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Assessment of plant and invertebrate remains from excavations at Cawthorn Camps, N. Yorkshire, 1999 (site 654)

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Summary

Plant (and in two cases also invertebrate) remains were investigated from 24 contexts associated with two of the Roman 'forts' at Cawthorn Camps, on the southern edge of the North York Moors, N. Yorkshire. Ancient plant remains were limited to small to moderate concentrations of charcoal and a very few other structures; all of the uncharred plant material and the few invertebrate remains encountered are thought likely to be of recent origin. Some spot finds of charcoal were found to be suitable for dating provided their archaeological context is appropriate.

Keywords: CAWTHORN CAMPS; N. YORKSHIRE; ROMAN; ASSESSMENT; PLANT REMAINS; INVERTEBRATE REMAINS; TURVES

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Introduction

Excavations were undertaken under the direction of Peter Wilson, Centre for Archaeology, English Heritage, at the site of Cawthorn Camps, near Pickering, N. Yorkshire, in September 1999, following Wilson and Lee's (1999) project design. Samples from two of the three trenches excavated were submitted for assessment of their bioarchaeological potential (and, in the case of some spot samples of charcoal, their suitability for dating). In particular some deposits thought to consist of, or to contain, degraded turves were examined to assess their value in addressing the question of recognising such material independently by means of their plant and invertebrate macrofossil content.

Methods

Samples of whole sediment from the excavations were processed by two sieving methods: for the first (samples specifically for the investigation and identification of ancient turves), 'test' subsamples (*sensu* Kenward *et al.* 1986) of 5 kg were disaggregated at the Environmental Archaeology Unit, University of York, by hand and sieved to 300 µm (following the procedures of Kenward *et al.* 1980), using a 'washover' to separate any organic material. The washovers were examined wet, whilst the residues were dried before being checked.

The second group were 'bulk-sieved' at the Centre for Archaeology, English Heritage, Portsmouth, using a modified Sīraf tank with a 0.25 or 0.5 mm mesh for the 'flots' or 'washovers' and a 0.5 mm mesh for the residues. The washovers were dried prior to examination in York; residues were not submitted but are unlikely to have contained any useful biological remains.

For each washover, volume was roughly estimated using a graduated beaker (and moderate pressure to settle the springy material into it) and then the material was quickly sieved on 4, 2 and 1 mm-mesh sieves, the clumps of tangled modern roots present in most cases being teased apart to allow any contained fossils to fall out. The remaining tangles of roots were not examined, but a rapid inspection of all the material falling through the sieves was made. In particular, the maximum size and quantity of charcoal present was noted (cf. Table 1).

Results

The results obtained in this assessment are presented in Table 1 by trench and within trench in approximate stratigraphic order. For the two samples for which 5 kg 'test' subsamples were examined, more detailed accounts follow.

Trench 1

Context 117 (upcast S. bank material, well-defined turves)

Sample 605/T (5 kg)

The sample was described in the laboratory as a dark, slightly greyish-brown, brittle (working crumbly) humic, slightly silty sand with stones 6-20 mm and modern roots. On sieving it became clear that the

sediment had a large content of stones.

This subsample yielded a moderate-sized to large residue of about 1225 cm³ of angular to subangular chocolate brown (presumably humic-stained) sandstone (about 850 cm³) plus a washover of roots and fine amorphous organic sediment (about 200 cm³), and a further component of about 175 cm³ of small (<2 mm) pellets of undisaggregated humic silty material which was intermediate in density.

Amongst the modern roots were fragments of shoots of heather (*Calluna vulgaris* (L.) Hull) together with a few flowers and capsules of this plant and, in the finest fraction, also some seeds. The material was variable in its state of preservation with some leafy shoots appearing to be intact except that they were strongly decolorised, whilst others had begun to lose tissue from the stems. The flowers and capsules often contained air which caused them to float. The only other identifiable remains were traces of rather fresh-looking moss (*Hypnum* cf. *cupressiforme* Hedw.). There was also a little charcoal (in fragments up to 5 mm).

Insect remains from Sample 605/T were sparse: a few larval apices of elaterid beetles, a pronotum probably of *Strophosomus sus* Stephens and two elytra of *Lochmaea suturalis* (Thomson), with a few remains of ants. The remains, whilst not especially well preserved, had an appearance which suggested they were not ancient—perhaps only decades rather than centuries old.

The question of the age and mechanisms of incorporation into Context 117 of the plant and invertebrate remains is clearly of some importance. If they are post-depositional intrusions they add nothing to the interpretation or understanding of the layer (which is thus barren of ancient remains other than charcoal); if they are contemporaneous with it, they indicate that the dark material probably was largely derived from turves and that these were cut from an area of vegetation not dissimilar to that obtaining today, with heather dominant.

Trench 2

Context 269 (dump of mineralised turves in rampart)

Sample 620/T (5 kg)

In the laboratory, this sediment was described as a light yellowish-grey-brown to light gingery-brown, brittle (working crumbly), slightly silty sand, with stones 20-60 mm and modern rootlets. There were occasional tiny dark flecks which might have been charcoal. The presence of large numbers of stones in the range 2-20 mm became apparent on disaggregation.

There was a moderately large residue of about 700 cm³ of angular sandstone gravel with a small washover of about 50 cm³ of roots, presumably all modern (some with what appear to be characteristic coarse rhizoid-like hairs normal to the axis of the roots). Identifiable remains were limited to two very decayed toad-rush (*Juncus bufonius* L.) seeds and there were traces of very decayed earthworm egg capsules and at least one ?modern mite.

It is apparent that no ancient biological remains survive in this deposit, or if they are present their concentration is too low to justify further investigation.

Discussion

As Table 1 shows, nearly all of the samples of whole sediment samples yielded, at least, a little charcoal; in some cases there were moderate concentrations (including oak, ash and hazel and no doubt other taxa). In a very few instances there were also low concentrations of remains of plants likely to have been used

for food (charred hazel nutshell from Contexts 119, 148 and 153, and barley grains from Context 153), but otherwise no evidence for plant used by the occupants of the site during the periods represented by the deposits, or for plants growing in the vicinity. It seems safe to conclude—given the depth of most of the deposits and the nature of the ground conditions in this area—that all of the uncharred material was of recent origin. Unfortunately the results shed no light, either, on the question of the deposits thought to contain turves.

Dating of charcoal samples

All of the 'spot finds' of charcoal are large enough for dating by accelerator mass spectrometry and the penetration of later rootlets should pose no problem. Dating is probably not worthwhile, however, unless the context is clearly a sealed one in which the charcoal is likely to be a primary component. None of the material appeared to be from twigs so there is a possibility that the dating of one or more fragments will give a date for wood which was already old at the time it was converted to charcoal.

Recommendations for further work

It may be worthwhile to examine and identify further the charcoal from selected contexts (some or all of those indicated in Table 1) to ascertain what kinds of timber were being used at the site and perhaps from the species identifications something of the likely sources for the timber/fuel resource.

On the basis of examining 20 specimens from each of six BS samples it is estimated that 15 hours would be required for identification and report compilation.

A further 0.5 hours *per sample* will be required for selection and identification of material for AMS dating from amongst the spot charcoal samples (or from the material generated by bulk-sieving), should this be required.

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Table 1. Results of bioarchaeological assessment of samples from Cawthorn Camps, N. Yorkshire (site 654). Context order (within each trench) follows stratigraphic order as far as possible. Sample type terminology follows Dobney et al. (1992). Abundance scales for charcoal are +: estimate of 1-10 fragments per sample; ++: 10-100 fragments; +++: >100 fragments.

Context	Context type	Sample	Sample type/volume (l.)	Notes	Charcoal >4mm	Charcoal 2-4 mm	Recommendations for further work
Trench 1							
132	buried soil beneath 117	606	BS/40	moderately large washover of about 400 cm ³ , mostly modern roots; a trace of charcoal including oak (<i>Quercus</i>) to 15 mm	+	+	no further action
151	buried soil	632	BS/40	residue rewashed and dried - very silty; moderately large washover of about 500 cm ³ , mainly modern roots, with traces of charcoal to 10 mm	+	+	no further action
139	part of charcoal spread sealed by wall 102	629	BS/4	rather large washover of about 200 cm ³ : a small amount of modern roots and some charcoal to 10 mm	++	+++	identification of a subsample of charcoal
		646	SPT (charcoal)	max. 0.7 g. of dry charcoal (to 10 mm), fragments penetrated by later rootlets			suitable for dating by AMS if context appropriate
117	upcast S. bank material, well-defined turves	605	GBA	see main text			no further action
		605	BS/40	moderately large washover of about 600 cm ³ , mainly modern roots including some coarse woody root fragments	+	+	no further action
142	N. bank material	608	BS/26	large washover of about 900 cm ³⁺⁺ , almost all a tangle of modern roots with some woody roots; charcoal only present as rare fragments <2 mm	-	+	no further action

<i>Context</i>	<i>Context type</i>	<i>Sample</i>	<i>Sample type/volume (l.)</i>	<i>Notes</i>	<i>Charcoal >4mm</i>	<i>Charcoal 2-4 mm</i>	<i>Recommendations for further work</i>
150	degraded top of N bank	641	BS/30	moderately large washover of about 500 cm ³ , mostly modern roots, including <i>Calluna</i> , but also a very few cm ³ of charcoal (mostly <2 mm) and rare charred ?rhizome fragments (e.g. from grass or sedge)	-	+	no further action
137	charcoal-rich fill from pit 120	609	BS/5	large washover of about 450 cm ³ , mostly modern roots but with some charcoal to 20 mm, including ?oak	++	+++	identification of a subsample of charcoal
		607	SPT (charcoal)	max. 5.1 g. of dry charcoal (to 40 mm), fragments penetrated by later rootlets			suitable for dating by AMS if context appropriate
121	charcoal-rich fill from feature 120, above 137	604	BS/10	moderately large washover of about 550 cm ³ , mostly modern roots with a trace of charcoal to 20 mm, including ?oak	+	++	no further action
		647	SPT (charcoal)	max. 1.7 g. of dry charcoal (to 20 mm), fragments penetrated by later rootlets			suitable for dating by AMS if context appropriate
153	charcoal-rich lower fill of feature 149, below 148	643	BS/5	large washover of about 350 cm ³ , mostly charcoal (to 20 mm), including oak and ash (<i>Fraxinus</i>) with some modern roots; also some charred hazel (<i>Corylus avellana</i>) nutshell fragments (to 10 mm) and a few charred barley (<i>Hordeum</i> sp.) grains (max. estimated as 5), mostly rather worn or even shrunken before charring, and a single charred brome (<i>Bromus</i> sp.) caryopsis	++	+++	identification of a subsample of charcoal

<i>Context</i>	<i>Context type</i>	<i>Sample</i>	<i>Sample type/volume (l.)</i>	<i>Notes</i>	<i>Charcoal >4mm</i>	<i>Charcoal 2-4 mm</i>	<i>Recommendations for further work</i>
148	fill of feature 149	631	BS/10	the large washover was about 600 cm ³ of modern roots (about 400 cm ³) and loose material including rather a lot of charcoal (to 20 mm, though much of it <2 mm), and traces of charred ?heather root-twig fragments and charred hazel nutshell (to 10 mm), which is presumably ancient	+++	+++	identification of a subsample of charcoal
		630	SPT (charcoal)	max. 4.8 g. of dry charcoal, fragments penetrated by later rootlets			suitable for dating by AMS if context appropriate
147	interface between black humic layer and gravel 146	625	BS/10	moderate-sized washover of about 400 cm ³ , mostly modern roots with a very little charcoal (to 15 mm); <1 mm includes much undisaggregated ?humic silt	+	+	no further action
146	adjacent to feature 112	624	SPT (charcoal)	max. 1.3 g. of dry charcoal, fragments penetrated by later rootlets			suitable for dating by AMS if context appropriate
129	fill of feature 122	603	BS/10	moderately large washover of about 400 cm ³ , mainly roots including heather (to 60 mm); traces of charcoal (to 4 mm)	-	+	no further action
135	sandy occupation layer	621	BS/20	rather large washover of about 700 cm ³ of modern roots with a trace of charcoal (to 10 mm) and a few small stones; still rather silty	+	++	no further action
119	charcoal spread (fire base) filling scoop 127	602	BS/10	rather large washover of about 500 cm ³ , mostly modern roots with some charcoal (to 10 mm) and one 4 mm piece of charred hazel nutshell	++	+++	identification of a subsample of charcoal

<i>Context</i>	<i>Context type</i>	<i>Sample</i>	<i>Sample type/volume (l.)</i>	<i>Notes</i>	<i>Charcoal >4mm</i>	<i>Charcoal 2-4 mm</i>	<i>Recommendations for further work</i>
Trench 2							
270	sandy layer (buried soil) beneath sealed land surface	626	BS/40	small washover of about 150 cm ³ of modern roots and rather a lot of stones; some charcoal (to 15 mm) including ?oak; some stone fragments appearing somewhat like mortar but probably just cemented matrix of sand with traces of charcoal; <1 mm fraction of sand and fine charcoal	++	++	identification of a subsample of charcoal
242	pre-rampart land surface sealing 270	622	BS/40	tiny washover of <50 cm ³ of modern roots, and including one whole modern grass culm and inflorescence; a trace charcoal to 15mm, including ash	+	+	no further action
269	dump of mineralised turves in rampart	620	GBA	see main text			no further action
			BS/20	small washover of about 150 cm ³ of modern roots, with a trace of charcoal (to 5 mm)	-	+	no further action
280	mixed gravel/clay fill of 225	645	BS/30	tiny washover of 1-2 cm ³ of rootlets, modern rush (<i>Juncus</i>) seeds and fine charcoal (< 2 mm)	-	-	no further action
279	lower silt fill of feature 225, sealing 280	644	BS/15	tiny washover of a few cm ³ , mainly sand and silt, with many modern rush seeds and some modern ?birch leaf fragments; traces of charcoal (to 10 mm)	+	+	no further action
251	ditchfill/bank slump	623	BS/40	small washover (<100 cm ³) of modern roots and bark, the latter perhaps from woody roots (coarse but thin flakes); traces of charcoal (to 10 mm) and root/rhizome fragments and tiny <2 mm charred herbaceous detritus	+	+	no further action
271	silt/sand	627	BS/40	tiny washover of <50 cm ³ of modern roots and a trace	+	+	no further action

<i>Context</i>	<i>Context type</i>	<i>Sample</i>	<i>Sample type/volume (l.)</i>	<i>Notes</i>	<i>Charcoal >4mm</i>	<i>Charcoal 2-4 mm</i>	<i>Recommendations for further work</i>
	primary fill of ditch			of charcoal (to 5 mm) and charred root/rhizome fragments			
272	sandy/humic fill of ditch	628	BS/40	small washover of about 150 cm ³ , much of it <1 mm, including sand and fine charcoal; traces of modern roots and of charcoal (to 10 mm) and charred root/rhizome and various modern plant remains	+	+	no further action
221	upper fill of defensive ditch	601	BS/40	moderately large washover of about 500 cm ³ , almost all modern rootlets, with traces of charcoal (to 10 mm); the 1-2 mm fraction contained a few fragments of very dark brown amorphous organic material which may be dried peat or mor humus - it was hard and somewhat glassy but apparently not charred	+	+	no further action