

**Assessment of invertebrate remains from excavations at Rickergate,
Carlisle (site code CAR98 RIC)**

by

Harry Kenward

Summary

A series of pre-processed samples from excavations of Roman and medieval deposits at Rickergate, Carlisle, was submitted for assessment of invertebrate remains. Most contained appreciable numbers of insects, and some were rich in ostracods and cladocerans. Further work is recommended, both to investigate local activity and living conditions, and to provide data for a study of land-use zonation in Carlisle.

Keywords: RICKERGATE, CARLISLE; ROMAN; MEDIEVAL; ENVIRONMENT; ACTIVITY; LAND-USE; INVERTEBRATE REMAINS; INSECTS

Author's address:

Environmental Archaeology Unit
Department of Biology
University of York
PO Box 373
York YO10 5YW

Prepared for:

Oxford Archaeology (North)
Storey Institute
Meeting House Lane
Lancaster LA1 1TF

5 September 2002

Assessment of invertebrate remains from excavations at Rickergate, Carlisle (site code CAR98 RIC)

Introduction

Material sampled from Roman and medieval deposits at Rickergate, Carlisle, during excavations carried out during 1998 was submitted by Oxford Archaeology (North) for assessment of its content of invertebrate remains. The site lay immediately to the north of the various Lanes excavations of 1978-1982, insects from which were reported by Kenward *et al.* (1998; 1992a-c; 2000), the data contributing significantly to the study of zonation in the Roman town by Kenward (1999).

Methods

Samples of 1 kg had been processed on behalf of Oxford Archaeology (North) and were supplied to the EAU in two fractions: a 'washover' and a residue (*sensu* Kenward *et al.* 1980). Ten of these samples were assessed for invertebrates. In most cases the washovers contained a substantial proportion of undisaggregated sediment. In order to extract insect and other invertebrate remains, the washover was re-sieved to 300 microns using hot water, and submitted to paraffin floatation using methods approximating to those of Kenward *et al.* (1980) as modified by Kenward *et al.* (1986). In most cases the residue was re-amalgamated with the washover before paraffin floatation. In view of project constraints, processing was carried out more rapidly and robustly than is ideal.

Recording was at the 'assessment' level of Kenward (1992) and carried out in the flots. Quality of preservation was recorded using the scales of Kenward and Large (1998).

Results

Results are presented in Table 1.

Discussion: potential of the material

Most of the samples assessed contained appreciable numbers of insects, mostly beetles, and in some cases other invertebrates as well (notably mites, ostracods and cladocerans). Such material clearly has a great deal of potential, both for understanding conditions and activity at the site and in the context of a wider synthesis of land-use zonation in Carlisle (see Kenward 1999). There were often similarities with other invertebrate assemblages from Carlisle, but the fills of the large medieval ditch were quite unlike any other material previously examined from the area.

Grain pests were present, and sometimes rather numerous, in four Roman deposits, with records of *Oryzaephilus surinamensis* (Linnaeus), *Cryptolestes ferrugineus* (Stephens) and *Sitophilus granarius* (Linnaeus) (the three 'main' grain pests in Table 1) in subjective order of abundance. One sample yielded the fourth common grain pest of the Roman period, *Palorus ratzeburgi* (Wissmann). The three main pests were also present in a single sample from a medieval pit or ditch fill deposit.

Two of the Roman deposits (from a 'occupation soil' and from a 'drainage ditch fill') gave insects which subjectively indicated material resembling stable manure, a very common component of Roman deposits in Carlisle (see references cited in the introduction). Analysis of larger subsamples, and integration with botanical evidence will be needed to confirm this using the stable manure 'indicator group' proposed by Kenward and Hall (1997).

The fills of the large ditch fronting the medieval city wall gave invertebrate assemblages remarkable for their large numbers of aquatic crustaceans (both Ostracoda and Cladocera), together with appreciable numbers of water beetles. Even more remarkable was the rarity in these samples of insects suggesting any form of dumping: it appears that there must have been rigorously enforced statutes forbidding this, bearing in mind the pressure to find places to dispose of filth in any urban area. Lack of interference with

the ditch sides is also suggested by the rather abundant fauna of semi-natural herbaceous vegetation in these deposits.

The river channel fill deserves further investigation, as invertebrates have the potential to determine depositional conditions (river versus cut-off channel), as well as providing clues as to land use from dung beetles (which, when abundant, provide evidence of grazing land).

In most cases, the processing of a subsample of 3 kg or more would be desirable in order to recover sufficient remains for confident interpretation. The notes provided for this assessment imply that only 1 kg of unprocessed sediment remains: this is rather less than conventionally made available for detailed analysis (cf. Dobney *et al.* 1992), and will limit the value of further work somewhat (especially since the assessment samples have received non-standard treatment and can only be used in analysis with some caution).

Recommendations

It is strongly recommended that, in order to provide a more reliable interpretation of site environment and activity, a detailed record should be made of most of these assemblages, together with invertebrates from further subsamples (see Table 1). Dating of the material from Period 9 should ideally be sharpened, if necessary by AMS. Assemblages from any other samples of similar nature to those assessed should also be analysed if possible, in order to provide a larger body of data which can meaningfully be compared with records from other sites in the City and included in publication of the study of land use zonation.

All samples, flots and residues should be retained pending further analysis.

Acknowledgements

I am grateful to Oxford Archaeology (north) for the opportunity to examine this material and for

providing full draft archaeological information. This work has been carried out with the permission of English Heritage.

References

- Dobney, K., Hall, A. R., Kenward, H. K. and Milles, A. (1992 for 1991). A working classification of sample types for environmental archaeology. *Circaea, the Journal of the Association for Environmental Archaeology* **9**, 24-6.
- Kenward, H. K. (1992 for 1991). Rapid recording of archaeological insect remains - a reconsideration. *Circaea, the Journal of the Association for Environmental Archaeology* **9**, 81-8.
- Kenward, H. (1999). Insect remains as indicators of zonation of land use and activity in Roman Carlisle, England. *Reports from the Environmental Archaeology Unit, York* **99/43**, 88 pp.
- Kenward, H. K., Allison, E. P., Dainton, M., Kemenés, I. K. and Carrott, J. B. (2000). The insect and parasite remains, pp. 81-3 and bibliography pp. 145-147 in McCarthy, M. R. (ed.), *Roman and medieval Carlisle: The southern Lanes*. Department of Archaeological Sciences, University of Bradford, Research Report 1. Carlisle: Carlisle Archaeology Limited.
- Kenward, H. K., Allison, E. P., Dainton, M., Kemenes, I. K. and Carrott, J. B. (1992a). Evidence from insect remains and parasite eggs from Old Grapes Lane A, The Lanes, Carlisle: Technical report. *Ancient Monuments Laboratory Report* **78/92**. [92/30]
- Kenward, H. K., Dainton, M., Kemenes, I. K. and Carrott, J. B. (1992b). Evidence from insect remains and parasite eggs from the Old Grapes Lane B site, The Lanes, Carlisle: Technical report. *Ancient Monuments Laboratory Report* **76/92**. [92/31]
- Kenward, H. K., Dainton, M., Kemenes, I. K. and Carrott, J. B. (1992c). Evidence from insect remains and parasite eggs from the Lewthwaites Lane A site,

The Lanes, Carlisle: Technical report. *Ancient Monuments Laboratory Report 77/92*. [92/32]

Kenward, H. K., Engleman, C., Robertson, A., and Large, F. (1986). Rapid scanning of urban archaeological deposits for insect remains. *Circaea* **3**, 163-72.

Kenward, H. and Hall, A. (1997). Enhancing bioarchaeological interpretation using indicator groups: stable manure as a paradigm. *Journal of Archaeological Science* **24**, 663-673.

Kenward, H. K., Hall, A. R. and Jones, A. K. G. (1980). A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. *Science and Archaeology* **22**, 3-15.

Kenward, H. and Large, F. (1998). Recording the preservational condition of archaeological insect fossils. *Environmental Archaeology* **2**, 49-60.

Kenward, H., Large, F. and Carrott, J. (1998). The archaeological significance of insect and other invertebrate remains from Keay's and Law's Lanes, The Lanes, Carlisle. Technical report. *Reports from the Environmental Archaeology Unit, York 98/32*, 126 pp.

Table 1. Invertebrates from Ricker gate, Carlisle: material submitted and comments on the invertebrate assemblages assessed. All subsamples 1.0 kg. Preservation scale: see text (low numbers imply good preservation or little colour change, high ones advanced degradation). Med - medieval; n/e - could not be examined within project constraints; Ro - Roman. Periods : 1 - pre-Roman activity and river channel, to late Iron Age; 2 - possible reclamation of river channel, late 2nd-early 3rd century AD; 3 - Roman occupation, c. early-mid 3rd; 6 - post-Roman dark soils, c. early 5th-early 12th; 7-9 - medieval, poorly stratified.

Site code/ Context	Sample	Period/ date	Feature type	Observations	Preservation	Potential
RIC B 86	1	3 Ro	pit/ditch	no identifiable invertebrate remains	n/a	none
RIC B 65	2	3 Ro	occupation soil?	few remains, very pale/yellowish; three main grain pests; subjectively a stable manure fauna	E 3.5-4.0, mode 3.5 distinct F 2.5-4.0, mode 2.5 weak yellow/pale 3, mode very distinct	would need a large (>4 kg) subsample to confirm interpretation
RIC C 216	1	6 post Ro	'dark earth'	no identifiable invertebrate remains	n/a	none
RIC C 241	2	2 Ro	drainage ditch?	small group of insects and a few mites; the three main grain pests; some other synanthropes; possibly foul matter	E 1.5-4.0, mode 3.0 weak F 1.0-3.5, mode 2.5, weak Pale 2-3, mode 2, weak	assessment sample gave too few remains for confident interpretation; 3-4 kg needed; additional 1 kg added to existing group may just provide required evidence
RIC C 243	5	2 Ro		rather small group of insect remains including fly puparia, the three main grain pests; hints of stable manure	E 2.5-4.0, mode 3.0 weak F 2.0-4.0, mode 2.5 weak pale 1-3, mode 2 weak	as RIC C 241 Sample 2
RIC C 260	6	2 Ro		small group of insects, mostly the three main grain pests, also <i>Palorus ratzeburgi</i> ; few other remains; a single ostracod	E 2.0-3.5, mode 2.5 weak F 1.5-3.0, mode 2.5 weak Yellow/pale 0-3, mode 2 weak	larger subsample needed to recover remains additional to grain pests; ideally 3-4 kg, but assessment group and further 1 kg may suffice
RIC C 265	8	1 pre-Ro	old river channel	small group of insects; remains well-preserved chemically but often fragmented; aquatics (including cladocerans), waterside forms; dung beetles rather common, perhaps suggesting grazing land	E 1.5-2.5, mode 2.0 weak F 2.0-5.0, mode 2.5 weak	larger (3-5 kg or more) subsample would give more information about depositional conditions (running water or a cut off channel?), and land use. This subsample and a further 1 kg may just provide a reasonably useful group

RIC D 355	9	9 med	large ditch fronting med city wall	n/e		
RIC D 353	2	9 med		n/e		
RIC D 354	3	9 med		flot consisted mostly of invertebrate remains; order of 1000 ostracods, numerous <i>Daphnia</i> , some aquatic and waterside insects; mites very abundant; range of terrestrial forms dominated by species associated with herbaceous plants; subjective impression of still water, fairly clean, closely surrounded by dense 'weedy' vegetation. No clear synanthropic component	E 1.5-2.5, mode 2.0 weak F 2.0-3.5, mode 2.0 weak	2-3 kg subsample would provide useful assemblage for reconstructing conditions in and around ditch. Assessment sample plus remaining 1 kg should just suffice, however
RIC D 356	4	9 med		n/e		
RIC D 357	5	9 med		n/e		
RIC E 87	5	7 med	pit/ditch?	rather small assemblage of invertebrates, with a few aquatics, indicators of foul matter, the three main grain pests, hints of other synanthropes	E 1.5-3.0, mode 2.5 weak F 2.0-3.5, mode 2.5 weak	3-5 kg subsample would give interpretable fauna; adding assessment group to remaining 1 kg may give useful information
RIC E 51	8	9 med	large ditch fronting med city wall	n/e		
RIC E 51	59	9 med		n/e		
RIC E 51	60	9 med		Estimated order of 10,000 ostracods, 100 chironomids, range of aquatic beetles and bugs. Probably pond-like conditions with weed vegetation at its sides. Little evidence of dumping of waste from human activity.	E 1.5-2.5, mode 2.0 weak F 1.5-3.5, mode 2.5 weak	3 kg subsample would give interpretable fauna; adding assessment group to remaining 1 kg should give useful information