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**Evaluation of biological remains from excavations at
Bolton Hall, Bolton (site code: TSEP 238)**

by

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Summary

A series of sediment samples and a few fragments of hand-collected bone and shell from deposits revealed by excavations at Bolton Hall, Bolton, were submitted for an evaluation of their bioarchaeological potential.

Useful (though rather variably preserved) assemblages of plant and insect remains were recovered from three of the four examined samples. Larger subsamples from these samples would provide additional information of use in site interpretation, and would probably yield sufficient quantities of plant and insect remains to allow AMS dating of the deposits.

The recovered hand-collected shell and bone fragments were too few and mostly too poorly preserved to be of any interpretative value beyond that given in the main text of this report.

KEYWORDS: BOLTON HALL, BOLTON; EVALUATION; LATE BRONZE AGE TO EARLY POST-MEDIEVAL; PLANT REMAINS; CHARRED PLANT REMAINS; INVERTEBRATES; SHELLFISH; VERTEBRATE REMAINS

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Introduction

An archaeological evaluation excavation was carried out by Humber Field Archaeology at Bolton Hall, Bolton (NGR: 47531 45191), between 25 November and 10 December 1999, as part of a series of interventions along the line of the British Petroleum Teeside to Humber pipeline.

A series of sediment samples ('GBA'/'BS' *sensu* Dobney *et al.* 1992), and a few fragments of hand-collected bone and shell, were recovered from the deposits. The deposits ranged in date (based on provisional dating of recovered pottery sherds) from Late Bronze Age through to early post-medieval.

All of the material was submitted to the EAU for an evaluation of its bioarchaeological potential.

Methods

Sediment samples

The sediment samples were inspected in the laboratory. Four of the samples were selected for investigation and their lithologies were recorded, using a standard *pro forma*, prior to processing, following the procedures of Kenward *et al.* (1980; 1986), for recovery of plant and invertebrate macrofossils. The washovers and residues were examined for plant remains. The washovers were also examined for invertebrate remains, and the residues were examined for other biological and artefactual remains.

A record of the preservational condition of the insect remains has been made and is stored in the EAU.

Table 1 shows a list of the examined samples and notes on their treatment.

Hand-collected shell

Three fragments of hand-collected shell were recovered from one context (2011). These were examined and some brief notes made on their preservational condition and possible identification.

Vertebrate remains

Data for the vertebrate remains were recorded electronically directly into a series of tables using a purpose-built input system and *Paradox* software. For each context (or sample) subjective records were made of the state of preservation, colour of the fragments, and the appearance of broken surfaces ('angularity'). Additionally, where more than ten fragments were present, semi-quantitative information was recorded concerning fragment size, dog gnawing, burning, butchery and fresh breakage.

Where possible, fragments were identified to species or species group, using the reference collection at the EAU. Fragments not identifiable to species ('B' bones *sensu* Dobney *et al.* forthcoming) were grouped into categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal 1 (assumed to be caprovid, pig or small cervid), small mammal (rats, mice, voles etc), unidentified fish, unidentified bird, and completely unidentifiable.

Measurements followed von den Driesch (1976), whilst withers height for horses was estimated using calculations devised by Kiesewalter (in von den Driesch and Boessneck 1974).

Results

Sediment samples

The results are presented in context number order. Archaeological information, provided by the excavator, is presented in square brackets.

Context 2012 [Organic layer within a hollow interpreted as a meander of Spittal Beck. Undated]

Sample 3/T (2 kg sieved to 300 microns with paraffin flotation)

A moist, jumbled mixture of black, white, grey and light orange, ash with some wood fragments.

Invertebrate remains were present in the flot in small numbers, and not well preserved, but an unusual group of taxa was recorded. There were hints of rather strong human modification of the surroundings. A substantially larger subsample (preferably more than 5 kg) would probably clarify matters.

The small residue of about 200 cm³ was approximately 25% by volume sand, the rest granular charcoal (including some quite large lumps, to 45 mm), small fragments of burnt soil or daub (to 15 mm) ranging in colour from red to grey and some 'glassy slag' (to 15 mm); this was perhaps all from fire ash with an industrial connection—the presence of part-burnt wood, bark and twig fragments is perhaps more consistent with a bonfire, however. The moderate quantities of wood fragments (to 10 mm) were mostly very decayed and also quite small (they perhaps originated in sawdust?). Identifiable plant remains in the residue and flot were a mixture of charred and uncharred taxa, mainly weeds of cultivated land and waste places but with some woody taxa perhaps representing scrub. A single amphibian bone was identified from this sample.

Context 2016 [As Context 2012 (above)]

Sample 1/T (2 kg sieved to 300 microns with paraffin flotation)

Moist, nearly black, brittle to crumbly, amorphous organic sediment and fine and coarse herbaceous and woody detritus with some large pieces of wood present.

The moderate-sized residue of about 250 cm³ consisted of twig fragments and herbaceous detritus, perhaps largely from woody roots. The modest-sized range of identifiable plant taxa represented by well preserved seeds indicated the deposit formed in a natural marsh/fen/mire community with abundant oogonia of stonewort (Characeae) suggesting pools, the presence of some small calcareous granules may be marl formed through the accumulation of the calcium carbonate by this plant. There were some insect remains (from the flot), which were well-decayed in many cases, but generally identifiable. Water beetles of the genus *Ochthebius* were abundant, and the remaining fauna mainly either aquatic or from waterside vegetation. A larger subsample would provide a useful (though fairly small) group of insect remains which would define water quality and surrounding environment more closely.

Context 2030 [As Contexts 2012 and 2016 (above)]

Sample 2/T (1 kg sieved to 300 microns with paraffin flotation)

Moist, very dark brown, somewhat brittle, slightly sandy peat.

The moderate-sized to large residue of about 300 cm³ consisted of plant debris, mainly woody and other root fragments; there were, however, also some small (to 5 mm) lumps of what appeared to be undisaggregated peaty sediment which might have been from fen peat. The only identifiable plant remains were traces of willow (*Salix*) bud-scales and of the moss *Drepanocladus*, both consistent with an origin in fen or marsh habitats. Invertebrates were present in small numbers, but there were too few to justify further investigation.

Context 4055 [Primary fill of one of two parallel ditches. Undated but possibly Iron Age]

Sample 6/T (2 kg sieved to 300 microns with paraffin flotation)

Moist to wet, dark brown (oxidising lighter), plastic and somewhat crisp in places, sandy amorphous organic sediment with some woody and herbaceous detritus.

There was a moderate-sized residue of about 250 cm³ of which about 75% by volume was twiggy debris, the rest sand. Amongst the plant remains were abundant tree leaf fragments and other detritus likely to have come trees and shrubs in the vicinity—various remains of alder (*Alnus*) and willow providing at least two candidates for the components of this vegetation. Seeds of duckweed (*Lemna*) were surprisingly abundant, indicating (together with remains of some other aquatic or waterside taxa) deposition in a body of water, but the presence of a variety of terrestrial taxa, including (again, unusually) rather large numbers of small Leguminosae (pea-family) petals, usually common in urban deposits thought to contain hay or stable manure, and silverweed (*Potentilla anserina* L.) either point to disposal of plant material into a lake, pond or ditch, or show that the fringe of alder and willow was in places broken to permit the development of shade-intolerant herbaceous vegetation.

A large quantity of invertebrate remains, mainly insects, was recovered by paraffin flotation. Preservation was excellent, numerous complete or near-complete sclerites of even quite large species having survived; there were excellent specimens of a range of bugs. Many species were present, representing aquatic, waterside and terrestrial habitats. Dung beetles were abundant, suggesting grazing land, and perhaps even that this was a watering-place for stock. No woodland taxa were noted, though some are easily overlooked without detailed analysis (fragments which may have been of a wood-boring longhorn beetle were seen). Overall, an open landscape is suggested by the dung beetles, click beetles and chafers, with some herbaceous vegetation and perhaps scrub (which might be the source of the ‘tree’ remains). The material from this subsample should be listed in detail, and further sample processed and scanned for additional terrestrial taxa and climate indicators.

Hand-collected shell

Only three small fragments of hand-collected shell were recovered from (Context 2011). These were very poorly preserved but appeared to be remains of freshwater mussel shell.

Hand-collected vertebrate remains

Only five fragments were recovered from this site, representing five deposits (Contexts 2016, 2027, 3009, 4008 and 4055). The bones from Trench 2 were well preserved, whilst those from the other trenches were very poor, with eroded surfaces. Root etch damage was recorded on the bones from Contexts 2027 and 3009.

The remains of cow and horse were identified and included an almost complete horse metacarpal from Context 2027. This bone gave an estimated withers height for the animal of 1394.8 mm or 13.3 hh (where 101.6 mm or 4 inches = 1 hand).

Table 2 gives a brief summary of the vertebrate remains by context.

Discussion and statement of potential

Further study of the plant and insect remains (from larger subsamples of these deposits) would provide additional information of use in the interpretation of the features of the site. These remains may also provide sufficient material for AMS dating of the deposits to be undertaken.

The hand-collected shell fragments were of no interpretative value.

The vertebrate remains were too few to be of any interpretative value beyond that given in the preceding text.

Recommendations

Larger subsamples of sediment should be processed to provide more interpretatively useful assemblages of plant and insect remains.

Where required, additional plant and insect remains should be extracted to provide material for AMS dating of the deposits.

No further work is warranted on the shell or animal bone assemblage from this site.

Retention and disposal

All of the current material should be retained for the present.

Archive

All material is currently stored in the Environmental Archaeology Unit, University of York, along with paper and electronic records pertaining to the work described here.

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Table 1. List of examined sediment samples from excavations at Bolton Hall, Bolton, with notes on their treatment.

Context	Sample	Notes
2012	3	2 kg sieved to 300 microns with paraffin flotation
2016	1	1 kg sieved to 300 microns with paraffin flotation
2030	2	1 kg sieved to 300 microns with paraffin flotation
4055	6	2 kg sieved to 300 microns with paraffin flotation

Table 2. Summary of hand-collected vertebrate remains from excavations at Bolton Hall, Bolton.

Context	No. of fragments	Notes
2016	1	1 large-sized mammal shaft fragment.
2027	1	Horse metacarpal - may have knife marks on shaft but marks are rather ambiguous. Measurements: GL1 = 217.6, L1 = 213.6, GL = 220.9, Bp = 49.27, SD = 29.81 (right).
3009	1	2 freshly broken fragments representing a cow metatarsal.
4008	1	1 burnt medium-sized mammal shaft fragment.
4055	1	1 horse femur shaft fragment - very poorly preserved.