Prehistoric, Roman and Saxon pollen and plant macrofossils from columns 1 and 4, and various other features from Watermead Country Park, Birstall, Leicestershire. (Accession no. A57.1996)

James Greig

James Greig (Archaeobotanical Consultant), 7 Southwold Avenue, King's Norton, Birmingham B30 3RJ

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Samples

A number of features were sampled, monoliths taken. This report deals with Column 2 which is Mesolithic in date, and Column 4 which is Roman to early medieval in date, and also a number of samples from archaeological features.

Laboratory work

Plant macrofossils

Subsamples of 100-200 ml were measured out. They were broken down in water, and the lighter, organic, fractions washed over to separate them from the inorganic material, and caught in a 500 µm sieve. The washovers were sorted in water under a x10 stereo microscope and the plant remains identified and checked with the writer's own reference collections. The results are listed in taxonomic order (Kent 1992) in Table 3 & Table 4

Pollen analysis

Pollen samples were processed using the standard method; about 1 cm^3 subsamples were dispersed in dilute NaOH and filtered through a 70µm mesh to remove coarser material, which was then scanned under a stereo microscope. The finer organic part of the sample was concentrated by swirl separation on a shallow dish. Fine material was removed by filtration on a 10µm mesh. The material was acetolysed to remove cellulose, stained with safranin and mounted on microscope slides in glycerol jelly. Counting was done with a Leitz Dialux microscope. Identification was using the writer's pollen reference collection, seen with a Leitz Lablux microscope. Standard reference works were used, notably Fægri and Iversen (1989) and Andrew (1984).

The pollen counts from Column 4 have been calculated into percentages and selected taxa drawn in a summary pollen diagram with the TILIA and TILIA.GRAPH programmes (Grimm 1990) which is given in Fig. 2. The nomenclature and order of the taxa follow Bennett (1994) and Kent (1992) respectively.

Column 2

A 1 m profile was sampled, going from clay sediment at the top (0 cm) becoming more organic down into a peaty layer (50 cm), which continued down to the bottom of the profile at 100 cm, where the peat lay on gravel.

Pollen samples were prepared at 0 cm, 25 cm, 50 cm, 75 cm and 100 cm, although the pollen was not good in all samples.

The following dates were obtained:

Table 1: radiocarbon dates from Column 1

Lab code	***position***	***material***	***Date uncal BP***	***Date cal BC***
GU-5671	top of peat	peat	7790 ± 80	7000-6420 cal BC
GU-5672	middle of peat	peat	9330 ± 80	8840-8090 cal BC
GU-5673	bottom of peat	peat	9780 ± 70	9130-8740 cal BC

Pollen preservation and abundance was disappointing, and further time was not spent on these samples to increase the counts, as the results seemed sufficient as they were. A pollen diagram has not been drawn up, so the results are simply described.

Starting from the earliest material at 100 cm at the base of the profile, a small count reveals a spectrum dominated by Poaceae (grasses) together with a range of herbs, including meadowsweet and sedges. Trees and shrubs include *Pinus* (pine), *Betula* (birch), *Salix* (willow) and *Quercus* (oak). Although this is a small count, it suggests that the time represented is before the development of woodland, which is confirmed by the date obtained, 9130-8740 cal BC.

Pollen was not preserved at 75 cm, but at 50 cm the pollen spectrum is that of Atlantic

wildwood, with *Quercus* (oak), *Ulmus* (elm), *Tilia* (lime), *Alnus* (alder) and *Corylus* (hazel). There is only a trace of herb pollen. The date of 8840-8090 cal BC would seem to be early for such a developed woodland.

A very sparse pollen count at 25 cm reveals a similar spectrum here, and the date 7000-6420 cal BC seems somewhat early.

The top of the profile, 0 cm, did not contain pollen, but this can be explained by the fact that alluvial clay does not usually contain enough pollen for a count.

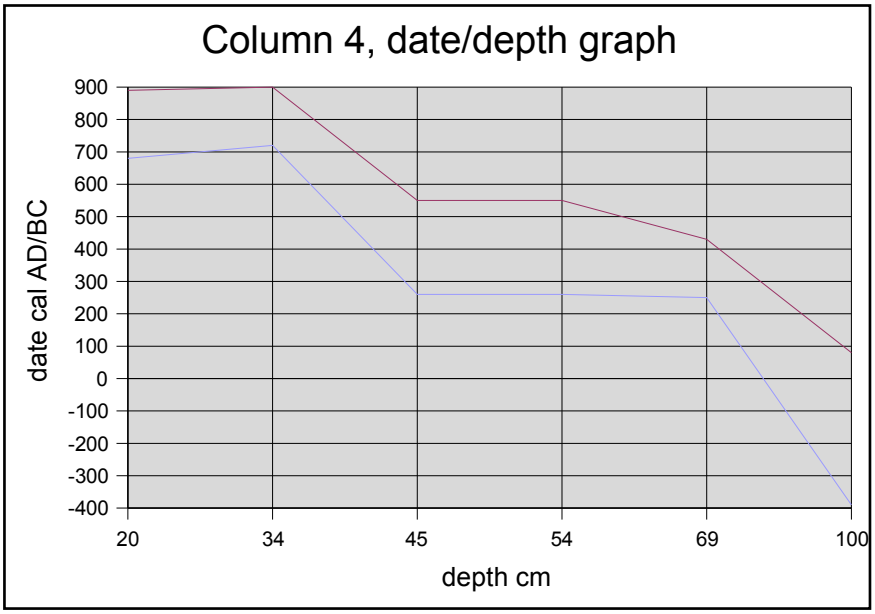
Results – Column 4, adjacent to the burnt mound

Table 2: Radiocarbon dates from Column 4

Lab nr.	*Sample, depth*	*material*	*Date uncal BP*	*δC^{13} 0/00*	*Date cal AD/BC, 95% probability*
OxA-12549	WPB/4/20, 20 cm	seeds	1237 ± 25	-24.5	
OxA-12549	WPB/4/20, 20 cm	seeds	1237 ± 25 BP	-24.2	cal AD 680-890
OxA-12999	WPB/4/33-35, 33-35 cm	seeds	1207 ± 27 BP	-25	cal AD 720-900
GrA-24528	WPB/4/44-46, 44-46 cm	twigs	1620 ± 94 BP	-26.94	cal AD 260-550
OxA-12826	WPB/4/54, 54 cm	seeds	1625 ± 50	-26.4	cal AD 260-550
OxA-12973	WPB/4/68-70, 68-70 cm	seeds	1682 ± 33	-26.8	cal AD 250-430
OxA-12482	WPB/4/81, 81 cm	seeds	4490 ± 33	-23.9	3360-3020 cal BC
OxA-12823	WPB/4/100, 100 cm	seeds	2110 ± 90	-27.4	390 cal BC – cal AD 80

Five levels of column 4 were dated, using macrofossils, mainly seeds of non-aquatic plants to avoid the possibility of hard water error. Four of the resulting dates provide a reasonably consistent depth/date graph (Fig 1) showing a deposition rate of 10 years per cm deposit. The fifth date at 81 cm gave a date of 3360-3020 cal BC which is clearly out of sequence, whether from redeposited older material or some other dating problem is not certain, so this date has not been included in the curve. The date range/depth graph (Figure 1) allows an estimate to be made for the date of any chosen horizon in this sequence.

Figure 1: Date range/depth graph for column 1



The depth/date curve also shows that the six dates seem to form a fairly consistent series.

Plant macrofossils (Table 4) The plant macrofossils were extracted partly to provide suitable material for radiocarbon dating, and at the same time provide a source of information about the plants growing on or very close to the site, and data that can very usefully be compared with the pollen results, below.

Pollen, Column 4 (Figure 2)

The pollen was very well-preserved and abundant in the upper part of the profile from 0-75 cm, and diatoms in the preparations show that it was probably laid down in standing water, which may account for the good state of the organic material.

Below 75 cm the pollen was less abundant, although still fairly well-preserved and it was still possible to obtain good information. The pollen results can be divided into three distinct pollen zones, referred to as WPB1-3.

WPB1 Iron Age woodland

The lowest part of the pollen diagram from 105-80 cm (WPB 1), from around 500 - 0 cal BC to AD 0-300, probably covers the late Iron Age and part of the Roman period, and shows signs of woodland with *Alnus* (alder), *Corylus* (hazel) and *Quercus* (oak). There are even traces of *Ulmus* (elm) and *Tilia* (lime) which could indicate traces of the formerly extensive wildwood. Macrofossils of *Alnus* (alder), *Corylus* (hazel) and *Sambucus nigra* (elder) show that woodland and scrub probably grew on the site. There are rather few signs of human activity, apart from some cereal type pollen, and charcoal in the macrofossil material, together with a macrofossil of the weed *Plantago major* (greater plantain).

At 80 cm the date was out of sequence, and there was very little pollen in the sample, so there is no count at that level. There may be a problem at that level, although the samples above and below it seem to show normal results, with trees and woodland being reduced, so the pollen results may be unaffected by the dating problem.

WPB2 Roman occupied landscape

The middle part of the pollen diagram from 80-37.5 cm (WPB 2) dates from AD 0-300 to AD 600-800, and may cover part of the Roman period and post-Roman Dark Age, into the Saxon period. It shows signs of a much more open and occupied landscape than previously.

Woodland and scrub, mainly *Quercus* (oak), *Corylus* (hazel) and *Alnus* (alder) is quite small at around 5% pollen sum, suggesting that little local woodland was present by this time. A consistent record of *Fagus* (beech) starts halfway through this zone at 55 cm, suggesting that beechwoods started growing in the area. A thorn of *Prunus/Crataegus* (sloe or hawthorn) shows evidence of scrub. A pollen record of Ericales (heathers) shows that some heathland probably grew from this point onwards, maybe at some distance from the site, since the amount of pollen is small.

There is a constant record of cereals, which is in keeping with a Roman age deposit. There was also a record of *Pisum* (pea) at 45 cm (ca cal AD 200-550). A large range of weeds is present, providing more evidence that there was cultivated land nearby the site at this time. A few of them were found as macrofossils (Table 4), such as *Chenopodium album* (goosefoot), *Stellaria media* (chickweed) and *Rumex acetosella* (sheep's sorrel), suggesting that cultivated land was not far away.

Grassland plants are also much in evidence, and sedges, which may have formed part of the same community, resembling surviving traditional damp hay meadow today. Macrofossils of *Ranunculus* subgenus *Ranunculus* (buttercup) and *Lychnis flos-cuculi* (ragged robin) could represent damp grassland. This is further discussed under WPB3, below.

Wetland and aquatic vegetation is is probably also indicated by part of the fairly abundant Cyperaceae pollen record from this point, since there are corresponding macrofossils of *Schoenoplectus tabernaemontani* (grey club-rush) which grows in shallow water and marshes, indicating that there was swamp, at least in the channel immediately where the deposit was forming, which is as expected for a deposit such as this. Further evidence of marshy or aquatic conditions is provided by macrofossils of *Oenanthe* sp. (water dropwort), *Eleocharis* sp. (spike-rush) and *Glyceria* sp. (sweet-grass).

WPB3 Saxon settlement

The upper part of the sequence, WPB3 (37.5-0 cm) from about cal AD 600-800 to perhaps cal AD 900-1050, shows still more signs of crops and occupation. There are constant records of Cerealia type (cereals), *Secale* type (rye) and *Cannabis* type (probable hemp), the last two typical early medieval (Saxon) crops, as might be expected from the dates. The top sample has *Centaurea cyanus* (cornflower), a distinctive weed of traditional autumn-sown cereals such as rye. This seem to appear suddenly at some point in the medieval period, thought to be around AD 1200 but not well dated (Greig 1991), but here it appears at the top of the sequence at around AD 900-1050. This horizon also provides correlation with the pollen diagram from Column 4 (see Brown, this volume).

A number of probable grassland plants are present, some of them, such as *Plantago lanceolata (*ribwort plantain), Lactuceae (composites) and Poaceae (grasses, which grow in a

great range of habitats), usually the most abundant three herbs in such parts of pollen diagrams. Smaller records from a number of other grassland plants are more informative, such as *Thalictrum* (meadow rue), *Filipendula* (meadowsweet), *Sanguisorba officinalis* (greater burnet) and *Centaurea nigra* (knapweed), which are distinctive components of traditional species-rich hay meadow which can be recognised from their pollen. A macrofossil record of *Prunella vulgaris* (self-heal) would also belong here. Such meadows grew in many river valleys on land that is often flooded in winter and unsuitable for arable farming, forming a vital part of the farming economy. Surviving examples of such meadow include Pixey Mead in the Thames valley, near Oxford (Greig 1984). There are a number of other records of plants of damp places, grouped under "damp grassland" on the pollen diagram, and they suggest that there was flood meadow here, as the name Watermead suggests. Some other taxa suggest dry grassland as well, such as *Sanguisorba minor* (lesser burnet).

There are slight records of *Ilex* (holly) and *Carpinus* (hornbeam), which may have been encouraged by woodland management.

Table 3: Summary of events table for the results from Column 4

zone	***date***	***event***	***comment***
WPB3	cal AD 600/800 – 900/1050	Further signs of crops *Secale* (rye) and Cannabaceae (probably hemp), damp hay meadow	Saxon settlement, early medieval alluvium covers the organic channel fill
WPB2	cal AD 0/300 – 600/800	low tree and shrub pollen, increased crops of Cerealia and *Pisum* (pea), grassland plants and sedges	Clearance of the woodland and formation of a Roman occupied landscape in the Soar valley
WPB1	500/0 cal BC – cal AD 0/300	high *Alnus*, *Quercus* and *Corylus*; a few signs of human activity	The Soar valley was wooded in the Iron Age, although there was some settlement

Table 4: Plant list from Column 4, names and order according to Stace (1991).

Sample, depths (cm):	**0-2**	**33-35**	**40-42**	**44-46**	**54-56**	**68-70**	**81-83**	**100-102**	**106-108**	
Ranunculus sect. *Ranunculus*			+	4		7	+	+		buttercup
Ranunculus sceleratus L.		2	+	2		1	+			celery-leaved buttercup
Ranunculus flammula L.					3	8	+			lesser spearwort
Ranunculus subg *Batrachium* (DC) A. Gray		1	+	1	+	4	+			water crowfoot

Sample, depths (cm):	**0-2**	**33-35**	**40-42**	**44-46**	**54-56**	**68-70**	**81-83**	**100-102**	**106-108**	
Urtica dioica L.					+			+		common nettle
Alnus glutinosa (L.) Gaertner								+		alder
Corylus avellana L.								+		hazel
Chenopodium album L.				1	-	3				fat hen
Stellaria media (L.) Villars					1	1				chickweed
Cerastium fontanum Baumg.						1				common mouse-ear
Lychnis flos-cuculi L.		1		3	3	7	+			ragged robin
Silene sp.					+	8				
Persicaria lapathifolia (L.) Gray			+	2	3		+			pale persicaria
Persicaria. hydropiper (L.) Spach					1	1	+			water-pepper
Polygonum aviculare L.				1						
Rumex acetosella L.				1	1	1				sheep's sorrel
Rumex sp.			+		+	5				dock
Viola sp.								+		violet, pansy
Barbarea vulgaris W.T. Aiton				3						winter-cress
Rorippa cf. *sylvestris/amphibia*					+					yellow-cress
Rubus sp.								+		? bramble
Potentilla anserina L.	-			1						silverweed
Potentilla cf *erecta* L. Räusch	-	1								cinquefoil
Potentilla reptans L.						1				creeping cinquefoil
Prunus/Crataegus thorn				1	+					
Oenanthe sp.		3		2	2					fine-leaved water-dropwort

Sample, depths (cm):	**0-2**	**33-35**	**40-42**	**44-46**	**54-56**	**68-70**	**81-83**	**100-102**	**106-108**	
Apium cf. *inundatum* (L.) H.G. Reichenb			+	3	3	2	+			lesser marshwort
Prunella vulgaris L.		1								self-heal
Mentha sp.					1	2	+	+		mint
Plantago major L.							+			greater plantain
Galium sp.				2			+			bedstraw
Sambucus nigra L.								+		elder
Sonchus asper (L.) Hill					1					prickly sow-thistle
Juncus sp.		1	+	1	+	1	+			rush
Eleocharis sp.		1		1	+		+			spike-rush
Schoenoplectus tabernaemontani C. Gmelin		220	+++	102	4		+			grey club-rush
Isolepis setacea R. Br.						1	+			bristle club-rush
Carex subg *Vignea*	1		+			1				
Carex subg *Carex*		1	+	1	6	5	+			
Glyceria sp.			+	1		3				flote-grass
other remains										
charcoal	+	+		+		+	+		+	
Trichoptera		+								

Other samples

Six other samples have been investigated for pollen and seeds. The amounts studied have been quite small, to give a qualitative account rather than an exhaustive search for every last plant to add to the flora. The results are listed in Table 5.

Sample 46, context 129 is peat from near the bridge, in an equivalent context to the base of column 4, which is dated cal BC 290 – cal AD 80 (OxA-12823). Damp woodland is shown by the pollen and macrofossils of *Alnus* (alder) which are the most numerous. Pollen of a range of other trees and shrubs includes *Corylus* (hazel), *Quercus* (oak), and small amounts of *Tilia* (lime) and *Pinus* (pine). The macrofossils show the most local woodland and scrub with *Alnus* (alder), *Prunus* ?*spinosa* (possible sloe), *Rubus* ?*idaeus* (wild raspberry), *Sambucus nigra* (elder) and *Mercurialis perennis* (dog's mercury), the latter a characteristic

woodland herb. Herbs such as *Ranunculus* subgenus *Ranunculus* (buttercups), possible *R. bulbosus* (bulbous buttercup), *Stellaria media* (chickweed) and *Ajuga reptans* (bugle) could represent partly shaded conditions or openings. Somewhat damp or boggy conditions as would be expected from a deposit of peat, are shown by *Stellaria uliginosa* (bog stitchwort) and *Lycopus europaeus* (gypsywort) and *Carex* species (sedges), and standing or flowing water by a single seed of *Ranunculus* subgenus *Batrachium* (water crowfoot). Human activity somewhere in the surroundings is shown by charcoal, and a pollen record of *Plantago lanceolata* (ribwort plantain). The results are comparable with the Iron Age part of the pollen diagram from Column 4.

56 context 101 is from the upper fill of the trough dated to cal BC 2980-2600 (OxA-12586), thought to be washed in earlier material. The pollen from this context showed a range of trees very similar to the pollen spectrum from 46 (above), with *Alnus* (alder), *Quercus* (oak), *Corylus* (hazel), *Tilia* (lime) and *Pinus* (pine). The macrofossils, however, contained only *Sambucus nigra* (elder) and charcoal.

101 context 233 and 102 context 234 are from a gully cut 228 which post-dates the burnt mound according to the stratigraphy, and the gully has been dated cal BC 120 – cal AD 30 (OxA-12548). Both samples are similar in content; trees and shrubs are only present as traces, and most of the pollen comes from small range of herbs and from Cyperaceae (sedges), suggesting a rather open landscape with grassland, and sedge in the forming wet deposit. The macrofossils add to this with a range of plants from wet habitats such as the aquatics *Ranunculus* subgenus *Batrachium* (water crowfoot) and *Glyceria* (sweetgrass), and from damp and marshy habitats, such as *Ranunculus flammula* (lesser spearwort), *Stellaria uliginosa* (bog stitchwort), *Juncus* (rush), *Eleocharis* (bristle scirpus) and various *Carex* species (sedges). Away from the local wet conditions that seem to have existed in the gully itself, there may have been relatively dry grassland, with a single seed record of *Leontodon* sp. (hawkbit) together with a large record of the corresponding pollen type, Lactuceae, and a pollen record of *Plantago lanceolata* (ribwort plantain) . Charcoal was present in the macrofossil samples. The signs of an occupied landscape with little remaining woodland correspond to the Roman part of the pollen diagram from Column 4.

103 context 315 and 104 context 316 are from the north hearth, dated from sample 108 to cal BC 2490-2200 (GU-5985). The pollen specta from each have a range of trees, *Alnus* (alder), *Quercus* (oak), *Corylus* (hazel) and *Tilia* (lime) and rather few herbs, suggesting rather undisturbed woodland, in keeping with the Neolithic date. The macrofossils from 103 add little to this, as there were only some *Sambucus nigra* (elder) seeds and large amounts of charcoal. 104 had a small flora mainly of wetland and marsh plants such as *Ranunculus* subgenus *Batrachium* (water crowfoot), *Lychnis flos-cuculi* (ragged robin) and Eleocharis (spike-rush). Drier grassland was represented by *Linum catharticum* (fairy flax) and *Potentilla* cf. *erecta* (tormentil), and *Pteridium* spores show that bracken grew locally.

Table 5: Plant lists from bulk samples from features, names and order according to Stace (1991).

Sample	46 m	46p	56 m	56p	101 m	101 p	102 m	102 p	103 m	103 p	104 m	104 p	
Pinus		3		6				1		3		2	
Ranunculus cf. *bulbosus* L.	2												bulbous buttercup
Ranunculus sect. *Ranunculus*	10				3		1				1		buttercup
Ranunculus sceleratus L.											1		celery-leaved buttercup
Ranunculus flammula L.							1				1		lesser spearwort
Ranunculus subg *Batrachium* (DC) A. Gray	1				21		1				23		water crowfoot
Ranunculus		1				2							
Ulmus						1							elm
Urtica dioica L.											1		common nettle
Quercus		17		25				3		14		7	oak
Betula		1						1					
Alnus glutinosa (L.) Gaertner, seeds (pollen)	64	94						1		17		17	alder
Alnus glutinosa (L.) Gaertner, catkin	7			56									
Corylus avellana L.		24		19				1		12		8	hazel
Stellaria media (L.) Villars	1												chickweed
Stellaria graminea L. /*S. palustris* Retz.					1								lesser or bog stitchwort
Stellaria uliginosa Murray	3				1		3						bog stitchwort
Lychnis flos-cuculi L.		1									3		ragged robin
Caryophyllaceae		1											

Sample	46 m	46p	56 m	56p	101 m	101 p	102 m	102 p	103 m	103 p	104 m	104 p	
Rumex sp.	1	3			1	1	12						dock
Tilia		3		7						4		7	lime tree
Viola sp.								+					violet, pansy
Salix sp.												1	willow
Barbarea vulgaris W.T. Aiton				3									winter-cress
Brassicaceae		1											mustard, cabbage etc.
Filipendula ulmaria L.		1											meadowsweet
Rubus sp.	2												? bramble
Potentilla anserina L.							1						silverweed
Potentilla cf *erecta* L. Räusch		1									1		cinquefoil
Potentilla reptans L.						1							creeping cinquefoil
Prunus ? spinosa L. *fruitstone fragment*	1												
Crataegus sp.											1		hawthorn
Mercurialis perennis L.	1												dog's mercury
Linum catharticum L.											1		fairy flax
cf. *Ajuga reptans* L.	1												? bugle
Glechoma hederacea L.	2												ground ivy
Lycopus europaeus L.	1												gypsywort
Mentha sp.	1						1						mint
Plantago lanceolata		2		1		3		5					ribwort plantain
Galium				1									bedstraw
Sambucus nigra L.	2		1				1		6		2		elder

Sample	46 m	46p	56 m	56p	101 m	101 p	102 m	102 p	103 m	103 p	104 m	104 p	
Cirsium sp.					3						1		spear thistles
Centaurea nigra						2							knapweed
Leontodon sp.							1						hawkbit
Lactuceae (above 1)				2		19		25		7		1	(above 1)
Artemisia		1											mugwort
Juncus sp.					1	1							rush
Eleocharis sp.					1		1				1		spike-rush
Schoenoplectus tabernaemontani C. Gmelin			+++										grey club-rush
Isolepis setacea R. Br.					1		1						bristle club-rush
Carex subg *Vignea*	2		+		1								sedge
Carex subg *Carex*	1		+		1								sedge
Cyperaceae				6		5		28		3		4	sedges, above 5
Glyceria sp.			+		3								flote-grass
Poaceae		15		5	1	6		16		6		3	grasses
other remains													
Pteridium				4		4		14		7		2	bracken (spores)
Polypodium		2		+						6		2	polypody fern
charcoal	+				+				+++		+++		

Correlation with other sites

There are few detailed pollen results published from the Leicester area, or indeed anywhere in the midlands with which to compare these results from this site. The results from Narborough Bog (Brown and Hatton 2002) should provide a suitable background in the future. However, these well-dated results from this site conform to the usual pattern of woodland development from initial open subarctic tundra, shown in the Column 2 results. Neolithic material shows evidence of the wildwood with mixed lime, oak and elm woods on

drier land, and oak and alder carr in the wetter valleys. The sequence of probable prehistoric clearances of the woodlands from the landscape is not shown, but by the Roman period the landscape seems to have been largely open as shown by the Column 4 results, with very little sign of remaining woods around Birstall. This is in keeping with results from this period, especially from near occupied sites, such as at Alcester, Warwickshire (Woodwards and Greig 1985-6).

The sequence from the Roman to the early medieval period at Birstall has the advantage of close dating and very good pollen preservation. The beginning of hemp and rye growing with the arrival of Saxons is especially clear, and compares with a similar sequence from Stafford Lammascote Road. There does not seem to be clear evidence from Birstall so far of the interruption in signs of human activity between the end of the Roman and the beginning of the Saxon period, which has been noted at a number of sites including Stafford (Greig 2002). There is a slight increase in tree pollen in sample at 45 cm, which is about the level at which this might be expected, as though there was some re-growth of woodland. However, the samples spaced at 10 cm represent one per century (of 50 years per sample from 40-50 cm), and a higher time resolution may be needed to detect such changes, which may have been of short duration.

The other very interesting feature of this part of the sequence is the possible evidence of traditional flood meadow with *Sanguisorba officinalis* (greater burnet) and *Centaurea nigra* (knapweed). This kind of meadow grew in river valleys that flooded in winter and were unsuitable for growing cereals, but could provide a good crop of hay if managed in the right way, with no grazing in spring and summer until mowing. Up to now, evidence of this meadow type has proved elusive, even in places where it still survives in Oxfordshire (Greig 1984).

Conclusions

The results from this site provide a series of glimpses into past landscapes that existed in the Soar valley. The burnt mound itself remains enigmatic, with little more than charcoal and some incidental signs of local vegetation. There are indications of a valley floor with alder and oak carr woodland on the damp land, where the burnt mount was. On drier land away from the valley bottom, there was mixed woodland with lime, elm, oak and hazel understory, the wildwood, which seems to have been widespread before extensive woodland clearance at various times in the prehistoric period. The valley floor woodlands seem to have lasted until the late Iron Age or early Roman period when they, too, gave way to occupied land with fields and meadows and rather little remaining woodland. Evidence of clearance of such remaining woods at around this time has also been found at a number of sites, as though there was generally more population pressure leading to occupation of further land, or the development of ways of using such damp land, such as for hay meadows or pastures. The early medieval period brought further occupation and the widespread cultivation of rye and hemp together with more use of damp meadowland. The sequence seems to end at about the time of the Norman conquest, with increased clay being washed in from bare soil exposed in winter, probably the result of increased farming on heavier soils than previously, as a result of further expansion in the population.

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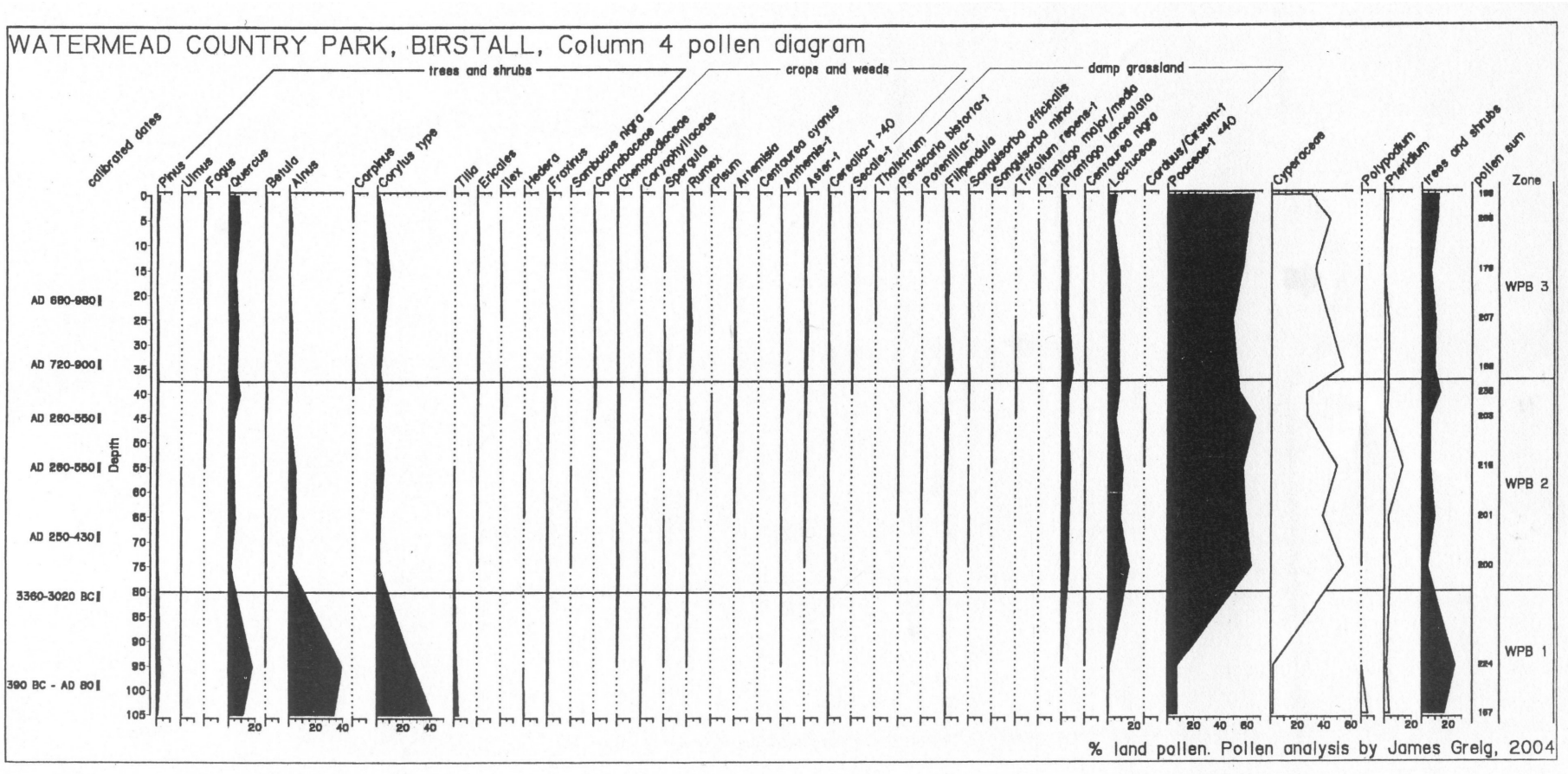

Figure 2: Watermead Country Park, Pollen Column 4