

## **Environmental samples, Watermead country park (Accession no. A57.1996)**

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### **Introduction**

During the investigation of the find of human skulls within waterlogged organic deposits and the subsequent discovery and excavation of a burnt mound and associated features samples were taken for the following reasons:-

- to recover material for radiocarbon dating of the site,
- to contribute to the interpretation of the site, and
- to investigate the environment of the site in the past to add to information from other waterlogged sites in the county.

It was hoped that evidence from this site would contribute to the picture of the ancient environment across the county adding to evidence from sites at Croft, Kirby Muxloe, Hemington and Castle Donington. It was also hoped that examination of samples from the features on the site would contribute to evidence for activities on the site as little is known of the function of burnt mound. Therefore investigation for the presence of plant and animal remains, particularly food remains represented by animal bone or charred plant remains was a priority.

In order to provide evidence of the environment in the past samples were taken for pollen which can give evidence of the surrounding area as well as conditions on the site, in addition samples were taken for insect remains and plant macrofossils which can give evidence of conditions on or near the site itself. Bulk samples were also taken from the burnt mound and associated hearths, trough and other features. These were used for the recovery of charcoal and charred remains to investigate the wood used for fuel and to investigate for the presence of food remains of wild or cultivated plants. The samples were also used to investigate the use of pebbles for heating water in the trough by recording the fragments of heat-cracked pebbles in the samples.

### **Method of sampling**

Samples were taken for pollen, plant macrofossils and for insect remains in columns through the organic sediments so that change over time could be detected. This involved taking monolith samples for pollen and taking bulk samples alongside the monolith tins in 10 cm slices for insect and plant remains. Three pollen columns were investigated. Column 2 was located to investigate the area of the human remains and was taken by James Greig who also analysed Column 4 taken from near the site to investigate the environment of the site. Both these columns also had samples analysed for plant macrofossils by James Greig and insect remains by David Smith (see separate report). A selection of features on the site were also sampled for waterlogged evidence. A further pollen monolith, Column 8 was taken by Dr A Brown as part of an on-going study of the changes in the environment of the

floodplain. These deposits were dated by AMS radiocarbon analysis of extracted seeds and plant material (see separate report).

Bulk samples were also taken from the burnt deposits for the recovery of charcoal for dating and identification, also for the recovery of charred plant remains or bones if present. A total of 42 bulk samples from 22 contexts were taken from the hearths, burnt mound and trough. They were processed and examined for the recovery of charred or other remains by the author (see below). The burnt stone fragments in the residues of the samples were investigated by John Tate (see separate report), and charcoal from the samples was identified by Rowena Gale for radiocarbon dating and by Graham Morgan to investigate the wood resources used for fuel (see separate report).

## **Charred plant remains from bulk samples of Late Neolithic date**

### **Introduction**

Samples were taken and processed for the recovery of charred plant remains which can give evidence of diet, agriculture or activities on sites in the past. The features sampled included the burnt mound layers, associated hearths and trough which were all dated to the Late Neolithic period by radiocarbon dating of charcoal from the samples.

### **Methods**

A total of 42 bulk samples from 22 contexts were taken from the hearths, burnt mound, trough and other features (Table 1).

Samples were wet sieved in a York tank using a 0.5mm mesh with flotation into a 0.5mm mesh sieve. The residues were air dried and the fraction over 4mm sorted for all finds which are included in the relevant sections of this report. The fraction below 4mm was reserved for sorting in case material had not been recovered by flotation. The flotation fraction (flot) was air dried and packed in self-seal polythene bags. The flots were then examined using a x10-60 stereo microscope and any the plant remains were removed to glass specimen tubes. The plant remains were identified by comparison with modern reference material and tabulated below (Table 1). The fine residues below 4mm were also examined and the plant remains included. Plant names follow Stace (1991).

### **Results**

Charcoal was abundant in many of the samples although few other plant remains were recovered. Eight of the samples contained some plant remains in small numbers (Table 1).

Most of the samples contained some uncharred seeds preserved by waterlogging, elder seeds were the most numerous of these seeds which are recorded in detail in the analysis of plant macrofossils (see Greig, separate report).

#### *Hearths*

A sample from the south hearth, sample 112 (245) contained two alder seeds (*Alnus glutinosa*) together with a small fragment of alder cone axis. The other sample from this hearth and from the north hearth contained no plant remains other than charcoal.

#### *Burnt spreads*

Samples from three of the seven contexts sampled contained some items of charred plant remains. Sample 92 (248) from the earliest layer was the most productive; an alder seed and a charred seed of a reed (Cyperaceae) were found in the flot, the fine residue contained single charred fragments of hazel nutshell (*Corylus avellana*), a sloe stone fragment (*Prunus spinosa*) and a pip of hawthorn (*Crataegus* sp.). Sample 90 (251) contained a small charred bud possibly of a shrub and a seed of clover type

(*Medicago* or *Trifolium*). Sample 86 (236) from the upper layer of the mound contained a couple of indeterminate seeds too fragmentary to identify.

### *Trough*

The lower layers produced a charred elder pip (*Sambucus niger*) from sample 60 (137) and a charred alder seed from sample 58 (122). An uncharred fragment of hazel nutshell was found in sample 48 (123).

The upper layers of the trough were found to be filled with re-deposited earlier silt and peat but the charred remains may be of the same period as the trough but mixed with the peat. These samples included four charred hazel nutshell fragments and a charred sedge seed (*Carex* sp.) from sample 57 (101/2); a small hazel nutshell fragment was also found in sample 55 (138).

## **Discussion**

All the remains found were of wild plants, mostly tree or shrub seeds or pips including alder, elder, hawthorn, hazel and sloe. All but the former are edible but here they are found in very small numbers in charcoal rich deposits which include the wood of these trees and shrubs. These plants are also represented as pollen and plant macrofossils (see Greig below) so represent part of the natural vegetation of the area. Although some may have been consumed the remains here could represent fragments of fruits included with the wood used as fuel. There is little to suggest anything other than incidental inclusion with fuel, and perhaps disposal of waste from occasionally consumed fruits and nuts available in the late summer or early autumn. Other plants represent the local vegetation.

The lack of finds of cereals here compares with some sites and features of this date although it has been pointed out that cereals were a usual part of the Neolithic economy in the midlands they are not always found (Moffett 1999). This could be for a number of reasons such as the way cereals were used, or differences in activities carried out at different sites, or differences in landscape. At other sites the greater abundance of nutshell fragments than cereal grains has been noted in many samples of this date. It has been pointed out that nutshell is waste for disposal whereas grains are the product to be used, so the waste of grains would have been avoided and deposits may not represent the availability of foods (Moffett et al 1989). The greater abundance of nutshell in this period than subsequently is thought to indicate their greater importance in the diet than in later periods (Robinson 2000). It may also indicate the proximity of woodland to many sites. The lack of cereals here, although they are known in the region at this date, may reflect the landscape and landuse of the flood plain as well as the specialised use of the site.

How people used burnt mounds is a matter for speculation. At Willow Farm, Castle Donington, the evidence from the plant remains shows food waste included cereals, nuts and perhaps gathered fruits suggesting that food was prepared and consumed on the site. This is only to be expected if people spent any time there for any other activity, the extensive burning found is certainly unnecessary for cooking on a domestic scale. Plant remains were sparse which may suggest only small scale use of cereals and gathered plant foods on that site. Evidence for processing wild foods had been reported from burnt mounds on the Essex coast (Wilkinson and Murphy 1995). At Willow Farm the evidence suggests the preparation and consumption of both wild and cultivated plant foods and that one of the functions of the hearths was food preparation. This may suggest at least transient occupation of that site but does not give any clues about other activities carried out there. Here there is no evidence for cereals and less evidence for wild food resources so other activities perhaps related to animal husbandry may be suggested.

## **Comparison with other sites**

Although cereals are lacking here cereal cultivation is known from the region from at least 3000 BC with abundant charred grain from a Neolithic building at Lismore Fields Buxton including emmer dated to 3990-3150 cal BC at 95% probability (Jones 2000) and a deposit of numerous emmer grains from Aston Cursus dated to c.3500 BC (Loveday 2000). At Willow Farm a deposit from a pit provided evidence for Late Neolithic-Early Bronze Age use and possible cultivation of wheat and barley in the area, and the reliance on both cultivated as well as collected foods including crab apples and hazel nuts;

the use of woodland resources with the proximity of woodland is suggested. A large group of charred crab apples were found in the pit and were dated to around 2000 BC by AMS radiocarbon analysis. Bronze Age glume wheats in moderate numbers from Lockington, Leicestershire show spelt already present by the Later Bronze Age. At Lockington emmer was dated to cal BC 1735 (cal BC 1875-1805 and 1795-1645 at 68% probability Beta-83721) and spelt with emmer dated to cal BC 1385 (cal BC 1425-1260 at 68% probability Beta 83722) found in pits dated from charcoal (Monckton 2000). Eye Kettleby, near Melton Mowbray, Leicestershire produced evidence for both emmer and spelt from Bronze Age contexts, while small amount of evidence for spelt was found at Ridlington Rutland but at that site hulled barley was abundant with grains dated to cal BC 1390-1210 at 68% probability (Wk-10073: 3025+/- 69 BP). However, evidence for spelt has not been found at all Bronze Age sites in the county as is the case at Willow Farm. The evidence from features of Bronze Age date at Willow Farm shows the use of glume wheat, with emmer identified from the Late Bronze Age where features contained waste from food preparation including grains of wheat and barley with a little chaff and weed seeds. Emmer was the only wheat identified in Late Bronze Age contexts there, with hazel nutshell present as a collected food suggesting.

The Late Bronze Age burnt mound at Willow Farm produced evidence of charred cereals including glume wheat and barley, a little chaff and weed seeds with hazel nutshell, similar to the evidence from the other Bronze Age features nearby. In addition elder and hawthorn were also found which may also have been consumed. These remains occurred with the main concentration of charcoal at the top of the mound near the hearth. It was therefore suggested that one of the functions of the hearth was food preparation of cultivated and gathered food for the people using the mound. This differs from the evidence here where the burnt mound is earlier being of Late Neolithic date and lacking cereals with nut and fruit remains being somewhat more sparse here. This may be more similar to the food evidence from Willington where only wild food resources seem to have been exploited, although cereals are known from elsewhere in the Trent floodplain. This mound in the Soar valley may be similar in having a specialised or seasonal function more related to animal husbandry for which these lowland sites are more suitable.

Table 1: Charred plant remains

Samp No.	Cont No.	Feat type	Samp Vol. litres	Flot Vol. mls	FF wt. gm	Se un	CF Char	Flot Char	Charred plant remains (charred, and from Flot unless stated)
S. Hth									
91	246	329	11	600#	116#	++	30	+	-
111*	246	329	sm	-	-	-	15	-	Charcoal sample.
112	245	329	3	25	126	(2)	10	10	2 Alder seeds, 1 Alder cone frag. both from FF residue.
N. Hth									
108*	317	318	10	146	768#	(17)	25	25	-
103	315	318	11	260	82	(11)	10	10	-
93	306	318	12	175	196#	++	3	+	-
B. Spd									
92*	248	BS	15	190	628#	+	5	5	A charred alder seed and a Cyperaceae seed from the Flot. A sloe stone frag, a hawthorn pip and 2 hazel nutshell frags from FF.
88	205	BS	17	295	738#	+	3	+	A charred bud and an uncharred frag of sloe stone from the Flot.
90	251	BS	4.5	200	150	++	4	15	A charred seed of clover type and a charred bud.
85	235	BS	22	170	674#	+	18	++	Organics and charcoal only.
82	231	BS	1	20	40	(6)	-	-	-
86*	236	BS	68	470	2298#	(3)	14	12	A seed of Lamiaceae, an indet seed frag.
87	237	BS	16	75	340#	-	10	+	Charcoal and organics.
Tr									
67*	147	124	Sm	-	-	-	170		Charcoal sample.
49	126	124	4.5	400	288	-	4	35	Charred bud and bark.
60	137	124	6	600	296	+	-	32	1 charred elder seed, 1 bud.
48	123	124	3	300	54	+	2	30	Uncharred hazel nutshell frag, twig and bark in flot.
42	122	124	5	900	54	-	10	96	-
58	122	124	3	300	102	+	14	20	1 charred alder seed, a bark frag.
57	101/2	124	15	1200#	202	+	10	60	A charred sedge seed in Flot, 4 hazel nutshell frags in residue.
55	138	124	12	250#	230	-	1	fl	Peat. 1 hazel nutshell frag in FF.
52	116	124	8	45	94	+	-	fl	-
51	111	Clay	7	130	242	-	2	5	-
Gully									
89*	229	228	6	200	30	+++	-	fl	Uncharred seeds abundant, seeds AMS dated.

Key: Se = seed, ch = charred, un = uncharred, Char = charcoal, Oth = other charred item, fl = flecks,

frag = fragments, + = present, ++ = moderate amount, +++ = abundant.

# = 50% examined, \* = radiocarbon sample, N.Hth = North hearth, S.Hth = South hearth, BS = burnt mound spreads, Tr. = Trough. FF = Residue fine fraction below 4mm, CF = Residue coarse fraction over 4mm.

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