Channel Tunnel Rail Link

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Oxford Wessex Archaeology Joint Venture

The waterlogged plant remains from well 11010 at Thurnham Roman Villa, Kent (ARC THM 98)

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CTRL Specialist Report Series

2006

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1 INTRODUCTION

During excavations at Thurnham Villa (ARC THM 98), incremental soil samples were collected from the sequence of infills and a possible organic lining or filter of the well (11010) for the recovery of waterlogged plant and insect remains. In addition a single sample was recovered from the base of an unusual votive pit (10570) to assess for potential waterlogged preservation. The construction of the well has tentatively been dated to after AD 150 although excavation to a depth of 4.4 m did not encounter the base of the structure or the primary fills. The excavated fill sequence dates from the late 3rd century and 4th century and possibly beyond. As a result the samples relate to the late Roman phase represented by a period of changing use compared to the earlier high status domestic occupation of the villa. Thus, it was hoped that any plant remains from the well would be able to provide information on the character of the local environment in the latter stages of the occupation and use of Thurnham Villa along with data on economic activities including the diet of the inhabitants in the latter period of the Villa's existence.

2 SAMPLING, PROCESSING AND ASSESSMENT

Bulk samples of 1 kg were available for processing with seven sub-samples of 200g being processed by a simple wash-over technique onto a 0.25mm mesh for the recovery of plant remains. Five samples produced plant remains; these were from the following contexts (from the lowest excavated fill upwards); 12227 (sample 10347); 11516 (sample 10351); 11985 (sample 10352); 11984 (sample 10306); and 11982 (sample 10293). Two samples; one from a silty fill sealing the obvious preserved organic remains within the well (context 10505, sample 10013) and one from the base of the votive pit (context 12377, sample 10377) produced no plant remains. Details of the assessment may be found in Pelling (2001).

3 ANALYSIS

On the basis of the assessment, it was recommended that the plant remains from the five samples should be analysed. Sub-samples of 500g were processed for analysis. However, only three samples (10347, 10351 and 10352) from the lower well fills were submitted to the author for detailed analysis. The assessment results (including identifications) from all the samples have been included in the table and discussion of the results.

4 METHODS

Standard MoLSS methodology was used for the recording of the plant remains. The samples selected for analysis were sorted, prior to recording, by staff at Oxford Archaeology. The waterlogged plant remains were stored wet while the sorted charred remains were dried. The

waterlogged plant remains were not quantified but estimates were made of their abundance by using the following rating system; + = 1-10 items; ++ = 11 - 50; +++ = 50+ items. The charred plant remains on the other hand were counted.

5 RESULTS

The results are shown in Table 1 with nomenclature following Stace (1991). Preservation of waterlogged plant remains was very good with a wide range of taxa being represented by seeds (a term used in the broadest sense to include achenes, stones, nutlets etc) as well as other plant parts.

Table 1: Thurnham Roman villa (ARC-THM98): the waterlogged plant remains from well 11010

					ASS	ASS
	context	**12227**	**11516**	**11985**	**11984**	**11982**
	sample	**10347**	**10351**	**10352**	**10306**	**10293**
	volume wet-sieved (g)	**500**	**500**	**500**	**500**	**500**
LATIN_NAME	**ENGLISH**					
Charred plant remains						
grains						
Triticum sp.	Wheat	1				
Cerealia	Indet. Cereal	3		1		
Cerealia	Indet. Cereal coleoptiles	1				
chaff						
Triticum spelta L.	Spelt glume base	17	1	1	1	1
Triticum spp.	Wheat spikelet base	1				
Triticum sp(p).	Wheat glume base	18		1		
Triticum spp.	Wheat rachis	10				
Avena spp.	Oat awns			1		
weed seeds						
Sorbus sp.	Rowan/Service/Etc	1				
Anthemis cotula L.	Stinking Mayweed		1			
cf. *Bromus* spp.	Bromes	2				
Avena/Bromus sp.	Oat/Brome Grasses	1				
Poaceae indet.	grasses	1				
indeterminate	charcoal	+++		++		
Waterlogged plant remains						
Ranunculus acris/repens/bulbosus	Buttercups	+	+	+		+
R. sardous Crantz	Hairy Buttercup	+				
Papaver somniferum L.	Opium Poppy	+	+	+		
Barbarea vulgaris R.Br.	Yellow Rocket	+				
Viola spp.	Violet		+			
cf. *Viola* spp.	Violet			+		
Lychnis flos-cuculi L.	Ragged Robin			+		
Cerastium spp.	Mouse-Ear Chickweed			+		
Stellaria media gp.	Chickweeds	+		+		
S. graminea type	Lesser Stitchwort			+		
Chenopodium sp.	Goosefoot Etc.		+	+		
Atriplex spp.	Orache			+		
Linum usitatissimum L.	Cultivated Flax	+				

					ASS	ASS
	context	**12227**	**11516**	**11985**	**11984**	**11982**
L. usitatissimum L.	Cultivated Flax capsule	+				
Ilex aquifolium L.	Holly		+	+		
Rubus fruticosus sens. lat.	Blackberry	+	+	+		
Rubus fruticosus/idaeus	Blackberry/Raspberry	+	++	++		
Potentilla sp.	Cinquefoil/Tormentil		+			
Rosa sp.	Rose			+		
Prunus spinosa L.	Sloe/Blackthorn	+		++		
P. cf. *spinosa*	Sloe/Blackthorn		+			+
Prunus sp(p).	-		+	+		
Crataegus monogyna Jacq.	Hawthorn	+	+	++	+	+
Sorbus sp.	Rowan/Service/Etc	+				
Malus domestica/sylvestris	Apple/Crab Apple	+	+			
M. domestica/sylvestris	Apple/Crab Apple endocarp	+				
Rosaceae indet.	Thorn	+		+		
Cornus sanguinea L.	Dogwood	+	+	+		
Conopodium majus (Gouan) Loret	Pignut Earthnut			+		
Aethusa cynapium L.	fool's parsley	+				
Conium maculatum L.	Hemlock	+	+	++		
Pastinaca sativa L.	Wild Parsnip	+		++		
Torilis sp.	Hedge-Parsley	+	+	+		
Daucus carota L.	Wild Carrot			+		
Apiaceae indet.	-		+	+		
Rumex conglomeratus Murr.	Sharp Dock tepals	++		++		
Rumex spp.	Dock tepals			++		
Rumex spp.	Dock	++	+	+++		+
Urtica dioica L.	Stinging Nettle	+++	+++	+++		
Betula spp.	Birch	+	+			
Corylus avellana L.	Hazel	+		+		
Salix sp.	Willow buds		+			+
*Fraxinus excelsio*r L.	Ash	+	+			
Hyoscyamus niger L.	Henbane	+				
Solanum nigrum L.	Black Nightshade	+		+		
Mentha spp.	Mint			+		
Stachys sp.	Woundwort	+	+	+		
Lamium purpurem L.	Red Dead Nettle	+				
Marrubium vulgare L.	White Horehound	+	+			
Plantago major L.	Great Plantain	+		+		
Sambucus nigra L.	Elder	+	++	++	+	
Arctium sp.	Burdock	+	+			
Carduus/Cirsium spp.	Thistles	+	+	+		
Lapsana communis L.	Nipplewort		++	+		+
Leontodon sp.	Hawkbit	+				
Sonchus asper (L.) Hill	Spiny Milk-/Sow-Thistle	+		+		
Sonchus sp.	Milk-/Sow-Thistle	+				
Juncus spp.	Rush			+		
Sparganium erectum L.	Branched Bur-Reed				+	
Eleocharis palustris/uniglumis	Spike-Rush	+				
Carex spp.	Sedge	+	+	++		
Poaceae indet.	grasses	+++		+++		+
indeterminate	-	+	+	+		
indeterminate	leaf fragments		+			
indeterminate	leaf abcission pads	+++	+++	+++		+

					ASS	ASS
	context	**12227**	**11516**	**11985**	**11984**	**11982**
indeterminate	buds		++	++		+
indeterminate	thorns	+				
Bryophyta indet.	Moss	++	+++	+++	+++	++
wood						
Quercus sp.	oak wood					+
cf. Pomoideae indet.	hawthorn, apple etc. wood				+	+
Fraxinus sp.	ash wood				+	
indeterminate	wood	+				+
ASS = assessment data only						

Plant remains other than seeds included a small number of flax (*Linum usitatissimum*) capsules, apple (*Malus domestica/sylvestris*) endocarp fragments and dock (*Rumex* spp.) tepals in single samples, plus leaf fragments and abcission pads (well represented in four of the samples), bud scales (in three samples) including willow (*Salix* sp.), and occasional (Rosaceae) thorn fragments in two samples. Both worked and unworked fragments of wood were present with the assessment recording oak (*Qercus* sp.), ash (*Fraxinus* sp.) and possibly hawthorn/apple/pear etc (cf. Pomoideae) (Pelling 2001).

Mosses were present in large amounts particularly in three of the five samples. The analysis of this material is reported on separately (Snow 2006).

A small quantity of charred plant remains, mainly cereal debris (chaff), a few weed seeds and charcoal fragments, were recovered mostly from fill 12227. Less frequent charred plant items were recorded in the other four samples.

The plants represented in the samples were from a range of habitats although woodland/shrub species and plants characteristic of disturbed ground (ruderals) are most numerous. There follows a discussion of the different habitats and the economic (food) plants represented. Potential differences in the plant assemblages from each sample are then examined to establish the evidence for the changing landscape in the late Roman period. In the assessment, it was noted that there was increased evidence for woodland regeneration in the upper sampled fills and a corresponding decrease in ruderals compared to the material from the lower fills, a possible reflection of a changing environment surrounding the villa in the late Roman period. Unfortunately, such an investigation is limited because only samples from the lower levels were submitted for analysis although all the assessment data will be considered in the following discussion.

5.1 The economic/food plants

There were both charred and waterlogged remains of potential economic (including food) plants. These include a small assemblage of charred cereals comprising a few grains and glume bases and rachis fragments from the chaff. Just one of the four grains was identified as wheat (*Triticum* sp.), while virtually all the chaff fragments were also from this cereal with

the better preserved glume bases being identified as spelt (*Triticum spelta*). The majority of the cereal remains were from the lowest excavated fill 12227. The only other potential grain represented as charred remains was oat (*Avena* sp.), with a few of the awn fragments being recovered from fill 11985. However, this material may be from either wild or cultivated oat. The only other possible cultivated crop present was flax, which was represented by a few seeds and capsules from fill 12227.

A small range of fruits and nuts were present most of which were probably growing wild and may reflect the residues of collected and consumed fruit. Alternatively the remains may have been deposited from trees and bushes growing over, and in the close vicinity of the well. Fruit remains of sloe/blackthorn (*Prunus spinosa*), blackberry (*Rubus fruticosus*) and blackberry/raspberry (*Rubus fruticosus/idaeus*) were present in moderate amounts in four samples while two samples contained seeds of apple/crab apple (*Malus domestica/sylvestris*) as well as endocarp fragments of this fruit. Occasional shell fragments of hazel nut (*Corylus avellana*) were recovered from two samples with more complete examples noted during the excavation of the deposits. Several of these were identified as being eaten by red squirrel from the characteristic gnaw pattern used to extract the nut from the shell (S. Lawrence pers. comm.). The only other possible food remains were a few carrot (*Daucus carota*) seeds in one sample although these could be from the wild rather than the cultivated species.

5.2 Woodland/scrub species

As noted above, and similar to the assessment results, there was a large woodland/shrub component in the samples, indicative of woodland in the close vicinity of the well. The results confirm the observations made in the assessment with a description of "mixed deciduous or oak woodland with a scrubby component at the margins of the wood or as an under-storey" (Pelling 2001, 149), with the presence of larger trees, ash (*Fraxinus excelsior*) (identified by both the seeds and wood), oak (*Quercus* sp.) (wood only), plus smaller trees and shrubs, for example, willow (*Salix* sp.) (buds), birch (*Betula* sp.), *Sorbus* sp. (rowan/service etc.), hazel, sloe/blackthorn, and apple (often associated with oak woodland), holly (*Ilex aquifolium*), hawthorn (*Crataegus monogyna*), dogwood (*Cornus sanguinea*), brambles, elder, rose (*Rosa* sp.). As noted above, a number of these plants may have been exploited for their wild fruits and nuts.

The evidence suggests both open and dense woodland, for example, sloe, which grows in clearings and wood margins and is not tolerant of dense shade, and holly, which tolerates a large amount of shade and is sometimes dominant in the lower tree or shrub layer of woods (Clapham *et al* 1987). These woodland/shrub species may grow in a range of soils (for example, ash and dogwood grow on calcareous soils) but tend to suggest the absence of acidic soils.

5.3 Disturbed ground and wasteland plants

There was a moderate taxa range of plants that grow in disturbed ground and waste places, the majority of which were associated with nutrient rich soils. Ruderals included a good representation of stinging nettle (*Urtica dioica*) and occasional records of henbane (*Hyoscyamus niger*), black nightshade (*Solanum nigrum*), white horehound (*Marribium vulgare*), wild parsnip (*Pastinaca sativa*), and hemlock (*Conium maculatum*). It should be noted that the stinging nettle is a high seed producing plant and even a relatively small presence in close proximity to the well would account for the high levels of seed inclusions recorded here.

A number of seeds represented in the samples may be from arable weeds. This is almost certainly the case with the small number of charred weed seeds, which included occasional records of stinking mayweed (*Anthemis cotula*), an indicator of waterlogged loams and clay soils, and grasses, including possibly brome seed fragments (cf. *Bromus* spp.). These seeds were from the lower fills where the majority of the cereal remains were found. There were several other potential arable weeds, represented by occasional waterlogged seeds, including fool's parsley (*Aethusa cynapium*), opium poppy (*Papaver somniferum*), chickweeds (*Stellaria media*), red dead nettle (*Lamium pupurem*) and spiny milk/sow-thistle (*Sonchus asper*). While all these plants could also have been growing in waste places, it is interesting to note that they are also all from fill 12227 from which most of the cereal remains were recovered. The range of taxa may tentatively suggest the cultivation of (sandy) loam nutrient rich soils, with several species tentatively pointing towards the use of damp areas of ground and slightly heavier soil conditions.

5.4 Damp/wetland plants

A small range of wetland plants were represented in the assemblages by occasional seed records, for example, rushes (*Juncus* spp.), sedges (*Carex* spp.), branched bur-reed (*Sparganium erectum*), and spike-rush (*Eleocharis palustris/uniglumis*). Branched bur-reed is a semi-aquatic plant that grows on mud or in shallow water in ponds, ditches and slow-flowing rivers and on ungrazed marshland, while spike-rush requires its roots to be submerged in water for at least part of the year and is associated with seasonally flooded ground, especially grassland. The habitats of several of the wetland species include woodland environments, for example, hemlock, ragged robin (*Lychnis flos-cuculi*) and occasionally sharp dock (*Rumex conglomeratus*). A few of the wetland plants may also have been growing on damp waste ground or disturbed ground including arable land, for instance, yellow rocket (*Barbarea vulgaris*) and hairy buttercup (*Ranunculus sardous*). Many of these plants may have been growing in wet ground in the vicinity of the well.

5.5 Other habitats

It was difficult to categorise the remaining plants that were represented in the samples because the majority may grow in more than one habitat; for example there were a small number of plants that are characteristic of grassland habitats, for example, hawkbit (*Leontodon* sp.) and a large number of indeterminate grasses (Poaceae). Others may be found in both grassland and woodland habitats, for instance, lesser stitchwort (*Stellaria gramineae*), grassland and arable fields, for example, hedge parsley (*Torilis* spp.), great plantain (*Plantago major*), or waste places and woodland margins, for example, nipplewort (*Lapsana communis*) and burdock (*Arctium* spp.). There was a good representation of docks (*Rumex* spp.), along with buttercups (*Ranunculus acris/repens/bulbosus*), both of which were present in virtually all the samples and both of which may grow in a range of habitats.

6 DISCUSSION

An examination of the individual plant assemblages from the fills of the well provides information upon the character of the local environment from the late Roman period which is characterised by an apparent change in the style of occupation and use of the villa and its surroundings. As noted above, the assessment results suggested a slightly higher ruderal component in the lower fills compared to the upper fills indicative of human activity while the upper fills contained a greater abundance of woodland and scrub species, reflecting increased local woodland/scrub regeneration (Pelling 2001). Such an investigation, however, was not possible because only the three lowest fills from the well were submitted for analysis and although the assessment results have been included in the table of results, it is not possible to use this information for detailed comparison with the analysed samples.

It is possible to examine the plant assemblages from the lowest three samples for potential differences although this showed that the botanical remains were not significantly different except for the fact that virtually all the cereal debris (grains, chaff) and charred weed seeds plus the few flax seeds and capsules were all in the lowest excavated fill (12227). This deposit was a purposeful backfill of large rubble blocks and the inclusion of cultivated or economic plants may be seen as a contemporary event reflecting the species cultivated or processed at the site at this time.

7 CONCLUDING REMARKS

The botanical evidence from the Thurnham well suggests an oak/ash woodland environment in the immediate vicinity of the feature with an under-storey of smaller trees and shrubs with the well either being on the woodland margins and/or near clearings. The immediate area of the well appears to have been well trodden and wet while there is evidence of cereal debris

(grain, chaff, arable weeds) in the lower fills of the well that may represent wind-blown remains from crop-cleaning activities close-by, or may have entered the well as part of backfilling. There may also have been increased woodland regeneration represented by the upper portion of the fill sequence. This could reflect the abandonment of the site as suggested by the assessment or even a change in the management and maintenance of the estate in the 4th century although the present study could not confirm this.

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