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Evaluation of biological remains from West Cowick, East Riding of Yorkshire (sitecode: 1998.88)

by

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Summary

Ten sediment samples and three boxes of hand-collected bone from deposits of medieval to early modern date were submitted for an evaluation of their bioarchaeological potential.

The microfossil 'squashes' contained only trace amounts of identifiable remains or were barren.

All of the samples contained small amounts of coal and charcoal, and all but one of the eight GBA samples contained at least trace amounts of partly charred and burned peat. Peat was therefore, presumably, an important resource for the heating of the kilns at West Cowick. Some other plant material (e.g. straw) may have been used with the peat (and wood and coal).

No ancient invertebrate remains were recovered from the samples.

The vertebrate assemblage, consisting of part skeletons, is obviously unrelated to the production of pottery at West Cowick, hence the assemblage has very limited potential for site interpretation or further zooarchaeological work.

KEYWORDS: WEST COWICK; EAST RIDING OF YORKSHIRE; EVALUATION; MEDIEVAL TO EARLY MODERN; POTTERY KILNS; PEAT; CHARCOAL; CHARRED PLANT REMAINS; VERTEBRATE REMAINS; COAL

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Introduction

An archaeological excavation was carried out by York Archaeological Trust at West Cowick, East Riding of Yorkshire, in late January-February 1999. Ten sediment samples (eight 'GBA' and two 'SPOT' *sensu* Dobney *et al.* 1992) and three boxes of hand-collected bone (of approximately 20 litres each) were recovered from the deposits. This material was submitted to the EAU for evaluation of its bioarchaeological potential.

The main features revealed by excavation at West Cowick were two pottery kilns (possibly of late 15th to early 16th century date). The focus of the investigation of the plant macrofossils from the submitted samples was to determine the fuel, or fuels, used to fire these kilns.

Other medieval features were few, but included a ditch and pit. Most other pits on the site were of 18th - 19th century date with one, associated with a cobbled surface, dated to the 17th - 18th century. The majority of the vertebrate material was recovered from these pits.

Methods

The sediment samples were inspected in the laboratory and descriptions of their lithologies recorded using a standard *pro forma*. All of the GBA samples were processed, following the procedures of Kenward *et al*. (1980; 1986) and were examined for microfossils using the 'squash' technique of Dainton (1992). The treatment of the samples is summarised in Table 1.

For the vertebrate remains, data were recorded electronically directly into a series of tables using a purpose-built input system and *Paradox* software. For each context containing more than ten fragments, subjective records were made of the state of preservation, colour of the fragments, and the appearance of broken surfaces ('angularity'). Additionally, semi-quantitative information was recorded concerning fragment size, dog gnawing, burning, butchery and fresh breakage.

Where possible, fragments were identified to species or species group, using the reference collection at the Environmental Archaeology Unit, University of York. Fragments not identifiable to species were grouped into categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal (assumed to be caprovid, pig or small cervid), bird, and unidentifiable.

Total numbers of fragments by species were recorded, together with the number of measurable fragments. Quantities of subadult, juvenile or neonatal bones, and numbers of mandibles and isolated teeth yielding ageing or sexing information were also recorded. As well as counts of fragments, total weights were recorded for all identifiable and unidentifiable categories.

Results

Sediment samples

The results of the investigations are presented in Context order. Archaeological information provided by

the excavator is given in square brackets. No ancient invertebrate remains were recovered from the samples.

Context 1065 [Flue pit fill - fill from same feature as Context 1106]
Sample 3/T (2 kg)

Moist, dark grey-brown, crumbly (working unconsolidated when wet), slightly silty sand with patches of orange-red and pale yellow-brown burnt clay. Glassy slag and glazed ?tile were present and ?charcoal/ash was abundant in the sample. Modern contaminant rootlets and seedlings were also noted.

The microfossil 'squash' was mostly inorganic material with a trace of organic detritus and a few frements of ?plant silica.

There was a rather large residue of about 500 cm^3 of sand, gravel, stone, and glassy slag (to 20 mm maximum dimension) with traces of clinker, bone and pottery. The modest-sized washover of about 50 cm^3 was of modern rootlets and charred peat fragments (also to 20 mm), with further cinders.

Context 1082 [Flue pit fill]
Sample 10/T (2 kg)

Just moist, dark grey-brown (speckled reddish-brown), crumbly (working unconsolidated to plastic when wet), slightly silty sand. Medium-sized stones (20-60 mm) were common and ?slag, modern rootlets and seedlings were present.

The microfossil 'squash' was mostly inorganic material with a trace of organic detritus. No identifiable microfossils were seen.

The moderately large residue of about 500 cm^3 was mostly sand and gravel, with some cinders and pottery. The large washover of about 70 cm^3 consisted of modern roots with moderate quantities of burnt peat fragments (up to 10 mm).

Context 1103 [Flue pit fill]
Sample 6/T (2 kg)

Just moist, dark grey-brown (speckled bright red, gingery-brown and dark grey), crumbly (working unconsolidated to plastic when wet), slightly silty, slightly clay sand (locally more clay). Medium-sized stones (20-60 mm, including lumps of ?rotted sandstone to 25 mm), charcoal and modern seedlings were present in the sample.

The microfossil 'squash' was mostly inorganic material with a trace of organic detritus. No identifiable microfossils were seen.

This subsample produced a moderately large residue of about 400 cm^3, mostly sand and gravel but with some burnt peat fragments (to 20 mm) and brick/tile; the small washover of a few cm^3 comprised roots with more burnt peat and some charred and uncharred ?modern weed seeds.

Context 1106 [Flue pit fill - fill from same feature as Context 1065]
Sample 4/T (2 kg)

Moist, mixed mid yellow-brown and dark grey-brown, crumbly, slightly silty sand with patches of orange-red and pale yellow-brown burnt clay. Brick/tile was present, medium-sized stones (20-60 mm) common, and ?charcoal/ash abundant in the sample. Modern rootlets and arthropods were also noted.

The microfossil 'squash' was mostly inorganic material with a trace of organic detritus. No identifiable microfossils were seen.

There was a modest-sized residue of about 450 cm^3 of sand and gravel with some brick/tile, and a single fragment (to 15 mm) of baked clay with charred organic material on one side of clast, perhaps from peat or turf. The small washover of about 40 cm^3 was of modern roots and burnt peat fragments (to 10 mm).

Context 1154 [Flue pit fill]
Sample 11/T (2 kg)

Moist, dark grey-brown (speckled with red-brown and dark grey), crumbly (working unconsolidated), slightly silty sand with flecks of brown and grey clay. Medium-sized stones (20-60 mm), ?ash and burnt soil were present in the sample. Modern contaminant rootlets, arthropods and seedlings were noted.

The microfossil 'squash' was mostly inorganic material with a trace of organic detritus. Two ?pollen grains/spores and a single fragment of ?plant silica were noted.

The modest-sized residue of about 450 cm^3 was mostly baked clay/daub (to 15 mm), glassy slag (to 25 mm) and sand, with a little brick/tile, coal and clinker; the small washover of about 20 cm^3 was of roots with burnt peat (to 15 mm).

Context 1204 [Flue pit fill]
Sample 2/T (2 kg)

Moist, dark greyish brown, crumbly (working plastic when wet), slightly silty sand with clasts of mid to dark grey-brown clay rich in rootlets (?intrusive or mixed into the deposit). Very small and small stones (2-20 mm) and seedlings were present.

The microfossil 'squash' was mostly inorganic material with a trace of organic detritus. A single phytolith fragment was noted.

There was a rather large residue of 600 cm^3 of sand, glassy slag (to 50 mm) and baked clay/daub (to 35 mm). The moderately large washover of about 60 cm^3 consisted of modern roots and a little burnt peat (to 5 mm).

Context 1206 [Flue pit fill]
Sample 17/SPT

This spot sample consisted of one fragment each of charcoal and charred raised bog (*Calluna-Sphagnum*) peat (both up to 30 mm in maximum dimension).

Context 1207 [Flue/stoke pit fill]
Sample 5/T (1 kg)

Just moist, dark brown to dark grey-brown, crumbly (working unconsolidated), burnt/charred ?peat with some bright red burnt soil. Modern rootlets were also present.

The microfossil 'squash' was mostly inorganic material with a trace of organic detritus. A single diatom and a phytolith fragment were noted.

The large residue of about 400 cm^3 was mainly of burnt peat and brick/tile fragments (both to 25 mm) with some sand, charcoal and coal. The rather large washover of about 40 cm^3 was of modern roots with further burnt peat fragments. Amongst these were traces of charred ?heather (cf. *Calluna vulgaris* (L.) Hull) stem or root fragments

and a seed which may have been ribwort (*Plantago lanceolata* L.), which might have arrived with peat and hay or turf, respectively. A single charred cereal chaff fragment may also have originated in material used as fuel.

Sample 15/SPT

This small sample of 'fuel' was treated as a spot find; it clearly consisted of partly burnt peat fragments (to 70 mm), perhaps of the type known as 'brown moss peat' formed originally in a fen or transitional bog environment.

Context 1247 [Pre kiln deposit - blackened appearance]
Sample 8/T (2 kg)

Moist, dark purple-brown to very dark grey, crumbly (working slightly plastic), ?ash derived from burnt ?peat with flecks of bright red burnt soil. Medium-sized stones (20-60 mm) were common and modern rootlets were present in the sample.

The microfossil 'squash' was mostly inorganic material with a trace of organic detritus. No identifiable microfossils were seen.

The modest-sized residue of about 250 cm^3 comprised sand and gravel with just a trace of baked clay/daub; present in the small washover of about 20 cm^3 were moderate numbers of charred seeds of the weeds knotgrass (*Polygonum aviculare* agg.) and speedwell (*Veronica* sp.) and of hemp (*Cannabis sativa* L.), together with some modern root fragments.

Vertebrate remains

Vertebrate material from 18 contexts was presented for assessment and bone from 14 of these contexts was recorded. The unrecorded contexts (1001, 1002, 1007, 1010) were either undated, modern topsoil or cleaning layers. Preservation records were made for only six of the contexts. In addition, bone was recovered from a further four contexts (Table 4), but was not presented to the EAU.

Overall preservation was variable (ranging from good to poor) and occasionally was recorded as such within, as well as between, contexts. Colour was also variable, although most fragments were described as ginger. Angularity (appearance of broken surfaces) was again variable with most fragments described as spiky, the rest being recorded as battered.

The degree of fragmentation was moderate, with more than 50% of fragments in all contexts falling between 5 and 20 cm in maximum dimension. Dog gnawing and butchery were noted on a few fragments in three contexts (1015, 1017, 1055). Evidence of fresh breakage was more common with up to 20% of fragments in all contexts affected.

A total of 540 fragments (weighing 8520.1 g) were recorded, of which 489 (weighing 7621.7 g) were identified to species (Table 2). Of these, 449 fragments were the remains of several part skeletons (see Appendix). The remaining 40 fragments represented cattle (21 fragments), caprovid (11), horse (6) and pig (2). The unidentified fraction comprised mainly of large and medium-sized mammal, shaft and vertebra fragments. Separating the assemblage by period (Table 3), shows that very few medieval fragments were recovered and most of these represented a single individual.

Discussion and statement of potential

The sediment samples investigated were effectively barren of microfossil remains and, as such, have no potential for site interpretation.

Distributed through the samples, there were small amounts of coal and charcoal, and no doubt the cinders

and clinker present originated in the former. However, the larger of the two spot samples (15) consisted of discrete lumps of partly charred peat and burnt peat was present, at least in trace amounts, in all but one of the 'test' subsamples. Peat was therefore, presumably, an important resource for the heating of the kilns at West Cowick. Its origin might easily have been the mires in the Humberhead Levels, a few kilometres to the SE of West Cowick, if not a nearer source in the lower Aire valley. Some other plant material (e.g. straw) may have been used with the peat (and wood and coal). The presence of the charred hemp seeds in Sample 8 (Context 1247) confirms that this was not a 'natural' deposit and that the 'blackened' appearance of the deposit is likely to have been caused by heat from the base of the kiln. The 'baking' of the hemp, and other weed seeds, by transferred heat would explain why they have remained intact rather than being destroyed—which would have occurred if they had been burnt in the presence of oxygen.

Although a moderate vertebrate assemblage has been recovered from West Cowick, the nature of the remains limits its potential for further analysis. Most of the assemblage consists of the part skeletons of several species (dog, cattle, pig, chicken). Parts of a pig skeleton were recovered from three stratigraphically linked contexts (1015, 1017 and 1101). As all the fragments were from a young animal and none of the elements were reproduced it suggests they may be the remains of a single individual. The preservation of the animal skeletons (with the exception of the dog in context 1059) was very uniform. Other fragments, within the same contexts as the part skeletons, were generally differently preserved, and in particular battered, which suggests they may represent reworked material.

The vertebrate assemblage, consisting of part skeletons, is obviously unrelated to the production of pottery at West Cowick, hence the assemblage has very limited potential for site interpretation or further zooarchaeological work.

Recommendations

No further investigation of the microfossil content of the sediment samples is recommended.

No further work is recommended on the sediment samples on bioarchaeological grounds.

Further analytical work is not required on the vertebrate remains.

Retention and disposal

Retention of a selection of the samples with richer concentrations of peat, as well as the larger spot find is recommended, at least in the short term, in case further examination of the peat and any associated plant remains is required. It is also recommended that in due course some of the extracted burnt peat and some unprocessed sediment (including Sample 8, which contained an unusual component of charred hemp seeds) is retained as part of the site archive.

The vertebrate remains should be kept for the present as they may be of use in further 'synthetic' study should closer dating be obtained.

Archive

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

Acknowledgements

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Table 1. Summary of the treatment of sedimant samples from West Cowick, East Riding of Yorkshire.

Context	Sample	Sample type	Treatment
1065	3	GBA	Description, 2 kg washover and microfossil 'squash'
1082	10	GBA	Description, 2 kg washover and microfossil 'squash'
1103	6	GBA	Description, 2 kg washover and microfossil 'squash'
1106	4	GBA	Description, 2 kg washover and microfossil 'squash'
1154	11	GBA	Description, 2 kg washover and microfossil 'squash'
1204	2	GBA	Description, 2 kg washover and microfossil 'squash'
1206	17	Spot	Description
1207	5	GBA	Description, 1 kg washover and microfossil 'squash'
1207	15	Spot	Description
1247	8	GBA	Description, 2 kg washover and microfossil 'squash'

Table 2. Total numbers of vertebrate fragments together with numbers of measurable and subadult bones, numbers of mandibles and teeth yielding ageing and sexing information and weights, by species, for West Cowick, East Riding of Yorkshire. Numbers in brackets refer to fragments belonging to part skeletons.

Species		**No. measurable**	**No. unfused**	**No. juvenile**	**No. mandibles**	**No. teeth**	**Total no. fragments**	**Weight (g)**
Dog	*Canis* f. domestic	12	-	-	-	-	156 (142 & 14)	873.5
Horse	*Equus* f. domestic	2	-	-	-	-	6	646.0
Pig	*Sus* f. domestic	-	21	1	2	-	199 (197)	1478.0
Cow	*Bos* f. domestic	14	-	-	3	1	102 (81)	4370.7
Sheep/ goat	Caprovid	3	-	-	-	2	11	230.6
Chicken	*Gallus* f. domestic	8	-	-	-	-	15 (15)	22.9
Subtotal		***39***	***21***	***1***	***5***	***3***	***489***	***7621.7***
Bird		-	-	-	-	-	1	0.4
Medium-sized mammal		-	-	-	-	-	14	68.2
Large mammal		-	-	-	-	-	35	829.6
Unidentified		-	-	-	-	-	1	0.2
Subtotal							***51***	***898.4***
Total		**39**	**21**	**1**	**5**	**3**	**540**	**8520.1**

Table 3. Numbers of vertebrate fragments by period for West Cowick, East Riding of Yorkshire.

Species		**Medieval**	**Post-medieval**	**Total no. fragments**
Dog	*Canis* f. domestic	-	156	156
Horse	*Equus* f. domestic	-	6	6
Pig	*Sus* f. domestic	-	199	199
Cow	*Bos* f. domestic	81	21	102
Sheep/ goat	Caprovid	-	11	11
Chicken	*Gallus* f. domestic	-	15	15
Subtotal		***81***	***408***	***489***
Bird		-	1	1
Medium-sized mammal		-	14	14
Large mammal		1	34	35
Unidentified		1	-	1
Subtotal		***2***	***49***	***51***
Total		**83**	**457**	**540**

Table 4. Weights of vertebrate remains (not presented to EAU) recovered from West Cowick, East Riding of Yorkshire.

Context	**Weight (g)**
1017	36
1055	58
1087	39
1095	13
1104	76
1223	7
1270	3

Appendix

Context 1015 - Chicken skeleton
The cranium, furcula, sternum, synsacrum and one radius were present, together with both scapulae, humeri, ulnae, femora and coracoids.

Context 1015 - Pig skeleton
A single radius distal epiphysis was present together with seven metacarpals, seven phalanges and seven carpals. All epiphyses were unfused except for one proximal 2nd phalanx. The metacarpals were very robust.

Context 1017 - Pig skeleton
The skull was rather fragmented with the maxillae separate from the cranial vault, both mandibles were present (with DP4 in wear). Two radii (one a distal epiphysis), and single calcaneum, metatarsal, metapodial and carpal were also present.

Context 1054 - Cattle skeleton
Both mandibles were present with a single maxilla fragment. Both metacarpals, pelves, femora, tibiae, calcanei, astragali, and metatarsals were recorded together with six phalanges and a patella. In addition, 23 vertebrae (including sacrum fragments), 2 cranial fragments, a single hyoid and 31 miscellaneous small fragments were also recovered.

Context 1055 - Dog skeleton
This skeleton of a large dog was almost complete except for the head. Both scapulae, humeri, radii, ulnae and tibiae were present, together with a single pelvis, femur, carpal, four metacarpals and three phalanges. In addition, 24 vertebrae, 71 rib fragments and 27 miscellaneous small fragments were recorded.

Context 1059 - Dog skeleton
This context contained the part skeleton of a medium-sized dog. The skull and both mandibles were present with rather worn teeth. Both humeri, radii, ulnae and tibiae were present, with a single pelvis and metacarpal.

Context 1101 - Pig skeleton
The front legs and axial skeleton of this individual were present. This included both scapulae and humeri, single radius and ulna, 76 rib fragments, 29 vertebrae, 26 vertebral epiphyses, 6 sternum segments and 11 miscellaneous small fragments. All the epiphyses on the limb bones and vertebra were unfused.