

**An assessment of biological remains from  
samples from excavations at the  
St John's College Library Extension, Cambridge**

by

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A series of washovers and residues from bulk-sieved samples, and of flots and residues from subsamples from GBA samples, from a variety of deposits of Roman, Saxo-Norman and medieval/post-medieval date were submitted by Cambridge Archaeological Unit for an assessment of their potential for detailed biological analysis and for a costing for further work to be undertaken by the Environmental Archaeology Unit.

Our observations on the material selected by CAU for this assessment are as follows:

(i) GBA samples (a priority rating for the value of further analysis for plants, insects and molluscs is offered in parenthesis, thus - H - high; M - medium; L - low)

Context 145 (= 463), sample 49 [lwer fill of 2nd phase/recut of 'tank' fill]

There was a small flot mostly of plant detritus with some angular charcoal to 6 mm. Stinging nettle (*Urtica dioica*) achenes were abundant and there were several other taxa indicative of disturbed habitats, and a single fig (*Ficus carica*) seed. There were no identifiable insect remains. (plants: M; insects: L)

Context 278, sample 59 ['tank' fill]

The small flot consisted mostly of angular charcoal to 8 mm, with traces of snail shell and one or two very poorly preserved purple deadnettle (*Lamium* Section *Lamiopsis*) nutlets. Insect remains were not observed. (All - L)

Context 290, sample 60 [dump in 'tank']

The rather large flot included much 'grassy' herbaceous detritus and some very decayed wood fragments to 10 mm; stinging nettle was again quite common, with a small group of other 'weeds', a fig seed and a seed of the aquatic/waterside plant bog-bean (*Menyanthes trifoliata*). There was at least one shell of a snail. (plants - M; others - L)

Context 293, sample 63 [lowest fill of cut for 'tank']

The very small flot contained a few traces of insect cuticle, which was poorly preserved and of little interpretative value; the presence of some bryozoa may reflect deposition in a body of water or the indirect incorporation of waterlain silts into the 'tank'. The few identifiable plant remains offer no additional useful information. (All - L)

Context 356, sample 68 [fill of post-hole in bottom of 'tank']

The rather large flot consisted mostly of coarse plant detritus and undisaggregated humic sediment. Insect remains were moderately abundant and well preserved, although difficult to observe because of the granular nature of the flot. The majority of the insects were beetles belonging to taxa commonly encountered in occupation deposits; all might occur near buildings in an area of weedy waste ground with decaying organic matter. There were several large ephippia (resting eggs) of *Daphnia* sp. (water-flea) and several snails, including ?*Planorbis* sp. A somewhat larger fauna would probably provide a basis for more detailed interpretation.

Identifiable plant remains from the flot included a few taxa of waste ground, amongst them greater celandine (*Chelidonium majus*), typically associated with buildings and walls, and a few poorly preserved charred cereal grains, perhaps bread/club wheat, *Triticum aestivo-compactum*.

Overall, this deposit appears to contain material from a surface adjacent to buildings, with some evidence for deposition in standing water. (plants - M; insects - H; molluscs - M)

Context 358, sample 71 ['tank' fill]

The flot included small numbers of quite well preserved insects of mixed origins, with some species likely to have been associated with buildings of some kind, but a variety of others indicative of 'outdoor' habitats, including water. There were a few snails, some plant remains from 'weed' taxa, and a single charred ?cereal grain. (all - M)

Context 399, sample 139 [upper fill of possible recut for 'tank']0

The flot was small and apparently devoid of insect remains. There were several snails, however, and a moderately rich assemblage of plant macrofossils including taxa of waste ground and aquatic habitats together with a little charred cereal grain. It might be profitable to pursue analysis of a further subsample where the undried residue can be examined for plant remains. (all - L)

Context 455, sample 140 [fill of later phase or recut of 'tank' fill]

There were a few snails in the flot, which otherwise consisted mostly of woody fragments to 20 mm. Seeds of weeds and a few other plant taxa were recorded, along with several charred ?barley (*Hordeum*) grains. The traces of insect remains proved to be of no interpretative value. (molluscs - M; rest - L)

Context 456, sample 141 [early fill of 'tank']

There was a huge flot with many insect fragments, although preservation of these was not very

good. There was a mixture of typical urban decomposers and species associated with 'outdoor' habitats. Two grain weevils, *Sitophilus granarius*, and a larval apex of the click-beetle *Athous haemorrhoidalis* were noted, while some large bright green fragments of a chafer were probably *Cetonia aurata*. A larger subsample would probably provide enough insects for interpretation.

A few aquatic snails were also present, but woody and herbaceous detritus to 15 mm made up the bulk of the flot. There was also a modest assemblage of identifiable macrofossils, including taxa of disturbed places and waste ground, aquatic and waterside habitats (represented by a small group including duckweed, *Lemna*, thalli). There was also a fig seed and a few very poorly preserved charred cereal grains.

This deposit also furnished some 'mystery' objects, in the form of macroscopically amorphous concreted material of dark brown colour and soft to hard, resinous texture. The blackish colour revealed inside some lumps when broken seemed to reflect the presence of sulphides, since there was a smell of hydrogen sulphide on treating small samples with dilute hydrochloric acid. A small amount of this material was examined on a microscope slide and found to contain tiny fragments of grass or similar herbaceous material and amorphous organic matter, but no parasite eggs typically of human faecal concretions were seen. It is possible that these lumps of material formed as the result of localised concentration of mineral salts in pellets of herbivore dung, but considerably more work would be needed to investigate this further. (plants/insects - H; molluscs - M; plus further work on 'mystery' material)

Context 461, sample 142 [early fill of 'tank']

The flot consisted mostly of decayed wood to 5 mm, with a small assemblage of seeds of weed taxa, a few pyrenes of rose, *Rosa* sp. and perhaps some other 'fruit' fragments, a single charred grain, a few snails and an unidentifiable beetle leg. (plants - M; rest - L)

Tests for parasite eggs: subsamples of raw sediment from three of the GBA samples (59, from context 278, 60 from 290, and 142 from 461) were checked for parasite eggs by means of a 'squash', in which a small amount of sediment was spread in a drop of water on a microscope slide, sealed with a cover slip, and the preparation scanned under a transmission microscope at x400. Eggs were recorded using the methods described by Dainton (forthcoming). None of the subsamples yielded any parasite eggs.

### **Comments on GBA subsamples**

Several of these deposits are clearly of value for further analysis of plant, insect and mollusc remains, although there may be problems resulting from the difficulty of determining the origin of the biota; the fills of the tank seem to include material scraped from surfaces and certainly give little evidence for the use of the tank or conditions within it.

Further analysis of waterlogged plant remains would require processing of raw sediment (if available) to examine the remains in the residue whilst still wet, and larger assemblages of

insects would be obtained from the same samples.

(ii) Bulk-sieved samples

A series of washovers ('flots') and residues from bulk-sieved samples were submitted; we have offered a 'priority' rating (Table 1) for each washover and residue based on the content of identifiable animal or plant remains - mainly snails and charred cereals. We suggest that samples with a rating of 'low' do not warrant further analysis and those rated 'high' should be examined in more detail; those in the 'medium' category might be examined if funds permit.

**Comments on bulk-sieved material**

Apart from a modest amount of charred cereal grain in several of the samples, the most obvious biological remains in these bulk-sieved samples was mollusc shell; their analysis may be useful for determining the origin of imported materials or the nature of the local environment at the point of deposition, providing these two contrasting components can be distinguished.

**Overall implications for further analysis**

GBA samples: sample 141 clearly merits further work, with samples 68 and 71 the next most important. Examination of 140 for molluscs and of 49, 60 and 142 for plant remains might be justified if funds permitted.

Costings:

(i) GBA samples

reprocess sample 141 (and 68 if material exists): 4 hours technician time at £10.49 per hour;

record insects from samples 141, 68 and 71, at least: 4 hours research fellow time at £20.76

record plants from samples 141, and perhaps also samples 49, 68, 71 and 142: 16 hours research fellow time at £20.76

record molluscs from samples 68, 71, 140 and 141: 4 hours research fellow time at £14.72

(ii) Bulk-sieved samples

record molluscs from washovers (and, where, appropriate residues) for samples 43, 77, 92 and 145, at least: 32 hours research fellow time at £14.72

record plant remains from washovers for samples 52, 79, 81, 91, 92, 145, at least and further work on sample 76 (with faecal concretions): 8 hours research fellow time at £20.76

(iii) Write report

8 hours research fellow time at £20.76 and 6 hours at £14.72

(iv) Revision of publication report, proof reading, etc.

4 hours research fellow time at £20.76 and two hours at £14.72

Totals:

Technician £41.96

Research Fellows £1478.08

Grand total                      £1420.04 + VAT @17.5%

If all remaining material is to be surveyed and recorded at some level, at least, a further 8 hours (£166.08) would be required for work on insects from GBA samples, a further two weeks each for work on plant remains and molluscs from BS samples (total £2838.40) and a further two weeks of technician time (£776.26) to re-wash poorly disaggregated BS samples; report writing would then require a further three days (£449.92) (grand total *in addition to the sum quoted above*: £4230.66). This exercise assumes all sorting of samples is done 'in house' at York, which is our preferred option.

### **Reference**

Dainton, M. (forthcoming). A quick, semi-quantitative method for recroding nematode gut parasite eggs. *Circaea* **10**

Context	Sample	Archaeol.	Priority			Residue	Overall	Comments
			Washover	Washer	Overall			
145	24	tank fill	L	L	L			
185	43	p/hole fill	H	L	H			abundant snails; much undisaggregated sediment
244	52	?floor	H	M	H			large lumps of ash or daub and some charcoal; ?needs refloating
266	57	'fill'	M	n/a	?M			
278	61	?drain fill	H	H	H			abundant plant remains; needs rewash; some pot
297	67	?surface	L	L	L			
305	76	pit fill	L	H	H			faecal concretions present; <i>Trichuris</i> and <i>Ascaris</i> eggs noted
309	79	pit fill	H	L	H			needs rewash; moderate grain
306	81	floor?	M	n/a	?M			
312	77	floor dep.	M	n/a	M			
316	90	floor	L	L	L			clunch only
319	82	floor	L	L	L			very small
337	91	floor?	H	n/a	?H			moderate amount of charred grain
338	92	floor	H	n/a	?H			
372	127	cut fill	L	L	L			
399	139	tank fill	H	n/a	?H			insects
435	145	?floor	H	H	H			rich in snails; rewash imperative
519	179	?foreshore	L	L	L			mainly flint gravel; much undisaggregated sediment
528	180	backfill	L	L	L			mainly flint gravel; much undisaggregated sediment
571	168	ditch fill	M	L	M			mainly flint gravel

n/a = residue sorted at CAU and not submitted; we cannot judge the overall priority of these samples, though most seem to be worthwhile on the basis of their washover.

Table 1. Bulk-sieved samples: priorities for further work.