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**A rapid assessment of
palaeoenvironmental remains from
features at Edgbaston House,
Wellington, Shropshire**

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by

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Summary

Samples were taken from two wood-lined tanks during excavations at Edgbaston House, Wellington, Shropshire. The samples were rapidly assessed for the abundance and preservation of palaeoenvironmental remains. Although the pollen preservation was poor the samples contained a well preserved archive of insect and plant macrofossil remains. These indicate that the pits were used for the disposal of cess and food waste as well as possible industrial processes such as flax retting. The paucity of environmental data for the medieval period in Shropshire shows this data to be invaluable in understanding the nature of human health and diet as well as more widespread settlement activity.

KEYWORDS: Wellington; cess pits; medieval; plant macrofossils; pollen; beetles

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1. INTRODUCTION

Birmingham Archaeo-Environmental were commissioned to undertake analysis on samples taken from features at Edgbaston House, Wellington, Shropshire. This report represents a rapid assessment of a selection of these samples which were selected with regard to their stratigraphic relationships. Material was recovered from two wood lined pits/tanks [1000] and [1013] in the form of monolith and bulk samples. The deposits infilling these tanks were waterlogged and were therefore conducive to the preservation of organic remains. A previous assessment on similar deposits infilling a large ditch at the site confirmed the high potential for the survival of good quality organic material at this site (Kitchen and Gearey 2010).

2. METHODS

2.1 Sampling

Samples were recovered from two wood lined pits. Pit [1000] was sampled using two 25cm monolith tins (94.78mAOD) accompanied by two 10L bulk samples from the upper and lower fills. Pit [1013] was also sub-sampled in two 25cm monolith tins (94.31mAOD) with spot samples recovered every centimetre above the tin where the fill was friable. Two 10L bulk samples were recovered from the upper and lower fills.

2.2 Pollen

A total of 8 sub-samples were submitted for a basic pollen assessment of presence/absence from pit [1000] and pit [1013]. Pollen preparation followed standard techniques including potassium hydroxide (KOH) digestion, hydrofluoric acid (HF) treatment and acetylation (Moore *et al.*, 1991). Each sample was 'scanned' to assess whether a full pollen assessment should be carried out. The concentration and preservation of pollen in each sample was assessed on a five point scale (see Table 1).

2.2 Insect remains

A total of 4 samples from the two pit features were assessed to determine their potential for insect analysis. Two samples were taken from the wood lined ovoid pit [1013] (Sample 1/ context 1015 – upper fill of pit; Sample 6/ context 1036 – primary sandy fill of pit) and two from the smaller wood lined pit [1000] (Sample 11/ context 1001 – upper fill of pit; Sample 12/ context 1038 – lower fill of pit).

The samples were processed using the standard method of paraffin flotation as outlined in Kenward *et al.* (1980). The system for "scanning" faunas as outlined by Kenward *et al.* (1985) was followed in this assessment.

When discussing the faunas recovered, the following considerations should be taken into account:

1) Identifications of the insects present are provisional. In addition, many of the taxa present could be identified

down to species level during a full analysis, producing more detailed information.

2) The various proportions of insects suggested are very notional and subjective. As a result, these faunas should be regarded as incomplete and possibly biased.

2.3 Plant Macrofossils

Material from the four processed samples, each of 10L, was submitted for rapid assessment of their content of plant macrofossils. In each case the material consisted of a 'flot' from paraffin flotation and a residue. All the fractions were wet. For assessment, flots and residues were briefly re-sieved and some of each sieve fraction examined at low power under a binocular microscope. Notes on the plant remains—and other components present—were made, along with a brief list of identifiable plant taxa. No attempt was made to do more than record the general nature of the assemblage.

3. RESULTS

Pollen

None of the pollen samples provided sufficient counts for palaeoenvironmental assessment. The results are summarized in Table 1. The four samples (0cm, 16cm, 24cm and 40cm) from pit [1000] yielded the most pollen, containing occasional grains of *Quercus* (oak), *Artemisia*-type (mugwort), Rosaceae (rose family), Cereal-type, Poaceae (wild grasses), Cyperaceae (sedges), *Corylus avellana*-type (hazel/sweet gale) and Pteropsida (ferns). The concentration of pollen was very low in each of the samples with low-medium preservation.

The two samples (4cm and 65cm) from pit [1013] contained a few cereal-type grains and grains of Poaceae but pollen was absent from 17cm and 40cm.

Insect remains

The insect taxa recovered are listed in Table 2. The taxonomy follows that of Lucht (1987) for the Coleoptera (beetles) and Smith, K.G.V. (1989) for the Diptera (flies).

The numbers of individuals present for each taxa is estimated using the following scale: + = 1-2 individuals, ++ = 2-5 individuals, +++ = 5-10 individuals, ++++ = 10-20 individuals, +++++ = 100s of individuals. The taxonomy used for the Coleoptera (beetles) follows that of Lucht (1987). The nature of the preservation and the potential for archaeological interpretation is outlined in Table 3.

Both of the insect faunas from samples 1 and 6, the upper and lower fills of the wood-lined pit [1013], were dominated by the remains of fly puparia. Flies of the Limosininae family are normally associated with a range of decaying material. If these puparia are *Telomerina flavipes* this species is normally associated with urine soaked faeces as are the copromyzids. The beetles recovered are also normally associated with this type of material or dumps of settlement waste in the archaeological record. *Omalium* spp, *Oxytelus* spp. *Philonthus* spp., *Quedius* spp., *Tachinus* spp. are typical of such deposits. This also includes a range of synanthropic species including *Cryptophagus* spp, *Lathridius* spp., *Mycetea hirta*, *Anobium punctatum*, *Ptinus fur* and *Tipnus unicolor* which are strongly associated with human habitation and settlement waste. There are no species which indicate the

nature of the landscape around the pit suggesting that the deposition of this material must have been quite fast or perhaps in a single episode.

An essentially similar beetle fauna was recovered from sample 11 from pit [1000]. However, in this case the fly fauna mainly consists of *Sepsis* spp. a genus which is normally associated with cess. The material from sample 12 was of a much lower concentration and therefore difficult to interpret.

Plant Macrofossils

Wood-lined pit [1013]

Context 1036 [black sandy organic silt; primary fill], Sample 6

There was a large flot of about 100 cm³ of organic debris, nearly all <2 mm, and small residue (for a 10L sub-sample) of about 320 cm³ of sand and some gravel, and about 130 cm³ of further organic detritus, mainly small wood fragments. The flot was found to consist almost entirely of wheat/rye (*Triticum/Secale*) 'bran' with abundant tiny insect fragments. Material in the residue was characterised by dark iron sulphide staining of many fragments, indicating a strongly anoxic burial environment, confirmed by the presence of respiratory processes of syrphid (rat-tailed maggot) larvae. Along with further large quantities of bran there were abundant small fruit seeds, especially of fig (*Ficus carica* L.), strawberry (*Fragaria vesca* L.) and *Vaccinium*, probably bilberry (*V. myrtillus* L.). There were a very few fruitstones of sloe (*Prunus spinosa* L.) and wild plum (*P. domestica* ssp. *insititia*) and at least one or two seeds of grape (*Vitis vinifera* L.), but modest quantities of apple (*Malus sylvestris* Miller) pips and endocarp ('core') fragments. Overall the material clearly contained a large proportion of faecal waste, though this was not confirmed

by testing for the eggs of intestinal parasites which through further analysis could easily be undertaken.

Context 1015 [black brown compacted organic silt; upper fill], Sample 1

The large flot of 100 cm³ was again rich in wheat/rye 'bran', together with a number of small fruits of members of the Umbelliferae/Apiaceae (carrot/parsnip family), many of which are used as food flavourings, though the majority were parsnip, *Pastinaca sativa* L., not normally considered to be used in this way. The very large residue of about 2.5L comprised organic debris and some sand. Here the organic component was largely bran with some rather large moss fragments (mainly *Thuidium tamariscinum* Hedw.), perhaps material used for sanitary purposes. Fruits of both hemp (*Cannabis sativa* L.) and hop (*Humulus lupulus* L.) were noted, together with 'stone cells' (sclereids) from the fruit of pear or quince (*Pyrus/Cydonia*). Altogether the material comprised a very typical assemblage for a cess pit fill though clearly containing material from some other sources.

Pit/tank [1000]

Context 1038 [grey/brown silty clay; lower fill], Sample 12

The large flot comprised about 150 cm³ of ancient rootlets with some herbaceous stem fragments, with a little wood and some beetles. The residue consisted of about 1L of sand, of which about 150 cm³ was further organic material, mainly short twig fragments. Amongst the latter were a few hawthorn/blackthorn (*Crataegus* sp./*Prunus spinosa*) thorns, blackberry/rose (*Rubus/Rosa* sp(p).) prickles, and rather frequent seeds of elder (*Sambucus nigra* L.) and blackberry (*Rubus fruticosus* agg.), altogether likely to have accumulated

from scrub colonising neglected ground (or cleared from an area of such land). There was rather little clear evidence for occupation debris other than a trace of hemp achenes and a little charcoal. The presence of mainly decay-resistant seeds might suggest this deposit had undergone strong decay following formation, perhaps confirmed by the abundant small rootlets (representing growth of plants on a surface above and indicating that the fill was not permanently waterlogged, though the woody fragments, including twigs, were not especially poorly preserved.

Context 1001 [dark brown silty clay; upper fill], Sample 11

The rather large flot of about 150 cm³ contained some wood fragments and hazel (*Corylus avellana* L.) nutshell, all rather worn, but otherwise well preserved. Some of the hazel nuts were immature and therefore less likely to be the result of deliberate collection and disposal. If they arrived from woodland with litter, this might be confirmed by the presence of a fruitstone and some leaf fragments of holly (*Ilex aquifolium* L.), and the few moss fragments (*Neckera complanata* Hedw. and *Antitrichia curtispindula* (Hedw.) Brid.). There were also a few hints of the presence of chaff or straw in the form of uncharred barley rachis (ear-stalk) fragments and grass/cereal culm-nodes (stem fragments). A single fig seed pointed to the presence of food waste, confirmed by the sparse and very small fragments of wheat/rye bran and remains of a few other potential food plants, but food/faecal waste was clearly not a major component of the deposit.

The huge residue of maybe 4L consisted of sand and some gravel with

much rather eroded wood to 100 mm and further hazel nutshell fragments. Also noted were a few wood chips, indicating the presence of debris from woodworking, and it is possible that the finer fractions contains more debris from this source, e.g. in the form of sawdust. Another small component comprised fragments of herbaceous stem which may be flax (*Linum usitatissimum* L.), capsule fragments of which were noted from Sample 6, Context 1036.

4. CONCLUSIONS AND RECOMMENDATIONS

It is clear that conditions are present within features at this site for good preservation, in stratified deposits, of organic material by anoxic 'waterlogging'. Despite this there were low concentrations of pollen within these features and coupled with the potentially complex taphonomic pathways for pollen incorporated in pit fills, makes it very difficult to provide any interpretable results that may provide information regarding the function of these features.

There was, however, preservation of delicate remains (*sensu* Kenward and Hall 2000) in pit [1013] (Samples 1 and 6) which offers the possibility of recovering a great deal of information about aspects of food and waste disposal in an area (NW Midlands) for which we currently have few data points. Absolute dating of this material is highly desirable if the results are to be properly contextualised.

The fills of pit [1000] probably require no further study except perhaps to pursue the identification of the ?flax stem fragments from Context 1001. They are most likely to be scutching waste, i.e. the debris arising from the

breaking of flax stems to release fibres following retting.

The pits from Edgbaston House, Wellington were clearly used for the disposal of settlement waste either during their period of use, or shortly after they fell out of use. The presence of parasites and flies also indicates the presence of cess within these waste deposits. Given that animal bone and fruit seeds were recovered from these deposits it is probable that food waste would have also been incorporated into these pits.

Combined rubbish/ cess pits are not uncommon in the archaeological record of the medieval period. Similar deposits are known from a range of sites including London (Smith 1997; 2002; 2007), Leicester (Skidmore 1999; Smith 2009a), Worcester (Osborne 1983) and Southampton (Smith 2009b). This palaeoenvironmental assemblage is rare within the region which suffers from poor preservation of organic material. It is however comparable to other assemblages such as those excavated in Brewood, Staffordshire (Ciaraldi 2004). This site also featured wood-lined pits accompanied by a good palaeoenvironmental assemblage.

The plant macrofossils and insect faunas from Wellington are directly comparable with a wide range of sites and certainly are of regional importance. This may be enhanced if the detailed contextual information that would result from the study of the insects present was combined with a range of other biological indicators.

The results of deposits at Edgbaston House have yielded a well preserved and valuable palaeoenvironmental record. The associated activity is likely to be dated to the late medieval period

as the upper fill of [1013] has been dated to the 15th-16th century which corresponds to the material recovered from pit [1000]. The insects and plant remains have indicated that the function of these pits seems to be the disposal of waste from the frontages of possible burgage plots. This waste includes information about diet, health, and settlement activity in Wellington.

Within Shropshire there is a lack of good environmental evidence with few published examples from the medieval period. Cess deposits have been identified in the East Midlands Strategy draft document as a key area for understanding the provisioning of medieval towns using environmental data. The focus of previous study in Shropshire has been restricted to monastic and castle sites. Small towns such as Wellington are under-represented in the published resource and thus there is a large gap in the knowledge of how such towns were organised and functioned. This site presents a unique opportunity to enhance our understanding of the settlement at Wellington during the late medieval period and how it compares to small towns in other regions at this time.

The further study of this material is essential to understand not only the activity at the site itself but how it fits into the broader picture of late medieval town development. The data discussed in this report are at assessment level only. This level of analysis determines the potential of the remains to provide detailed information. Full scientific analyses of the material are required to realise the analytical potential in line with English Heritage guidelines for post-excavation work of this kind (EH 2002). This phase of study should therefore comprise the following:

- Full analysis of the plant material from these and other samples.
- Full analysis of the insect fauna from these and other samples.
- A program of absolute dating to provide chronological control.
- Integration of previous palaeoenvironmental work carried out at the site (Kitchen 2010).
- No further assessments or analyses for pollen are recommended at this stage.

6. ARCHIVE

The samples are currently stored at BA-E and will be retained for a maximum of one year before being discarded unless otherwise specified by the client.

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Sample	Pollen Species Present	Concentration	Preservation	Further Analysis?
[1000] 0cm	A few grains of <i>Artemisia</i> , <i>Quercus</i> , cereal-type, Poaceae, Cyperaceae, Pteropsida	Very Low (1)	Medium (3)	No
[1000] 16cm	A few grains of <i>Artemisia</i> , Rosaceae, Cyperaceae, <i>Corylus avellana</i> -type, Poaceae, <i>Quercus</i> , Pteropsida	Very Low (1)	Medium (3)	No
[1000] 24cm	A few grains of Poaceae, <i>Artemisia</i> , <i>Quercus</i>	Very Low (1)	Low (2)	No
[1000] 40cm	A few grains of cereal-type, Apiaceae, Cyperaceae, <i>Quercus</i> , Pteropsida	Very Low (1)	Low (2)	No
[1013] 4cm	Couple of cereal grains	Very Low (1)	Medium (3)	No
[1013] 17cm	No pollen	N/A (0)	N/A (0)	No
[1013] 40cm	No pollen	N/A (0)	N/A (0)	No
[1013] 65cm	1 grain of Poaceae	Very Low (1)	Low (2)	No

Table 1:Pollen results

Table 2. The insect taxa recovered from Edgbaston, House, Wellington.

Sample no.	1	6	11	12
Context	1015	1036	1001	1038
COLEOPTERA				
Carabidae				
<i>Clivina fossor</i> (L.)	-	-	+	+
<i>Trechus</i> spp.	-	-	+	-
<i>Pterostichus</i> spp.	-	-	+	+
<i>Pristonychus terricola</i> (Hbst.)	-	-	+	-
Hydrophilidae				
<i>Cercyon haemorrhoidalis</i> (F.)	-	-	-	+
<i>Cercyon analis</i> (Payk.)	-	-	-	+
<i>Cercyon</i> spp.	++++	-	++++	+
<i>Hydrobius fuscipes</i> (L.)	-	-	-	+
Catopidae				
<i>Catops</i> spp.	-	++	-	-
Histeridae				
Histeridae spp.	++	-	-	-
Staphylinidae				
<i>Omalium</i> spp.	++++	++	-	-
<i>Lesteva</i> spp.	++	-	-	-
<i>Trogophloeus</i> spp.	-	++	+	+
<i>Oxytelus</i> spp.	+++	++	++++	+
<i>Platystethus</i> spp.	-	-	+	-
<i>Stenus</i> spp.	-	-	-	+
<i>Stilicus orbiculatus</i> (Payk.)	-	-	+	-
<i>Xantholinus</i> spp.	-	-	++	-
<i>Philonthus</i> spp.	++++	-	-	-
<i>Quedius</i> spp.	++++	-	-	-
<i>Philonthus</i> spp.	-	++	-	-
<i>Tachinus</i> spp.	++	++	+	-
Aleocharinidae Genus & spp. Indet.	++	-	-	-
Dryopidae				
<i>Dryops</i> spp.	-	-	-	+
Nitidulidae				
<i>Meligethes</i> spp.	-	-	+	-
Cryptophagidae				
<i>Cryptophagus</i> spp.	++	+	++	+
<i>Atomaria</i> spp.	+	-	-	-
Lathridiidae				
<i>Enicmus minutus</i> (Group)	++	+	-	-
Endomychidae				
<i>Mycetaea hirta</i> (Marsh.)	++	-	++	-
Coccinellidae				
<i>Halyzia sedecimguttata</i> (L.)	+	-	-	-

Sample no.	1	6	11	12
Anobiidae				
<i>Anobium punctatum</i> (Geer)	+	-	++++	++
Ptinidae				
<i>Tipnus unicolor</i> (Pill. Mitt.)	++	++	-	+
<i>Ptinus fur</i> (L.)	++++	++	+	
Mordellidae				
<i>Anaspis</i> spp.	-	+	-	-
Scarabaeidae				
<i>Aphodius</i> spp.	-	+	+	+
Chrysomelidae				
<i>Phyllotreta</i> spp.	-	++	-	-
Bruchidae				
<i>Bruchus</i> spp.	++	-	-	+
Scolytidae				
<i>Leperisinus varius</i> (F.)	-	-	+	+
Curculionidae				
<i>Apion</i> spp.	-	-	-	+
<i>Barypeithes</i> spp.	-	+	-	-
<i>Notaris acridulus</i> (L.)	-	+	-	-
<i>Ceutorhynchus contractus</i> (Marsh.)	-	+	-	-
<i>Ceutorhynchus</i> spp.	-	-	++	-
DIPTERA				
Sepsidae				
<i>Sepsis</i> spp.	-	-	++++	-
Sphaeroceridae				
Copromyzinae Genus and spp. indet.	+++	-	-	-
Limosiniinae Gen. & spp. Indet.	-	++	-	-
? <i>Telomerina flavipes</i> (Meigen)	++++++	-	-	-
Muscinae				
<i>Musca domestica</i> L.	-	-	+	-

Table 3. Summary of the nature of the insect faunas from Edgbaston, House, Wellington

Sample number	Degree of preservation	Comparative size of faunas	Water conditions	landscape / deposit	Overall potential of this sample
1	good	large	not water lain	Probably rotting settlement waste or cess. Clearly suggested by presence of <i>Omalium</i> , <i>Oxytelus</i> , <i>Philonthus</i> and <i>Quedius</i> . Several synanthropes presents such as <i>Cryptophagus</i> , <i>Mycetea hirta</i> , <i>Anobium punctatum</i> and <i>Tipnus fur</i> and <i>Ptinus unicolor</i> . Limosiniinae flies and Copromyzinae suggest cess.	Very good
6	good	moderate	not water lain	Probably rotting settlement waste or cess. Suggested by presence of <i>Omalium</i> , <i>Oxytelus</i> and <i>Philonthus</i> . Several synanthropes presents such as <i>Cryptophagus</i> , <i>Mycetea hirta</i> , <i>Anobium punctatum</i> and <i>Tipnus fur</i> . Limosiniinae flies and Copromyzinae suggest cess.	good
11	good/ moderate	large	not water lain	Probably rotting settlement waste or cess. Suggested by presence of <i>Omalium</i> , <i>Oxytelus</i> and <i>Philonthus</i> . Several synanthropes presents such as <i>Cryptophagus</i> , <i>Mycetea hirta</i> , <i>Anobium punctatum</i> and <i>Tipnus fur</i> . <i>Sepsis</i> flies normally associated with cess.	Very good
12	poor	small	not water lain	difficult to interpret due to size	limited