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Assessment of invertebrate remains from excavations at M1/A1 Site 3, Grim's Ditch, Yorkshire (site code: AML96)

by

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Summary

Two sediment samples from deposits at Grim's Ditch, Yorkshire were submitted for an assessment of the potential of the invertebrate remains preserved in them. The assemblages, preserved by anoxic waterlogging, have excellent potential for detailed reconstruction of conditions in the ditch and of vegetation and acitivity in its surroundings. A programme of further work is recommended, particularly if large subsamples are available for processing (in order to recover more substantial numbers of terrestrial insects).

Keywords: GRIM'S DITCH; M1/A1; YORKSHIRE; ASSESSMENT; DARK AGE; INVERTEBRATES; INSECTS

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Introduction

Excavations were carried out by West Yorkshire Archaeology Service at Grim's Ditch, Yorkshire during 1996. Two small General Biological Analysis samples ('GBAs' *sensu* Dobney *et al*. 1992) were submitted by Headland Archaeology Ltd for an assessment of their content of invertebrate remains. The material was of likely Dark Age date.

Methods

The sediment was initially inspected in the laboratory and described using a *pro forma*. The subsamples were processed in their entirety for extraction of macrofossil remains, following procedures of Kenward *et al.* (1980; 1986). The flots resulting from processing were examined for their content of invertebrate remains; notes were made of the quantity of fossils, the state of preservation, and principal ecological groups.

Results and discussion

The results are presented in context number order with context information provided by the excavator in square brackets. Sample numbers were allocated by the EAU.

Context 3019, Sample 301901/T
[layer with high concentration of organic debris immediately above basal strata]
1.52 kg processed

Moist, light grey with a yellowish cast, stiff (working plastic), silty clay with a few roots (some probably modern) and abundant herbaceous detritus.

An extremely large flot was produced, containing abundant herbaceaous detritus and a large, well-preserved, assemblage of beetles and bugs discussed below. Other invertebrates, such as mites, ants, Diptera, and caddis flies, were also present in modest to large numbers.

Context 3022, Sample 302201/T
[less organic layer above 3021]
1.38 kg processed

Moist, light grey, flushed with orange and yellow mottles, brittle and stiff (working sticky), very slightly sandy, silty clay. Some rather decayed organic material and some roots were present.

The flot from this sample was neither as large as that from Sample 301901/T, nor were the invertebrates as well-preserved, but the assemblage produced was very similar in character. The two groups are therefore discussed together.

Aquatic beetles (and some bugs) were well-represented and indicative of unpolluted water with abundant waterside and aquatic vegetation. To obtain an accurate picture of water quality and pH it would be necessary to identify a large number of fossils from certain families and genera (Hydrophilidae, *Ochthebius*, *Hydroporus*) to species. However, the initial impression is that the water in the ditch was probably not far from neutral.

Beetles and bugs from a wide range of terrestrial habitats, typical of lowland northern Britain, were present, but there are no indications that heathland, peat-bog, or woodland habitats existed in the immediate vicinity. This would seem to be at variance with the evidence from the plant remains (Holden 1996), although it could be a reflection of the different taphonomic processes operating for plants and invertebrates.

Records of significant numbers of individuals of at least three species of *Aphodius*, and the presence of other dung beetles (such as *Geotrupes* sp.), suggest that stock may have been grazing on nearby grassland. There were also several beetles typically associated with grass turf as larvae: ?*Agrypnus murinus* (Linnaeus) adult and larva, *Phyllopertha horticola* (Linnaeus) and *Dascillus cervinus* (Linnaeus).

The numbers of invertebrates recovered (particularly from Context 3019) suggest slow accumulation of these deposits, unless unusual conditions prevailed, or running water entered the ditch so as to concentrate fossils. Again, this needs to be reconciled with the botanical interpretation.

Processing larger subsamples would produce greater numbers of terrestrial species thus enabling a more precise reconstruction of the local habitats. Similarly, identification of larger numbers of aquatics should refine the description of conditions within the ditch.

Statement of potential

The two samples submitted produced invertebrate assemblages with excellent potential for reconstruction of conditions, both in the ditch itself and in its immediate environs. In addition, these samples have academic interest with regard to the contribution they can make to records in time and space, and perhaps, if sufficient taxa are identified, to studies in climatic reconstruction.

Recommendations

It is strongly recommended that a comprehensive analysis is undertaken on this material. Ideally, larger subsamples (3-5 kg) should be processed from both contexts and the resulting insect assemblages recorded in detail, with as many specific identifications as possible being made. Detailed work on the existing material would, however, be of considerable value.

AMS dating of plant material from selected contexts would be desirable in order to confirm that the ditch is indeed Dark Age in date.

It is highly likely that any further excavations at this site would also recover well-preserved material, and any destruction of these deposits should be accompanied by an adequate sampling strategy, with appropriate provision for a post-excavation programme.

Retention and disposal

The remaining sediment from both Contexts 3019 and 3022 should be retained and the flots and residues produced from the assessment should also be kept, at least for the present.

Archive

The flots and residues resulting from the assessment are 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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