Lower Radbourne Archaeobotanical Analysis

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Introduction

Archaeobotanical assessment of thirty-nine bulk-sampled archaeological contexts during evaluation trenching at Lower Radbourne, highlighted the requirement for further quantification and analysis of archaeobotanical remains. Sampled archaeological contexts were primarily ditch fills, alongside five posthole fills and two pit fills. Pottery remains were identified as being from between 11th-15th century; though with the suggestion that the 15th century pottery was scarce, and that settlement and domestic activity in this area had ceased during the mid-late 14th century. Charred archaeobotanical remains were recovered from nineteen of the thirty-nine sampled contexts; primarily in the form of cereal grains, alongside associated agricultural weed seeds and seeds of horticultural products.

Methods

Bulk fill samples were processed via water floatation through a siraf-style flotation tank using a 500 µm flotation mesh and a 500 µm sieve. Heavy residues were cleaned and searched for archaeological finds and non-floating palaeoenvironmental remains. Flots were weighed; air dried, and scanned using a low-power binocular microscope (x40).

Botanical macrofossil identification was undertaken using a low-power binocular microscope (x40). Botanical macrofossil identification utilised plates and guides from Martin and Barkley (2000) and Cappers *et al.* (2006), as well as comparison with a modern reference collection.

Plant nomenclature follows Stace (1997) and the cereal identification utilised the guide by Jacomet (2006).

All botanical macrofossils present were assessed. Uncharred organic material was identified and roughly quantified. All of the uncharred material represents recent biological activity as the site was free-draining with no evidence for waterlogging.

Results

By far the most common recovered remains were those of charred cereals. A number of the assemblages (see table 1) were indeed composed primarily of charred grain. Free-threshing wheat (*Triticum nudum*) was the most frequent component of all archaeobotanical assemblages, with a minor proportion being composed of oats (*Avena* sp). The wheat grains possessed the characteristic short, squat form of free-threshing wheat, and was frequently well preserved with little clear evidence for erosive damage. Indeed, all cereal grains as well as non-cereal charred macrofossils were generally well preserved. The free-threshing wheat cannot be conclusively identified as being either hexaploid bread wheat (*Triticum aestivum*) or tetraploid durum wheat (*Triticum durum*) in the apparent absence of rachis remains. However, they are far more likely to be of the bread wheat variety which was far more

common in medieval Britain (*Woolgar et al.* 2011). Although in the absence of florets oats cannot be definitively identified as the cultivated variety (*Avena sativa*; Hillman *et al.* 1996), their presence alongside wheat in relatively high numbers compared to other charred weed seeds would suggest that they are likely the cultivated variety. An exception was in the upper fill (3408) of ditch [3407] where two oats were recovered within the florets. These florets were indicative of the cultivated *Avena sativa* variety.

Results

Sample No.	33	34	35	30	36	31
Context No.	1210	1212	1216	1404	1504	2006
Description	Fill of gully	Fill of gully	Fill of pit [1215]	Fill of ditch [1403]	Fill of ditch [1503]	Fill of gully [2005]
Composition of the flots	100% rootlets; dock (*Rumex sp.*) seeds	100% rootlets	100% rootlets	100% rootlets	100% rootlets, Grass (Poaceae) seeds, Clover (*Trifolium sp*.) seeds	100% rootlets, Grass (Poaceae) seeds, Clover (*Trifolium sp*.) seeds
Sample Volume	10L	10L	10L	40L	10L	20L
Flot Weight	1.04g	0.63g	0.04g	7.47g	1.71g	0.98g
Charred plant macrofossils						
Cereals						
Free-threshing wheat *Triticum aestivum)*					2	

Sample No.	5	38	7	6	22	23
Context No.	3015	3007	3022	3025	3404	3406
Description	Fill of ditch [3014]	Upper fill of boundary ditch [3005]	Primary fill of ditch [3021]	Fill of ditch [3024]	Fill of ditch [3403]	Fill of posthole [3405]
Composition of the flots	100% rootlets, goosefoot (Chenopodium sp.), seeds, dock (Rumex sp.) seeds	20% rootlets, goosefoot (Chenopodium sp.), seeds, dock (Rumex sp.) seeds; 80% charred grain	80% rootlets, goosefoot (*Chenopodium sp.*) seeds, dock (*Rumex sp.*) seeds, Poaceae seeds	60% rootlets, goosefoot (*Chenopodium sp.*)	60% rootlets, goosefoot (*Chenopodium sp.*), dock (*Rumex sp.*) seeds	60% rootlets, goosefoot (*Chenopodium sp.*), seeds, dock (*Rumex sp.*) seeds; 40% charred grain
Sample Volume	40L	40L	40L	40L	40L	10L
Flot Weight	0.3g	3.95g	0.21g	0.29g	1.72g	2.66g
Charred cereals						
Oat awn						
Barley (*Hordeum sp.*)						
Free-threshing wheat *Triticum aestivum)*	1	133	13	9	3	112
cf. Free-treshing wheat (*Triticum cf. aestivum)*		36	5			40
Oat (*Avena sp.*)		5	1			15
cf. Oat (cf. *Avena sp.*)						5
Indet. Cereal grain						20% of flot

Sample No.	24	25	26	4	16	39
Context No.	3408	3410	3412	3704	3804	3908
Description	Upper fill of ditch [3407]	Fill of posthole [3409]	Fill of posthole [3411]	Fill of pit [3703]	Fill of ditch [3803]	Fill of ditch [3903]
Composition of the flots	20% rootlets, goosefoot (Chenopodium sp.), seeds, dock (Rumex sp.) seeds, catchfly (*Silene sp.*); 80% charred grain	50% rootlets, goosefoot (Chenopodium sp.), dock (Rumex sp.) seeds); 50% charred grain	5% rootlets, dock (*Rumex sp.*); 85% charred grain	100% rootlets, goosefoot (Chenopodium sp.), seeds, dock (Rumex sp.), clover (*Trifolium sp.*) seeds	100% rootlets, Dandelion (Asteraceae) seeds, goosefoot (Chenopodium sp.)	100% rootlets, Dandelion (Asteraceae) seeds, goosefoot (Chenopodium sp.)
Sample Volume	30L	10L	5L	40L	40L	40L
Flot Weight	83.95g	0.21g	2.66g	1.19g	1.07g	1.81g
Charred cereals						
Oat awn	4		1			
Barley (*Hordeum sp.*)	8		1			
Free-threshing wheat *Triticum aestivum)*	66% of flot	9	83			
cf. Free-treshing wheat (*Triticum cf. aestivum)*	10% of flot	1	17			
Oat (*Avena sp.*)	179 (2 with florets)	1	10			
cf. Oat (cf. *Avena sp.*)	41		1			
cf Rye (*Secale cereale*)	3					
Indet. culm internode	2					
Indet. Straw	4					
Indet. Cereal grain			80% of flot			

Sample No.	8	9	12	11	10	13
Context No.	3909	3911	4104	4106	4107	4207
Description	Fill of ditch [3904]	Fill of ditch [3905]	Fill of ditch [4103]	Fill of ditch [4105]	Fill of ditch [4105]	Fill of large post-medieval ditch
Composition of the flots	20% rootlets; 80% charred grain	70% rootlets, Dandelion (Asteraceae) seeds, goosefoot (Chenopodium sp.)	95% rootlets, Dandelion (Asteraceae), goosefoot (*Chenopodium sp.*) seeds	98% rootlets, goosefoot (*Chenopodium sp.*) seeds	100% rootlets, Grass (Poaceae) seeds, Clover (*Trifolium sp.*) seeds	98% rootlets, goosefoot (*Chenopodium sp.*) seeds; sedge (*Carex sp.*) fronds
Sample Volume	40L	40L	40L	40L	40L	40L
Flot Weight	0.29g	0.78g	7.28g	1.15g	1.44g	1.20g
Charred cereals						
Cereals						
Free-threshing wheat *Triticum aestivum)*	8	3	5	3	2	
cf. Free-treshing wheat (*Triticum cf. aestivum)*	1	1	1		1	
Oat (*Avena sp.*)	2	5				
cf. Oat (cf. *Avena sp.*)	1					

Sample No.	14	1	17	28	27	2
Context No.	4520	4804	4904	5104	5112	5606
Description	Fill of ditch [4519]	Fill of shallow ditch [4803]	Fill of ditch	Fill of posthole [5103]	Fill of posthole [5111]	Suspected medieval ridge and furrow
Composition of the flots	70% rootlets, 20% moderate charcoal; 10% charred grain	100% rootlets	98% rootlets, goosefoot (*Chenopodium sp.*), clover (*Trifolium sp*.) seeds	100% rootlets, goosefoot (*Chenopodium sp.*) seeds	100% rootlets	60% rootlets, goosefoot (*Chenopodium sp.*) seeds; 40% charred grain
Sample Volume	40L	40L	40L	10L	20L	40L
Flot Weight	5.37g	3.94g	1.69g	0.61g	0.26g	4.74g
Charred cereals						
Free-threshing wheat *Triticum aestivum)*	33		2			47
cf. Free-treshing wheat (*Triticum cf. aestivum)*						38
Oat (*Avena sp.*)	2					6
cf. Oat (cf. *Avena sp.*)						1
Indet. Cereal grain	5					

Sample No.	2	18	19	20	21
Context No.	5606	6006	6604	7204	7704
Description	Suspected medieval ridge and furrow	Fill of ditch [6005]	Fill of ditch [6603]	Fill of ditch [7203]	Fill of ditch [7703]
Composition of the flots	60% rootlets, goosefoot (*Chenopodium sp.*) seeds; 40% charred grain	60% rootlets, goosefoot (*Chenopodium sp.*) seeds	100% rootlets, goosefoot (*Chenopodium sp.*), clover (*Trifolium sp*.) seeds	100% rootlets	95% rootlets, goosefoot (*Chenopodium sp.*) seeds
Sample Volume	40L	40L	40L	40L	40L
Flot Weight	4.74g	0.96g	0.39g	0.06g	0.48g
Charred cereals					
Free-threshing wheat *Triticum aestivum)*	47	10	1		
cf. Free-treshing wheat (*Triticum cf. aestivum)*	38				
Oat (*Avena sp.*)	6	3			
cf. Oat (cf. *Avena sp.*)	1	1			

Table 1. Recovered charred cereal archaeobotanical remains

Sample No.	38	23	24	26	9	12
Context No.	3007	3406	3408	3412	3911	4104
Description	Upper fill of boundary ditch [3005]	Fill of posthole [3405]	Upper fill of ditch [3407]	Fill of posthole [3411]	Fill of ditch [3905]	Fill of ditch [4103]
Sample Volume	40L	10L	30L	5L	40L	40L
Flot Weight	3.95g	2.66g	83.95g	2.66g	0.78g	7.28g
Charred non-cereals						
Pea (*Pisum sativum*)		1	4			
Broad bean (*Vicia faba)*			6			
Turnip (*Brassica rapa ssp. rapa)*	1					
Sloe/blackthorn (*Prunus spinosa*)	1					
Rose hip (*Rosa canina*)			1			
Dog rose (*Rosa canina*) seed			3			
Brome grass (*Bromus sp.*)		3	2	2		
Goosefoot (*Chenopodium sp.*)	1		5			
Stinking hawksbeard (*Crepis foetida*)		1	1	1		1
Stinking chamomile (*Anthemis cotula)*	8	5	23	6		2
Dock (*Rumex sp.*)	2		15	2		
Nettle (*Urtica dioica*)			6			
Vetch (*Vicia sp.*)			5		1	1
Poppy (*Papaver sp.*)			4			
Cleavers (*Galium aparine*)		1	3			
Pale persicaria (*Persicaria lapathifolia*)			1			
Polygonaceae			3			
Poaceae			8			

Sample No.	13	14	2	18
Context No.	4207	4520	5606	6006
Description	Fill of large post-medieval ditch	Fill of ditch [4519]	Suspected medieval ridge and furrow	Fill of ditch [6005]
Composition of the flots	98% rootlets, goosefoot (*Chenopodium sp.*) seeds; sedge (*Carex sp*.) fronds	70% rootlets, 20% moderate charcoal; 10% charred grain	60% rootlets, goosefoot (*Chenopodium sp.*) seeds; 40% charred grain	60% rootlets, goosefoot (*Chenopodium sp.*) seeds
Sample Volume	40L	40L	40L	40L
Flot Weight	1.20g	5.37g	4.74g	0.96g
Charred non-cereals				
Catchfly (*Silene sp.*)			1	
Stinking chamomile (*Anthemis cotula)*		2	3	1
Vetch (*Vicia sp.*)	1		1	1

Table 2. Recovered charred non-cereal archaeobotanical remains

Trench 34 yielded the greatest concentration of recovered archaeobotanical material. The two posthole fills (3406) and (3412) both contained large charred cereal assemblages of over fifty individuals, despite relatively small sample sizes, as well as small numbers of agricultural weed seeds. A single pea was recovered from the posthole fill (3406).

The upper (3408) fill of ditch [3407] contained by far the most significant archaeobotanical assemblage recovered. The assemblage weighed 83.95g, of which roughly 85% was charred cereal remains alongside a small (~5%) quantity of large (>10mm) fragments of charcoal and around 10-20 non-cereal archaeobotanical remains. These non-cereal remains were primarily peas (*Pisum sativum*) and broad beans (*Vicia faba*) alongside a small number of agricultural weed seeds. A small quantity (1-5 individuals) of charred cereal straw was also observable within the assemblage. This assemblage yielded thirteen other varieties of charred seed. These were all seeds of plants commonly encountered as agricultural weeds. Doge rose (*Rosa canina*) seeds and a seed pod (rose hip) were also recovered from this context.

The upper fill (3007) of boundary ditch [3005], the fill (4504) of ditch [4519], and ditch fill (5606) also contained notable archaeobotanical assemblages, yielding quantities of charred cereal grain. As with the other charred archaeobotanical assemblages, small quantities of agricultural weed seeds were also recovered. Of note from the upper fill (3007) of boundary ditch [3005] was the recovery of a single charred *Brassica* seed. This seed was exceptionally well preserved and displayed distinct, pronounced ribbed reticulum and an angular-oblong mesh. Based on these features and with comparison with reference material, the seed is identified as being either domesticated turnip (*Brassica rapa ssp.* rapa) or wild turnip (*Brassica rapa ssp. campestris*). Additionally, within this context a sloe/blackthorn (*Prunus spinosa*) was also recovered.

Discussion

The charred archaeobotanical assemblages recovered from the bulk-sampled archaeological contexts are all characterised by high proportions of charred grain. The assemblages were overwhelmingly composed of cleaned grain with an absence (or near absence) of cereal chaff and a small proportion of weed seeds. Free-threshing bread wheat grains such as are found here, alongside cultivated oats and legumes, are very typical medieval archaeobotanical assemblages (Woolgar *et al.* 2011). This high proportion of cleaned grain is very indicative of grain which has undergone cereal processing and is ready for consumption (Hillman *et al.* 1996). The small quantities of charred cereal straw recovered in the upper fill (3408) of ditch [3407] probably represents accidental inclusions with the grain which passed through cereal processing, though there is a slight chance for them to represent accidentally charred roofing material. These grain assemblages were somewhat mixed; predominantly of wheat alongside a smaller quantity of oats. Peas and beans were also encountered, alongside what may be a turnip seed; though it should be noted that it is not possible to distinguish between wild turnip or the domesticated turnip. These are indicative of food plants which were commonly grown as domestic horticultural products during the medieval period (Woolgar *et al*. 2011). They could easily be combined with the cereal grains as part of the pottage which formed the backbone of the lower-class medieval diet (Harvey, 1984). These assemblages likely represent charred assemblages of domestic material which has been discarded in predominantly ditch deposits. As these represent domestic refuse

deposits, they are unlikely to represent a single instance of domestic consumption and instead represent the disposal of built up charred material which was collected from the domestic environ and disposed of. It is therefore impossible to say whether the presence of both oats and wheat in the same assemblage is indicative of a maslin crop.

The most common charred weed seed within the charred archaeobotanical assemblage was that of stinking chamomile (*Anthemis cotula*). This is a weed which can be encountered in archaeological assemblages generally from the Roman period onwards, though possibly from the later Iron Age (Lodwick, 2017) and is a common herb on arable land with heavy clay soils (Kay 1971). Further weeds, such as the nettles (*Urtica dioica*) are found on nutrient-rich soils such as farmyards and manure heaps; the former being more likely here. The cleavers (*Galium aparine*) are an autumn germinating species and when found with cereals, such as here, may indicate that the cereal crops were autumn sown (Jones, 1981). The dog rose seeds and hip recovered from upper ditch fill (2408), and the sloe/blackthorn stone are possibly indicative of either field boundary hedgerows or as the result of animal transport into the grain assemblage. The vetch (*Vicia sp*.) seeds could indicate cultivated vetch which was known to have been grown for animal fodder, though here they are more likely to represent agricultural weeds.

These archaeobotanical assemblages represent domestic waste dumps which were likely the result of accidental charring of material from a nearby settlement. These assemblages are the charred remains of lower-class foodstuffs which were consumed within domestic dwellings.

All charred archaeobotanical remains could be considered practical options for radiocarbon dating, excepting those assemblages composed of small numbers of cereal grains due to the potential for residuality or intrusiveness (Pelling *et al.* 2015). However, considering the abundance of more easily datable pottery remains recovered from many archaeological contexts, this may not be necessary.

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