Environmental summaries, Watermead country park (Accession no. A57.1996)

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Environmental Background

The analysis of pollen and insect remains from columns through the sediments together with samples from features on the site have provided a good environmetal sequence, which provides a background to the activity on the site. Evidence from the Mesolithic to early medieval periods was recovered which, although not continuous, contributes to our knowledge of the history of the environment of the region.

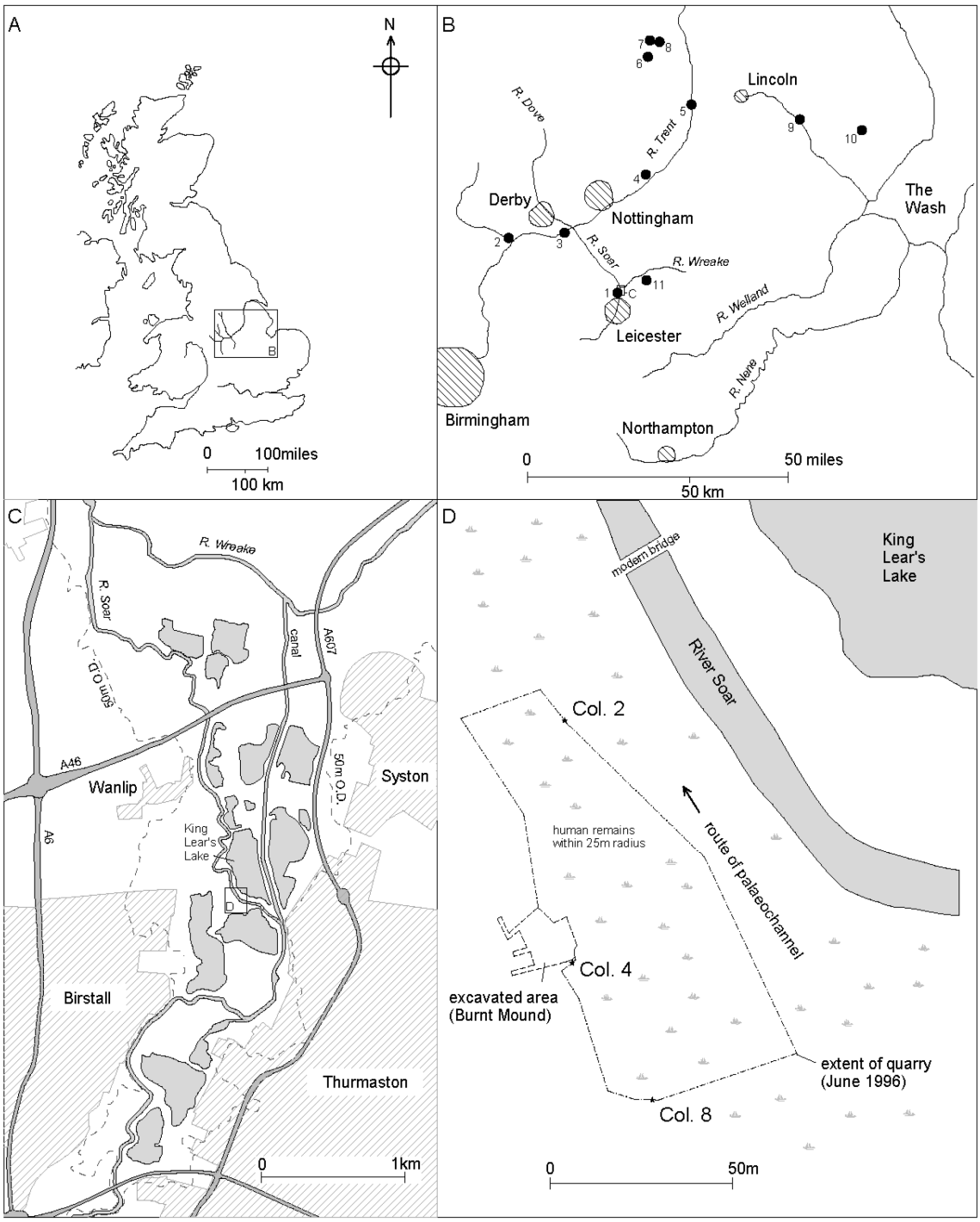

Figure 1: Site location plan and location of column samples (D).

Post-Glacial and Mesolithic

The earliest pollen from a palaeochannel sampled as Column 2 was dominated by grasses together with a range of herbs, including meadowsweet and sedges. Trees and shrubs included pine, birch, willow and oak (see Greig below). This represented the time after the last glaciation before the development of woodland and was dated to 9130-8740 cal BC. The lack of insects associated with woodland also suggested an open landscape. A range of water beetles that are associated with slow flowing or even stagnant water suggested the conditions in the channel. The surrounding vegetation was suggested by insects associated with sedges and sphagnum moss. One species of insect is a small rove beetle which is found today mainly at altitude in mountainous areas in the British Isles, and it is often associated with wet moss and the roots of

heather in boglands. Nowadays it is not found in the lowland river valleys of the midlands and is probably a late survival from glacial faunas. However, it is a very common species recovered from similar early post glacial deposits examined at Hemington, Leicestershire. Other plant feeding beetles show that this channel contained a range of waterside vegetation including stands of water reeds, sedges and bur reed (see Smith and Tetlow 'Insect Report'). The river valley vegetation of reed swamp and sedge beds surrounded by tundra has also been found at Croft, West Bridge in Leicester and at Hemington in the Trent Valley in this period.

The upper part of this deposit is very different. The pollen spectrum is that of Atlantic wildwood, with oak, elm, lime, alder and hazel with 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 near the top of Column 2 reveals a similar spectrum, and the date 7000-6420 cal BC also seems somewhat early. These results conform to the usual pattern of woodland development from initial open subarctic tundra (see Greig 'Pollen Report'). The early dates may be a result of the radiocarbon analysis of bulk peat samples which may have included water plants subject to the hard water effect. The corresponding insect samples produced small insect faunas with few species of the surrounding environment although the water beetles suggest that the water conditions present were essentially similar to those seen earlier. The absence of insects indicating cold conditions suggests the amelioration in climate that occurs at the start of the Holocene (see Smith and Tetlow 'Insect Report').

The Early Neolithic

At the time represented by the human bone of Early Neolithic date the palaeochannel deposits of Column 2 appear to have silted up to form a bog or possibly a cut-off channel surrounded by bog. The human bones seem to have been deposited in this wetland area at this time. The vegetation of the marshy area is likely to have been similar to the previous period represented. The wildwood would have been present on surrounding land because the pollen evidence suggests that this was present in the previous and succeeding deposits.

Late Neolithic; the environment of the burnt mound

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. Although few waterlogged samples proved to be of this date pollen samples from the north hearth have a range of trees, alder, oak, hazel and lime and rather few herbs, suggesting rather undisturbed woodland, in keeping with the Neolithic date. The macrofossils add evidence of elder and a small flora mainly of wetland and marsh plants such as water crowfoot, ragged robin and spike-rush. Drier grassland was represented by fairy flax and tormentil, and spores show that bracken grew locally (see Greig 'Pollen Report'). Pine was an additional tree found in the peat from the trough which contained earlier washed-in material (table 5= 22). These results suggest that the burnt mound was in a clearing by the water side on marshy ground, with grassy vegetation beyond, in a surrounding of wet woodland, mainly of alder. The charcoal used for fuel at the burnt mound shows that alder and hazel were most commonly used probably obtained from near the site together with oak, willow and the shrubs hawthorn and blackthorn from the surroundings. Elm is also represented amongst the charcoal perhaps brought from further away (table 1, 'Pollen Report'). The use of wood for fuel would suggest that the clearing was man-made, although it could have been a natural clearing caused by the river and extended by the people using the site. The charred plant remains add little to this, they only show the use of woodland resources possibly gathered for food which include hazel nutshell, sloe stone fragments, elder and hawthorn pips; these were in small numbers and they may have been brought with the wood for fuel, however, such fruits would have been consumed. No cereal remains were found in the 21 samples examined although cereals have been found at other sites of this period in the region; cereal cultivation seems unlikely nearby at this period (table plant remains samples). The aurochs may have found grazing in such clearings as well as access to drinking water. Unfortunately no insect remains were recovered from these samples,

possibly because they were not preserved but insect remains have been found to be sparse at these sites (see Smith and Tetlow 'Insect Report').

Bronze Age

There are no samples from this period and the actual woodland clearance is not represented. The channel was still silting up in the succeeding period so it seems that there was standing water at this time in the possibly cut-off channel, the local vegetation would have been similar to the previous and succeeding periods. The human bones could have been deposited in the water or bog as is possible with the Earlier Neolithic bones.

Iron Age to Roman

There is evidence of Iron Age woodland from pollen analysis of Column 4 (see Greig 'Pollen Report'). The lowest part of this pollen diagram dates from around 500cal BC to AD 300 and probably covers the late Iron Age and part of the Roman period, and shows signs of woodland with alder, hazel and oak. There are even traces of elm and lime which could indicate traces of the formerly extensive wildwood. Macrofossils of alder, hazel and 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, together with a seed of the weed greater plantain (Figure xxx pollen diagram Col 4). Just above this level in the profile there was a band of material dated to the Neolithic period which may be washed in sediment, perhaps representing a flooding event. It is possible that this may be related to destabilisation of soils by clearing woodland and cultivation. Woodland clearance in the Bronze Age and Middle Iron Age is known from headwater sites of the Soar at Croft and Kirby Muxloe (see Smith and Tetlow 'Insect Report'). At variance with these results is the pollen record from Column 8 which was further from the site; this shows survival of pine woodland with birch and hazel which would have been expected at a much earlier date. (see Brown and Hatton 'Palaeochannel Sediments Report'). The gully by the burnt mound was found to contain sediment dated to the Late Iron Age and the fill of the Neolithic ditch contained remains which showed similar conditions to the base of Column 4 (see Greig 'Pollen Report'). Local conditions indicated by insect remains from Column 4 show water beetles of still or slow flowing water, with rushes, reeds and sedges at the channel margin and water plants Dung beetles are present suggesting the use of land as pasture (Illus xx insect diagram). The Middle Iron Age site at Wanlip had evidence of a mixed economy of pastoral and arable farming and charred cereals were recovered from that site, (Beamish 1998), the pollen here suggests cultivation in the vicinity in the Iron Age.

Roman occupied landscape

By the Roman period the landscape seems to have been largely open as shown by the Column 4 pollen results, with very little sign of remaining woods around Birstall. The middle part of the pollen diagram of Column 4 (Illus XX) 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 oak, hazel and alder is quite a small part of the pollen sum, suggesting that little local woodland was present by this time. A consistent record of beech starts suggesting that beechwoods started growing in the area. A thorn of sloe or hawthorn shows evidence of scrub. A pollen record of heathers shows that some heathland probably grew from this point onwards, maybe at some distance from the site (see Greig 'Pollen Report').

There is a constant record of cereals and a record of peas at cal AD 200-550 as evidence of crops. A large range of weeds is present, providing more evidence that there was cultivated land nearby the site at this time. 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 buttercup and ragged robin could represent damp grassland. Wetland and aquatic vegetation is probably also indicated from this point by macrofossils of 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 water dropwort, spike-rush and sweet-grass (see Greig 'Pollen Report'). Insect remains were similar throughout Column 4 and include water beetles of slow or still water, feeders on marsh plants, and dung beetles indicating pasture (see Smith and Tetlow 'Insect Report').

Saxon to Early Medieval

Saxon settlement is indicated in the upper part of the sequence in Column 4 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 cereals, rye and probable hemp, the last two typical early medieval (Saxon) crops, as might be expected from the dates. The top sample has cornflower, a distinctive weed of traditional autumn-sown cereals such as rye (see Greig 'Pollen Report'). This horizon also provides correlation with the pollen diagram from Column 8 (see Brown 'Palaeochannel Sediments Report'). A number of probable grassland plants are present, with records for meadow rue, meadowsweet, greater burnet and knapweed, which are distinctive components of traditional species-rich hay meadow. A macrofossil record of 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 lesser burnet. There are slight records of holly and hornbeam, which may have been encouraged by woodland management (see Greig 'Pollen Report').

Throughout Column 4 the majority of the insect recovered are water beetles typical of slow flowing or still environments often filled with waterside and floating vegetation. The channel seems to also have contained quantities of emergent vegetation such as rushes and water reeds as the water silted up. Other insects are associated with sandy ground and some others associated with muddy ground, there may have been some variation in the nature of the bank sides. In terms of the environments near the channel the insects in these faunas clearly suggest grassland, meadowland and pasture. In particular, there are relatively large numbers dung beetles in these samples. There also appears to have been areas of disturbed ground. Whether this represents scuffed areas of pasture or disturbed ground resulting from the activity of the river as it changed its channel is not clear (see Smith and Tetlow 'Insect Report'). This may have caused by activity near the bridge or crossing point. This sequence ends with alluvial deposits which fill the channel. This may be a result of a flooding event, deterioration in the climate or destabilisation of soils by cultivation, however, it may have a number of causes during the early medieval period.