ANCIENT MONUMENTS LABORATORY

REPORT

3520

SERIES/No CONTRACTOR

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TITLE Jorth Shoebury, Essex, Interim report No 2 (Samples 9-28)

Site	: North Shoebury (TQ 98/24) Report No. 2
County	: Essex
Director	: J. Wymer
Type of site	: Extensive complex of settlement, field system and cemetery features
Period	: Multi-period
Geology	: Calcareous Brickearth
Type of material	: Charred plant material, marine and terrestrial molluscs, bone.

North Shoebury : Interim Report No. 2 (Samples 9-28)

Samples 1-8, discussed in the first interim report, were all from medieval contexts. This report deals with a more diverse group of samples from a wide variety of contexts of different dates, as well as several hand-collected marine mollusc samples from Roman features. The results obtained provide a useful basis for determining the future sampling strategy at the site. As before, only a brief interim discussion of the results will be given here.

1. Samples from prehistoric cremations

The fills of several cremation pits and vessels were examined. Cremated bone was rather thinly spread throughout these fills and therefore wet-sieving techniques (though unavoidably resulting in some further fragmentation) were necessary for complete extraction. Charred plant remains were extracted from these soil samples by water flotation in the laboratory, collecting the flot in a 250 micron mesh sieve. The dried flots were sorted under low power of a binocular microscope, extracting charred cereals, seeds and other plant remains. Charcoal fragments > 6mm were identified. The non-floating residues were wet-sieved over a 1mm mesh and dried for the extraction of cremated bone, which has been retained for future specialist study.

Besides cremated bone and charred plant remains these samples also contained modern intrusive biological material including roots, seeds, insects and shells of *Cecilioides acicula*. In addition sample 9 (0021) produced small shell fragments of *Ostrea*, *Mytilus*, *Cerastoderma*, *Balanus* and a few Zonitids. These are also believed to be intrusive.

The charred plant remains from sample 9 (0021) presumably represent material incorporated into the cremation pyre. A range of plant species from several distinct habitats is present. The charcoal from the sample is of oak (*Quercus*) with some indeterminate diffuse porous charcoal. The sample also contains charred seeds of herbaceous plants and cereals: seeds of wetland species (*Montia fontana*, *Carex*), ruderals and segetals (Leguminosae, *Plantago lanceolata*), grains and spikelet fragments of emmer wheat (*Triticum dicoccum*), bread or club wheat (*Triticum aestivum/compactum*) and barley (*Hordeum* sp.) have been identified. In addition, charred ~~bulbils~~ tubers of the onion couch grass (*Arrhenatherum elatius* var. *bulbosum*) are present. This oddly mixed assemblage of plant remains is closely comparable to material recovered from Bronze Age cremations from Oxfordshire by

Sample No.		9	11	12	22	23	24	25	26
Context		0021	0600A	0600C	1161	1161	1161	1161	1161
					(pit fill)	(pit fill)	(contents of vessels)		
Indet. cereal	ca	1fr.	-	-	6fr.	3fr.	-	3fr.	-
Triticum sp.	ca	-	-	-	1	2	-	2	1
Triticum sp.	gb	-	-	-	2	3	-	-	-
Triticum dicoccum (Schubl)	spf	1	-	-	-	-	-	-	-
Triticum aestivum/compactum	ca	1	-	-	-	-	-	-	-
Hordeum sp.		1	-	-	-	-	-	-	-
c.f. *Ranunculus* sp.		1	-	-	-	-	-	-	-
Montia fontana L. subsp. *chondrosperma*		2	-	-	-	-	-	-	-
Trifolium/Lotus sp.		3	-	-	-	-	-	-	-
Vicia/Lathyrus sp.		1+1co.	-	-	-	-	-	-	-
Leguminosae indet.		-	-	-	-	-	-	1co	-
Quercus sp.	ch	+	++	++	-	-	-	-	-
Plantago lanceolata L.		3	-	-	-	-	-	-	-
Compositae indet.		-	-	-	1	-	-	-	-
Carex sp.		38	-	-	-	-	-	-	-
Bromus mollis/secalinus		-	-	-	-	1	-	-	-
Arrhenatherum elatius (L) var. *bulbosum*	~~bu~~tu	69+fr	-	-	-	-	-	-	-
Gramineae indet.	cb	1	-	-	-	-	-	-	-
Indet.	s	6	-	-	-	-	-	-	-
Indet.	st.fr	+	-	-	-	-	-	-	-
Indet.	ch	+	-	-	+	+	+	+	+
Sample weight (kg)		11.9	0.75	57.3	6.3	8.9	2.2	4.1	1.1

Table 1 : Charred plant remains associated with cremations

Taxa are represented by fruits or seeds unless otherwise indicated

Abbreviations: ~~[illegible]~~; ca-caryopsis; cb-culm base; ch-charcoal; co-cotyledon; fr-fragments; gb-glume base; s-seeds; spf-spikelet fork; st-stem fragments; tu - tubers

Jones (1978, 107-8). He interpreted cereal remains and onion couch bulbils from these cremations as deliberate inclusions in the cremation pyre, presumably food offerings.

Samples 11 and 12 (0600A and C) contained abundant cremated bone and fired brickearth fragments with large quantities of charcoal. All the charcoal fragments examined were of oak (Quercus) from large timbers. No trace of other plant species was observed.

Samples 22-26 were from the general fill of a Belgic cremation pit and from vessels in this fill. Cremated bone was thinly spread throughout these samples. Charcoal (not identified) occurred only as rare small fragments. Four of these samples included small quantities of grains and fragmentary glume bases of a wheat species (either spelt or emmer) generally in a poor state of preservation, together with a few charred weed seeds. The significance of these cereal remains is difficult to assess: they may represent material from the pyre but on the other hand thin scatters of charred cereals are often very common in features at Iron Age sites and thus these cereals may merely be accidental inclusions derived from grain processing in the vicinity.

2. Samples from various pits, ditches etc.

(a) Charred plant remains

Charred plant remains were recovered by water flotation in the laboratory from samples of fill from Iron Age, Roman and Saxon pits and ditches. Typically these samples produced small quantities of charred cereal grains and spikelet fragments with a few charred weed seeds and small fragments of charcoal (Table 2).

The cereals identified are Triticum dicoccum (emmer), Triticum spelta (spelt) and Hordeum vulgare (six-row hulled barley), together with some cereal remains which could be determined only to generic level or were not thought to be identifiable. These three cereals have frequently been reported from Iron Age and Roman contexts in varying proportions throughout the country. The presence of spelt and emmer in a Saxon feature (1044, Sample 21) is of greater interest, but the possibility of some residual cereal remains surviving from earlier site phases has to be considered. When more Saxon features have been sampled it will probably be possible to determine whether derived material presents a significant problem. The weed seeds are predominantly common arable species, often found in archaeological deposits. Charcoal was generally present only as small fragments and has not been identified.

Table 2 : Charred cereals and crop weeds

Taxa are represented by fruits or seeds unless otherwise indicated.

Abbreviations: af-awn fragments; ca-caryopsis; cn-culm node; fr-fragments gb-glume bases; p-plumile and primary root fragments; ri-rachis internode; spb-spikelet base; spf-spikelet fork; tspf-terminal spikelet fork.

Notes:
- (a) All brittle-rachis type
- (b) Fragmentary glume bases and specimens with widths + venation patterns intermediate between T.spelta and T.dicoccum
- (c) Lacking internodes and most of glume base
- (d) From lateral spikelet
- (e) No testas
- (f) Cotyledons and embryo only
- (g) Fragment of ridged tissue between ribs
- (h) Small indeterminate grass caryopses

Sample No.		13	14	15/20	16	17
Context		1013	1008	1000	1008B	1002
Feature-type		Pit	Vessel	Vessel	Pit	Pit
Provisional dating		Roman	Iron Age	BA/IA	Iron Age	Roman
Indeterminate cereals	ca+fr	4	-	-	12	22
	p	-	-	-	-	-
	ri	-	-	-	-	-
	cn	-	-	-	-	-
Triticum sp.	ca	-	1	1	3	12
	ri(a)	1	-	-	3	2
	gb(b)	2	1	2	29	9
	spf	-	-	-	-	1
	spb(c)	1	-	-	3	4
	af	-	-	-	+	-
Triticum dicoccum Schübl.	gb	-	1	-	9	4
	spf	2	-	-	-	10
	tspf	-	-	-	-	-
Triticum spelta L.	gb	2	-	-	8	2(?)
	spf	-	-	-	1(?)	1(?)
Hordeum sp.	ca	-	-	-	2	6
	ri	1 fr	-	-	-	1
Hordeum vulgare L.	ca(d)	-	-	-	-	-
Avena sp.	af	-	-	-	+	-
Caryophyllaceae indet.		-	-	-	-	-
Chenopodium album L.		12	-	-	-	1
Chenopodiaceae indet.	(e)	-	-	-	2	-
Leguminosae indet.		-	-	-	-	1
Polygonum aviculare agg.		-	-	-	-	-
Polygonum convolvulus L.		-	-	-	-	1
Rumex sp.		-	-	-	-	-
Rumex acetosella agg.		-	-	-	-	-
Polygonaceae indet.	(f)	-	-	-	-	-
Plantago lanceolata L.		-	-	-	1	-
Anthemis cotula L.		-	-	-	-	-
Tripleurospermum maritimum (L)	(g)	-	-	-	1	-
Eleocharis sp.		-	-	-	-	-
Gramineae indet.	(h)	-	-	20	6	2
Bromus mollis/secalinus		-	-	-	1 fr	-
Indeterminate		1	-	9	6	5
Sample weight (kg)		13.3	0.6	2.8	5.1	17.0

Table 2 : Charred cereals and crop weeds

19	21	28	28	28	28	28
1035	1044	1036(0-10cm)	1036(10-20cm)	1036(20-25cm)	1036(25-35cm)	1036(35-40c
Pit	Pit	Ditch	Ditch	Ditch	Ditch	Ditch
Roman	Saxon	Roman	Roman	Roman	Roman	Roman
8	15	2	1	6	2	1
-	-	1	-	-	-	-
-	1	-	-	-	-	-
-	-	-	1	-	-	-
-	-	-	2	-	-	1
1	-	-	2	2	3	2
-	12	5	10	12	4	8
-	-	-	-	-	-	-
1	3	-	-	-	2	7
-	-	-	-	-	+	-
-	7	-	-	-	-	-
-	3	-	-	-	-	-
-	-	-	-	-	-	-
-	6	3	6	6	5	6
-	-	-	-	-	-	-
-	1	-	-	-	1	-
-	-	-	-	-	-	-
-	-	-	-	-	-	1
-	-	-	-	-	+	-
-	5	-	-	-	-	-
-	-	-	-	-	-	-
-	1	-	-	-	-	-
1	2	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	1	-	-	-	1	-
1	-	-	-	-	-	-
-	-	1	-	-	-	-
-	-	-	-	-	-	-
-	-	-	1	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	2	-	1
-	-	-	-	-	1	-
-	2	-	-	-	-	-
6.8	7.5	3	3	2.1	3	3

The agricultural activities represented by such thin scatters of charred cereal remains are difficult to determine: such scatters could be produced by crop processing activities or even possibly by stubble-burning.

(b) Land molluscs

Central column samples were taken from ditches 0641 and 1036 specifically for the extraction of land molluscs, (samples 27 and 28), and the sieved residues from the larger bulk samples were also inspected for shells. Apart from a few Zonitids, from the cremation 0021 (sample 9) which are thought to be intrusive, the only species observed was *Cecilioides acicula*, though a few large Helicids (*Helix* and *Cepaea*) were picked out from the soil during excavation. It thus appears that, although features at the site are cut into calcareous brickearth, their fills are decalcified to an extent that only larger mollusc shells will, in general, survive.

Small land mollusc shells were, however, recovered from an unexpected source: from the sediment encrusting marine mollusc shells from contexts 0645 and 1150 (Table 3). It appears that these shell deposits would originally have provided an unusual micro-habitat for land snails and slugs. Before the interstices between these shells were filled with unwashed sediment they would have formed a ramifying system of cavities presenting a humid base-rich micro-habitat. The decaying remnants of marine molluscs within these shells would have provided a food source for facultative carnivores such as *Oxychilus* sp. and *Vitrina pellucida*. Subsequently the concentration of shell in these contexts evidently maintained base-rich conditions and permitted the survival of small land mollusc shells.

Although this is of some interest in terms of molluscan ecology, it is of no value for the reconstruction of wider environmental conditions since these deposits are clearly atypical. It must unfortunately be concluded that survival of small shells at this site will be an unusual event. Possible sources of information are sediments underlying dumps of marine shell; here it is possible that leaching from the overlying refuse layer would maintain base-rich conditions. Elsewhere continued sampling for land molluscs is not thought to be worthwhile.

Context No.	0645	1150
Cochlicopa sp.	-	3
Vallonia costata (Müller)	-	2
Vallonia excentrica Sterki	-	2
Vallonia sp.	4	-
Cecilioides acicula (Müller)	4	1
Cepaea sp.	1	1 + frags
Trichia hispida (Linné)	2	5
Oxychilus sp.	6	-
Vitrina pellucida (Müller)	1	3
Limacid plates	2	-
Arionid granules	+	-

Table 3 : Land molluscs associated with marine mollusc deposits

(c) Other faunal remains

Several samples produced small indeterminate fragments of mammal bone, as well as rare amphibian and small mammal bone. Fish bone was not seen in any of the soil samples, although 0645, which consisted almost entirely of Cerastoderma valves, produced a few small fishbone fragments when these shells were washed.

3. Marine molluscs

Shells have been collected from a number of contexts for identification and counting, but many of these contexts are, as yet, undated. It is therefore not possible, at this stage, to make use of these counts to follow changes through time in the relative importance of different species. In this report large deposits of oyster valves from three Roman contexts (1036, 1150, 1150B) are compared with shells from the medieval enclosure ditch (0603A), described in the first interim report.

(a) Shell size

Measurements were made of hinge-gape dimensions for a maximum of 100 left and right valves from each context. The results are given in Table 4 and in Figs. 1-2 in histogram form. The Roman oysters have mean sizes some 20mm greater than the medieval specimens. Mean shell size is very similar for valves from the three Roman contexts, and the three distributions of shell size appear, on simple visual comparison, to be almost identical. Size range for the Roman oysters seems greater than for medieval shells, but this may merely be related to sample size.

(b) Associated organisms

The Roman shells show a similar range of encrusting and boring organisms to the medieval shells: Bryozoa, *Clione*, *Balanus*, *Polydora* and *Ostrea* spat. *Polydora* infestation seems more severe in the Roman shells, but this is not easily quantifiable.

(c) Attachment

In contrast to specimens from the medieval enclosure ditch very few (less than 1%) of the *Ostrea* left valves from Roman contexts are attached to shells other than dead oyster shells (Table 5).

(d) Discussion

Shells from cultivated (or at least managed) oyster beds might be expected to show several features distinguishing them from shells from natural beds:

1) A higher intensity of exploitation in managed beds would result in smaller mean shell size, since fewer individuals would survive to full maturity.

2) Shells from artifically-laid beds would have a narrow age-range and hence size-range.

3) In natural populations the oyster lower valves would mostly be attached to dead oyster valves and other solid substrates. In cultivated beds artificial deposition of material to form firm substrates for attachment would be necessary where the bottom was soft or muddy. This would obviously be detectable only if shells other than oyster valves were used for this purpose.

There are clear differences between the Roman and medieval shells with respect to two of these features. The medieval shells are smaller than the Roman shells, and this mean size difference (*c.* 20mm) is much greater than differences in mean size between the deposits of Roman shells (*c.* 2mm). Furthermore, less than 1% of the Roman oyster lower valves are attached to shells of other species, compared with 23.9% of the medieval oyster lower valves. On this evidence there is reason to believe than the medieval oysters came from a more heavily exploited and managed population. The apparent differences in size ranges between the medieval and Roman shells may, however, not be significant and certainly by visual comparison of the histograms no clear differences in the distributions of shell size can be

Context	Date	Mean hinge-gape (mm)		Range (mm)		No. measured	
		Left valve	Right valve	Left valve	Right valve	Left valve	Right valve
0309A	Medieval	58-79	58-01	42-103	40-101	62	57
1036	Roman	82-14	75-00	58-107	28-105	88	96
1150	Roman	80-32	77-67	39-108	45-110	100	100
1150B	Roman	80-57	75-73	30-119	27-111	100	100

Table 4 : Oyster valve dimensions

Context	Date	Ostrea/Indeterminate	Cerastoderma	Mytilus	Littorina	? Venerupis
0309A	Medieval	86 (76.1%)	21 (18.6%)	3 (2.7%)	1 (0.9%)	2 (1.8%)
1036	Roman	133 (99.2%)	-	1 (0.8%)	-	-
1150	Roman	212 (100%)	-	-	-	-
1150B	Roman	207 (99.5%)	-	1 (0.5%)	-	-

Table 5 : Oyster lower valve attachment

seen. There is thus no evidence at present to suggest that the medieval beds had been artifically stocked with young oysters of similar age.

Conclusions and prospects for future work

For two main reasons the samples examined so far have been less informative than had been hoped:

1. The fills of features at the site are partly decalcified, and land mollusc preservation is poor. This largely rules out the main source of palaeoecological information to be expected on such dry, originally calcareous deposits. A possible source of land molluscs would be deposits subsequently sealed by dumps of marine shell: in the circumstances such layers will be well worth looking for and sampling.

2. Concentration of biological remains. The medieval ditch samples contained large quantities of material, since this feature was directly adjacent to a settlement area. By contrast the prehistoric Roman and Saxon features sampled contain much less material. Continued sampling of such deposits is unlikely to produce significantly new information; but as excavation proceeds towards more densely settled areas sampling should be more productive.

These considerations do not apply to the examination of cremations. It seems that Iron Age and earlier cremations provide a useful source of information about crop plants besides their obvious content of human skeletal remains and therefore continued study of these will be worthwhile.

The results from study of the marine molluscs, indicating interesting differences between the Roman and medieval assemblages, justify further collection and examination of shell, particularly large deposits of shell.