HEREFORD AND DISTRICT: PLANT REMAINS FROM EXCAVATIONS OF NEOLITHIC TO MEDIEVAL DATE.

Angela Monckton 2005  ULAS Archive Reports

Plant remains from excavations in Hereford were assessed and selected sites analysed by recording cereal remains, weeds and other plants. The remains were mostly charred and of medieval date including some of Late Saxon date from Castle House in Hereford, and exceptionally some of Neolithic date from the excavation of the Asda site Hereford. Remains from sites at Tenbury Wells, the Frome Valley and Leominster are also included. The excavations were carried out by Archaeological Investigations Ltd. of Hereford from 1997 to 2005 and analysed at ULAS.

CONTENTS

Hereford: Assessment of charred plant remains from an evaluation of a medieval site at Hereford. The Mead and Thomkinson site (HE 97B).  ULAS (March 1997)

Assessment of charred plant remains from an evaluation at Tenbury Wells (HE 97E).  ULAS (August 20th 1997)

Assessment of environmental samples from Godsell's Garage site, Hereford (HE 97C)  ULAS (August 20th 1997)

Assessment of samples from Hereford County Hospital (Site 1) for plant remains (Hereford 294-98).  ULAS Report 99-106

Hereford, Asda site: Charred plant remains from Neolithic, Bronze Age and medieval contexts excavated 2001 (ASD 01).  ULAS Report No. 2001-118


Assessment of charred plant remains from Hereford Magistrates Court, Bath Street, Hereford (HMG 00).  ULAS Report 2001-12

Hereford Magistrates Court, Bath Street, Hereford (HMG 00): Charred plant remains ULAS Report 2001-60


Assessment of charred plant remains from St. Martin's Street, Hereford (HSM 01).  ULAS Report 2001-000.


Hereford: Assessment of charred plant remains from an evaluation of a medieval site at Hereford. The Mead and Thomkinson site (HE.97B).

Angela Monckton  (March 1997)

Introduction

During the recent evaluation of medieval deposits at Hereford (HE 97B) samples were taken for assessment of their potential to produce evidence from plant and animal remains. Three samples were submitted for this assessment in addition to those for waterlogged plant and insect remains. Charred plant remains are preserved in most soil conditions on occupation sites of most periods and have the potential to provide evidence of diet and economy in the past. These remains have been recorded from an increasing number of towns and evidence from Hereford would add to the national picture and allow comparison with other towns (eg Worcester, Moffett 1991 AML Report 123/91) and with hinterland sites.

Method of assessment

Three 5 litre samples were wet sieved with flotation into a 0.5mm mesh sieve. The flotation fraction (flot) and residue were air dried and those with charred material present were submitted for analysis. These were sorted with a x10 stereo microscope, either the whole or a part of the larger fractions. Charred remains seen in the samples processed wet for waterlogged material by James Greig were also noted.

Results of the assessment

1007 sample 2 flot: The 450 mls of flot included abundant large charcoal and wood fragments, bone fragments, a large fish bone and mussel shell were found. Shrivelled organic material was present together with hazel nutshell fragments and about 25 uncharred seeds including docks, blackberry, nettles, knotgrass, sedges, orache and vetch. This deposit was presumably waterlogged. No charred plant remains were found. (50% sorted)

1007 sample 2 residue: Abundant charcoal and wood with bone fragments and a metal fragment of copper alloy were seen. Only two uncharred seeds were found and no charred plant remains were present. (50% sorted of 350 mls below 5mm).

1003 sample 1 flot: The 7 mls of flot included small charcoal fragments, mussel shell, a small mammal bone. Uncharred hazel nutshell and two uncharred seeds were the only plant remains.

1024 sample 7 residue: A few large wood fragments with shrivelled organic material and charcoal flecks were the main constituents of the residue. A small bone and one uncharred sedge seed were the only other plant remains. (25 mls of residue below 5mm).

1011 sample 4 wet residue: The sample processed for waterlogged plant remains had abundant charcoal with charred cereal grains and chaff (rachis) seen by James Greig during sorting. The grains included free-threshing wheat grains and the well preserved rachis included both bread wheat (Triticum aestivum s.l.) and rivet wheat (Triticum turgidum type). These are both free-threshing wheats and rivet wheat has been found on an increasing
number of sites in the southern half of England in recent years. Rye rachis (*Secale cereale*)
was also seen and charred seeds were also present in the waterlogged samples.

**Statement of potential**

The presence of well preserved rachis material has the potential for detailed identification of
the cereals and the presence of charred plant remains indicates the potential for their
preservation in other deposits should they be investigated. The find of rivet wheat here is a
welcome addition to our knowledge of the use of this cereal in this area. These remains can
give evidence of diet as well as the cereal crops exploited. Should larger groups of remains
be recovered they can show the proportions of the cereals in use and the weed seeds present
can indicate the type of land cultivated and possibly give clues about cultivation methods.
Although most of these samples were unproductive this type of deposit which contains
domestic waste has the potential to contain charred plant remains. This type of deposit also
has the potential to give evidence from a range of analyses such as that of fish bone, small
mammal bone and possibly that of parasite eggs. Bulk sampling of a range of these urban
deposits can build up a picture of diet and living conditions in the past.

**Recommendations**

Should further investigation of this site be carried out it is suggested that bulk sampling for
charred plant remains is carried out from a range contexts if they have the potential to be
dated and have low residuality. Samples of a minimum of 20 litres are suggested.

The processing method may need some detailed consideration as much of the charcoal did
not float from the wet deposits. Wet sieving on a fine mesh of 0.5mm may be required and
residues should be reserved for sorting as many of the remains will stay in them.
Assessment of charred plant remains from an evaluation at Tenbury Wells (HE97E).

Angela Monckton August 20th 1997

Introduction
A sample from a medieval ditch was taken during the excavation by Archaeological Investigations Ltd. of Hereford with Andy Boucher as project manager.

Methods
About 10 litres of the sample was processed by wet sieving in a 1mm mesh with flotation into a 0.3mm mesh sieve. Processing was carried out by the site staff and the whole residue and flotation fraction (flot) was submitted for this assessment. The residue was divided into a coarse fraction (CF over c 6mm) and a fine fraction (FF 1mm to 6mm). The CF residue was examined by eye and the FF residue was examined using a stereo microscope at x10 magnification. The flot was also sorted at x10 magnification and the plant remains identified and noted.

Results

Context 1001 sample 1: The 5mls of flot contained woody root and stem fragments presumably modern, the charred remains consisted of one cereal grain and four grain fragments and two seeds of a large grass (Poaceae). An uncharred seed of goosefoot (Chenopodium sp) was thought to be intrusive.

Residue: FF, about 200mls of wet gravel and silty clay was re-washed and found to contain numerous small charcoal fragments and 11 cereal grains including five of wheat (Triticum sp), three of which were of free threshing wheat. A fragment of corroded wire was also found. The CF residue contained only about 100 mls of stone fragments.

Conclusions
A small amount of wheat including free threshing wheat was present in the sample although there was no diagnostic chaff present to determine if this was bread wheat or another type of free threshing wheat. Large grass seeds are often found with charred cereals as a weed of the crop. This small number of remains probably represents waste from food preparation and indicates the presence of domestic waste in this context.

Recommendations
There are insufficient remains for further work on this sample but the presence of charred cereal remains in this context shows that the site has some potential for the recovery of charred plant remains. If further excavations are carried out in the area it is suggested that sampling is carried out as part of the project, although there is insufficient potential from the plant remains alone to justify further investigation. Should further excavations be carried out samples of around 20 litres in size should be processed from potentially datable contexts which have evidence of occupation such as pot or bone or have charcoal apparent. Not all the remains were recovered by flotation so the sieved residues would need to be examined.
Assessment of environmental samples from Godsell's Garage site, Hereford (HE97C)
August 20th 1997

Introduction

During an evaluation excavation carried out by Archaeological Investigations Ltd. of Hereford with Andy Boucher as project manager samples were taken to examine for the preservation of plant and animal remains. The deposits were from an area of the town thought to have been used for rubbish disposal and were of medieval to post medieval date. The deposits were thought by the excavators to require examination for the possibility of waterlogged preservation as well as for charred plant remains and bones.

Methods

Three contexts were examined. About 10 litres of each sample was processed by wet sieving in a 1mm mesh with flotation into a 0.3mm mesh sieve. Processing was carried out by the site staff and the whole residue and flotation fraction (flot) was submitted for this assessment. The residue was divided into a coarse fraction (CF over c 6mm) and a fine fraction (FF 1mm to 6mm). The CF residue was examined by eye and the FF residue was examined using a stereo microscope at x10 magnification. The flot was also sorted at x10 magnification and the plant remains quickly identified and the quantity noted.

A small subsample of each was submitted for examination for waterlogged preservation. Of these 100mls was washed in a 0.18 mm mesh sieve during the assessment and the whole washover was examined using a stereo microscope at x10 magnification. No organic material other than charcoal was found but charred plant remains were present in some of the samples. Hence examination of the samples for pollen and insect remains was not necessary so was not carried out.

Results

**Context 2014, sample 1:** Flot of 9mls contained mostly charcoal with four grains of free thresing wheat (Triticum sp), one possible grain of rye (cf Secale cereale), 12 cereal grains, five large grass seeds (Poaceae) and a bark fragment which were all charred. An uncharred seed of elder (Sambucus nigra) was found together with two fish vertebrae, two fish scales and a few bone fragments.

Residue: FF about 2000mls of which 25% contained one wheat grain, one cereal grain, two fragments of hazel nutshell (Corylus avellana) and a possible legume fragment (Vicia/Pisum/Lathyrus) of medium size. This fraction also contained a possible eel bone, a few fish bones and bone fragments. The CF residue consisted mainly of pebbles, bone fragments were removed for identification.

Washover: No organic material other than charcoal, a cereal grain and a hazel nutshell fragment.
**Context ?3002**, sample 2: **Flot** (unlabelled context of HE97 only) of 5 mls had one cereal grain.  
**Residue** of 3002 sample ? 2: the residue submitted had almost no material below 6mm and consisted almost entirely of pebbles, a few bone fragments were removed for identification.  
**Washover**: sample 2A no context number: Nothing, sand with a very few charcoal flecks.

**Context 2018**. Sample 3, variously labelled part 1 and 2, 'B' and A all are 2018.  

**Flot**: sample 3 part 1 HE97C 'B', the flot of 31 mls had 50% sorted to produce 29 charred items including 11 cereal grains, five free threshing wheat grains, two wheat grains, one free threshing wheat rachis, one wheat rachis, one barley grain, two large grass seeds, a straw fragment, a piece of hazel nutshell, a fragment of pea or bean (*Vicia/Pisum*), a seed of knotgrass (*Polygonum* sp) and a seed of vetch (*Vicia* sp).  
**Residue**: sample 3 part 1, FF residue, scanned only, was grit with very little charcoal present. CF residue of pebbles, bone fragments removed for identification.  
**Washover**: sample 3A contained no organic material other than charcoal with three free threshing wheat grains, one cereal grain and three free threshing wheat rachis fragments including one of bread wheat (*Triticum aestivum* s.l.).

**Flot**: HE97 'B' sample 3 'B' part 2, about 3 mls of flot was a bag of 11 grains and nothing else, they included one free threshing wheat grain, two wheat grains, seven cereal grains and one large grass seed.  
**Residue**: sample 3 'B' part 2, FF residue of 1050 mls of which 25% sorted had three cereal grains, fish remains, bone and burnt bone fragments. Little charcoal was present.

**Conclusions**

No waterlogged preservation was found in any of the tree contexts examined. Context 3002/sample 2/unlabelled had no charred plant remains and little else present. The two other contexts 3014 and 3018 had charred plant remains present, context 3018 being most productive. The remains identified were of free threshing wheat of which bread wheat was identified from rachis material (chaff), rye is possibly also present but this could not be confirmed. The few weed seeds found were mainly of large grasses. The presence of charred cereal remains together with bone fragments and fish remains shows the presence of domestic rubbish in these two contexts.

**Potential**

If the charred plant remains found in this evaluation prove to be from datable, well defined contexts with low residuality they would provide some information about diet in the past. The potential of the fish remains should also be considered. Should a larger group of such remains be recovered from well dated deposits they would have the potential to provide more information about such questions as the supply and consumption of food in the past.
Recommendations

No waterlogged preservation was found in the samples examined and if these samples reflect conditions in all contexts on the site there appears to be little potential for the recovery of evidence from this type of preservation.

Although processing more material from these contexts may produce a more representative group of charred plant remains from these samples it may not add significantly to the information because the remains are at a low concentration and from a small number of samples. A short report could be prepared on these samples if required when context information and dating is available.

The assessment has established the presence of charred plant remains including identifiable wheat chaff so should further excavation be carried out sampling for charred plant remains should be an integral part of the project. However, these remains alone would not justify further excavation of the site.

Should further excavations be carried out samples of at least 20 litres in size should be processed from potentially datable contexts which have evidence of occupation such as pot or bone or have charcoal apparent. Residuality of the contexts requires consideration when samples are selected for analysis. Recovery by flotation is reasonably good from these sediments but a sample of residues should be examined. Sampling for fish remains should also be considered.
Assessment of samples from Hereford County Hospital (site 1) for plant remains (Hereford 294-98).

Angela Monckton Date: 12.8.99  (ULAS Report 99/106)

Introduction

Excavations were carried out by Archaeological Investigations Ltd. of Hereford directed by Darren Vyce and samples were taken for the recovery of charred plant remains which can give evidence of diet or activities in the past. The site occupied by the present hospital was formerly that of the precinct of St Guthlac's priory from 1143 AD until the dissolution in 1539 AD. The two features sampled post date the priory and date to the middle of the 16th century and were thought to be rubbish pits for the disposal of building materials from alterations to the site rather than for domestic refuse.

Methods

Features were sampled if they were datable and had the potential to contain charred plant remains. Two samples of 30 litres each in size were processed.

Processing: Samples were wet sieved with flotation into a 0.5mm mesh sieve. The residues were air dried and the fraction over 4mm sorted for all finds by the site staff. The fraction below 4mm was reserved and submitted for this assessment. The flotation fractions (flots) were air dried and packed carefully in plastic boxes and submitted for this assessment.

Assessment: The flots were examined with a x10 stereo microscope and the plant remains were removed to glass specimen tubes stored with the flot. The plant remains were rapidly identified without comparison with modern reference material so the identifications should be regarded as provisional. The remains were noted with an estimate of quantity and tabulated below (Table E1). Residues were also examined in the same way to determine if the plant remains had been recovered by flotation. Recovery of plant remains by flotation appeared to be good as the residues contained only a little charcoal and abraded bone fragments.

Results

Both samples contained a little charcoal but the only evidence of charred plant remains was from a single grain of free-threshing wheat (*Triticum* sp) in sample 2 together with a few indeterminate charred fragments. The plant remains recovered were mainly uncharred seeds found in small numbers in sample 2 with fewer in sample 1. The remains were not mineralised such as are found in cesspits as they retained their flexibility, and although the deposit did not appear to be waterlogged it is possible for pockets of organic material to be preserved in damp parts of a deposit in otherwise dry conditions. A possibility that seed coats can be preserved in lime rich conditions has been suggested (Curry pers com), or by partial mineralisation (Robinson in Moffett 1993) and such uncharred seeds of elder found in medieval deposits from Leicester have been shown to be archaeological by radiocarbon dating (Moffett 1993). Hence considering the late date of these deposits the seeds found may date from the time the pits were filled.

Assuming that these deposits were well sealed and that the uncharred material was not intrusive these could be the remains of the more robust seeds which have survived in the
deposit in the pit. If this is the case the seeds found are likely to be those growing on and around the site at the time the pit was filled and such plants as docks (Rumex sp), goosefoot (Chenopodium sp), nettles (Urtica dioica), elder (Sambucus nigra), grasses (Poaceae) and dandelions (Taraxacum sp) grow in and around occupation sites. Sedges (Carex sp) were the most abundant remains and these may have been growing on damp areas of the site or possibly be the remains of plant material brought to the site for use. In addition weld (Reseda luteola) which is a dye plant, and St. John's-wort (Hypericum sp) sometimes used as a herb, were found. Both may have been introduced onto the site by seeds brought with material for use on the site in earlier times or be garden escapes growing as weeds on the site, however both could grow as part of the natural vegetation or as weeds so could also have been growing on the site into the post-medieval period.

Other finds from the samples

Small snail shells were present in both samples, Ceciliodes acicula the burrowing snail was most abundant. The following were present in low numbers; Vallonia sp (an open country snail), Pupilla muscorum (a snail of open conditions tolerant of disturbed ground) and Trichia sp (a widespread snail). All were opaque shells which did not look recent. A small amount of charcoal was present in the residues with very abraded bone fragments most numerous in sample 2, which also contained a small iron nail.

Conclusions

The seeds found may represent the vegetation of the site in the post-medieval period and the only evidence of food waste is from a single cereal grain which is probably residual from the earlier phases of the site. The pits do not appear to contain domestic rubbish from the evidence of the plant remains in the samples examined.

Quantity for Analysis

No further analysis of the samples is suggested. Should further excavation be carried out in the area it is suggested that sampling for plant remains is continued as other parts of the site may show different phases and activities to the area examined. Features from monastic sites have a high potential to produce evidence of plant remains and post-medieval domestic rubbish pits, if found, are a priority for study as they may contain evidence of introduced plants.

Bibliography

Table E1: Assessment of samples for plant remains, Hereford 294-98.

<table>
<thead>
<tr>
<th>Samp No.</th>
<th>Cont No.</th>
<th>Feature type</th>
<th>Samp Vol. litres</th>
<th>Sorted Vol. mls</th>
<th>Gr ch</th>
<th>Cf ch</th>
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<tr>
<td>1</td>
<td>111</td>
<td>103 Pit</td>
<td>30</td>
<td>Flot 2</td>
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<td>3</td>
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<td>fl</td>
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<td>Sedge seeds, snails.</td>
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<td></td>
<td>Residue 420</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
<td>+</td>
<td>fl</td>
<td>Very few charcoal frags, abraded bone frags.</td>
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<tr>
<td>2</td>
<td>086</td>
<td>024 Pit</td>
<td>30</td>
<td>Flot 5</td>
<td>1</td>
<td>fr?</td>
<td>39</td>
<td>+</td>
<td>-</td>
<td>fl</td>
<td></td>
<td>A charred wheat grain, uncharred seeds included 20 sedge seeds, 3 nettles, 1 weld, 4 St John's-wort, others were of goosefoot, elder, docks, grass, dandelion and seed frags, some stem and straw frags, a modern birch seed, snails.</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>fl</td>
<td>Few charcoal frags, more abraded bone frags than sample 1.</td>
</tr>
</tbody>
</table>

Key: Gr = cereal grain, Cf = chaff, Se = seed in the broad sense, ch = charred, un = uncharred, Oth = other, Nut = nutshell, Char = charcoal, Oth = other charred item, fl = flecks, fr = fragments, + = present, ++ = moderate amount, +++ = abundant. # = further work required.
Hereford, Asda site: Charred plant remains from Neolithic, Bronze Age and medieval contexts excavated 2001 (ASD.01)

Angela Monckton  25.7.01    ULAS Report No. 2001/118

Introduction

Excavations were carried out by Archaeological Investigations Ltd. Hereford directed by Andy Boucher and samples were taken for the recovery of charred plant remains which can give evidence of diet, agriculture or activities on sites in the past. The features sampled included an Early Neolithic pit, a possible Bronze Age horizon, and two medieval cesspits.

Methods

Features were sampled if they were datable and had the potential to contain charred plant remains. A total of four samples were processed and submitted for assessment.

Processing: Samples were wet sieved in a York tank using a 0.5mm mesh with flotation into a 0.5mm mesh sieve. The residues were air dried and reserved for analysis. The flotation fraction (flot) was air dried and packed carefully in self-seal polythene bags.

Assessment: The flots and residues were examined with a x10 stereo microscope and the plant remains were removed to glass specimen tubes. The plant remains were identified, counted and listed below (Table E1). For the more productive samples only a proportion of the remains could be sorted in the time available.

Results of the assessment

Charred plant remains were recovered from all four samples.

Sample 3, context 6001: The Early Neolithic pit, context 6001, contained abundant hazel nutshell mainly in the residue, a moderate number of cereal grains some of which were identified as emmer and the rest were probably wheat grains which were broken and abraded. A single chaff fragment was identified as a spikelet fork of emmer. A fragment of apple core was present probably of crab apple as well as a few apple pips. Weed seeds were few in number but included dock, knotgrass and clover type.

Sample 1, Test Pit 3: This sample was thought to be of Bronze Age date. It contained quite numerous cereal grains which included free-threshing wheat with short broad grains and a number of chaff fragments which were rachis of free-threshing, probably bread wheat, although broken rather short and abraded. A few barley grains and oat grains showed these additional cereals were present. Weed seeds included large grasses, vetch and a larger legume which was either cultivated vetch or pea, but the seed was incomplete so could not be identified with certainty. Large culm nodes showed that straw fragments were also present. This group of plant remains bears a resemblance to medieval remains from the area, but if shown to be earlier the wheat rachis is an important find and should be examined further.

Sample 6, cesspit context 2019: This sample contained insufficient plant remains for further analysis but contained a few grains of both free-threshing wheat, barley and a rye grain with rachis fragments (chaff) of both barley and rye with occasional weed seeds and straw fragments. There were also uncharred seeds of elder and fumitory which may have been mineralised, but may have been the survival of these robust seeds in the soil of the site. Most noticeable in the sample were numerous blue-grey concretions, possibly around small roots, chemical investigation of these may reveal the conditions in the pit.
Sample 7, cesspit context 2008: The plant remains in this sample were similar to those in the previous sample consisting of a few grains of free-threshing wheat, rye and oat, with two chaff fragments including one of free-threshing wheat rachis, which was too broken to identify further, and a fragment of rye rachis. There was also a possible bean fragment and the typical medieval weeds corn cockle and stinking mayweed; the former suggesting autumn sowing probably of the wheat, and the latter indicating the cultivation of heavy clay soils.

Discussion

The plant remains from the early Neolithic feature show the greater abundance of nutshell fragments than cereal grains which has been noted in many samples of this date. It has been pointed out that nutshell is a waste product for disposal whereas grains are the product to be used, so the waste of grains would have been avoided and deposits may not represent the availability of foods (Moffett et al 1989). The grains here are quite numerous compared with many deposits of this date. The greater abundance of nutshell in this period than subsequently is thought to indicate their greater importance in the diet than in later periods (Robinson 2000). It has been suggested that the finds of nutshell in pits may perhaps be explained by the storage of nuts in pits which were removed and consumed nearby, or possibly because the deposition of burnt nutshell was a common ceremony associated with pits (Robinson 2000). The cereal found here was emmer wheat, confirmed from the identification of the chaff, the small amount of chaff and weed seeds show this was cleaned grain, possibly burnt during food preparation. Crab apple was also present in the deposit as an additional gathered food. Although the conclusions from a single sample are limited, the find here is evidence for early cultivation and use of emmer in the area, and the reliance on both cultivated and collected foods.

The sample from Test pit 3 is dominated by cereal grains, mainly free-threshing wheat with a few chaff fragments, probably of bread wheat, and few weed seeds. It probably represents partly cleaned grain with the last contaminants present which would have been removed by hand before use. This may therefore be waste from food preparation, the whole grain may have been for use in such food as pottage. The date of this deposit is unknown at present.

The two medieval samples from possible cesspits contain no evidence from mineralised plant remains to confirm or deny this. (Tests for eggs of gut parasites may resolve this, or tests on the unknown concretions may reveal the type of deposit present.) The small numbers of charred plant remains include few cereal grains with little chaff and weed seeds. These may represent a scatter of domestic waste from hearths but may originate from thatched roofs. Recent analysis of thatch has shown the presence of ears of cereal together with heads of arable weeds and even legumes (Lects 1999). Seeds and fragments from this may drop into domestic fires and become mixed with domestic rubbish. The remains do however show the cereals cultivated were free-threshing wheat, rye and oats and the presence of the troublesome medieval weeds corn cockle and stinking mayweed and compares with these finds from other sites in the area.

Bibliography


Table 1. List of charred plants from Asda site, Hereford (ASD 01).

<table>
<thead>
<tr>
<th>Sample Context</th>
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<td>-</td>
</tr>
<tr>
<td>Bread wheat</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wheat free-threshing</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Barley</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rye</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Cereal</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Straw</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SEEDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Hazel nut shell</td>
<td>233</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Crab apple core fragment</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Crab apple pips</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fat-hen</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Corn cockle</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Knotgrass</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Knotweed</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dock</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vetch or Vetchling</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bean or Pea</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Cultivated Vetch or Peas</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Clover type</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stinking Mayweed</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Grasses, large</td>
<td>-</td>
<td>9</td>
<td>1</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td>Grasses, small</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Elder (uncharred)</td>
<td>1</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fumitory (uncharred)</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Indeterminate seeds</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>304</td>
<td>130</td>
<td>28</td>
<td>39</td>
<td></td>
</tr>
</tbody>
</table>

% flot and residue sorted | 50% | 50% | all | all | % sorted

Volume of sample | 20 | 5 | 30 | 30 | litres

Key: Wet-sieved with flotation (0.5mm meshes), Flots and all residues sorted.
Remains are seeds in the broad sense unless stated, taxonomy after Stace (1991).
Environmental samples from an excavation at Hereford General Hospital GHE.02.


Introduction

Excavations were carried out by Archaeological Investigations Ltd. Hereford and samples were taken for the recovery of charred plant remains which can give evidence of crops, diet and activities in the past. The medieval features sampled included a ditch, postholes and a gully all of 13th century date.

Methods

Features were sampled at the discretion of the excavators. Seven samples of about 20 litres in size were processed.

Samples were wet sieved using 0.5mm mesh with manual flotation into a 0.5mm mesh sieve. The residues were air dried and separated on a sieve with about 3mm mesh, the coarse residues were sorted for finds, and the fine fractions of three of the samples were submitted for analysis. The flotation fractions (flots) were air dried and packed in self-seal polythene bags and submitted for analysis.

The flots were examined with a x10 stereo microscope and any plant remains were removed to glass specimen tubes stored with the flots. The plant remains were identified by comparison with modern reference material in the Department of Archaeology, University of Leicester. The remains were noted with their quantity and tabulated below (table E1). The three fine fraction residues were also examined by sorting at x10 magnification and the plant remains noted below. Plant names follow Stace (1991).

Results

Very few charred plant remains were recovered from the samples.

Ditch samples, probably 13th century: A small flot from sample 1 (9005) contained a few cereal grain fragments, a possible legume fragment and a charcoal fragment. Three flots from context (9058) were examined. The flot of sample 2 consisted of a single tiny coal or vitrified fragment. The small flot from sample 3 contained two wheat grains (Triticum sp.) which could not be identified further, with a few cereal grain fragments and a little charcoal. Sample 4 also produced a small flot which contained fragments of a large grass seed (Poaceae) with flecks of charcoal.

Gully samples: A sample from context (5014) with a small flot and fine residue contained only a wheat grain with a few cereal grain fragments, the residue contained only a few cereal grain fragments and a couple of bone fragments. The sample from context (5015) was similar with few cereal grain fragments in the flot and two seeds in the residue including a broken large grass seed and part of a vetch seed (Vicia sp.). In addition a fragment of small bone and a fragment of eggshell were found in the residue.

Posthole: Sample (5029) consisted of a fine residue only which contained only occasional flecks of charcoal.
Discussion

The samples were very unproductive compared with other sites in Hereford such as the Magistrates Court site, Bath Street, where pits and kilns produced remains all the main cereals; wheat included bread wheat, barley, rye and oats with a few legume fragments and a wide range of arable weeds as found at other sites in England at this date (Greig 1991). Pits of 11th-13 century date at Castle House were less productive but did contain the main cereals with weeds, while a burnt layer and ditch at St. Martins Street were quite productive of cereal remains and weed seeds. Contexts at Godsell's Garage and the Mead and Thomkinson site also produced a scatter of cereal remains and weed seeds, the latter site including rivet wheat chaff among the remains. (Monckton 2001a, 2002, 2001b 1997a,b.). This site may be less productive because there is less domestic or cereal related activity nearby, and waste from such activity has not been deposited in these features.

Conclusions

The charred plant remains were very sparse and included wheat and arable weeds as found in greater quantities at other sites in the city. There is little to suggest domestic activity or rubbish disposal on the site.

Table E1: Environmental samples (GHE.02)

<table>
<thead>
<tr>
<th>Samp No.</th>
<th>Cont No.</th>
<th>Feat type</th>
<th>FF Vol. mls</th>
<th>Flot Vol. mls</th>
<th>Gr ch</th>
<th>Cf ch</th>
<th>Se ch</th>
<th>Se un</th>
<th>Leg ch</th>
<th>C/c</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9005</td>
<td>Ditch</td>
<td>-</td>
<td>2 fr</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>+</td>
<td></td>
<td>Cereal frags, legume frag.</td>
</tr>
<tr>
<td>2</td>
<td>9005</td>
<td>Ditch</td>
<td>-</td>
<td>&gt;1 fr</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>?</td>
<td>coal frag</td>
</tr>
<tr>
<td>3</td>
<td>9058</td>
<td>Ditch</td>
<td>-</td>
<td>3 fr</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td></td>
<td>Wheat grains</td>
</tr>
<tr>
<td>4</td>
<td>9058</td>
<td>Ditch</td>
<td>-</td>
<td>1 fr</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td></td>
<td>A grass seed</td>
</tr>
<tr>
<td>-</td>
<td>5014</td>
<td>Gully</td>
<td>25</td>
<td>3 fr</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td></td>
<td>A wheat grain in the flot, few cereal frags in the FF.</td>
</tr>
<tr>
<td>-</td>
<td>5015</td>
<td>Gully</td>
<td>45</td>
<td>2 fr</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td></td>
<td>Cereal frags in the flot; a grass seed, a vetch seed, a small bone and an eggshell frag in the FF</td>
</tr>
<tr>
<td>-</td>
<td>5029</td>
<td>Post-hole</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>fl</td>
<td></td>
<td>Nothing.</td>
</tr>
</tbody>
</table>

Key: FF = fine fraction residue, Gr = cereal grain, Cf = chaff, Se = seed, ch = charred, un = uncharred, Leg = legume, Nut = nutshell, C/c = charcoal, Oth = other charred item, fl = flecks, fr = fragments, + = present, ++ = moderate amount, +++ = abundant. # = further work required.
Acknowledgements

I am grateful to Benedikte Ward for sending the samples and for providing information about the site, and to Andy Boucher for the opportunity to work on these projects. The work was carried out at the University of Leicester Archaeological Services, Leicester, LE1 7RH. ULAS Report Number 2002-210.

Bibliography


Angela Monckton    November 19th 2004  (ULAS Report No. 2004-186)

Introduction

A borehole survey was undertaken in the scheduled area of the town ditch at the rear of the John Venn Building at Bath St./Gaol St., Hereford. The work was directed by Andy Boucher of Archaeological Investigations Ltd of Hereford. The objectives of the survey were to examine the extent and preservation of the ditch deposits and to assess their potential to produce environmental and other information. In order to do this two lines of borings were made across the ditch employing a mechanical boring rig which extracted cores of 5.0 to 7.5 cm diameter from the deposits. Samples from the cores were submitted for this assessment to investigate the deposits for the preservation of organic remains of plants and animals which may provide evidence of the surrounding environment or of living conditions in the past.

Provenance, Dating and Quantity

There were two transects of boreholes across the ditch; a northern row of borings BH 5 to 8, and a southern row BH 1 to 4 produced cores up to 4.6 metres deep. The deposits were described by the site team and deposits with the potential to contain remains were selected for assessment. The selected cores were divided and part retained for further analysis if required, then a total of 12 sub-samples were processed and assessed.

Methods

For the purposes of this assessment the subsamples were processed as follows. The size of samples was usually about 1.2 litres (from one metre of core divided in half vertically).

Processing: Samples were wet sieved using a 0.5mm mesh with flotation into a 0.3mm mesh sieve. The residues were air dried and the coarse fraction (over c.4mm.) sorted by eye for all finds. The fine fraction of the residue (below c. 4mm.) should be reserved for sorting during the analysis stage if required in case remains had not all been recovered by flotation. The flotation fraction (flot) was air dried and packed carefully and submitted for this assessment.

Assessment: The flots were examined with a x10-x30 stereo microscope, for those with small numbers of remains the plant remains were removed to glass specimen tubes while those with numerous remains were selected for further work. The plant remains were rapidly identified without comparison with modern reference material so the identifications should be regarded as provisional. The remains were noted with an estimate of quantity and tabulated below (table 2). The plant names follow Stace (1991).

Range and Variety of Material

Seeds were recovered from all the flots mainly preserved by waterlogging of the ditches. Although the flots were generally small seeds were numerous in some of the samples and included those of water plants, waterside plants and land plants, organic remains of leaf and stem material was also present. A very few charred plant remains were recovered including occasional cereal grains and weed seeds. Snail shells, mainly of water snails
Lymnaea spp. and Planorbis group were quite numerous in some of the samples. Other remains included fragments of insects including wing-cases. The remains from the samples are summarised below (table 1). Around fifty species of plants were found, some very abundant, in the assessment.

**Water plants:** these include duckweed (*Lemna* sp.) which only sets seed in standing water so suggests permanent water in the ditches at the time represented by these deposits, unless it washed in from elsewhere at times. Pondweed (*Potomogeton* sp.) was well represented suggesting standing or slow flowing water, and other water plants included water plantain (*Alisma plantago-aquatica*). Plants such as water-cress (*Rorippa* sp.), water-dropwort (*Oenanthe aquatica*), celery-leaved buttercup (*Ranunculus sceleratus*), and rushes (*Juncus* sp.) grow in marshy areas as found at the margins of water courses.

**Land plants:** these include waterside plants such as water-pepper (*Polygonum hydropiper*), gypsywort (*Lycopus europaeus*) and possible bur-margold (*Bidens* sp.). Other plants of damp or wet ground such as sedges (*Carex* sp.), buttercups (*Ranunculus* subgen. *Ranunculus*) and thistles (*Cirsium/Carduus*) may have grown near the ditch or on surrounding wet grassland. This may be indicated by pollen analysis. The plants found include numerous nettles (*Urtica dioica*) which grows on nutrient rich soils as found near habitation and rubbish disposal; henbane (*Hyoscyamus niger*) and hemlock (*Conium maculatum*) were also found which are poisonous plants which grow on polluted land such as that found near rubbish pits and cesspits. A range of plants of disturbed ground was found including docks (*Rumex* sp.), goosefoots (*Chenopodium* sp.), persicaria (*Persicaria* sp.) and knotweeds (*Polygonum* sp.) all of which can occur as arable weeds. Corn cockle (*Agrostemma githago*) was also found which was a weed of cereal crops.

**Useful plants:** Fruits may have been represented by bramble and elder but these also occur as scrub at the margins of occupation. Plants which may have been used are represented in a number of the samples by vervain (*Verbena officinalis*), a herb used in the medieval period, and weld, a dye plant. However, both grow in natural vegetation or may be escapes from cultivation. The only remains found in charred condition were grains of wheat, rye and oats as single grains, with a single charred grass seed probably a weed of the crops. The small number perhaps resulting from the small size of the samples or more likely from type of deposit, perhaps formed by silting rather than as a rubbish deposit.

**Assessment of macrofossils from the base of the cores**

Two subsamples from the base of the ditch for the deepest boreholes, BH 2 and BH 6, were examined for the potential to produce plant macrofossils for radiocarbon dating and for pollen analysis. For waterlogged deposits radiocarbon dating is best carried out by the AMS method used to assay identified plant material, preferably seeds. The seeds used must be of land plants which take in carbon dioxide from the air, not water plants which can take in carbonates dissolved in the water that may originate from ancient sources such as limestone and give a falsely early date (the hard water effect). Usually about 20-30 seeds of land plants are required for AMS dating.

A small subsample of 100mls near each column base was dispersed in water and washed over into a 0.18 mm mesh sieve. The volume of the subsample was measured by water displacement and amounted to about 5cm of sediment. After sieving the whole residue
was then examined whilst wet because small seeds such as those of rushes shrivel and become unrecognisable when they dry.

BH 2, depth 4-4.6 m: The lowest 18 cms of the column was submitted and the subsample was taken from the upper end (the base marked by tape). Organic remains were present but not abundant; some plant debris was present, insect remains, a snail shell, a fragment of charcoal. Water plants were represented by rushes and a few water-plantain seeds. Seven species of land plant were found represented by single seeds, these included weld (*Reseda luteola*) and silverweed (*Potentilla anserina*). The core probably has the potential to produce sufficient seeds for radiocarbon dating. The presence of organic remains indicates the potential for pollen preservation in the sediment at this level.

BH 6, depth 4-4.6m: The lowest 25 cms was submitted and the subsample was taken from one end probably the base. A few pebbles were present and some fragments of coal or mineralised charcoal. A little organic detritus was present. Seeds were found in small numbers including elder and brassica although broken and abraded. Four seeds of land plants were found which indicates that the core section should contain sufficient seeds for radiocarbon dating. The preservation above this is likely to be better and so the core has the potential to produce information from pollen.

**Conclusions**

Waterlogged preservation was found and a good range of plant species were represented. The samples mainly represented layers of one meter in depth so more detailed examination of the reserved material in smaller sections may produce more information about the location of the remains and so produce information about the formation of the deposit and changes, or otherwise, in the environment. Preservation may be more patchy than suggested by these samples so it is possible that useful concentrations of organic material may be found. Specialist processing and examination of a series of samples for both pollen and plant macrofossils is recommended; the study of these remains together is more revealing than either on its own. Such a study can reveal local environment and land use (J. Greig pers comm.). In an urban situation conclusions about diet and living conditions may also be possible particularly if rubbish or sewage deposits are encountered. The samples also contain insect remains which can be very revealing about water conditions and living conditions, although large bulk samples are needed for their study. Further work would be needed to show their potential at this site. Snails may be useful in revealing conditions within the ditches and can also be used to investigate if flooding events have occurred. The main potential of these present borehole samples is for a more detailed study of the local environment by pollen and plant macrofossil analysis.
Table 1: Summary of results from the ditch borehole sub-samples from North and South transects at depths examined.

<table>
<thead>
<tr>
<th>Depth</th>
<th>BH 8</th>
<th>BH 7</th>
<th>BH 6</th>
<th>BH 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3m</td>
<td>++ Duckweed</td>
<td>ORGANIC ++</td>
<td>SNAILS (50+)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>few land plants</td>
<td>few water plants</td>
<td>few waterplants</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>land plants ++</td>
<td>Land plants ++</td>
<td></td>
</tr>
<tr>
<td>2-3m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-5m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NORTH

<table>
<thead>
<tr>
<th>Depth</th>
<th>BH 4</th>
<th>BH 3</th>
<th>BH 2</th>
<th>BH 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3m</td>
<td>ORGANIC ++</td>
<td>Snails (5)</td>
<td>SNAILS (50+)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>water plants ++</td>
<td>water plants ++</td>
<td>water plants +</td>
<td></td>
</tr>
<tr>
<td></td>
<td>land plants +++</td>
<td>waterside plants</td>
<td>few land plants</td>
<td></td>
</tr>
<tr>
<td>3-4m</td>
<td>Snails (7)</td>
<td>SNAIILS (40+)</td>
<td>Snails (7)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>few water plants</td>
<td>few water plants</td>
<td>water plants +</td>
<td></td>
</tr>
<tr>
<td></td>
<td>land plants +</td>
<td>few land plants</td>
<td>land plants +</td>
<td></td>
</tr>
<tr>
<td>4-5m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SOUTH

Key: + = present, ++ = moderately abundant, approximate counts in brackets.
NB. From BH 6 two samples were numbered 2-3 metres.
Table 2: Assessment of flots for plant and animal remains, HFD-MG 2004-59

<table>
<thead>
<tr>
<th>Samp No.</th>
<th>Depth m.</th>
<th>Samp Vol. litres</th>
<th>Flot Vol. mls</th>
<th>Se WP</th>
<th>Se LP</th>
<th>Pl ch</th>
<th>Chc</th>
<th>SN</th>
<th>Ins</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>South</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BH 1</td>
<td>2-3m</td>
<td>1.2</td>
<td>10</td>
<td>10</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>50+</td>
<td>+</td>
<td>Pond weed and water snails.</td>
</tr>
<tr>
<td>BH 1</td>
<td>3-4m</td>
<td>1.2</td>
<td>3</td>
<td>30+</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>Duckweed, pondweed. Water pepper, Gypsywort.</td>
</tr>
<tr>
<td>BH 2</td>
<td>2-3m</td>
<td>1.2</td>
<td>7</td>
<td>100+</td>
<td>50+</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>+</td>
<td>Celery-leaved buttercup and pondweed. Nettles abundant.</td>
</tr>
<tr>
<td>BH 2</td>
<td>3-4</td>
<td>1.2</td>
<td>10</td>
<td>10</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>40+</td>
<td>-</td>
<td>Land plants include knotgrass, thistles and vervain. Wheat grain.</td>
</tr>
<tr>
<td>BH 2</td>
<td>4-4.6m</td>
<td>0.5</td>
<td>9</td>
<td>20</td>
<td>40</td>
<td>2</td>
<td>1</td>
<td>20</td>
<td>-</td>
<td>Land plants include bramble, elder, vervain, knotgrass, corn cockle. Rye grain.</td>
</tr>
<tr>
<td>BH 3</td>
<td>2-3 m</td>
<td>1.2</td>
<td>12</td>
<td>30</td>
<td>100+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>ORGANICS ++, leaf and stem material, nettles ++++, bramble, elder, thistles, henbane, fat-hen, Lamiaceae present.</td>
</tr>
<tr>
<td>BH 3</td>
<td>3-4 m</td>
<td>1.2</td>
<td>5</td>
<td>+</td>
<td>30+</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>?</td>
<td>Waterside and land plants including vervain. A fish scale ?marine,</td>
</tr>
<tr>
<td>North</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BH 5</td>
<td>2-3 m</td>
<td>1.2</td>
<td>12</td>
<td>+</td>
<td>20+</td>
<td>3</td>
<td>1</td>
<td>50+</td>
<td>+</td>
<td>Pondweed and few water plants, land plants incl. bramble, vervain, docks, knotgrass, chickweed etc. Charred oat and wheat grains.</td>
</tr>
<tr>
<td>BH 6</td>
<td>2-3 m</td>
<td>1.2</td>
<td>20</td>
<td>+</td>
<td>100+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>ORGANICS ++, Few water plants, more land plants incl. nettles++, bramble, velvet, vervain, goosefoot, hemlock, Lamiaceae.</td>
</tr>
<tr>
<td>BH 6</td>
<td>2-3 m</td>
<td>1.2</td>
<td>10</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>30+</td>
<td>-</td>
<td>Water snails. Few seeds of elder, goosefoot and silverweed.</td>
</tr>
<tr>
<td>BH 6</td>
<td>4-5 m</td>
<td>1.2</td>
<td>4</td>
<td>3</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>Very little organic material, few seeds of water pepper, vervain and a weld seed.</td>
</tr>
<tr>
<td>BH 7</td>
<td>2-3 m</td>
<td>1.2</td>
<td>3</td>
<td>+++</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Many duckweed seeds, few elder, nettle and vervain seeds.</td>
</tr>
</tbody>
</table>

Key: Se = seed, WP = water plants, LP = land plants including waterside plants, Pl ch = charred plants, un = uncharred, Chc = charcoal, SN = snails, Ins = insect fragments, Oth = other charred item, incl = including, fl = flecks, fr = fragments, + = present, ++ = moderate amount, +++ = abundant.
Assessment of charred plant remains from Hereford Magistrates Court, Bath Street, Hereford (HMG-00).


Introduction

Excavations were carried out by Archaeological Investigations Ltd. Hereford directed by Darren Vyse and samples were taken for the recovery of charred plant remains which can give evidence of activities and life on the site in the past. The features sampled included possible tanning pits, ditches, gullies and kilns or furnaces and were of medieval date from the late 12th to late 13th centuries AD. Provisional phasing was provided.

Methods

Features were sampled at the discretion of the archaeologists if they were datable and had the potential to contain charred plant remains. A total of 18 samples from medieval contexts were processed amounting to 285 litres of soil, usual sample size being 15 litres.

Processing: Samples were wet sieved in a York tank using a 1mm mesh with flotation into a 0.5mm mesh sieve. The residues were air dried and the fraction over 4mm sorted for all finds and then discarded. The fractions below 4mm were reserved for assessment and sorting during the analysis stage if required. The flotation fractions (flots) were air dried and packed carefully in self-seal polythene bags and submitted for this assessment.

Assessment: The flots were all examined with a x10 stereo microscope, for those with small numbers of remains the plant remains were removed to glass specimen tubes stored with the flot, those with numerous remains were selected for further work. The plant remains were rapidly identified without comparison with modern reference material so the identifications should be regarded as provisional. The remains were noted with an estimate of quantity and tabulated below (Table E1). Residues (below 4mm) from three selected samples were also examined to determine if the plant remains had been recovered by flotation.

Results of the assessment

All but one of the flots (sample 38) contained charred plant remains and examination of the residues produced only charcoal and bone fragments indicating that plant remains had been recovered efficiently by flotation. Three of the samples contained fairly numerous plant remains (samples 44, 15 and 16) with a further two having a moderate amount (samples 40 and 12) while the remaining flots contained below 20 items of plant remains (table E1). The productive samples represented all phases from phase 1 to phase 4.

The plant remains

The most numerous cereal found was free-threshing wheat (Triticum sp. free-threshing) represented by charred grains. No wheat chaff was found despite examining all the flots so the wheat could be either bread wheat or rivet wheat because only the chaff is diagnostic. Both types of wheat are known to occur in the region in the medieval period (Moffett 1991). Other cereals were less numerous and included rye (Secale cereale), oat (Avena sp) and occasional grains of hulled barley (Hordeum vulgare). The oat was probably cultivated as some larger grains were found but no evidence was found to confirm this. The cereal grains were generally blistered and abraded as is often the case
with medieval remains. Other crop plants were represented by a few legume fragments of either beans or peas (*Vicia/Pisum*).

Weed seeds were present in most of the samples probably as weeds of the cultivated fields brought with the crops. The most common was large grass including brome grass (*Bromus hordeaceus* or *secalinus*) which was a common weed of cereals in the past. Stinking mayweed (*Anthemis cotula*) was also common and was particularly numerous in sample 15. This plant is considered to be an indicator of the cultivation of clay soils and became more numerous in the medieval period probably following the introduction of the mould board plough (Greig 1991). This plant was a troublesome weed of the medieval period and was known as 'doggefenell' (Jones 1988). Arable weeds present occasionally included a second type of mayweed, scentless mayweed (*Tripleurospermum inodorum*), and cleavers (*Galium aparine*) was found in one sample. The latter is typical of autumn sown cereals and free-threshing wheat and rye are usually autumn sown. Other weeds present include vetches (*Vicia/Lathyrus*) which also grow as an arable weed. Some of the plants found such as black medick (*Medicago lupulina*), ribwort plantain (*Plantago lanceolata*) and knapweed (*Centaurea nigra*) grow in grassy vegetation and could represent fodder, kindling or may have grown in parts of the cultivated fields. With the exception of a seed of buttercup (*Ranunculus acris/repens/bulbosus*) little evidence of damp or wet ground was found in the plant remains which is often the case at other sites at this time. A few uncharred seeds of such plants as elder (*Sambucus nigra*) and blackberry (*Rubus fruticosus agg*) may be archaeological, perhaps as the survival of more robust seeds or from reworked material. Both these plants occur frequently in archaeological deposits.

**Provisional conclusions**

The kilns were the most productive features and all contained cereal remains, however, free-threshing wheat does not require any heat processing to free it from the chaff, although parching was sometimes carried out to facilitate milling. The phase 3 kiln sample 15 contained quite numerous seeds including those of grassy vegetation which may represent material used as kindling. The phase 1 kiln sample 44 also contained some of this type of material. The phase 4 kiln sample 16 differed in consisting mainly of grains, probably representing domestic waste from food preparation possibly disposed of in the kiln mixed with the fuel. The presence of a legume fragment also suggests that this contained domestic waste. Abundant charcoal in the kilns provided evidence of the fuel used. It seems likely that the cereals are only present in the kilns incidentally as the kilns are interpreted as having industrial functions. Most of the rest of the samples represent a scatter of domestic waste included in the fills of the pits, ditches and gullies during disuse (although perhaps the primary layers of the possible tanning pits should have the residues examined for mineralised remains which may not have floated).

The plant remains found give evidence of the use of free-threshing wheat, rye, oats and barley; the weeds present suggest that the cereals were grown on heavy clay soils. Sample 16 contained cleaned grain while the other samples appear to consist of seeds cleaned from the cereal with a few grains included and burnt as domestic waste. The grain was possibly for use as pottage because flour would be ground at a mill at this time. Legume fragments of beans or peas and hazel nutshell showed that these were also consumed. Grassy material was also present in two of the samples which may have been used as kindling for the kilns.
**Further work possible**

It is suggested that, should the site be published, a species list and tabulation of the most productive samples is produced for inclusion in the report to add to the data about crops and arable weeds from medieval Hereford. This to take account of final phasing, and residues from five selected samples (12, 15, 16, 40 and 44) to be checked. Cost £300.

Identification of charcoal from the kilns would provide evidence of the wood exploited as fuel and may give evidence of the type of woodland management used to produce it. Charcoal from six contexts and flot of sample 44.

Specialist and fee to be arranged.

**Bibliography**


**Other remains from samples:**

Residue sample 12: Volume 0.85 litres, charcoal fragments over 7mm size only.

Residue sample 19: Volume 1.3 litres, bone fragments ++, a few charcoal fragments and a small fish vertebra.

Residue sample 38: Volume 0.35 litres, a few bone fragments only.

**Key to table 1E:**

Key: Gr = cereal grain, Cf = chaff, Se = seed, ch = charred, un = uncharred, Leg = legume, Nut = nutshell, Char = charcoal, Oth = other charred item, fl = flecks, fr = fragments, + = present, ++ = moderate amount, +++ = abundant. * = record remains, # = further work required.

Remains are charred seeds in the broad sense unless described otherwise.
<table>
<thead>
<tr>
<th>Samp No.</th>
<th>Cont No.</th>
<th>Feat type</th>
<th>Samp Vol. litres</th>
<th>Flot Vol. mls</th>
<th>Gr ch</th>
<th>Cf ch</th>
<th>Se ch</th>
<th>Se un</th>
<th>Leg ch</th>
<th>Nut ch</th>
<th>Char</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
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<td>3</td>
<td>3004</td>
<td>Ditch Ph.4</td>
<td>20</td>
<td>5</td>
<td>10</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>fl</td>
</tr>
<tr>
<td>8</td>
<td>5002</td>
<td>Kiln Ph.4</td>
<td>15</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>fl</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1006</td>
<td>Kiln Ph.4</td>
<td>30</td>
<td>6</td>
<td>6</td>
<td>-</td>
<td>5</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>+</td>
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</tr>
<tr>
<td>11</td>
<td>5017</td>
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<td>15</td>
<td>3</td>
<td>9</td>
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<td>4</td>
<td>-</td>
<td>-</td>
<td>fl</td>
<td></td>
</tr>
<tr>
<td>12*</td>
<td>1008</td>
<td>Kiln Ph.4</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>-</td>
<td>17</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>+</td>
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</tr>
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<td>5033</td>
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<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
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<td>Kiln Ph.3</td>
<td>7</td>
<td>10</td>
<td>c25</td>
<td>1</td>
<td>c100</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>16#</td>
<td>1009</td>
<td>Kiln Ph.4</td>
<td>15</td>
<td>15</td>
<td>100+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>+</td>
<td>Mainly wheat, few rye grains and oat, a legume frag, v few seeds.</td>
</tr>
<tr>
<td>19</td>
<td>5015</td>
<td>Pit Ph.2</td>
<td>15</td>
<td>2</td>
<td>6</td>
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<td>3</td>
<td>-</td>
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<td>fl</td>
</tr>
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<td>Pit Ph.3</td>
<td>15</td>
<td>4</td>
<td>5</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>fl</td>
</tr>
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<td>5068</td>
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<td>15</td>
<td>3</td>
<td>12</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
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<td>fl</td>
<td></td>
</tr>
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<td>5</td>
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<td>-</td>
<td>fl</td>
<td></td>
</tr>
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<td>5083</td>
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<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Nothing.</td>
</tr>
<tr>
<td>39</td>
<td>5085</td>
<td>Gully Ph.1</td>
<td>15</td>
<td>3</td>
<td>9</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>Wheat, lg grass.</td>
</tr>
<tr>
<td>40*</td>
<td>5090</td>
<td>Pit Ph.2</td>
<td>15</td>
<td>7</td>
<td>c20</td>
<td>-</td>
<td>c20</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>Wheat, barley, cereal grains, brome grass, lg grass, stinking mayweed, vetch type, daisy family indet, uncharred elder.</td>
</tr>
<tr>
<td>43</td>
<td>09</td>
<td>Gully Ph.1</td>
<td>15</td>
<td>2</td>
<td>4</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>fl</td>
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</tr>
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<td>15</td>
<td>15</td>
<td>9</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td></td>
</tr>
<tr>
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<td>5101</td>
<td>Kiln Ph.1</td>
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<td>240</td>
<td>c35</td>
<td>-</td>
<td>c45</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>+++</td>
<td>190 mls of large charcoal. Wheat, rye, oats, a legume, brome and lg grass, a seed of cleavers and a ribwort plantain, vetch type, charred elder and a few others.</td>
</tr>
</tbody>
</table>
Introduction

Excavations were carried out by Archaeological Investigations Ltd. Hereford directed by Darren Vyce and samples were taken for the recovery of charred plant remains which can give evidence of activities on the site in the past. The features sampled included tanning pits, a rubbish pit, ditches, gullies and kilns or furnaces. The features were mainly of medieval date from the late 12th to late 13th centuries AD. Selected samples were analysed following assessment.

Methods

Features were sampled at the discretion of the archaeologists if they were datable and had the potential to contain charred plant remains. A total of 18 samples from medieval contexts were processed amounting to 285 litres of soil, usual sample size was 15 litres.

The samples were wet sieved in a York tank using a 1mm mesh with flotation into a 0.5mm mesh sieve. The residues were air dried and reserved for analysis if required. The flotation fractions (flots) were air dried and were all assessed by examination with a x10 stereo microscope, seven samples contained more numerous remains and were selected for further work. The plant remains were sorted from the selected flots using a stereo microscope and were identified by comparison with modern reference material in the University of Leicester Department of Archaeology. The residues of the selected samples were also sorted in the same way and the remains included here. An average of 80% of the remains was recovered by flotation but the only diagnostic chaff was found in one of the residues. The plant remains were counted and tabulated (table 1), names follow Stace (1991) and are seeds in the broad sense unless described otherwise. Samples not included in table 1 are referred to in the text as scanned samples.

Results

The plant remains

The most numerous cereal found was free-threshing wheat (*Triticum* sp. free-threshing) represented by charred grains which could be either bread wheat or rivet wheat because the grains are difficult to distinguish, chaff is more diagnostic. A few fragments of wheat chaff (rachis) were found in one of the residues (context 5101), some of which could be identified as bread wheat (*Triticum aestivum* s.l.) showing the presence of this type of wheat on the site. However, rivet wheat is also known to occur in the region in the medieval period (Moffett 1991) and its presence here cannot be excluded. Other cereals were less numerous and included rye (*Secale cereale*), oat (*Avena* sp) and occasional grains of hulled barley (*Hordeum vulgare*). The oat was probably cultivated as some larger grains were found but no evidence was found to confirm this. The cereal grains were generally blistered and abraded as is often the case with medieval remains. Other crop plants were represented by a few legume fragments of either beans or peas (*Vicia/Pisum*). Fragments of hazel nutshell showed that these nuts were gathered for consumption.
Weed seeds were present in most of the samples probably as weeds of the cultivated fields brought with the crops. The most common was large grass including brome grass (*Bromus hordeaceus* or *secalinus*) which was a common weed of cereals in the past. Stinking mayweed (*Anthemis cotula*) was also common and was particularly numerous in the sample from kiln context 5024. This plant is considered to be an indicator of the cultivation of clay soils and became more numerous in the medieval period probably following the introduction of the mould-board plough (Greig 1991). This plant was a troublesome weed of the medieval period and was known as 'doggefenell' (Jones 1988). Arable weeds present occasionally included a second type of mayweed, scentless mayweed (*Tripleurospermum inodorum*), and cleavers (*Galium aparine*) was found in one sample. The latter is typical of autumn sown cereals and free-threshing wheat and rye are usually autumn sown. Other arable weeds include corn marigold (*Chrysanthemum segetum*), field gromwell (*Lithospermum arvense*), and vetches (*Vicia/Lathyrus*). The latter includes plants which grow in grassy vegetation but some were also troublesome arable weeds.

Other plants such as black medick (*Medicago lupulina*), ribwort plantain (*Plantago lanceolata*) and knapweed (*Centaurea nigra*) grow in grassy vegetation and could represent fodder, kindling or may have grown in parts of the cultivated fields. With the exception of a seed of buttercup (*Ranunculus acris/repens/bulbosus*) in a scanned sample from ditch context 5068, little evidence of damp or wet ground was found in the plant remains. A few uncharred seeds of such plants as elder (*Sambucus nigra*) and blackberry (*Rubus fruticosus* agg) may be archaeological, perhaps as the survival of more robust seeds or from reworked material from pits. Seeds of both these plants occur frequently in archaeological deposits.

The features sampled

The kilns were the most productive features and all contained cereal remains, however, free-threshing wheat does not require any heat processing to free it from the chaff, although parching was sometimes carried out to facilitate milling. However, it seems likely that the cereals are only present in the kilns incidentally as the kilns are interpreted as having industrial functions. The phase 3 kiln sample from context 5024 contained quite numerous seeds including those of grassy vegetation which may represent material used as kindling. The phase 1 kiln sample from context 5101 also contained some of this type of material. These two kiln samples together with that from kiln context 1008 contained more seeds than grain suggesting that they may also contain seeds cleaned from the grain, together with accidentally included grains, burnt as waste. Similar material was also found in the rubbish pit context 5091. This type of material can also originate from thatch which contains a wide range of cereals and arable weeds (de Moulins 1999). This could possibly originate from seeds falling from thatch and burnt with domestic rubbish or from the use of thatch waste as kindling, however, there is little evidence for straw (culm nodes) in the samples.

The phase 4 kiln sample from context 1009 differed in consisting mainly of grains, probably representing waste from food preparation, possibly disposed of in the kiln mixed with the fuel. The presence of a legume fragments and nutshell, in this and other samples, also suggests that domestic waste is present. On balance it is thought that the samples from the kilns contain domestic waste mixed with the fuel as abundant charcoal was present in the kiln samples as evidence of the fuel used. Most of the rest of the samples represent a scatter of domestic waste included in the fills of the pits, ditches and gullies during disuse. A low concentration of similar
waste was also found in the samples from the tanning pits which unfortunately did not preserve evidence of materials used for this process.

**Discussion**

The plant remains found give evidence of the use of free-threshing wheat including bread wheat, rye, oats and barley. It seems likely that the cereals became mixed during their use or disposal because wheat and rye are usually autumn sown while oats and barley could have been spring sown. The remains are too mixed to suggest if any of the cereals were grown together as maslin crops although these are recorded from documentary evidence (Greig 1988). Bread wheat was the only type of wheat identified on this site as was the case at Godsell's Garage, Hereford (Monckton 1997a), however, bread wheat together with rivet wheat (*Triticum turgidum*) has been found in a medieval context at Hereford site HE 97B (Monckton 1997b). Rivet wheat has been found at an increasing number of medieval sites in the midlands and southern England (Moffett 1991) such as Worcester, Deansway from the late medieval period (Moffett 1991). Rivet wheat is thought to have been introduced after the Norman conquest and the dating of the spread of this cereal to this area would be of interest. The lack of evidence for this cereal here may be part of this pattern which may only emerge with the study of more dated sites. Future analysis of cereals from different sites may add to our knowledge of the use of these cereals and allow comparison with the hinterland to investigate the supply of cereals to the town. Evidence from the weeds found here suggested that some of the cereals were grown on heavy clay soils, although there is little evidence for very wet conditions which suggested that the fields could have had reasonable drainage. Some of the cereals were probably autumn sown, and such plants as stinking mayweed and vetches may have been troublesome weeds of the cultivated fields.

**Conclusions**

The plant remains found give evidence of the use of free-threshing wheat including bread wheat, rye, oats and barley; the weeds present suggest that some of the cereals were grown on heavy clay soils. A sample from one of the kilns (context 1009) contained a mixture of cereal grains with few seeds possibly as waste from food preparation, while the other samples from the kilns and a rubbish pit appear to consist of seeds cleaned from the cereals together with a few grains accidentally included and burnt as domestic waste. Legume fragments of beans or peas and hazel nutshell showed that these were also consumed. The presence of the cereals in the kilns was thought to be from the incidental inclusion of domestic waste with the fuel. Evidence for grassy material was also present in two of the samples which may have been used as kindling for the kilns.
Acknowledgements

I am grateful to Darren Vyce for taking the samples, providing very helpful information about the site, and for the opportunity to work on the project. The work was carried out at The University of Leicester Archaeological Services, Leicester, LE1 7RH. ULAS Report Number 2001/60.

Bibliography


Table 1. Charred Plant Macrofossils from medieval contexts at Hereford Magistrates Court (HMG-00).

<table>
<thead>
<tr>
<th>Phase</th>
<th>Century</th>
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</tr>
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<td>12th</td>
<td>Kiln</td>
<td>21</td>
<td>5101</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>13-14</td>
<td>R.Pit</td>
<td>16</td>
<td>5091</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>13-14</td>
<td>T.Pit</td>
<td>18</td>
<td>5015</td>
<td>19</td>
</tr>
<tr>
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<td>14-15</td>
<td>Kiln</td>
<td>7</td>
<td>5024</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>T.Pit</td>
<td>16</td>
<td>5070</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Kiln</td>
<td>18</td>
<td>1009</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Kiln</td>
<td>19</td>
<td>1008</td>
<td>12</td>
</tr>
</tbody>
</table>

**GRAINS**
- *Triticum* free-threshing: 4 4 4 6 3 19 - Free-threshing wheat
- *Triticum* sp.: 5 1 - 6 - 16 2 Wheat
- *Triticum* sp. germinated: - - - - - 2 - Wheat
- *Triticum* sp. tail grains: 1 - - 8 - 5 - Wheat
- *Secale cereale* L.: 7 - - 3 - 10 - Rye
- *Hordeum vulgare* L. hulled: - - 1 - - 11 - Barley
- *Hordeum vulgare* L.: - 1 - - 3 9 - Barley
- *Avena* sp: 2 - - 3 - 5 - Oat
- *Avena* sp germinated: 1 - - - - - Oat
- Cereal indet.: 5 9 1 18 3 60 7 Cereal
- Cereal/Poaceae: 10 2 - 4 - 16 1 Cereal/Grass
- Cereal embryos: - - 1 - - - Cereal

**CHAFF**
- *Triticum aestivum* s l rachis: 1 - - - - - Bread wheat
- *Triticum cf aestivum* rachis: 2 - - - - - cf Bread wheat
- Cereal rachis: 1 - - 1 1 - - Cereal
- Culm node large: 1 - - - 2 - - Cereal stem

**LEGUMES**
- *Vicia/Lathyrus/Pisum*: 1 - - 1 - 4 - Vetch/Vetchling/Peas
- *Vicia/Pisum*: - - - - 1 2 Bean/Pea

**FRUIT AND NUTS**
- *Rubus fruticosus* agg: 1un - - - - - Blackberry
- *Prunus* sp. fragment: 4 - - - - 2 - Sloe/bullace fragment
- *Corylus avellana* L.: 4 1 - - - 4 - Hazel nutshell

**WILD PLANTS**
- *Chenopodium sp.*: - 1 - 2 - - Goosefoot
- *Stellaria/Cerastium*: - - - - 1 - Chickweed/Mouse-ears
- *Polygonum aviculare* agg: 1 - - - - - Knotgrass
- *Rumex* sp: 1 - - 2 - 1 - Dock
- *Vicia sp*: 7 - - 24 - 7 8 Vetch
- *Vicia/Lathyrus*: 1 1 - 4 1 - - Vetch/Vetchling
- *Medicago cf lupulina* L.: - - 1 - - - Black Medick
- *Medicago/Mellilotus/Trifolium*: 1 1 - 7 - - Clover type
- *Apiaceae indet.*: - - - 1 - - Carrot family
- *Lithospermum arvense* L.: - - - - 2 - Field gromwell
- *Lamiaceae indet.*: - 1un - - - - Dead-nettle family
- *Plantago lanceolata* L.: 1 - - - - - Ribwort plantain
- *Galium aparine* L.: 1 - - - - - Cleavers
- *Sambucus nigra* L.: 4 2un - - 2un - - Elder
- *Centaurea cf nigra* L.: - - - 1 - - - Knapweed
- *Anthemis cotula* L.: - 2 1 48 2 3 - Stinking mayweed
- *Chrysanthemum segetum* L.: - 1 - 8 - 1 - Corn marigold
- *Tripleurospermum inodorum* (L) Schultz-Bip.: - - - - 1 Scentless mayweed
- *Asteraeae indet.*: - - - 8 - - - Daisy family
- *Bromus hordeaceus/secalinus*: 6 5 - 5 - 4 - Brome grass
- *Poaceae large*: 24 11 - 33 - 26 19 Grasses
- *Poaceae medium*: 3 - 1 - - 3 - Grasses
- *Poaceae small*: 3 - - 3 - 1 Grasses
<table>
<thead>
<tr>
<th>Item</th>
<th>Present</th>
<th>Abundant</th>
<th>Rubbish Pit</th>
<th>Tanning Pit</th>
<th>Kiln or Furnace</th>
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<tr>
<td>Indetermined seeds</td>
<td>1</td>
<td>-</td>
<td>4</td>
<td>1</td>
<td>3</td>
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<tr>
<td>Stem fragments</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>Bark fragments</td>
<td>2</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Culm node small</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fungal remains?</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
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<td><strong>TOTAL</strong></td>
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<td>40</td>
<td>13</td>
<td>204</td>
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<td>15</td>
<td>15</td>
<td>15</td>
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<td>5</td>
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<td>7</td>
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<tr>
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<tr>
<td><strong>Items/litre</strong></td>
<td>6.9</td>
<td>2.7</td>
<td>0.9</td>
<td>13.6</td>
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</tr>
</tbody>
</table>

**Key.**  + = present,  ++ = abundant,  R.Pit = rubbish pit,  T.Pit = tanning pit,  K = kiln or furnace.  
Remains are seeds in the broad sense unless described otherwise.
Hereford: Charred plant remains from Late Saxon and medieval contexts at Castle House, Hereford (HRH.99).


Introduction

The project consisted of three watching briefs carried out by Archaeological Investigations Ltd. Hereford directed by Benedikte Ward. During excavations samples were taken for the recovery of charred plant remains which can give evidence of diet, agriculture or activities on sites in the past. The features sampled included pits and layers from the Late Saxon to 13th century AD in date.

Methods

Features were sampled at the discretion of the archaeologists if they were datable and had the potential to contain charred plant remains. Five samples of c.3-10 litres in size were taken.

The samples were wet sieved in a York tank using a 0.5mm mesh with flotation into a 0.5mm mesh sieve. The flotation fractions (flots) were air dried and then sorted using a stereo microscope, plant remains were identified by comparison with modern reference material in the University of Leicester Department of Archaeology. The plant remains were counted and tabulated (table 1), names follow Stace (1991) and are seeds in the broad sense unless described otherwise.

Results

Phase 1, Late Saxon period (10th - 11th century AD)

A sample from the burnt layer (2714) which overlay a late Saxon building was the most productive from the site (table 1). It contained abundant barley grains of hulled barley which were mainly straight grains, probably of two-rowed barley, with a few asymmetrical grains suggesting that six-row barley was also present. About a quarter of the identifiable barley grains had evidence of germination having the impression of the cereal sprout as a furrow on the grain. Other grains were poorly preserved and pitted while grains, identified only as indeterminate cereal grains, were heavily pitted and broken. This suggests intense burning. Chaff and cereal sprouts were not found in the deposit and, as grains survive burning better than chaff, it is possible that other remains were burnt away (Boardman and Jones 1990). The sample also contained some oats, a few of which were germinated, barley and oats are often considered to be spring sown and are known to have been grown together as a mixed crop or maslin (Greig 1988). However, wild oats occur as an arable weed and no diagnostic oat remains were found to identify the oats here. The deposit also contained weed seeds (table 1) of which buttercups and spike-rush suggest the cultivation of damp ground, while stinking mayweed is typical of the cultivation of heavy clay soils. This plant became more common in the medieval period possibly as a result of the introduction of the mould-board plough (Greig 1991). Corn-cockle, a weed more typical of autumn sown crops, was present.

The second sample from a pit of this phase (2708) contained only a few charred cereal grains of wheat, oat and barley with a few weed seeds of arable weeds including stinking mayweed and
bromegrass (table 1). This probably represents domestic waste. No mineralised remains were found to suggest other uses of the pit, although the pit was described as being lined with a lime deposit which sometimes causes mineralised preservation to occur.

**Phase 2, Medieval Pit, 11th-12th century**

The sample (3116) contained a few cereal grains including wheat and barley but also included a fragment of chaff which was of free-threshing wheat, probably bread wheat. A few weed seeds were present with the grains (table 1). Some mineralised stem fragments were also found, mineralisation often occurs in cesspits but no other evidence for this interpretation was found. The charred remains probably also represent food preparation waste.

**Phase 3, Medieval 12th-13th century.**

A sample from a pit (208) contained a few cereal grains of free-threshing wheat with a few weed seeds as found above (table 1). A few uncharred seeds included elder and hemlock which appeared to be mineralised. Both these plants grow on organically rich soils such as occur near pits and, although the former is edible and the latter a poison with medicinal uses, both are likely to have arrived in the pit from nearby vegetation. Seeds of duckweed were also found suggesting that there was either standing water in the pit or that water brought from elsewhere contained these seeds. Duckweed only sets seed in standing water and if washing water was brought for use on the site the pit may have been used for disposal after use. A second sample from layer (109) contained cereal grains including rye, free-threshing wheat and oats with a few weed seeds and a fragment of straw probably also as domestic waste.

**Discussion and conclusions**

The burnt layer (2714) in phase 1 was 3-5cm thick and the sample was taken from an area of one square metre from the extensive deposit. The layer was found to lie over a building of Saxon date which was partly exposed in the excavation trench. The burnt layer was interpreted by the archaeologists as the remains of the burnt building. Such a layer could therefore contain remains of roofing, building contents and material on the building floor. The remains were compared with studies of plant material found in preserved thatch from standing buildings of medieval date (Letts 1999). Thatch is characterised as containing cereal straw and chaff with a surprising number of grains in whole ears of cereals. Rye and wheat were the most common cereals used but other cereals and reeds were also used, an example dominated by barley straw was recorded; arable weeds were also common in thatch, often as whole seed-heads, and pods of pulses were often well represented (de Moulins and Letts forthcoming). The remains here consisted of barley and oat grains with weed seeds. The grain was intensely burnt, and the lack of straw and chaff remains may have been because they were completely burnt away. The weeds present included corn-cockle and stinking mayweed, both common in thatch, and the latter included part of a seed head with seven seeds fused together. Although many of the common constituents of thatch are lacking the deposit may represent the remains of burnt thatch. Some germination of grains may have occurred in the thatch which may have been halted by drying out of the roof in dry weather.

Other possibilities are that the grain was the remains of cereals stored or used in the building, possibly malted grain or spoiled grain possibly from the bottom of a store, however there is insufficient evidence for either. However, some of the cereal and other plant remains on
medieval sites are now thought to have fallen from thatch (de Moulins and Letts forthcoming), and then became incorporated into deposits after burning either for disposal or accidentally. During an intense house fire much roofing material would probably be blown away by the draught, so only the denser remains trapped under the collapsed structures would be likely to be charred rather than burnt away. Although it is difficult to draw conclusions from a single sample it is likely that the remains include thatch which also show the cereals cultivated and the weeds of crops.

Phase 1 cereals included barley and oats in the burnt layer with the addition of wheat from pit context (2708). Barley was used not only as animal food but also for human consumption and brewing. It could be ground for flour, either alone or mixed with other cereals (Greig 1988), and it was also used to make pottage. For this the papery hulls would be removed from the grain by parching and milling, so barley may be accidentally burnt during these processes. The weeds present incuded abundant seeds of stinking mayweed which indicates the cultivation of clay soils, which together with a range of other arable weeds was brought in with the crops. This pit contained a scatter of waste probably from domestic activity.

In Phase 2 the only evidence was for a scatter of domestic rubbish which included free-threshing wheat including a chaff segment, probably of bread wheat. Bread wheat was the only type of wheat identified on this site as was the case at Hereford Magistrates Court (Monckton 2001) and Godsell's Garage, Hereford (Monckton 1997a). This is in contrast to Hereford site HE.97B (Monckton 1997b) where bread wheat together with another free-threshing wheat, called rivet wheat, was found in a medieval context, as at some sites in the midlands and southern England (Moffett 1991).

Phase 3 evidence is for free-threshing wheat and oat grains with a few arable weed seeds and some seeds possibly from vegetation surrounding the pits including hemlock and elder. Duckweed seeds in the pit suggested that the pit may have contained standing water or have been used for the disposal of washing water. Rye was found as an additional cereal in a layer from this phase.

Acknowledgements

I am grateful to Benedikte Ward for providing information about the site, and for the opportunity to work on the project. The work was carried out at The University of Leicester Archaeological Services, Leicester, LE1 7RH. ULAS Report Number 2001/006.

Bibliography


Table 1. Charred Plant Macrofossils from Castle House, Hereford.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Century</th>
<th>Feature type</th>
<th>Layer</th>
<th>Pit</th>
<th>Layer</th>
<th>Pit</th>
<th>Context</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>10-11</td>
<td></td>
<td>11-12</td>
<td></td>
<td>12-13</td>
</tr>
</tbody>
</table>

GRAINS

*Triticum* free-threshing
- - - - 1 2 Free-threshing wheat

*Triticum* sp.
- 1 1 - 1 Wheat

*Secale cereale* L.
- - - 2 - Rye

*Hordeum vulgare* L. hulled
54 1 - - - Barley

*Hordeum vulgare* L. germinated
24 - - - - Barley

*Hordeum vulgare* L.
18 - 1 - - Barley

*Avena* sp.
22 1 - 2 1 Oat

*Avena* sp germinated
3 - - - - Oat

Cereal indet.
28 1 4 1 2 Cereal

Cereal/Poaceae
33 3 2 - 2 Cereal/Grass

Cereal embryos
- - - - 2 Cereal

CHAFF

*Triticum cf aestivum* rachis
- - 1 - - cf Bread wheat

Cereal rachis
- - - - 1 Cereal

Culm node large
- - - 1 - Cereal straw

OTHER PLANTS

*Ranunculus* subgen. *Ranunculus*
2 - - - - Buttercups

*Chenopodium album* L.
2 - - - - Fat-hen

*Cerastium* sp.
1 - - - - Mouse-ears

*Agrostemma githago* L.
2 - - - - Corn-cockle

*Rumex cf acetosella.*
2 - - - - Sheep's sorrel

*Vicia* sp.
1 - 1 - - Vetch

*Vicia/Lathyrus*
2 - - - - Vetch/Vetchling

*Medicago/Melilotus/Trifolium*
5 - - - 1 Medick/Melilot/Clover

*Conium maculatum* L.
- - - - 1m Hemlock

*Sambucus nigra* L.
- - - 4u 5u Elder

*Anthemis cotula* L.
43 1 - - 1 Stinking mayweed

*Asteraceae* indet.
2 - - - 1 Daisy family

*Lemma* sp.
- - - - 12u Duckweed

*Eleocharis* sp.
9 - - - - Spike-rush

*Bromus hordeaceus/secalinus*
- 1 - - - Brome grass

*Poaceae* large
2 2 1 4 5 Grasses

*Poaceae* medium
1 - 1m - - Grasses

Indetermined seeds
3 1 - - - Seeds

Mineralised stems and buds
- - ++ - - Mineralised plant material

TOTAL 259 12 12 15 37 (Items)
Vol flot 35 7 20 45 5 (mls)

Key: + = present, ++ = abundant, m = mineralised, u = uncharred.
Remains are seeds in the broad sense unless described otherwise.

NB. Phase 1 from site HRH.99, Phase 2 from site RCH.99 and Phase 3 from site CPO.98.
Assessment of charred plant remains from St. Martin's Street, Hereford (HSM 01).


Introduction

Excavations were carried out in advance of development by Archaeological Investigations Ltd. Hereford directed by Kath Crooks and samples were taken for the recovery of charred plant remains which can give evidence of crops, diet and activities in the past. The features sampled were of 12th-14th century date.

Methods

Features were sampled at the discretion of the excavators. Three samples of about 20 litres in size were processed and submitted for this assessment.

Processing: Samples were wet sieved in a York tank using a 0.5mm mesh with flotation into a 0.5mm mesh sieve. The residues were air dried and packed after removal of large stones and finds. The flotation fraction (flot) was air dried and packed carefully in self-seal polythene bags. Residues and flots were included in this assessment.

Assessment: The flots were examined with a x10 stereo microscope and examples of the plant remains were removed to glass specimen tubes stored with the flots. The plant remains were rapidly identified so the identifications should be regarded as provisional. The remains were noted with their quantity and tabulated below (Table E1). Residues were also examined by scanning 25% at x10 magnification to determine if the plant remains had been recovered by flotation.

Results of the assessment

Charred plant remains were recovered from two of the samples, a third sample contained only charcoal with abundant slag. No waterlogged remains were found.

Sample 3, Ditch fill (136), date 12th century: the most numerous remains in this sample were rye grains with occasional wheat grains present. Weed seeds included stinking mayweed (Anthemis cotula), goosefoot (Chenopodium sp.), small grass (Poaceae) and knotgrass (Polygonum aviculare). The residue contained some charcoal fragments, a few cereal grains and a vetch seed (Vicia sp.). This sample was dominated by cereal grains. In addition a fish vertebra and a few bone fragments were found in the residue.

Sample 2, Hard mottled silt clay (238), date 12-13th century: abundant charcoal and slag fragments were found in the sample. No plant remains were found in either the flot or the residue.

Sample 1, Black ash (335), date 14th century: charred plant remains included grains of wheat, mostly identified as free-threshing wheat as the most numerous type of remains in the sample. Only one chaff fragment was found which was wheat rachis of free threshing type (Triticum sp. free-threshing) but it could not be identified further because it was broken short. This could have been either bread wheat or rivet wheat as both have been found in the area at this date. Grains of oat (Avena sp.) and rye (Secale cereale) were
also present in small numbers. Weed seeds included stinking mayweed (*Anthemis cotula*) which is usually associated with the cultivation of heavy clay soils, vetch (*Vicia/Lathyrus*), goosefoot (*Chenopodium* sp.), large and small grasses (*Poaceae*) and a possible knapweed seed (*Centaurea* sp.). A few uncharred seeds of elder (*Sambucus nigra*) were also present, these are robust seeds found in many archaeological deposits. The residue contained charcoal fragments and a few cereal grains, confirming that the sample was dominated by cereal grains as no more chaff fragments or seeds were seen. A fish scale and a small mammal bone were found in addition in the residue.

Conclusions

The plant remains add to the evidence from the area for the cereals utilised, and the weeds give some evidence of the cultivation of heavy soils. The samples from (136) and (335) are both grain dominated and probably consist of waste from food preparation, burnt in the domestic hearth and dumped with hearth cleanings in features on the site. The earlier sample was mainly rye, the later sample mainly wheat. However, this cannot be taken to show any change over time as all the cereals were cultivated throughout the medieval period and more samples would be necessary to show changes in consumption or other activities on sites. Domestic activity is suggested here.

Recommendations

Should the site be published it is suggested that a short summary of the plant remains is included and a table of results could be prepared if necessary. Little further work is possible on these samples but consideration should be given to combining these results with those from other sites in the town. If more work is carried out on this site or nearby, the area has the potential to produce evidence from plant remains. It is suggested that more extensive sampling to investigate changes in crops and diet over time, and to compare evidence of activity from different features or areas of sites is carried out in future excavations.

Table E1: Assessment of flots for charred plant remains, HSM-01.

<table>
<thead>
<tr>
<th>Samp No.</th>
<th>Cont No.</th>
<th>Feature</th>
<th>Samp Vol. litres</th>
<th>Flot Vol. mls</th>
<th>Gr ch</th>
<th>Cf ch</th>
<th>Se ch</th>
<th>Se ch</th>
<th>Leg ch</th>
<th>Char ch</th>
<th>Comments</th>
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<tr>
<td>1</td>
<td>335</td>
<td>Layer</td>
<td>12</td>
<td>99</td>
<td>1</td>
<td>17</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>++</td>
<td>62 wheat grains., 9 oat, 3 rye, rest cereal indet. Rachis of free threshing wheat. 6 stinking mayweed seeds.</td>
</tr>
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<tr>
<td>2</td>
<td>238</td>
<td>Silt</td>
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<td>-</td>
<td>-</td>
<td>+++</td>
<td>Charcoal and slag.</td>
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<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>22 rye grains, 2 wheat, 7 cereal indet. 5 stinking mayweed.</td>
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<td>-</td>
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<td>-</td>
<td>+</td>
<td>25% residue</td>
</tr>
</tbody>
</table>

Key: Gr = cereal grain, Cf = chaff, Se = seed, ch = charred, un = uncharred, Leg = legume, Nut = nutshell, Char = charcoal, Oth = other charred item, fl = flecks, fr = fragments, + = present, ++ = moderate amount, +++ = abundant. # = further work required.
Charred plant remains from Iron Age to Romano-British sites in the Frome Valley, Herefordshire, (LTE.04 and BHA.04).

Angela Monckton  March 4th 2005.

Introduction

Two sites were excavated in the Frome Valley in 2004 by Herefordshire County Council directed by Cori Renfrew. The Lower Town Enclosure was an Iron Age to Romano-British enclosure seen as a crop mark where three trenches were excavated across the enclosure ditch, and at Brook House Farm near Bromyard a scatter of Romano-British pottery was investigated by digging one metre square test pits. During the excavations samples were taken for the recovery of charred plant remains in order to investigate any evidence for crops, economy or activities on the sites in the past.

Methods

Samples were taken from deposits thought to contain plant or animal remains. The samples were of 5 litres in size and were processed by wet sieving in a 0.5mm mesh with flotation into a 0.25mm mesh sieve. The flotation fractions (flots) and residues were air dried and packed carefully, the residues were dried and separated on a 6mm riddle and the fraction over 6mm was sorted for all finds which are included in the relevant sections of the report. The fraction below 6mm was reserved for analysis. The fill of a Romano-British pot was treated in the same way as an additional sample. This work was carried out by Benedikte Ward at Hereford.

Eight samples from the Lower Town Enclosure and three from Brook House Farm were submitted for this assessment and analysis. All the flots and residues below 6mm were scanned at x10 magnification and those with sufficient remains for interpretation (over 50 items) were selected for analysis. The plant remains were sorted into glass specimen tubes and identified by comparison with modern reference material and counted; then the best samples from each site were recorded (table 1). The plant names follow Stace (1991) and are seeds in the broad sense unless stated. To compare the samples with those from other sites the total numbers of cereal grains, weed seeds and chaff (i.e. the glumes plus twice the spikelet forks which consist of two glumes), were calculated (table 1). The ratios of glumes to wheat grains, and weed seeds to total grains, were then calculated because this can give evidence of crop processing activities (van der Veen 1992).

Results: the plant remains

Cereals: Wheat chaff fragments (glumes) were quite abundant in one deposit. Most of the glumes were too broken to distinguish their features and so were identified as glume wheat, either emmer or spelt (Triticum dicoccum/spelta). Some were identified as spelt (Triticum spelta) from their prominent minor veins, one prominent wide angled keel and wide bases; occasional glumes were identified as emmer (Triticum dicoccum) because of their lack of prominent minor veins, the acute angles of the two keels and their small size. Small rachis segments were also identified only as glume wheat. The identifiable cereal grains were mainly of wheat, possibly spelt. Occasional abraded barley grains (Hordeum vulgare) were found, oat was present as awns or cereal barbs (Avena sp) which have a characteristic twisted shape, this was possibly wild oat which is an arable weed. The crops found here are the same as those from other Iron Age and Romano-British sites in the midlands (Greig 1991).

Other food: Evidence of plants collected and used as food was from hazel (Corylus avellana) nutshell fragments gathered from woodland margins or hedgerows. A charred fruitstone of sloe (Prunus spinosa) was evidence of fruit consumed and could grow in similar places.
**Wild plants:** Abundant weed seeds were found in one deposit with fewer in the other samples. These were mainly weeds of arable or disturbed ground probably present as weeds of the cereal crops which included scentless mayweed (*Tripleurospermum inodorum*) probably suggesting the cultivation of better drained soils, while corn cockle (*Agrostemma githago*) indicates that autumn sowing of the wheat was likely. A group of weeds typical of disturbed ground such as is found in settlements, garden type cultivation or of spring sown crops was also present. These included charred goosefoots (*Chenopodium* sp) and docks (*Rumex* sp). The most numerous seeds were of vetches or vetchling (*Vicia* or *Lathyrus*) which became more common as an arable weed from the Late Iron Age onwards (Jones 1988) although these plants also grow on grassland. Other grassland plants include eyebright or bartsia (*Euphrasia* or *Odontites*) and some grasses (*Poaceae*). These may represent grass used as kindling or perhaps waste fodder, but may have been weeds cleaned from the cereals as most of these grassy plants can also grow as arable weeds. The seeds of grasses including brome grass (*Bromus* sp) were also found which was also an arable weed. Plants of damp or wet ground were lacking.

**Results by context**

**Lower Town Enclosure (LTE.04)**

*Trench 1:* Three layers of the ditch profile were sampled as a column, the upper layer 107 contained Romano-British pot, the middle layer 108 was seen to contain snails, and the base 109 contained abundant bone. The deposits contained very little charred material producing only flecks of charcoal; the only plant remains other than charcoal was a fragment of hazel nutshell from the lower layer 109. This may have been from domestic waste included with the animal bones but could occur in many types of deposit. Surprisingly, snails were sparsely represented in 108, only fragments of shell of the banded snail (*Cepaea* sp.) were found; this is common in damp deposits in ditches. A deposit in the ditch was interpreted as dumped material because it contained pot, bone, slag and burnt clay and samples were taken of a burnt patch of charcoal and bone. Pottery from the deposit was thought to be of Iron Age date. Of the two similar samples from 203 which contained charred plant remains sample 2 was the richer (table 1). This sample was dominated by wheat chaff with numerous seeds, mainly of vetches, with a few cereal grains of wheat. This represents cereal cleaning waste and is discussed below. The deposit also contained tiny fragments of wheat awns (barbs) burnt and preserved as silica skeletons. This type of light chaff is often found in the flues of kilns or ovens where cereal waste is used as fuel or kindling and is more often seen in Roman date deposits. The deposit contained a density of remains at 87 items per litre of soil which is relatively high for the Iron Age.

*Trench 2:* The two samples from this ditch section were the most productive from these sites. A deposit in the ditch was interpreted as dumped material because it contained pot, bone, slag and burnt clay and samples were taken of a burnt patch of charcoal and bone. Pottery from the deposit was thought to be of Iron Age date. Of the two similar samples from 203 which contained charred plant remains sample 2 was the richer (table 1). This sample was dominated by wheat chaff with numerous seeds, mainly of vetches, with a few cereal grains of wheat. This represents cereal cleaning waste and is discussed below. The deposit also contained tiny fragments of wheat awns (barbs) burnt and preserved as silica skeletons. This type of light chaff is often found in the flues of kilns or ovens where cereal waste is used as fuel or kindling and is more often seen in Roman date deposits. The deposit contained a density of remains at 87 items per litre of soil which is relatively high for the Iron Age.

*Trench 3:* Two samples were taken from a shallow pit recut into the ditch profile. The samples from 304 and 305 contained quite abundant charcoal fragments although other plant remains were a single seed of vetch and a single fragment of cereal grain or large grass. This small amount of material can only suggest that this is part of a thin scatter of domestic or other waste from occupation. A few bone fragments were present together with a burnt bone of a rodent and a few rodent teeth found in the residues.

**Brook House Farm (BHF.04)**

Three samples of Roman date were examined, charred plant remains were found in small numbers (table 1).

*Trench 10:* A sample from ditch deposit 1002 contained abundant charcoal with a small number of plant remains including a few cereal grains and hazel nutshell fragments. Burnt bone
fragments were present in the flot and the residue and a couple of small fragments of green mineral were seen.

**Trench 13:** A charcoal layer with burnt clay and slag contained a few wheat chaff fragments and a couple of charred seeds of vetches and large grass and occasional fragments of burnt bone.

**Trench 15:** Soil from inside a Romano-British pot contained little charred material, only flecks of charcoal and a fragment possibly of cereal grain or large grass was present with a small fragment of burnt bone. Small pottery fragments were also present in the sample.

**Discussion**

In order to interpret the samples it is necessary to consider what is known about the cereals. The main cereal found here is spelt which is a glume wheat, in which the grains are held firmly in the chaff even after threshing which only breaks the ears into spikelets. After initial threshing the straw is removed and the spikelets winnowed to remove light contaminants and coarse sieved to partly clean the spikelets (Hillman 1981). This type of grain could have been stored as spikelets with the chaff still present, because the chaff protected the grains from weevil and fungal attack (Hillman 1984). Before the grain was used the chaff could be removed by parching and pounding, followed by fine-sieving to remove the chaff (glumes and rachis) and any small weed seeds, leaving cleaned grain for use (Hillman 1981). The waste chaff could be preserved by charring if it was burnt either as rubbish or if it was used as fuel or kindling. Evidence for this fine sieving waste is found where the ratio of glumes to wheat grains is high because in the ear of wheat there is one glume to each grain so an excess of glumes in the sample indicates cereal cleaning waste, this was found in samples from 203 (table 1). Similarly a high ratio of seeds to grains also indicates cereal cleaning waste (van der Veen 1992), this was found here in samples the same samples (table 1).

Few cereal grains were found here but if samples contain more grains than chaff and seeds they may represent cleaned cereal product, so there were no samples of this type here. However, some of the large seeds such as those of large grasses and larger vetches remain with the grain because they would not be removed by fine sieving but could be hand sorted from the grain before use. The large seeds found here may represent some of this waste sorted from grain during processing added to the fine sieving waste.

The density of remains is high in one sample from 203 at 87 items/litre of soil. Sites can be compared using the maximum density found in the most productive sample from each site although this can be affected by preservation and the type of activity in the past. Many Iron Age sites in the midlands have low maximum densities of remains most Leicestershire sites being below 10 items/litre with the exception of the Late Iron Age sites at Huncote and Ashby de la Zouche with 19 and 32 items/litre respectively (Monckton forthcoming). Gamston in Nottinghamshire falls into this more productive group with 23 items/litre maximum density (Moffett 1992). At Crick Northamptonshire the maximum density of cereal cleaning waste was 16 items per litre with the most productive samples being from a posthole of a granary which had a grain rich sample of 171 items/litre. Some sites in the Thames valley have even higher densities. Hence this cereal cleaning waste is relatively abundant for the Iron Age in the midlands.

Although maximum densities are only one means of comparison the high density here of 87 items/litre of fine sieving cereal cleaning waste suggests the importance of cereal processing on the site. Chaff could be used as fodder so would only be burnt if plentiful, and perhaps if it was useful for fuel or kindling. Chaff was commonly used for fuel to parch cereals in the Roman period (van der Veen 1989) and it may have been used for this on a smaller scale here although it could have been used as fuel for other purposes including kindling for domestic fires or even kilns used for various purposes. Unfortunately no evidence survived to indicate why this waste was burnt or to show the scale of the activity.
The Roman date samples from Brook House Farm contained similar remains to the previous samples as only a low density scatter of probably domestic waste. The same crops continued into the Roman from the Late Iron Age together with the arable weeds. The sample from the pot did not contain any plant or animal remains and seemed to be filled with the sediment from the ditch deposit.

Conclusions

The site of the Lower Town Enclosure produced abundant charred cereal remains and weed seeds from a dump of burnt material in enclosure ditch deposit 203 of Iron Age date. The remains were interpreted as dehusking waste from glume wheat as fine sieved waste consisting of chaff and seeds removed from the grain. The main cereal was glume wheat probably mainly spelt, with exceptionally abundant leguminous weeds. The cereal cleaning waste was relatively abundant compared with other sites in the region showing the importance of agriculture in the area. The remains were thought to represent an activity on this part of the site using the crop waste as fuel or kindling. The spelt was thought to be autumn sown from the evidence of the weeds present and probably grown on fairly well drained soils. Hazel nuts and sloes were also gathered and consumed on the site. Other samples from the site contained few charred or other remains, perhaps because they were further away from domestic or other activity on the site. The Romano-British deposits sampled at Brook House Farm produced only a low density scatter of probably domestic waste indicating occupation in the vicinity, glume wheat and barley were consumed as were hazel nuts as gathered food.

Acknowledgements

I am grateful to Benedikte Ward for the efficient processing of the samples and to Cori Renfrew for information about the site, and to Herefordshire County Council for funding. The work was carried out at University of Leicester Archaeological Services. ULAS Report 2005.
Bibliography


<table>
<thead>
<tr>
<th>Site</th>
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<th>LTE</th>
<th>BHF</th>
<th>BHF</th>
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<td>203</td>
<td>1301</td>
<td>1003</td>
</tr>
<tr>
<td><strong>Context type</strong></td>
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<td><strong>Ditch</strong></td>
<td><strong>Ditch</strong></td>
<td><strong>Layer</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>-</td>
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<td>3</td>
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<td>-</td>
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<td>154</td>
<td>1</td>
<td>-</td>
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<tr>
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<td>17</td>
<td>-</td>
<td>-</td>
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<tr>
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<td>26</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
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<td>+</td>
<td>+</td>
<td>+</td>
<td>Si</td>
</tr>
<tr>
<td><em>Avena</em> type awns</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Culm node large</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
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<td>5</td>
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<td>-</td>
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<td><em>Chenopodium</em> sp.</td>
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<td>5</td>
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<td>1</td>
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<td>-</td>
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<td>-</td>
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<td>-</td>
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<tr>
<td><em>Vicia sp</em> (&lt; 2mm)</td>
<td>29</td>
<td>107</td>
<td>2</td>
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<tr>
<td><em>Vicia</em> Lathyrus (2-3 mm)</td>
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<td>17</td>
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<td>2</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
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<td>1</td>
<td>16</td>
<td>1</td>
<td>-</td>
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<tr>
<td>Poaceae small</td>
<td>1</td>
<td>15</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Indeterminate seeds</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Culm node small</td>
<td>-</td>
<td>2</td>
<td>Si</td>
<td>-</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>58</td>
<td>435</td>
<td>6</td>
<td>12</td>
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<tr>
<td>Vol flot</td>
<td>10</td>
<td>20</td>
<td>15</td>
<td>45</td>
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<tr>
<td>% in Flot</td>
<td>5.9</td>
<td>31.7</td>
<td>50</td>
<td>42</td>
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<tr>
<td>Items/litre</td>
<td>11.6</td>
<td>87</td>
<td>c.3.0*</td>
<td>2.4</td>
</tr>
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<td><strong>PROPORTIONS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glumes</td>
<td>23.7</td>
<td>49.2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cereal grains</td>
<td>8.5</td>
<td>5.9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Weed seeds</td>
<td>67.8</td>
<td>44.6</td>
<td>-</td>
<td>-</td>
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<td><strong>RATIOS</strong></td>
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<td></td>
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<td></td>
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<tr>
<td>Glumes: Wheat grains</td>
<td>2.8</td>
<td>8.3</td>
<td>-</td>
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<tr>
<td>Seeds : All grains</td>
<td>8.0</td>
<td>7.4</td>
<td>-</td>
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</table>

**Key.** All remains are from the Flot plus whole residue of 5 litre samples, except * = 25% of FF residue sorted. Si = silicified remains burnt to silica skeletons. Remains are charred and are seeds in the broad sense unless described otherwise.
Assessment of plant remains from Leominster Poultry Packers site (LPP 99).

Angela Monckton 14.10.99 (ULAS Archive Report)

Introduction

Excavations were carried out by Archaeological Investigations Ltd of Hereford directed by Kath Crooks and samples were taken for the recovery of charred plant remains which can give evidence of diet and activities on the site in the past. The medieval features sampled included a ditch or dried watercourse and an adjacent deposit all of 12th-13th century date.

Provenance, Dating and Quantity

A total of three samples from the medieval ditch or watercourse were taken from different locations within context 5015 and three contexts of the adjacent deposits were also sampled 5040, 5041 and 5043, all were dated to the 12th-13th centuries by pottery. The sample size was not specified.

Methods

Processing: Samples were wet sieved with flotation into a 0.5mm mesh sieve. The residues were air dried and the fraction over 6mm sorted for all finds. The fraction below 6mm was reserved for sorting during the analysis stage if required. The flotation fraction (flot) was air dried and packed carefully in self-seal polythene bags and submitted for this assessment.

Assessment: The flots were scanned with a x10 stereo microscope and samples were selected which required further work. Examples of the plant remains were rapidly identified without comparison with modern reference material so the identifications should be regarded as provisional. The remains were noted with an estimate of quantity (table E1) and described below. Some residues (below 6mm) were also examined to determine if the plant remains had been recovered by flotation. The assessment was hindered by the lack of residues from ditch 5015 samples and by the inadequate washing of the flots.

Results of the assessment

The lower ditch samples contained uncharred seeds and organic fragments and the deposit had clearly been waterlogged in the past and, although not found to be so on excavation, organic remains were preserved. Although these samples were bulk processed and dried a variety of seeds was preserved and these were in reasonable numbers in the sample from the bottom of the ditch. Charred cereal grains were also present in all three samples from the ditch and were most numerous in the upper sample (71.5 m.) which contained over a hundred grains. The residues were not seen from these samples but may have contained larger remains which would not have floated. The deposit samples 5040 and 5041 were submitted as dry dusty flots and large damp residues (below 6mm) both of which were difficult to examine. However there appeared to be little present in sample 5040 but sample 5041 contained a moderate number of cereal grains in the residue together with some cereal chaff represented by rachis material some of which was identifiable as possible bread wheat together with rye. Charred seeds were also present including arable weeds. Hence it appears that recovery of plant...
remains by flotation was poor as most of the remains stayed in the residue. For this sample it is suggested that the residue is dried and sorted for more cereal remains and the flot rewashed so that the remains can be sorted from it. Sample 5043 consisted of a tiny flot with only two cereal grain fragments present and the residue consisted of dry dusty silt which was impossible to sort so needs rewashing before examination however this may be unproductive.

**Range and variety of material**

**Ditch samples**

**Ditch bottom 5015:** This sample contained numerous uncharred seeds including wet ground plants such as sedges (*Carex* sp), spike-rush (*Eleocharis* sp) and rushes (*Juncus* sp), plants of damp ground such as buttercup (*Ranunculus* sp) and dead-nettle family (*Lamiaceae*), plants of damp nutrient rich ground such as nettles (*Urtica dioica*), hemlock (*Conium maculatum*) and henbane (*Hyoscyamus niger*) and plants of disturbed ground such as goosefoots (*Chenopodium* sp) and chickweed (*Stellaria media* type). Arable weeds were also present including scentless mayweed (*Anthemis cotula*), stinking mayweed (*Tripleurospermum inodorum*) and poppy (*Papaver* sp). Fruit pips were represented by elder (*Sambucus niger*) and blackberry (*Rubus fruticosus* agg) but these plants often grow on nutrient rich disturbed ground such as is found near occupation. A number of the uncharred seeds remain unidentified at present. Charred cereal grains showed the presence of domestic rubbish possibly present as waste from food preparation, about 50 charred cereal grains and a few charred seeds were seen in the sample during scanning. These included wheat (*Triticum* sp free-threshing) and rye (*Secale cereale*) with a single oat grain (*Avena* sp). Charred cereal straw fragments were also present perhaps picked from the cereal before use, burnt and dumped in the ditch with hearth cleanings. The deposit appears to contain a mixture of remains of the vegetation growing in the area of the ditch with charred rubbish dumped in the ditch, although some of the uncharred seeds from for example rushes and sedges could be from materials brought to the site for uses such as flooring or roofing while the seeds of arable weeds may have been brought to the site with the cereals. Hence the deposit may consist of a mixture of different material.

**Ditch, Trench 1 South base, 5015:** Fewer seeds were present perhaps because of poorer preservation, however the presence of duckweed seeds (*Lemna* sp) showed that there had been standing water in the ditch in the past as duckweed only sets seed in such conditions. Seeds of rushes and sedges again showed the wet conditions nearby and disturbed ground plants such as goosefoots were again present. A few charred cereal grains were also found.

**Ditch 71.5 metres, 5015:** The flot contained mainly cereal grains, over a hundred being present, including free-threshing wheat and rye with a few oat grains and occasional barley grains. Cereal straw was again present and very few charred seeds of arable weeds. Uncharred seeds of the same plants already found in this feature were also present in smaller numbers.
**Deposits adjacent to the ditch**

**Deposit 5040:** The sample contained a few charred cereal grains in the residue with a small number of uncharred seeds and a nutshell fragment in the silty flot.

**Deposit 5041:** This was the most productive sample from these deposits. Scanning part of the residue showed the presence of cereal rachis material (chaff) some of which was of possible bread wheat and some was of rye. Other fragments of identifiable chaff may be present in the rest of the deposit so the presence of rivet wheat which is another type of free-threshing wheat cannot be excluded. In medieval deposits free-threshing wheat may be represented by bread wheat and/or rivet wheat which have similar grains but can be distinguished from well preserved rachis material. Grains of free-threshing wheat and rye grains were present with a few oat grains but without further examination of the residue and the flot, which requires rewashing, the proportions of the cereals cannot be suggested. Seeds of arable weeds were also present. Abundant charcoal was found in the residue and this with the presence of hazel nutshell and fish vertebrae suggest that domestic rubbish forms part of the deposit.

**Deposit 5043:** The tiny flot and silty residue seemed to have low potential for the presence of plant remains although there may be some slag-like substance present.

**Statement of Potential**

The plant remains in ditch 5015 bottom sample have the potential to show the environment of the ditch and the immediate surroundings although the remains are probably from a mixture of materials; ditch sample 5015 at 71.5 metres contains sufficient cereal remains for analysis to show the proportions of cereals in the sample and may suggest domestic use of the cereals; the sample of deposit 5041 has the potential to provide identifiable rachis material also examination of the proportions of the remains in the sample may suggest the stage of processing of the grain while the weeds present may suggest the season of cultivation and type of land cultivated. Considering that medieval plant remains have not been reported from Leominster before (de Moulins 1998, EH Regional Review of Environmental Archaeology) unless there is unpublished work it would be worthwhile to publish these remains for comparison with other sites in the area and region.

**Proposed Analysis**

It is suggested that three samples are analysed: 5015 ditch bottom for the record of plants present to indicate the type of environment, 5015 at 71.5 metres should be sorted to quantify the cereals and sample 5041 should have the residue dried and sorted then the flot rewashed to recover more rachis material for identification and quantify the cereals. Before analysis is carried out the archaeological integrity of the deposits should be considered.
Table E1: Assessment of samples for charred plant remains (LPP 99).

<table>
<thead>
<tr>
<th>Cont No.</th>
<th>Feature Type</th>
<th>Samp Vol. Litres</th>
<th>Flot Vol. mls</th>
<th>Gr ch</th>
<th>Cf ch</th>
<th>Se ch</th>
<th>Se un</th>
<th>Leg ch</th>
<th>Nut ch</th>
<th>Char</th>
<th>Comments</th>
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<tr>
<td>5015</td>
<td>Ditch bottom</td>
<td>Flot 20</td>
<td>c50</td>
<td>-</td>
<td>c15</td>
<td>++</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>Uncharred seeds, deposit probably was waterlogged, some charred remains.</td>
</tr>
<tr>
<td>5015</td>
<td>Ditch south base</td>
<td>Flot 22</td>
<td>c25</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>fl</td>
<td>Few remains</td>
</tr>
<tr>
<td>5015</td>
<td>Ditch 71.5m</td>
<td>Flot 25</td>
<td>100+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>Mainly cereal grains of wheat and rye with a few charred and uncharred seeds.</td>
</tr>
<tr>
<td>5041</td>
<td>Deposit</td>
<td>Flot 45</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>1?</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>Silty flot needs rewashing</td>
</tr>
<tr>
<td>..</td>
<td>..</td>
<td>Residue 740</td>
<td>c50</td>
<td>9</td>
<td>c20</td>
<td>+</td>
<td>-</td>
<td>++</td>
<td>++</td>
<td>25% scanned. Grains of wheat, rye and few oats. Rachis of possible bread wheat and rye. Few charred and very few uncharred seeds.</td>
<td></td>
</tr>
<tr>
<td>5040</td>
<td>Deposit</td>
<td>Flot 20</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>Silty flot.</td>
</tr>
<tr>
<td>..</td>
<td>..</td>
<td>Residue 710</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>-</td>
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<td>+</td>
<td></td>
<td>25% scanned. Few remains present.</td>
<td></td>
</tr>
<tr>
<td>5043</td>
<td>Deposit</td>
<td>Flot 1</td>
<td>fr</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Silty flot.</td>
</tr>
<tr>
<td>..</td>
<td>..</td>
<td>Residue 250</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>25% scanned. Few remains present.</td>
<td></td>
</tr>
</tbody>
</table>

Key: Gr = cereal grain, Cf = chaff, Se = seed, ch = charred, un = uncharred, Leg = legume, Nut = nutshell, Char = charcoal, Oth = other charred item, fl = flecks, fr = fragments, + = present, ++ = moderate amount, +++ = abundant. # = further work required.