APPENDIX 1 MOLLUSCS

1.1 Assessment of Molluscs

by Mark Robinson

Introduction

1.1.1 A total of 31 samples were taken for molluscan analysis from the 2nd-3rd century Roman settlement at Bower Road. The samples were from sections through a pit and ditches. They comprised 2 kg samples cut from the sections as part of 5 columns. The quantities of mollusc samples are listed in Table 9.1.

1.1.2 The samples were floated onto a 0.5mm sieve and the residues sieved down to 0.5mm by the Oxford Archaeological Unit. Both flots and residues were dried and retained.

1.1.3 The samples were taken in accordance with the Fieldwork Event Aims for the site, which are set out in section 2 of the main report, above. The study of the molluscs was intended to provide information on the local contemporaneous environment of the Roman site.

Methodology

1.1.4 It was decided to assess what appeared to be a representative range of samples to cover all the archaeological features that have been sampled. Two columns were assessed from the ditch of the rectangular enclosure (Sections 4 and 39 from Group 171) because they appeared to be of different character.

1.1.5 The flots assessed were scanned under a binocular microscope at magnifications of x10 and x20. The residues were also checked for shells. Many broken and calcium carbonate-encrusted shells, mostly of woodland species, had failed to float in some of the samples. The abundance of taxa in the flots was recorded on a scale of + (present, 1-5 individuals), ++ (some, 6-10 individuals) and +++ (many, 11+individuals). An estimate was made of the total number of individuals in each flot excluding *Cecilioides acicula*. This species was excluded because it burrows deeply and provides no useful information on conditions as a sediment or soil formed. (The other burrowing species listed, *Pomatias elegans*, only burrows just below the surface of loose soil or leaf litter, so does give useful palaeoecological information.) The identifications are divided into species groups in the table of results (Table 9.2). Nomenclature follows Kerney (1999).

Quantifications

1.1.6 Table 9.1 details the breakdown of sample numbers and the number of samples assessed. Recovery of shells by flotation was incomplete in some samples but this would be overcome in any full-scale analysis by sorting the residues as well as the flots.

Provenance

1.1.7 Three faunal elements occur in the flots: shade-loving species of relatively dry woodland, species of dry open habitats and species of stagnant water. The woodland fauna includes the "old woodland" snail *Acicula fusca* and the rare snail *Vertigo pusilla* which no longer occurs in Kent. Many of the shells of woodland snails have encrustation of calcium carbonate on them. The occurrence of an old woodland fauna does not seem entirely compatible with a Roman settlement on the site and the

encrustation of some of these shells suggests they had a separate origin from the other shells. It is thought most likely that they had been re-worked from the colluvial sediment and they were earlier Holocene in origin. Unfortunately, the colluvium had not been sampled. The species of open habitats probably represent the contemporaneous fauna of the Roman settlement. They mostly comprise *Vallonia costata* and *V. excentrica* but are not particularly abundant. The aquatic species probably lived in standing water in the archaeological features. They are all "slum aquatic" molluscs, which are able to tolerate stagnant conditions and episodes of drying out. By far the most numerous is *Anisus leucostoma*, which is particularly abundant in Samples 18 and 19 from Section 39. It is possible that this part of the ditch held water for longer than the other contexts.

1.1.8 The high degree of residuality in the molluscan assemblages greatly reduces their value for meeting their research objective. They do show that the archaeological features at least seasonally held standing water. However, it is not possible to use snail evidence to determine whether the Roman settlement was entirely open or had much scrub on it.

Conservation

1.1.9 The mollusc remains are at present stable as dry flots and residues . Further analysis would require sorting of shells from the flots and residues but they would remain stable. If the recommendation that no further analysis is undertaken is followed, it is recommended that the flots and residues should be discarded.

Comparative material

1.1.10 No other sites within the CTRL project have given similar problems with residual material. However, in situ earlier Holocene woodland assemblages were found at White Horse Stone. Residuality is, however, a general problem in molluscan studies.

Potential for Further Work

1.1.11 The following section discusses potential for further work in the light of the Landscape Zone Priorities and Fieldwork Event Aims.

1.1.12 The molluscs from Bower Road appear to have no potential for further useful work, given the problem with residual material.

Recommendations

1.1.13 It is recommended that a very brief summary of the results of the molluscan assessment be incorporated in any final report, including mention of the occurrence of residual earlier Holocene shells of woodland species which had probably been derived from colluvium and the occurrence of contemporaneous snails of stagnant water in the Roman features.

Bibliography

KERNEY, M. P., (1999). *Atlas of the land and freshwater molluscs of Britain and Ireland*. Colchester, Harley Books.

Table 9.1: Quantities of mollusc samples

Number of columns	Number of samples in columns	Number of other samples	Total number of samples taken	Number of columns assessed	Total number of samples assessed
5	31	0	31	4	12

Table 9.2: Mollusc Columns

Column/Section	**54**	**54**	**4**	**4**	**4**	**4**	**4**	**39**	**39**	**39**	**74**	**74**
Sample	**33**	**30**	**14**	**12**	**11**	**9**	**7**	**19**	**18**	**16**	**55**	**54**
Context	**345**	**345**	**515**	**515**	**515**	**508**	**508**	**464**	**463**	**462**	**160**	**160**
Catholic species												
Cochlicopa sp.	-	-	-	+	-	-	-	+	+	-	-	-
Trichia hispida gp.	++	+	+	-	+	-	-	+	+	+	+	+
Arianta arbustorum	-	-	-	+	-	-	-	-	+	-	-	-
Cepaea sp.	-	+	+	-	-	-	-	-	-	-	-	-
Open-country species												
Pupilla muscorum	-	-	+	-	-	-	-	-	-	+	-	-
Vallonia costata	+	-	+	+	-	-	-	+	-	-	-	-
V. excentrica	+	+	+	-	-	-	-	-	-	+	-	-
Vallonia sp.	+	-	+	+	+	-	-	+	-	+	+	+
Shade-loving species												
Acicula fusca	-	-	-	-	-	-	-	-	-	-	+	-
Carychium sp.	++	-	+	++	+	-	-	+++	+	++	+++	-
Vertigo pusilla	-	-	-	-	-	-	-	+	-	-	-	-
Punctum pygmaeum	-	-	-	-	-	-	-	+	-	-	-	-
Discus rotundatus	+	+	+	+	++	-	-	++	+	+	+	-
Vitrea sp.	-	+	+	+	-	-	-	+	+	-	+	-
Nesovitrea hammonis	+	-	-	-	-	-	-	-	-	-	-	-
Aegopinella pura	-	-	-	-	-	-	-	+	-	-	+	+
A. nitidula	+	-	-	-	-	-	-	+	-	-	+	-
Oxychilus cellarius	-	+	+	+	-	-	-	+	-	-	+	-
Euconulus fulvus	-	-	-	-	-	-	-	+	-	-	-	-
Clausilia bidentata	-	-	-	-	-	-	-	+	+	-	+	-
Burrowing species												
Pomatias elegans	-	-	-	-	-	-	-	+	-	-	-	-
Cecilioides acicula	-	-	-	+	-	-	-	+	+	++	-	+
Slum aquatic and amphibious species												
Lymnaea truncatula	+	-	-	+	-	-	-	+	-	+	-	-
L. peregra	-	-	++	-	-	-	-	++	+	-	-	-
Anisus leucostoma	+	-	-	+	-	-	-	+++	+++	+	+	-
Other aquatic species												
Pisidium sp.	-	-	-	+	-	-	-	+	+	-	-	-
Approx Total (excluding Cecilioides acicula)	*50*	*10*	*40*	*35*	*15*	*0*	*0*	*250*	*500*	*30*	*50*	*5*

APPENDIX 2 SHELLS

2.1 Oysters and other marine molluscs

By Jessica M. Winder

Introduction

2.1.1 Shells of the common flat oyster *Ostrea edulis* L. together with whelk (*Buccinum undatum* L.), common cockle (*Cerastoderma edule* L.) and a larger cockle species (?*Acanthocardium* sp.) were recovered from excavations at Bower Road.

2.1.2 Shells were recovered by hand retrieval and sieving of bulk samples.

2.1.3 Marine molluscs were retrieved in accordance with the Landscape Zone Priorities and Fieldwork Event Aims for the site, set out in section 2 of the main report, above. 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

2.1.4 The shells from each context were identified, where possible, and counted.

2.1.5 Oyster valves were separated into left and right valves, and further divided into shells suitable or unsuitable for measuring and detailed recording of features.

2.1.6 A sub-sample of contexts containing at least thirty measurable left or right valves would be selected as suitable for use in statistical comparisons of sizes or comparisons of evidence for epibiont infestation (Winder 1993).

Quantification

2.1.7 Table 9.1 presents the number of shells for each context with comments on their condition.

2.1.8 Some 51 oyster shells were recovered, of which only 17 were near complete valves and 34 were unmeasurable. These were recovered from thirty contexts together with fragments of at least two single cockle valves, a fragment of a larger cockle species, and a fragment from a common whelk. There were also fragments of unidentified fossil shell.

2.1.9 The number of shells and shell fragments in each context is very small, and the state of preservation of the shells is almost without exception extremely poor, being worn, powdery and flaky.

Provenance

2.1.10 The molluscs were recovered from a wide range of features across the site, representing all main periods of activity.

Conservation

2.1.11 Long term storage would not be affected by any further analysis, were this feasible.

2.1.12 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.

2.1.13 Regarding retention/discard policy, it is suggested that there is little merit in retaining this assemblage of material.

Comparative material

2.1.14 This assemblage of material is not suitable for comparison with material from elsewhere, whether within or from outside the CTRL project.

Potential for further work

2.1.15 The following section discusses potential for further work in the light of the Landscape Zone Priorities and Fieldwork Event Aims.

2.1.16 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, Department of Archaeology.

Table 10.1: Oysters and other marine molluscs from Bower Road

Context number	Sample number	Left valve (LV) oyster	Unmeasurable LV oyster	Right valve (RV) oyster	Unmeasurable RV oyster	Total valves oyster (P=present)	Other species	Comments on oysters
102		0	0	0	0	0		Fragment RV only
		0	1	1	0	2		Medium, thin, flakey, Pc
103	45 >10mm	0	0	0	0	0		2 frags RV oyster
103		0	0	0	0	0		2 frags oyster
120		0	0	0	0	0		2 frags very large RVs, thin, sharp-edged, good condition but with orange/pink interior in 1 ?burning
162		2	0	0	1	3		LV large thick but delaminating
162	54	0	0	0	1	1		Thin, small
254		0	0	0	0	0		Fragment RV from large shell-blackened ?burning
260		0	0	0	0	0		Small frags -not all shell- some sort of hard translucent material
301		1	4	2	7	14	1 cockle valve	Various sizes, very flakey, lots frags, powdery. Includes stone and ?fossil fragments. Hinge of lge measurable RV with ?imprint shell at heel
304		1	0	0	0	1		Thick, irregular, flakey
324		0	1	0	0	1	Columella of whelk	Stone and oyster fragment
338		1	0	0	0	1	Frag land snail - zonitid- like	Reddy brown colour to interior
349		0	1	3	1	5		Flakey, RVs thin, 1 v large, notches. Pinky pigment externally
366		0	0	0	0	0	Fragments land snail ?Cepea nemoralis	
386		0	1	0	0	1	Frag large cockle	

Context number	Sample number	Left valve (LV) oyster	Unmeasurable LV oyster	Right valve (RV) oyster	Unmeasurable RV oyster	Total valves oyster (P=present)	Other species	Comments on oysters
							species ?Acanthocardia not C. edule	
412		1	0	0	0	1		Large relatively thin >90MW x 100ML, ribbed, sharp edges
424		0	0	0	0	0		3 pieces ? Fossil/limestone
429		0	1	0	0	1		Very flakey, powdery, eroded. Part of large shell. Frags oyster
462	20 >10mm	0	2	0	1	3		LV large, irregular heel. Lots broken pieces incl some RV
462		0	0	1	2	3		Large, Pc, RV slightly convex
466		0	0	1	1	2	1 cockle valve	Pc, medium RV
469		0	0	0	1	1		Frags 1 RV, Pc, v flakey
470		0	1	0	0	1		Frags LV v flakey
484		0	0	1	1	2		1 v large convex RV, Pc, irreg heel, eroded. 3 frags ?fossil
487		0	0	0	0	0		Fossil Gryphea-lik
488		0	1	0	0	1		2 frags v worn oyster + ?frag crab. Oyster worn, powdery
504		0	0	0	0	0		?piece fossil
515	2 >10mm	0	0	0	0	0		2 frags
552		1	0	0	0	1		Very large LV >95MW x 100ML, irreg heel, rel thin
555		0	0	1	0	1		Flakey, medium, Pc
557		0	0	0	1	1		Flakey, medium, Pc
557	3 >10mm	0	0	0	1	1		Flakey frag, v worn
573		0	2	0	1	3		V worn, flakey, Pc
581		0	0	0	0	0		2 frags fossil shell
Totals		*7*	*15*	*10*	*19*	*51*		