AML Rpnt 4297 Site No [redacted]

Hand collected molluscs from 16-22 Coppergate, York

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Report to the Ancient Monuments Laboratory. July 1984.

During the excavation at 16-22 Coppergate (YAT code 1976-81.7), mollusc shells were hand-collected from all contexts and retained for identification. An exception was made in the case of oysters (Ostrea edulis L.), which were virtually ubiquitous, crushed oyster shell making up a substantial part of the mineral component of most deposits. Recording all oysters would have been an excessively laborious task for minimal information return. A number of large caches of oyster shells have been retained with a view to undertaking an examination of the size and age of the shells. This report is concerned with mollusc species other than oyster, and also includes non-mollusc 'shells', namely barnacles, crabs and sea-urchins. The recording unit was a single-line record, each record noting the occurrence of a taxon in a context. Thus a single record may refer to one mussel shell or to many (over 1000 in one case), and a single context may figure in several records, each of a different taxon.

Twelve hundred records were made, listing 5027 shells or pieces of shell from 928 different contexts. The unexpectedly high total of 36 taxa was recorded, made up of 29 mollusc species, 3 non-mollusc species and 4 mollusc genera. Sources for taxonomic detail and habitat information are given at the end of the report rather than by detailed reference in the text.

Table 1 gives a list of the taxa found, and their frequency in terms of the number of records per taxon. To allow some investigation of diachronic variation in frequency, the records have been divided into medieval, 10th century and late 9th century groups. It should be stressed that this division is approximate, and is based on the stratigraphy of 'blocks' of contexts. Of the 1200 records, 982 could be attributed to these period groups.

Marine species.

From the site as a whole, a few taxa predominate. Mytilus edulis (common mussel) shells made up nearly half of the records, with substantial numbers of Cerastoderma edule (cockle), Patella vulgata (a limpet), Littorina littorea (common periwinkle), Buccinium undatum (a whelk) and Neptunea antiqua (another whelk). Of the infrequent taxa, some could have been exploited for food (e.g. Pecten maximus - great scallop) although the low frequency argues against any regular exploitation. Shells, and bits of shells, of many species appear to have come onto the site almost by chance, or perhaps as contaminants in a consignment of mussles or oysters. The specimen of Cypraea pantherina is clearly a deliberate import. This cowrie is limited today to the Red Sea and Gulf of Aden.

The diversity of taxa represented probably reflects the varied foreshores available for exploitation in the East Yorkshire area. The sheltered estuary of the Humber would be an obvious source for Mytilus edulis, Tellina tenuis and Cerastoderma edule, as well as the numerous oysters. The three buccinid whelks are species of rocky or sandy shores, normally being found below the low water mark. Nucella lapillus (dog-whelk), the Littorina species, Gibbula cineraria (the grey top or silver tommie), Ocenebra erinacea (sting winkle or rough tingle), Patella vulgata and Modiolus modiolus (horse mussel) are normally restricted to rocky shores, where Nucella, Patella, Gibbula and the Littorinas are found in the intertidal zone whilst Ocenebra and Modiolus occur around low water and below. The remaining marine species, Nucula turgida, Pecten maximus, Arctica islandica and Acanthocardia echinata (one of the spiny cockles) are mainly found on sandy bottoms at low water and below, Nucula turgida being found down to 50 fathoms.

A consideration of the means of harvesting the more abundant taxa may explain the presence of the less abundant ones. Oysters were evidently collected in very large numbers. This is a species of firm sandy or rocky shores, from low water downwards. A widely-used method of collection is by means of the 'beam-trawl', a bag-like trawl net with a weighted beam across its mouth. Although there is no direct evidence for the use of such a device by Anglo-Scandinavian peoples, neither is there any evidence to gainsay its use, and large-scale collection of oysters would require some such technology. If oysters were trawled from sandy and rocky grounds between low water and 10 fathoms, and the catch brought into York without any sorting, then this would account for the presence of most of the less frequent marine species.

Mytilus edulis does not require to be trawled: it can be collected by hand from the intertidal zone. If lumps of Mytilus bed were collected indiscriminately, this would provide another source of marine species. There is some direct evidence for such collection. A soil-sample taken for biological analysis from late 10th-11th century layers (context 19197, sample 1142) proved to contain a large number of Mytilus shells (an estimated 2000). These shells were clearly not from individuals selected for food, as a high proportion of the total were very small shells, 10 mm or less in length. In addition to Mytilus, the sample contained about 30 valves of Tellina tenuis, 23 of Cerastoderma edule (including some very small specimens), 8 of Ostrea edulis, and specimens of Gibbula cineraria, Littorina littorea, Buccinium undatum, the estuarine bivalve Scorbicularia plana (da Costa), and the uncommon conid prosobranch Lora turricula (Montagu). The contents of this sample appear to be part of a wholesale collection of Mytilus and attendant species.

In short, then, there is strong indirect evidence for the collection of oysters and mussels on a large scale, the catch being brought into York without the removal of species not required for food. The likely sources for the species would be the Humber Estuary and adjoining parts of the East Coast. Balanus crenatus is a barnacle which is commonly to be found adhering to mollusc shells, and most specimens were found attached to Mytilus valves.

Examination of Table 1 shows Patella vulgata and Neptunea antiqua to have been more frequent in late 9th century levels than in deposits of later date. Otherwise, there is little diachronic variation in the distribution of the marine species. The higher frequencies of Patella and Neptunea might reflect differing tastes in the 9th century (not that eating limpets has much to do with taste), or may indicate a proportionally greater exploitation of rocky, as against sandy, grounds in this period.

Freshwater species

The Unio and Anodonta species (freshwater mussels) are all basically creatures of slow rivers and canals. Anodonta cygnaea and Unio pictorum may also be found in lakes, and both will tolerate rather muddy conditions. Unio tumidus and Anodonta anatina, on the other hand,

prefer rather cleaner, better oxygenated water, Anodonta anatina being found on sandy, rather than muddy, bottoms. The necessary habitats would all have been available in the rivers Ouse and Foss within a few hundred metres of the site. That being so, the concentration of Anodonta species into medieval levels in notable, and there is also some diachronic variation in the occurrence of Unio species. The ratio Unio tumidus:U. pictorum is 1.73:1 in late 9th century levels, falling to 1.13:1 in the 10th century and 0.91:1 in medieval levels. In short, in the late 9th century, Unio tumidus would appear to have been more common than subsequently. This change in frequency cannot be explained in terms of human selection. The two species are difficult enough to distinguish given clean shells and a taxonomic key: the possibility of a community preferentially exploiting one of the two species must be remote. A more likely explanation is that the freshwater mussel shells reflect local river conditions, and that the higher frequency of Unio tumidus in the late 9th century levels indicates the Ouse and the Foss to have been better oxygenated during this period than was the case later. There is some evidence to support this interpretation from studies of fish bones from Coppergate (Jones, pers. comm.). Fish bone assemblages from late 9th century levels are characterised by the presence of clean-water species such as grayling (Thymallus thymallus (L.)), barbel (Barbus barbus (L.)) and burbot (Lota lota (L.)), which are not present in later levels.

The concentration of Anodonta species in medieval levels may be a consequence of their being collected for food. McMillan (1973, 9) mentions the consumption of Anodonta species in the medieval period, but gives no supporting reference. It is possible that the Unio species were gathered for food as well, but the high incidence of small, young individuals suggests otherwise. Unio shells are quite robust and would make useful scoops or small containers. Possibly small numbers were regularly brought ashore when undertaking embankment works or were picked up in fish traps, and were thus made use of in a somewhat serendipitous manner, rather than deliberately exploited.

Terrestrial species

The few terrestrial molluscs represented in this hand-collected material will in no way reflect the original terrestrial mollusc fauna of the site, only the presence of several large species. Of the many

records of Helix aspersa (garden snail), some were sufficiently fresh to give rise to suspicions that they were modern individuals which had secreted themselves around the site during unguarded moments, burrowing into the soft substrate in order to hibernate or to aestivate, only to expire. Some, however, were clearly not modern, and at least a few of the late 9th and 10th century specimens appeared not to be intrusive. As a whole, the species was more frequent in medieval levels. Cepaea hortensis was a frequent find, more so than Cepaea nemoralis. Cepaea hortensis tends to be found in wetter places than C. nemoralis and may thus have been better adapted to the moist riverside environs of Coppergate. The carnivorous zonitid Oxychilus cellarius is a common synanthrope, particularly in dank corners and recesses. Monacha cantiana is a more unexpected find, being a species of rather dry hedgerows, waste ground and scrub. It is locally abundant in the York area today, despite being at the Northern edge of its British range. This single shell from Coppergate must be seen as a chance allochthonous occurrence, possibly brought into the city with collected plants.

Conclusions

Despite certain qualms about the value of recovering mollusc shells other than by sieving, the results of this study have justified the time put into it. The diverse list of marine species has led to a well-founded hypothesis regarding harvesting procedures and coastal exploitation, and examination of the freshwater species has produced evidence for local water conditions which is coincident with evidence from another source. Overall, the results underline the close association of York with the sea. The hypothesised unloading of harvested oysters and mussels in the city would imply that York functioned as a fishing port, rather than just trading marine products with communities nearer to the coast.

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	ALL		MEDIEVAL		10TH CEN		LATE 9TH CEN	
	n	%	O	E	O	E	O	E
Patella vulgata L.	22	1.83	2	11.7	3	3.7	11	2.7
Gibbula cineraria (L.)	4	0.33	2	2.1	1	0.7	–	–
Littorina sp.	1	0.08	–	–	–	–	–	–
Littorina littorea (L.)	25	2.08	13	13.2	4	4.2	6	3.0
Littorina neritoides (L.)	2	0.17	–	–	2	0.3	–	–
Cypraea pantherina Solander	1	0.08	–	–	–	–	1	0.1
Nucella lapillus (L.)	5	0.42	3	2.7	1	0.8	–	–
Ocenebra erinacea (L.)	1	0.08	1	0.5	–	–	–	–
Buccinium undatum L.	20	1.67	11	10.6	4	3.3	1	2.42
Neptunea antiqua (L.)	12	1.00	4	6.4	2	2.0	5	1.5
Colus gracilis (da Costa)	2	0.17	2	1.1	–	–	–	–
Planorbis planorbis (L.)	2	0.17	2	1.1	–	–	–	–
Cepaea sp.	3	0.25	–	–	3	0.5	–	–
Cepaea hortensis Muller	24	2.00	8	12.7	9	4.0	6	8.7
Cepaea nemoralis L.	2	0.17	2	1.1	–	–	–	–
Helix aspersa Muller	218	18.17	150	115.7	32	36.3	14	26.3
Monacha cantiana (Montagu)	1	0.08	–	–	1	0.2	–	–
Oxychilus cellarius (Muller)	1	0.08	1	0.5	–	–	–	–
Nucula turgida Leckenby + Marshall	1	0.08	–	–	–	–	–	–
Mytilus edulis L.	570	47.50	306	302.6	84	95.0	62	68.9
Modiolus modiolus (L.)	3	0.25	–	–	2	0.5	–	–
Pecten maximus (L.)	6	0.50	3	3.2	–	–	–	–
Arctica islandica (L.)	3	0.25	1	1.6	1	0.5	–	–
Acanthocardia echinata (L.)	1	0.08	1	0.5	–	–	–	–
Cerastoderma edule (L.)	51	4.25	27	27.1	11	8.5	3	6.2
Tellina tenuis da Costa	2	0.17	2	1.1	–	–	–	–
Unio sp.	22	1.83	9	11.7	5	3.7	4	2.7
Unio pictorum (L.)	60	5.00	23	31.9	16	10.0	11	7.3
Unio tumidus Philipsson	78	6.50	21	41.4	18	13.0	19	27.6
Anodonta sp.	23	1.92	19	12.23	–	–	1	2.8
Anodonta cygnaea (L.)	17	1.42	16	9.0	–	–	–	–
Anodonta anatina (L.)	4	0.33	3	2.1	–	–	–	–
Anodonta complanata Rossmassler	1	0.08	–	–	–	–	–	–
Balanus crenatus	8	0.67	3	4.3	1	1.34	–	–
Cancer pagurus	3	0.25	2	1.6	–	–	1	0.4
Echinus esculentus	1	0.08	–	–	–	–	–	–
TOTAL NO. OF RECORDS	1200		637		200		145	

Table 1. Frequency of taxa by number of records.
Key to columns:
n = number of records in all contexts
% = records for whole site as a percentage of 1200 records
O = observed number of records for period
E = expected number of records for period, obtained by redistributing total number of records for that period by the percentage frequencies obtained for the whole site.