 [Fill of charcoal pit or hearth]
Sample 4

Just moist, mid brown, just consolidated to unconsolidated, silty sand. Very small and small stones (2 to 20 mm) and fragments of charcoal were present in the sample.

The residue was mostly gravel and sand with some pebbles and charcoal (to 30 mm). Slag, a single land snail, two fragments of oyster shell and small bone were also present.

The bone component of the residue comprised three amphibian bones, two small mammal long-bone shaft fragments and twenty-two unidentified fragments.

Amongst the moderately large amounts of charcoal (to 30 mm maximum dimension), ash (*Fraxinus*) predominated, but there was also a little oak (*Quercus*) and perhaps also willow/aspens/poplar (*Salix/Populus*).

Sample 5

Just moist, mid to dark grey-brown, just consolidated to unconsolidated, silty sand. Very small to medium-sized stones (2 to 60 mm), very fine charcoal, modern roots and evidence of earthworm activity (sorting of particles) were noted for this sample.

The residue was mostly pebbles (to 50 mm), gravel, sand and charcoal (to 30 mm) with slag, small bone, fragments of shellfish (oyster) and ?iron artefacts also present.

The bone component of the residue was made up of one small mammal long-bone shaft and twenty unidentified fragments.

The charcoal was of the same size and concentration as that from sample 4, with ash again predominating. Earthworm egg capsules were also noted from the residue.

Context 3018 [Grave fill with no skeleton *in situ*]
Sample 7

Moist, mid brown, just consolidated (working crumbly), slightly silty sand with very small to medium-sized stones (2-60 mm) present.

The residue was mostly sand with some gravel. Pebbles, slag, small bone (nine unidentified fragments), mortar, charcoal (to 5 mm), roots and several charred cereal grains were also present. The latter were poorly- to well-preserved *Hordeum* with a single ?*Triticum* (wheat) and a few *Avena*.

Context 5036 [Layer; no associated features]
Sample 8

Moist, mid greyish brown, unconsolidated to just consolidated, sandy clay silt. Land snails were present in the sample.

The residue was mostly sand with some gravel. Slag, small bone, snails, charcoal (to 15 mm) and a few charred plant remains were also present. The latter comprised a single *Hordeum* and some unidentified grains, with a small *Vicia* (vetch) seed.

The bone component of the residue consisted of two amphibian bones (probably frog), seven small mammal long-bone shaft fragments and thirty-eight unidentified fragments.

The land snails (single representatives of *Trichia hispida* and *Cepaea* sp.) were both grassland species.

Context 5063
Sample 9

Just moist, mid to dark brown, just consolidated to unconsolidated (working slightly plastic), sandy clay silt. The sediment had undergone bioturbation to the point of forming a soil. Very small and medium-sized stones (2 to 6 and 20 to 60 mm), traces of ?mortar and wood charcoal, modern roots, abundant voids and burrows and land snails (including the burrowing snail *Cecilioides acicula*) were present in the sample.

The residue was mostly sand with some gravel. Small pebbles, slag, two iron objects and a small fragment of glass, small bone, charcoal (to 10 mm), roots and several grains and seeds were also present. The latter included several *Avena* grains, one unidentified cereal and a fragment of charred hazel (*Corylus avellana* L.) nutshell.

The bone component of the residue comprised one 'mouse-sized' rib, one 'mouse-sized' incisor, eight

small mammal long-bone shaft fragments, one bird phalanx and fifty-four unidentified fragments.

Context 5066 [Possible garden soil]
Sample 10

Dry, mid brown, brittle to unconsolidated, silty sand. Whitish flecks, roots and medium-sized stones (20 to 60 mm, including some flint) were present in the sample.

The residue was mostly sand with some gravel. Pebbles, slag, small bone, ?worked flint, charcoal (to 15 mm), roots, snails and several grains and seeds were also present. The latter included a few *Avena* sp. and several fragments of charred hazel nutshell (to 10 mm).

The bone component of the residue consisted of one mouse tibia, one 'mouse-sized' vertebra, four small mammal long-bone shaft fragments and thirty-seven unidentified fragments.

Four species of land snail were recorded: *Cochlicopa lubrica*, *Trichia hispida*, *Vallonia* sp. and *Cecilioides acicula* (a modern burrowing snail). These snails are all associated with grassland.

Hand-collected animal bone

The assemblage was quite small, comprising a total of 389 fragments weighing 4073 g, of which 93 (49 from contexts dated to the Anglo-Saxon period) were identifiable to species (Table 1 of the Appendix). The remains of cattle, caprines, pigs and horse were most commonly represented, with cattle and caprines making up the bulk of the identified material (71 fragments).

Two of the three bird bones were domestic chicken (*Gallus f. domestic*), the other being ?goose (*Anser* sp.).

Animal bone from the bulk-sieved residues

There was very little bone in any of the bulk-sieved residues (341 fragments in total weighing 20 g). The bone recovered was very fragmented and mostly unidentifiable (297 unidentifiable fragments). The identified material included nine

amphibian bones, almost certainly frog (cf. *Rana temporaria* L.), and thirty small mammal fragments. The latter consisted of a single mole femur (almost certainly intrusive) found in context 2003 (medieval in date), one possible black rat (cf. *Rattus rattus* (L.)) distal tibia from Context 3007 (undated), a further five murine bones and 23 unidentifiable small mammal shaft fragments. A single bird phalanx was also present in context 5063 (medieval to post-medieval).

Human bone

The results of the investigations are presented in skeleton context number order, with information provided by the excavator in brackets.

Skeleton context 3020 [A ?complete skeleton located below a mound of gravel (3021), skull intact until crushed by vandals. Skeleton laid in a supine position with hands crossed over chest area (right over left). Legs continue into former [electricity] substation. Right femur broken by vandals. Dentition poor—molars ground flat. Head to West, legs to East. Early stages of excavation located a small pot to the right hand side of the skull (?bockel urn). Excavation into baulk showed that the legs were crossed at the knees.]

This was an adult male of twenty to twenty-five years of age.

The robustness of the jaw and the size of the mastoid and supraorbital suggest that this individual was an adult male with dental attrition indicating an age of between twenty and twenty-five years. In the region of the right supraorbital area was a depression, approximately 10 mm square, suggesting an old healed injury. Mild hypoplastic lines were evident on the canines and premolars, but there was no marked oral pathology. The skull could be reconstructed to some extent.

Most of the vertebrae were represented (six cervical, 11 thoracics and five lumbar). Schmorl's nodes were present on three lower thoracics and the sacrum was in five pieces. Severe erosion prevented the study of arthritic changes. The left and right ribs (bagged separately) were eroded and incomplete. Much of the sternum was present, with the manubrium fully united to the main body and showing a long central hole (approximately 15 mm

by 10 mm), probably of congenital origin.

Scapulae and clavicles were present but severely eroded. Both humeri were present (364 mm in length) and both radii and ulnae were well-preserved.

The left hand was represented by one carpal, five metacarpals and five phalanges, and the right by one carpal, four metacarpals and ten phalanges. In addition, there were seven carpals and a phalanx for which it was not possible (because of poor preservation) to determine side.

The pelvis was represented by most of the left and right sides and was clearly male in form.

The femora were extremely large and robust (maximum length 482 mm) and show no pathology. Only one patella was present.

There was also a miscellaneous group of fragments comprising six identified pieces of skull (and many smaller pieces), two pieces of scapula, the body of the hyoid, a large ?non-human rib, two further hand phalanges, a lightly eroded tarsal and sixteen unidentified pieces.

Skeleton context 4010 [Grave cut 4011; 50% of an articulated skeleton, upper portion above the sacrum completely removed *post-mortem*, although some arm bones located *in situ*. Body originally placed on its back with legs in 'foetal position', fully articulated—some disturbance as patella found close to pelvis. No disturbance to bones below the patella which appear to be laid on the land surface and covered by gravel mound (4006/7). Right leg crosses over left, toes pointing East. Excavation located a metal object which appeared to be stuck into spine—?murder weapon]

An adult male of twenty to thirty years of age.

Distal thirds of the left radius and ulna, two left metacarpals and a left phalanx were present. There was restricted but severe peeling of the outer bone 'skin' in three areas.

Left and right halves of pelvis were present, in pieces but with nearly complete innominates. The area of contact and union between the right ischium and pubis showed some surface irregularity suggestive of minor trauma in childhood. The bone

was very robust and the angle of the greater sciatic notch was acute, together indicating maleness. The pubic symphysis on the right side was half present and semi-corrugated, suggesting an age of twenty to thirty years.

The sacrum was almost complete, represented by two main pieces and three minor fragments. The upper lumbar surface on the left side showed modest marginal lipping and irregularity. The intervertebral surface also showed some irregularity—slight asymmetry of the neural arch at the spinous region—suggestive of an inflammatory process. The last lumbar vertebra was represented by the neural arch and part of the body in the region of the sacral articulation with evidence of an inflammatory process. The lumbar body also showed some marginal lipping, surface irregularity and pitting. The neural arch was asymmetrical with some deviation from centre of the neural spine. There was no evidence of a weapon injury in the bones, but this may have been obscured by bone decay.

The femora were extremely robust—the femoral necks were noticeably thick, the upper contour of the femur head extending straight onto the neck without apparent narrowing. The maximum length was that of the left femur (506 mm). Some surface flaking was evident on the right bone. The left tibia and fibula were broken but complete, showing some minor erosion and an unusual peeling of the bone surfaces. The left tibia shaft surface showed minor irregularity with restricted striations and pitting suggesting an early stage inflammatory reaction. Further diagnosis was made difficult by *post-mortem* changes to the bone. The right tibia and fibula also showed surface peeling and minor shaft striations together with some general erosion. The striations may indicate an early inflammatory response partly obscured by *post-mortem* erosion. The maximum tibial length was that of the right (412 mm). These large and robust bones again suggest a male. The left foot was represented by most of the tarsals, the five metatarsals and three phalanges. All of the left foot bones showed considerable surface erosion but this appears not to have affected the joint surfaces. A small (3 mm by 2 mm) depressed zone on the calcaneum is indicative of osteochondritis dissecans. The right foot was represented by six tarsals, five metatarsals and parts of (probably) seven phalanges. All of the bones of the right foot showed similar surface erosion to that seen on the left foot bones.

Included with the human remains was the distal articular area of a mature *Bos* (cow) humerus. There was also a group of miscellaneous bones comprising a patella, two carpals, a first metacarpal, four hand phalanges, parts of probably four ribs, two fragments of sacrum, a coccygeal element, four probable pelvic fragments and thirty fragments of unidentified bone. Additionally, there was a group of non-human bones—part of a sheep tooth, an immature sheep metapodial and three shaft fragments of long-bones from a large mammal (?*Bos*).

Skeleton context 4023 [Excavation located a grave cut (grave cut 4021) but found only the remains of an articulated lower leg and foot. Further excavation to the West located a ?strap end and some disturbed vertebrae and finger bones. As with skeleton context 4010 there is no apparent disturbance from above. Some of the toe bones found in context 4013 may come from this burial.]

This somewhat mixed group of bones was composed of six tarsals (representing both feet), eight metatarsals, four foot phalanges, three hand phalanges, the right patella, right tibia and fibula (complete except for limited *post-mortem* erosion and trowel damage) and the distal end of the right femur. The maximum length of the tibia was 380 mm. None of the bones give any evidence of joint disease.

An additional group of bones, submitted as 'miscellaneous', contained more human remains—a right temporal bone, a fragment of sphenoid, a metacarpal and two hand phalanges—together with four fragments of ?*Bos* (?scapula and rib) and eleven unidentified fragments.

Skeleton context 5040 [A young individual laid on its back with head on its right side and facing North. Legs were bent and knees facing North (similar position to 4010 but head and feet reversed). Spine appears to be bent towards the South. The skeleton had no feet and breaks to the tibia and fibula appear to be of antique date. Removal of the skull located an iron object (31).]

An incomplete skeleton of a child of, from the evidence of the teeth, ten years (√6 months).

The skull was in pieces but appeared to be mostly complete. Severe cribra orbitalia was noted.

Parts of at least eleven vertebrae, including three cervicals, two lumbar and two sacral segments and thirty-two rib fragments were present. Both clavicles, most of both humeri, parts of two radii, the proximal half of one ulna and another ulna missing the distal end were also recorded. The pelvis was represented by five fragments. The femora, tibiae and fibulae (with some epiphyses) of both legs were present and showed no evidence of disease or fractures, but all were highly eroded.

A further group of bones, submitted as 'miscellaneous', was composed of an area of pelvis near the acetabulum, proximal humerus epiphysis, manubrium, the shaft of an ulna, an incomplete scapula, two ribs, a heavily eroded calcaneum and two metacarpals.

Skeleton context 5041 [A skeleton of a small individual (?child) laid in a shallow cut (3042). The position of the bones suggests that the body was laid on its back with the hand over the stomach area. The skull was in a poor condition and the jaw had fallen away from the skull. Initial excavation located no grave goods. Orientation of North-South (head South) is different to other burials. On removal of burial excavation located an arm bone and shoulder blade above the head.]

An incomplete skeleton of a child of, from the evidence of the teeth, three-and-a-half years (✓6 months).

The skull was very fragmented with some surface erosion but no evidence of disease. The permanent canine crown was half-formed and the first molars were seen as crowns with little root development. No hypoplasia was evident. Three fragments of vertebrae and twenty-three fragments of rib were identified. The right scapula was nearly complete and the distal half of the right humerus and most of the radii shafts were present. The pelvis was represented by a single, much eroded fragment (?ischium). Both femora and tibiae were mostly present, but only the shaft of one fibula.

Two other bones, submitted as 'miscellaneous', were non-human—a large fragment (*Bos/Sus* size range) and a small calcaneum.

Skeleton context 16014 [A fully extended skeleton aligned approximately South-West (head) to North-

East (feet). Majority of the lower limbs present but only the right arm represented. The skeleton had been disturbed around the feet, resulting in a collection of bone concentrated just to the North-East of the skeleton (shown on photograph). This skeleton has an 'abundance' of grave goods (shown on plan). No cut nor apparent coffin suggested that the skeleton had been covered by a small mound of earth.]

Male, of indeterminate age.

The skull was represented by fragments exhibiting varying degrees of erosion. The supraorbital, nuchal area and mastoid development suggested that this individual was male. No teeth or jaws were noted. There were parts of three humeri, of which one was labelled right humerus, presumably from this skeleton (16014). Lower limb long-bones present included the left femur (maximum length 393 mm) showing erosion of the articular ends, much of the right femur, the left and right tibiae (maximum length 308 mm for left) and half of the left and right fibulae. Also present were parts of the shafts of two femora and two tibiae from another individual (or other individuals). The bones submitted as 'under shoulder' were the distal ends of the femur and a piece of acetabulum. The bones submitted as 'left foot' included a piece of acetabulum, a talus, a patella, parts of four metatarsals and a navicular. The bones submitted as 'right foot' were four tarsals, three metatarsals and part of a pelvis.

The bones submitted as 'miscellaneous' were a radius, two calcanea, one first metatarsal, a patella and a hand phalanx.

There were over fifty unidentified fragments, mostly from long-bones, and a few non-human fragments—a cow incisor, two pieces of rib and a small piece of skull (both ?*Bos*) and three unidentified pieces of long-bone.

Discussion

Sediment samples

Apart from a few charred cereals and a little charcoal, a few snails and small amounts of bone, very few plant and animal remains were recovered from the deposits sampled at this site and some, at

least, of the fossils observed were certainly or probably of post-depositional origin. This is not surprising given the rather shallow nature of the stratigraphy.

Animal bone

Although the bones were much fragmented, their overall preservation was recorded as fair to good, with colour being mostly fawn for material from all the periods represented. Butchery and dog gnawing were noted on a small number of fragments and fresh breakage was evident on 20-50 percent of all bones.

A single mole (*Talpa europaea* L.) humerus was identified from context 3018. The difference in preservation between this fragment and the other material from this context, together with the fact that moles are burrowing animals, suggests that this is intrusive.

Also of interest was a cat mandible from context 15005 (Anglo-Saxon to medieval in date) which had a series of vertical knife marks on its lateral surface in the region of the mental foramen. These cut marks are consistent with pelt removal.

Human bone

The gravel mound over at least some of the bodies may have detrimentally influenced the preservation of the bones and only one skeleton (3020) was well represented. The condition of the bones was variable, but generally ranged from moderate to highly eroded. There was clear evidence of root action. In two instances there was unusual flaking of the outer bone surface.

The skulls were all broken and collapsed so that reconstruction would be necessary before detailed studies could be undertaken. Long-bone measurements were not possible in most cases because of erosion of the articular ends. Sexing and ageing were made difficult by breakage, erosion and incompleteness of the skeletal

elements.

Pathology was obscured by erosion, although cases of cribra orbitalia, Schmorl's nodes, calculus, possible early periostitis, and minor congenital abnormality of the sternum were noted. The locations of some of the bones appeared to be the result of disturbance and these remains could not be associated with particular skeletons.

There was clear variation in body posture. Skeleton 3020 had been carefully positioned on the back with forearms over the chest, whereas skeleton 5040 appears to have been on its right side with the head angled backwards and legs bent to less than 45 degrees.

Although a metal object (possibly a spearhead) was found in association with the pelvis from context 4010, there was no visible weapon damage on the bone (although this may have been obliterated by later erosion). No clear evidence for cause of death could be determined for any of the individuals.

Statement of potential

There can be no justification in further work on the sediment samples, nor does it seem likely that useful remains will be recovered during further excavation of the same levels.

The hand-collected animal bone assemblage is of little interpretative value because of its small size and the limited number of bones which can be used to obtain age-at-death and biometrical information (four mandibles with teeth, eighteen loose teeth, and only four measurable bones).

The state of preservation and degree of breakage of the human bone renders these skeletons of little interpretative value.

Recommendations

If deposits in which preservation of remains by anoxic waterlogging occurs are encountered, a programme of sampling and analysis should certainly be undertaken, given the regional rarity and importance of material of this date.

Likewise, in the event of further excavation, the possibility of recovering an important Anglian animal bone assemblage should be considered. This period is poorly represented in the British Isles. From the Yorkshire/Humberside region, only the site of West Heslerton has yielded useful quantities of material of this date.

There is also a need for more information on Anglo-Saxon skeletal series from the Yorkshire region, so further excavation of the Thirsk castle cemetery would be extremely valuable from this point of view, too. Should further excavation occur it would be important to undertake on-site conservation and subsequent reconstruction of the bone.

Retention and disposal

All of the remaining sediment samples and residues from sieving can be discarded. All the bone, including the human remains, should be retained for the present.

Archive

All residues, sediment vouchers, and bone from samples are currently stored in the Environmental Archaeology Unit, University of York, along with the hand-collected human and non-human bones and the paper and electronic records pertaining to the work described here.

Acknowledgements

The authors are grateful to MAP Archaeological Consultancy Ltd. for making this material available and to

English Heritage for allowing Allan Hall, Keith Dobney and Annie Milles to contribute to this work.

Reference

Dobney, K., Hall, A. R., Kenward, H. K. and Milles, A. (1992). A working classification of sample types for environmental archaeology. *Circaea, the Journal of the Association for Environmental Archaeology* 9 (for 1991), 24-6.

Appendix*Table 1. Hand-collected bone from recorded contexts*

Species	Total fragments	Total weight (g)	Total measurable	Mandibles with teeth	Isolated teeth
Cattle	50		3	3	12
Sheep/goat	21		1	1	5
Pig	6		-	-	1
Horse	9		-	-	-
Dog	3		-	-	-
Cat	1		-	-	-
Domestic fowl	2		-	-	-
Mole	1		-	-	-
Subtotal	93	19\85	4	4	18
Unidentified bird	1	-	-	-	-
Unidentified	295	2088	-	-	-
Total	389	4073	4	4	18