

Reports from the Environmental Archaeology Unit, York 94/44, 5pp.

**Evaluation of biological remains from excavations at Yarm,
Cleveland (sitecode: OCM 94)**

by

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Summary

Five samples of sediment from the fills of a medieval (13th-14th century) ditch at Yarm were examined for their content of biological remains. Plant macrofossils and invertebrates (mainly beetles and water fleas) preserved by anoxic 'waterlogging' were present in most samples and quite abundant in three of the samples. A few charred cereal remains were also recorded.

The ditch appears to have contained water only intermittently. There was some, but only limited, evidence for waste disposal or accidental incorporation of occupation debris, but the insects gave no indication of intensive occupation nearby (within tens of metres) as the fills formed.

Conservation of the deposits is recommended; if they are to be damaged by development a strategic programme of palaeo-environmental investigation should be carried out.

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31 August 1994

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Introduction

Five samples of sediment (GBAs *sensu* Dobney *et al.* 1992) from excavations of a deep medieval ditch at Yarm, Cleveland, were supplied by York Archaeological Trust for an evaluation of their content of biological remains.

Methods

All of the samples submitted were described in the laboratory using a standard *pro forma* and 1 kg 'test' samples were processed following methods outlined by Kenward *et al.* (1980; 1986).

Analysis for eggs of parasitic nematodes was carried out using the 'squash' method of Dainton (1992). Other microfossils (e.g. phytoliths, diatoms, pollen and fungal spores) were also noted if present.

Results

The results of the investigations of sediment samples are presented in context number order.

Context 1012

Sample 1

Moist, light to mid grey/brown, slightly crumbly, plastic clay with black ?mineral deposits present. Throughout the sediment were burrows and root channels lined with orange-coloured iron salts, some forming brittle linings to the voids. This sediment may have been subject to bioturbation.

A few fungal spores, a single pollen grain and some 'lumps' of organic detritus were present in the squash.

There was a single hemlock (*Conium maculatum*) fruit in the flot and the residue

was very small and consisted of sand and gravel to 10 mm. No invertebrate remains were observed in the washover.

Context 1024

Sample 2

Moist, mid-dark grey/brown plastic to slightly crumbly clay with traces of herbaceous detritus and orange patches of silt. Stones in the size range 6-20 mm and >60 mm, and twigs were present.

Much organic detritus, including plant tissue, was present in the squash.

Plant remains were moderately frequent in the flot and residue and preservation was rather variable. Identifiable taxa were mostly plants likely to have grown on neglected ground (they included white horehound, *Marrubium vulgare*, and hedge garlic, *Alliaria petiolata* and probably also teasel, *Dipsacus cf. sylvestris*). There were also a few seeds of fig (*Ficus carica*) and sloe stones (*Prunus spinosa*), the former presumably from food, the latter possibly from local vegetation (since blackthorn thorns were also present). A small amount of very decayed wood and some twig fragments were recorded from the residue, along with a little coal, and a ?fox (*Vulpes vulpes*) tooth. Several seeds of an unidentified crucifer were noted; these were well preserved and most similar to reference material of horseradish, *Armoracia rusticana*; the identification of this material should be pursued.

There were some *Daphnia* (water flea) ephippia (resting eggs) and ostracod valves in the flot. Beetles were present in moderate numbers and consisted of a mixture of aquatic and waterside taxa, some phytophages (plant-feeders), and a few decomposers (species associated with decaying matter). The plant-feeders might all have occurred in lightly disturbed

habitats with herbaceous vegetation by the water's edge. The decomposers included *Oxytelus sculptus*, *Anotylus sculpturatus* group, and *A. ?inustus*, all of which might be found in dung, but are also able to live in rather foul waterside accumulations of rotting vegetation.

Context 1026

Sample 3

Moist, mid-dark grey/brown plastic, very slightly sandy clay with traces of herbaceous detritus and orange flecks (some with the appearance of burnt clay). Charcoal and 6-20 mm-sized stones were present.

The squash contained many fungal spores, a few pollen grains, some plant tissue and organic detritus.

Preservation of plant remains in the flot and residue was good but the concentration of remains was low. The most abundant seeds were elderberry (*Sambucus nigra*) and there was at least one seed of fig; the other identifiable taxa were weeds present in very small amounts. The residue consisted largely of sand and gravel to 15 mm, mineralised root traces, some brick/tile to 10 mm, a little cinder to 30 mm, coal and charcoal to 20 mm. *Daphnia ephippia* were also recorded from the flot, but no other invertebrates were observed.

Context 1031

Sample 4

Mid-dark grey plastic and sticky, moist humic clay with woody and herbaceous detritus. Pale orange and bright red burnt clay was present as a minor component. Wood, twigs, ?coal and 20-60 mm-sized stones were all present.

Some plant tissue and organic detritus were the only remains present in the squash.

The most abundant seeds/fruits in the washover and flot were mallow, probably common mallow, *Malva sylvestris*, and weld or dyer's rocket, *Reseda luteola*. They probably grew on waste ground in the vicinity of the ditch. Also present was teasel, probably wild teasel and a few other taxa not identifiable closely enough to be useful interpretatively. A few leaves of bog moss, *Sphagnum*, were recorded; these presumably arrived with peat or with moss collected from a peat bog. A little burnt and unburnt bone to 10 mm, trace of coal and some twig fragments to 40 mm made up the rest of the residue, together with a little sand and some gravel to 30 mm.

Insects and some other invertebrates were abundant in the flot. Both ostracod valves and *Daphnia ephippia* were numerous, and there were substantial numbers of aquatic beetles, principally *Helophorus* spp. The other aquatic beetles would mostly have found habitats with the *Helophorus* in a small body of water, which would not necessarily be permanent. Many of the remaining beetles would, or might have lived by water and, indeed, all of the recorded 'terrestrial' taxa could have occurred in a disturbed area by water. No species strongly favoured by human activity (synanthropes) were present, however.

Context 1034

Sample 5

Moist, mid-dark grey/brown plastic, soft and sticky, very slightly sandy clay with very slight traces of herbaceous detritus and locally mottled mid orange/brown at the cm scale. Evidence of ?charcoal or reduction and some burnt sandstone were also present.

The squash contained some organic detritus, plant tissue and fungal spores.

The small assemblage of moderately well preserved plant remains in the flot and residue appeared to be a mixture of taxa of no particular character. Many of the

'weeds' recorded from other samples (stinging nettle, elderberry, hemlock) were present here but there were also some bud-scale of willow (*Salix*) and some traces of probable food remains: charred grains of oats and wheat (probably bread/club wheat, *Triticum aestivo-compactum*) and uncharred seeds of raspberry and blackberry (*Rubus idaeus* and *R. fruticosus* agg.), as well as a *Prunus* fruitstone fragment. A single charred wheat rachis fragment (consisting of two-and-a-half segments) was also present; it was apparently from a free-threshing variety.

The flot contained abundant *Daphnia* ephippia, testifying to aquatic deposition, perhaps under conditions of seasonal drying. Other invertebrates were rare and of very limited ecological significance; only a few robust beetle taxa had survived.

Discussion

The contrast between the evidence from plant remains and invertebrates concerning the environment within the ditch is probably significant. The most likely explanation for the presence of aquatic invertebrates (water fleas and water beetles) without a corresponding aquatic flora is that the ditch only held water intermittently. It is just possible that plants were inhibited by pollution, but the fine sediments and rarity of organic detritus suggest that this was not the whole explanation.

Plant remains point to the presence of neglected ground and perhaps even scrub in the vicinity of the ditch (some of the taxa recorded may well have grown on its sides or even in the bottom if it was only seasonally flooded), though some of the foodplants clearly originated in human occupation in the vicinity. There is no evidence, however, for human dwellings and intensive occupation; in particular, insects typical of houses and stables were not recorded. It would be surprising if no strongly synanthropic insects had found their way into the ditch fills if there was intensive human occupation within a few

tens of metres. It is conceivable that conditions in the houses and yards were extremely clean, but even in this case species such as the woodworm beetle *Anobium punctatum*, and spider beetles *Ptinus fur* and *Tipnus unicolor*, might be expected to have strayed into the ditch. An alternative explanation is that the ditch infilled at a time when the adjacent properties were not occupied.

Statement of potential

Preservation of plant and invertebrate remains was variable in these deposits but the presence of fossils preserved by anoxic 'waterlogging' in some layers signals the likely importance of some features at this site for environmental investigation.

The insects clearly have some potential, firstly for determining conditions within the ditch, secondly (and to a limited extent) for reconstructing the ecology of the surroundings, and thirdly for providing information about human activity on the site as these ditch fills formed.

It appears that larger subsamples from contexts 1024 and 1031 would give substantial, diverse insect assemblages. From a palaeo-entomological point of view, study would be desirable providing dating was good, but archaeological questions would require formulation.

Plant remains offer potential for providing information about vegetation at or near the site and, to a limited extent, about disposal of food waste by the inhabitants, though considerably larger subsamples would be needed to provide useful assemblages.

Certainly the deposits should not be destroyed without a full, but carefully targeted study.

Recommendations

If the deposits discussed here cannot be preserved *in situ* (with guaranteed preservation of 'waterlogged' remains; i.e. with a stable water-table), larger samples

should be secured and further strategic analysis carried out on at least a selection of the fills.

Retention/disposal

All samples should be retained for the present against the possibility of future research.

Archive

All extracted fossils from the test subsamples, and the residues and flots are currently stored in the Environmental Archaeology Unit, University of York, along with paper and electronic records pertaining to the work described here.

Acknowledgements

The authors are grateful to Rhona Finlayson (York Archaeological Trust) for providing the samples and to English Heritage for granting permission to AH and HK to contribute to this report..

References

Dainton, M. (1992). A quick, semi-quantitative method for recording nematode gut parasite eggs from archaeological deposits. *Circaea* **9**, 58-63.

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.

Kenward, H. K., Engleman, C., Robertson, A., and Large, F. (1986). Rapid scanning of urban archaeological deposits for insect remains. *Circaea* **3** (for 1985), 163-72.

Kenward, H. K., Hall, A. R. and Jones, A. K. G. (1980). A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. *Science and Archaeology* **22**, 3-15.