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**An assessment of biological remains from excavations at Waterton,
North Lincolnshire (site code: WGF96)**

by

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Summary

Sediment samples and hand-collected bone from excavations at Waterton, North Lincolnshire, were submitted for an analysis of their bioarchaeological potential. The material was all of medieval date.

Charred grains were present in the gully fill from Phase 1 (Context 120), and some poorly preserved cereal remains and pulses were noted from the pitfill in Phase 2 (Context 112). Invertebrate and plant remains from the ditch fill (Context 122) in Phase 3 were numerous and well-preserved; the conditions indicated are of a more-or-less permanent body of water with little pollution, and some human maintenance of the ditch-side vegetation. Artificial habitats (buildings) were probably present nearby.

The 'waterlogged' material from Context 122 and charred material from Contexts 112 and 120 certainly deserve further investigation as probably do some of the samples not processed for assessment. Although the bone was well-preserved it has very limited interpretative value. An estimate of time for further work on this material is presented.

Keywords: WATERTON; NORTH LINCOLNSHIRE; ASSESSMENT; MEDIEVAL; SEDIMENT SAMPLES; PLANT REMAINS; INVERTEBRATE REMAINS; VERTEBRATE REMAINS

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Introduction

Excavations were undertaken at Waterton, North Lincolnshire, by the Humber Archaeology Partnership. Features uncovered during the excavation of the two trenches included a series of ditches and gullies and a complex of pits.

Nineteen sediment samples and a small assemblage of hand-collected animal bone, amounting to one box (39 x 30 x 12 cm), were recovered from deposits representing four phases. These were: **Phase 1** Early medieval: *circa* 10th to 12th century; **Phase 2** High medieval: *circa* 13th to 14th century; **Phase 3** Post-medieval: *circa* later 15th to mid 16th century; **Phase 4** Modern.

This report considers the bioarchaeological potential of the material submitted to the EAU for assessment.

Methods

All nineteen samples ('GBAs' *sensu* Dobney *et al.* 1992) were inspected in the laboratory. Five were chosen for further investigation and a description of their lithology was recorded using a standard *pro forma*. Subsamples of 2 kg were taken from three of the samples (7, 130, and 205), and 3 kg from the fourth (sample 10) for extraction of macrofossil remains, following procedures of Kenward *et al.* (1980; 1986). The whole of the fifth sample (11), weighing 8 kg, was bulk-sieved by hand to 300 μ m. The residues from all processed samples were sorted for finds.

All the animal bone (with the exception of that assigned to Phase 4) was examined; records were made of preservation, quantities, and identifications, where appropriate.

Results

The results of the investigations are presented in phase, then context number, order, with information provided by the excavator in square brackets.

The sediment samples

Phase 1

Context 120 [fill of gully] **Sample 7/T** (tub one of two)

Moist, stiff (working plastic and sticky when wet), light/mid grey to grey/brown with areas of oxidation (pale orange/brown patches) silty clay. Charcoal was common in the sample.

The very small flot consisted mostly of fine charcoal (<5 mm) with many *Heterodera* sp. (soil nematode) cysts and four charred cereal grains.

Soil concretions (?iron pan), sand and very small stones (2-6 mm) formed the main components of the residue. A few charred cereal grains and charcoal fragments were also noted. The former were very eroded and included barley and wheat (probably bread/club wheat). The latter included charred bark, the largest fragment being about 15 mm.

Context 130 [fill of ditch] **Sample 130/T**

Moist, crumbly (working plastic), light greyish/brown clay silt, with pale orange/brown patches of oxidation. Localised areas were noted with more or less clay, darker and lighter colouring, and occasional fine sand. Some modern rootlets were also present.

The tiny flot contained some plant debris, rootlets, many *Heterodera* sp. cysts and one (poorly preserved) fragment each of two beetles: *Cercyon* sp. and *Anobium* sp.

The residue was again mostly soil concretions (?nodules of iron pan or worm casts) with some very small stones (2-6 mm). Also present were a few rootlets, an eel (*Anguilla anguilla* (L.)) vertebra and a single unidentified land snail.

Context 205 [fill of ditch] Sample 205/T

Just moist, stiff (working crumbly and plastic when wet), light brown to mid brown mottled with grey, with localised patches of pale orange/brown (oxidation), clay silt. Local areas of increased clay content, fine sand, and dark brown ?pan were also recorded. Burnt earth/brick/tile and charcoal fragments (to 20 mm) were present.

The tiny flot contained some plant detritus and many *Heterodera* sp. cysts. The residue consisted almost entirely of soil concretions, with a few charred grain and charcoal fragments (to 2 mm), and a single *Cecilioides acicula* (Müller).

Phase 2

Context 112 [fill of pit] Sample 11/BS

Just moist, mid brown, very stiff, slightly indurated (working crumbly and very sticky when wet), clay silt. Burnt earth was common in the sample, whilst charcoal was recorded as present.

The residue consisted mainly of sand and gravel with a few charcoal pieces (to 10 mm) and some ?brick/tile fragments. There were small numbers of very eroded charred cereal grains and pulse cotyledons, amongst which barley (*Hordeum*), wheat (*Triticum*, probably bread/club wheat, *T. aestivo-compactum*), oats (*Avena*) and pea (*Pisum*) were recorded. Fifteen land snails were present, all identified as *Cecilioides acicula* (Müller), a burrowing species and probably intrusive. Bone was represented by a small number of unidentifiable fragments.

Phase 3

Context 122 [fill of ditch] Sample 10/T

Moist, mid grey with abundant orange/brown mottling (to 1 cm), stiff (working plastic), clay silt. Plant debris, twigs, seeds, and beetles were present in the sample.

The flot consisted mainly of invertebrate remains, with small numbers of well-preserved plant macrofossils. The latter included taxa typical of waterside and aquatic environments, as might be expected in the fill of a ditch, along with terrestrial taxa no doubt from vegetation skirting the water-course. There were a few weeds of cultivated land and waste ground, and two taxa (*Crataegus* and *Rosa*) likely to be from scrub or perhaps a hedge in the vicinity. Of particular interest were two achenes of hemp (*Cannabis sativa* L.) and at least three fruits of teasel (though these could not be ascribed with certainty to fuller's teasel, *Dipsacus sativus* (L.) Honckeny and may therefore be from the wild species, *D. fullonum* L.). The small residue consisted almost entirely of herbaceous and woody detritus to 20 mm. It also contained numerous ostracods and *Daphnia* (water flea) ephippia; both of these were abundant in the flot, too.

The other invertebrates in the flot included large numbers of chironomid (midge) larval head capsules and abundant beetles and bugs. Aquatics were numerous both in terms of species and individuals. The most abundant were *Helophorus* spp., Corixidae (water boatmen), *Ochthebius* spp., *Limnebius* sp., *Haliplus* sp., with some *Hydrobius fuscipes* (Linnaeus) and a variety of Hydrophilinae and Hydroporinae. Single individuals of *Tanysphyrus lemnae* (Paykull) and *Gerris* sp. were also noted; the former (as its name suggests) is associated with duckweeds, *Lemna* spp. (the seeds of which were present amongst the plant remains), and the latter is a 'pondskater'. These aquatics undoubtedly indicate reasonably unpolluted, more-or-less permanent water with abundant aquatic vegetation.

Several species found at water margins were also present, particularly *Dryops* sp., *Lesteva longoelytrata* (Goeze), *Saldula* sp. and various Carabidae. These evoke mud with some vegetation, such as might be found on a somewhat unstable ditch bank.

The adjacent terrestrial environment was indicated by a wide range of beetles. There seems to have been abundant herbaceous vegetation, including vetches or clovers, nettles, and some Cruciferae. There were no more than one or two individuals which seem likely to have lived on woody plants. Dung was indicated by several beetles, particularly *Aphodius* species, including *?contaminatus* (Herbst), *granarius* (Linnaeus), and *?prodromus* (Brahm).

These terrestrial insects may indicate the general environment of the surroundings, but most of them might have been able to live on the banks and margins of the ditch. Few of the insects were more than facultative synanthropes, but there were rare well-preserved remains of *Anobium punctatum* (Degeer), *Ptinus fur* (Linnaeus), *Xylodromus concinus* (Marsham) and *Lathridius minutus* group, all components of 'house fauna' *sensu* Kenward and Hall (1995, 662). A few other taxa often found with these were also noted. While these species may conceivably have lived in birds' nests, it is far more likely that they represent the fauna of structures nearby, either in contemporaneous occupation or in early abandonment.

Wood

A single sample (from Context 122) was submitted for identification; it consisted of an assortment of fragments from a few millimetres in size up to about 100 mm. Most were basically twigs up to about 20 mm diameter, often irregular in shape and at least two bearing oblique cuts to one end. They seem likely to be waste rather than structural material. A selection of five of the more easily handled specimens were found to be ash (*Fraxinus*, three specimens) and ?blackthorn, plum, etc. (*?Prunus*, 2).

Bone

A small assemblage of animal bone was recovered from the excavations. This consisted of material from seventeen contexts containing a total of 62 (1952 g) identifiable and 63 (645 g) unidentifiable fragments (Table 1). Six measurable fragments, one mandible with teeth, and five isolated teeth were recorded.

Preservation of the material was good, with the broken surfaces, for the most part, appearing 'spiky'. Colour ranged from dark brown to gingery brown to fawn, with little apparent variation within contexts. Fresh breakage and dog gnawing was observed but it was limited in extent, affecting only a few bones (0-10% from each context). Butchery was evident on a small number of cattle fragments and a horse metacarpal.

Cattle and pig were the most frequently represented species, with only one definite caprine fragment being recorded. However, the unidentifiable fraction did contain small numbers of sheep-sized rib and vertebra fragments. Although Table 1 shows dog remains to be quite numerous, they are all (with the exception of one fragment) from a single skull (Context 126).

Horse bones were identified from all phases; most were lower limb elements, with one complete metacarpal showing evidence of burning/scorching towards the proximal end of the shaft. The same metacarpal (from Context 117) showed an isolated bony exostosis and associated periosteal new bone formation, located on the medial side of the shaft, just below the proximal articulation. This may be the result of trauma.

Cervid remains were represented by a single fallow deer (*Dama dama* (L.)) metacarpal.

Statement of potential

Providing dating is reasonably tight, the ditch fill from context 122 would

undoubtedly repay further, more detailed, analysis of plant and invertebrate remains to shed light on local environmental conditions and human activity; it would be important to address the question of whether the site was occupied at the time this layer formed. The ditch appears to have been open for a long time for the invertebrates to accumulate, so development of vegetation towards scrub might have been predicted in the absence of some controlling (presumably human-determined) factor. This material also has value in contributing to current research into the degree of representation of human dwellings in nearby cut features at sites where surfaces were too dry for preservation, but ditches and wells contain waterlogged deposits.

The charred plant remains from Contexts 112 and 120 provide some evidence for plant utilisation, worthy of further investigation since material of this kind from well-dated contexts from rural medieval sites in this part of the country is almost non-existent.

The small size of the bone assemblage and the limited number of specimens which can be used to obtain age-at-death and biometrical data render this material of extremely limited zooarchaeological potential.

Recommendations

The sample from Context 122 should be examined in more detail; a larger subsample of this material should be processed very carefully, using special techniques, to extract very small insect remains (including the diagnostic fore tarsi of male Corixidae, a family of bugs of use in the determination of water quality), and a full species list for plants and invertebrates should also be compiled.

The charred plant remains from Contexts 112 and 120 should be examined more carefully and a proper record of the taxa present made. The small numbers of remains present do not, perhaps, justify

accurate quantification.

The identifiable mollusc remains are almost certainly intrusive to the deposits and of no interpretative value.

No detailed work on the bones is warranted, although the production of a basic archive may aid further archaeological interpretation. Time estimates for further work on the plants and invertebrates are presented in Table 2.

Retention and disposal

Material from the GBA and BS samples from Contexts 112, 120 and 122 at least should be retained for further investigation where appropriate, as should remaining sediment.

Since the animal bones are well-dated they should also be retained despite their limited analytical potential as an isolated group.

Archive

All material is currently stored in the Environmental Archaeology Unit, University of York, along with paper and electronic records pertaining to the work described here.

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Table 1. Hand-collected vertebrate remains from Waterton, North Lincolnshire.

Species	Phase \	Total fragments			No. measurable			No. mandibles			No. isolated teeth			Weight (g)		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
<i>Canis f. domestic</i>	dog	22	-	1	-	-	-	-	-	-	-	-	-	166	-	16
<i>Equus f. domestic</i>	horse	1	1	5	-	-	4	-	-	-	-	-	-	243	119	482
<i>Sus f. domestic</i>	pig	-	1	11	-	-	-	-	-	-	-	1	2	-	2	111
<i>Dama dama</i> (L.)	fallow deer	-	1	-	-	1	-	-	-	-	-	-	-	-	38	-
<i>Bos f. domestic</i>	cattle	5	11	2	-	1	-	1	-	-	1	1	-	156	349	250
Caprine	sheep/goat	-	1	-	-	-	-	-	-	-	-	-	-	-	20	-
Sub-total																
		28	15	19	-	2	4	1	-	-	1	2	2	565	528	859
Unidentified																
		12	34	17	-	-	-	-	-	-	-	-	-	149	269	227
Sub-total																
		12	34	17	-	-	-	-	-	-	-	-	-	149	269	227
Total																
		40	49	36	-	2	4	1	-	-	1	2	2	714	797	1086

Table 2. Time estimates for further work on material from Waterton, North Lincolnshire.

Task	Staff	Time (hours)
General		
General laboratory tasks, sample movement etc.	Tech	2
Maintain databases	RAi	2
Administration	RAi	4
GBA samples		
Process further material for extraction of insects using special techniques	Tech	9
Sorting and detailed recording of further material	RAi	26
	RFi	9
Process review material	Tech	9
Sort and record review material	RAi	26
	RFi	10
BS samples		
Detailed recording of material from assessment samples	RFp	2
Process review material	Tech	9
Record review material	RFp	3
Data analysis and basic reporting		
Data analysis	RFi	2
	RFp	2
Production of technical (EAU) report (including archive tables)	RFi	5
	RFp	5
	RAi	18
	RAb	9