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**Assessment of plant and animal remains from deposits at
Higher Lane, Fazakerley, Merseyside (site code FAZ94)**

by

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Summary

Macrofossil plant and invertebrate remains were examined via subsamples from a series of six samples of sediment from various features of medieval and post-medieval date from excavations in Higher Lane, Fazakerley, Merseyside. Three samples from a sequence from one of the features—interpreted as a possible fish pond—were also assessed for their content of pollen and spores. The pollen spectra suggested that there was a decrease in tree cover in the vicinity of the pond during the period represented by the lower half of the fills and the appearance in the record of aquatic taxa with lowered tree pollen levels is interpreted as indicating that the trees had overshadowed the water and limited the growth of aquatics in the earlier stages of infill. The sediment sample from the ‘fish pond’ gave modest assemblages of plant and insect macrofossils indicating inwash of soil or other sediment, but the sample chosen was perhaps atypical of the pond deposits as a whole; field observations showed organic preservation in many layers. The other samples from this site were barren of biological remains other than modern roots and very small fragments of charcoal.

A very small amount of hand-collected bone was also examined. It was of little bioarchaeological value.

It is recommended that, if a case can be made on archaeological grounds, more work on the fills of the ‘pond’ should be undertaken, and that a low-cost survey should be carried out of the biological remains from other contexts for which dating is secure and for which clear archaeological questions can be posed. Two options for further work are given.

Keywords: Merseyside; Fazakerley; Higher Lane; medieval; post-medieval; sediments; plant remains; insect remains; bones

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Assessment of plant and animal remains from deposits at Higher Lane, Fazakerley, Merseyside (site code FAZ94)

Introduction

A series of six GBA samples (*sensu* Dobney *et al.* 1992) of sediment from a variety of features of medieval and post-medieval date from excavations at Higher Lane, Fazakerley, Merseyside, were submitted for an assessment of their bioarchaeological potential. They represent approximately 10% of the GBA and BS samples for the site as a whole. A small amount of very fragmentary hand-collected bone was also assessed.

Methods

Sediment samples

All the sediment samples were examined in the laboratory and the lithology of the sediments described using a standard *pro forma*. 'Test' subsamples of 1 kg were taken from these for processing, following methods outlined by Kenward *et al.* (1980; 1986); for two subsamples, paraffin flotation was used to extract insect remains, whilst for the other four a 'washover' was obtained. Flots, washovers and residues were examined for plant macrofossil remains and the two flots containing insect and other invertebrate fragments checked for plant remains, too.

Samples for pollen analysis were taken (by AH) in two series from sections exposing the 'pond' feature in Trench 1. Three samples from one series (which represents the thickest part of the sequence of deposits, towards the middle of the section) were examined palynologically for this assessment.

Pollen samples

Preparation of the samples for pollen analysis followed a routine sequence of treatments involving dilute sodium hydroxide solution to disaggregate the sediments and remove humic colloids,

dilute hydrochloric acid to remove carbonates, hydrofluoric acid to remove silt and clay, and an acetolysis mixture of acetic anhydride and concentrated sulphuric acid to remove cellulose. Preparations were stained with 0.1% safranin, suspended in silicone oil, and single slides prepared from these for examination. The slides were traversed and pollen and spores recorded until it was felt that a large enough sample for the calculation of pollen percentages (at least 250 grains) had been achieved. No attempt was made to pursue difficult identifications and the numbers of unidentifiable grains are probably underestimated.

Bones

A very small amount of hand-collected bone fragments from these excavations was submitted and all of it examined.

Results

Sediment samples

The results for the analyses of sediment samples are presented in context number order, with archaeological information in brackets. In each case, the results of the bioarchaeological analyses are preceded by a description of the lithology as recorded in the laboratory.

Context 1073, Sample 10 [basal fill of 'pond'; 13/14th C to early post-medieval?]

Mid/dark grey, cheesy brittle (working plastic), very humic silt with fine and coarse woody and herbaceous detritus (including twig fragments) and pinkish-brown, stiff, slightly stony clay (apparently 'natural').

There was a moderate component of plant detritus, mainly flakes of what appeared to be bark from woody roots, in the residue and flot. The remainder

of the residue was sand with a little gravel to (20 mm maximum dimension) and a little charcoal (to 10 mm). There appeared also to be some small fragments of sandy humic sediment to about 5 mm.

Identifiable plant remains were moderately frequent and mostly quite well preserved. There were large numbers of seeds of both fat-hen (*Chenopodium album* L.) and orache (*Atriplex* sp(p).), but the small range of other taxa (mostly also weeds) were present in ones and twos. There were also large numbers of sclerotia (resting bodies) of the soil-dwelling fungus *Cenococcum*, perhaps suggesting the inwash of soil from the sides of the pond, or the dumping of sediment rich in well-aerated soil (the presence of clasts of sandy humic material and of small numbers of earthworm egg capsules may also indicate this). The only other group of plants with environmental implications were two taxa suggestive of ground with impeded drainage, and perhaps most likely to have grown on wet tracks or the margins of a pond (though the cut for this feature was such as to suggest it did not have shelving edges where toad rush (*Juncus bufonius*) and spike-rush (*Eleocharis palustris*) would have grown).

The only direct evidence from the plant remains for human activity (other than the predominance of weed taxa in the assemblage) was the presence of two fragments of hemp (*Cannabis*) 'seeds', perhaps themselves from hemp plants growing as ruderals (weeds of waste ground), although perhaps from a crop being retted in the pond (to free the fibre from the stems).

The flot included modest numbers of invertebrate remains whose preservation was variable but generally poor. There were several worm egg capsules (also seen in the residue) and *Daphnia* ephippia (water flea resting eggs), suggesting the incorporation of terrestrial deposits in an aquatic environment. Aquatic insects were rare, however, and such remains as were present are likely to have been a mixture of insects from soil and perhaps 'background fauna'.

In summary, this deposit appears to have formed through the inwash or slumping of soil from the edges of the cut. Although it appears to have become mixed with at least some waterlain sediment already in the 'pond', it does not provide a description of conditions within that body of water.

Context 1167, Sample 21 [basal fill in pit cut 1157; probably C13/14th]

Mid orange to grey plastic to stiff, sandy clay silt with traces of stones of 2-6 mm.

The washover contained a few modern root fragments, some woody and perhaps from nearby trees and shrubs. There was also a trace of charcoal to 5 mm and of coal to 3 mm. A very few 'seeds' of three taxa of little interpretative significance were present; they were pale in colour and poorly preserved and may also be of recent origin. The residue consisted of sand and gravel, the latter up to 20 mm. It is likely that, if ancient organic material had been deposited in this fill it had decayed subsequently, the recorded remains being of relatively recent origin.

Context 1253, Sample 49 [primary fill of pit 1277]

Varicoloured (grey-green to orange to buff to grey-brown), stiff (working plastic), slightly sandy clay silt with traces of stones of 2-6 mm and modern root/rootlet fragments.

Small amounts of modern roots were recorded in the washover, along with a trace of charcoal to 2 mm; the residue was of sand with a little gravel to 20 mm.

Context 1289, Sample 43 [dark brown/black humic fill of pit 1282]

Mid grey (with patches of pale red-brown natural), plastic, ?slightly humic, slightly sandy, slightly silty clay, locally rather sandy, perhaps with traces of charcoal; modern root/rootlet fragments also present.

The washover contained some modern root fragments, a modern grass 'seed' and traces of charcoal less than 2 mm in size. Sand and gravel (to 15 mm) made up the whole of the residue. No ancient humic component could be discerned.

Context 1314, Sample 62 [cobble and clay, perhaps floor of a byre]

Mid red-orange-brown (slightly greyish), plastic to stiff, very slightly sandy silty clay with traces of charcoal.

The washover and residue were very similar to those for the previous sample, though traces of coal to 2 mm and of charcoal to 5 mm were recorded from the residue.

Context 3090, Sample 16 [primary fill of ditch 3089; probably deposited very rapidly, perhaps slump from top of ditch]

Mid orange-brown (to greenish-grey and darker grey), stiff (working plastic), clay sand to clay (sand and clay components locally variable) with modern roots/rootlets.

There were modern rootlet fragments in the small flot, together with traces of arthropod cuticle; the residue was of sand and gravel (to 25 mm). The few invertebrate remains may also have been of modern origin. The small staphylinid *Anotylus nitidulus* was recorded. This beetle was common in the past but now appears to be rare, so that it might be regarded as evidence that at least a proportion of the remains were ancient. However, it may have been a common beetle in Britain until very recently.

It is likely that, if ancient organic material had been deposited in this fill it had decayed subsequently, the recorded remains being of relatively recent origin.

Pollen samples

The results of the analysis of samples for pollen and spores are presented in the Appendix. The most obvious features of the spectra are the markedly lower proportions of tree and shrub pollen in the uppermost sample (and a correspondingly larger value for herbaceous taxa, mainly grasses) compared with the two lower assemblages. There is also a modest component of aquatic taxa in the sample from Context 1065 which is not present at the other two levels. This suggests that tree cover during the period in which the earlier deposits formed was denser and/or closer to the site of deposition. The absence of aquatics from the lower two spectra perhaps argues for the presence of trees very close to, if not actually overshadowing, the water; this interpretation seems to be borne out by the field observation (by the excavators and AH) of layers of tree leaves, including willow (*Salix*), at some levels in the sequence.

Bones

The small collection of bones comprised material from 13 contexts, eight being of broad medieval date, the remainder being classified as undated or modern. Individual contexts produced very limited quantities of bone, most of it from three domestic mammals: cattle, horse, and dog (see below). Preservation of the material varied from fair to poor, with the assemblages from several contexts being recorded as having variable preservation. Few measurable bones and mandibles with teeth were present and fresh breaks were evident throughout.

Context 1253 (preservation variable, angularity variable to battered, colour gingery brown)

Cattle mandible

Cattle mandible with teeth (P3-M2) Very worn, elderly individual

Radius (midshaft of radius showing 'onion weathering' possibly scorched or boiled)

Context 1262 (Preservation poor, angularity battered, colour fawn)

Horse mandibular teeth x 3, very fragmentary and broken.

5 x unidentifiable cow-sized fragments

Context 1257 (Preservation poor)

Horse mandibular cheek tooth

Context 1264 (Preservation fair)

Horse primary phalanx

8 x unidentifiable fragments

Context 1291 (Preservation poor)

Cattle teeth, very fragmented enamel slivers

Context 1313 (Preservation poor)

5 x unidentified fragments (3 x burnt and 2 apparently scorched and eroded in appearance).

Context 1316 (Preservation poor)

8 x sheep-sized shaft fragments

Undated

Context 1155 (Preservation fair)

Shaft fragments of horse metapodial

Context 1166 A single dog canine tooth

Context 1248 Horse maxillary molar

Context 1272 (Preservation poor)
Shaft fragment of cattle metapodial

Context 4038 (Preservation poor)
Shaft fragment of cattle metacarpal (juvenile)

Discussion and recommendations

With the exception of the sample from the 'pond' fill, the deposits examined for macrofossils from this site were effectively barren of interpretatively useful biological remains; this is probably consistent with their relatively shallow stratigraphic position, though the clay subsoil might be expected to have maintained a fairly high water-table in the area. The single sample from the 'pond' deposit was, perhaps, not the most useful for assessment in that it appears to have come from slump or inwash. It is clear from the pollen analysis of three samples from later fills in this feature, however, that a record of the local vegetation can be reconstructed and plant and invertebrate macrofossils will certainly be present and will assist in this reconstruction.

On the basis of this assessment, it thus appears that the only samples likely to yield useful bioarchaeological information are those from the 'pond' feature in Trench 1. A total of six GBA and six BS samples from these fills is available for further analysis (though unfortunately one principal context with organic preservation, 1078 was apparently not sampled), together with two sequences of closely-spaced pollen samples, one (of 35 samples) from the middle of the section, the other (of 18 samples) from a position closer to one edge.

It is recommended that, should reconstruction of the history of the environment in this 'pond' and its immediate surroundings be considered of archaeological value, analyses of plant and invertebrate macrofossils from the five GBA samples not so far examined should be undertaken, together with analysis of

the pollen from selected samples from the longer of the two vertical sequences. A check for intestinal parasite eggs (which might indicate the presence of faecal material) should also be made.

However, the dating of this feature is based on rather little (pottery) evidence and it may be necessary to use accelerator-dating on selected (probably terrestrial) plant remains to provide a chronology before further plant and invertebrate analyses are carried out. A minimum of three dates would probably be required to provide a useful framework. Figures for work and staff which would be required to carry an appropriate programme of analysis are given in Table 1.

A contingency for work on the remaining GBA samples, and also for processing and sorting of the BS samples for artefacts (and bone) has been included in Table 1 if it is thought that these will also be archaeologically useful activities. A further contingency has been allowed for a limited amount of work on the mineral matrix of the 'pond' deposits, should this be required in order to establish details of deposit formation.

The minimum programme of work which would be of bioarchaeological value (assuming an appropriate dating framework can be established) is analysis of plant and invertebrate macrofossils from the 'pond' sediments in order to reconstruct conditions in and around the feature (tasks marked * in Table 1, but the task times being slightly less in some cases—shown in square brackets). The cost of this minimum programme would be approximately one third of the full programme; dating costs would probably be incurred in either case.

The assemblage of bone is of little interpretative value because of its small size and broad dating. No further work on this material is warranted.

Retention/disposal

All material should be retained for the present.

Archive

All the samples, residues, flots, washovers, bones and paper and electronic archive relating to the work reported here are currently stored in the EAU, York. Other samples are in the care of Lancaster University Archaeological Unit.

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References

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.

Table 1. Resources required to carry out analyses of plant and invertebrate remains from samples from Higher Lane, Fazakerley, Merseyside. Costs are not given in this report but are supplied separately. For further explanation of tasks see text.

	Staff	Time required (days)	Cost
AMS Dates on three samples (minimum) from 'pond' fill		*	
General laboratory tasks, sample movement, etc.	Tech.	1*	
Maintain databases	Tech.	0.5*	
Administration, project meetings, obtaining and organising archaeological information	Tech. RA plants RA insects	1* 1 1	
Further work on GBA samples chosen on the basis of assessment			
- Describe lithology of samples	Tech. RA plants	0.25* 0.25*	
- Process subsamples	Tech.	2*	
- Record plant remains	RA plants RF plants	2* 0.5*	
- Survey parasite eggs	Tech.	0.25	
- Record insect remains	RA insects RF insects	3* 1*	
GBA Review			
- Describe and select 10 samples	Tech. RA x 2 (plants, insects)	0.5 2 x 0.25	
- Process samples	Tech.	3	
- Review plant remains	RA plants	0.5	
- Survey parasite eggs	Tech.	0.25	
- Review insect remains	RA insects	0.25	
Contingency for additional analyses following review	Tech. RA plants RF plants RA insects RF insects	1 0.5 0.25 0.5 0.25	
Pollen preparations for 8 selected samples	Tech.	2	

	Staff	Time required (days)	Cost
Recording pollen samples (including 3 samples prepared during assessment)	RF plants	5.5	
Contingency for further pollen analysis: preparation	Tech.	2	
Contingency for further pollen analysis: recording	RF plants	5.5	
Process and sort 20 BS samples for artefacts	Tech.		
Contingency for analysis of bones from BS residues	RA bones RF bones	0.5 0.25	
Data analysis and Technical Report preparation	Tech. RA plants RF plants RA insects RF insects	1* 2* [1.5] 2* [1] 2* [1.5] 0.25*	
Preparation of publication report, including graphics, etc.	Tech. RF plants RF insects	5* [4] 1* 0.5*	
Contingency	Tech. RA plants RF plants RA insects RF insects RA bones RF bones RF soils/sediments	1 1 0.5 1 0.5 1 0.25 1	
Totals, allowing for leave Costs based on 1994-5 with 3.5% inflation for 1995-6	Tech. RA plants RF plants RA insects RF insects RA bones RF bones RF soils/sediments	26.5 8.5 17 9 5 1.5 0.5 1	

Appendix

Pollen and spore percentages for three samples from the 'pond' feature in Trench 1. All values rounded to nearest whole percentage point, but values <0.5% presented as '+'. Actual counts can be calculated (approximately) from the pollen sums. All percentages for identified taxa are based on the total counts for pollen and spores excluding unidentifiable grains. Percentages for indeterminate grains are calculated as a percentage of all grains. () indicates tentative identifications for taxa securely determined from other samples.

Pollen/spore Taxon	-39 cm Context 1065	-65 cm Context 1078	-95 cm Context 1073
Trees and shrubs			
<i>Betula</i>	10	11	18
<i>Pinus</i>	-	+	-
<i>Quercus</i>	3	10	16
<i>Tilia</i>	-	-	+
<i>Ulmus</i>	(+)	+	-
<i>Fraxinus</i>	2	-	-
<i>Alnus</i>	7	16	14
<i>Ilex</i>	-	1	1
<i>Hedera</i>	-	-	+
<i>Corylus/Myrica</i>	15	41	26
<i>Salix</i>	12	-	-
cf. <i>Tsuga</i>	+	-	-
<i>Betula/Corylus/Myrica</i>	-	+	2
<i>Calluna</i>	+	3	+
Ericales undiff.	+	1	2
Herbs, including ferns			
Artemisia	-	-	+
Caryophyllaceae	(1)	+	+
cf. Cerealia	1	+	+
Chenopodiaceae	+	1	1
Compositae: Liguliflorae	+	1	2
Compositae: Tubuliflorae	4	1	3
Cruciferae	1	-	-
Cyperaceae	1	+	+

Pollen/spore Taxon	-39 cm Context 1065	-65 cm Context 1078	-95 cm Context 1073
Filicales undiff.	+	1	1
<i>Filipendula</i>	-	+	+
Gramineae	20	5	9
cf. Labiatae	-	+	-
<i>Plantago lanceolata</i>	2	-	-
<i>Plantago</i> sp(p).	+	1	+
<i>Polygonum persicaria</i>	-	-	+
<i>Polypodium</i>	5	4	1
<i>Pteridium aquilinum</i>	-	1	1
<i>Ranunculus</i> type	3	+	+
cf. Rosaceae undiff.	-	-	+
Rubiaceae	-	-	+
cf. <i>Rumex</i>	1	+	-
<i>Succisa pratensis</i>	-	+	-
<i>Trifolium/Vicia</i> type	+	-	+
Aquatics			
<i>Alisma</i> type	+	-	-
<i>Lemna</i>	4	-	-
cf. <i>Potamogeton</i> sp(p).	1	-	-
<i>Sphagnum</i> sp(p).	+	-	-
Indeterminable	19	10	18
Total count of pollen and spores, excluding indeterminable	270	437	387