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Evaluation of biological remains from excavations at The Arcade, Ripon, North Yorkshire (site code: HARGM 10214)

by

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Summary

A series of sediment samples and four boxes of hand-col1ected bone from deposits revealed by excavations at The Arcade, Ripon, North Yorkshire, were submitted for an evaluation of their bioarchaeological potential.

Very few useful assemblages of plant remains were recovered from the deposits and these were, generally, of limited interpretative value. However, a proper analysis should be made of material from Context 2085, provided dating is secure and reasonably tightly defined, and of any associated deposits which may have similar concentrations of charred cereal remains. The recovered invertebrate remains (including the hand-collected shell) were of no interpretative value.

The vertebrate remains recovered from these deposits show some potential for providing useful zooarchaeological and archaeological information for the reconstruction of aspects of human activity. Initial examinations show that the remains mainly represent household refuse, with a small component of butchery, possible evidence for the rearing of pigs, and some indications of possible small-scale craft activities u skinning/fur preparation and antler working.

The remaining sediment samples from well dated contexts should be sieved to recover small bone (particularly fish bone) and an archive of this and the hand-collected material, including biometrical data, prepared.

KEYWORDS: THE ARCADE; RIPON; NORTH YORKSHIRE; EVALUATION; 10TH CENTURY TO MODERN; MEDIEVAL; PLANT REMAINS; CHARRED PLANT REMAINS; INVERTEBRATES; INTESTINAL PARASITIC NEMATODE EGGS; SHELLFISH; VERTEBRATE REMAINS; ?SKINNING/FUR PREPARATION; ?ANTLER WORKING

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Introduction

An archaeological evaluation excavation was carried out by York Archaeological Trust at the site of The Arcade, Ripon, North Yorkshire (NGR: SE 3131 7127).

A series of sediment samples ('GBA'/'BS' *sensu* Dobney *et al*. 1992), and four boxes (each of approximately 20 litres) of hand-collected bone, were recovered from the deposits. The deposits ranged in date from 10th century through to modern but most were more tightly constrained to between the 12th and 14th centuries (mostly medieval).

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

Methods

Sediment samples

The sediment samples were inspected in the laboratory. Eight of the samples were selected 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. The washovers and residues were examined for plant remains. The washovers were also examined for invertebrate remains, and the residues were examined for other biological and artefactual remains.

Two of the sediment samples (Context 2070, Sample 9 and Context 2149, Sample 31) were examined for the eggs of intestinal parasitic nematodes and other microfossils using the 'squash' technique of Dainton (1992).

Table 1 shows a list of the submitted samples and notes on their treatment.

Hand-collected shell

Only two contexts (one of which, Context 2000, was a 'cleaning' layer containing pottery fragments of 14th century to modern date) gave hand-collected shell. These were examined and very brief notes made.

Vertebrate remains

Data for the vertebrate remains were recorded electronically directly into a series of tables using a purpose-built input system and *Paradox* software. For each context (or sample) 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 EAU. Fragments not identifiable to species ('B' bones) were grouped into one 'unidentified' category.

Total numbers of fragments by species were recorded, together with the numbers of 'A' bones, i.e. mandibular teeth and mandibles (for age at death analysis), measurable fragments, and the number of unfused and juvenile fragments (Dobney *et al*. forthcoming). In addition to counts of fragments, total weights were recorded for all identified and unidentified categories.

Only material from deposits with spot dates was recorded in detail, although bones from all deposits were scanned and brief notes were made regarding these assemblages.

Results

Sediment samples

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

Context 2070 [backfill of a ?cess pit lined with pieces of micatious sandstone 'roof' tiles. Dated 13th/14th century]
Sample 9/T (2 kg sieved to 300 microns with washover and microfossil 'squash')

Just moist, light to mid grey-brown, soft (working just plastic and slightly sticky; very sticky when wet), slightly clay sandy silt. Stones (2-6 mm and 20-60 mm) and traces of charcoal were present in the sample.

The moderate-sized residue of about 250 cm^3 consisted of gravel (to 50 mm) and sand. There was also a moderate-sized washover of about 40 cm^3 of sand with some charcoal (to 10 mm), with some very small fish bones and very decayed beetles; some possible evidence for very decayed faecal material is in the form of mineral-replaced fig (*Ficus carica* L.) seeds and tentatively identified raspberry (*Rubus idaeus* L.) seeds. The few other plant remains were of no interpretative significance.

Approximately 40 very tiny bone fragments were recovered from this sample. A number of small fish vertebrae (including herring) and a pig phalanx were identified.

The microfossil 'squash' was approximately half organic detritus and half inorganic material with some ?phytolith fragments and several live ?soil nematodes. No eggs of intestinal parasitic nematodes were seen.

Context 2078 [backfill of cobble lined cess pit (stratigraphically below context 2066). Dated 13th/14th century]
Sample 15/T (3 kg sieved to 300 microns with washover)

Moist, reddish grey, soft (working plastic and somewhat thixatropic), silty clay sand. Stones (2-20 mm) and traces of charcoal were present in the sample.

There was a moderate-sized residue of about 300 cm^3 of sand and gravel with a little bone, and a small washover of about 30 cm^3 of sand and fine charcoal. The only biological remains were some fruiting bodies of a fungus, *Rosellinia* cf. *mammiformis* (Pers.) Ces. & De Not., which grows on twigs but is of no interpretative value in isolation.

Context 2085 [backfill. Dated 14th/15th century]
Sample 22/T (2 kg sieved to 300 microns with washover)

Moist, black (but rubs dark brown), soft (working thixatropic and somewhat plastic), very humic, ?charcoal-rich silt. Fragments of large mammal bone, charred twigs, ?mortar/lime, ?ash, and ?burnt soil were present in the sample.

The small residue of about 25 cm^3 consisted of sand, gravel, an iron object (or perhaps an iron-rich concretion) and a little burnt and unburnt bone. The small washover of about 250 cm^3 was very distinctive, however, in being dominated by charcoal (to 20 mm) with quite well-preserved charred grains of bread wheat (*Triticum 'aestivo-compactum*') and much fine 'silicified' ash. Amongst these were rachis and rachilla fragments of free-threshing wheat and many awns, as well as traces of chaff from barley (*Hordeum*) and rye (*Secale cereale* L). There were virtually no charred weed seeds (except perhaps the moderate numbers of small *Vicia*) and only a very few uncharred seeds, one of which, greater celandine (*Chelidonium majus* L.) is a species typically found at the foot of a wall. The mechanism whereby the abundant cereal chaff became 'silicified' is not certainly know, though it is discussed by Robinson and Straker (1990); perhaps this ash is most likely to represent material burnt in a bonfire.

Twenty-four fragments of bone were recovered from this sample, which included a single eel (*Anguilla anguilla* (L.) vertebra, and a number of unidentified bird fragments. A few of the bones had been burnt.

Context 2089 [backfill of slot cut 2086. Dated 12th century]
Sample 25/T (2 kg sieved to 300 microns with washover)

Just moist, light to mid olive-brown to mid red-brown, crumbly (working more or less plastic), slightly sandy, clay silt/silty clay. Stones (20-60 mm) and charcoal were present in the sample.

The residue of about 150 cm^3 was of gravel with some sand with a large washover of about 200 cm^3 of charcoal and more sand. Amongst the charcoal, there were two fragments (to 40 mm) of oak (*Quercus*) roundwood with very close annual rings indicating slow growth.

Context 2118 [backfill of interleaving layers within post hole 2121, removed as one context. Dated 12th to late 14th century]
Sample 28/T (2 kg sieved to 300 microns with washover)

Moist, mid olive-grey-brown, soft to crumbly (working slightly plastic and thixatropic, silty clay sand. Charcoal and ?ash were abundant, and fragments of large mammal bone (some of which were burnt) were present, in the sample.

There was a moderate-sized residue of about 225 cm^3 of burnt bone (to 40 mm) and sand with some gravel and cinders; very large washover of about 500 cm^3 was largely cinders (to 30 mm),with some coal and charcoal (both to 20 mm), the latter including some material of oak.

Of the 22 bone fragments recovered from a quick sort of the residue, only one fragment was unburnt. The rest were white in colour and calcined.

Context 2138 [levelling/floor or possible sub-floor. Dated No pottery spot date available]
Sample 30/T (3 kg sieved to 300 microns with washover)

Just moist, light to mid reddish grey-brown (with grey flecks and areas of 'rusty' red around root traces and cracks), stiff and brittle (working crumbly, then plastic when wet), sandy clay silt. Stones (2-20 mm), charcoal, and traces ('stains') of very decayed wood were present in the sample.

The moderate-sized residue of about 300cm^3 comprised gravel with some sand. There was a small washover of about 50 cm^3 of coal, charcoal, very small bones and sand with modern rootlets and a few uncharred seeds, and modest numbers of very decayed beetles and some mites. The seeds were not interpretatively significant; all were typical of urban occupation deposits with very poor preservation.

A small bone assemblage including the remains of small mammals and several small fish vertebrae was recovered.

Context 2149 [backfill of pit/post hole. No pottery spot date available]
Sample 31/T (2 kg sieved to 300 microns with washover and microfossil 'squash')

Just moist, mid grey-brown (locally somewhat reddish brown and light grey with patches of yellow-orange, ?very decayed organic material in 'veins'), crumbly (working more or less plastic and sticky when wet), sandy silty clay. Stones (2-20 mm) and charcoal were present in the sample.

The moderate-sized residue of about 200 cm^3 was mostly gravel with some sand. There was a rather large washover of about 120 cm^3 of sand and charcoal, amongst which were modest numbers of poorly preserved uncharred fig (*Ficus carica* L.) and blackberry (*Rubus fruticosus* agg.). The few other plant remains were not of much significance, but there was quite a lot of fine fish and other bone which, together with the fruit seeds suggests a component of extremely decayed faecal material.

A moderate-sized assemblage of bone was recovered from this sample. Many of the the fragments were very small and most were unidentifiable. Some fragments appeared to be damaged by acid etching but most were fairly well-preserved. Fish remains were identified, including eel (*Anguilla anguilla* (L.)), ?thornback ray (cf. *Raja clavata* L.) and smelt (*Osmerus eperlanus* (L.)). Juvenile bird vertebrae, possibly representing chicken, were noted, along with a number of bird phalanges. Turdidae, passerine and corvid fragments were also identified.

The microfossil 'squash' was mostly organic detritus with some inorganic material and a few fungal hyphae. Two (possibly three) eggs of intestinal parasitic nematodes were seen: one (possibly two) *Ascaris* (maw worm) egg and one *Trichuris* (whipworm) egg. The *Trichuris* egg had lost both polar plugs and appeared rather distorted (probably not measurable). The presence of these eggs confirms the presence of faecal material, but their low numbers indicate that this probably formed only a minor component of the deposit.

Context 4002 [backfill of large feature lined with limestone and clay. Dated 12th to 14th century]
Sample 20/T (3 kg sieved to 300 microns with washover)

Just moist, light to mid grey-brown (locally more brown and more grey), crumbly (working plastic when wet), slightly sandy silty clay with patches of ?lime. Stones (6-20 mm) and coal were present in the sample.

The small to moderate-sized residue of about 200 cm^3 was of sand, gravel (mainly very worn Magnesian limestone) and coal, with a little bone and a tooth. The moderately large washover of about 70 cm^3 consisted of sand and coal with modern woody roots and traces of uncharred seeds of toad-rush (*Juncus bufonius* L.) and elderberry (*Sambucus nigra* L.), as well as of charcoal (including oak, to 10 mm). The remains were of no interpretative significance.

Hand-collected shell

Two contexts yielded very small amounts of shell, all of which was oyster (*Ostrea edulis* L.). Context 2000 (a 'cleaning' layer) gave two large, well-preserved right valves and Context 2176 gave two fused, rather poorly preserved (very soft and pitted) valves (both ?left valves).

Hand-collected vertebrate remains

The entire assemblage (recovered mainly from deposits of medieval date) amounted to 1290 fragments (representing 66 contexts). Details of the range of species and number of fragments for hand-collected material from the deposits (31) dated by pottery (Table 2) to the medieval period can be found in Table 3. This table excludes the 68 fragments representing a part skeleton of a pig from Context 2149. Vertebrate material from the scanned deposits is included in the results below.

Preservation of the vertebrate remains was rather variable, although most fragments were recorded as 'good' or 'fair'. A small component that was rather battered in appearance was apparent within the material from many of the deposits, whilst a small number of the fragments exhibited rounded edges or were very eroded. In general, the assemblage was moderately fragmented although, material from several deposits showed extensive fresh breakage, as opposed to damage caused in antiquity. Little indication of dog gnawing of the bones was evident.

The major domestic species were identified, including the remains of cattle, caprovids and pigs. A preliminary examination of the range of skeletal elements for cattle and caprovids showed a predominance of meat-bearing bones indicating domestic or kitchen refuse. Some butchery waste, however, was indicated by the presence of cranial, maxilla and mandible fragments, isolated teeth, and distal limb elements. Pig remains included the part skeleton of a juvenile individual from Context 2149, whilst several other deposits (Contexts 2070, 2085, 2101 and 4009) also contained elements representing very young, possibly neonatal, individuals. Goat horncores (Contexts 2068, 2075 and 2088) and ?goat metapodials and phalanges (Contexts 2097, 2099 and 4010) were also identified. Birds were represented by fowl and goose, with a possible pheasant (cf. *Phasianus colchicus* L.) humerus noted from Context 2107. This deposit also produced 27 cat fragments, of which 24 were metapodials representing at least 6 individuals. Other medieval pit and post-pit fills also yielded cat bones. Some of the remains of individual cats included, or were exclusively represented by, metapodials (Contexts 2070, 2092, 2099, 2109, 2110 and 2146), whilst others (Contexts 2074, 2093 and 4009) appeared to be part skeletons, with the major limb bones and pelves present. Although no knife marks were observed on any of the cat bones, it seems likely that some of these groups (e.g. the metapodials from Context 2107) represent the waste from the preparation of furs or skins.

Antler fragments representing red deer (*Cervus elaphus* L.), fallow deer (*Dama dama* L.) and roe deer (*Capreolus capreolus* (L.)) were recovered from Contexts 2087, 2107 and 2142, whilst a single calcaneum was identified as red deer from Context 2095. The absence of meat-bearing elements suggests that these fragments may be related to craft activities rather than representing food waste. Other wild species present included hare, *Lepus* sp., (Context 2074) and a tibia shaft fragment tentatively identified as rabbit (cf. *Oryctolagus cuniculus* (L.)) from Context 4010.

The deposits also produced small numbers of fish bones, most of which were Gadidae, those identified to species being cod (*Gadus morhua* L.).

The recorded and scanned assemblage included 101 measurable fragments and 10 mandibles with teeth *in situ* of use for providing biometrical and age-at-death data.

Discussion and statement of potential

Preservation of plant remains other than by charring was rare and the uncharred material usually not well-preserved. Except for charcoal, charred plant remains were limited to a few charred cereals except in the case of the abundant wheat grains in the sample from Context 2085, which were accompanied by quantities of charred and 'silicified' chaff, an extremely unusual deposit (for other instances of silicified material, see Robinson and Straker 1990).

The few invertebrate remains recovered from the samples were very poorly preserved and of no interpretative value.

The very few hand-collected shell remains (all oyster valves) were of no interpretative value.

The vertebrate remains recovered from these deposits show some potential for providing useful zooarchaeological and archaeological information for the reconstruction of aspects of human activity. Variability of angularity and colour was observed within material from many deposits, possibly implying the presence of some redeposited or residual bone in varying amounts. It also suggests that a number of sources are responsible for the accumulations of debris. Initial examinations show that the remains of cattle and caprovids mainly represent household refuse, with a small component of butchery waste also present. Some of the pig remains are probably derived from domestic waste, whilst the bones from the neonatal/juvenile individuals possibly provide evidence for the rearing of pigs in the vicinity.

The concentrations of cat metapodials seem to represent waste associated with the processing of animal skins, although no direct evidence from skinning marks was observed. Cat bones with skinning marks are fairly common from medieval sites (Johnstone *et al* 1997; Gidney 2000) and documentary evidence confirms the use of cat fur in the medieval period for trimmings and linings or as a cheap alternative to more expensive furs such as ermine (Veale 1966). Other craft activities, such as antler working, may have been undertaken but probably only on a small scale.

The potential of the deposits for preserving bone is highlighted by the recovery of a small fish assemblage from the processed subsamples. Processing of larger samples would probably provide a useful and interpretable assemblage.

Recommendations

Since the samples examined were selected on the basis that they consisted of deposits likely to yield useful assemblages of plant and/or animal remains, the paucity of such assemblages suggests that further work on these classes of remains is not warranted. However, a proper analysis should be made of material from Context 2085, provided dating is secure and reasonably tightly defined, and of any associated deposits which may have similar concentrations of charred cereal remains.

Although this assemblage is fairly small, it is recommended that a basic archive, including biometrical data, should be produced of all well dated material. The remaining sediment samples from well dated contexts should be sieved to recover small bone (particularly fish bone) and this material included in the archive. This would allow for the data to be used in conjunction with information from other sites of medieval date in Ripon. Increasing the available data sets will provide a wider understanding of the activities being undertaken in the city during this period.

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 at The Arcade, Ripon, North Yorkshire, with notes on their treatment.

Context	Sample	Notes
2070	9	2 kg sieved to 300 microns with washover and microfossil 'squash'
2078	15	3 kg sieved to 300 microns with washover
2085	22	2 kg sieved to 300 microns with washover
2089	25	2 kg sieved to 300 microns with washover
2118	28	2 kg sieved to 300 microns with washover
2138	30	3 kg sieved to 300 microns with washover
2149	31	2 kg sieved to 300 microns with washover and microfossil 'squash'
4002	20	3 kg sieved to 300 microns with washover

Table 2. List of contexts (with spot dates) from which the bone was recorded in detail.

Context	**Spot date**
2007	14th century
2032	13/14th century
2044	13th century
2047	13/14th century
2049	12/13th century
2050	12/13th century
2052	12-13/14th century
2056	10/11-14th century
2066	10-13/14th century
2068	13/14th century
2070	13/14th century
2078	13/14th century
2083	10/11-14th century
2085	14/15th century
2087	13/14th century
2088	10-12th century
2092	10-13th century
2093	11/12-14th century
2099	11th century
2100	14th century
2107	10-13th century
2109	12/13th century
2110	12/13/14th century
2111	13/14th century
2118	12-14th century
2132	12-14th century
2142	12-14th century
4002	12-14th century
4009	12th century
4010	12th century
4024	10th century; 13-14th century

Table 3. Vertebrate remains from deposits spot dated by pottery to the medieval period.

Species		Number of fragments
cf. *Oryctolagus cuniculus (L.)*	?rabbit	1
Canis f. domestic	dog	1
Felis f. domestic	cat	86
Equus f. domestic	horse	7
Sus f. domestic	pig	45
Cervid	deer	2
Cervus elaphus L.	red deer	1
Dama dama (L.)	fallow deer	1
Capreolus capreolus (L.)	roe deer	1
Bos f. domestic	cattle	60
Caprovid	sheep/goat	86
Anser sp.	goose	4
cf. *Phasianus colchicus* L.	?pheasant	1
Gallus f. domestic	chicken	5
Fish		13
Sub-total		*314*
Unidentified		511
Sub-total		*511*
Total		**825**