

Palaeoecology Research Services

**Evaluation of biological remains from excavations at  
Site R<sub>3</sub>, Island Wharf, Hull Marina, Kingston upon Hull  
(site code: HUM2002)**

by

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**Summary**

*Eight sediment samples, one box of hand-collected shell, and two boxes of hand-collected bone, recovered from excavations of deposits of 17<sup>th</sup> to 19<sup>th</sup> century date and some ?natural alluvial deposits, at Site R<sub>3</sub>, Island Wharf, Hull Marina, Kingston upon Hull, were submitted to PRS for an evaluation of their bioarchaeological potential.*

*Plant remains preserved by charring or in an uncharred state were present in modest numbers in some of the deposits and, where present, the invertebrates agreed well with the evidence from the plant remains. Analysis of the supposed natural alluvium has shown that whilst some of it may well have formed without any input from human activity, other deposits (e.g. Context 2055) certainly contain some occupation waste, so that they either formed where waste was being deposited into the Humber or the deposit is not natural alluvium in a strict sense.*

*The bias of the small hand-collected shell assemblage towards edible taxa, together with the oyster valves showing evidence of having been opened using tools, strongly suggests that these remains derived almost exclusively from human food waste.*

*The small vertebrate assemblage was dominated by cattle and caprovid remains, with pig and dog bone fragments also identified.*

*Although these deposits did not yield plant and invertebrate assemblages of high interpretative value, further excavation at this site should certainly be accompanied by an appropriate schedule of sampling. If material from well-dated primary contexts were encountered, then further assessment of plant and invertebrate remains could afford an opportunity for the study of past activity in this area. If the dating and integrity of the deposits can be ascertained, then a basic archive should be recorded for the current bone and shell assemblages for the purposes of synthesis and comparison.*

**KEYWORDS:** SITE R<sub>3</sub>; ISLAND WHARF; HULL MARINA; KINGSTON UPON HULL; EVALUATION; ?NATURAL (PRE-OCCUPATION) DEPOSITS; POST-MEDIEVAL; MID 17<sup>TH</sup> CENTURY; EARLY MODERN; 19<sup>TH</sup> CENTURY; PLANT REMAINS; CHARRED PLANT REMAINS; INVERTEBRATE REMAINS; SHELLFISH; OYSTER (*OSTREA EDULIS* L.); VERTEBRATE REMAINS

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## Evaluation of biological remains from excavations at Site R<sub>3</sub>, Island Wharf, Hull Marina, Kingston upon Hull (site code: HUM2002)

### Introduction

An archaeological evaluation excavation was carried out by Humber Field Archaeology at Site R<sub>3</sub>, Island Wharf, Hull Marina, Kingston upon Hull (NGR TA 0965 2807), in late August and early September 2002.

Eight sediment samples ('GBA'/'BS' *sensu* Dobney *et al.* 1992), a single box of hand-collected shell, and two boxes of hand-collected bone, were recovered from the deposits revealed by two trenches. All of the material was submitted to PRS for an evaluation of its bioarchaeological potential.

Provisional stratigraphic and ceramic evidence suggested the following phases.

- Phase 1: pre-occupation, ?natural deposits
- Phase 2: post-medieval, second quarter of the 17<sup>th</sup> century
- Phase 3: early 19<sup>th</sup> century, associated with dock construction
- Phase 4: ?19<sup>th</sup> century

### Methods

#### *Sediment samples*

The sediment samples were inspected in the laboratory. Six were selected for evaluation and their lithologies recorded, using a standard *pro forma*, prior to processing, following the procedures of Kenward *et al.* (1980; 1986), for recovery of plant and invertebrate macrofossils.

The flots, washovers and residues resulting from processing were examined for plant and invertebrate macrofossils. The residues were examined for larger plant macrofossils and other biological and artefactual remains.

Recovered artefacts were returned to the excavator.

#### *Hand-collected shell*

A single box of hand-collected shell (representing material from 9 contexts) was submitted. Brief notes were made on the preservational condition of the shell and the remains identified to species where possible.

For oyster (*Ostrea edulis* L.) shell additional notes were made regarding: numbers of left and right valves; evidence of having being opened using a knife or similar implement; evidence of fresh breakage; measurability of the valves; damage from other marine biota (polychaet worms and dog whelks); encrustation by barnacles.

#### *Hand-collected vertebrate remains*

For the hand-collected vertebrate remains that were recorded, data were entered directly into a series of tables using a purpose-built input system and *Paradox* software. Records were made concerning the state of preservation, colour of the fragments, and the appearance of broken surfaces ('angularity'). Other information, such as fragment size, dog gnawing, burning, butchery and fresh breaks, was noted, where applicable.

Fragments were identified to species or species group using the PRS modern comparative reference collection. The bones which could not be identified to species were described as the 'unidentified' fraction. Within this fraction fragments were grouped into a number of categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal (assumed to be

caprovid, pig or small cervid), unidentified bird and totally unidentifiable.

## Results

### *Sediment samples*

The results are presented in context number order by period. Archaeological information, provided by the excavator, is given in square brackets. A brief summary of the processing method and an estimate of the remaining volume of unprocessed sediment follows (in round brackets) after the sample numbers.

PRE-OCCUPATION – ?NATURAL DEPOSITS (PHASE 1)

#### **Context 1044** [?natural alluvium]

Sample 4/T (3 kg sieved to 300 microns with paraffin flotation; no unprocessed sediment remains)

Just moist, light to mid grey-brown to mid grey, stiff to crumbly (working soft), silty clay sand (locally more clay). There were no obvious inclusions in the sample.

There was a tiny residue of about 50 cm<sup>3</sup> of sand and gravel with traces of marine and freshwater/estuarine/saltmarsh snails and bivalves, and a single fragment of bone (identified as a water vole (*Arvicola terrestris* (L.)) tooth fragment. The identified shell remains included *Hydrobia ulvae* (Pennant) (saltmarsh), ?Baltic Tellin (*Macoma ?balthica* (Linnaeus) – estuaries/mudflats), flat periwinkle (*Littorina obtusata* (L.) – on large brown seaweeds) and cockle (*Cerastoderma edule* (L.) – inter-tidal in sand).

The small washover was of about 30 cm<sup>3</sup> of fine plant detritus, the coarsest being very thin flaky wood fragments, all with an extremely rounded, worn appearance, perhaps indicating that it had been water-transported before deposition. The few identifiable (uncharred) plant remains included at least two salt-marsh taxa, *Suaeda maritima* (L.) Dumort. (annual seablite) and *Triglochin maritima* L. (sea arrowgrass) with a few other taxa consistent with grassland close to an estuary – overall, agreeing with the archaeological interpretation that this was natural alluvium.

The small flot consisted mainly of ‘flaky’ plant detritus and some insect remains, which were mostly very fragmented. There were also a few mites, and ostracods, and a single foraminiferan (indicating at least slight marine influence at some time). The insects indicated various open-air habitats, aquatic, waterside

and terrestrial. There were hints of grazing land from *Aphodius* species, the chafer *Phyllopertha horticola* (Linnaeus), and some species which feed on herbaceous plants (including clovers or vetches and crucifers). There were no species typical of human occupation sites.

#### **Context 2055** [?natural alluvium]

Sample 6/T (3.2 kg sieved to 300 microns with paraffin flotation; no unprocessed sediment remains)

Moist, light to mid brown to light to mid grey-brown (internally), stiff (working soft and slightly plastic), silty clay (to clay silt). There were no obvious inclusions in the sample.

The tiny residue consisted of a few cm<sup>3</sup> of cinder (to 5 mm in maximum dimension) with some brick/tile (to 2 mm) and herbaceous detritus including a few seeds, amongst which were some charred plant fossils suggesting the presence of material derived from burnt hay – *Ranunculus* Section *Ranunculus* (buttercup) and *Prunella vulgaris* L. (self-heal) and uncharred material suggesting unburnt straw – *Scandix pecten-veneris* L. (shepherd's needle), *Chrysanthemum segetum* L. (corn marigold) and *Agrostemma githago* L. (corncockle). There was clearly a component of organic occupation waste in this deposit so if it was naturally formed alluvium it must have acquired some waste from the nearby town as it formed. The rather large flot contained further cinder and ‘char’ (undense, black, often vesicular material presumed to have originated from the bituminous exudate formed during burning of coal) and some herbaceous detritus.

There were very few insects in the flot, and no other invertebrates were seen. The beetles and bugs included species from a range of terrestrial and aquatic habitats, perhaps a very small subset of the remains seen in the sample from Context 1044. In this case, however, and in accord with the botanical evidence, there was evidence of waste from human occupation (in the broad sense) in the form of the grain beetles *Oryzaephilus ?surinamensis* (Linnaeus) and *Sitophilus granarius* (Linnaeus). There were no other synanthropic forms to give any indication of the source of these pests.

#### **Context 2059** [?natural alluvium]

Sample 5/T (2.6 kg sieved to 300 microns with washover; no unprocessed sediment remains)

Moist, mid brown, brittle to crumbly (working plastic), clay, with some dark grey patches (perhaps of charred material), and small stones (2 to 6 mm) present.

This sample yielded a very small residue of about 20 cm<sup>3</sup> of sand, and gravel, with a trace of marine and land snail shell fragments and bone, though the coarsest components were cinders (to 20 mm); there was also a little coal. Two amphibian bones and five other fragments of unidentified bone were recovered from this sample.

The very small washover of a few cm<sup>3</sup> was of coal and 'char' with a few snails (including *Oxychilus ?cellarius* (Müller), *Vallonia* sp., and *Discus rotundatus* (Müller)) and woody root fragments.

#### POST-MEDIEVAL – SECOND QUARTER 17<sup>TH</sup> CENTURY (PHASE 2)

**Context 2028** [material for construction of sea wall, 17<sup>th</sup> century]

Sample 9/T (2.25 kg sieved to 300 microns with washover; no unprocessed sediment remains from this sample but all of Sample 8, approximately 2 litres, from the same context is unprocessed)

Moist, mid orange-brown to mid grey-brown, brittle to crumbly (working soft), clay silt. Fragments of mortar/plaster and stones (2 to 60 mm) were present, and charcoal (both very fine and as small fragments) was common, in the sample.

The large residue of about 400 cm<sup>3</sup> comprised rounded and angular chalk gravel (to 45 mm), Triassic sandstone (to 15 mm), with some fragments of oyster shell, mortar, cinder and sand. There was also a large washover of a further 300 cm<sup>3</sup> which was almost pure 'char', coal and charcoal, with a little cinder; the charcoal was often rather rounded and perhaps therefore reworked.

#### EARLY MODERN – EARLY 19<sup>TH</sup> CENTURY (PHASE 3)

**Context 1046** [dump/?demolition rubbish, early 19<sup>th</sup> century]

Sample 2/T (3 kg sieved to 300 microns with paraffin flotation; approximately 12 litres of unprocessed sediment remains)

Moist, mid grey-brown to mid grey, crumbly (working soft), ?ashy, slightly sandy clay silt, with a little fine and coarse herbaceous detritus. Stones (6 to 20 mm), fragments of clay pipe, and large mammal bone were present in the sample

There was a large residue of about 450 cm<sup>3</sup>, mainly cinder (to 15 mm) and brick/tile (to 35 mm), with some coal, grit, bone, shell fragments (unidentifiable except for one ?*Oxyloma pfeifferi* (Rossmässler)), clay pipe and other ceramic fragments, and sand. The small

assemblage of bone amounted to 49 fragments. Twelve bones were burnt, including a ?haddock (cf. *Melanogrammus aeglefinus* (L.)) vertebra. Other fish vertebrae were identified as eel (*Anguilla anguilla* (L.)), herring (*Clupea harengus* L.) and ?pike (*Esox lucius* L.). Most fragments were less than 10 mm in dimension and only the fish remains were identifiable.

The small washover of about 30 cm<sup>3</sup> consisted of herbaceous detritus (perhaps mainly root bark/epidermis) but also some coal and cinders. There were a few moderately well-preserved uncharred seeds, mainly of weeds (especially *Stellaria media* (L.) Vill., chickweed) and *Carex* (sedges); the archaeological record for *Euphorbia peplus* (petty spurge) is a rather rare one (though the plant is common enough as a weed of waste places and cultivated ground today).

The small flot contained 'char', cinders, a few unidentified snail fragments, and a few, poorly preserved, scraps of insect cuticle.

**Context 2019** [dump/?demolition rubbish, early 19<sup>th</sup> century]

Sample 7/T (2 kg)

Moist, mid brown to mid grey-brown, crumbly (working soft and slightly sticky), clay silt, with some occasional black patches (of ?very decayed organic material) and some stones (6 to 60 mm).

This sample gave a large residue of about 300 cm<sup>3</sup> of cinders (to 35 mm) and some coal, sand, some shell fragments (including one ?cockle hinge fragment), and 17 fragments of bone. Most of the bones were unidentifiable and less than 20 mm in any dimension. Identifiable fragments included elements of amphibian and ?hedgehog (cf. *Erinaceus europaeus* L.).

The small washover of about 60 cm<sup>3</sup> was of cinders, 'char' and woody and herbaceous root fragments. Some of the uncharred seeds present were very pale in colour but are not thought necessarily to be of recent origin. One seed of the genus *Veronica* on the other hand was very dark (stained with iron sulphide?); it was of a kind likely to be relatively recently arrived in Britain – but probably not inconsistent with the early 19<sup>th</sup> century date. The traces of birch fruits present, however, seemed to be recent since their embryos were full. There was clearly some food waste in this sample, given the presence of modest numbers of seeds of *Rubus idaeus* L. (raspberry) and rare remains of *Ficus carica* L. (fig), *Rubus fruticosus* agg. (blackberry) and perhaps *Apium graveolens* L. (celery). There was a further record for *Euphorbia peplus*, along with a modest group of other weed taxa.

### *Hand-collected shell*

Hand-collected shell was recovered from 9 contexts. Preservation was, in general, very good. All of the material was evaluated and the taxa identified as closely as possible.

Most of the recovered shell was of edible shellfish from 19<sup>th</sup> century or ?19<sup>th</sup> century (Phases 3 and 4) deposits. Oyster was, by far, the most commonly represented species with only trace representations of other marine taxa (mussel – *Mytilus edulis* L., cockle, and ?edible crab – ?*Cancer pagurus* L.)

The oyster shell was, on the whole, very well-preserved (approximately 86% of the valves could be identified as either left or right valves). Also, 43% of the valves for which 'side' could be determined were measurable (though measurements were not taken as part of this evaluation). Evidence of the oysters having been opened using a knife or similar implement (as shown by 'V'- or 'W'-shaped notches on the shell margins) was noted on 27% of the valves. Fresh breakage was noted on 14% of the valves and this may have obscured any damage from opening in some cases. Some damage to the valves (polychaet worm burrows/tubes) and encrustation (barnacles) by other marine biota was noted.

The few hand-collected land snail remains (Context 1032) were of *Helix ?aspersa* Müller (the 'garden snail'); a highly eurytopic species of no value in interpreting ecological conditions on the site, beyond indicating the availability of at least modest amounts of calcium carbonate (perhaps provided by the decomposing shellfish remains).

The results for the hand-collected shell are summarised in Table 1.

### *Hand-collected vertebrate remains*

Hand-collected vertebrate remains, amounting to 332 fragments, were recovered from eleven deposits, most of which were of 19<sup>th</sup> century (Phase 3) or ?19<sup>th</sup> century date (Phase 4). Only one of the deposits assigned to Phase 2 (mid 17<sup>th</sup> century) produced bone (Table 2). The bulk of the vertebrate assemblage was recovered from Phases 3 and 4 and was believed to represent dumping behind the sea wall to reclaim low-lying land.

Preservation of the remains was mostly recorded as 'good'. Only a few deposits (Contexts 1024, 1046, 2019 and 2028) contained material that was poorly preserved and rather eroded, but this was largely

restricted to fragments recovered from the samples. Bones within several deposits showed some variation in colour, which was particularly noticeable in the assemblages from Contexts 1019, 1021 and 1032. Fresh breakage damage and evidence of dog gnawing was negligible. Although butchery was not extensive, a few large and medium-sized mammal vertebrae had been chopped longitudinally, indicative of the splitting of carcasses into sides. Additionally, split cattle long bones from Contexts 1032 and 1036 and a number of heavily chopped cattle pelvises from Contexts 1021 and 1036 were noted. Context 1021 also produced a sheep skull fragment which had been split sagittally, and there was evidence of the removal of the horncores. Sheep, mainly ram, horncores were prevalent from Context 1032. All showed evidence of removal from the skull, most had been chopped through the base of the core.

The range of identified species recovered from the excavations is shown in Table 3. Quite a large component of the vertebrate assemblage was unidentified to species but represented large and medium-sized mammals. Identified remains included cattle and caprovid, with pig also represented but to a lesser extent.

An examination of the skeletal elements present in the assemblage for cattle and caprovid suggested the presence of both primary and secondary butchery waste. Domestic refuse, in the form of meat-bearing elements, was also noted. The concentration of horncores from Context 1032 and the evidence of their removal from the rest of the skull could indicate the deliberate collection of horn for craft activities.

A few bird bones were also present, these being identified as chicken, goose (*Anser* sp.) and duck (*Anas* sp.). In addition, single fragments of rabbit (*Oryctolagus cuniculus* (L.) from Context 1008 and ling (*Molva molva* (L.)) were recorded. A part skeleton of a small dog, including elements from both the front and back legs, was recovered from Context 2054. The cause of death was not apparent from the bones.

Twenty-seven measurable fragments and five mandibles with teeth *in situ* were available for the provision of age-at-death and biometrical data.

## **Discussion and statement of potential**

### *Sediment samples*

Plant remains preserved by charring or in an uncharred state were present in modest numbers in some of the deposits, but the nature of the contexts is such that this material

is probably not deserving of further analysis. Where present, the invertebrates agreed well with the evidence from the plant remains, though the remains themselves were rather sparse and their preservation often poor.

Analysis of the supposed natural alluvium has shown that whilst some of it may well have formed without any input from human activity, other deposits (e.g. Context 2055) certainly contain some occupation waste, so that they either formed where waste was being deposited into the Humber or the deposit is not natural alluvium in a strict sense.

#### *Hand-collected shell*

The bias of the hand-collected shell towards edible taxa, together with the oyster valves showing evidence of having been opened using tools, strongly suggests that these assemblages derive almost exclusively from human food waste. Only the oyster remains have any potential for obtaining additional information of use in site interpretation.

From current evidence, the oysters could only have been imported to the site from the Kent, Essex or Suffolk coasts or the Firth of Clyde (Winder 1992 and pers. comm.). However, Kenward (1998) has speculated that exploitation of local (but as yet unlocated) oyster beds may well have been more widespread along the east coast of England.

#### *Hand-collected vertebrate remains*

Deposits from Hull Marina yielded a small assemblage of bone, most of the material being recovered from those of early modern date. Generally, preservation of the vertebrate remains was good, although some of the assemblages contained fragments that were rather eroded and battered in appearance. It seems likely that the material recovered derived from a number of sources including both butchery and domestic refuse, with a small component which may represent waste

from horn working. The rather eroded fragments may be indicative of redeposited material. Assemblages of this date are few, and rarely collected or reported upon. Information obtained from vertebrate assemblages of this period provides the opportunity for comparison between many sources of data and aids our understanding of continuity and change.

### **Recommendations**

Although these deposits did not yield plant and invertebrate assemblages of high interpretative value, further excavation at this site should certainly be accompanied by an appropriate schedule of sampling. If material from well-dated primary contexts were encountered, then further assessment of plant and invertebrate remains could afford an opportunity for the study of past activity in this area.

If the dating and integrity of the deposits can be ascertained, then a basic archive should be recorded for the current shell and vertebrate assemblages. These remains clearly show the potential of the deposits in this area for preserving both shell and bone, and this should be borne in mind if further excavation is undertaken.

### **Retention and disposal**

The current material should be retained for the present.

### **Archive**

All material is currently stored by Palaeoecology Research Services (Unit 8, Dabble Duck Industrial Estate, Shildon, County Durham), along with paper and electronic records pertaining to the work described here.

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Table 1. Hand-collected shell by context from deposits revealed by excavations at Site R3, Island Wharf, Hull Marina. **Key:** Context (P) – context number (Phase); e – erosion; f – fragmentation; r – right; l – left; i – indeterminate side; kn – number of valves showing evidence of having been opened with a knife or similar implement; worm – number of valves showing polychaet worm burrowing; dog – number of valves showing evidence of boring by dog whelks; barn – number of valves bearing barnacles; fresh – number of valves showing damage from fresh breakage; meas – number of measurable valves; frag – fragment.

Context (P)	Numbers of oyster valves					Weight of oyster valves(g)			Additional details for oyster valves						Other marine	Other
	e	f	r	l	i	r	l	i	kn	worm	dog	barn	fresh	meas		
1019 (4)	2	1	15	13	6	415	490	80	9	1	0	4	5	8	Mussel valves x 2 Cockle valve x 1 ?edible crab x 1 (claw frag)	-
1021 (4)	1	1	30	47	10	930	2150	110	26	9	0	6	12	42	Mussel valves x 9 Cockle valves x 3	-
1024 (4)	2	1	5	4	2	150	180	25	3	1	0	0	3	6	-	-
1032 (3)	1	2	3	0	2	70	0	10	2	1	0	0	1	0	Mussel valve x 1 Cockle valve x 1 (frag)	<i>Helix ?aspersa</i> x 2 (1 as apex frag only)
1033 (4)	2	1	1	0	0	25	0	0	0	0	0	0	1	0	-	-
1036 (3)	1	1	14	9	4	450	330	70	11	5	0	1	5	16	Cockle valves x 2	-
1046 (3)	1	3	0	0	3	0	0	20	-	-	-	-	-	-	Cockle valve x 1	-
2019 (3)	1	1	3	2	1	40	200	20	3	1	0	0	1	3	Mussel valve x 1 Cockle valve x1	-
2028 (2)	2	3	0	0	1	0	0	8	-	-	-	-	-	-	Cockle valve x 1	-
Totals			98	75	29	2080	3350	343	54	18	0	11	28	75		

Table 2. List of contexts, with dates and phases, from which vertebrate remains were recovered, including the total number of fragments, the number of mandibles with teeth in situ (No. mands), and the number of measurable fragments (No. meas.), for Site R<sub>3</sub>, Island Wharf, Hull Marina.

Context	Sample	Total fragments	No. mands.	No. meas.	Phase	Date
1008		1	0	0	3	E19 <sup>th</sup> C
1019		52	0	4	4	?19 <sup>th</sup> C
1021		102	2	12	4	?19 <sup>th</sup> C
1024		10	1	0	4	?19 <sup>th</sup> C
1032		79	1	4	3	E19 <sup>th</sup> C
1033		3	0	1	4	?19 <sup>th</sup> C
1036		24	0	2	3	E19 <sup>th</sup> C
1044	4/T	1	0	0		Pre-occupation
1046		20	1	0	3	E19 <sup>th</sup> C
1046	2/T	49	0	0	3	E19 <sup>th</sup> C
2019		19	0	0	3	E19 <sup>th</sup> C
2019	7/T	17	0	0	3	E19 <sup>th</sup> C
2028		11	0	0	2	mid 17 <sup>th</sup> C
2028	9/T	10	0	0	2	mid 17 <sup>th</sup> C
2054		11	0	4	3	E19 <sup>th</sup> C
2059	5/T	7	0	0		Pre-occupation

Table 3. Hand-collected fragments by species and phase from deposits revealed by excavations at Site R<sub>3</sub>, Island Wharf, Hull Marina.

Species		2	3	4	Total
<i>Oryctolagus cuniculus</i> (L.)	rabbit	-	-	1	1
<i>Canis</i> f. domestic	dog	-	10	-	10
<i>Sus</i> f. domestic	pig	-	5	4	9
<i>Bos</i> f. domestic	cow	-	14	20	34
Caprovid	sheep/goat	3	41	29	73
<i>Anser</i> sp.	goose	-	1	-	1
<i>Anas</i> sp.	duck	-	-	1	1
cf. <i>Gallus</i> f. domestic	?fowl	-	-	1	1
<i>Gallus</i> f. domestic	fowl	-	1	2	3
<i>Molva molva</i> (L.)	ling	-	1	-	1
Unidentified		8	81	108	197
Unidentified bird		-	-	1	1
<b>Total</b>		<b>11</b>	<b>154</b>	<b>167</b>	<b>332</b>