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Pollen

Methodology

1.1.1 Eight samples were taken from the stratified sediment sample in two boreholes: WABH2011_BH02 and WA2011 BH05, described in Table 1. Standard preparation procedures were used (Moore *et al*. 1991). 4cm^3 of sediment was sampled, with a Lycopodium spike added to allow the calculation of pollen concentrations (Stockmarr 1971). All samples received the following treatment: 20 mls of 10% KOH (80°C for 30 minutes); 20mls of 60% HF (80°C for 120 minutes); 15 mls of acetolysis mix (80°C for 3 minutes); stained in 0.2% aqueous solution of safranin and mounted in silicone oil following dehydration with tert-butyl alcohol.

1.1.2 Pollen counting was undertaken at a magnification of x400 using a Nikon Eclipse E400 transmitted light microscope. Determinable pollen and spore types were identified to the lowest possible taxonomic level with the aid of a reference collection kept at Wessex Archaeology. The pollen and spore types used are those defined by Bennett (1994; Bennett *et al*., 1994) except Poaceae which follow Küster (1988). Plant nomenclature follows Stace (1997).

1.1.3 A total land pollen (TLP) sum of a minimum of 100 grains, excluding obligate aquatics and pteridophytes, was used for assessment.

Results

1.1.4 Variable amounts of pollen were encountered in the eight samples, with sufficient counts for assessment only found in borehole WABH2001 BH02 at 0.71m aOD and 0.61m aOD. These were derived from peat and peaty silt deposits respectively. Given that the other samples were derived from estuarine alluvium, it is not surprising that the other samples failed to yield sufficient pollen for assessment.

1.1.5 The two samples with sufficient pollen for assessment show an assemblage dominated by *Quercus* (oak) and *Corylus avellana*-type (hazel), with *Alnus glutinosa* (alder), *Ulmus* (elm), Chenopodiaceae (goosefoots and oraches) and Poaceae (grasses) also present. This implies the presence of woodland and areas of open ground within the pollen catchment. The presence of Chenopodiaceae may indicate local estuarine influence. A radiocarbon date associated with the peat at 0.74m aOD provided a date of 3100-2910 cal BC (SUERC-38608, 4020±35 BP), indicating that it is Middle Neolithic in date. A similar pollen assemblage is alluded to in borehole WA2011 BH05, though insufficient pollen was preserved to make full counts to verify this.

Potential

1.2 Pollen

1.2.1 The pollen assessment shows very low concentrations and abundance in the majority of samples, and therefore for these it would not be possible to obtain meaningful counts to enable a statistically valid interpretation. The two pollen samples with sufficient pollen concentrations in borehole WABH2001 BH02 at 0.71 and 0.61m aOD have potential to provide an

insight into the Middle Neolithic vegetation of the surrounding area. Given the consistent presence of *Ulmus* within the samples, further sampling may yield Late Mesolithic / Early Neolithic radiocarbon dates for the lower sediment and therefore provide a valuable insight into the persistence of *Ulmus* in the area around the time when the British elm decline is commonly implied to have occurred (eg, Parker *et al*. 2002). Further pollen sampling of this part of the sequence, along with radiocarbon dating, will provide a proper insight into the age of the peat (likely to have been heavily compacted by overlying alluvial deposits).

Proposals

1.3 Pollen

1.3.1 It is recommended that additional pollen samples are taken from the peat (and adjacent contexts) for pollen analysis. A total of eight additional pollen samples should be taken from these contexts for analysis, combined with an additional two radiocarbon dates to constrain the chronology

Acknowledgements

1.3.2 Pollen assessment was carried out by Dr Michael Grant, with pollen sample preparation provided at CEESR, Kingston University, by Kevin Attree.

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Table 1: Pollen identified within the eight samples from boreholes WABH2011 BH02 and WA2011 BH05

Borehole	**WABH2011 BH02**						**WA2011 BH05**	
Depth (m BGL)	**2.5**	**4.73**	**4.83**	**6.55**	**9.59**	**10.2**	**4.2**	**7.97**
Depth (m OD)	**2.94**	**0.71**	**0.61**	**- 1.11**	**- 4.15**	**- 4.76**	**1.53**	**- 2.24**
Pinus sylvestris				2				1
Ulmus		6	8					
Quercus		40	38	7		1	4	5
Betula			5					
Alnus glutinosa		14	23				3	2
Tilia cordata		1		1				
Ilex aquifolium								1
Fraxinus excelsior			2					
Corylus avellana-type		68	88	2	2		5	1
Salix							1	1
Hedera helix		1	1					1
Chenopodiaceae	4	13	20	5			1	1
Rumex acetosella			1					
Rumex sanguineus-type			1					
Brassicaceae	1							
Plantago lanceolata							1	
Lactuceae undiff.							1	
Solidago virgaurea-type		1	2					
Cyperaceae undiff.	1	9	6	2		1	1	7
Poaceae undiff.	3	13	25	4			8	5
Bromus hordeaceus-type							1	
Myriophyllum verticillatum		1						
Potamogeton natans-type			1					
Sparganium emersum-type	1	6	5				2	
Typha latifolia			1					
Osmunda regalis							1	
Polypodium	1	2					2	3
Pteridium aquilinum	6		1				7	9
Dryopteris filix-mas-type				2			1	
Pteropsida (monolete) indet.	3	1		3		1	2	4
Bryophyta		1	2				1	1
TLP SUM	9	166	220	23	2	2	26	25
Pollen Concentration	3626	136670	282061	9121	468	1060	5542	4838