

An evaluation of the bioarchaeological value  
of some deposits from borehole investigations  
in Selby, North Yorkshire  
(YAT/Yorkshire Museum site code 92.5003)

by

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**Summary**

A series of nine samples from boreholes in the area to the north and west of Gowthorpe, Finkle Street and Micklegate, Selby were examined. Some gave good preservation (by waterlogging) of plant and invertebrate remains, offering useful interpretative information concerning the nature and mode of formation of the deposits. It is recommended that every effort should be made to carry out a more detailed investigation of this material if its disturbance or destruction through development is anticipated.

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**An evaluation of the bioarchaeological value  
of some deposits from borehole investigations  
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(YAT/Yorkshire Museum site code 92.5003)**

A series of nine samples of sediment from trial boreholes in the area to the north and west of Gowthorpe, Finkle Street and Micklegate, Selby, were submitted for investigation of their value for bioarchaeological analysis. Except for two samples taken as 'spot' finds, all were GBA samples. All the samples were described in the laboratory using a standard *pro forma* and a subsample of each disaggregated following methods of Kenward *et al.* (1980). Flots resulting from this were checked for plant and invertebrate remains, and the wet residues were also examined for plant remains, snails, and their content of other components, using a 'washover' where appropriate to separate less dense organic material. Insects were examined using 'assessment recording' (Kenward 1992).

The samples are discussed in context order, with dating (where available) and comments or questions from the excavator in brackets:

**Context 108, Sample 5** [peaty, highly organic; was this formed by dumping into water or built up by natural means?]: mid/dark grey-brown, moist, plastic to crumbly, slightly sticky woody and herbaceous detritus in a matrix of silt and clay, with wood fragments.

There was quite a large flot from the 1 kg subsample examined. Invertebrates were fairly numerous, with good preservation. There were quite large numbers of aquatic beetles, with *Hydraena* sp. much the most numerous, together with several caddis larval cases. A few terrestrial insects were noted, including three probably associated with trees.

The residue consisted purely of organic detritus, mostly twig and bark fragments in the range 2-20 mm, but with abundant finer woody and herbaceous detritus, notably fragments of leaf, probably from broad-leaved trees. The identifiable plant remains from the flot and residue were generally well preserved and most are likely to have originated in woodland. Prominent amongst these were buds and bud-scales of oak (*Quercus*), with traces of birch (*Betula*) fruits, holly (*Ilex aquifolium*) seeds, alder (*Alnus glutinosa*) fruits, female cone axes and buds/bud-scales and an immature lime (*Tilia*) fruit. The remaining taxa might all have grown in or by wet woodland, though the rather worn achenes of buttercup (*Ranunculus* Section *Ranunculus*) were perhaps washed in (it seems most likely that the deposit formed in a slow-flowing stream or ditch with overhanging trees not far away and there appears not to have been any contribution from human habitation or ejectamenta).

**Context 204, Sample 4** [slightly organic/humic]: light/mid grey-brown (with mid orange sand in places, perhaps contamination from the drill tube), dry to moist, stiff (but plastic when worked), rather heterogeneous clay sand with traces of brick/tile.

The flot from the 1 kg subsample investigated was very small. There were no more than a few fragments of insect cuticle, but probable aquatic deposition was indicated by small numbers of *Daphnia* (water-flea) resting-eggs

(ephippia). The residue was mostly of sand and gravel (mainly brick/tile to 10 mm and mortar to 30 mm), with a little charcoal to 10 mm. About half the volume of this residue comprised plant detritus, mostly very decayed wood fragments. The identifiable plant remains were few but included moderate numbers of elderberry (*Sambucus nigra*) seeds and stinging nettle (*Urtica dioica*) achenes with a few other taxa likely to have been growing as weeds in the vicinity or brought there in dumped soil. There was also a fragment of a flax (*Linum usitatissimum*) seed capsule, and a single snail, *Planorbis planorbis*, a freshwater taxon, was recorded. This deposit appears to have formed in or by water.

**Context 604, Sample 1** [medieval; what does this deposit represent? is it build-up and/or dumping?]: light/mid grey-brown, dry, indurated, slightly sandy silty clay with traces of charcoal, mammal bone, brick/tile, mortar/lime flecks and ?modern roots.

A 2 kg subsample was examined. It gave a modest-sized flot with woody root fragments (some apparently with nodules, perhaps from alder). There were also rather frequent seeds of raspberry (*Rubus idaeus*) and a little charcoal to 3 mm. There were hardly any invertebrates, although a few scraps of insect cuticle and a single ostracod were observed. A single poorly preserved Characeae oogonium was further evidence for an aquatic component in this deposit. The insect remains were very reminiscent of material recorded from sediments where preservation is poor and only a few extremely resistant fossils remain.

More of the root fragments were present in the residue, which otherwise consisted largely of sand and some concretions of sand in a non-calcareous matrix (?rich in iron salts). There was also a little charcoal, brick/tile, pot and limestone chippings to 15 mm, and traces of snail shell, and burnt and unburnt fish bone.

The small concretions in this deposit appear to have formed *in situ*, perhaps as some kind of 'pan' in a sediment which was subject to changing water levels.

**Context 804, Sample 8** ['spot' sample; small fragments of wood; is this naturally deposited?]: mid grey-brown, moist, plastic, sticky, slightly sandy clay with traces of wood fragments.

The whole sample (weight 330 g) was processed. The residue resulting consisted mainly of very decayed wood fragments to 25 mm, with a little angular brick/tile to 25 mm, a little charcoal to 10 mm, and angular limestone, rounded flint and pot to 15 mm. All the few identifiable seeds present appeared to be modern contaminants, though the wood is likely to have been of some antiquity.

**Context 905, Sample 6** [was this formed by silting in slow running water?]: slightly greyish brown (with some blue-grey/red-brown mottling: gleyed), moist, plastic to stiff, slightly silty clay (with some patches of siltier and slightly sandy material); a little organic matter which might be contaminant; evidently formed in a low velocity regime, probably alluvial.

A 1 kg subsample was examined. The flot was small and contained only a few aquatic and terrestrial insects whose preservation was quite good. The small residue consisted mostly of fine plant detritus and sand with a little woody detritus >2 mm. There was evidence for an origin for the plant material in woodland, for there were frequent twig and bark fragments and leaf fragments probably from broad-leaved trees, bud-scales of oak, and an immature lime fruit (as in the subsample from sample 5 (see above)). The presence of a few *Daphnia ephippia* points to aquatic deposition. It is likely that this is part of the same deposit as context 108.

**Context 1004, Sample 9** ['spot' sample 'full of snails']: mid grey-brown, dry to moist, indurated, silty clay with modern roots and abundant, very fragmentary freshwater snails.

A 0.5 kg subsample was disaggregated. Paraffin flotation was not undertaken because of the abundance of fragmentary snail shells. Instead, a washover was examined for insect and plant remains and the washover and residue then checked for snails. Abundant in the washover were seeds of duckweed, *Lemna* sp(p)., likely to have lived on the surface of a static or slow-flowing body of water. The majority of the snails recorded were *Valvata piscinalis* and *V. ?cristata*, both of which suggest deposition in a body of flowing water; there were also a few *Bithynia tentaculata* shells and *Bithynia* sp. opercula, and a single *Gyraulus albus* shell was also noted. These are all freshwater taxa. There were only a few traces of insect cuticle, but resting-eggs of the bryozoans *Crystatella mucedo* and *Lophopus crystallinus* were abundant. A single putative caddis case and a few ostracods also testify to aquatic deposition.

A likely depositional regime for this material is a well-oxygenated biologically active bottom sediment in which dead invertebrates and plant remains were quickly scavenged or rapidly decayed, only live resting-eggs and some seeds surviving long enough to be preserved as the sediment compacted.

There was a modern sow-thistle (*Sonchus asper*) achene, a fresh-looking elderberry seed and a little charcoal to 5 mm.

**Context 1205, Sample 2** [possible silting within Kirk Dike]: mid grey-brown (with yellowish mottling), moist, plastic to slightly stiff, slightly heterogeneous, slightly sandy silty clay with traces of charcoal, wood, bone, brick/tile, some patches of amorphous organic material and ?modern roots.

The flot from the 1 kg subsample examined gave quite large amounts of fine plant detritus, amongst which were willow (*Salix* sp(p).) bud-scales and fruits and traces of *Zannichellia* fruits, bulrush (*Scirpus lacustris*) nutlets and hemlock (*Conium maculatum*) mericarps. Willow and *Zannichellia* remains were also quite frequent in the residue, along with some other wetland indicators (hornwort, *Ceratophyllum* sp.; spike-rush, *Eleocharis palustris*; bittersweet, *Solanum dulcamara*; marestail, *Hippuris vulgaris*; water-dropwort, *Oenanthe aquatica*; water-plantain, *Alisma* sp.; and bur-reed, *Sparganium* sp.). There was also a single shell of the freshwater snail *Valvata piscinalis*. By contrast there were a few terrestrial taxa likely to have arrived with occupation debris (there were brick/tile and charcoal fragments to 10 mm and limestone fragments to 15 mm in the residue of sand and plant detritus). These included seed fragments of corncockle (*Agrostemma githago*), an achene of corn marigold (*Chrysanthemum segetum*), and traces of blackberry (*Rubus fruticosus*

agg.), elderberry, henbane (*Hyoscyamus niger*), orache (*Atriplex* sp.) and a charred oat (*Avena* sp.) grain. A further indicator of human activity was a fragment of flax seed capsule.

Invertebrates were quite numerous in the flot, with a variety of aquatic and terrestrial insects and perhaps three types of cladoceran ephippia (*Daphnia* sp?p. being the most numerous).

This deposit appears to have formed in fresh water, but with some occupation material discarded into it, perhaps by gradual accumulation rather than a massive dump.

**Context 1303, Sample 3** [C2nd-3rd; is this a cultivated soil?]: mid grey-brown, moist, plastic to slightly sticky sandy clay with modern roots/rhizomes; it has every appearance of a cultivated soil.

Most of the 1 kg subsample examined passed the 300  $\mu\text{m}$  sieve, the residue consisting of a little sand and gravel to 10 mm, with traces of brick/tile and charcoal to 5 mm. A washover from this consisted mainly of roots and rootlets, perhaps all of recent date (the coarsest were fleshy). All of the identifiable plant macrofossils were certainly or probably modern, and it is likely (given the absence of ancient seeds or invertebrate remains) that this was, indeed, cultivated soil, with worm activity bringing seeds down from the modern surface.

**Context 1403, Sample 7** [is this redeposited natural? (from 1 m above same peaty layer as sample 5, context 108)]: mid red-brown, moist, crumbly (just plastic when worked) clay silt with rootlet channels bearing red iron oxide staining; looks very much like alluvium.

Not surprisingly, perhaps, the 1 kg subsample mostly passed the 300  $\mu\text{m}$  sieve, leaving a tiny residue of iron-rich material probably the somewhat concreted linings of root channels or worm burrows. There was a trace of brick/tile to 5 mm and a snail shell fragment; the former may have been contamination from above during drilling, for the deposit seems otherwise to be natural alluvium.

### Implications

Although samples from only nine of the fourteen boreholes were provided, representing only one of the layers encountered in each case, several of them have provided interpretatively useful assemblages of plant and invertebrate remains. There is evidence from the results obtained for the presence of a body of water in the past close to the line of the present Selby Dam, and also some evidence for a watercourse (?Kirk Dike) at the western end of the area investigated has also emerged. Samples from borehole on the southern edges of the area produced more evidence for human occupation and only limited indications of aquatic deposition. The two samples of 'peat' with evidence for woodland vegetation and fauna are of especial interest and further work on the layers from which these were taken would be valuable, especially if deposits are exposed during development. They should certainly not be destroyed without full biological investigation.

For the material already collected, it is important that at least those samples with good preservation of waterlogged invertebrate and plant remains are retained. These are: samples from context 108, 905, 1004, and 1205. The remainder are probably not worth keeping in the long term.

### References

Kenward, H. K. (1992). Rapid recording of archaeological insect remains—a reconsideration. *Circaea* 9, 81-8.

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Please note: Information concerning the archaeological context and dating of the deposits and biota considered in this report have been provided by York Archaeological Trust; the Environmental Archaeology Unit takes no responsibility for changes in archaeological interpretation or re-phasing which may have occurred since this report was compiled.