

Reports from the Environmental Archaeology Unit, York 94/22, 7pp.

**Evaluation of biological remains from excavations
in Cartergate, Grimsby (site code CGG94)**

by

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Summary

Plant and invertebrate remains from a series of late- to early post-medieval deposits from Cartergate, Grimsby, S. Humberside, have been examined, together with a small assemblage of hand-collected molluscs and bone, to evaluate their bioarchaeological potential.

Some of the sediment samples proved to contain well preserved plant and invertebrate macrofossils indicative of occupation deposits containing material from stock and also some food remains. They are of value and should be examined further, either through the samples in hand or through analysis of samples from subsequent excavations.

The hand-collected shell and bone are not interpretatively useful and bone would only be of value if large-scale sieving of well-dated deposits was undertaken.

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19 April 1994

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Introduction

Twenty-four samples of sediment ('GBAs' *sensu* Dobney *et al.* 1992) from excavations of medieval and post-medieval deposits in Cartergate, Grimsby, were supplied by Humberside Archaeology Unit for an evaluation of their content of biological remains. Also supplied for investigation were two standard-sized boxes of hand-collected bone and a small number of hand-collected snails.

Methods

GBA samples

Of the eight samples selected for processing, six were chosen during an initial inspection, on the basis of their apparent content of organic matter. Two additional samples were subsequently investigated at the request of the excavator. The eight GBA samples were described (using a *pro forma*) and subsamples of 1 kg were then processed for biological remains following techniques of Kenward *et al.* (1980; 1986). No further analysis of the remaining samples was undertaken.

Invertebrate and plant macrofossil remains were examined in the flots or washovers from the GBA subsamples and plant remains and other components were recorded from the residues.

Six of the selected eight GBA samples were examined for the eggs of parasitic nematodes using the 'squash' method of Dainton (1992). Other microfossils (e.g. phytoliths, diatoms, pollen and fungal spores) were also noted.

Results

Results of the analyses of biological remains are given in the appendix.

Discussion and statement of potential

Three of the eight samples gave very poor preservation or were barren of biological remains. The remainder had a variable content of plant and invertebrate macrofossils. None of the samples examined by means of a 'squash' contained parasite eggs.

Of the samples which gave some preservation of macrofossil invertebrate and plant remains by anoxic waterlogging, two suggested the presence of hay and/or manure and a third some evidence of food remains and perhaps food storage pests. The nature of the evidence would certainly be clarified by further, more detailed, analysis.

These analyses have shown that an appreciable proportion of the deposits at Cartergate are likely to have preservation of substantial quantities of macro- and microfossils. The samples with more than a few fossils show clearly that these remains have potential for bio-archaeological investigation and that information of archaeological value would be obtained by such analyses in the event of further intervention.

The hand-collected shell was of no interpretative value.

The size of the bone assemblage, and the small number of fragments providing biometrical and age at death information, limit its usefulness in terms of its zooarchaeological potential. However, should further, more extensive, work be carried out (including systematic sieving), more useful information, particularly concerning the fish, may well be obtained.

Recommendations

The macrofossil-rich samples discussed here should be recorded more fully to

elucidate further the nature of the deposits and to contribute to the database of information concerning the distribution of plant and invertebrate remains in space and time, for future biological and archaeological synthesis.

In the event of development involving destruction of these deposits on more than a very limited scale, every effort should be made to implement a full sampling programme and to carry out appropriate post-excavation analytical work. Recovery of bone should involve sieving of bulk samples.

No further work on the existing bone and mollusc assemblages is recommended.

Retention/disposal

The sediment samples with preservation of waterlogged biological remains should be retained and stored under controlled environmental conditions to allow further analysis in the future. These are perhaps best lodged at the EAU, York, where an archive of such high priority material has been established.

The remaining samples and the hand-collected material can be discarded, although the samples should, ideally, be sieved to 1 mm to recover artefacts and any other material of interest before disposal.

Archive

All biological remains, samples of processed and unprocessed sediment and paper and electronic archives relating to the work discussed here are currently stored at the Environmental Archaeology Unit, University of York.

Acknowledgements

The authors are grateful to Ken Steedman, Humberside Archaeology Unit, for making this material available and for archaeological information and to English

Heritage for allowing AH, HK and AM to contribute to this work.

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Appendix

GBA samples

The samples are discussed in order of trench number, then phase and context number. Archaeological information, including dating, provided by the excavator is presented in brackets.

Trench 1, phase 2b (13th/early 14th C.)

Context 22 sample 1007 [secondary fill of pit 53]: Moist, mid orange-grey-brown, crumbly (working plastic), slightly sandy silty clay. Very small and small stones (2-20 mm) and ?eggshell were present and charcoal was abundant in the sample.

The moderately large residue consisted largely of charcoal to 30 mm with traces of brick/tile and ?daub. There were no plant or invertebrate remains in the flot which contained only a little charcoal up to 2 mm. The microfossil 'squash' showed the

material to consist largely of organic debris, with some fungal spores and live soil nematodes.

Context 99 sample 1010 [fill of pit 101]: Moist, varicoloured (light orange-brown to mid-grey with black and orange), stiff (working plastic), slightly sandy clay. Very small and small stones (2-20 mm) were present and fragments of charcoal and bone (mostly fish—some burnt) were common in the sample.

The small residue consisted mostly of sand and gravel with moderate amounts of charcoal and charred fish bone, with a small amount of unburnt bone. The microfossil 'squash' showed this material to be inorganic, with a few fungal spores. The flot was minute and contained only traces of charcoal to 2 mm.

Context 120 sample 1009 [primary fill of pit 128]: Moist, mid to dark grey-brown, soft (working plastic), sandy slightly clay silt. A small amount of very decayed wood, coal, and very small stones (2-6 mm) were present in the sample.

Preservation of plant remains was moderate to poor and the concentration of identifiable macrofossils low. However, the flot and residue yielded a modest range of identifiable taxa including some which may have originated in wet grassland and one taxon (*Triglochin maritima*, sea arrow-grass) which was from vegetation on the upper part of a salt-marsh. These are perhaps most likely to have arrived in cut vegetation—hay—or in manure from animals fed on such material or grazed on meadow or salt-marsh. There were very few taxa likely to have originated locally as part of the urban weed flora and no economically useful taxa.

The flot produced a small to medium-sized invertebrate assemblage of mixed preservation (medium to good) dominated by Staphylinidae and Lathridiidae with some mites present. There were hints of stable manure, but a substantially larger subsample would need to be processed to test this. The microfossil 'squash' showed this to be mostly inorganic material with some organic debris, fungal spores and phytoliths.

Context 162 sample 1011 [primary fill of pit 101]: Moist, mid orange-grey-brown, stiff (working plastic), slightly sandy clay with very small and

small stones (2-20 mm) and fragments of bone present and charcoal abundant (in discrete patches).

There were no plant or invertebrate remains other than a few very poorly preserved charred wheat (probably bread/club wheat, *Triticum aestivo-compactum*) grains in the flot from this subsample; the small residue was mostly charcoal to 25 mm, with traces of brick/tile and a little sand and gravel. The microfossil 'squash' indicated this to be mainly inorganic sediment with some fungal spores and organic detritus.

Trench 2 phase 2 (13th/early 14th C.)

Context 212 sample 1016 [?alluvial material above natural]: Moist, slightly heterogeneous in both colour and texture (mostly light to mid grey-brown with patches of pale orange-brown, mid grey, mid blue-grey and locally black in patches and streaks), soft to stiff (working plastic), silty clay. Small stones (6-20 mm) were present in the sample.

Very decayed wood and herbaceous plant detritus were present in both the washover and residue from his subsample. The plant macrofossils were moderately well to poorly preserved and present in a moderate concentration. They were mostly weeds of disturbed places and cultivated soils. Traces of oyster shell and coal indicate the presence of occupation debris, but none of the identifiable plant remains can be considered as indicative of specific human activity. The invertebrate assemblage contained moderately well preserved Staphylinidae and Anobiidae but these were of no interpretive value possibly representing only 'background' fauna. This sample was not examined for microfossils.

If this material is alluvial, it clearly contains some occupation debris, perhaps derived secondarily, or perhaps contamination introduced during excavation.

Trench 2 phase 5 (16th/17th C.)

Context 72 sample 1002 [lower fill of pit 28]: Moist, mid brown, soft working plastic, sandy clay silt with abundant very small stones (2-6 mm) and marine mollusc shell, brick/tile fragments, small and medium-sized stones (6-60 mm) all present.

Few identifiable plant remains were observed in the small washover and residue from this subsample; preservation was poor. The few taxa present suggest deposition from wetland vegetation but with some material from dry land habitats, too. A few poorly preserved insect remains of no interpretive value were present in the washover. Brick/tile and coal were present in trace amounts. This sample was not examined for microfossils.

Context 236 sample 1022 [well fill (well 117 not fully excavated)]: Moist, dark grey-brown, soft to crumbly working plastic, very humic sandy silt with very small stones (2-6 mm), mortar/lime, brick/tile and wood present.

The subsample from 1022 gave a large plant macrofossil assemblage which was generally quite well preserved (but rather variable in this respect); there were quite high concentrations of identifiable remains. The presence of grassland taxa and cereal weeds perhaps points to the presence of hay and straw, but there were also some food remains (fig, wheat/rye 'bran', apple) and several fragments of hemp (*Cannabis*) 'seeds'. The moderately frequent fruits of *Triglochin maritima* and a few achenes of sea aster (*Aster tripolium*) indicate the presence of upper salt-marsh vegetation, perhaps in herbivore dung or hay (cf. sample 1009). Other indicators of occupation debris were mortar, charcoal, brick/tile, leather, coal, and bone, including fish bone.

The flot contained a rich, diverse insect fauna, generally well preserved, including some taxa not normally preserved at all (e.g. aphids). The assemblage was dominated by taxa associated with compost/litter habitats, including Lathridiidae, Cryptophagidae, Staphylinidae, Rhizophagidae and Diptera (adults, larvae and pupae). Species representative of other habitats were also present, including Apionidae (mainly grassland), Curculionidae and Elateridae (natural habitats: grassland/woodland). The woodworm beetle *Anobium punctatum* was present in small numbers and specimens of the grain weevil *Sitophilus granarius* were noted. Aphids and earthworm egg capsules were also present in the flot.

The insects, at first sight, were very diverse in their origins, but may have been channelled through a single process, as the assemblage included a substantial component indicative of stable manure. This group included characteristic decomposer species, others associated with crude buildings,

some probably introduced in feed grain, and others likely to have been brought in cut vegetation.

The microfossil 'squash' mostly consisted of organic debris with some testate amoeba, fungal spores and a few (<10) diatoms.

Trench 3 phase 3 (Late 14th/15th C.)

Context 237 sample 1020 [?ditch fill beneath pit/ditch 136]: Moist, mixture of brown clay and grey crumbly clay silt. Overall: mid olive to mid to dark grey, crumbly (working plastic), slightly sandy clay silt with wood, fragments of large animal bone and ?marine molluscs present.

The rather small residue consisted mainly of cinder and iron-concreted sediment with a little coal and some fine and coarse woody and herbaceous plant material (the organic fraction was perhaps 10% by volume). Most of the identifiable plant remains were present in small numbers and preservation was moderate to poor. Taxa present at more than trace levels were weld/dyer's rocket (*Reseda luteola*), wild radish (*Raphanus raphanistrum*) and *Sphagnum imbricatum*. These plants represent disturbed places, cultivated soils and raised mire, respectively and indicate the material must have originated from more than one source. A few fragments of 'plum' (*Prunus domestica* sensu lato) fruitstone and two charred wheat grains show that the occupation debris probably included some food waste.

The flot contained a fairly diverse assemblage of well preserved insect remains (although preservation was not so good as that of sample 1022). The assemblage consisted mostly of decomposers, with a few Hydrophilidae (the latter suggesting wet conditions) with some Anobiidae (possibly a flight component). Some *Daphnia* ephippia, again indicative of wet conditions, were also present in the flot. There were some pale Oxytelinae, suggesting catastrophic events which killed them after emergence. Most notable were several specimens of a *Bruchus* species (probably *rufimanus*) which appeared to have been damaged by crushing, perhaps by chewing. They may have come from peas or beans used for food, having passed through the gut.

The microfossil 'squash' consisted mostly inorganic with some organic debris and a few fungal spores.

Hand-collected molluscs

Context 40 [upper fill of ditch 47, 13th-early 14th C.]: 15 shells of which 12 were *Cepaea hortensis*, three *Helix aspersa*.

Context 137 [upper fill of ditch 230, 15th-16th C.]: seven *Helix aspersa*.

Hand-collected bone

The bone assemblage comprised only 352 fragments and represents material from 45 bone-bearing contexts across the five trial trenches, but mostly from Trenches 1, 2, and 3. The assemblage could be divided on the basis of the six site-wide phases but the number of fragments from each phase was too few to produce detailed interpretative information.

Preservation overall was good to fair, with colour, for most fragments, being fawn or brown. The bones showed a moderate amount of both butchery and dog gnawing but little evidence of fresh breakage.

The range of domestic animals represented (taken as a whole across the trenches) included cattle (57 fragments), caprovid (53 fragments), pig (12 fragments), and horse (2 fragments). Additional species identified were dog, cat, rabbit, hare, domestic fowl and goose. A tibia shaft from context 118 (upper fill of well, 16th-17th C.) was identified as possibly being roe deer. There were also nine fish fragments recovered, four of which were tentatively identified as flatfish remains. Detailed results are given in Table 1.

A number of the GBA subsamples (from contexts 99, 162, and 237) contained small amounts of fish and one in particular (context 99) included numerous burnt fragments. An amphibian bone was also recovered from this context.

Of a total of 147 identifiable fragments in the hand-collected material, 39 were recorded as measurable, the small number possibly a reflection of fairly extensive damage caused by dog gnawing. In addition, five isolated teeth and eight mandibles were present.

Table 1. Hand-collected bone from all five trenches at Cartergate.

Taxon	Total fragments	Total weight (g)	Total measurable	Mandibles with teeth	Isolated teeth
Cattle	57			1	2
Sheep/goat	53			4	1
Pig	12			3	
Horse	2				2
Roe deer	1				
Dog	2				
Cat	1				
Hare	1				
Rabbit	1				
Bird	4				
Goose	2				
Fowl	2				
Fish	9				
Subtotal	147	5458	0	8	5
Unidentified	205	2078	0	0	0
Total	352	7536	0	8	5