APPENDIX 1 - INSECTS AND MOLLUSCS

1.1 Assessment of the Insects and Molluscs

by Mark Robinson

Introduction

1.1.1 A total of five bulk samples were taken from palaeochannel sediments of possible late Iron Age to Roman date at East of Station Road for the recovery of biological remains (Figure 5). The samples are each of the order of 10 kg. They are kept wet in sealed plastic bags and boxes.

1.1.2 Sub-samples of 200 g were sieved down to 0.25 mm for the assessment of waterlogged macroscopic plant remains. Insect remains were noted in four of these sub-samples.

1.1.3 It is hoped that the analysis of the insect remains can contribute to the fieldwork aim of obtaining a palaeoenvironmental sequence for the area spanning at least the Iron Age and the early Roman period.

Methodology

1.1.4 It was decided that the most efficient approach to the assessment was to use the wash-overs which had been prepared for the assessment of waterlogged macroscopic plant remains. The flots were scanned under a binocular microscope at magnifications of x10 and x20. The abundance of taxa was recorded in Table 1 on a scale of + (present, 1-5 individuals), ++ some, 6-10 individuals) and +++ (many, 11+ individuals). Nomenclature for Coleoptera (the majority of the insects) follows Kloet and Hincks (1977). The insect remains were subsequently stored in 70% ethanol.

Quantifications

1.1.5 All five samples were assessed and four were found to contain insect remains. Table 1 gives the range and abundance of insects in each sample. The results show that all the samples with insects will contain sufficiently large assemblages of insects for useful palaeoecological analysis. No obvious bias was noted with the recovery of remains.

1.1.6 Numerous mollusc shells are also present in Samples 16 and 18 from the bottom of the palaeochannel. Their concentration is up to 1000 shells per kg. The majority are species of flowing water, particularly *Bithynia tentaculata* and *Valvata piscinalis*.

Table 22: East of Station Road: summary of insect remains

Section	41	41	41	41	41
Sample	16	18	17	15	14
Context	1726	1726	1726	1725	1725
Depth	46.42	46.54	46.80	47.00	47.28
Trichoptera indet - larva	-	+	-	-	-
Trichoptera indet - larval case	+	+	-	-	-
Aphrodes sp	-	-	+	-	-
Bembidion sp	-	-	-	+	-
Pterostichus madidus	-	-	+	-	-
Harpalus affinis	-	+	-	-	-

Section	41	41	41	41	41
Sample	16	18	17	15	14
Context	1726	1726	1726	1725	1725
Depth	46.42	46.54	46.80	47.00	47.28
Helophorus sp (brevipalpis size)	-	+	-	+	-
Megasternum obscurum	-	-	-	+	-
Anacaena sp	-	-	+	-	-
Limnebius papposus	-	-	+	-	-
Lesteva sp	+	-	-	-	-
Anotylus rugosus	-	-	+	-	-
Stenus sp	-	-	-	+	-
Geotrupes sp	-	-	+	-	-
Aphodius sp	-	-	+	-	-
Helichus substriatus	-	-	+	-	-
Oulimnius sp	+	-	+	-	-
Normandia or Riolus sp	-	-	-	+	-
Agrypnus murinus	-	+	-	-	-
Agriotes sp	-	-	+	-	-
Cantharis sp	-	-	+	-	-
Cerylon sp	-	-	-	+	-
Enicmus transversus	-	-	+	-	-
Altica sp	+	-	-	-	-
Chaetocnema concinna	-	+	-	-	-
Apion sp	-	+	+	-	-
Sitona sp	-	+	-	-	-
Hypera punctata	-	+	-	-	-
Acalles turbatus	-	-	-	+	-
Ceuthorhynchinae indet	-	+	-	-	-
Gymnetron pascuorum	-	-	+	-	-
Lasius sp	+	+	-	-	-
Hymenoptera indet	+	-	-	-	-
Diptera indet - puparium	-	+	-	-	-
Approx total per kg	***35***	***50***	***60***	***30***	***0***

\+ = 1-10
++ = 11-50
+++ = 51-100
++++ = 101-1000
1000+ = >1000

Provenance

1.1.7 The samples are derived from waterlogged sediments which possibly began to accumulate in the palaeochannel as the result of the fall of a tree rooted into the bank. Sherds of late Iron Age / early Roman pottery were recovered from the upper part of the sequence. The insects from the samples can be divided into the bankside and aquatic species from the channel itself and those derived from the surrounding terrestrial landscape. The occurrence of the elmid beetles *Oulimnius* sp. and *Normandia* or *Riolus* sp. shows that the channel carried clean, well-oxygenated moving water. The terrestrial insects from Samples 16, 18 and 17 are characteristic of grassland conditions. They include *Agrypnus murinus*, whose larvae feed on the roots of grassland plants and *Gymnetron pascuorum*, which feeds on *Plantago lanceolata* (ribwort plantain). The presence of domestic animals is suggested by scarabaeoid dung beetles such as *Geotrupes* sp. In contrast, the insects from Sample

15 are more characteristic of woodland conditions, with *Cerylon* sp. which occurs under bark and *Acalles turbatus* which bores into dead wood.

1.1.8 The insects in Samples 16, 18 and 17 are well preserved and those in Sample 15 are in adequate condition for identification. All four of these samples show potential to meet the research objectives provided they can be dated securely. (The occurrence of *Pterostichus madidus*, a beetle which has not previously been recorded in deposits earlier than late Roman, in Sample 17, raises a slight doubt about the presumed date of the sequence).

Conservation

1.1.9 The waterlogged samples are not stable and their organic content will decay over a period of several years unless kept cold. It is therefore recommended that prior to analysis, the samples should be kept refrigerated either as unprocessed samples or processed flots. Samples 15, 16, 17 and 18 should be kept until decisions have been taken on further analysis.

Comparative Material

1.1.10 No other waterlogged insect sequences from later prehistoric and Roman palaeochannel deposits are known from the CTRL project or elsewhere in Kent. The best comparative insect material from the project is from the Roman well at Thurnham. However, work on insect remains from deposits of this date in the upper Thames Valley has shown the value of insect evidence for palaeoenvironmental reconstruction (eg Robinson 1992).

Potential for Further Work

1.1.11 The insect remains show good potential to address the original research aims. They certainly show much evidence for the local environment and the apparent transition from grassland to more wooded conditions is of interest. It is recommended that further sub-samples from the four samples to contain insects are subjected to paraffin flotation to extract insect remains such that 100-200 individuals of terrestrial Coleoptera (beetles) are available for analysis from each sample. A palaeoenvironmental reconstruction should be made from their qualitative analysis. The results would be of regional significance for Kent.

1.1.12 The molluscs from the bottom of the palaeochannel support the insect evidence that clean well-oxygenated water flowed along it. It is recommended that molluscs are extracted from the samples to be analysed for waterlogged macroscopic plant remains and reported on.

Bibliography

Kloet, G S and Hincks, W D, 1977, *A check list of British insects, 2nd edition (revised): Coleoptera and Strepsiptera*, Royal Entomological Society of London; Handbook for the Identification of British Insects 11, pt 3. London.

Robinson, M A, 1992, Environmental archaeology of the river gravels: past achievements and future directions, in Fulford, M and Nichols, E (eds), *Developing landscapes of Lowland Britain. The archaeology of the British gravels: a review*, 47-62, Society of Antiquaries Occasional Papers 14, London

APPENDIX 2 - SHELL

2.1 Assessment of the Oysters

by Jessica M. Winder

Introduction

2.1.1 Only fragments of the common flat oyster *Ostrea edulis* L. were recovered from the East of Station Road excavations. Shells were recovered by hand retrieval and seiving of bulk samples. It was hoped that the study of marine molluscs would assist in the understanding of the manipulation and consumption by humans of natural resources and the way in which population increase and concentration might have affected natural resource exploitation and accelerate environmental change.

Methodology

2.1.2 The shells from the single context were identified and counted. Shell remains were considered for their suitability for size and infestation analyses. A subsample of contexts containing at least thirty measurable left or right valves would be the minimum requirement for selection as suitable for use in statistical comparisons of size or comparisons of evidence for epibiont infestation (Winder 1993).

Quantification and Provenance

2.1.3 Table 23 presents the numbers of shells for each context with comments on their condition. Only seven minute fragments were recovered from the single context. The provenance of the marine mollusc material cannot be determined. The shells are poorly preserved.

Conservation

2.1.4 Long term storage would not be affected by any further analysis, were this feasible. Long term storage, should it be deemed necessary or desirable, would require the shells to be kept dry, in sealed polythene bags, with minimisation of mechanical damage. Regarding retention/discard policy, it is suggested that there is little merit in retaining this assemblage of material.

Comparative Material and Potential for Further Work

2.1.5 This assemblage of material is not suitable for comparison with material from elsewhere, whether within or from outside the CTRL project. The quality of the shell material totally prohibits any potential for further investigation. There is no potential for the data assemblage derivable from this assemblage of marine molluscan material to address the original Landscape Zone Aims and the Fieldwork event Aims.

Bibliography

Winder, J M 1993, A study of the variation in oyster shells from archaeological sites and a discussion of oyster exploitation, PhD thesis, University of Southampton

Table 23: East of Station Road: summary of oysters

Context number	Left valve (LV) oyster	Unmeas-urable LV oyster	Right valve (RV) oyster	Unmeas-urable RV oyster	Total valves oyster (P = present)	Comments on oysters
1271					P	Approx 7 minute fragments.