

*Reports from the Environmental Archaeology Unit, York 98/25, 20 pp.*

**Assessment of biological remains from Sammy's Point, Hull  
(site code SPH98)**

by

John Carrott, Allan Hall, Paul Hughes, Deborah Jaques,  
Cluny Johnstone, Harry Kenward and Darren Worthy

**Summary**

*Thirty-seven sediment samples and single boxes of both animal bone and shell from excavations at Sammy's Point, Hull (within the area occupied by the 17th century Citadel), have been assessed for their bioarchaeological potential.*

*The insect remains from the site deserve further investigation, to provide information about the origins of the deposit (dumps or in-situ accumulation) ecological conditions and human activity, and as a source of information in future synthesis. No further work is recommended on the plant remains except as an adjunct to any studies of the insects. The small amount of shell recovered from the samples is of no interpretative value.*

*The hand-collected shell assemblage most probably derived from human food waste but has little potential for further interpretation of the deposits.*

*The hand-collected vertebrate assemblage consisted mostly of the remains of the major domestic species representing domestic refuse with a small component of primary butchery waste. A single fragment of boneworking waste was recovered from Context 84. The sieved assemblage contained a few fish remains in addition to mammalian and bird fragments, and was also indicative of domestic waste.*

KEYWORDS: HULL; CITADEL; POST-MEDIEVAL; ASSESSMENT; SEDIMENT SAMPLES; PLANT REMAINS; INVERTEBRATE REMAINS; MARINE SHELLFISH; SNAILS; BEETLES; VERTEBRATE REMAINS

Authors' address:

Palaeoecology Research Services  
Environmental Archaeology Unit  
University of York  
Heslington  
York YO10 5DD

Prepared for:

Humber Archaeological Partnership  
The Old School  
Northumberland Avenue  
Hull  
HU2 0LN

Telephone: (01904) 433846/434475/434487  
Fax: (01904) 433850

11 August 1998

## Assessment of biological remains from Sammy's Point, Hull (site code SPH98)

### Introduction

An archaeological excavation was carried out by the Humber Archaeology Partnership during May 1998 within the area of Hull occupied by the 17th century Citadel fortifications. Thirty-seven sediment samples and single boxes of animal bone (approximately 16.5 litres) and shell (approximately 8 litres) were presented for assessment.

Deposit dates (mostly from historical records) fall into four phases: pre-Citadel (pre 1681), construction of the Citadel (c. 1681), occupation up to demolition (1681-1865) and post-demolition (post 1865).

### Methods

#### *Sediment samples*

All thirty-seven sediment samples were inspected in the laboratory and descriptions of their lithologies recorded using a standard *pro forma*. On the basis of this inspection and information supplied by the excavator, 17 samples were chosen for further work. Subsamples were taken from six samples for extraction of macrofossil remains, following procedures of Kenward *et al.* (1980; 1986). The remaining eleven were bulk sieved for bone and finds recovery. Two 'SPOT' samples of wood (from Context 154) and fibres (from Context 73) were examined.

Table 1 shows a list of samples and notes on their treatment.

#### *Hand-collected shell*

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

#### *Vertebrate remains*

The vertebrate remains (from both the hand-collected and the sieved assemblages) were examined and a basic archive produced. A record was made of preservation, quantities (numbers and weights) and identifications where appropriate. Measurements were taken, where applicable, following von den Driesch (1976).

Fragments not identifiable to species were grouped into categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal (assumed to be caprovid, pig or small cervid), bird, and fish.

### Results

#### *Sediment samples*

The results of the investigations are presented in phase then context number order by trench. Samples for which no further analysis was undertaken are shown in Table 1 with a reference to the appropriate sample description.

## Trench 1

Phase 2 (c. 1681)—construction of the Citadel

### Context 72, Sample 1 [2 kg GBA]

A mixture of light brown to light blue grey, silty clay (alluvium) with granular to slightly layered dark brown to blackish mix of ?coal/ash/stable manure (or similar compressed plant material). Brick/tile, coal and clay pipe were present in this sample.

The moderately small flot and washover (10% of the original sample by volume) contained a limited assemblage of open waste ground weed species including oraches (*Atriplex* sp(p).), fat-hen (*Chenopodium album* L.), red goosefoot or a relative (*Chenopodium* Section *Pseudoblitum*), knotgrass (*Polygonum aviculare* agg.) and stinging nettle (*Urtica dioica* L.). The presence of significant quantities of *C.* Section *Pseudoblitum* may suggest that the sample came from an area containing organic-rich rubbish or manure, although some species in this group are found on saltmarshes. Wetland species were well represented in the sample. Fragments of stem/rhizome epidermis of common reed (*Phragmites australis* (Cav.) Trin. ex Steudel) were frequently encountered, accompanied by achenes of water crowfoot (*Ranunculus* Subgenus *Batrachium*), sedge nutlets (*Carex* sp(p).), and leaves of the bog moss *Sphagnum imbricatum* Russ. The wetland component of the sample very probably represents dumping of fen peat, a few small nodules of which were noted in the washover. Possible food remains were restricted to several small pieces of apple (*Malus sylvestris* Miller) endocarp (core).

The moderate-sized residue (20% of the original sample by volume) contained a mix of occupation debris including abundant clinker/cinder, occasional small fragments of coal, charcoal (to 5 mm), brick/tile, mortar and small pieces of burnt bone. Rounded pebbles (to 35 mm) were also present. Further small nodules of unburnt fen peat were found in the residue.

Insects were rather abundant in the flot, but although chemically well-preserved many were highly fragmented (identification of most still being possible, however). There were numerous resting eggs (ephippia) of *Daphnia* sp. water fleas. Aquatic habitats were also represented by insects: several

*Helophorus* (two species); *Ochthebius* sp. and a hydrophilid.

Nettles grew at the edge of the water (or perhaps were dumped), for there were large numbers of wings of the whitefly (psyllid) *Trioza urticae* (L.). Psyllid nymphs were numerous, too, and were probably of this species. A range of other bugs and beetles represented other outdoor habitats. Two species of dung beetle (*Aphodius*) were present. Species associated with human occupation were poorly represented (e.g. the spider beetle *Ptinus fur* (L.)).

Initially, it was hoped that the presence of *T. urticae* as both adults and nymphs would give some information on the season of deposition. *T. urticae* has at least three generations per year and is likely to occur as both adults and nymphs throughout the warm season (overwintering as adults), however.

### Context 72, Sample 2 [8 kg BS]

#### Description as Sample 1

The residue (1086 g) consisted mostly of sand, coal and clinker/cinders with small quantities of stones, brick/tile and compacted ash. Clay pipe fragments were the only finds present. Organic material included wood and charcoal fragments, large mammal and bird bone, shellfish (mostly unidentifiable fragments but including oyster (*Ostrea edulis* L.) and mussel (*Mytilus edulis* L.)), land snail (?*Helix* sp.) and beetle fragments.

Plant remains included oak charcoal (to 30 mm), hazel (*Corylus avellana* L.) nutshell, wood chip fragments (to 15 mm), and mineralised twig fragments (to 15 mm).

A total of 24 bone fragments (weighing 4.0 g) was recovered from this sample. Single elements of rabbit (*Oryctolagus cuniculus* (L.)), hare (*Lepus* sp.) and duck, possibly teal (*Anas crecca* L.), were identified together with 21 unidentified fragments (including a single burnt fragment).

A single water beetle (*Hydrobius fuscipes*) elytron was identified.

**Context 73 (west area), Sample 19 [9 kg BS]**

A moist mottled (oxidation/reduction), light grey brown to blue grey to brown, soft and plastic, silty clay. Chalk (angular gravel to 40 mm) and ?mortar/lime were present in this sample.

The residue (195 g) consisted mostly of stones, mortar, brick/tile, coal and cinders. The only find was a single piece of clay pipe. Organic debris included wood, charcoal, large mammal bone and shellfish.

A total of four unidentifiable bone fragments (weighing 0.4 g) was recovered, which included a bird shaft fragment.

**Context 73 (west area), Sample 20 [8 kg BS]**

Description as Sample 19 with additional granular coal or ?organic material.

The residue (211 g) contained mostly stones, sand, brick/tile, coal and clinker/cinders. Finds included pottery, mortar/plaster, glass, iron nail and clay pipe fragments. Organic debris included twigs, fruitstones, charcoal and large mammal bone.

Plant remains included charcoal (to 13 mm), hazel twigs and wild plum (*Prunus domestica* ssp. *insititia*) stones.

A total of four unidentifiable bone fragments (weighing 0.7 g) was recovered from this sample.

**Context 73 (north), Sample 30 [2 kg GBA]**

A mix of light grey brown to black silty clay (slightly micaceous alluvium with clear oxidation/reduction) and compressed, very dark brown to black, somewhat layered, organic material (?stable manure).

The flot from this sample produced an almost identical mix of weed seeds and wetland taxa to that from Sample 1/T from Context 72: weeds of rough open ground and others typical of organic rubbish and manure were present, as were taxa typical of fen peat. Several small nodules of fen peat were present in the washover.

The residue was also very similar in composition to that from Sample 1/T, containing a mixture of

clinker/cinder, coal, charcoal (to 5 mm), mortar and fen peat nodules. Macrofossils not found in Context 72 included rare fish scales, a single fragment of a corncockle (*Agrostemma githago* L.) seed, and small fragments of wood.

A fairly small assemblage of invertebrates was recovered. *Daphnia ephippia* were numerous, and there were several water beetles (*Helophorus* sp., *Ochthebius* sp. and *Limnebius* sp.) and a waterside bug (*Saldula* sp.), so the deposit seems to have formed in water. Dung beetles (*Aphodius granarius* (L.)) were present, as was the nettle-feeding psyllid bug *Trioza urticae* (L.). Species strongly associated with human occupation (synanthropes) were rare.

**Context 73, Sample 31 [SPOT]**

This spot sample contained probable animal fibres. They were not particularly well preserved but the 'hairs' were of variable thickness making them more likely to be from some domestic animal than human. The fibres were possibly wool but would need to be examined by a textiles specialist for further identification.

**Context 74, Sample 4 [2 kg GBA]**

A moist, very dark brown to black, crumbly, mixture of coal, ?ash and humic silt with a component of well-decayed slightly fibrous plant material. Brick/tile, coal (burnt), clay pipe stem, bark and large mammal bone (burnt) were present in this sample.

The principal plant macrofossils found in the moderately small flot/washover (10% of the original sample by volume) were monocotyledon detritus and the seeds of mud rush (*Juncus gerardi* Loisel.) which grows on saltmarshes. The rather limited weed seed assemblage, indicative of disturbed ground and wayside habitats, included thistles (*Cirsium/Carduus*), fat-hen, stinging nettle, dock (*Rumex* sp(p).), knotgrass, chickweed (*Stellaria media* (L.) Vill.), annual nettle (*Urtica urens* L.), hemlock (*Conium maculatum* L.), and wild carrot (*Daucus carota* L.). The last of these species is typical of grassy habitats, particularly near the sea. In common with samples 1/T and 30/T from Contexts 72 and 73 respectively, the sample contained a range of wetland taxa, though the number of species and the abundance of their remains was much more

restricted. In contrast to Contexts 72 and 73 there were no nodules of fen peat.

The large residue (40% of the original sample by volume) contained a mixture of occupation waste including abundant clinker/cinder and frequent pieces of unburnt coal (to 5 mm), charcoal (to 5 mm), angular pebbles (to 30 mm), brick/tile (to 35 mm), small pieces of mortar and occasional small fragments of burnt bone.

The flot contained abundant well-preserved insects. Most would have lived together in a mass of rather foul decomposing matter. There were several dung beetles (*Aphodius prodromus* (Brahm), *A. contaminatus* (Herbst) and at least one other). A few species represented plants, including nettles (the host of the weevil *Cidnorhinus quadrimaculatus* (L.)).

The dung beetles, *A. prodromus* and *A. contaminatus* have their main flight periods in spring and late summer/autumn, respectively. Again (as for Context 72), the season of deposition is unclear from the insect remains.

#### Context 74, Sample 5 [7 kg BS]

Description as Sample 4.

The residue (1717 g) contained mostly coal, clinker/cinders, brick/tile, sand and compacted ash. Clay pipe fragments were the only finds present. Organic debris included twigs, large and small mammal and burnt bone fragments, mussel and unidentified shell fragments (some burnt).

Plant remains included unidentifiable twigs and herbaceous stems, hazel nutshell and a single wild plum (*Prunus domestica* spp. *insititia*) stone.

A total of 96 bone fragments (weighing 8.1 g) was recovered from this sample. Two rabbit bones and a single lagomorph (rabbit/hare) tooth were recovered, together with a bird bone shaft, a fish scale, two unidentified fish fragments and 88 unidentified mammal bones (including a single burnt fragment).

#### Context 74, Sample 6 [7 kg BS]

Description as Sample 4.

The residue (1681 g) contained mostly coal, clinker/cinders, brick/tile, sand, compacted ash and stones. Finds included clay pipe fragments and iron nails. Organic debris included wood charcoal, nutshell, large mammal bone, fish scales, eggshell, snails and beetle fragments.

Plant remains included hazel nutshell, burdock (*Arctium* sp.) fruits, twigs (one mineralised) and charcoal (to 13 mm).

A total of 121 bone fragments (weighing 15.6 g) was recovered from this sample, including three fish scales, three unidentified fish fragments, a single acid-etched caprovid tarsal, three rabbit metapodials and 111 unidentified fragments.

A single dung beetle (*Aphodius* sp.) elytron was identified.

#### Context 122, Sample 25 [5 kg BS]

Lumps of light grey brown silty clay (probably alluvium) with some organic content in a matrix of granular coal and burnt ?coal/shell. The effects of oxidation/reduction processes were evident and some blue-grey/brown mottling (?gleying) was also noted.

The residue (1091 g) consisted chiefly of clinker/cinders, coal, brick/tile, sand, compacted ash and stones. Finds included clay pipe fragments, mortar/plaster, glass, leather scraps and iron objects. Organic debris included, wood, twigs, charcoal, nutshell, fruit stones, large mammal, fish and burnt mammal bone, eggshell and unidentified shell fragments.

Plant remains included charcoal (to 25 mm), plum (*Prunus domestica*) stones, hazel nutshell, thistle fruits, twigs (one mineralised) and wood fragments.

A total of 56 bone fragments (weighing 11.2 g) was recovered from this sample. A single sheep 3rd phalanx was recovered, together with a small mammal shaft fragment and 24 unidentified mammal fragments. Three fish scales (one pike *Esox lucius* L.), two herring (*Clupea harengus* L.) vertebrae, one pleuronectid vertebra, one gadid vertebra and 22 unidentified fish fragments were also recovered.

**Context 122, Sample 26 [2 kg BS]**

Description as Sample 25.

The most common plant macrofossils in the small flot/washover (5% of the original sample by volume) were seeds of *Chenopodium* Section *Pseudoblitum*, whose species grow on organic-rich rubbish or manure heaps. The sample also contained a significant quantity of herbaceous detritus, including the remains of legume petals, which may represent the hay component of stable manure. A mixed assemblage of weed seeds indicative of rough open ground and hedge or wayside margins was present including most of the weed taxa recorded from Contexts 72 to 74, though further species were noted including mouse-ear chickweed (*Cerastium* sp(p).), wild teasel (*Dipsacus fullonum* L.), hop (*Humulus lupulus* L.), daisy (*Bellis perennis* L.), stinking mayweed (*Anthemis cotula* L.), *Brassica* sp(p). and knapweed (*Centaurea* sp(p).).

Wetland taxa included mud rush, the bog moss *Sphagnum imbricatum* Russ., *Calliergon cuspidatum* (Hedw.) Kindb., common reed, and *Ranunculus* Subgenus *Batrachium*. Peat nodules were also found in the flot and washover. Remains of potentially 'useful' plants were restricted to several small pieces of apple endocarp.

Clinker/cinder formed the bulk of the moderately large residue (30% of the original sample by volume). Other occupation waste included a small amount of coal (to 25 mm), brick/tile, coarse quartz sand, a single glass fragment (to 18 mm) and a glazed pottery sherd. Food waste was represented by a single oyster shell and several small pieces of eggshell.

The small group of insects showed a clear human influence, but aquatic and terrestrial semi-natural habitats were well represented. Aquatics included a corixid bug (water boatman), the backswimmer *Notonecta ?glauca* L. and a hydroporine; a shorebug (Saldidae sp.) was also recorded. Human influence was revealed by a range of synanthropic species including the spider beetle *Tipnus unicolor* (Piller and Mitterpacher) and some species which may have exploited material of the consistency of stable manure.

A single medium-sized mammal rib was recovered.

**Context 154 [SPOT wood sample]**

This was a piece of wood approximately 130 mm in length, identified as pine (*Pinus* sp.).

**Trench 3***Phase 1—pre-1681***Context 330, Sample 13 [2 kg GBA, 5 kg BSXS]**

Moist, light brown to dark grey (and shades between), crumbly (working plastic - slightly sticky when wet), clay silt with traces of fibrous plant debris and patches of light brown sandy clay silt (alluvium). Very small and small stones (2-20 mm), brick/tile and coal were present.

Processing of this sample produced very little unburnt organic material. The large residue (40% of the original sample by volume) was mainly composed of clinker/cinder with a small quantity of brick/tile (to 5 mm), mortar (to 4 mm), charcoal (to 5 mm), coal (to 5 mm), coarse quartz sand, burnt bone fragments and occasional very degraded wood fragments. Other plant remains were restricted to seeds of a very limited selection of rough ground weeds and small quantities of common reed stem/rhizome epidermis.

The excess material (5 kg) was bulk sieved and the resultant residue (1052 g) consisted chiefly of brick/tile, clinker/cinders, coal and stones, with some sand also present. Finds included mortar/plaster, glass, iron nails and pins, and clay pipe fragments. Organic debris included wood, twigs, charcoal, nutshell, large, small and burnt mammal bone fragments, fish bone, unidentified shell fragments (most of which were probably of marine shellfish) and an unidentified land snail.

The plant remains included hazel nutshell fragments, twigs (to 14 mm), charcoal (to 10 mm), wood fragments (to 30 mm) and wood chips (to 27 mm).

A total of 22 bone fragments (weighing 5.4 g) was recovered from this sample, including the remains of eel (*Anguilla anguilla* (L.)), ?field vole (cf. *Microtus agrestis* (L.)) and 20 unidentified mammal bone fragments (including one burnt fragment).

**Context 334, Sample 17 [8 kg BS]**

Moist, dark grey brown, firm to crumbly and brittle (working sticky and plastic), very slightly humic, clay silt. Chalk gravel (to 30 mm), brick/tile and glazed pot were present.

The residue (1400 g) consisted mainly of clinker/cinders, coal, stones, sand and brick/tile. Finds included mortar/plaster scraps, glass, an iron nail, a copper alloy pin and clay pipe fragments. Organic debris included wood, charcoal, charred grain, seeds, large mammal and burnt bone fragments and unidentified marine shell fragments (some burnt).

The plant remains included wild carrot seeds, hazel nutshell fragments, wheat (*Triticum* sp.), twigs (to 12 mm), charcoal (to 12 mm) and wood fragments (to 17 mm).

A total of 29 bone fragments (weighing 6.4 g) was recovered. A single fish vertebra was noted, together with a rabbit mandible and 25 unidentified mammal bone fragments (including two burnt fragments).

**Context 337, Sample 34 [10 kg BS]**

Moist, mid slightly grey brown, stiff and brittle (working granular - sticky and plastic when wet), silty clay. Very small to medium-sized (2-60 mm) stones, flint gravel and iron 'precipitation' in root channels were present in this sample.

The residue (1076 g) consisted chiefly of stones and sand with brick/tile, coal and cinders/clinker present. Organic debris included charcoal, charred grain and large mammal bone fragments. The plant remains included wheat (*Triticum* sp.) and charcoal (to 13 mm).

A total of 9 bone fragments (weighing 2.3 g) was recovered from this sample, including a single caprovid phalanx, a fish scale, and seven unidentified mammal bone fragments.

**Context 350, Sample 9 [9 kg BS]**

Moist, dark grey brown to black, crumbly and granular, slightly humic silt, with coal and patches of light to mid grey brown silt (natural alluvium). Very small (2-6 mm) stones, brick/tile, clay pipe stem, fine

twigs and large mammal bone fragments were present in this sample.

The residue (2535 g) consisted chiefly of brick/tile, clinker/cinders, coal, sand and stones. Finds included clay pipe fragments, a coin, iron objects, glass, mortar/plaster, leather scraps and pottery. Organic debris included wood, charcoal, nutshell, fruitstones, large and small mammal bone and unidentified fragments of marine shellfish and two shells of *?Trichia* sp. landsnails were also noted. Plant remains included cherry (*Prunus* Section *Cerasus*) stones, burnt hazel nutshell, hazel twigs, cork bark, charcoal (to 14 mm), unidentifiable twigs (one partly mineralised).

A total of 18 bone fragments (weighing 3.3 g) was recovered. A single mole mandible was identified, and in addition two unidentifiable fish fragments, one bird phalanx and 13 unidentifiable mammal fragments (including a single burnt fragment) were recovered.

**Context 350, Sample 10 [8 kg BS]**

Description as Sample 9.

The residue (1967 g) consisted chiefly of clinker/cinders, coal, brick/tile, sand, compacted ash, and stones. Finds included clay pipe fragments, iron objects and glass. Organic debris included wood, nutshell, large mammal, fish and burnt bone, two fragments of cockle (*Cerastoderma ?edule* (L.)) shell, two *?Trichia* sp. landsnails, a single freshwater snail (*Bithynia tentaculata* (L.)) shell and some unidentified shell fragments.

Plant remains included hazel nutshell, hazel twigs, charred twigs and charcoal (to 16 mm).

A total of 22 bone fragments (weighing 5.1 g) was recovered from this sample. Single caprovid, fish (including a single pleuronectid vertebra) and bird fragments were recovered, together with 18 unidentifiable mammal fragments.

**Context 350, Sample 11 [7 kg BS]**

Description as Sample 9.

The residue (1980 g) consisted chiefly of clinker/cinders, coal, brick/tile, sand and stones.



Finds included clay pipe fragments, mortar/plaster, iron objects and glass. Organic debris included wood, charcoal, nutshell, large and small mammal and burnt bone, shellfish (two fragments of oyster valve, and single fragments of mussel and cockle valve) and seven unidentified land snail fragments.

Plant remains included cherry stones, hazel nutshell, unidentifiable twigs and charcoal (to 15 mm).

A total of 35 bone fragments (weighing 5.1 g) was recovered. A single rabbit metapodial was identified together with a juvenile bird fragment (possibly chicken). The unidentified material included seven fish, one bird and 25 mammal fragments (including a single burnt fragment).

#### Context 350, Sample 12 [2 kg GBA]

Description as Sample 9.

The 1 kg subsample produced a very small flot (<1% of the original sample by volume) containing a limited assemblage of weed seeds typical of disturbed ground and waysides, including docks, oraches, chickweed, *Chenopodium* Section *Pseudoblitum*, annual nettle, prickly sow-thistle (*Sonchus asper* (L.) Hill), annual dead-nettles (*Lamium* Section *Lamiopsis*), upright hedge-parsley (*Torilis japonica* (Hout. DC.) and hairy buttercup (*Ranunculus sardous* Crantz).

The large residue (50% of the original sample by volume) was principally composed of clinker/cinder with small quantities of coal, coarse quartz sand, brick/tile, rounded pebbles, mortar (to 4 mm), charcoal (to 5 mm) and highly degraded wood fragments (to 5 mm). Other remains included eggshell and additional seeds of weed taxa already noted from the flot, a single blackberry/rose (*Rubus/Rosa* sp(p).) prickle and occasional leaves of the bog moss *Sphagnum imbricatum*.

There were few insects in the flot, and preservation was poor. Synanthropic and semi-natural habitats were represented. The material had little potential to provide archaeological information unless a specific question exists, and a very large subsample were to be processed. A notable record was a single grain weevil (*Sitophilus granarius* (L.)), the only grain pest seen during the investigation of the material from the site.

#### Hand-collected shell

The 26 contexts examined produced 99 shell fragments of greater than 20 mm in largest dimension together with many smaller fragments. Preservation ranged from fair to very poor—some contexts contained almost complete shells (though even these were partly rotted and pitted), while others yielded only very rotted unidentifiable fragments.

Most of the recovered shell was oyster (*Ostrea edulis* L.) valves or fragments of valves from Phase 3 (c. 1681). A small number of the oyster valves (at least six) showed marks characteristic of opening with a knife or similar implement. Fragment counts by context are given in Table 2 and by phase in Table 3.

#### Hand-collected vertebrate remains

Vertebrate material from 29 contexts was presented for assessment and was all examined. A total of 240 vertebrate fragments (weighing 3336 g) was present, of which 84 (weighing 2169 g) were identifiable to species or species group. Table 4 gives the number of fragments by species, together with the number of unfused and juvenile bones, the number of mandibles of use in age at death analysis, and weights. Table 5 gives the numbers of fragments by date.

Overall, preservation was variable, mostly described as fair or good, but consistent within contexts. Colour and angularity (appearance of broken surfaces) were variable both within and between contexts, colour being mostly described as brown or fawn and angularity as 'spiky' or 'battered'.

The assemblage was moderately fragmented, with only one context (of the 29) containing a bone larger than 20 cm in any dimension and the assemblage from ten contexts including more than 20 % of small fragments (less than 5 cm in any dimension).

Evidence of dog gnawing and burning was sparse. Butchery marks and fresh breakage were evident on 10-20% of fragments overall. Cattle bones were noticeably heavily butchered, including several astragali and a calcaneum chopped through diagonally. This suggests the removal of the lower hind limbs from the rest of the carcass. A single humerus had been chopped at the distal end and sawn through the shaft (sawing had become a regular butchery practice by this period).



The assemblage contained 22 measurable fragments (Table 7), 11 subadult bones (six unfused and five juvenile) and a single mandible.

Caprovid remains were the most numerous (44 fragments), followed by cattle (*Bos f. domestic*) (Table 4). Other mammal species represented included pig (*Sus f. domestic*), cat (*Felis f. domestic*) and rabbit (*Oryctolagus cuniculus* (L.)). It is unlikely there would be wild rabbits in such an urban environment and the bones did not appear intrusive, which suggests they may have been food debris.

Bird species represented included goose (*Anser* sp.), duck (*Anas* sp.) and chicken (*Gallus f. domestic*). The goose fragments mostly represent large greylag or domestic individuals.

As most of the fragments (57 of 84) were from contexts dated to 1681, analysis of species representation by period provided no useful information (Table 5). There also appeared to be little difference between material from the two trenches.

The range of identifiable elements present represented mostly domestic refuse, with a small component of primary butchery waste. The unidentified 'medium mammal' fraction contained 53% of rib fragments, also suggesting domestic refuse with a smaller proportion of butchery waste. Trench 1 contained a more obviously 'domestic' assemblage but the small number of fragments from Trench 3 limited the interpretation of this part of the assemblage.

A single piece of boneworking waste was noted in Context 84: circular holes were present in a large mammal shaft fragment.

### *Sieved vertebrate remains*

Table 6 gives the numbers of fragments of bone, by phase, from the bulk-sieved residues. See individual sample accounts above for details.

All the species represented in the sieved assemblage (with the exception of mole) are edible, and therefore probably represent domestic waste.

## **Discussion and statement of potential**

### *Sediment samples*

#### **Plant macrofossils**

Five of the six GBA samples analysed for plant macrofossils contained archaeologically significant plant assemblages, however, Sample 13, Context 330 produced a very limited assemblage of little interpretative value.

All of the samples contained a small component of common waste or disturbed ground/rough grassland species typical of archaeological occupation deposits. More striking was the quantity of wetland plants present in the samples. Samples from Contexts 72, 73N and 122 all contained significant quantities of common reed, several fen or bog mosses, and other fen or open water species such as water crowfoot. These species almost certainly originated in the fen peat nodules that were identified from all three of the contexts mentioned above. The presence of frequent resting eggs of the water flea *Daphnia* and other insects mentioned below suggest that the fen peats formed in close proximity to open pools. However, it is unlikely that the peat deposits formed *in situ* since all of the samples in question also contained abundant remains of hearth waste, including clinker/cinder, charcoal, unburnt coal, and burnt bones well as general occupation waste such as brick/tile and mortar fragments. The peat was probably part of the general mix of occupation waste dumped in the sampling areas. Peat could have been used for fuel, litter, or other domestic purposes; however, there is no evidence from the samples to suggest that any of the peat had been burnt.

Plant macrofossils provided scant evidence for 'useful' plants. The samples were notable for the almost complete absence of edible food plants. Small pieces of apple core, fragments of hazel nutshell, occasional fruitstones and a single wheat grain were the only remains that could have been eaten.

Sample 26, Context 122, in particular contained a plant macrofossil assemblage reminiscent of hay, and the presence of numerous seeds of *Chenopodium* Section *Pseudoblitum*, plants which favour organic-rich substrates such as manure, suggests that the sample may have contained stable manure. Other samples contained *C. Section Pseudoblitum* seeds, but, there was less evidence of hay, perhaps suggesting that there was manure in the vicinity but not in the samples.

### **Invertebrate remains**

Four of the deposits investigated contained at least modest numbers of insect remains and processing a larger subsample would in each case provide an assemblage with substantial archaeological potential. Sample 12 (Context 350) gave only small numbers of insects (but was notable in providing the only grain pest from the site). Three of the deposits studied seemed to have been waterlain (the nature of Context 350 was uncertain from the insects)—although in the light of the other components of the sample flots and residues, it seems possible that the aquatic taxa were introduced in dumped material (this requires further investigation). Groups of insects indicating stable manure and house floors were conspicuously absent. One deposit (Context 74) yielded numerous dung beetles, so perhaps stock were kept nearby.

The small numbers of shell remains recovered from the samples are of no interpretative value.

### *Hand-collected shell remains*

Marine shell (almost entirely of oyster) was thinly distributed through the 26 contexts examined—mostly dated to c. 1681 and the construction of the Citadel. The presence of 'knife' marks on some of the oyster valves, and the absence of encrustation by other marine invertebrates on the inner surfaces of the valves, indicate that they were being collected and eaten by humans. The concentrations seem too low to imply direct dumping of food waste, so secondary deposition might be assumed. The nearest known oyster beds are located off the Kent, Essex and Suffolk coasts or in the Clyde estuary (Winder 1992 and pers. comm.). It is possible, however, that oyster beds existed more locally (Kenward, forthcoming). The few other marine taxa noted all occur commonly along the east coast of England today (MacMillan 1968). The terrestrial snails are of no interpretative value.

### *Vertebrate remains*

The hand-collected vertebrate assemblage is small and hence is of limited interpretative potential. The range of species present is fairly restricted, but includes the major domestic species, as would be expected on an urban site of post-medieval date.

Most of the species represented in the hand-collected material are food animals (with the exception of cat, mole and ?field vole) and the element representation supports the interpretation of mainly domestic refuse. A small component of primary butchery waste

was also noted. The single piece of boneworking waste noted in Context 84, perhaps suggests the manufacture of buttons or gaming counters.

The vertebrate remains from the samples also appear to be mostly domestic food waste although, considering the amount of sediment sieved, the quantities are rather small. Sieving more sediment is unlikely to retrieve much more material so the potential of this assemblage is severely limited.

### *General*

From documentary evidence, the deposits examined from Trench 1 should date to between 7 September and 3 December 1681 (i.e. contemporaneous with the construction of the Citadel). Attempts to address the question of the season of deposition of these contexts, most notably for Contexts 72 and 74, were unsuccessful (see Results). The biological remains recovered from these deposits cannot confirm or deny either the season or the date of deposition.

There was some doubt as to whether or not Context 74 was part of the Citadel construction deposits. From the biological remains, there is some evidence to suggest that this context is rather different to the other examined deposits from Trench 1 (the absence of nodules of fen peat and the presence of numerous *Aphodius* species dung beetles).

The remains from the 'interval' deposits (contexts 72 and 122) appear to represent a mixture of domestic rubbish.

## **Recommendations**

Given the rather modest quantities of plant material recovered from the samples, potential for further investigation is very limited. No further work is recommended except as an adjunct to any studies of the insects.

The insect remains from the site deserve further investigation, to provide information about the origins of the deposit (dumps or *in-situ* accumulation) ecological conditions and human activity, and as a source of information in future synthesis.

The shell assemblage is of little interpretative value and, as such, no further work is recommended.

The small size of the vertebrate assemblage makes it of little interpretative importance. However, given the tight dating of most contexts and the historical importance of the Citadel, a basic archive should be made of the vertebrate assemblage.

## **Archive**

All material is currently stored in the Environmental Archaeology Unit, University of York, along with paper and electronic records pertaining to the work described here.

## **Acknowledgements**

AH and HK are grateful to English Heritage for permission to work on this material. The authors are grateful to Humber Archaeology Partnership for providing the material and the archaeological information.

## 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.

Kenward, H. (forthcoming). Invertebrates in archaeology in the north of England.

Kenward, H. K., Engleman, C., Robertson, A., and Large, F. (1986). Rapid scanning of urban archaeological deposits for insect remains. *Circaea* 3 (for 1985), 163-72.

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.

MacMillan, N. F. (1968). *British Shells*. London: Warne.

von den Driesch, A. (1976). A guide to the measurement of animal bones from archaeological sites. *Peabody Museum Bulletin* 1. Cambridge Mass.: Harvard University.

Winder, J. M. (1992). *A study of the variation in oyster shells from archaeological sites and a discussion of oyster exploitation*. PhD. Thesis, University of Southampton, Department of Archaeology, 304 pp.

Table 1. List of the sediment samples from Sammy's Point, Hull. Key: NFA = no further action.

Context no.	Sample no.	Type	Processed	Notes
70	15		N	A light grey brown, locally reddish or orangeish or more grey, sandy clay silt. ?Mortar flecks and brick/tile were present in this sample. NFA.
70	16		N	Description as Sample 15. NFA.
72	1	GBA	Y	2 kg sieved to 300 $\mu$ m, paraffined
72	2	BS	Y	8 kg washed to 500 $\mu$ m
73W	19	BS	Y	9 kg washed to 500 $\mu$ m
73W	20	BS	Y	8 kg washed to 500 $\mu$ m
73N	29		N	Description as Sample 30 but much less organic. NFA.
73N	30	GBA	Y	2 kg sieved to 300 $\mu$ m, paraffined
73N	31	SPOT		Spot sample examined and sent to conservation
74	3		N	Description as Sample 4. NFA.
74	4	GBA	Y	2 kg sieved to 300 $\mu$ m, paraffined
74	5	BS	Y	7 kg washed to 500 $\mu$ m
74	6	BS	Y	7 kg washed to 500 $\mu$ m
74W	21		N	A mid grey brown, slightly brittle and stiff, (working crumbly then sticky and plastic, slightly humic, clay silt, with inclusions of slightly laminated natural clay. Medium-sized stones (20-60 mm), brick/tile, vivianite flecks, coal, wood, large mammal bone and marine molluscs were present. NB sample 23 most organic, and sample 24 nearest to 'natural'. NFA for all 4 samples.
74W	22		N	
74W	23		N	
74W	24		N	
93	7		N	A mixture of angular gravel and light to mid grey brown clay with reduced lumps. The gravel is mostly chalk (to 120 mm) and a little flint. Brick/tile fragments were present in this sample. NFA
93	8		N	
122	25	BS	Y	5 kg washed to 500 $\mu$ m
122	26	GBA	Y	2 kg sieved to 300 $\mu$ m, paraffined
330	13	GBA	Y	2 kg sieved to 300 $\mu$ m, paraffined, excess (5 kg) bulk sieved
333	14		N	Mixture of yellowish ?mortar and dark grey brown, crumbly, ?slightly humic, clay silt, with medium-sized stones (20-60 mm). NFA.
334	17	BS	Y	8 kg washed to 500 $\mu$ m
334	18		N	Description as Sample 17. NFA

Context no.	Sample no.	Type	Processed	Notes
336	27		N	Moist, dark grey brown, firm to crumbly and brittle (working sticky and plastic), very slightly humic, clay silt. Chalk gravel (to 30 mm), brick/tile, vivianite specks, coal and clay pipe were present. NFA for either sample.
336	28		N	
337	34	BS	Y	10 kg washed to 500 $\mu$ m
337	35		N	Description as Sample 34. NFA
338	32		N	Gravel and stone with a little dark grey brown silty matrix (mostly chalk gravel with a little flint). Brick/tile, coal and clay pipe fragments were present in this sample. NFA for either sample.
338	33		N	
343	36		N	Moist, light to mid grey brown to light to mid brown, stiff to crumbly (working sticky and plastic), natural alluvial clay with 'ancient' root and black root channels. NFA for either sample.
343	37		N	
350	9	BS	Y	9 kg washed to 500 $\mu$ m
350	10	BS	Y	8 kg washed to 500 $\mu$ m
350	11	BS	Y	7 kg washed to 500 $\mu$ m
350	12	GBA	Y	2 kg sieved to 300 $\mu$ m, paraffined

Table 2. The hand-collected shell from Sammy's Point, Hull. (Note that all counts are of fragments > 20 mm in largest dimension, not minimum numbers of individuals).

	Marine shell							Notes
	Oyster				Mussel	Cockle	Other	
Context	Left	Right	Indet.	Knife mark				
13	1	-	-	1	-	-	-	
20	-	1	1	-	-	-	-	
36	-	1	-	-	-	-	-	
59	-	-	-	-	-	1	-	
60	3	3	1	1	-	-	-	
66	1	2	-	-	-	-	-	
69	-	-	2	?1	-	-	-	
70	1	2	1	1	-	-	-	
72	3	9	-	-	2	3	many unid. fragments	3 unid. land snail frags
73	1	3	1	1	-	-	-	
74	2	2	-	-	3	-	-	
84	-	-	-	-	-	-	-	1 ? <i>Cepaea</i> sp. land snail
92	1	1	-	1	-	-	-	
98	1(?2)	-	1	1	-	1	-	
101	2	2	-	-	-	-	-	
103	-	1	-	-	-	-	-	
105	-	1	-	-	-	-	-	
108	?1	3	1	?1	-	-	-	
109	-	-	-	-	-	1	-	
122	5	3	2	-	-	-	-	
129	-	-	-	-	-	-	-	1 unid. land snail
135	-	1	-	-	-	-	-	1 ?land snail
334	1	1	1	-	1	-	-	
338	-	-	-	-	1	-	-	
342	-	-	-	-	-	-	1 unid. frag.	
350	2	2	4	-	-	-	-	
<b>TOTAL</b>	<b>24 (?26)</b>	<b>38</b>	<b>15</b>	<b>6 (?8)</b>	<b>7</b>	<b>6</b>		



Table 3. Numbers of hand-collected shell fragments by date from Sammy's Point, Hull. (Note that all counts are of fragments > 20 mm in largest dimension, not minimum numbers of individuals; figures in brackets beneath the phase headings are the number of contexts examined from that phase.)

Taxa		Pre 1681 (4)	1681 (15)	Pre 1865 (4)	Post 1865 (3)	Total no. fragments
Oyster	<i>Ostrea edulis</i> L.	11	63	2	3	79
Mussel	<i>Mytilus edulis</i> L.	2	5	-	-	7
Cockle	<i>Cerastoderma ?edule</i> (L.)	-	5	-	1	6
Unidentified marine		1	many	-	-	many
<b>Total marine</b>		<b>14</b>	<b>72+</b>	<b>2</b>	<b>4</b>	<b>93+</b>
<i>Cepaea</i> sp.		-	-	1	-	1
Unidentified land snail		-	3	2	-	5
<b>Total non-marine</b>		<b>-</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>6</b>

Table 4. The hand-collected vertebrate remains from Sammy's Point, Hull. Key: \*Weight of all unidentifiable fragments.

Taxon		No. unfused	No. juvenile	No. mandibles	Total no. fragments	Weight (g)
Rabbit	<i>Oryctolagus cuniculus</i> (L.)	-	-	-	4	6.3
Cat	<i>Felis f. domestic</i>	-	-	-	1	2
Pig	<i>Sus f. domestic</i>	2	-	-	5	54
Cow	<i>Bos f. domestic</i>	2	5	-	25	1351
Sheep/goat	Caprovid	2	-	-	34	739
Sheep	<i>Ovis f. domestic</i>	-	-	1	10	
Goose	<i>Anser sp.</i>	-	-	-	2	13
Duck	<i>Anas sp.</i>	-	-	-	2	1.3
Chicken	<i>Gallus f. domestic</i>	-	-	-	1	2
<b>Subtotal</b>		<b>6</b>	<b>5</b>	<b>1</b>	<b>84</b>	<b>2168.6</b>
Medium mammal		-	-	-	90	
Large mammal		-	-	-	59	*1167.4
Bird		-	-	-	5	
Unidentifiable		-	-	-	2	
<b>Subtotal</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>156</b>	<b>1167.4</b>
<b>Total</b>		<b>6</b>	<b>5</b>	<b>1</b>	<b>240</b>	<b>3336</b>

Table 5. Numbers of hand-collected vertebrate fragments by date from Sammy's Point, Hull.

Taxon		Pre 1681	1681	Pre 1865	Post 1865	Total no. fragments
Rabbit	<i>Oryctolagus cuniculus</i> (L.)	3	1	-	-	4
Cat	<i>Felis f. domestic</i>	-	1	-	-	1
Pig	<i>Sus f. domestic</i>	1	3	-	1	5
Cow	<i>Bos f. domestic</i>	9	15	1	-	25
Sheep/goat	Caprovid	6	27	-	1	34
Sheep	<i>Ovis f. domestic</i>	1	8	-	1	10
Goose	<i>Anser</i> sp.	-	1	-	1	2
Duck	<i>Anas</i> sp.	2	-	-	-	2
Chicken	<i>Gallus f. domestic</i>	-	1	-	-	1
<b>Subtotal</b>		<b>22</b>	<b>57</b>	<b>1</b>	<b>4</b>	<b>84</b>
Medium mammal 1		13	69	6	2	90
Large mammal		18	28	5	8	59
Bird		1	3	1	-	5
Unidentifiable		2	-	-	-	2
<b>Subtotal</b>		<b>34</b>	<b>100</b>	<b>12</b>	<b>10</b>	<b>156</b>
<b>Total</b>		<b>56</b>	<b>157</b>	<b>13</b>	<b>14</b>	<b>240</b>

Table 6. Numbers of sieved vertebrate fragments by date from Sammy's Point, Hull.

Taxon		Pre 1681	1681	Total no. fragments
Rabbit/Hare	Leporidae	-	1	1
Rabbit	<i>Oryctolagus cuniculus</i> (L.)	2	6	8
Hare	<i>Lepus</i> sp.	-	1	1
Sheep/goat	Caprovid	2	2	4
Mole	<i>Talpa europaea</i> L.	1	-	1
?Field vole	cf. <i>Microtus agrestis</i> (L.)	1	-	1
?Teal	cf. <i>Anas crecca</i> L.	-	1	1
Herring	<i>Clupea harengus</i> L.	-	2	2
Eel	<i>Anguilla anguilla</i> (L.)	1	-	1
Pike	<i>Esox lucius</i> L.	-	1	1
Cod family	Gadidae	-	1	1
Flatfish	Pleuronectidae	1	2	3
Crab	Brachyura	-	1	1
<b>Subtotal</b>		<b>8</b>	<b>18</b>	<b>26</b>
Unidentified mammal		111	244	355
Unidentified bird		4	1	5
Unidentified fish		11	33	44
<b>Subtotal</b>		<b>126</b>	<b>278</b>	<b>404</b>
<b>Total</b>		<b>134</b>	<b>296</b>	<b>430</b>

Table 7. Measurements for vertebrate remains from Sammy's Point, Hull.

Context	Date	Taxon	Element	Side	Measurements			
338	pre 1681	Cow	Radius	L	Bp=80.1	BFp=73.8		
72	17th C	Sheep/goat	Scapula	L	GLP=31.6	SLC=16.9	ASG=20.1	
72	17th C	Sheep	Humerus	R	SD=16.6	BT=30.4	HT=19.9	HTC=15.4
108	17th C	Sheep	Humerus	L	BT=28.2	HT=18.9	HTC=14.9	
108	17th C	Sheep	Humerus	R	BT=26.6	HT=17.2	HTC=13.7	SD=13.9
69	17th C	Sheep	Radius	R	GL=147.9	SD=16.0	Bp=32.1	BFp=28.0
72	17th C	Sheep/goat	Radius	R	SD=15.5	Bp=29.5	BFp=26.4	
74	17th C	Sheep/goat	Radius	R	Bp=32.4	BFp=29.1	SD=18.3	
74	17th C	Sheep/goat	Radius	R	Bp=32.7	BFp=28.6	SD=19.7	
60	17th C	Sheep	Tibia	L	SD=12.5	Bd=27.0	Dd=20.6	
69	17th C	Sheep/goat	Tibia	R	SD=12.5	Bd=27.3		
69	17th C	Sheep/goat	Tibia	L	SD=11.9	Bd=25.7	Dd=19.9	
334	pre 1681	Sheep	Tibia	R	Bd=25.1	Dd=19.4	SD=12.3	
72	17th C	Sheep/goat	Metacarpal	R	SD=13.4	Bp=21.3	Dp=15.3	
72	17th C	Sheep/goat	Metatarsal	L	SD=11.1	Bp=19.3	Dp=20.8	
73	17th C	Sheep/goat	Metatarsal	R	GLI=123.7	SD=11.5	Bp=21.3	Dp=21.0
					Dem=9.8	Dvm=15.8	Dim=12.4	
108	17th C	Sheep/goat	Metatarsal	R	Bp=20.0	Dp=20.0	SD=12.1	
122	17th C	Cat	Radius	R	GL=86.9	SD=4.8	Bp=7.2	Bd=11.4
72	17th C	Rabbit	Femur	L	GL=80.2	Bp=18.0	SD=6.1	Bd=13.3
334	pre 1681	Rabbit	Metatarsal2	L	Gl=33.7	Bd=4.7	SD=3.5	
20	L19th C	Goose	Tibiotarsus	L	Bd=19.2	Dd=18.1		
70	17th C	Goose	Tibiotarsus	R	Bd=18.1	Dd=18.4		