

**Channel Tunnel Rail Link  
London and Continental Railways  
Oxford Wessex Archaeology Joint Venture**

**The charred and waterlogged plant remains from  
Parsonage Farm, Westwell, Kent (ARC PFM98)**

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## 1 INTRODUCTION

Thirty-seven environmental samples were taken from excavations at this moated medieval farm complex, situated at the confluence of two streams. All areas of the site were sampled, including various medieval features such as pits, hearths and the moat, and also deposits within the western palaeochannel, which were associated with a brushwood structure and presumed to be Iron Age in date (50BC – AD50). After assessment, ten samples were selected for further study. Three of these came from the Iron Age deposits within the western stream channel and seven from 12th to 13th century pitfills, both within and outside the moated area.

## 2 METHODS

The samples were processed by flotation, using meshes of 0.25mm and 1.0mm respectively to catch the flot and residue. The residues were dried and sorted by eye for biological and artefactual remains. Flots containing only charred plant remains were also dried, while organic flots were stored in industrial methylated spirits. The dried flots were sorted for charred remains by Oxford Archaeology staff, prior to identification and recording by the author. Organic flots were scanned, and the abundance of waterlogged plant remains estimated on the following scale: + up to 10, ++ 11–50, +++ 51–approx. 250, ++++ over 250 (many hundreds). Only unusual seeds, or those whose identification required detailed examination, were extracted. Where unidentifiable cereal grains or other charred remains could not be quantified because of fragmentation, their abundance was estimated using the same scale. Identifications were made using the botanical reference collection of the Museum of London Specialist Services, and standard identification reference manuals (Beijerinck 1947, Berggren 1981, Anderberg 1994). All identifications were recorded on the MoLAS ORACLE database. The results are shown in Tables 1 and 2.

Table 1: The charred plant remains from Parsonage Farm

feature	P127	P252	P182	P102	P238	P276	P427	
samp vol(l):	20	30	20	20	30	30	30	
gp	43	64	65	65	65	96	216	
sgp	81	207	191	192	196	180	264	
context	601	589	236	101	237	166	426	
sample	24	22	16	1	13	8	15	
Latin name	English name							
<i>cereal grains</i>								
<i>Triticum cf. aestivum</i> s.l.	bread/club wheat	24	39	32	341	73	65	99
<i>Triticum</i> sp.	wheat	5	23	3	58	6	20	19
cf. <i>Triticum</i> sp.	wheat	1	12	2	55	14	20	18
<i>Secale cereale</i> L.	rye			6	19	3	8	
cf. <i>Secale cereale</i>	rye		4	3	12	4	10	1

	feature	P127	P252	P182	P102	P238	P276	P427
	samp vol(l):	20	30	20	20	30	30	30
	gp	43	64	65	65	65	96	216
	sgp	81	207	191	192	196	180	264
	context	601	589	236	101	237	166	426
	sample	24	22	16	1	13	8	15
<b>Latin name</b>	<b>English name</b>							
<i>Triticum/Secale</i> sp.	wheat/rye	2	2	2	6	2	9	
<i>Hordeum vulgare</i> L.	6-row barley	21	6	8	40	3	12	10
cf. <i>Hordeum vulgare</i>	6-row barley	3	4	4	9	2	6	5
<i>Avena</i> sp.	oat		6	12	69	5	20	3
cf. <i>Avena</i> sp.	oat	5	4	7	53	9	22	4
Cerealìa	indet. cereal	++	++	+	+++	+++	++	+++
<b>cereal chaff</b>								
<i>Triticum aestivum</i> s.l.	bread/club wheat, rachis						2	
<i>Secale cereale</i> L.	rye, rachis		1					
<i>Hordeum vulgare</i> L.	6-row barley, rachis					1		
<b>other plants</b>								
<i>Raphanus raphanistrum</i> L.	wild radish				1			
<i>Silene</i> sp.	campion	2						
<i>Chenopodium</i> cf. <i>album</i>	fat hen					1		
<i>Atriplex</i> sp.	orache						2	1
Chenopodiaceae indet.	-							1
cf. <i>Trifolium</i> sp.	clover				1			
cf. <i>Vicia faba</i>	horsebean/broad bean			1	4		1	
<i>Vicia/Lathyrus</i> spp.	vetch/tare/vetchling	1		5	43	10	21	20
<i>Pisum sativum</i> L.	cultivated pea				6	1		
cf. <i>Pisum sativum</i>	cultivated pea				33	1	3	
<i>Vicia/Lathyrus/Pisum</i> spp.	vetch/tare/vetchling/pea	4	12	8	50	10	40	13
<i>Polygonum aviculare</i> agg..	knotgrass						1	
cf. <i>Persicaria amphibia</i> (L.) Gray	amphibious bistort							1
<i>Persicaria</i> cf. <i>maculosa</i>	redshank							1
<i>Persicaria lapathifolia</i> (L.) Gray	pale persicaria						1	
<i>Persicaria</i> cf. <i>laxiflora</i> (Weihe) Opiz	tasteless water-pepper						1	
cf. <i>Persicaria</i> sp.	-	1						
<i>Rumex</i> spp.	docks	2	1	4	1	5	3	2
<i>Carpinus betulus</i> L.	hornbeam				2			
<i>Corylus avellana</i> L.	hazel nutshell		+		+	+	+	
<i>Anthemis cotula</i> L.	stinking mayweed			1		3		26
Poaceae indet.	grasses	4					3	
<i>Bromus</i> sp.	brome grass			1	4		4	
cf. <i>Bromus</i> sp.	brome grass	2				1	4	
<i>Avena/Bromus</i> sp.	oat/brome grass	4	4	4			1	4
Indeterminate	-	1			3			
Indeterminate	thorn				1			

Table 2: The waterlogged plant remains from Parsonage Farm

		Feature type	peat layer	fill chan 224	fill chan 224
		samp vol(l):	20	20	15
		gp	52	53	53
		sgp	235	227	227
		context	242	210	191
		interp	NM	D	D
		sample	9	6	5
Latin name	English name	hab codes			
Bryophyta indet.	moss	-	++	++	++
<i>Ranunculus acris/repens/bulbosus</i>	buttercups	ABCDE	++	++	++
<i>Ranunculus flammula</i> L.	lesser spearwort	E	+	+	+
<i>Ranunculus</i> subgen. <i>Batrachium</i> (DC)A	crowfoots	E	+	++	++
<i>Viola</i> sp.	violet	ABCD		+	+
<i>Silene</i> sp.	campion	ABCD		+	
<i>Lychnis flos-cuculi</i> L.	ragged robin	CDE	+	+	+
<i>Cerastium</i> sp.	mouse-ear chickweed	ABD	++	+	+
<i>Stellaria holostea</i> L.	greater stitchwort	C		+	++
<i>Moehringia trinervia</i> (L.)Clairv.	three-nerved sandwort	C			+
<i>Montia fontana</i> ssp. <i>chondrosperma</i> L	blinks	AE	+		
<i>Chenopodium album</i> L.	fat hen	AB	+		
<i>Ilex aquifolium</i> L.	holly	C			+
<i>Rubus</i> cf. <i>fruticosus</i> agg.	blackberry	C	++		++
<i>Rubus fruticosus/idaeus</i>	blackberry/raspberry	C		++	++
<i>Potentilla</i> sp.	cinquefoil/tormentil	BCDE	+		
cf. <i>Crataegus monogyna</i>	hawthorn	C			+
cf. <i>Daucus carota</i>	wild carrot	AD	+		
<i>Polygonum aviculare</i> L.	knotgrass	AB			+
<i>Persicaria maculosa</i> Gray	redshank	AB		+	+
<i>Polygonum hydropiper</i> (L.) Spach	water pepper	E	++	+	
<i>Rumex acetosella</i> agg.	sheep's sorrel	AD	+		
<i>Rumex</i> spp.	docks	ABCDE	+	+	+
<i>Urtica dioica</i> L.	stinging nettle	BCDE	+		+
<i>Betula pendula</i> Roth	silver birch	CD	+	+	
<i>Alnus glutinosa</i> (L.) Gaertner	alder	CE	+++	++	+
<i>Alnus glutinosa</i> (L.) Gaertner	alder catkin	CE	+	+	+
<i>Corylus avellana</i> L.	hazel nutshell	CF		+	
<i>Mentha</i> sp.	mint	ABCE	+	+	
<i>Lycopus europaeus</i> L.	gipsy-wort	E	+	+	+
<i>Lamium</i> sp.	dead-nettle	ABC		+	
<i>Galeopsis tetrahit</i> L.	common hemp-nettle	ACE		+	+
cf. <i>Ajuga</i> sp.	bugle	ACDE		+	
<i>Sambucus nigra</i> L.	elder	BC	+	+	++
<i>Eupatorium cannabinum</i> L.	hemp-agrimony	E	+		
<i>Carduus/Cirsium</i> sp.	thistles	ABDE	+	+	+
<i>Taraxacum</i> sp.	dandelion	BCDE		+	
Alismataceae indet.	-	E		+	
<i>Potamogeton</i> sp.	pondweed	E		+	

	Feature type	peat layer	fill chan 224	fill chan 224	
	samp vol(l):	20	20	15	
	gp	52	53	53	
	sgp	235	227	227	
	context	242	210	191	
	interp	NM	D	D	
	sample	9	6	5	
Latin name	English name	hab codes			
<i>Juncus</i> sp.	rush	ABCDE	++	+	+++
<i>Sparganium erectum</i> L.	branched bur-reed	E		+	+
<i>Isolepis setacea</i> (L.)R.Br.	bristle club-rush	E	++		
<i>Carex</i> spp.	sedge	CDE	++	++	
Cyperaceae indet.	-	ABCDE	+		+
cf. <i>Glyceria</i> sp.	flote/reed grass	E			+++
cf. <i>Danthonia decumbens</i>	heath grass	D		++	
Poaceae indet.	grasses	ABCDE	++	+	+
Indeterminate	leaf	-		+	+
Indeterminate	bud scales	-		++	+
Indeterminate	stem	-	++	++	+++
Indeterminate	thorn	-	+	+	+
Indeterminate	wood	-	+++	+++	+++
Indeterminate	indet. plant tissue	-	+++	++	++

### 3 RESULTS

#### 3.1 Iron Age

Preservation of organic remains was good in the four samples taken from the western stream channel, and waterlogged plant remains have been recorded from peat deposit [242] and two later channel fills, [210] and [191]. All consisted mainly of organic material, including much wood, thorns, bud scales, plant stems and moss, as well as large assemblages of seeds.

A relatively high number of woodland species were represented in these assemblages. Seeds and catkins of alder (*Alnus glutinosa*), which grows on river banks and in wet woodland, were found in all three samples, and several twigs from both samples were also identified as alder. Bramble (*Rubus* cf. *fruticosus*) and elder (*Sambucus nigra*) seeds, both plants of woodland clearings and scrub, were also found in all samples. Occasional silver birch (*Betula pendula*) seeds were present in peat deposit [242] and in [210], while hazel nutshell fragments were also identified from the latter. Holly (*Ilex aquifolium*) and probable hawthorn (cf. *Crataegus* sp.) seeds were found only in [191], and also in the upper two deposits ([210] and [191]) were a few seeds of the herbaceous plants, greater stitchwort (*Stellaria holostea*) and three-nerved sandwort (*Moehringia trinerva*). All these are characteristic of relatively well-drained woods and scrub (Clapham et al 1987).

Seeds from herbaceous plants of wetland habitats were common in the channel fills, and several wetland taxa such as crowfoots (*Ranunculus* subgen. *Batrachium*), lesser spearwort (*R. flammula*), sedges (*Carex* spp.) and rushes (*Juncus* spp.) were recovered from all three. Cases from the aquatic larvae of caddis flies (Trichoptera) were also found in all samples. Bristle club-rush (*Isolepis setacea*), blinks (*Montia fontana* ssp. *chondrosperma*) and hemp agrimony (*Eupatorium cannabinum*), whose seeds were found only in the peat deposit [242], tend to grow in damp, disturbed ground which may be flooded in winter, but regularly dries out (Ellenberg 1988). Pondweed (*Potamogeton* sp.), branched bur-reed (*Sparganium erectum*), water-plantain (*Alisma* sp.) and flote grass (cf. *Glyceria* sp.), which were exclusive to the later deposits [210] and [191] however, prefer wetter conditions where standing water is present all or most of the time.

Seeds of ragged robin (*Lychnis flos-cuculi*), buttercups (*Ranunculus acris/bulbosus/repens*) and wild grasses (Poaceae) were found in all these samples, and may have grown on damp, grassy stream banks, or in nearby meadows. Other remains were mainly from disturbed-ground species such as thistles (*Carduus/Cirsium* sp), stinging nettle (*Urtica dioica*), docks (Rumex spp.), violet (*Viola* sp.) and redshank (*Persicaria maculata*), which could have grown on drier patches of land close to the channel, or in cultivated or waste ground further away.

### 3.2 Medieval

Small quantities of charred plant remains, including cereal grains, were found in most of the medieval samples but only seven, all from 13th-century pitfills, contained sufficiently large assemblages for analysis. The condition of this material was generally poor, and many grains were not identifiable to species.

All assemblages were made up mainly of cereal grains, with wheat (*Triticum* spp.) accounting for the majority in all samples (between 48% and 86% of identified grains). The grains appeared to be from a free-threshing wheat species, and two wheat rachis nodes in pit [230] were identified as the hexaploid bread wheat (*T. aestivum* s.l.). Oats (*Avena* sp.) were the next most common species over all (four to 25%), with generally smaller amounts of barley (*Hordeum sativum*) and rye (*Secale cereale*), although these varied greatly between samples, with barley accounting for 41% of the identified grains from pit [127]. Although rye grains were present in all but one sample, it was always the least abundant cereal, and never comprised more than 12% of any grain assemblage.

Cereal chaff was very rare, and consisted only of the two wheat rachis nodes mentioned above, and single rachises fragments of rye and barley in pits [127] and [102] respectively. Weed seeds accounted for up to 20% of all items in the assemblages, but a narrow range of taxa was represented, with small vetch/tare (*Vicia/Lathyrus* spp) seeds forming the majority in

most samples. Seeds of stinking mayweed (*Anthemis cotula*) were common in one sample (from Pit [427]), and those of brome (*Bromus* sp.) and other wild grasses were relatively widespread, but other species, including wild radish (*Raphanus raphanistrum*), clover (cf. *Trifolium* sp.), campion (*Silene* sp.) and persicarias (*Persicaria* spp.) were found only rarely.

Cultivated pulses, also preserved by charring, were present in all samples. These can only be identified with certainty using the shape, size, and position of the hilum (attachment scar) which, in most cases here, was missing. Several which had retained their hila were identified as peas (*Pisum sativum*) however, and many of the complete and almost complete seeds were provisionally identified to pea (cf. *Pisum sativum*) or horse bean (cf. *Vicia faba*) on their size and morphology alone. The very many broken fragments of obviously large pulses, which could be identified only as vetch/bean/pea (*Vicia/Lathyrus/Pisum* sp.), probably came mainly from peas and beans, although other cultivated species, such as vetch (*Vicia sativa*), may also have been present. Pit 102 contained the highest concentration of pulses, but some were present in all seven of the pitfills studied.

The only charred remains unlikely to be directly associated with the cereal or pulses were occasional hazelnut fragments in four of the samples and two seeds of hornbeam (*Carpinus betula*) found in [101].

Samples from the moat fills [313], [1049] and [1050], from the western and eastern branches of the moat, were seen during assessment to contain very small assemblages of uncharred seeds, so were not studied in detail. These were mostly from common disturbed-ground species such as bramble, persicaria, buttercups and thistles. The only potential indicators of damp ground were occasional seeds of sedge, in [1049] and [1050], celery-leaved crowfoot (*Ranunculus sceleratus*) in [1050] and marshwort (*Apium* sp.) in [313].

#### 4 DISCUSSION

The waterlogged plant assemblages from Iron Age channel deposits represent at least three discrete habitats, indicating environmental conditions at the time of deposition. The remains of woodland plants (including twigs, bud scales and thorns, as well as seeds) may have come from the local flora, or arrived with material imported for the brushwood structure. Even if the latter is the case however, it is likely that locally available resources would have been used for this feature. There is evidence therefore for mixed, broadleaved woodland either on the banks of the stream or a short distance away, at the time [191], and probably [210] were deposited. Evidence for woodland is less conclusive in the sample from deposit [242], although alder and birch may have grown along the banks of the stream, along with scrubby plants such as elder and bramble.



While some wetland plants were found in all the channel deposits, the small number found exclusively in either earlier or later layers suggest that some changes in the environment may have taken place between the deposition of deposits [242] and [191]. Those from the earlier peat sample seem to represent a more disturbed environment with muddy banks, submerged in winter but with seasonal drying-out, while the wetland taxa found only in the later channel fills suggest a wetter environment with slow-moving or stagnant water and reed swamps. Less significant parts of all these assemblages suggest grassland, and ground disturbed by human activity.

The medieval charred assemblages contained relatively small numbers of arable weed seeds and virtually no cereal chaff, indicating that the cereals and pulses had been cleaned ready for consumption. There is no evidence that crops were grown or processed on the site, although these activities are in any case more likely to have taken place outside the moated enclosure, and quite possibly outside the excavated area.

The cereals in use here are those which would be expected in the medieval period, from southern England (Greig 1991), and the predominance of wheat reflects the presumably high social status of the manor house. Peas and horse beans were also widespread on the site, indicating another important food resource. Cereals and pulses would have been among the staple foods for the occupants of the manor, used for making bread, pottage, and possibly for feeding livestock. Apart from the predominance of wheat, there was no evidence from the plant remains for the high status foods suggested by some of the animal bone. This is due mainly to the absence of well-preserved waterlogged material and the fact that very few foodstuffs are likely to become charred.

Apart from a cluster of four pits with grain assemblages ([182], [102], [238] and [240]) just outside the eastern arm of the moat, there are too few samples to draw any significant conclusions about the distribution of charred cereals on this site. Similarly, there are no significant differences in the composition of assemblages, which would suggest specific activities in any part of the site. All these assemblages are probably general domestic waste, from accidents during food preparation.

Little evidence has survived, in the form of plant macrofossils, of the natural environment during the medieval period. The woodland indicated from Iron Age samples, is shown by pollen studies to continue into the medieval period, but charred hornbeam seeds found in one pit assemblage, and probably representing burnt fuel, are the only macrofossil evidence for this environment. Similarly, diatoms recovered from the southern part of moat suggest that it contained standing water, but the small assemblages of plant macrofossils in samples from the eastern and western arms of the moat do not provide any convincing

evidence for this. The poor preservation of these remains suggests however that post-depositional drying of the fills may have led to the decay of much of the original assemblages.

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