

## The Plant Remains from 114-119 St Aldates and 4-5 Queen Street, Oxford (OXSTAD16)

### INTRODUCTION

During excavations at 114-119 St Aldates/4-5 Queen Street, Oxford, environmental bulk soil samples were collected from late Saxon through to post-medieval deposits for the potential recovery of macro-plant remains and information on crop husbandry and diet and the nature of activities taking place across the site.

### METHODS

Twenty-six samples were collected, largely from pit fills and layers/dumps and ranging in size from nine to forty litres. Most of the samples were processed for the recovery of charred plant remains using a modified 'Siraf'-style type flotation tank, with mesh sizes of 0.25mm and 0.5mm for the recovery of the flots and residues respectively. One litre sub-samples from fills (4014), (4061) and layer (10013) and the entire sample from fill (1333) were also processed for the potential recovery of 'waterlogged' plant remains by wash-over onto a 0.25mm mesh; these flots were kept wet to limit potential damage to any fragile organic material.

Following assessment<sup>1</sup>, twenty-two of the samples were selected for analysis; four from middle/late Saxon deposits (Phase 1), 16 from medieval contexts (Phases 2 to 4) and two from post-medieval fills (Phase 7). The plant remains were identified using a binocular microscope (with a magnification of up to x40) together with modern and charred reference material and manuals<sup>2,3</sup>. The charred plant remains were 100% sorted and quantified from all the flots except from fill (3071) which contained an exceptionally rich charred plant assemblage; a fraction (12.5%) of this flot was sorted and the charred plant remains quantified while the remaining fraction (87.5%) was scanned for additional species. 'Waterlogged' and mineralized plant remains in three samples were recorded without sorting (unless not readily identifiable) and estimates made of the abundance of different species using the following scale (also used for the scanned charred plant remains from (3071)); + =1-10; ++=11-50; +++=51-1150; ++++=151-250; +++++=>250 items. Nomenclature for the botanical identifications follows Stace<sup>4</sup>, which was also used for habitat/ecological information along with Hanf<sup>5</sup> and Wilson et al<sup>6</sup>.

### RESULTS

The results are shown by phase in Tables 1 to 3 (charred plant remains) and 4 (waterlogged and mineralized plant remains). Variable amounts of charred plant remains were recovered from all the samples with the bulk of this material being from the mid to late Saxon and early medieval deposits (Phases 1 to 3). The charred remains consisted of almost equal amounts of cereal grains (52%) and other plant/weed seeds (48%) with only traces of cereal chaff (<1%). The cereal grains were poorly preserved and many were unidentifiable with variable but sometimes large amounts of uncounted small cereal grain fragments in all the samples. There was a rich 'waterlogged' plant assemblage in a thirteenth to fourteenth-century layer (10013) (Phase 4) while two fills

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<sup>1</sup> J. Giorgi, 'Charred, mineralised and waterlogged plant remains'. Post-excavation assessment (OA 6605) (2017), pp.49-61.

<sup>2</sup> R.T.J.Cappers, R.M. Bekker, J.E.A.Jans, *Digitale Zadenatlas Van Nederland. Digital Seed Atlas of the Netherlands* (Groningen, 2006).

<sup>3</sup> S. Jacomet, *Identification of cereal remains from archaeological sites* 2<sup>nd</sup> edition (Basel, 2006).

<sup>4</sup> C. Stace, *New Flora of the British Isles*, 2<sup>nd</sup> edn (Cambridge, 2005).

<sup>5</sup> M. Hanf, *The Arable Weeds of Europe* (Ludwigshafen, 1983).

<sup>6</sup> P. Wilson and M. King, *Arable Plants – a field guide* (Old Basing, 2003).

(4014) (4061) of a mid-seventeenth to early eighteenth-century stone-lined latrine [4073] (Phase 7) contained good amounts of both mineralized and 'waterlogged' botanical remains. There were occasional and small numbers of uncharred seeds in most of the other samples but it is difficult to establish whether or not these are contemporary with the sampled features; *Sambucus* (elder) seeds were the most common, these being fairly robust seeds which may survive for long periods in the soil. The results shall be discussed by period and phase.

### ***Middle to Late Saxon (Phase 1)***

Four samples from this phase contained charred plant remains; one from the fill (3088) of a possible pit/cellar [3060] in Area 3; and three from Area 5, two from layers (5027) and (5031), part of a sequence of compacted gravel floors and charcoal rich deposits, and one from a post-hole fill (5034).

The four samples contained broadly similar charred plant assemblages consisting largely of cereal grains. The two main cereals represented in these samples were (six-row) hulled barley (*Hordeum vulgare*), particularly in layer (5027), and free-threshing wheat (*Triticum aestivum/turgidum*), the main cereal in fill (3088); a rachis fragment in layer (5027) showed the presence of hexaploid bread wheat (*Triticum aestivum*). The samples contained only a few grains of oat (*Avena*) and rye (*Secale cereale*). These grains may have become accidentally burnt while being dried before milling and/or storage or as a result of cooking accidents.

These assemblages represent virtually fully processed cereals, grains making up 96% and 86% of the quantified remains in the two richest assemblages from fill (3088) and layer (5027) respectively. The samples contained few chaff fragments or potential arable weed seeds, the latter including *Agrostemma githago* (corn cockle), *Fallopia convolvulus* (black bindweed) and *Bromus* (brome), all large weed seeds difficult to separate from the grain other than by hand-sorting and often found in cereal storage deposits. An *Anthemis cotula* (stinking chamomile) seed in one sample may point to the cultivation of calcareous soils while a few *Eleocharis* (spike-rush) and *Carex* (sedge) seeds suggest that this may have included damper areas of ground. All four samples also contained a few charred hazel (*Corylus avellana*) nutshell fragments, probably food waste from the collection and consumption of this wild food resource.

The two main cereals in these samples, free-threshing wheat and hulled barley, along with a little evidence for rye and oats, are the main grains found in the late Saxon period in southern England<sup>7</sup>, free-threshing wheat and hulled barley being the dominant grains from other sites of this period in Oxford, for example, in mid to late Saxon deposits close-by at 11 to 12 Queen Street<sup>8</sup> while other late Saxon deposits included a large assemblage of free-threshing wheat at All Saints Church<sup>9</sup> and another of barley and wheat on the north side of Lincoln College<sup>10</sup>.

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<sup>7</sup> J. Greig, 'The British Isles', *Progress in Old World Palaeoethnobotany* (eds W. van Zeist, K. Wasylikowa and K.-E. Behre) (Rotterdam, 1991), p. 315.

<sup>8</sup> M. Robinson, 'Waterlogged plant and invertebrate evidence' 'Late Saxon evidence and excavation of Hinxey Hall, Queen Street, Oxford' (ed C Halpin), *Oxoniensia* **48** (1980), p. 69.

<sup>9</sup> M. Robinson, 'Environmental evidence from All Saints Church', *Oxford before the University: The Late Saxon and Norman Archaeology of the Thames Crossing, the Defences and the Town* (ed. A. Dodd), Thames Valley Landscapes Monograph No. 17, Oxford Archaeology (2003), p. 389.

<sup>10</sup> Z. Kamash, D.R.P. Wilkinson, B.M. Ford and J. Hiller, 'Late Saxon and medieval occupation: evidence from excavations at Lincoln College, Oxford, 1997-2000', *Oxoniensia* **67** (2002), pp. 199-286.

Cereals during the Saxon period may have been used for gruel or porridge, which probably made up a significant part of the diet<sup>11</sup> although the main use of the wheat grains would have been for bread, a staple food at the time with a preference for white leavened wheat bread<sup>12</sup>. Other uses of barley were for ale (although there were no germinated grains to suggest such a use) and animal fodder.

### ***Medieval period***

#### ***Phase 2 (Early to late eleventh century)***

##### **Area 4**

*Timber-lined cellar pit [3059]*; four samples from the backfills (3055), (3058), (3068), (3071) of this feature in Area 4 contained broadly similar and rich charred plant assemblages, particularly in fill (3071) with an estimated density of *c* 60 charred items per litre of processed soil.

The charred plant assemblages consisted mainly of cereal grain, free-threshing wheat being the dominant cereal in all four samples with good amounts of hulled barley in fills (3055) and (3071) but only traces of rye and oat. Fill (3068) also contained a possible pea (cf *Pisum sativum*) while several larger legume fragments in this sample may also be from cultivated pulses. Charred hazelnut shell was present in all four fills particularly in (3058) and (3068).

The cereal grains accounted for between 83% and 98% of the quantified remains in the four assemblages (discounting the hazel nut shell) with only traces of cereal chaff and small numbers of wild plant/weed seeds. These charred plant assemblages again represent the burnt residues of almost fully processed grain.

#### ***Phase 3 (Late eleventh to twelfth century)***

Charred plant remains were analyzed from ten samples in this phase; eight from Area 1 and single samples from Areas 4 and 10.

##### **Area 1**

Eight samples from an open area of pitting used for rubbish disposal, six from pit fills (1035), (1257), (1158), (1103), (1214), (1129) and two from layers (1181), (1188), produced variable amounts of charred plant remains. The main identifiable cereals in these samples were again free-threshing wheat and hulled barley with a small number of oats and a few possible rye grains. Free-threshing (including bread) wheat was the dominant grain in pit fill (1214) while barley was the main cereal in pit fill (1035). Large indeterminate legume seeds in pit fill (1214) may be from cultivated pulses. Charred hazelnut shell was present in all the samples particularly in the two fills of Pit [1144] while the residues of other potential wild food remains were represented by single charred elder and *Rubus* (brambles) fruit seeds in pit fills (1038) and (1257) respectively.

Charred cereal grains made up between 82% and 97% of the quantified remains (excluding the hazel nut shell) in pit fills (1035), (1158), (1103) and layers (1181) and (1188) and 62% of the remains in pit fill (1257). The relatively small number of wild plant/weed seeds and paucity of chaff suggests that the majority of the remains in these assemblages represent almost fully processed cereals.

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<sup>11</sup> A. Hagen, *A Handbook of Anglo-Saxon Food. Processing and Consumption* (Pinner, 1994), p. 60.

<sup>12</sup> *Ibid.* p. 125.

The other two samples from Area 1, however, contained much larger numbers of charred wild plant/weed seeds.

*Pit fill (1214)*: this contained an exceptionally rich charred plant assemblage (with an item density of *c* 155 per litre of processed soil), grains making up just 34% of the quantified remains and chaff (<1%) while weed seeds made up 65% of the counted material. These remains, however, probably also represent almost fully processed cereals because these percentages do not take account of the very large amounts of unquantified cereal grain fragments in the sample; moreover, 73% of the charred weed seeds consisted of *Anthemis cotula* seeds which were probably initially part of seed heads (some of which survived intact in the sample) which broke up on charring. These weed seeds (as part of seed heads) together with the large number of grain-sized weed seeds in this sample, including a good number of mineralized *Lithospermum arvense* (corn gromwell) seeds, accounted for the majority of the weed seeds in this sample and are indicative of almost fully processed cereals. This sample also contained a small number of Poaceae (grass/cereal) culm nodes, possibly cereal straw.

*Pit fill (1129)*: wild plant/weed seeds accounted for 72% of the quantified charred plant remains in this sample, cereal grains making up just 28%. Some of these wild plant remains were from cereal weeds but there was also a good representation of potential grassland plants, for example *Ranunculus acris/repens/bulbosus* (buttercups), *Prunella vulgaris* (self-heal), *Rhinanthus minor* (yellow rattle), *Carex* and wild grasses including *Lolium* (rye-grass), *Lolium/Festuca* (rye-grass/fescue) and *Poa* (meadow grass). These remains may represent the burnt residues of hay, possibly gathered from meadow/grassland areas closer to the river. Charred and mineralized stem fragments in this sample may be residues of flooring/stabling materials.

There was also a probable latrine [1058] in Area 1 although the plant remains in the three sampled fills (1057), (1080), (1101) from this feature consisted mainly of large amounts of charcoal together with just a few charred cereal grains, a little chaff and hazelnut shell and a few charred and uncharred seeds, debris probably from the backfilling of this feature. The only potential evidence for faecal waste was small amounts of mineralized concretions in the basal fill.

#### **Area 4**

*Occupation/ rubbish dump (4105)*; a sample from this feature in Area 4 produced a fairly rich charred plant assemblage (with an item density of 33.5) consisting mainly of wild plant/weed seeds (70% of the quantified material) and a fairly good amount of hazelnut shell (21%) with charred grains of all four cereals and a little barley and wheat chaff accounting for less than 10% of the material.

The wild plant/weed seeds were mainly from cereal weeds including both large weed seeds particularly *Agrostemma githago* and *Bromus*, and smaller cereal weed seeds, especially *Bupleurum rotundifolium* (thorow-wax) seeds, which accounted for 31% of all weed seeds, and *Atriplex* (oraches). *Carex* and *Eleocharis* seeds were also relatively well represented and may be from cereal weeds or from the residues of flooring materials and/or hay fodder along with other potential grassland plants represented in this sample including *Ranunculus acris/repens/bulbosus*, *Prunella vulgaris*, *Plantago lanceolata* (ribwort plantain) and Poaceae (wild grasses).

The charred plant remains in this sample largely represent the by-products from almost fully processed cereals; larger weed seeds, which would have required hand-sorting, and smaller weed seeds, most of which would have been removed by fine-sieving of the grain. There is also potential evidence for the residues of flooring materials and/or hay fodder suggesting that this feature was probably a rubbish dump receiving debris from a number of different activities.

## Area 10

*Pit fill (10019)*; a sample from this feature in Area 10 produced a fairly rich charred plant assemblage consisting mainly of cereal grains (64% of the quantified remains) with evidence for free-threshing (including bread) wheat, hulled barley and oats, a fairly good amount of charred hazelnut shell (22%) but relatively few weed seeds (14%). This assemblage represents burnt debris from almost fully processed cereal grain.

This pit fill sample, however, also contained a fairly good number of uncharred seeds mainly from fruits including *Ficus carica* (fig), *Fragaria vesca* (wild strawberry) and elder; if contemporary with the sampled feature, these remains may suggest that the pit was used for disposal of other food debris including possibly faecal waste, with fly puparia also noted in this sample. Uncharred *Carex* and *Eleocharis* seeds may be the residues of flooring materials used to dampen down the smells.

## Phase 4 (Thirteenth to fourteenth century)

Two samples containing plant remains were examined from this phase; one from a pit fill (4044) in Area 4, and one from layer 10013 in Area 10.

## Area 4

*Pit fill (4044)*: a sample from this pit in Area 4 contained a fairly large charred plant assemblage consisting mostly of charred grain (65% of the quantified remains) of free-threshing wheat, hulled barley and oats and traces of possible rye. A few wheat chaff fragments (2%) included evidence for bread wheat. There was again a fairly good amount of charred hazelnut shell (22%) but few other charred seeds (11%) which included a possible pea and several other large legume seeds and fragments which may belong to cultivated pulses. There were very few cereal weeds in this sample. This assemblage represents burnt debris from fully processed cereal grain and possibly legumes.

A sample collected during the evaluation phase of the site from a fill of Pit [102] from this area of the site produced *Prunus* fruit stones mostly of *Prunus avium* (cherry) and occasionally *Prunus domestica* (plum/bullace) and mineralized and waterlogged seeds particularly of fig and strawberry; these remains together with lumps of laminated cassy material containing plant stems, plus fly puparia may represent faecal waste and possibly flooring/stabling materials<sup>13</sup>.

## Area 10

*Layer (10013)*; this sampled layer produced a rich 'waterlogged' plant assemblage dominated by large amounts of fruit remains. Large numbers of *Prunus* fruit stones included plum/bullace type, probably *P. domestica* spp. *insititia* (bullace/damson/greengage) on the basis of the size and morphology of the better preserved stones; both cultivated and wild plum stones, however, were identified in a thirteenth-century pit fill from Merton College<sup>14</sup>. There were also fruit stones of *Prunus spinosa* (sloe/ blackthorn), cherry and possibly *Prunus cereasus* (sour/dwarf/Morello cherry). Other fruits were represented by large numbers of grape (*Vitis vinifera*), fig, wild strawberry and *Rubus Glandulosus* (blackberry) seeds, smaller numbers of apple (*Malus*) and pear/apple (*Pyrus/Malus*) seeds and occasional records for *Morus nigra* (mulberry) and *Sorbus*

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<sup>13</sup> J. Meen and K. Hunter, 'Appendix C: Environmental evidence, 114-119 St Aldates and 4-5 Queen Street, Oxford: Archaeological evaluation report, Oxford Archaeology client report', (2015).

<sup>14</sup> R. Pelling, 'Charred and waterlogged plant remains' 'Excavations at No. 4A Merton St., Merton College, Oxford: The Evolution of a Medieval stone house and tenement and an early college property' (eds. D. Poore, D. Score and A. Dodd), *Oxoniensia* 71 (2006), p. 335.

fruits including possibly rowan (cf *Sorbus aucuparia*). There was also a small amount of fragmented hazelnut shell in this sample.

The fruits represented in this layer and from Pit [102] have been found on other medieval sites in Oxford; for example in eleventh to thirteenth-century deposits from Merton College<sup>15</sup>. Grapes and figs may have been imported as dried fruits while grapes may have also been locally grown at this time during the early medieval warm period (950 to 1250 AD). Some of these fruits may have been cultivated in kitchen gardens and in orchards while the wild fruits and nuts (blackberry, hazelnuts, sloe/blackthorn, possible rowan and dog rose) may have gathered from hedgerows and woodlands outside the town.

Other food plants included evidence for culinary herbs, represented by a few finds of coriander (*Coriandrum sativum*), fennel (*Foeniculum vulgare*) and possibly some of the mineralized Apiaceae seeds in this sample. Coriander and fennel were both common flavorings at the time according to the archaeobotanical evidence<sup>16</sup>. There were also large amounts of fragmented cereal bran, some of which was identified as wheat and/or rye, both cereals also being represented by small numbers of charred grains in this sample. These fine bran fragments (mainly smaller than 1mm) may indicate finely milled or well-sieved whole meal flour. There were also large amounts of very fragmented corn cockle seed in the sample, such fragments frequently found together with cereal bran because these large weed seeds were difficult to remove other than by hand-sorting and therefore were often milled together with the grain.

Occasional hemp (*Cannabis sativa*) seeds were also identified in this sample; this plant was mainly grown for its fibres although the oil from the seeds may have been used for cooking and lighting and as animal feed<sup>17</sup>. Cannabis was also identified in a thirteenth-century pit fill from Merton College<sup>18</sup>. The *Brassica/Sinapis* (cabbages, turnips, mustards) seeds in this layer may also be food remains.

The sample also contained evidence for a small range of potential cereal weeds, by-products from the final stages of crop-cleaning, together with evidence for the residues of hay fodder represented by *Ranunculus acris/repens/bulbosus*, *Leontodon* (hawkbit), *Prunella vulgaris* and good number of *Carex* seeds. The sedges may also be from flooring materials, possibly collected from the margins of the river along with several other wetland plants, *Eleocharis* and *Oenanthe* (water dropwort) identified in the sample and possibly incidentally collected at the same time. Indeterminate stem fragments may also be from flooring materials. Seed remains of *Rosa canina* (dog-rose) and *Cornus sanguinea* (dog-wood) along with the *Rubus* (brambles) seeds may be evidence for hedgerows close-by.

The botanical remains in this sample represent general food waste as well as probably faecal remains given the presence cereal bran, small-seeded fruits and large amounts of fly puparia. There is also evidence for the residues of hay and flooring (including possibly stabling) materials.

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<sup>15</sup> Pelling, *Oxoniensia* 71, p. 326, 335 Ibid.

<sup>16</sup> J. Greig, 'Archaeobotanical and historical records compared – a new look at the taphonomy of edible and other useful plants from the 11<sup>th</sup> to the 18<sup>th</sup> centuries A.D.' *Circea, The Journal of the Association for Environmental Archaeology* 12 (2) (1996 for 1995), p. 217.

<sup>17</sup> J. Greig, 'Plant Resources'. *The Countryside of Medieval England* (ed. G. Astill and A. Grant) (Oxford, 1988), p. 122.

<sup>18</sup> Pelling, *Oxoniensia* 71, p. 335 Ibid.

The plant remains from this layer provide a partial insight into the diet of the inhabitants in this area at the time although it is not possible to establish whether this deposit is associated with Jewish or post-Jewish occupation of the site because the context was dated to the thirteenth to fourteenth-century therefore covering the period prior to and post-dating the expulsion of the Jews from the City. In any event it is not possible to distinguish a Jewish diet on the basis of the plant remains alone; suffice to say, however, that the range of foodstuffs represented in this sample suggest a high status diet.

#### ***Discussion of the medieval cereal grain assemblages (Phases 2 to 4)***

There is a similar range of cereals in all three medieval phases (eleventh to fourteenth-century) of the site with free-threshing (including bread) wheat and hulled barley being the main grains together with smaller amounts of oats and traces of rye, similar to the results from the mid to late Saxon phase. This is the usual range of cereals for the medieval period in southern Britain<sup>19</sup> with similar dated (eleventh to thirteenth-century) finds from other medieval sites in Oxford, free-threshing (including bread) wheat often being the main cereal; for example, from Corpus Christi College<sup>20</sup>, Jesus College (along with hulled barley)<sup>21</sup>, the Nun's Garden, Queens College<sup>22</sup> and Merton College<sup>23</sup>. Closer to the site, free-threshing (including bread) wheat, hulled barley and oats were the main grains in eleventh to thirteenth-century deposits from excavations at Queens Street, St Ebbes<sup>24</sup>. The only other evidence for arable crops in the medieval samples were a few possible peas and perhaps some of the larger legume fragments which may be from cultivated pulses.

Wheat made the best and therefore most sought after and expensive bread in the medieval period<sup>25</sup>, particularly wheat bread using the finest and well sieved flour to remove as much bran as possible; the very fragmented cereal bran in (10013) also suggests well-sieved flour. Barley was used for bread and ale but there was no evidence except a few loose cereal coleoptiles to suggest brewing activities on site. All the cereals may have added to pottage<sup>26</sup> while barley and oats were used as fodder.

Historical records from around 1300 suggest that the catchment area for cereal production and supply to the Oxford extended to a radius of no more than twelve miles<sup>27</sup> with the virtually clean grain assemblages in the samples suggesting that they were being imported into the City as processed cereals.

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<sup>19</sup> Greig, *Progress in Old World Palaeoethnobotany*, p. 321 Ibid.

<sup>20</sup> W. Smith, 'Charred and waterlogged plant remains', 'Medieval and Post-Medieval Remains from Excavations on the Site of the New Auditorium, Corpus Christi College, Oxford, 2008 (eds R. Bashford, A. Dodd and D. Poore), *Oxoniensia* 79 (2014), p.206.

<sup>21</sup> W. Smith, 'Charred and Mineralised Plant Remains', 'Eleventh-century, later medieval and early post-medieval evidence from investigations at Jesus College and Market Street, Oxford' (ed R. Bashford) (forthcoming *Oxoniensia*)

<sup>22</sup> J. Giorgi, 'Plant Remains', 'Late Saxon, Medieval and Post-Medieval Archaeology at the Nun's Garden, The Queen's College, Oxford (eds S Teague, A. Norton and A. Dodd). *Oxoniensia* 80 (2015), pp. 179-185.

<sup>23</sup> J. Giorgi, 'The Plant Remains from Merton College Lift Pit (OXMEGH16)' (2017) (OAU Environmental Archive Report)

<sup>24</sup> J. Giorgi, 'The Plant Remains from Queen Street, St Ebbes, Oxford (OXCMS97)' (1999) (Environmental Archive Report)

<sup>25</sup> P.W. Hammond, *Food and Feast in Medieval England* (Stroud, 1995), p.2.

<sup>26</sup> C.A. Wilson, *Food and drink in Britain* (London, 1991), p. 199.

<sup>27</sup> B.M.S. Campbell, J.A. Galloway, D. Keene, M. Murphy, *A Medieval Capital and its Grain Supply. Agrarian Production and Distribution in the London Region c. 1300*, Historical Geography Research Series No. 30 (1993), p.173.

There are similar weed seed assemblages in the different medieval phases of the site with a number of weeds, including *Anthemis cotula* and *Lithospermum arvense* and *Bupleurum rotundifolium*, suggesting the cultivation of calcareous loams; a similar range of weeds has been found on other medieval sites in Oxford including the Nun's garden, Queens College<sup>28</sup> and Queen Street, St Ebbes<sup>29</sup>. Several other species, however, for example *Agrostemma githago*, *Polygonum aviculare* (knotgrass), may tentatively suggest that sandy loams were also used for growing crops while *Carex* and *Eleocharis* seeds in the medieval grain assemblages suggest that areas of cultivation may have included damper areas of ground probably closer to the river.

There is tentative evidence from the weed seeds for both the spring-sowing of cereals, for example *Fallopia convolvulus*, and autumn-sowing, for instance *Bupleurum rotundifolium* and *Galium aparine* (cleaver); of the two main cereals in the samples, bread wheat would have usually been winter sown while barley may have been sown in both winter and spring<sup>30</sup>. The presence of relatively short weeds including *Anthemis cotula* and *Bupleurum rotundifolium* suggests that the cereals were reaped fairly low on the straw.

#### **Phase 7 (Mid-seventeenth to eighteenth century)**

Two samples from the fills (4014), (4061) of a stone-lined latrine [4073] produced rich and similar botanical assemblages. Both contained a few charred grains including wheat and oat but the bulk of the plant remains consisted of 'waterlogged' and mineralized fruit remains including large numbers of fig, blackberry and raspberry (*Rubus idaeus*) seeds, smaller numbers of grape pips and occasional wild strawberry, elder and apple (*Malus domestica*) seeds. There were also a few plum/bullace fruit stones in fill (4014) and a charred hazelnut shell fragment in fill (4061). These remains, particularly the small fruit seeds, may be indicative of faecal waste which is also suggested by large amounts of mineralized concretions and mineralized fly puparia in both fill samples.

Other post-medieval deposits from sites in Oxford have produced similar ranges of fruit; for example, in sixteenth to eighteenth-century fills from two stone-lined cesspits at Corpus Christi College<sup>31</sup> and in the fills of an eighteenth-century well at Merton College<sup>32</sup>.

There was also a good number of *Carex* seeds in both samples which may be the residues of discarded flooring materials dumped in the pit to dampen down the smells; the presence of several wetland plants in the samples including *Ranunculus sceleratus* (celery-leaved crowfoot), *Alisma* (water plantain), *Juncus* (rush) and *Eleocharis*, may suggest that the sedges were collected from the river bank; mineralized ribbed stem fragments in both samples may be from flooring/stabling materials.

#### **ABSTRACT/SUMMARY**

The charred plant remains from the site show that free-threshing (including bread) wheat and hulled barley were the main cereals used on the site throughout the late Saxon and medieval period with perhaps occasional use of oats but little evidence for rye. Most of the charred plant assemblages in both periods suggest that almost fully processed cereals were being bought onto

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<sup>28</sup> Giorgi, *Oxoniensia* **80**, pp. 179-185. Ibid.

<sup>29</sup> Giorgi, Environmental Archive Report, Ibid.

<sup>30</sup> L. Moffet, 'The Archaeology of Medieval Plant Foods', *Food in Medieval England. Diet and Nutrition*, (eds C.M. Woolgar, D. Serjeanston and T. Waldron) (Oxford, 2006), p.48.

<sup>31</sup> Smith, *Oxoniensia* **79**, p.207. Ibid.

<sup>32</sup> Giorgi, OAU Environmental Archive Report, Ibid.



site. The grains may have become accidentally burnt while being dried before milling and/or storage or as a result of cooking accidents. There were relatively few weed seeds, mainly grain-sized ones which are often found in stored grain deposits. The identifiable weeds suggest the cultivation of mainly calcareous soils including damper areas of ground perhaps nearer the river. There was limited evidence for the use of possibly peas and other pulses.

Large amounts of fruit remains were present in medieval deposits in layer (10013) and Pit [102] and in a post-medieval latrine [4073], with waterlogged and mineralized remains from a wide range of fruit species, particularly plum/bullace, cherry, sloe/blackthorn, grape, fig and apple and occasional records for mulberry and *Sorbus* fruits. Charred hazelnut shell was present in virtually all the samples and particularly in the medieval phases of the site. Evidence for culinary herbs (coriander, fennel) and hemp were also found in layer (10013) which also contained large amounts of cereal bran. There was evidence for faecal remains in this layer and in two other medieval pits [10018] and [102] and the post-medieval latrine [4073]. There was also evidence for the residues of flooring (including possibly stabling materials) in these features as well as in medieval pit fill (1129) and dump (4105) both of which, along with layer (10013), also contained potential evidence for the residues of hay fodder.

Table 1: 114-119 St Aldates, Oxford (OXSTAD16): Phases 1 and 2: The Charred Plant Remains

	Period	MID TO LATE SAXON				EARLY TO LATE 11th CENTURY				
		1				2				
phase		1				2				
area		5				3				
structure/feature		1.1				2.1				
context type		FILL	LAYER	LAYER	PH	FILL	FILL	FILL	FILL	
cut number					5033	3059	3059	3059	3059	
context number		3088	5027	5031	5034	3055	3058	3068	3071	
sample number		3007	5002	5004	5007	3000	3002	3003	3005	
vol sample (l)		40	20	10	20	38	40	40	40	
vol flot (ml)		205	49	48	11	36	105	220	655	
% sorted									13%	
% scanned									87%	
LATIN NAME		ENGLISH								
CHARRED PLANT REMAINS										
Cereal grains										
<i>Triticum aestivum/turgidum</i> type	free-threshing wheat	23	3	2	4	27	27	26	37	++++
<i>T. cf. aestivum/turgidum</i> type	?free-threshing wheat	9	2	1	1	7	19	5	43	
<i>Triticum</i> sp(p).	wheat	8	3	3	1	28	23	15	32	+++++
<i>cf. Triticum</i> sp(p).	?wheat	11	3	4	1	5	11	8	21	
<i>Triticum/Secale cereale</i> L.	wheat/rye	2		1		2		2	7	+
<i>Secale cereale</i> L.	rye	1				1		1	2	+
<i>cf. S. cereale</i>	?rye	1			1	2		1		
<i>Hordeum vulgare</i> L.	barley, hulled twisted	3	8		1	5		5	17	+++++
<i>H. vulgare</i> L.	barley, hulled straight	1	3		2	2		3	2	
<i>H. vulgare</i> L.	barley, hulled	5	33	1	1	17	2	3	17	
<i>H. vulgare</i> L.	barley, indet	7	12			12	1		16	
<i>cf H. vulgare</i>	?barley	2	5			1			4	
<i>Avena</i> sp(p).	oat		1			1	1	1	2	++
<i>cf. Avena</i> sp(p).	?oat		2		1	1	2	1	1	
Cerealia	indet. cereal	66	85	26	14	114	70	63	92	+++++
Cerealia	indet cereal fragments <2mm	++	++	+	++	+++	+++	++	++	
Cerealia	indet cereal loose coleoptiles									+
Cereal chaff										
<i>Triticum aestivum</i> type	hexaploid wheat rachis		1							
<i>T. aestivum/turgidum</i> type	free-threshing wheat rachis		1		2					
<i>Hordeum</i> sp(p).	barley rachis		3					2	1	
Other plant/weed seeds										
<i>Ranunculus acris/repens/bulbosus</i>	buttercups					1		2		
<i>Urtica</i> sp.	nettle						1			
<i>Corylus avellana</i> L.	hazel nut shell fragments	6	4	4	1	10	59 (0.015g)	48 (0.01g)	5	++
<i>Atriplex</i> sp(p).	orache					1		2		
<i>Atriplex/Chenopodium</i> sp.	oraches/goosefoots etc.		1							
<i>Chenopodium</i> spp.	goosefoots etc.							2		
<i>Agrostemma githago</i> L.	corncockle	1				3		1	3	++
<i>Polygonum aviculare</i> L.	knotgrass						1	2		
<i>Fallopia convulvulus</i> (L.) A Love	black bindweed		1				2			
<i>Rumex</i> sp(p).	dock			1		1		2		
<i>Vicia/Lathyrus</i> sp(p).	vetch/tare/vetchling (>2mm)			1	1					+
<i>Vicia/Lathyrus</i> sp(p).	vetch/tare/vetchling (<2mm)					1				+
<i>Vicia/Lathyrus/Pisum</i> sp(p).	vetch/tare/vetchling/pea (>2mm)	1						4		
<i>Vicia/Lathyrus/Pisum</i> sp.	vetch/tare/vetchling/pea (<2mm)				1					
<i>cf Pisum sativum</i>	?pea							1		
<i>Medicago/Trifolium</i> sp(p).	medicks/clovers		2				4	1		+
Fabaceae indet	small fragments/cotyledons		2							
Fabaceae indet	small rounded legumes		1		1					
<i>Lithospermum arvense</i> L.	field gromwell							1m		+mc
<i>Plantago lanceolata</i> L.	ribwort plantain					2		1		+
<i>Euphrasia/Odontites</i> sp.	eyebrights/bartsias		1							
<i>Rhinanthus minor</i> L.	yellow rattle		1							
<i>Valerianella dentata</i> (L.) Pollich	narrow-fruited cornsalad						1			
<i>Anthemis cotula</i> L.	stinking chamomile				1	1		1		
<i>Eleocharis palustris/uniglumis</i>	spike-rush		1			1				
<i>Carex</i> sp(p).	sedge		1				2	1		
<i>Festuca/Lolium</i> sp.	fescue/rye-grass						1			
<i>Poa</i> spp.	meadow-grass		2							
<i>Bromus</i> sp(p).	brome	1				1	1		1	+
<i>cf. Bromus</i> spp.	?brome							3		
Poaceae indet.	wild grasses (large seeds)	1	6		2	4	2	3		+
Poaceae indet.	wild grasses (small seeds)		2							
indeterminate	wood charcoal	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++
indeterminate	items		+	+		+	+	+		+
<b>TOTAL</b>		<b>149</b>	<b>190</b>	<b>44</b>	<b>36</b>	<b>251</b>	<b>230</b>	<b>211</b>	<b>303</b>	
<b>item density (per litre of processed soil)</b>		<b>3.7</b>	<b>9.5</b>	<b>4.4</b>	<b>1.8</b>	<b>6.6</b>	<b>5.7</b>	<b>5.3</b>	<b>60.6e</b>	

Item frequency: + =1-10; ++ = 11-50; +++ = 51-150; ++++ =151-250; +++++ = 250+ items

m = mineralised remains; mc = mineralised and charred remains

e = projected density based on sub sample

Table 2: 114-119 St Aldates, Oxford (OXSTAD16): Phase 3: The Charred Plant Remains

	Period	LATE 11th TO 12th CENTURY									
	phase	3									
	area	1							4	10	
	context type	PIT	PIT	PIT	PIT	PIT	PIT	LAYER	LAYER	LAYER	PIT
	cut number	1038	1144	1144	1357	1215	1279				10018
	context number	1035	1257	1158	1103	1214	1129	1181	1188	4105	10019
	sample number	4	56	36	24	44	29	41	42	4010	10001
	vol sample (l)	40	12	40	13	9	16	38	18	20	40
	vol flot (ml)	120	155	59	42	135	135	28	89	150	100
LATIN_NAME	ENGLISH										
<b>CHARRED PLANT REMAINS</b>											
<b>Cereal grains</b>											
<i>Triticum aestivum/turgidum</i> type	free-threshing wheat	10	2	2		7	2	3		3	3
<i>T. cf. aestivum/turgidum</i> type	?free-threshing wheat	4	2	2	2	58	1	3	2	1	7
<i>Triticum</i> sp(p).	wheat	9		3	4	31	1	3	4	3	9
cf. <i>Triticum</i> sp(p).	?wheat	8	3	4		72	1	4	4	1	5
<i>Triticum/Secale cereale</i> L.	wheat/rye		1								
<i>Secale cereale</i> L.	rye									2	
cf. <i>S. cereale</i>	?rye			1							
<i>Hordeum vulgare</i> L.	barley, hulled twisted	8	3	1			1	1	1		2
<i>H. vulgare</i> L.	barley, hulled straight	3		2					1		1
<i>H. vulgare</i> L.	barley, hulled	32	1	3	1		1	4	1	1	4
<i>H. vulgare</i> L.	barley, indet	18		3	2	11		2	1	1	1
cf <i>H. vulgare</i>	?barley	8			1	5		3			
<i>Avena</i> sp(p).	oat	2	4	1		8	3	3	1	8	7
cf. <i>Avena</i> sp(p).	?oat	4	1	2		9		1	1	2	14
Cerealia	indet. cereal	93	24	31	19	278	23	21	20	40	78
Cerealia	indet cereal fragments <2mm	+++	++	++	++	++++	++	++	++	++	++
<b>Cereal chaff</b>											
<i>Triticum aestivum</i> type	hexaploid wheat rachis					2					1
<i>T. aestivum/turgidum</i> type	free-threshing wheat rachis					3			2	1	
<i>Hordeum</i> sp.	barley rachis									1	
<i>Avena</i> sp.	oat awn fragment		1								
<b>Other plant/weed seeds</b>											
<i>Ranunculus acris/repens/bulbosus</i>	buttercups		2	1			1			2	
<i>R. flammula</i> L.	lesser spearwort					2					
<i>Ranunculus</i> spp.	buttercups					2					
Papaveraceae indet.	poppies etc.					1					
<i>Urtica</i> sp.	nettle		1							1	
<i>Corylus avellana</i> L.	hazel nut shell fragments	13	71 (0.025g)	36 (0.01g)	17	12	18	10	22 (0.01g)	144 (0.025g)	46 (0.02g)
<i>Atriplex</i> sp(p).	orache	1				54	2			41	1
<i>Chenopodium</i> spp.	goosefoots etc.									2	
<i>Stellaria media</i> (L.) Vill.	common chickweed									1	
<i>Agrostemma githago</i> L.	corncockle	2		1			1		1	24	2
<i>Silene</i> sp.	campion/catchfly									1	1
<i>Polygonum aviculare</i> L.	knotgrass	1				2				2	

<i>Fallopia convulvulus</i> (L.) A Love	black bindweed									16	
<i>Rumex acetosella</i> L.	sheep's sorrel									1	1
<i>Rumex</i> sp(p).	dock	2	1			1	2		1	16	1
Polygonaceae indet						6					
<i>Malva</i> sp.	mallow						1			3	2
<i>R. idaeus</i> /sect <i>Glandulosus</i>	raspberry/blackberry		1								
<i>Vicia/Lathyrus</i> sp(p).	vetch/tare/vetchling (>2mm)	1	1			18			1		
<i>Vicia/Lathyrus</i> sp(p).	vetch/tare/vetchling (<2mm)	2	2			7	1				1
<i>Vicia/Lathyrus/Pisum</i> sp(p).	vetch/tare/vetchling/pea (<2mm)	1	1	1		3			1		
<i>Medicago/Trifolium</i> sp(p).	medicks/clovers		1			1	4			5	
Fabaceae indet	small rounded legumes	1								4	
<i>Bupleurum rotundifolium</i> L.	thorow-wax						1			146	
cf. <i>Daucus carota</i>	?carrot									1	
<i>Lithospermum arvense</i> L.	field gromwell					76m					
<i>Prunella vulgaris</i> L.	self-heal						1			2	
Lamaiceae indet										4	
<i>Plantago lanceolata</i> L.	ribwort plantain	1				1				8	
<i>Euphrasia/Odontites</i> spp.	eyebrights/bartsias									11	
<i>Rhinanthus minor</i> L.	yellow rattle						8				
<i>Sherardia arvensis</i> L.	field madder										1
<i>Galium aparine</i> L.	cleavers									8	1
<i>Sambucus nigra</i> L.	elder	2									
<i>Centaurea</i> spp.	knapweeds									3	
<i>Anthemis cotula</i> L.	stinking chamomile seed head					10	1				
<i>A. cotula</i> L.	stinking chamomile	1				658	2			8	5
Asteraceae indet						2					
<i>Eleocharis palustris/uniglumis</i>	spike-rush		3				1	1		11	
<i>Carex</i> sp(p).	sedge	1	3	1		1	6			24	2
Cyperaceae	sedges etc.		1				1				1
<i>Festuca/Lolium</i> sp(p).	fescue/rye-grass						2				
<i>Lolium temulentum</i> L.	darnel									9	
<i>L. cf. temulentum</i>	?darnel									8	
<i>Lolium</i> sp(p).	rye-grass						8			1	
<i>Poa</i> spp.	meadow-grass						1			4	
<i>Bromus</i> sp(p).	brome	5		1						31	
cf. <i>Bromus</i> sp(p).	?brome	4	1	1			1			22	
Poaceae indet.	wild grasses (large seeds)	5	1	4	1	31	3	2	2	21	8
Poaceae indet.	wild grasses (small seeds)	1				3	19			19	
Poaceae indet.	wild grass/cereal culm node/internode		3			17	1			1	1
indeterminate	ribbed round stems						16			1	
indeterminate	wood charcoal	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++
indeterminate	items	+	+			+	+			++	+
	<b>TOTAL</b>	<b>243</b>	<b>135</b>	<b>101</b>	<b>47</b>	<b>1392</b>	<b>135</b>	<b>61</b>	<b>66</b>	<b>670</b>	<b>206</b>
	<b>item density (per litre of processed soil)</b>	<b>6.1</b>	<b>11.4</b>	<b>2.5</b>	<b>3.6</b>	<b>154.7</b>	<b>8.4</b>	<b>1.6</b>	<b>3.7</b>	<b>33.5</b>	<b>5.1</b>

Item frequency: + =1-10; ++ = 11-50; +++ = 51-150; ++++=151-250; +++++ = 250+tems

**Table 3: 114-119 St Aldates, Oxford (OXSTAD16): Phases 4 and 7: The Charred Plant Remains**

	Period	13th to 14th C		MID 17th-EARLY 18th C	
	phase	4		7	
	area	4	10	4	
	structure/feature			7.1	
	context type	?PIT	LAYER	CESSPIT	
	cut number	4048		4073	
	context number	4044	10013	4014	4061
	sample number	4004	10000	4005	4007
	vol sample (l)	40	31	21	36
	vol flot (ml)	150	1500	170	350
LATIN_NAME	ENGLISH				
<b>CHARRED PLANT REMAINS</b>					
<b>Cereal grains</b>					
<i>Triticum aestivum/turgidum</i> type	free-threshing wheat	7	1		
<i>T. cf. aestivum/turgidum</i> type	?free-threshing wheat	11	2		
<i>Triticum</i> sp(p).	wheat	9			1
cf. <i>Triticum</i> sp(p).	?wheat	8	1	1	
<i>Triticum/Secale cereale</i> L.	wheat/rye	1	3		
<i>Secale cereale</i> L.	rye		3		
cf. <i>S. cereale</i>	?rye	2	3		
<i>Hordeum vulgare</i> L.	barley, hulled twisted	2			
<i>H. vulgare</i> L.	barley, hulled straight		1		
<i>H. vulgare</i> L.	barley, hulled	6			
<i>H. vulgare</i> L.	barley, indet	2	1		
cf <i>H. vulgare</i>	?barley		2		
<i>Avena</i> sp(p).	oat	3	1		
cf. <i>Avena</i> sp(p).	?oat	7		1	
Cerealia	indet. cereal	64	9	5	3
Cerealia	indet cereal fragments <2mm	++	+	+	+
<b>Cereal chaff</b>					
<i>Triticum aestivum</i> type	hexaploid wheat rachis	1			
<i>T. aestivum/turgidum</i> type	free-threshing wheat rachis	2			
<b>Other plant/weed seeds</b>					
<i>Ranunculus acris/repens/bulbosus</i>	buttercups	1			
<i>Corylus avellana</i> L.	hazel nut shell fragments	42 (0.005g)		1	
<i>Rumex</i> sp.	dock	1			
<i>Vicia/Lathyrus</i> spp.	vetch/tare/vetchling (>2mm)	2			
<i>Vicia/Lathyrus</i> spp.	vetch/tare/vetchling (<2mm)	3			
<i>Vicia/Lathyrus/Pisum</i> sp.	vetch/tare/vetchling/pea (<2mm)	1			
cf <i>Pisum sativum</i>	?pea	1			
<i>Medicago/Trifolium</i> spp.	medicks/clovers	3			
Fabaceae indet	large fragments/cotyledons	2			
<i>Plantago lanceolata</i> L.	ribwort plantain		1		
<i>A. cotula</i> L.	stinking chamomile	2			
<i>Carex</i> sp(p).	sedge	1			
<i>Bromus</i> sp.	brome		1		
Poaceae indet.	grasses (large seeds)	3			
Poaceae indet.	grasses (small seeds)	1			
Poaceae indet.	wild grass/cereal culm node/internode		1		
indeterminate	wood charcoal	+++++	+++++	+++++	+++
indeterminate	items	+			
	<b>TOTAL</b>	<b>188</b>	<b>30</b>	<b>8</b>	<b>4</b>
	<b>item density (per litre of processed soil)</b>	<b>4.7</b>	<b>1</b>	<b>0.4</b>	<b>0.1</b>

Item frequency: + = 1-10; ++ = 11-50; +++ = 51-150; ++++=151-250; +++++ = 250+tems

Table 4: 114-119 St Aldates, Oxford (OXSTAD16): Phases 4 and 7: The Waterlogged and Mineralised Plant Remains

	Period	13th/14th C	MID 17th-EARLY 18th C	
	phase	4	7	
	area	10	4	
	structure/feature		7.1	
	context type	LAYER	CESSPIT	
	cut number		4073	
	context number	10013	4014	4061
	sample number	10000	4005	4007
	vol sample (l)	31	21	36
	vol flot (ml)	1500	170	350
	LATIN_NAME	ENGLISH		
	<i>Ranunculus acris/repens/bulbosus</i>	buttercups	+++	+
	<i>R. sardous</i> Crantz.	hairy buttercup	+	
	<i>R. sceleratus</i> L.	celery-leaved crowfoot		+
	<i>Papaver</i> spp.	poppy		+
	Papaveraceae indet.	Poppy family		+
	<i>Cannabis sativa</i> L.	hemp	+	
	<i>Morus nigra</i> L.	black mulberry	+	
	<i>Ficus carica</i> L.	fig	+++++	+++*
	<i>Betula</i> sp.	birch		+
	<i>Corylus avellana</i> L.	hazel nut shell fragments	++	
	<i>Chenopodium</i> spp.	goosefoots etc		+
	<i>Atriplex</i> spp.	oraches	++	+
	<i>Montia fontana</i> L.	blinks		+
	<i>Agrostemma githago</i> L.	corn cockle fragments	+++++	
	<i>Silene</i> spp.	campions/catchflies	+	
	Caryophyllaceae indet.	Pink family		+
	<i>Polygonum aviculare</i> L.	knotgrass	+	
	<i>Fallopia convulvulus</i> (L.) A Love	black bindweed	+	
	<i>Rumex</i> spp.	docks	++	
	<i>Brassica/Sinapis</i> spp.	cabbages, turnip, mustards	++	
	<i>Rubus idaeus</i>	raspberry	++	+++*
	<i>R. sect. Glandulosus</i>	blackberry	+++	++
	<i>R. idaeus/sect. Glandulosus</i>	raspberry/blackberry	+++	+++*
	<i>Rubus</i> spp. fragments	brambles etc.	++	+++
	<i>Fragaria vesca</i> L.	wild strawberry	++++	+
	<i>Potentilla/Fragaria</i> spp.	cinquefoil/tormentil/strawberry	+++	
	<i>Rosa canina</i> L.	dog-rose	+	
	<i>Prunus spinosa</i> L.	sloe/blackthorn	+++	
	<i>P. domestica</i> type	plum/damson/bullace	++++	+
	<i>P. avium</i> type	sweet cherry	+++	
	<i>P. avium/cerasus</i> type	sweet/dwarf cherry	++	
	<i>Prunus</i> spp.	indet. fruit stones (whole/fragments)	+++	
	<i>Pyrus/Malus</i> spp.	pear/apple	++	
	<i>Malus domestica</i> Borkh.	apple		+++
	<i>Malus</i> spp.	apple	++	
	cf. <i>Sorbus aucuparia</i>	?rowan	+	
	<i>Sorbus</i> spp.	whitebeam	+	
	<i>Pyrus/Malus/Sorbus</i> spp.	pear/apple/service-tree	++	
	Rosaceae indet.	Rose family	+	
	<i>Medicago/Trifolium</i> spp.	medicks/clovers		++
	<i>Cornus sanguinea</i> L.	dogwood	+	
	<i>Vitis vinifera</i> L.	grape	++++	+++*
	<i>Coriandrum sativum</i> L.	coriander	+	
	<i>Oenanthe</i> spp.	water-dropwort	+	
	<i>Aethusa cynapium</i> L.	fool's parsley	+	
	<i>Foeniculum vulgare</i> Mill.	fennel	+	
	Apiaceae indet.	Carrot family	+	+++*
	<i>Galeopsis tetrahit</i> L.	common hemp-nettle	+	
	<i>Prunella vulgaris</i> L.	self-heal	++	
	<i>Sambucus nigra</i>	elder		+
	<i>Carduus/Cirsium</i> spp.	thistles	+	
	<i>Leontodon</i> spp.	hawkbits	+	
	<i>Anthemis cotula</i> L.	stinking chamomile	+	
	<i>Chrysanthemum segetum</i> L.	corn marigold	+	
	<i>Alisma</i> spp.	water-plantains		+
	<i>Juncus</i> spp.	rushes		+
	<i>Eleocharis palustris/uniglumis</i>	spike-rush	+	+
	<i>Carex</i> spp.	sedges	+++	+++
	Cerealia indet.	cereal bran fragments	+++++	
	Poaceae indet.	grasses (large seeds)		+++*
	Poaceae indet.	grasses (small seeds)	+	+++*
	Bryophyta indet.	moss fragments	+++	
	indeterminate	ribbed stem fragments	++++	+++**
	indeterminate	seeds etc	+++*	+++*
	indeterminate	wood fragments (branch, twig, shavings)	++++	+++*

key: very approximate frequencies: + = 1-10; ++ = 11-50; +++ = 51-100; ++++ = 101-250; +++++ => 250 items

\* = waterlogged and mineralised; \*\* = mineralised only