

Digging Deeper

A Community Archaeology Project at Under Whitele, Sheen



(UWDD21) Charred Plant Remains and Wood Charcoal Assessment

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Dove Valley Activity Centre, Under Whitle, Staffordshire (UWDD21) – charred plant remains and wood charcoal assessment

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Introduction

A series of bulk sediment samples were taken during the archaeological excavation of a possible medieval/post-medieval farmstead at Dove Valley Activity Centre, Under Whitle, near Lognor in Derbyshire in August and September 2021. The excavation was carried out as part of Digging Deeper: A Community Archaeology Project by the Tudor Farming Interpretation Group and Dr Ian Parker-Heath of Enrichment Through Archaeology. Twelve samples, representing three hundred and sixty-four litres of sediment, were processed by the author for the recovery of charred plant macrofossils and wood charcoal. The processed samples were submitted to the Sheffield Archaeobotanical Consultancy for assessment in January 2022.

Aims and objectives.

- To determine the concentration, diversity, state of preservation and suitability for use in scientific dating, of any paleoenvironmental material present in the samples.
- To evaluate the potential of any paleoenvironmental material present in the samples to provide evidence for crop plants and/or wild plant foods.
- To evaluate the potential of any paleoenvironmental material present in the samples to provide evidence for the local environment or land use.

Methodology

The bulk samples were processed by the author using a water separation machine. Floating material was collected in a 300µm mesh, and the remaining heavy residue retained in a 1mm mesh. Flots and heavy residues were air dried. The >4mm fractions of the heavy residues were sorted for artefacts and ecofacts. The 2-4mm fractions of the heavy residues were sorted for charred plant remains and wood charcoal.

The samples were assessed in accordance with Historic England guidelines for environmental archaeology assessments (Campbell *et al* 2011). A preliminary assessment of the samples was made by scanning using a stereo-binocular microscope (x10 - x65) and recording the abundance of the main classes of material present. All material present in the samples was quantified using a scale of abundance (- = < 10 items, + = 10-29 items, ++ = 30-49 items, +++ = 50-99 items, ++++ = 100-499 items, +++++ = > 500 items).

Preliminary identification of plant macrofossils was carried out by comparison with material in the reference collections at the Department of Archaeology, University of Sheffield, and various reference works (e.g. Cappers *et al* 2006). Cereal identifications and nomenclature follow Zohary *et al.* (2012). Other plant nomenclature follows Stace (2019). The composition of the samples is recorded in Table 1. The seed, in the broadest sense, of the plant is always referred to in Table 1, unless stated otherwise. The abbreviation *cf.* means 'compares with' and denotes that a specimen most closely resembles that taxon more than any other.

Preservation

Preservation of plant macrofossils and wood is by charring. Preservation of charred plant material is poor. A very low quantity of cereal grain was found in the samples and the cereal grain is distorted and identifiable by gross morphology only. Preservation of wood charcoal is also somewhat poor, as a significant proportion of the charcoal fragments had been affected by vitrification, whereby charcoal takes on a glassy appearance which potentially hampers identification or the recording of dendrological features. The low concentration and poor preservation of charred material in the samples points to hearth or oven waste which has been reworked and redeposited over time.

Intrusive seeds of buttercup (*Ranunculus acris/repens/bulbosus*) and earthworm cocoons are occasionally present and most of the samples are dominated by large proportions of modern roots. This indicates that the sampled contexts have been affected by bioturbation and that there is an increased likelihood that any charred material found in the samples may be intrusive.

Results

Charred plant remains

Very low concentrations of charred plant remains are present in the samples. A single barley grain (*Hordeum distichum/vulgare*) was found in sample 2 from layer 4 and single oat grains (*Avena* sp.) were found in sample 5 from layer 011 and sample 12 from layer 026. As no diagnostic oat chaff is present, it was not possible to determine whether the oat grains are from wild plants or cultivated crops. A seed of small seeded grass (<2mm Poaceae) is present in sample 6 from layer 012 and a seed of corn spurrey (*Spergula arvensis*) was found in sample 8 from layer 021. Single charred tubers/rhizomes were also found in sample 8 and in sample 7 from layer 013.

Wood charcoal

Sample 2 from layer 004, sample 7 from layer 013 and sample 8 from layer 021 produced moderately rich assemblages between fifty and one hundred >2mm charcoal fragments. The remaining samples produced small assemblages of less than thirty >2mm wood charcoal fragments. Preliminary examination of the wood charcoal fragments using low power microscopy indicates the presence of both diffuse porous and ring porous taxa in samples 1, 2, 3, 5 and 6 from layers 003, 004, 002, 011 and 012. Primarily diffuse porous taxa is present in samples 7, 8, 10, 12, 13 and 14 from layers 013, 021, 027, 026, 031 and 046, as well as in sample 9 which was taken from a lynchet. The diffuse porous charcoal found in the latter group of samples includes small diameter roundwood twigs, which were tentatively identified using low power microscopy as heather family, gorse or broom (cf. Ericaceae/*Ulex/Cytisus*).

Table 1 – Under Whittle Digging Deeper (UWDD21), archaeobotanical sample assessment.

Context No.	Sample No.	Context description	Date	Sample volume (l)	Roots (ml)/ flot volume excluding roots (ml)	Grain/ chaff	Wild or weed plant material	>4mm/ >2mm charcoal	Notes
003	1	Layer	medieval/ post-medieval?	34	200/0.5	0/0	0	0/-	WC: DP <i>Ranunculus acris/repens/bulbosum</i> uc (+) Earthworm cocoons (+) Vitrified charcoal (+++)
004	2	Layer	medieval/ post-medieval?	38	400/6	-/0	0	-/+++	CPR: <i>Hordeum distichum/vulgare</i> grain WC: DP some RP
002	3	Layer	medieval/ post-medieval?	40	300/5	0/0	0	0/+	CPR: Leaf bud WC: RP and DP Vitrified charcoal (++++)
011	5	Layer	medieval/ post-medieval?	40	300/5	-/0	0	-/+	CPR: <i>Avena</i> sp. grain WC: RP and DP (inc. round wood – cf. <i>Ericaceae/Ulex/Cytisus</i>) <i>Ranunculus acris/repens/bulbosum</i> uc (+) Vitrified charcoal (+++) Earthworm cocoons (-)
012	6	Layer	medieval/ post-medieval?	37	200/4	0/0	-	-/++	CPR: <2mm Poaceae WC: RP and DP (inc. round wood - cf. <i>Ericaceae/Ulex/Cytisus</i>) <i>Ranunculus acris/repens/bulbosum</i> uc (-) Vitrified charcoal (++++) Earthworm cocoons (-)
013	7	Layer	medieval/ post-medieval?	30	100/6	0/0	0	-/+++	CPR: Tuber/rhizome WC: DP (inc. round wood - cf. <i>Ericaceae/Ulex/Cytisus</i>) <i>Ranunculus acris/repens/bulbosum</i> uc (-) Vitrified charcoal (++++) Earthworm cocoons (+)
021	8	Layer	medieval/ post-medieval?	50	50/6	0/0	-	-/+++	CPR: <i>Spergula arvensis</i> , tuber/rhizome WC: DP Vitrified charcoal (+)
Lynchett	9	Layer	medieval/ post-medieval?	10	50/3	0/0	0	0/+	WC: DP (inc. round wood - cf. <i>Ericaceae/Ulex/Cytisus</i>) Vitrified charcoal (+)
027	10	Layer	medieval/ post-medieval?	5	5/0.2	0/0	0	0/-	WC: DP round wood - cf. <i>Ericaceae/Ulex/Cytisus</i>
026	12	Layer	medieval/ post-medieval?	40	20/3	0/0	0	-/+	CPR: <i>Avena</i> sp. WC: DP (inc. round wood - cf. <i>Ericaceae/Ulex/Cytisus</i>)
031	13	Layer	medieval/ post-medieval?	20	100/5	0/0	0	-/+++	WC: DP (inc. round wood - cf. <i>Ericaceae/Ulex/Cytisus</i>) Vitrified charcoal (++) Earthworm cocoons (+)

Context No.	Sample No.	Context description	Date	Sample volume (l)	Roots (ml)/ flot volume excluding roots (ml)	Grain/ chaff	Wild or weed plant material	>4mm/ >2mm charcoal	Notes
046	14	Layer	medieval/ post-medieval?	20	100/	0/0	0	-/-	WC: DP (inc. round wood - cf. Ericaceae/ <i>Ulex/Cytisus</i>) Vitrified charcoal (++) Earthworm cocoons (-)

key - = < 10 items, + = 10-29 items, ++ = 30-49 items, +++ = 50-99 items, ++++ = 100 - 499 items, +++++ = > 500 items. CPR = charred plant remains, WC = wood charcoal. DP = diffuse porous charcoal, RP = ring porous charcoal.

Discussion of potential

The charred plant remains found in the samples have some very limited potential to provide evidence for cereal crops and no potential to provide evidence for crop husbandry or crop processing practices. The only positively identified cereal crop is barley, as it was not possible to determine whether the oat grain is wild or cultivated. The cereal grain is likely to have been charred during parching, drying or cooking. The seeds of corn spurrey and small seeded grass may be from weeds that were brought to the site with cereal crops or may be from plants growing at the site.

The wood charcoal assemblages in sample 2 from layer 004, sample 7 from layer 013 and sample 8 from layer 021 have relatively good potential to provide evidence for the availability and exploitation of woody taxa for use as fuel. Where at least fifty charcoal fragments of a suitable size for identification are present, this is more likely to result in a representative sample of wood use, including rare taxa (Stuijts 2006). The tubers/rhizomes and the small diameter twigs tentatively identified as heather family, gorse or broom, found in several of the samples, suggest the collection of plant material from heathland, possibly as turves (Hall 2003). Identification of the small diameter twigs using high power microscopy would be expected to provide more evidence regarding the potential exploitation of heathland.

Significance of the charred plant remains and wood charcoal assemblage

The charred plant remains from Under White are of no research significance due to the low concentration and poor preservation of the material. The wood charcoal is of some limited regional research significance as the identification and analysis of wood charcoal assemblages from medieval and post-medieval sites in the midlands is somewhat sparse (Murphy 2001).

Recommendations for further work

It is recommended that at all the >2mm wood charcoal fragments in sample 2 from layer 004, sample 7 from layer 013 and sample 8 from layer 021 are identified using high power microscopy. The aims of this further work would be to provide a fully identified and quantified record of the woody species present in the samples and to investigate the availability and exploitation of local woodland, scrub or heathland for the collection of fuel.

Scientific dating

Short life organic material suitable for scientific dating is present in most of the samples in the form of small diameter roundwood twigs.

References

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