APPENDIX 1 - SHELL

by Jessica Winder

1.1 Assessment of the Oyster Shell

Introduction

1.1.1 Shells of the common flat oyster *Ostrea edulis* L. together with mussel (?*Mytilus* sp.), whelk (*Buccinum undatum* L.) and common cockle (*Cerastoderma edule* L.) and several unidentifiable bivalves were recovered during excavation works at Thurnham Roman Villa (ARC THM 98).

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

1.1.3 The recovery and study of oyster shell was undertaken in accordance with the Fieldwork Event Aims for the site, which are 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 accelerated environmental change.

Methodology

1.1.4 The shells from each context were identified, where possible, and counted. Oyster valves were separated into left and right valves, and further divided into shells suitable or unsuitable for measuring and detailed recording of features. A sub-sample of contexts containing at least 30 measurable left or right valves would be selected as suitable for use in statistical comparisons of size or comparisons of evidence for epibiont infestation (Winder 1993).

Quantifications

1.1.5 Table 14.1 presents the numbers of shells for each context with comments on their condition.

1.1.6 Shell was recovered from 151 contexts, and comprised 954 shells (194 complete or near complete left valves, 292 unmeasurable left valves, 250 complete or near complete right valves and 218 unmeasurable right valves and numerous small or minute fragments). Fragments of a small number of mussel, cockle and unidentifiable bivalve mollusc valves similar to tellins and venerupids were also recovered together with fragments of at least four common whelk and two terrestrial gastropods.

1.1.7 The number of shells and shell fragments in most contexts is very small. Contexts 10084, 10196, 10197, 11641,15001, 15214, 20087 and 20174 are larger individual assemblages of shell from secure stratigraphic positions and dates. However, only the sample from context 20174 contains enough measurable shells (106 left valves and 137 right valves), that is, 30 or more measurable left or right valves, to permit statistically-based comparisons to be made with other samples.

Provenance

1.1.8 The state of preservation of the oyster shells is generally extremely poor with a high degree of breakage, etching, and mechanical wear leading to delamination of the shell structure and the production of numerous small fragments and minute flakes

which cannot be used except as an indication of the presence of the species in the context.

1.1.9 Intact, or nearly complete shells have survived in most contexts (118 of 151 contexts) but only in small numbers. In the eight contexts selected for their secure stratigraphy and dating and larger numbers of shells, only context 20174 has enough of the correct quality of shells to be used in comparisons to perhaps determine provenance. This context is the fill of a ditch sealed by the proto-villa building.

Conservation

1.1.10 Long term storage would not be affected by any further analysis, where this is 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. It is suggested that samples comprising only fragmentary shell remains should be discarded.

Comparative material

1.1.11 This assemblage of material is not suitable for intrasite comparisons either on a spatial or temporal basis. Table 14.2 provides a summary of oyster shells recovered in larger numbers from secure contexts attributed to various phases of occupation. The medieval phase and phases 4, 3/4, and 2 do not provide enough measurable/recordable shells to permit reliable statistical analyses to be carried out.

1.1.12 Phase 2/3 is represented by shells from context 20174 which are suitable for use in intersite comparisons.

1.1.13 Archaeological oysters, with which Thurnham Roman Villa shells could be compared, include samples from Roman sites at Halstock Roman Villa, Greyhound Yard, Alington Avenue and Shapwick (all in Dorset); Newport Roman Villa (Isle of Wight); the Brooks and Owslebury (Hampshire); Pudding Lane (London); Tort Hill (Cambridgeshire); North Shoebury, Colchester, and Elms Farm (Essex); Deerton Street Roman Villa (Kent); and the Shires (Leicestershire).

1.1.14 Modern oyster samples, with which Thurnham Roman Villa shells could be compared, include Poole Bay, and Poole Harbour (Dorset); Sowley Ground and Newtown (the Solent, Hampshire); and the rivers Roach and Colne (Essex).

1.1.15 References to the archaeological and modern oyster samples suitable for comparison work can be found in the bibliography. Not all sources of data are published but are held as unpublished or as a primary resource by the specialist.

1.1.16 Although oyster shell has been recovered from numerous other CTRL sites, the quantities and condition of the material make it unlikely that comparable assemblages will be available from this source.

Potential for further work

1.1.17 There is potential for the data assemblage derivable from marine molluscan material from context 20174, a ditch sealed by the proto-villa, to address the original Landscape Zone Aims and the Fieldwork Event Aims.

1.1.18 The study of the oysters could 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 accelerated environmental change.

1.1.19 Presence and absence data can indicate, in a qualitative way only, onsite consumption and disposal areas as well as phases of occupation during which shellfish were consumed.

1.1.20 Examination of cut marks and notches on oyster shells in context 20174 could indicate opening techniques and cooking methods.

1.1.21 Recording such features as the degree of irregularity in shape, the presence of attached young oyster spat, the adhesion of other mature oyster shells, size and age ranges and presence of chambering and chalky patches could indicate whether the oysters had been farmed in any way or were from a natural, wild population.

1.1.22 The size distribution in the oyster sample from Thurnham Roman Villa could be compared by parametric two sample t-test and non-parametric Mann Whitney test with other samples. Rejection of the null hypothesis might suggest different source locations and populations.

1.1.23 Comparison of the percentage frequency of evidence for epibiont organisms between Thurnham Roman Villa and other samples using Principal Component Analysis might indicate the coastal source from which the Thurnham oysters had been derived.

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Table 14.1: Thurnham Roman Villa ARC THM 98: Oyster shells by context

Context number	Sample number	Left valve (LV) oyster	Unmeasurable LV oyster	Right valve (RV) oyster	Unmeasurable RV oyster
10084		8	16	3	5
10196		3	2	4	
10197		12	9	5	1
		23	**27**	**12**	**6**
11641			4		3
		3	5	5	2
15001			2		2
15001				1	
15001		7	14	8	6
15001		1	1	5	3
15001	10288				
	10-4mm				
15001	10288				
	>10mm				
15001	10288				
	<10mm				
		11	**26**	**19**	**16**
15214					2
			1	1	1
		2	8		6
15214	10412				
	>10mm				
15214	10413				
	>10mm				
15214	10413		1		
	>10mm				
15214	10414				
	>10mm				
15214	10414	1			
	>10mm				
		3	**10**	**1**	**9**
20087		3	8	3	7
		3	**8**	**3**	**7**
20174		8	11	9	5
		2	1	2	1
		5	12	11	13
		12	2	13	4
		20	15	23	5
		19	21	28	9
		22	20	25	16
		4	3	9	4
20174	10383	14	8	14	10
20174	10285		4	3	1
	<10mm				
20174	10383				
	<10mm				
		106	**97**	**137**	**68**

Table 14.2: Summary of oyster shell totals for each phase based on selected contexts (10084, 10196, 10197, 11641, 15001, 15214, 20087, 20174)

PHASE	Left valve (LV) oyster	Unmeasurable LV oyster	Right valve (RV) oyster	Unmeasurable RV oyster	Total
MEDIEVAL	23	27	12	6	68
PHASE 4	11	26	19	16	72
PHASE 3/4	3	10	1	9	23
PHASE 2	3	8	3	7	21
PHASE 2/3	106	97	137	68	408
TOTAL	**146**	**168**	**172**	**106**	**592**