

*Reports from the Environmental Archaeology Unit, York 2000/55, 13 pp.*

**Mollusc remains (other than shellfish) recovered from bulk sediment samples from excavations at Flixborough, North Lincolnshire (site code: FLX89)**

by

John Carrott

**Summary**

*Non-marine mollusc remains from deposits mainly of Middle to Late Saxon (7<sup>th</sup>-11<sup>th</sup> century) date at Flixborough, N. Lincolnshire were rather sparse.*

*All of the assemblages were small and only a small range of taxa was represented. The overall character of the assemblages was consistent across the physical and temporal distribution of the site, indicating a local environment of dry, probably short-turfed, grassland with damper/more shaded conditions present within cut features and hints of denser cover, such as nearby woodland/scrub.*

*The presence of Hydrobia species in seven contexts (in particular H. ulvae) provided strong supporting evidence for the exploitation of salt-marsh plants at the site, the remains, and possible uses and paths of arrival, of which have been noted and discussed by Hall (2000).*

**Keywords:** FLIXBOROUGH; NORTH LINCOLNSHIRE; MIDDLE TO LATE SAXON; ANGLIAN; 7<sup>TH</sup>-11<sup>TH</sup> CENTURY; MOLLUSC REMAINS; SALT MARSH

Author's address:

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

Prepared for:

Humber Archaeology Partnership  
The Old School  
Northumberland Avenue  
Kingston-upon-Hull HU2 0LN

Telephone: (01904) 434487  
Fax: (01904) 433850

30 December 2001

# Mollusc remains (other than shellfish) recovered from bulk sediment samples from excavations at Flixborough, North Lincolnshire (site code: FLX89)

## Introduction

Excavations at a site near Flixborough, North Lincolnshire (NGR SE 876 143) by the Humberside Archaeology Unit (now Humber Archaeology Partnership) in 1989 revealed within thick deposits of blown sand containing abundant evidence for occupation in the Anglian period (7<sup>th</sup>-early 11<sup>th</sup> centuries), with some traces of earlier and later material. The deposits were a rich source of evidence, primarily in the form of artefacts and vertebrate remains.

Preliminary and subsequent bioarchaeological assessments (Dobney *et al.* 1993; 1994; Hall and Milles 1993; Loveluck and Dobney 1998) suggested that non-marine mollusc remains were rather sparse but the only source of evidence for local environment reconstruction (Dobney *et al.* 1994). Given the international importance of the site, a modest programme of study of these remains was undertaken in the period 1998-2000.

## Methods

Remains were examined from bulk sediment samples ('BS' samples *sensu* Dobney *et al.* 1992) processed either on site or later in the laboratory. In most cases, the remains were concentrated in the washovers from processing but small numbers of remains recovered from the residues were also included where present.

All complete fossils and distinctive fragments were identified as closely as possible though, in many cases, key diagnostic features had been lost (through damage to the shells) or were obscured by concreted sediment in the shell openings

(attempts to remove such material generally led to the destruction of the shell and so were abandoned at an early stage of the study). Counts of minimum numbers of individuals (MNI) were recorded.

Principal sources for the biology of the recorded species were Kerney and Cameron (1979) and Evans (1972).

Phase groups for the contexts were defined as for the vertebrate remains (Table 1).

The manuscript lists were entered to a *Paradox* database using a system written by the author. *Paradox*, *Microsoft Excel*, *Microsoft Powerpoint* were used to investigate and produce summary presentations of the data. The statistical software package *Canoco* was also used to investigate the data using detrended correspondence analysis.

## Results

All of the assemblages were small and only a small range of taxa was represented (Table 2). The taxa recorded are listed by Context and Sample in Table 3.

## Discussion

The overall character of the assemblages was consistent across the physical and temporal distribution of the site, indicating a local environment of dry, probably short-turfed, grassland with damper conditions (indicated by, for example, *Carychium* spp. and *Vitrea crysallina*) present within cut features. There were also hints of denser cover, such as nearby woodland/scrub,

given by the presence of *Discus rotundatus* in Contexts from Phases 1 through 6.

Only one record of a freshwater snail was made, an unidentified planorbid from Context 8660 (a Phase group 5b pit fill). This may have entered the deposit in a variety of ways and was probably not indicative of actual standing water.

Seven contexts (4624 and 5369 from Phase group 2-3a; 5983, 10064, and 11699 from Phase group 3b; 5930 and 6961 from Phase group 6) gave remains of one or more *Hydrobia* species. The presence of these, in particular *H. ulvae* in four of the contexts (4624, 5369, 5983, and 10064), provided strong supporting evidence for the exploitation of salt-marsh plants at the site, the remains, and possible uses and paths of arrival, of which have been noted and discussed by Hall (2000). A plot of the results from *Canoco* (Fig 1.) clearly separated three of these contexts (a soakaway 4624, and two dumps 5369 and 5983) on the first axis of variation. Here the snail assemblages were dominated by *H. ulvae* and this almost certainly indicates that the remains had been incorporated, along with other waste, by deliberate dumping. The more mixed assemblage from the post hole fill Context 10064 was also separated, though less markedly, perhaps indicating that waste material had been accidentally incorporated into the deposit.

The land snail *Cecilioides acicula* was present in 46 of the recorded Contexts but this modern, burrowing species was almost certainly intrusive to the deposits and of no interpretative value.

## References

Dobney, K., Hall, A. R., Kenward, H. K. and Milles, A. (1992). A working classification of sample types for environmental archaeology. *Circaea, the Journal of the Association for Environmental Archaeology* **9** (for 1991), 24-6.

Dobney, K., Hall, A., Kenward, H. and Milles, A. (1993). *Material assessment of sediment samples (GBA and BS) from Flixborough*. 12 pp. plus appendix 31 pp. Prepared for Humberside Archaeology Unit. [Reports from the Environmental Archaeology Unit, York **93/21**]

Dobney, K., Hall, A., Kenward, H. and Milles, A. (1994). Integrated assessment of biological remains from excavations at Flixborough, S. Humberside. *Reports from the Environmental Archaeology Unit, York* **94/9**, 15 pp.

Evans, J. G. (1972). *Land snails in archaeology*. London and New York: Seminar.

Hall, A. (2000). Technical Report: Plant remains from excavations at Flixborough, N. Lincolnshire (site code: FLX89). *Reports from the Environmental Archaeology Unit, York* **2000/56**, 107 pp.

Hall, A. and Milles, A. (1993). *Material assessment of hand-collected non-vertebrate remains from Flixborough*. 3 pp. Prepared for Humberside Archaeology Unit. [Reports from the Environmental Archaeology Unit, York **93/27**]

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.

Kerney, M. P. and Cameron, R. A. D. (1979). *A field guide to the land snails of Britain and north-west Europe*. Glasgow: William Collins Sons and Co. Ltd.

Loveluck, C. P. and Dobney, K. (1998). *Biological and artefact remains from Flixborough sediment samples. Assessment and updated project design for analysis*. Report prepared by Humber Field Archaeology, November 1998.

*Table 1. Date ranges for phase groups.*

<b>Phase group</b>	<b>Period</b>
1	mid to late 7 <sup>th</sup> century
2-3a	late 7 <sup>th</sup> to mid 8 <sup>th</sup> century
3b	mid 8 <sup>th</sup> to early 9 <sup>th</sup> century
4-5b	early 9 <sup>th</sup> to early 10 <sup>th</sup> century
6	early to late 10 <sup>th</sup> century
6iii	late 10 <sup>th</sup> to early 11 <sup>th</sup> century
7+	later than early 11 <sup>th</sup> century or too broadly phased for classification

Table 2. Complete list of mollusc taxa (other than shellfish) represented in the assemblages recovered from sediment samples from Flixborough, North Lincolnshire. Taxa are presented in taxonomic order following Kerney and Cameron (1979).

<i>Hydrobia ?ventrosa</i>	(Montagu)
<i>Hydrobia ?ulvae</i>	(Pennant)
<i>Hydrobia ulvae</i>	(Pennant)
? <i>Hydrobia</i> sp.	
<i>Carychium ?minimum</i>	Müller
<i>Carychium minimum</i>	Müller
<i>Carychium ?tridentatum</i>	(Risso)
<i>Carychium tridentatum</i>	(Risso)
<i>Carychium</i> sp.	
Planorbidae sp.	
Succineidae sp.	
<i>Cochlicopa ?lubrica</i>	(Müller)
<i>Cochlicopa lubrica</i>	(Müller)
<i>Cochlicopa ?lubricella</i>	(Porro)
<i>Cochlicopa lubricella</i>	(Porro)
<i>Cochlicopa</i> sp.	
<i>Vertigo ?pygmaea</i>	(Draparnaud)
<i>Vertigo pygmaea</i>	(Draparnaud)
<i>Vertigo</i> sp.	
<i>Pupilla muscorum</i>	(Linnaeus)
<i>Vallonia ?costata</i>	(Müller)
<i>Vallonia ?excentrica</i>	Sterki
<i>Vallonia excentrica</i>	Sterki
<i>Discus rotundatus</i>	(Müller)
<i>Vitrea crystallina</i>	(Müller)
<i>Aegopinella ?nitidula</i>	(Draparnaud)
<i>Aegopinella nitidula</i>	(Draparnaud)
? <i>Aegopinella</i> sp.	
? <i>Oxychilus</i> sp.	
<i>Cecilioides acicula</i>	(Müller)
<i>Trichia ?hispida</i>	(Linnaeus)
? <i>Trichia</i> sp.	
<i>Trichia</i> sp.	
<i>Cepaea</i> sp.	
<i>Cepaea</i> or <i>Arianta</i> sp.	

*Table 3. Lists by sample of mollusc taxa (other than shellfish) represented in the assemblages recovered from bulk sediment samples from Flixborough, North Lincolnshire. Taxa are listed in rank order then taxonomic order. Numbers are minimum numbers of individuals (MNI). ReM: D = Recording Method: Detailed. Ecological codes are given following the MNI as follows:*

**Key** to ecological codes: dv—damp grassland; dw—aquatic marginal vegetation; f—freshwater; h—halophile; mm—marine; rs—rock rubble/scree; sn—synanthropic; tv—dry grassland; ws—woodland/scrub

Context: 1739 Sample: 3472/T ReM: D

Cochlicopa lubrica	1	dv
Cochlicopa sp.	1	-
Vallonia ?costata	1	tv
Vallonia ?excentrica	1	tv

Context: 3280 Sample: 6043 ReM: D

Discus rotundatus	1	ws-dv-sn
-------------------	---	----------

Context: 3359 Sample: 3361/F ReM: D  
Notes: approx 30 unidentified fragments

Vallonia ?excentrica	6	tv
Aegopinella ?nitidula	6	sn-ws-dv
Vallonia ?costata	5	tv
Carychium ?minimum	3	dv
Carychium ?tridentatum	3	dv
Cochlicopa ?lubricella	2	tv
Cochlicopa ?lubrica	1	dv
Vertigo pygmaea	1	tv
Vertigo sp.	1	-

Context: 3541 Sample: 3560/F ReM: D  
Notes: a few fragments and shell 'dust'

Cochlicopa sp.	1	-
Vallonia ?costata	1	tv
Aegopinella ?nitidula	1	sn-ws-dv
Cepaea or Arianta sp.	1	dv

Context: 3736 Sample: 3737/F ReM: D  
Notes: approx 10 unidentified fragments

Vallonia ?excentrica	4	tv
Carychium ?minimum	1	dv
Vallonia ?costata	1	tv
Discus rotundatus	1	ws-dv-sn
?Trichia sp.	1	-

Context: 3874 Sample: 4136/F ReM: D  
Notes: approx 5 unidentified fragments

Cochlicopa ?lubrica	1	dv
---------------------	---	----

Context: 3911 Sample: 3912/F ReM: D

Notes: approx. 30 unidentified fragments

?Trichia sp.	3	-
Carychium ?tridentatum	1	dv
Cochlicopa sp.	1	-
Cepaea sp.	1	dv-ws

Context: 4216 Sample: 4217/T2 ReM: D  
Notes: approx 15 unidentified fragments

Vallonia ?excentrica	6	tv
----------------------	---	----

Context: 4373 Sample: 4374/F ReM: D  
Notes: approx 6 unidentified fragments

Carychium ?tridentatum	1	dv
Cochlicopa ?lubrica	1	dv
Vallonia ?costata	1	tv
Vallonia ?excentrica	1	tv
Discus rotundatus	1	ws-dv-sn

Context: 4616 Sample: 4617/BS ReM: D  
Notes: 1 unidentified fragment

Mollusca sp.	1	-
--------------	---	---

Context: 4624 Sample: 4662/BS ReM: D  
Notes: approx 6 unidentified fragments

Hydrobia ulvae	18	mm
Hydrobia ?ventrosa	1	ha
Succineidae sp.	1	-
Vallonia ?costata	1	tv
Vallonia ?excentrica	1	tv
?Trichia sp.	1	-

Context: 4624 Sample: 4664/BS ReM: D  
Notes: 1 unidentified fragment

Hydrobia ulvae	1	mm
----------------	---	----

Context: 4645 Sample: 4649/T2 ReM: D

Notes: 1 unidentified fragment and flakes of shell

Cochlicopa lubrica	1	dv
Vallonia ?costata	1	tv
Vallonia ?excentrica	1	tv

Context: 5369 Sample: 5524/BS ReM: D

Hydrobia ulvae	7	mm
----------------	---	----

Context: 5369 Sample: 5524/BS2 ReM: D

Hydrobia ulvae	50	mm
----------------	----	----

Context: 5369 Sample: 6765 ReM: D

Notes: 2 unidentified fragments

Hydrobia ulvae	140	mm
Mollusca sp.	2	-

Context: 5930 Sample: 5962/BS ReM: D

Notes: approx 10 unidentified fragments

Cochlicopa sp.	2	-
Vallonia ?excentrica	2	tv
?Hydrobia sp.	1	-
Cochlicopa ?lubricella	1	tv
Discus rotundatus	1	ws-dv-sn
?Trichia sp.	1	-

Context: 5983 Sample: 6780 ReM: D

Hydrobia ulvae	2	mm
Mollusca sp.	1	-

Context: 5983 Sample: 10288/BS ReM: D

Hydrobia ?ulvae	1	mm
-----------------	---	----

Context: 5983 Sample: 10288/F ReM: D

Mollusca sp.	1	-
--------------	---	---

Context: 6235 Sample: 0/F ReM: D

Notes: approx 20 unidentified fragments

Discus rotundatus	4	ws-dv-sn
?Trichia sp.	4	-
Pupilla muscorum	2	tv
Cochlicopa ?lubrica	1	dv
Cochlicopa lubricella	1	tv

Vallonia ?excentrica	1	tv
----------------------	---	----

Context: 6235 Sample: 11570 ReM: D

Mollusca sp.	1	-
--------------	---	---

Context: 6235 Sample: 11570/F ReM: D

Mollusca sp.	2	-
--------------	---	---

Context: 6465 Sample: 10576/BS ReM: D

Discus rotundatus	1	ws-dv-sn
Mollusca sp.	2	-

Context: 6487 Sample: 9937/BS ReM: D

Notes: approx 15 unidentified fragments

Cecilioides acicula	34	-
Vertigo ?pygmaea	5	tv
Vallonia ?excentrica	5	tv
Carychium sp.	1	-
Cochlicopa ?lubrica	1	dv
Vallonia ?costata	1	tv

Context: 6961 Sample: 6964/F ReM: D

Cecilioides acicula	7	-
Vallonia ?excentrica	4	tv
?Trichia sp.	2	-
?Hydrobia sp.	1	-
Carychium tridentatum	1	dv
Cochlicopa lubrica	1	dv
Discus rotundatus	1	ws-dv-sn
Aegopinella ?nitidula	1	sn-ws-dv

Context: 7077 Sample: 7079/F ReM: D

Notes: approx 25 unidentified fragments

Vallonia ?excentrica	17	tv
Cecilioides acicula	6	-
Discus rotundatus	3	ws-dv-sn
Aegopinella ?nitidula	3	sn-ws-dv
Vallonia ?costata	2	tv
Carychium ?tridentatum	1	dv
Trichia sp.	1	-

Context: 7109 Sample: 7124/F ReM: D

Notes: approx 25 unidentified fragments

Vallonia ?excentrica	21	tv
Cecilioides acicula	9	-

?Trichia sp.	6	-
Cochlicopa ?lubricella	4	tv
Carychium ?tridentatum	3	dv
Cochlicopa ?lubrica	2	dv
Pupilla muscorum	2	tv
Discus rotundatus	2	ws-dv-sn

Context: 7212 Sample: 7213/F ReM: D  
Notes: 3 unidentified fragments

Cecilioides acicula	3	-
Pupilla muscorum	2	tv
Vallonia ?costata	2	tv
Vallonia ?excentrica	2	tv
Succineidae sp.	1	-
Cochlicopa ?lubrica	1	dv

Context: 7266 Sample: 7267/F ReM: D  
Notes: approx 25 unidentified fragments

Vallonia ?excentrica	21	tv
Cecilioides acicula	12	-
Discus rotundatus	8	ws-dv-sn
Trichia sp.	6	-
Cochlicopa ?lubrica	5	dv
Aegopinella ?nitidula	3	sn-ws-dv
Pupilla muscorum	2	tv
Trichia ?hispidata	2	dv-tv-ws
Vallonia ?costata	1	tv

Context: 7273 Sample: 7282/F ReM: D  
Notes: approx 20 unidentified fragments

Cecilioides acicula	17	-
Vallonia ?excentrica	9	tv
Cochlicopa ?lubrica	3	dv
Carychium ?minimum	1	dv
Pupilla muscorum	1	tv
Vallonia ?costata	1	tv

Context: 7577 Sample: 7595/T2 ReM: D  
Notes: 1 unidentified fragment

Trichia ?hispidata	1	dv-tv-ws
--------------------	---	----------

Context: 7665 Sample: 7664/T2 ReM: D  
Notes: a few unidentified fragments

Cecilioides acicula	6	-
Aegopinella ?nitidula	2	sn-ws-dv
Carychium ?tridentatum	1	dv
Discus rotundatus	1	ws-dv-sn
Trichia ?hispidata	1	dv-tv-ws

Context: 7668 Sample: 7669/F ReM: D  
Notes: approx 20 unidentified fragments

Vallonia ?excentrica	7	tv
Cecilioides acicula	4	-
Vertigo ?pygmaea	3	tv
Discus rotundatus	3	ws-dv-sn
Trichia ?hispidata	3	dv-tv-ws
Cochlicopa sp.	2	-
Carychium ?minimum	1	dv
Carychium ?tridentatum	1	dv
Vallonia ?costata	1	tv

Context: 7676 Sample: 7677/T2 ReM: D

Trichia sp.	1	-
-------------	---	---

Context: 7694 Sample: 7692/T ReM: D  
Notes: a few unidentified fragments

Vallonia ?costata	2	tv
Trichia ?hispidata	2	dv-tv-ws
Cochlicopa lubrica	1	dv
Pupilla muscorum	1	tv
Vitrea crystallina	1	dw-dv

Context: 7903 Sample: 8463/F ReM: D  
Notes: approx 10 unidentified fragments

Aegopinella ?nitidula	8	sn-ws-dv
Cecilioides acicula	5	-
Cochlicopa ?lubrica	4	dv
Vallonia ?excentrica	3	tv
Trichia ?hispidata	3	dv-tv-ws
Pupilla muscorum	1	tv
Discus rotundatus	1	ws-dv-sn

Context: 7926 Sample: 7930/F ReM: D  
Notes: approx 6 unidentified fragments

Vallonia ?excentrica	14	tv
Trichia ?hispidata	2	dv-tv-ws
Vertigo ?pygmaea	1	tv
Pupilla muscorum	1	tv
Vallonia ?costata	1	tv
Cecilioides acicula	1	-

Context: 8091 Sample: 0/F ReM: D

Vallonia ?excentrica	15	tv
Trichia ?hispidata	4	dv-tv-ws
Carychium sp.	2	-
Discus rotundatus	2	ws-dv-sn



Vallonia ?costata	1	tv
Vitrea crystallina	1	dw-dv

Context: 8108 Sample: 8789/F ReM: D  
Notes: a few unidentified fragments

Vallonia ?excentrica	6	tv
?Trichia sp.	2	-
Discus rotundatus	1	ws-dv-sn
Cecilioides acicula	1	-

Context: 8149 Sample: 8509/F ReM: D

Cecilioides acicula	40	-
Vallonia ?excentrica	27	tv
Cochlicopa ?lubrica	5	dv
Pupilla muscorum	5	tv
Discus rotundatus	2	ws-dv-sn
Vitrea crystallina	2	dw-dv

Context: 8189 Sample: 8465/F ReM: D  
Notes: approx 20 unidentified fragments

Vallonia ?excentrica	14	tv
Trichia sp.	2	-
Pupilla muscorum	1	tv
Discus rotundatus	1	ws-dv-sn

Context: 8200 Sample: 10293/F ReM: D  
Notes: approx 10 unidentified fragments

Cochlicopa ?lubrica	3	dv
Vallonia ?excentrica	3	tv
Carychium ?tridentatum	1	dv
Vallonia ?costata	1	tv

Context: 8461 Sample: 8527/F ReM: D  
Notes: approx 12 unidentified fragments

Vallonia ?excentrica	19	tv
Cecilioides acicula	15	-
Cochlicopa lubricella	2	tv
Pupilla muscorum	2	tv
?Trichia sp.	2	-
Cochlicopa lubrica	1	dv
Vallonia ?costata	1	tv

Context: 8652 Sample: 8650/F ReM: D

Cecilioides acicula	27	-
Vallonia ?excentrica	10	tv
Cochlicopa ?lubrica	2	dv
Vallonia ?costata	2	tv

Vertigo ?pygmaea	1	tv
Pupilla muscorum	1	tv
?Trichia sp.	1	-

Context: 8653 Sample: 8655/F ReM: D  
Notes: approx 6 unidentified fragments

Vallonia ?excentrica	1	tv
Cecilioides acicula	1	-

Context: 8660 Sample: 8769/F ReM: D  
Notes: a few unidentified fragments

Vallonia ?excentrica	5	tv
Carychium ?tridentatum	4	dv
Aegopinella ?nitidula	2	sn-ws-dv
Planorbidae sp.	1	f
Succineidae sp.	1	-
Cochlicopa ?lubrica	1	dv

Context: 8668 Sample: 8634/F ReM: D

Mollusca sp.	1	-
--------------	---	---

Context: 8724 Sample: 8784/F ReM: D  
Notes: 4 unidentified fragments

Discus rotundatus	2	ws-dv-sn
Vallonia ?excentrica	1	tv

Context: 8731 Sample: 8732/F ReM: D  
Notes: a few unidentified fragments

Vallonia ?excentrica	4	tv
Cecilioides acicula	1	-
Trichia ?hispidata	1	dv-tv-ws

Context: 8749 Sample: 8750/T2 ReM: D  
Notes: 1 unidentified fragment

Vallonia ?excentrica	4	tv
Cecilioides acicula	3	-
Vallonia ?costata	1	tv

Context: 8771 Sample: 8782/T2 ReM: D

Cecilioides acicula	13	-
Cochlicopa ?lubricella	2	tv
Cochlicopa ?lubrica	1	dv
Vallonia ?excentrica	1	tv
Cepaea or Arianta sp.	1	dv

Context: 8774 Sample: 8772/F ReM: D  
Notes: approx 10 unidentified fragments

Vallonia ?excentrica	5	tv
Cochlicopa lubrica	1	dv
Cecilioides acicula	1	-
Cepaea or Arianta sp.	1	dv

Context: 8833 Sample: 8835/T2 ReM: D

Cecilioides acicula	6	-
Aegopinella ?nitidula	1	sn-ws-dv

Context: 8852 Sample: 8853/T2 ReM: D  
Notes: a few unidentified fragments

Cecilioides acicula	4	-
Vallonia ?excentrica	2	tv
Pupilla muscorum	1	tv

Context: 10064 Sample: 10070/BS ReM: D  
Notes: approx 15 unidentified fragments

Vallonia ?excentrica	7	tv
Hydrobia ulvae	6	mm
?Aegopinella sp.	6	-
Cochlicopa ?lubrica	4	dv
Discus rotundatus	4	ws-dv-sn
Cochlicopa lubricella	2	tv
Vallonia ?costata	2	tv
?Oxychilus sp.	2	-
Cecilioides acicula	2	-
Pupilla muscorum	1	tv
Trichia ?hispidula	1	dv-tv-ws
Mollusca sp.	1	-

Context: 10143 Sample: 10144?/F ReM: D

Cecilioides acicula	6	-
Vallonia ?excentrica	2	tv
Pupilla muscorum	1	tv
Discus rotundatus	1	ws-dv-sn
Aegopinella nitidula	1	sn-ws-dv

Context: 10146 Sample: 10149/F ReM: D

Cecilioides acicula	20	-
Vallonia ?excentrica	11	tv
Carychium tridentatum	3	dv
Cochlicopa ?lubrica	2	dv
Carychium minimum	1	dv
Discus rotundatus	1	ws-dv-sn
Trichia sp.	1	-
Cepaea or Arianta sp.	1	dv

Context: 10178 Sample: 10335/F ReM: D  
Notes: approx 12 unidentified fragments

Cecilioides acicula	20	-
Vallonia ?excentrica	15	tv
Vallonia ?costata	6	tv
?Trichia sp.	3	-
Cochlicopa ?lubrica	2	dv
Pupilla muscorum	2	tv
Discus rotundatus	2	ws-dv-sn
Carychium sp.	1	-

Context: 10179 Sample: 0/F ReM: D

Cecilioides acicula	40	-
Vallonia ?excentrica	26	tv
Cochlicopa ?lubrica	5	dv
Discus rotundatus	3	ws-dv-sn
Vallonia ?costata	2	tv
Aegopinella ?nitidula	2	sn-ws-dv
Trichia sp.	2	-
Succineidae sp.	1	-
Pupilla muscorum	1	tv
Vitrea crystallina	1	dw-dv

Context: 10210 Sample: 10208/F ReM: D  
Notes: a few unidentified fragments

Cecilioides acicula	5	-
Vallonia ?excentrica	3	tv
Cochlicopa ?lubricella	2	tv
Carychium ?tridentatum	1	dv

Context: 10236 Sample: 10234/F ReM: D  
Notes: approx 10 unidentified fragments

Cochlicopa ?lubrica	2	dv
Discus rotundatus	2	ws-dv-sn
Aegopinella ?nitidula	2	sn-ws-dv
Cecilioides acicula	2	-

Context: 10244 Sample: 10245/F ReM: D  
Notes: approx 10 unidentified fragments

Cecilioides acicula	3	-
Trichia ?hispidula	2	dv-tv-ws
Carychium minimum	1	dv
Cochlicopa ?lubrica	1	dv
Aegopinella ?nitidula	1	sn-ws-dv

Context: 10291 Sample: 10289/F ReM: D  
Notes: approx 20 unidentified fragments

Carychium sp.	7	-
Discus rotundatus	4	ws-dv-sn
Cecilioides acicula	4	-
Vallonia ?excentrica	3	tv
?Oxychilus sp.	3	-

Context: 10296 Sample: 10853/F ReM: D  
Notes: a few unidentified fragments

Cecilioides acicula	21	-
Vallonia ?excentrica	7	tv
Trichia sp.	5	-
Cochlicopa ?lubricella	3	tv
Pupilla muscorum	2	tv
Vitrea crystallina	1	dw-dv

Context: 10303 Sample: 10304/F ReM: D

Cecilioides acicula	10	-
Cochlicopa ?lubrica	3	dv
Vallonia ?excentrica	3	tv
Carychium ?tridentatum	2	dv
?Trichia sp.	2	-
Discus rotundatus	1	ws-dv-sn
Aegopinella ?nitidula	1	sn-ws-dv

Context: 10333 Sample: 10663/F ReM: D  
Notes: a few unidentified fragments

Cecilioides acicula	8	-
Pupilla muscorum	3	tv
Vallonia ?excentrica	2	tv
Discus rotundatus	2	ws-dv-sn

Context: 10360 Sample: 10361/F ReM: D  
Notes: approx 10 unidentified fragments

Vallonia ?excentrica	18	tv
Trichia sp.	2	-
Cochlicopa ?lubrica	1	dv
Cochlicopa sp.	1	-
Discus rotundatus	1	ws-dv-sn
Cecilioides acicula	1	-

Context: 10388 Sample: 10389/F ReM: D  
Notes: approx 6 unidentified fragments

Cecilioides acicula	17	-
Vallonia ?excentrica	4	tv
Discus rotundatus	2	ws-dv-sn
Aegopinella ?nitidula	2	sn-ws-dv
Cochlicopa ?lubrica	1	dv
Vertigo ?pygmaea	1	tv

Context: 10398 Sample: 10396/F ReM: D  
Notes: 1 unidentified fragment

Cochlicopa ?lubrica	2	dv
Pupilla muscorum	1	tv
Cecilioides acicula	1	-

Context: 10399 Sample: 0/F ReM: D  
Notes: two samples 11145 and 11953 /F

Vallonia ?excentrica	21	tv
Cochlicopa ?lubrica	9	dv
Trichia ?hispidata	9	dv-tv-ws
Vallonia ?costata	6	tv
Aegopinella ?nitidula	6	sn-ws-dv
Pupilla muscorum	3	tv
Discus rotundatus	3	ws-dv-sn
Carychium ?minimum	1	dv
Vertigo ?pygmaea	1	tv
Vitrea crystallina	1	dw-dv

Context: 10665 Sample: 10666/F ReM: D  
Notes: approx 6 unidentified fragments

Cecilioides acicula	30	-
Vallonia ?excentrica	3	tv
Cochlicopa ?lubrica	2	dv
?Trichia sp.	2	-
Vertigo ?pygmaea	1	tv
Pupilla muscorum	1	tv
Discus rotundatus	1	ws-dv-sn
Aegopinella ?nitidula	1	sn-ws-dv

Context: 10775 Sample: 10773/F ReM: D  
Notes: approx 10 unidentified fragments

Cecilioides acicula	10	-
Vallonia ?excentrica	4	tv
Pupilla muscorum	3	tv
Cochlicopa ?lubrica	2	dv
Trichia ?hispidata	2	dv-tv-ws

Context: 10836 Sample: 10837/F ReM: D  
Notes: approx 10 unidentified fragments

Cecilioides acicula	11	-
Cochlicopa lubrica	2	dv
Pupilla muscorum	2	tv
Carychium sp.	1	-
Vallonia ?excentrica	1	tv
Discus rotundatus	1	ws-dv-sn

Context: 10840 Sample: 10841/T2 ReM: D

Cecilioides acicula	11	-
Vallonia ?excentrica	2	tv
Aegopinella ?nitidula	2	sn-ws-dv
Trichia ?hispidula	2	dv-tv-ws
Planorbidae sp.	1	f
Cochlicopa ?lubrica	1	dv
Cochlicopa ?lubricella	1	tv
Pupilla muscorum	1	tv
Vitrea crystallina	1	dw-dv

Context: 10851 Sample: 10852/F ReM: D  
Notes: approx 6 unidentified fragments

Cecilioides acicula	43	-
Vallonia ?excentrica	4	tv
Cochlicopa ?lubrica	3	dv
Carychium sp.	1	-
Trichia sp.	1	-

Context: 10870 Sample: 10868 ReM: D  
Notes: approx 20 unidentified fragments

Cecilioides acicula	46	-
Vallonia ?excentrica	14	tv
?Trichia sp.	4	-
Cochlicopa ?lubrica	2	dv
Pupilla muscorum	2	tv
Vallonia ?costata	2	tv
Vertigo sp.	1	-
?Oxychilus sp.	1	-

Context: 10884 Sample: 10885/F ReM: D  
Notes: a few unidentified fragments

Vallonia ?excentrica	6	tv
?Trichia sp.	4	-
Cochlicopa ?lubrica	2	dv
Pupilla muscorum	1	tv
Vallonia ?costata	1	tv
Aegopinella ?nitidula	1	sn-ws-dv

Context: 10961 Sample: 10959/F ReM: D  
Notes: approx 15 unidentified fragments

Cecilioides acicula	25	-
Vallonia ?excentrica	5	tv
Cochlicopa ?lubrica	3	dv
Vallonia ?costata	2	tv
Trichia ?hispidula	2	dv-tv-ws
Vertigo ?pygmaea	1	tv

Context: 11013 Sample: 11015 ReM: D

Cochlicopa ?lubrica	2	dv
---------------------	---	----

Vallonia ?excentrica	2	tv
Discus rotundatus	1	ws-dv-sn
Mollusca sp.	2	-

Context: 11029 Sample: 11075/T2 ReM: D  
Notes: a few unidentified fragments

Cecilioides acicula	23	-
Vallonia ?excentrica	5	tv
Vitrea crystallina	1	dw-dv

Context: 11699 Sample: 11820/T ReM: D

Discus rotundatus	1	ws-dv-sn
-------------------	---	----------

Context: 11699 Sample: 11857/F ReM: D  
Notes: approx 20 unidentified fragments

Cecilioides acicula	5	-
Vallonia ?costata	4	tv
?Hydrobia sp.	2	-
Vallonia excentrica	2	tv

Context: 12127 Sample: 12128/F ReM: D

Cecilioides acicula	10	-
Vallonia ?excentrica	6	tv
Discus rotundatus	4	ws-dv-sn
Carychium ?tridentatum	2	dv
Pupilla muscorum	2	tv
Cochlicopa ?lubrica	1	dv

