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**Evaluation of biological remains from excavations near West Lilling,
North Yorkshire (site code: OSA99EX03)**

by

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Summary

A series of sediment samples and one small box of hand-collected bone from deposits revealed by excavations near West Lilling, North Yorkshire, were submitted for an evaluation of their bioarchaeological potential.

Most of the sediment samples yielded no more than a very little charcoal and few modern seeds, though there were traces of other charred plant material which included wheat chaff and some debris perhaps from burnt turves or peat, all probably ancient. These samples probably do not warrant further study. In contrast, one deposit was quite rich in charred plant remains, including cereal grains and wheat chaff whilst two yielded well preserved plant and insect remains preserved by waterlogging. These all deserve further analysis.

A small assemblage of vertebrate remains was recovered. Most of the fragments were poorly preserved and few bones could be identified to species. No further work on the bone assemblage is warranted.

KEYWORDS: WEST LILLING; NORTH YORKSHIRE; EVALUATION; ROMAN; MEDIEVAL; PLANT REMAINS; CHARRED PLANT REMAINS; INVERTEBRATES; VERTEBRATE REMAINS; BURNT VERTEBRATE REMAINS

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Introduction

An archaeological evaluation excavation was carried out by On-Site Archaeology near West Lilling, North Yorkshire (NGR: SE 640 644).

A series of sediment samples ('GBA'/'BS' *sensu* Dobney *et al.* 1992), and one small box (of approximately 10 litres) of hand-collected bone, were recovered from the deposits. The deposits were, where dated, Roman or medieval.

All of this material was submitted to the EAU for an evaluation of its bioarchaeological potential.

Methods

Sediment samples

The sediment samples were inspected in the laboratory. Thirteen of them were selected (by the excavator) for investigation and their lithologies were recorded, using a standard *pro forma*, prior to processing, following the procedures of Kenward *et al.* (1980; 1986), for recovery of plant and invertebrate macrofossils. Table 1 shows a list of the submitted samples and notes on their treatment. The flot, washovers and residues were examined for plant remains. The flot and washovers were also examined for invertebrate remains, and the residues were examined for other biological and artefactual remains.

Vertebrate remains

All of the bone was recorded in detail; subjective records were made of preservation, angularity (i.e. the nature of

the broken surfaces) and colour, whilst quantities and identifications were noted where appropriate. Additionally, semi-quantitative information was noted for each context concerning fragment size, dog gnawing, burning, butchery and fresh breaks. Fragments not identifiable to species (□□ bones *sensu* Dobney *et al.* forthcoming) were grouped into three categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal (assumed to be caprovid, pig or small cervid), and completely unidentifiable.

Results

Sediment samples

The results are presented in context number order by period. Archaeological information, provided by the excavator, is presented in square brackets.

Roman

Context 6091 [cut fill in 6089]

Sample 31/BS (4 kg sieved to 300 microns with washover)

Just moist, light to mid red-brown to mid to dark grey-brown. Stiff (working plastic) clay with some ?rotted charcoal and modern rootlets present.

The tiny residue consisted of sand, grit and ?iron pan; there was a small washover of about 25 cm³ of modern rootlets and ancient charcoal (to 5 mm) with traces of charred cereal grains and chaff, including a few ?spelt wheat, *Triticum* cf. *spelta*, glume-bases in reasonably good condition, and hulled barley (*Hordeum*) grains, but all at very low concentrations.

Context 6150 [fill in 6151]

Sample 43/BS (5 kg sieved to 300 microns with washover)

Wet, light grey-brown to mid to dark grey-brown, soft (working soft and slightly sticky), slightly clay, slightly silty sand with some ?cinder present.

The moderately large residue of about 500 cm³ comprised clean quartz sand with some ?iron pan. The washover of about 100 cm³ was of charcoal (to 10 mm) with woody and herbaceous detritus. Amongst these fragments were abundant well preserved seeds of elder (*Sambucus nigra* L.) and stinging nettle (*Urtica dioica* L.) and modest numbers of seeds of the goosefoots in *Chenopodium* Section *Pseudoblitum*. Other identifiable plant remains included a rather large assemblage of taxa representing waterside vegetation and stands of weeds, the latter including communities of sandy fields and neglected waste places. There was also a small component perhaps from grazed or trampled turf. Some lumps (to 5 mm) of sandy humic silt observed might be from inwashed soil or mor humus. Notable in the material were rather large numbers of fragments of vegetative material with characteristic darkened epidermis and strongly sinuous cell walls. Though not identified at this stage, it seems likely this material could be identified and might offer further interpretative information. One or two ?spelt glume-bases were also noted. A small group of insects was recovered, including aquatic and waterside forms, and some terrestrial species. There were also some cladoceran resting eggs. Preservation varied, but most insect remains appeared identifiable.

Context 6161 [fill in 6160]

Sample 20/BS (5 kg sieved to 300 microns with washover)

Just moist, light to mid grey-brown, unconsolidated, slightly silty sand.

The moderate-sized residue of about 400 cm³ consisted of clean quartz sand and a little ?iron pan. The washover of about 120 cm³ was at least half by volume sand and ?iron pan, the rest charcoal (to 10 mm) with some reasonably well preserved ?spelt glume-bases and a few charred remains which might have originated in burnt turves or peat.

Context 6182 [fill in 6185]

Sample 26/BS (5 kg sieved to 300 microns with washover)

Just moist, mid grey-brown, crumbly to unconsolidated, slightly silty sand.

The moderate-sized residue of about 500 cm³ comprised clean quartz sand and a little ?iron pan. The ~40 cm³ washover was of sand and extremely strongly silt-coated charcoal with modern remains (rootlets, earthworm egg capsules and perhaps most

of the few weed seeds). There were traces of insect remains, but insufficient for further analysis.

Context 6183 [fill in 6206]

Sample 27/BS (5 kg sieved to 300 microns with washover)

Moist, mid grey-brown, crumbly to unconsolidated, slightly silty sand.

The moderate-sized residue of about 500 cm³ was of clean quartz sand with a little ?iron pan and traces of very decayed bone. The small washover of about 40 cm³ contained more sand with some charcoal (to 20 mm) and very decayed bone with a very few charred cereal grains (oats, *Avena*, and wheat, *Triticum*). Again there were traces of charred remains which might have originated in turves.

Context 6184 [fill in 6206]

Sample 28/BS (5 kg sieved to 300 microns with washover)

Moist, mid grey-brown, crumbly to unconsolidated, slightly clay silty sand. Fragments of mammal bone were present in the sample.

The moderate-sized residue of about 500 cm³ was of clean quartz sand with a single large (65 mm) cobble fragment and a trace of bone. The washover of about 40 cm³ was of sand and charcoal (to 10 mm) with a few charred wheat grains, charred weed seeds (*Bromus*) and some very decayed bone; the few uncharred grass fruits present included modern and ?fossil material. Insect remains were restricted to a few well-decayed weevil fragments (reddened, with eroded edges..

Preservation of the 27 unidentified bone fragments recovered from this sample was very poor. The surface of the bones had been completely destroyed by chemical erosion and their fragility had resulted in much fresh breakage.

Context 6205 [fill in 6089]

Sample 41/BS (5 kg sieved to 300 microns with washover)

Moist, light yellow-orange-brown to mid to dark grey-brown, crumbly to unconsolidated, slightly clay slightly silty sand and ?ash with patches (to 10 mm) of light brown clay. Some ?cinder/clinker was present in the sample which had an overall burnt appearance.

The moderate-sized residue of about 350 cm³ consisted of clean quartz sand with ?iron pan, pottery

fragments (to 70 mm) and a little charcoal (to 10 mm). The washover comprised about 120 cm³ of charcoal with some sand-sized undisaggregated silt), and traces of reasonably well preserved charred cereals (one or two of each of oats (*Avena*), barley and wheat, as well as a little spelt chaff). There were also traces of charred plant remains which might have originated in turves.

Context 6237 [fill in 6089]

Sample 39/BS (5 kg sieved to 300 microns with washover)

Just moist, light brown through black in shades of orange-grey-brown (colours rather jumbled), slightly clay slightly silty ashy sand with fragments of rotted charcoal. The sample had an overall burnt appearance.

The small residue of about 200 cm³ was of clean quartz sand and iron pan. The large washover of 400 cm³ comprised about 100 cm³ clean quartz sand, the rest being angular charcoal (to 25 mm), probably mostly oak (*Quercus*). There were modest amounts of charred cereal remains, including spelt glume-bases and some other chaff which was probably also spelt wheat. The grains observed were often very puffed or eroded, and there was some iron salt deposition on both grains and charcoal. Other cereals noted were oats and rye (cf. *Secale cereale* L.).

Context 6289 [fill in 6290]

Sample 49/T (5 kg sieved to 300 microns with paraffin flotation)

Moist, mid to dark grey to light to mid grey-brown, crumbly to unconsolidated (working soft), sandy slightly clay silt with a little fine and coarse herbaceous detritus.

The small to moderate-sized residue of about 500 cm³ yielded about 300 cm³ clean quartz sand, the rest being rather decayed wood debris (to 35 mm), including twigs, probably of elder, and at least one fragment which appeared to have been worked. The presence of some charred heather (*Calluna vulgaris* (L.) Hull) root/basal twig material and some pteridophyte roots perhaps indicates the presence of remains from turves or peat (some burnt peat fragments were also noted), as may some of the grassland taxa represented by uncharred seeds. Other seeds indicate disturbed habitats, though with more evidence for grassland than for arable land, for example. The abundance of well preserved seeds makes this deposit a very suitable source for useful bioarchaeological information if studied more closely.

The flot yielded quite large numbers of insect remains, together with some mites and abundant water flea resting eggs (ephippia of Cladocera). The last included at least three distinct types. Aquatic beetles were numerous, too, a small *Helophorus* sp. being the most abundant taxon, but accompanied by a range of others including *Ochthebius minimus* (Fabricius), *Hydrobius fuscipes* (Linnaeus), a second *Helophorus*, two species of Hydrophilinae, a hydroporine, *Colymbetes fuscus* (Linnaeus), and a halipid. Aquatic deposition is therefore certain, but the abundant cladoceran resting eggs may indicate temporary water, probably much reduced in the summer. The water margins were sufficiently undisturbed to support a little aquatic-marginal vegetation on which plant-feeders lived, and to allow some mud-dwellers to survive.

The terrestrial component included a range of plant feeders and ground beetles able to live on or under fairly sparse vegetation, which included nettles, *Urtica* spp., on the basis of *Brachypterus* sp. and *Cidnorhinus quadrimaculatus* (Linnaeus). There were distinct hints of grassland. More significant among the terrestrial species was a distinct synanthropic component. Taxa recorded in this category included *Typhaea stercorea* (Linnaeus), of which there were at least two, *Gyrophypnus angustatus* Stephens, *Cordalia obscura* (Gravenhorst), *Ephistemus globulus* (Paykull), and *Cryptophagus* spp., collectively perhaps indicative of moist but open-textured rotting plant matter. The litter on a moist surface, perhaps in a stable or animal pen, might support a community of this kind. A single *Anobium punctatum* (Degeer) probably originated in a structure, but the woodworm is common enough in the wild. Dung beetles were present in moderate numbers, four species of *Aphodius* (one fairly common) and a *Geotrupes* sp. being noted. A few other taxa may also have exploited dung, such as three or more species of *Cercyon*, *Cryptopleurum minutum* (Fabricius), *Platystethus arenarius* (Fourcroy) and *Oxyomus sylvestris* (Scopoli).

Most of the invertebrates were excellently preserved, but a few of the terrestrial forms appeared more decayed, perhaps having entered indirectly as corpses via soil or other material: in view of the botanical evidence, turves might be a source.

Careful analysis of the insects from this subsample, preferably combined with those from another 5 kg, would provide a detailed picture of conditions in the cut, and should allow substantially more to be deduced concerning conditions and activities on the adjacent surfaces.

Context 6310 [fill]

Sample 53/BS (5 kg sieved to 300 microns with washover)

Just moist, mid grey-brown, crumbly to unconsolidated, slightly silty sand.

The moderate-sized residue of about 500 cm³ consisted of clean quartz sand with some fragments of flaggy micaceous sandstone and rounded clasts of ?burnt soil and ?iron pan. The small washover of about 40 cm³ was of sand and charcoal (to 20 mm) with traces of charred cereals (oats, barley, ?wheat) and modern (germinating!) weeds.

Context 6311 [fill]

Sample 54/BS (5 kg sieved to 300 microns with washover)

Moist, mid grey-brown (mottled lighter and darker in patches), crumbly to unconsolidated, slightly clay silty sand with some stones (2 to 6 mm) present.

The moderate-sized residue of about 325 cm³ consisted of clean quartz sand with a little very decayed bone and ?iron pan. The washover of about 70 cm³ was of bone fragments and sand with some very decayed elder seeds and beetles (a few tough weevils of the kind often found in deposits where most insects have decayed completely) and a trace of charred ?heather root/twig perhaps from turves.

Forty-five fragments of bone, all >30 mm in size, were recovered. As with the hand-collected material from this deposit, preservation was poor and fragments were battered and eroded in appearance.

*Medieval***Context 6100** [layer]

Sample 9/BS (5 kg sieved to 300 microns with washover)

Wet, light to mid brown to mid to dark grey-brown, soft and slightly sticky (working somewhat thixotropic), clay silty sand with patches (to 5 mm) of very dark brown ?humic material and medium-sized stones (20 to 60 mm).

The very small residue of about 100 cm³ comprised very clean quartz sand. There was a washover of about another 40 cm³, mainly of tiny pellets of undisaggregated silt, with traces of charcoal (to 5 mm) and a little more sand as well as a few seeds, most of which were probably modern.

Many very small and extremely poorly preserved fragments of unidentifiable bone were recovered from this sample.

*Unphased***Context 6134** [fill]

Sample 52/BS (1 kg sieved to 300 microns with washover)

Just moist, light to mid grey-brown (with lighter mm-scale mottling), crumbly to unconsolidated, sandy (and ?ashy) silt with fragments of burnt mammal bone present.

The small residue of about 75 cm³ consisted of burnt bone (to 15 mm), charcoal (to 20 mm), sand, and gravel; the washover of about 50 cm³ contained further sand with some charred organic debris amongst which there was more burnt bone, charcoal and perhaps debris from the burning of turves (charred herbaceous detritus and charred moss stems—though the remains were extremely sparse).

This sample yielded over 100 small, very brittle and fragmented bones, all of which were burnt. Although only a single fragment was identifiable to species (a single sheep astragalus), most of the material represented medium-sized mammals (assumed to be caprovid, pig or small cervid).

Hand-collected vertebrate remains

The hand-collected vertebrate remains were recovered from 14 contexts, ten of which dated to the Roman period. The remaining deposits were of modern origin or undated. Of the 141 fragments recovered, 100 were from the Roman deposits. Preservation was, on the whole, so poor that few fragments could be identified to species. Eroded bone surfaces, the result of the acidic nature of the deposits, were common. Much fresh breakage was noted throughout the assemblage, probably because of the brittle and fragile nature of the bones. Half the assemblages from contexts 6075, 6090, 6092, 6095 and 6125 (of Roman date) contained burnt or heavily calcined fragments, which again were somewhat delicate. The few bones which were identified to species represented the remains of the major domestic species, cattle, caprovid and pig.

Summary information for the hand-collected vertebrate assemblage is presented in Table 2.

Discussion and statement of potential

With one or two exceptions, survival of plant remains other than charcoal in these deposits was, as might be expected, poor, though many yielded a few chaff fragments (which mostly seemed to be of spelt wheat), and a few charred cereal grains, and there were sometimes hints that material derived from burnt turves was present. Two samples gave large assemblages of well preserved remains, one (Sample 43, Context 6150) primarily indicating disturbed habitats in the vicinity of a waterhole or ditch, the other (Sample 49, Context 6289) having evidence which might point to grazing land in the vicinity or even to the deposition of animal dung or stable manure.

Overall, the hand-collected vertebrate assemblage was very fragmented, with few identifiable bones and none which could provide biometrical or age-at-death data. The very poor preservation is most likely to be a reflection of the acidic nature of the sediments and, consequently, these deposits show no potential for the preservation of an interpretatively useful assemblage of vertebrate remains.

Recommendations

Given the rarity of deposits with good preservation of charred and uncharred remains from rural sites of this date in the Vale of York, every effort should be made to study further at least some material from this site. Charred cereal remains should certainly be recorded in more detail from Context 6237 and any other contexts which are thought to contain more than small amounts of charred material. Plant and invertebrate remains from Context 6289 should be studied in detail and those from Context 6150 are also worthy of additional investigation. It would probably be worthwhile making a further selection of

material on the basis of sieving 5 kg subsamples of as many well-dated deposits from primary contexts as possible and judging by eye from the volume of washover yielded.

No further analysis of the vertebrate material is warranted.

Retention and disposal

All of the current material should be retained for the present.

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. List of examined sediment samples from excavations near West Lilling, North Yorkshire, with notes on their treatment.

Context	Sample	Notes
6091	31	4 kg sieved to 300 microns with washover
6100	9	5 kg sieved to 300 microns with washover
6134	52	1 kg sieved to 300 microns with washover
6150	43	5 kg sieved to 300 microns with washover
6161	20	5 kg sieved to 300 microns with washover
6182	26	5 kg sieved to 300 microns with washover
6183	27	5 kg sieved to 300 microns with washover
6184	28	5 kg sieved to 300 microns with washover
6205	41	5 kg sieved to 300 microns with washover
6237	39	5 kg sieved to 300 microns with washover
6289	49	5 kg sieved to 300 microns with paraffin flotation
6310	53	5 kg sieved to 300 microns with washover
6311	54	5 kg sieved to 300 microns with washover

Table 2. Summary of the hand-collected vertebrate remains from a site near West Lilling, North Yorkshire.

Date	Context	No. of fragments	Preservation	Notes	Weight (g)
modern	6000	1	Fair; battered in appearance.	Unidentified: 1 large mammal sized shaft fragment.	9
Roman	6075	16	Fair; rather brittle.	Unidentified: 5 tooth enamel fragments, 11 unidentified fragments (all burnt)	15
Roman	6090	5	Fair; fragile.	Unidentified: 5 fragments (burnt).	5.2
Roman	6092	2	Fair; fragile.	Unidentified: 2 fragments (burnt).	1
Roman	6095	29	Fair; battered and rounded; fawn in colour. Some surfaces eroded.	Cattle: 1 P3, 1 first phalanx fragment. Unidentified: 27 mainly large sized mammal fragments	54
modern	6097	29	Variable preservation.	Cattle: 1 metapodial, 1 carpal and 1 maxillary molar. Caprovid: metapodial. Pig: canine fragment. Unidentified: 24 mainly large sized mammal fragments.	45.2
Roman	6125	9	Fair; brittle.	Caprovid: distal radius (burnt). Unidentified: 8 medium-sized	8.2

				mammal fragments (all burnt).	
no info	6132	1	Fair; battered	Cattle: 1 mandibular molar (M1/M2).	15
Roman	6142	11	Fair to poor; root etching and some damage to bone surface.	Cattle: 1 ulna. Caprovid: 1 maxillary molar (M3). Pig: 1 maxilla with teeth <i>in situ</i> . Unidentified: 8 mainly large sized mammal fragments, including shaft and rib.	84
Roman	6170	15	Very poor preservation; eroded and battered.	Unidentified: 10 tooth enamel fragments and 5 unidentified fragments.	14.2
Roman	6258	10	Poor.	Unidentified: 10 tooth enamel fragments.	5.5
Roman	6307	4	Variable, fair and poor.	Caprovid: 1 astragalus, 1 calcaneum. Unidentified: medium-sized mammal shaft fragments.	11.5
Roman	6310	1	Very poor; fragile.	Cattle: 1 maxillary molar.	7
No info	6311	10	Poor; battered.	Cattle: 1 second phalanx fragment. Caprovid: 1 metatarsal, 1 humerus, 1 mandible (no teeth). Unidentified: 6 large mammal sized fragment.	37