

Palaeoecology Research Services

**Evaluation of biological remains from
excavations on land at Barker's Mill,
Beverley, East Riding of Yorkshire
(site code: BMB2004)**

PRS **2004/65**

Evaluation of biological remains from excavations on land at Barker's Mill, Beverley, East Riding of Yorkshire (site code: BMB2004)

by

Allan Hall, Harry Kenward, Juliet Mant, Deborah Jaques, John Carrott and Stewart Gardner

Summary

Nine bulk sediment samples (of 37 collected), a single column sequence (of 3 column tins), a very small amount of hand-collected shell and three boxes of hand-collected bone, recovered from deposits encountered during excavations at Barker's Mill, Beverley, East Riding of Yorkshire, were submitted for an evaluation of their bioarchaeological potential. Two trenches were excavated with the purpose of identifying and evaluating medieval and post-medieval development relating to the Becksides and Watersides areas of Beverley.

Microfossil remains, in particular diatoms and to a lesser extent pollen, were present through most of the column sequence.

Plant remains in the examined bulk samples were generally well preserved and sometimes extremely well preserved, though some deposits yielded rather few identifiable specimens. Insects were present in some of the samples, occasionally in large numbers and well-preserved. They show potential for the investigation of aspects of the local environment, human influence and the nature of some specific fills. The deposits considered here add considerably to our growing corpus of evidence for exploitation of the environment of the environs of Beverley as well as contributing further records of relevance to an understanding of human activities such as dyeing and other aspects of textile working through the Middle Ages.

The very small amount of hand-collected shell was mostly oyster, probably from human food waste, and does not warrant any further consideration.

A small assemblage of well preserved vertebrate remains was recovered which was dominated by the remains of cattle, sheep/goat and pig, with other domesticates being present in smaller numbers. Birds and fish were also fairly well represented. It would seem that waste from a number of sources is represented—bones which appear to be primary butchery waste and several fragments which suggest refuse from some sort of craft activity e.g. hornworking, were present. However, the presence of the remains of birds, fish and the smaller mammals, such as dog and cat, also suggest domestic refuse. Remains of eel, pike and ?cyprinid indicate the occasional exploitation of riverine resources, whilst the gadid and herring bones suggest the importation of marine fish, possibly dried or pickled rather than fresh.

Further study of the pollen and diatom content of the column sequence would be of value to investigate the depositional environment and surrounding landscape. Further work on the plant and insect macrofossil remains is also highly desirable to investigate aspects of the site environment and economy. The importance of combining data from insects and plants in interpreting this material (e.g. the origin of the aquatic components, and possible presence of stable manure) must be emphasised and analysis should also be made of plant remains from those samples for which insect analysis is deemed appropriate. In addition, any deposits not considered in this assessment should certainly be reviewed as part of any further work undertaken. The preservation of the vertebrate material was good but the deposits from which it was recovered were rather broadly dated. Further analysis of the assemblage to produce an archive, including biometrical and age-at-death data, would be worthwhile if a tighter dating framework could be achieved. Although only small, data from this assemblage may provide a useful contribution to synthetic studies of the area.

KEYWORDS: BARKER'S MILL; BEVERLEY; EAST RIDING OF YORKSHIRE; EVALUATION; MEDIEVAL; POST-MEDIEVAL; PLANT REMAINS; CHARRED PLANT REMAINS; CHARRED GRAIN; POLLEN; CHARRED GRAIN; INVERTEBRATE REMAINS; DIATOMS; INTESTINAL PARASITE EGGS; TRICHURIS; BEETLES; SNAILS; VERTEBRATE REMAINS; DYEING; TEXTILE WORKING; ?HORNWORKING

Contact address for authors:

Palaeoecology Research Services
Unit 8
Dabble Duck Industrial Estate
Shildon
County Durham DL4 2RA

Prepared for:

Humber Field Archaeology
The Old School
Northumberland Avenue
Hull HU2 0LN

22 October 2004

Evaluation of biological remains from excavations on land at Barker's Mill, Beverley, East Riding of Yorkshire (site code: BMB2004)

Introduction

Archaeological excavations were carried out by Humber Field Archaeology on land at Barker's Mill, Beverley, East Riding of Yorkshire (NGR TA 0456 3927), during April and May 2004, prior to the construction of a block of flats and associated carpark.

Two trenches were excavated with the purpose of identifying and evaluating medieval and post-medieval development relating to the Beckside and Waterside areas of Beverley.

Thirty-seven bulk sediment samples ('GBA'/'BS' *sensu* Dobney *et al.* 1992, of between 10 and 40 litres), three column tins (column samples 32, 33 and 34 forming one overlapping sequence), a very small amount of hand-collected shell and three boxes of hand-collected bone, were recovered from the encountered deposits. Nine of the bulk samples, the column sequence and all of the hand-collected material, were submitted to Palaeoecology Research Services Limited (PRS), County Durham, for an evaluation of their bioarchaeological potential.

Methods

Bulk sediment samples

The sediment samples were inspected in the laboratory and their lithologies were recorded using a standard *pro forma*. Subsamples of the selected samples were processed, broadly following the procedures of Kenward *et al.* (1980), for the recovery of plant and invertebrate macrofossils.

Plant remains in the flots, washovers and residues, and the general nature of these various fractions were recorded briefly by 'scanning', identifiable taxa and other

components being listed directly to a computer database using *Access* software.

Insects in the flots were recorded using 'assessment recording' *sensu* Kenward (1992), creating a list of the taxa observed during rapid inspection of the flots, with a semi-quantitative estimate of abundance, and a subjective record of the main ecological (e.g. aquatics, grain pests) or indicator/activity (e.g. for stable manure, Kenward and Hall 1997) groups present. A record of the preservational condition of the remains was made using scales given by Kenward and Large (1998). This scheme provides scales for chemical erosion and fragmentation (0.5-5.5, the higher figure representing the greatest degree of damage), and colour change (0-4), in each case giving a range and a value for the position and strength of the mode (Kenward and Large 1998, Tables 2, 3 and 5-7).

Two samples were examined for the eggs of intestinal parasitic nematodes using the 'squash' technique of Dainton (1992).

Where the residues were primarily mineral in nature they were dried, weighed and their components recorded.

Column samples

The column samples were examined via a series of subsamples again using the 'squash' technique of Dainton (1992). As noted above, this was originally developed to quickly assess deposits for their content of eggs of intestinal parasitic nematodes but routinely reveals other microfossils such as pollen and diatoms. In this instance, the primary purpose of the subsamples was to determine the presence/absence of these other microfossil remains and, if present, assess their state of preservation. Assessment slides were scanned

at 150x magnification with 600x used where necessary.

Hand-collected shell

A small quantity of hand-collected shell (representing material from 23 contexts, 2 of which were unstratified or 'modern') was submitted. Brief notes were made on the preservational condition of the shell and the remains identified to species where possible. The weight (in grammes) of shell from each context was noted and its preservational condition recorded using two, subjective, four-point scales for erosion and fragmentation—scale points were: 0 – none apparent; 1 – slight; 2 – moderate; 3 – high.

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; measurability of the valves; damage from other marine biota (e.g. polychaet worms and dog whelks); encrustation by barnacles.

Vertebrate remains

For the vertebrate remains, data were entered directly into a series of tables using a purpose-built input system and *Paradox* software. Subjective records were made of the state of preservation, colour of the fragments, and the appearance of broken surfaces ('angularity'). Additional 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), and totally

unidentifiable. These groups are represented in Table 3 by the category labelled 'Unidentified'.

Results

Sediment and column samples

The results are presented in context number order. 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.

Context 1006 [?floor silt]

Sample 2/T (3 kg sieved to 300 microns with paraffin flotation and washover; approximately 5 litres of unprocessed sediment remain)

Moist, light brown to mid grey-brown (in shades of brown and grey-brown), stiff to sticky (working soft), slightly clay silt, with stones (2 to 20 mm) and fragments of charcoal present.

This subsample yielded a very small washover of about 30 ml of fine plant debris, mainly very decayed wood and some charcoal and traces of ?peat, ?charred peat and charred saw-sedge (*Cladium mariscus* (L.) Pohl) leaf fragments (to 2 mm). The small flot was rich in rush (*Juncus*) seeds, most of which appeared to be the salt-marsh species mud rush, *J. gerardi* Loisel. Preservation of plant remains was moderately good, some *Rubus* (blackberry, *R. fruticosus* agg. and raspberry, *R. idaeus*) seeds being rather worn, however.

The small flot contained only a few fragments of insect remains, often well decayed and unidentifiable (E 3.5-5.5, mode 4.5 weak; F 2.5-5.5, mode 3.5 weak); the range of preservational states may suggest decay in antiquity, probably when, and soon after, the deposit formed (Kenward and Hall 2004). The fauna included some aquatics as well as some species typical of occupation sites. It is unlikely that even a very large subsample would provide information of archaeological value.

The small residue (dry weight 0.31 kg) was of sand and stones (to 25 mm), with a little mortar (3 fragments to 12 mm, <1 g), pot (1 fragment to 12 mm, <1 g), charcoal (to 10 mm, ~1 g) and unidentified shell fragments (<1 g). This sample also produced 34 small (most of less than 15 mm in maximum dimension) fragments of bone, of which 26 were fish. Few of these

were identifiable to species but eel (*Anguilla anguilla* (L.)) and pike (*Esox lucius* L.) remains were recorded. An unidentified amphibian shaft fragment was also noted.

Context 1054 [primary fill of pit 1046]

Sample 6/T (3 kg sieved to 300 microns with paraffin flotation; approximately 6 litres of unprocessed sediment remain)

Moist dark grey-brown to mid brown (internally orange), brittle to crumbly, amorphous organic sediment with a little silt and flecked with pale sand grains. Stones (2 to 6 mm), twigs and herbaceous detritus were present.

There was a very large residue of about 1100 ml of woody and herbaceous detritus. The woody debris included some wood chips (to 20 mm), with other wood fragments, twig and a little bark. Preservation was good: there was some silt coverage, but material was generally grey in colour and firm in texture. With the wood were a few fragments of fen peat. Well-preserved moss shoots and some pale and very well preserved herbaceous plant detritus including grass/cereal culm and culm-nodes made up a good proportion of the finer fractions. The more abundant fruits and seeds were saw-sedge, spike-rush (*Eleocharis palustris* sl), and sedge (*Carex* spp., some retaining their utricles), some perhaps originating in imported peat. Charred saw-sedge leaf fragments were again present. Other taxa probably originated in woodland materials (e.g. brushwood) with other litter arriving as bracken, straw, and hay. Plants presumably from domestic occupation comprised hazelnut (*Corylus avellana* L.) and walnut (*Juglans regia* L.), flax/linseed (*Linum usitatissimum* L., both seeds and capsule fragments) and hemp (*Cannabis sativa* L., achenes).

The flot was of modest size and contained quite large numbers of fairly well preserved insect remains (E 1.5-3.0, mode 2.0 weak; F 2.0-3.5, mode 2.5, weak). There were a few aquatic and waterside forms, though not enough to provide evidence of the importation of water or waterside vegetation. There was a range of species associated with decaying matter, from fairly dry to foul, but none were very abundant. The influence of humans was clear, although there were no specialised synanthropes. However, it seems likely that analysis of the fauna of this subsample combined with remains from a second of similar or larger size would allow a clearer picture of the nature of the pit fill, and of the surroundings, to emerge.

Vertebrate remains from this sample amounted to just 15 fragments, of which five were burnt. Although of fair preservation most were unidentifiable, but a single

herring (*Clupea harengus* L.) vertebra and a caprovid sesamoid were noted.

Context 1066 [organic layer]

Sample 10/T (3 kg sieved to 300 microns with paraffin flotation; approximately 6 litres of unprocessed sediment remain)

Moist, dark grey-brown to black (also light grey-brown in places), brittle and layered to crumbly (working soft), silty amorphous organic sediment with abundant fine and coarse herbaceous detritus. Stones (2 to 60 mm), including flint flakes, and fragments of reed or straw were present.

The very large residue of about 2500 ml consisted of woody and herbaceous detritus with a little sand and gravel (the mineral component made up only about 150 ml). Preservation of plant material was excellent. Amongst the disaggregated debris were some distinctive small (to 5 mm) lumps of yellow-greenish fine plant detritus (the colour leaching yellow into alcohol), presumably from herbivore dung (and deserving of further investigation). Another important component was peat (clasts to 5 mm). For the rest, the plant remains appeared to constitute a 'classic' 'hay' assemblage with a distinctive halophyte component probably from salt-marsh (possibly arriving with the herbivore dung?). The more abundant remains were spike-rush, cats ears (*Hypochoeris*) and hawkbits (*Leontodon*)—all of which were abundant—with modest numbers of fruits or seeds of sea arrow-grass (*Triglochin maritima* L.), greater plantain (*Plantago maritima* L.), grasses (Gramineae), small Leguminosae petals, *Juncus* cf. *gerardi*, sedges and eyebright/red bartsia (*Euphrasia/Odontites verna* (Bellardi) Dumort, all of which might be grazed from short turf. Many of the less common taxa are also likely to have arrived in this way. Hazel nut and walnut were also present, along with charred saw-sedge leaf fragments.

The flot, which was quite large and difficult to sort, consisted mainly of plant debris of various kinds. Insect remains were quite abundant, though their preservation was not especially good (E 2.0-3.5, mode 3.0 weak; F 2.0-3.5, mode 2.5 weak). There was a clear group of species suggesting fairly dry decaying plant remains, but also a few from rather fouler matter. There was a quite strong 'outdoor' component, including some aquatics and some plant-feeders which may perhaps have been imported with hay. There was no clear 'stable manure' fauna, however (cf. Kenward and Hall 1997). There were at least two bees, resembling the honey bee *Apis mellifera* Linnaeus. Fuller analysis might clarify the nature of this material, and processing further sediment would allow the abundance of bees, and thus the likelihood of local bee-keeping, to be estimated.

Context 1068 [ground-raising organic deposit]

Sample 11/T (3 kg sieved to 300 microns with paraffin flotation; approximately 10 litres of unprocessed sediment remain)

Moist, mid brown to mid to dark grey-brown, brittle to crumbly (working soft), humic, slightly clay silt. Twigs and vivianite were present.

The moderately large residue of about 650 ml, of which all but about 125 ml was woody debris (some quite coarse wood and bark) and herbaceous detritus, the small mineral fraction being sand and gravel. There was a little peat and some wood chips. Fruits and seeds were rather sparse but mostly clean and well preserved, though some were rather worn (and some presumably originated in the peat). The more abundant taxa were sedge and spike-rush, but these were only present in modest numbers. For the rest there was a mixture of aquatic and wet land taxa with some clearly from woodland. 'Useful' plants comprised hazel nut, flax (seeds) and a single cherry (*Prunus* Section *Cerasus*) fruitstone. There were hints of the presence of straw and hay and much of the fine fraction comprised small wood fragments which perhaps represented sawdust.

There was a fairly small flot, in which insect remains were rather abundant. The fossils were often in good condition (E 1.5-3.0, mode 2.0 weak; F 1.5-3.5, mode 2.5 weak). There was clear evidence of an aquatic influence, from pond snails, a statoblast of the bryozoan *Lophopus crystallinus* (Pallas), *Daphnia* ehippia, and some aquatic and waterside beetles. Most of the fauna may have lived at the edge of water, on mud, in litter, or on plants, and there was no clear component associated with human occupation. Analysis of this material would be worthwhile in the context of investigation of the Beckside area generally, although a larger subsample would provide a more useful assemblage.

Only eight fragments of bone were recovered from this sample but all were well preserved. One large ling (*Molva molva* (L.)) vertebra was identified; this fragment, representing a large fish of over a metre in length, had been chopped. Other fish remains were present, which included an eel vertebra. A piece of eggshell was also recovered.

Context 1073 [ground reclamation/raising]

Sample 19/T (3 kg sieved to 300 microns with paraffin flotation and microfossil 'squash'; approximately 3 litres of unprocessed sediment remain)

Moist, mid brown to mid to dark grey-brown, brittle to crumbly, slightly sandy, slightly silty amorphous

organic sediment. Stones (6 to 20 mm), wood, twigs, ?moss, beetles, freshwater molluscs and bivalves were present in the sample.

This subsample yielded a large residue of about 1450 ml of woody and herbaceous detritus and some mineral material (the last only making up about 75 ml). Some coarse woody fragments were present, along with abundant finer herbaceous detritus. As in Sample 11, the fine fraction contained many small wood fragments which may have originated as sawdust. Preservation was very good, though a little vivianite was sometimes present on wood and twig fragments. The only abundant identifiable remains were fruits of sedge, with moderate numbers of nutlets of spike-rush, seeds of toad rush (*Juncus bufonius* L.), female cone axes of alder (*Alnus glutinosa* (L.) Gaertner), charred leaf fragments of saw-sedge and buds/bud-scales of oak (*Quercus*). Other taxa likely to have arrived with brushwood (including some corticolous mosses) were present, too, as well as plants likely to have been present in peat (a little of which was again present) and some weeds perhaps originating in straw. Traces of flax seed and capsule fragments were present, and a single fruit of *Dipsacus* (teasel) which might be from fuller's teasel (*D. sativus* (L.) Honckeny). A few possible foodplant taxa were noted, but all might have been present in a woodland/scrub component rather than domestic waste.

The flot was fairly large, and contained appreciable numbers of insects whose preservation was generally good (E 1.5-2.5, mode 2.0 weak; F 1.5-3.0, mode 2.5 weak). A range of aquatic and waterside beetles and snails together with *Daphnia* ehippia and ostracod valves indicated flooding or the importation of aquatic deposits. Most of the decomposers may have lived by water, too, although some of the species were typical of occupation deposits. Analysis of a larger subsample would probably be worthwhile.

The microfossil 'squash' was mostly organic detritus with a little inorganic material. Amongst the remains were many diatoms (of at least six different forms, some well preserved and others rather fragmented), pollen grains/spores and fragments of plant tissue. Some ?phytolith fragments and fungal spores and hyphae were also noted but no eggs of intestinal parasites were recorded.

The small number of bone fragments (8) recovered from this subsample included remains of goose (*Anser* sp.), eel and ?pike.

Context 2043 [upper fill in pit 2026=2044]

Sample 31/T (3 kg sieved to 300 microns with paraffin flotation; approximately 4 litres of unprocessed sediment remain)

Moist, light-mid brown to mid-dark grey-brown (with some light to mid orange-brown patches), crumbly (working soft), slightly humic, clay silt, with stones (2 to 20 mm) and flecks of charcoal present.

A very small wet component of the residue of about 80 ml, mainly very decayed wood and peat and a very little sand, was left from the processing of this subsample. A single charred barley (*Hordeum*) grain was found embedded in a clast of concreted silt. Fruits and seeds were moderately frequent and rather variable in preservation, from very poor to very good. Only sedge nutlets were moderately frequent, however. Traces of weld (*Reseda luteola* L.) probably represent a weed rather than dyeplant here (though see below); there was also a single well-preserved fig (*Ficus carica* L.) seed. There was also a small dried component to the residue (dry weight 0.41 kg) mostly of sand and stones (to 20 mm), with a little charcoal (to 15 mm, ~1 g), mortar (2 fragments to 12 mm, <1 g), cinder (1 fragment to 20 mm, <1 g), pot (1 fragment to 10 mm, <1 g), brick/tile (7 fragments to 15 mm, ~1 g), wood/bark fragments (to 30 mm, <1 g), a single charred barley grain and a few unidentified shell fragments (<1 g). Twenty-nine bone fragments were also recovered, most of which were small (less than 10 mm) and unidentifiable. Both fish and mammal fragments were present, with one possible cyprinid vertebra identified.

The flot was small, and contained rather few insects whose preservation varied (E 2.0-4.0, mode 3.0 weak; F 1.5-3.5, mode 2.5 weak). There were also quite large numbers of mites and a single *Daphnia* ephippium. The beetles were mainly indicative of semi-natural environments, but processing of even a larger subsample would be unlikely to provide sufficient remains for confident interpretation. There was no evidence that the deposit was waste of any characteristic kind.

Context 2045 [primary fill in pit 2044]

Sample 9/T (3 kg sieved to 300 microns with paraffin flotation; microfossil 'squash'; approximately 5 litres of unprocessed sediment remain)

Moist, mid brown to mid grey-brown to mid grey, crumbly and sticky (working soft and sticky), slightly sandy clay silt, with stones (2 to 20 mm), including chalk, ?faecal concretions, ?fish bone and fine herbaceous detritus present

The rather small residue of about 300 ml consisted mostly of sand and gravel with a little pottery; a small washover of a few tens of millilitres in size was mainly peat, with a little charcoal. Single well-preserved oat (*Avena sativa* L.) and barley spikelets were present, the latter bearing a long radicle (extending beyond the

length of the grain and indicating it had begun to germinate prior to charring; there was also a detached germinating cereal embryo). Most of the other plant taxa present were weeds (weld was again present) and the assemblage gives little clue as to any specific material contributing to the pit fill.

The small flot gave only a few insect remains, often poorly preserved (E 2.5-4.0, mode 2.5 weak; F 2.0-4.0, mode 2.5 weak). They were ecologically mixed and unlikely to be of much significance even if a very large subsample were to be processed.

The microfossil 'squash' was mostly organic detritus with some inorganic material present. Small numbers of moderately well preserved pollen grains/spores and diatoms (at least two types) were noted as were a few ?phytolith fragments. No eggs of intestinal parasites were seen.

This sample produced only three fragments of bone, which included a caprovid incisor.

Context 2061 [secondary fill of large pit 2060]

Sample 17/T (3 kg sieved to 300 microns with paraffin flotation; approximately 12 litres of unprocessed sediment remain)

Moist, mid grey-brown (with lighter and darker patches), crumbly to slightly sticky (working soft), humic, clay silt, with small areas of light blue-grey clay. Vivianite, fragments of wood, twigs and bark, and fish bones were present in the sample.

The moderate-sized residue of about 750 ml, of which less than 100 ml was sand and gravel, consisted largely of woody debris and granular peat. No identifiable remains were abundant, but there were modest numbers of fragments of material which appeared to be monocotyledonous root/rhizome which might be from peat or, alternatively, may be culm-base from cereal straw (and which needs further investigation). Peat (some fragments with bog bean (*Menyanthes trifoliata* L.) seeds embedded in them) was also noted. A single rather large (10 mm) root fragment of madder (*Rubia tinctorum* L.) and one smaller fragment, point to the presence of traces of waste from textile working; to these may be added traces of hemp seed fragments and modest numbers of weld seeds (here perhaps representing dyebath waste?). Preservation was generally excellent, though there was a little vivianite on some wood and twig fragments. Single barley and cultivated oat grains in well-preserved spikelets were present and there were some more strongly eroded grains. The few seeds of cornfield weeds may indicate the presence of straw whilst some grassland taxa may indicate hay. Hazel nut and walnut were present, along with remains of sweet gale (bog myrtle, *Myrica gale* L.)

which may have been used as a dyeplant in this case. There were also single very well preserved fruitstones of blackthorn (*Prunus spinosa* L.) and small plum/bullace (*P. domestica* ssp. *insititia* (L.) C. K. Schneider), but no very clear component of food.

The flot was of about average size, and rather rich in insect remains. Preservation was variable but often good (E 1.5-3.5, mode 2.0 weak; F 1.5-3.0, mode 3.0 weak). There were a few aquatics and other outdoor forms, but the fauna as a whole was that of occupation deposits, with some hints of material of the consistency of stable manure (none of the species characteristic of stable manure were present in large numbers, however). Analysis of a larger, or additional, subsample would be worthwhile in clarifying the nature of this deposit.

Four of the six bone fragments recovered from this sample were fish, including herring and eel. The remaining fragments could not be identified.

Context 2063 [primary fill of pit 2060]

Sample 21/T (3 kg sieved to 300 microns with paraffin flotation and washover; approximately 1 litre of unprocessed sediment remains)

Moist, mid to dark grey-brown, crumbly (working soft), ?humic, slightly clay silt, with ?charcoal fragments.

A 'light' washover of about 40 ml of fine plant detritus had been removed from a residue which, itself, consisted of about 500 ml; all but about 125 ml of this was found to be a 'heavy' washover of granular peat fragments (the two fractions were recombined for the purposes of examination and subsequent storage). Amongst the peat was a little wood, bark, and twig material. There was a low concentration of fruits and seeds, the remains all appearing a little worn. The more frequent were corncockle (*Agrostemma githago* L., seed fragments), sedge, saw-sedge (uncharred nutlets; charred leaf fragments were also present), weld, blackberry and stinging nettle (*Urtica dioica* L.), forming no very obvious grouping. A single fruit of the large purple-flowered milk-thistle *Silybum marianum* (L.) Gaertner was noted; this introduced plant has been recorded in recent years from medieval deposits from at least two sites in Kingston-upon-Hull and three in York, but does not so far seem to have been noted at Beverley. Though introduced originally as a medicinal herb, the plant is likely to have become established subsequently as an urban weed.

The flot was moderately large and consisted primarily of woody fragments. Insects were present in rather small quantities, and their preservation tended to be poor (E 2.5-3.5, mode 3.0 weak; F 2.0-3.5, mode 2.5 weak). The fauna had no clear character, appearing to have had very mixed origins. There were two bees,

probably *Apis mellifera* (honey bee), and their presence perhaps indicates that analysis of a larger subsample would be worthwhile.

Bone from this sample was well preserved, and included two herring vertebrae.

Column samples

The three column tin samples formed one overlapping sequence through eight contexts in Trench 1 (Contexts 1037, the uppermost, though 1066, 1074, 1075, 1071, 1073, 1079 to 1081, basal, which overlay the natural clay 1082), each a distinct fill of cut 219. A 'squash' subsample was examined from each of these contexts. With the exceptions of the uppermost and lowermost contexts (1037 and 1081, respectively) each of the 'squash' subsamples was mostly of organic detritus, with variable but always relatively small inorganic components. Diatoms were present in most of the deposits in the sequence, sometimes in large numbers and often well preserved. Similarly, pollen grains/spores were often present though in rather small numbers and often somewhat crumpled or broken. There was little to indicate human activity but a single trichurid parasite egg was noted from Context 1075 and another possibly (only tentatively identified) from the next highest context in the sequence (Context 1074). Both of these remains were of a size to be eggs of *Trichuris trichiura* (Linnaeus) but could also be of *Trichuris suis* (Schrank), the whipworms of humans and pigs, respectively. The only other indication of human activity was from traces of fine charcoal noted through the column sequence.

The results from the 'squash' subsamples are summarised in Table 1.

Hand-collected shell

Hand-collected shell with a total weight of just over six hundred and seventy grammes was recovered from 23 contexts (9 from Trench 1 and 14 from Trench 2, one of which was unstratified, one 'modern' and the rest provisionally dated as medieval). Most of the individual deposits gave small amounts of remains with only the unstratified Context 2000 yielding more than 100 g of shell. Preservation was somewhat variable (ranging from poor to good) but predominantly fair. All of the material was assessed and the taxa identified as closely as possible. Table 2 gives the total number of fragments recorded by context and summary totals.

The remains from almost all of the contexts were either exclusively or predominantly of oyster shell. Other edible marine taxa (cockle – *Cerastoderma edule* (L.), and ?mussel – cf. *Mytilus edulis* L.) were each present

in trace amounts in one context (2059 and 1068, respectively).

The oyster shell was, on the whole, of 'fair' preservation (approximately 84% of the valves could be identified as being either left or right valves). Only about one third of the valves for which 'side' could be determined were measurable (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 14-31% of the valves. Up to 29% of the valves showed some fresh breakage presumably caused during recovery of the remains (some of the bags of shell from individual contexts also contained small flakes of shell showing that the valves had disintegrated further post-excavation). There was no evidence of damage to the valves (e.g. polychaet worm burrows, dog whelk holes) or encrustation (e.g. by barnacles) by other marine biota.

The only recovered land snail remains were of a single individual of *Cepaea/Arianta* sp. from Context 1006.

Hand-collected vertebrate remains

Forty-eight of the excavated deposits produced a vertebrate assemblage amounting to 792 fragments. These remains were mainly recovered from pit fills but also from several levelling layers and the fill of a gully. Most contexts were provisionally dated to the medieval period, but some later material of post-medieval and modern date was also present within the assemblage. In total, 78 fragments were measurable and 12 were mandibles with teeth *in situ*.

Preservation of the vertebrate remains from both trenches was recorded as fair to good. Material from seven medieval deposits (Contexts 1010, 1054, 1067, 1075, 2012, 2048 and 2059) were noted as being dark brown in colour, suggesting waterlogging, and these were generally well preserved. Dog gnawing was noted on a limited number of bones and appeared most commonly on bones from Trench 1. Burnt material was recovered from ten deposits (Contexts 1007, 1066, 1068, 1070, 1071, 2025, 2027, 2048, 2052 and 2059).

Heavy fragmentation of the remains was noted from many deposits; the absence of fresh breaks suggests that this occurred in the past and was probably the result of butchery practises. Long bones had often been chopped and split (Contexts 1010, 1067, 1069, 2012, 2043, 2025 and 2051), probably to allow for access to the marrow. Vertebrae were also commonly butchered (Contexts 1010, 1067, 2022, 2059 and 2061) with many being chopped longitudinally. This suggests that carcasses were being split into 'sides' a practise that was common during the medieval period. Several

scapulae were found to have been trimmed (Contexts 1070 and 2059), which may represent the preparation of cured shoulder joints, whilst a dog scapula was noted as having knife marks along the blade suggesting defleshing (Context 1039).

A sheep/goat horncore had been chopped around the base to remove it from the rest of the skull (Context 1068), whilst a sheep/goat cranium had had the horns removed (Context 1010). Both may be evidence for some sort of craft activity. Bone working was also indicated by the presence of two sheep/goat metatarsals that had holes made in their proximal ends (Contexts 1010 and 2003). Irregularities of the proximal articulation of one had also been removed. Additionally, a possible bone skate made from a horse radius was recovered from Context 1068. Both ends of the bone had been remodelled to produce slight points and the ulna had been removed to provide a flat surface on which to balance. Examples of skates made from horse and cattle long bones, typically metapodials have been found on several sites including Coppergate (O'Connor 1989) and Walmgate (<http://www.yorkarchaeology.co.uk/wgate/main/life3.php>) in York. Similar skates to the one found at Barker's Mill were also found at Oost-Souburg in the Netherlands (Lauwerier and Van Heeringen, 1998).

A fairly restricted suite of species was identified and this was dominated by the major domesticates, cattle, caprovid and pig. Horse, cat and dog were present in small numbers while wild species were represented by a single fragment of hare. Bird remains were well represented with goose, fowl and duck being common although a Turdidae (thrush family) bone was also present. A fragment of human skull was identified amongst the unstratified material.

Fish remains, although not numerous, were recovered from 15 deposits and included cod (*Gadus morhua* L.), haddock (*Melanogrammus aeglefinus* (L.)) and ling (*Molva molva* (L.)). These are all marine fish belonging to the gadid family, the consumption of which became increasingly popular during the medieval period (Locker 2001; Enghoff, 2000). While the haddock could have been caught closer to the shore, the cod and ling bones represent large fish, often over a metre in length, and these fish generally inhabit deeper waters. This suggests that they were supplied as stored fish and the butchered ling vertebrae from Context 1006 support this.

The largest quantity of bone was assigned to the unidentified fraction, much of which was of large and medium-sized mammal vertebrae and rib fragments.

All parts of cattle and sheep/goat skeletons were represented; however, the remains of pig included high proportions of mandibles and pelvis, with relatively

fewer long bones present. This could represent the waste from initial processing of carcasses as there were also reasonable numbers of metapodials—heads and feet often being discarded first.

Pathological conditions were noted in two cases. A single cattle metatarsal exhibited exostoses on the distal shaft, together with splayed distal condyles and eburnation of the distal articulation (Context 1010). Additionally, a cattle phalanx (Context 1007) had eburnation on the distal articulation and a small pit on the articular surface. Both of these bones appear to have been affected by osteoarthritis which was common in medieval cattle and may have been caused by their use as traction animals (Scott 1992).

Discussion and statement of potential

The column samples show some potential for the investigation of the depositional environment via further study of their microfossil content—the diatoms being of particular interest in this regard.

Plant remains were generally well preserved (mostly by anoxic waterlogging), and sometimes extremely well preserved, though some deposits yielded rather few identifiable specimens. Uncharred peat fragments were present in all but one of the samples (and tentatively identified from the ninth), and other wetland resources frequently noted were charred saw-sedge (*Cladium*) leaf fragments (in six samples), likely to represent either ash from saw-sedge used as fuel or from the burning of thatch (see further discussion of the use of this plant by Hall *et al.*, 2003). Remains of charred saw-sedge are now regularly recorded from sites of medieval date in Beverley, especially in the area of Well Lane and Lord Roberts Road, a few hundred metres to the north-east of the present site. Peat, presumably dug from nearby deposits, is almost a constant in samples from the Becks area. Small numbers of hazel nutshell fragments (submitted along with the hand-collected shell) are most likely food waste. Insects were present in some of the samples, occasionally in large numbers and well-preserved. They show potential for the investigation (in conjunction with further

study of the plant remains) of aspects of the local environment, human influence and the nature of some specific fills.

The deposits considered here add considerably to our growing corpus of evidence for exploitation of the environment of the environs of Beverley as well as contributing further records of relevance to an understanding of human activities such as dyeing and other aspects of textile working through the Middle Ages.

The small hand-collected shell assemblage was dominated by fairly well preserved oyster valves from medieval contexts (mostly pit fills and levelling/ground raising deposits). The oyster valves (and the few other edible shellfish remains) probably all represent human food waste—though clear evidence of their having been opened using tools was rather sparse. From current evidence, the would most likely 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. The only hand-collected land snail was a single *Cepaea/Arianta* sp. from Context 1006, probably of modern origin and of no interpretative value.

This site has produced a small assemblage of well preserved vertebrate remains, though some fragmentation, resulting from the medieval butchery practises employed, has reduced the number of skeletal elements which can be measured. The assemblage was dominated by the remains of cattle, sheep/goat and pig, with other domesticates being present in smaller numbers. Birds and fish were also fairly well represented. It would seem that waste from a number of sources is represented here. There are bones which appear to be primary butchery waste and several fragments which suggest refuse from some sort of craft activity e.g. hornworking. However, the presence of the remains of birds, fish and the

smaller mammals, such as dog and cat, also suggest domestic refuse.

Remains of eel, pike and cyprinid (from the samples) indicate the occasional exploitation of riverine resources, whilst the gadid and herring remains suggest the importation of marine fish, possibly dried or pickled rather than fresh.

Recommendations

Further study of the pollen and diatom content of the column sequence (column samples 32, 33 and 34) would be of value to investigate the depositional environment and surrounding landscape.

A proportion of the samples deserve full analysis for insect remains, especially in the context of a broader study of the Beckside area and land-use zonation in Beverley as a whole. The records of bees are of particular note and analysis of much larger subsamples of the deposit from which they came would be worthwhile, in the hope of determining whether bees were abundant in the locality. The importance of combining data from insects and plants in interpreting this material (e.g. the origin of the aquatic components, and possible presence of stable manure) must be emphasised. Analysis should also be made of plant remains from those samples for which insect analysis is deemed appropriate. There are specific recommendations in the 'Results' text for further investigation of particular plant remains from Contexts 1066 and 2061. In addition, any deposits not considered in this assessment should certainly be reviewed as part of any further work undertaken.

No further study of the current hand-collected shell assemblage is warranted.

The preservation of this vertebrate material is good but the deposits from which it was recovered are rather broadly dated. Further analysis of the assemblage to produce an

archive, including biometrical and age-at-death data, would be worthwhile if a tighter dating framework could be achieved. Although only small, data from this assemblage may provide a useful contribution to synthetic studies of the area.

Retention and disposal

All of the current material should be retained for the present. All remaining sediment samples should be stored under suitable conditions until decisions regarding further analysis and/or disposal can be taken.

Archive

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

Acknowledgements

The authors are grateful to Trevor Brigham and Sophie Tibbles, of Humber Field Archaeology for providing the material and the archaeological information.

References

- Dainton, M. (1992). A quick, semi-quantitative method for recording nematode gut parasite eggs from archaeological deposits. *Circaea, the Journal of the Association for Environmental Archaeology* **9**, 58-63.
- 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.
- Enghoff, I. B. (2000). Fishing in southern North Sea region from 1st to 16th century AD: evidence from fish bones. *Archaeofauna* **9**, 59-132.

Hall, A. R., Kenward, H. K. and McComish, J. M. (2003). Pattern in thinly-distributed plant and invertebrate macrofossils revealed by extensive analysis of occupation deposits at Low Fisher Gate, Doncaster, U. K. *Environmental Archaeology* **8**, 129-44.

Kenward, H. K. (1992). Rapid recording of archaeological insect remains - a reconsideration. *Circaea, the Journal of the Association for Environmental Archaeology* **9** (for 1991), 81-8.

Kenward, H. K. (1998). Invertebrates in archaeology in the north of England (unpublished draft).

Kenward, H. and Hall, A. (1997). Enhancing bioarchaeological interpretation using indicator groups: stable manure as a paradigm. *Journal of Archaeological Science* **24**, 663-73.

Kenward, H. and Hall, A. (2004). Actively decaying or just poorly preserved? Can we tell when plant and invertebrate remains in urban archaeological deposits decayed? pp. 4-10 in Nixon, T. (ed.), *Preserving archaeological remains in situ? Proceedings of the 2nd [PARIS] conference 12-14th September 2001*. London: Museum of London Archaeology Service.

Kenward, H. and Large, F. (1998). Recording the preservational condition of archaeological insect fossils. *Environmental Archaeology* **2**, 49-60.

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.

Lauwerier, R. C. G. M. and Van Heeringen, R. M. (1998). Skates and prickers from the Circular Fortress of Oost-Souburg, the Netherlands (AD 900-975). *Environmental Archaeology* **3**, pp.121-126

Locker, A. (2001). *The role of stored fish in England 900-1750 AD: the evidence from historical and archaeological data*. Sofia: Publishing Group Limited.

O'Connor, T. P. (1989). Bones from Anglo-Scandinavian levels at 16-22 Coppergate. *The*

Archaeology of York **15** (3), 137-207 + Plates VII-XI. London: Council for British Archaeology.

Scott, S. (1992). *The animal bones*, pp. 236-51 in Evans, D. H. and Tomlinson, D., Excavations at 33-35 Eastgate, Beverley, 1983-6. *Sheffield Excavation Reports* **3**. Sheffield.

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. Barker's Mill, Beverley, East Riding of Yorkshire: summary of microfossil 'squash' subsamples. Key: org = approximate amount of 'squash' composed of organic detritus – T = trace (~1%); L = little (<10%); M = most (50%+); f. spores/hyphae = fungal spores and/or hyphae; Trichuris – sub-columns indicate numbers of eggs with 0, 1 or 2 polar plugs intact; f = few (up to 3 individuals); s = some (4 to 20); m = many (21 to 50); vm = very many (more than 50).

Context	org	plant tissue	pollen/spores	?phytolith fragments	f. spores/hyphae	diatoms	Trichuris			Note
							0	1	2	
1037	T	-	-	-	t	-	-	-	-	
1066	M	vm	s	-	s	vm	-	-	-	4+ types of diatom
1074	M	m	f	-	-	m	-	?1	-	5+ types of diatom
1075	M	m	s	-	f	f	-	1	-	2+ types of diatom
1071	M	m	f	s	f	vm	-	-	-	7+ types of diatom
1073	M	m	s	f	s	m	-	-	-	4+ types of diatom
1079	M	m	s	f	s	m	-	-	-	6+ types of diatom
1081	L	s	s	-	-	-	-	-	-	

Table 2. Barker's Mill, Beverley, East Riding of Yorkshire: hand-collected shell by context. Key: Med = medieval; Mod = modern; U/S = unstratified; 'Cn' = Context number; Type = Context type; 'l' = number of left (or lower) valves; 'r' = number of right (or upper) valves; 'i' = number of valves of indeterminate side; 'meas' = estimated number of valves intact enough to be measured; 'e' = average erosion score for valves; 'f' = average fragmentation score for valves; 'kn' = number of valves showing damage characteristic of the oyster having been opened using a knife or similar implement; 'fr' = number of valves showing fresh breakage; 'wt' = total weight of shell (in grammes).

Cn	Date	Type	Oyster valves								Notes	wt
			l	r	i	meas	e	f	kn	fr		
1006	Med	levelling/?floor	0	0	0	-	-	-	-	-	1 x <i>Cepaea/Arianta</i> sp. land snail	4
1007	Med	dump	1	0	0	1	2	1	?1	0	several hazel nut fragments - 2 x '½'s plus other smaller fragments	54
1009	Med	levelling	0	0	1	0	2	3	0	0		2
1014	Med	coffer pit fill	1	0	0	?1	1	1	?1	?1		20
1045	Med	fill of pit 1046	0	0	0	-	-	-	-	-	1 x ?freshwater mussel valve fragment; 1 x '½' hazel nut	<1
1066	Med	organic layer	1	0	0	1	1	1	?1	1		42
1068	Med	levelling	1	1	0	2	1	1	1/?2	0	2 x ?mussel (cf. <i>Mytilus edulis</i> L.) valve fragments; 1 x whole and 1 x '½' hazel nut	48
1071	Med	levelling	1	0	0	1	1	1	0	0	valve stained mid to dark brown	28
1092	Med	ground raising	2	0	0	2	1	1	?1	1	valves stained mid to dark brown and dark blue/grey	49
2000	U/S	unstratified	0	1	0	0	2	3	0	0		7
2003	Mod	disturbed	3	2	1	?1	2	2	?1	1	many small 'flakes' of shell	111
2011	Med	upper fill of ?pit 2067	1	0	1	0	1	2	0	2		41
2012	Med	primary fill of ?pit 2067	1	0	0	1	1	1	1	?1		33
2022	Med	levelling/?floor	1	0	3	?1	2	1	0	?1		14
2025	Med	upper fill of pit 2026 [=2044]	5	7	1	2	2	2	2	3/?4	many small 'flakes' of shell	95
2041	Med	fill of pit 2026 [=2044]	0	1	0	0	2	3	0	1		9
2042	Med	upper fill of pit 2026 [=2044]	0	4	0	?1	2	2	?1	1		27
2043	Med	upper fill in lower part of pit 2026 [=2044]	0	2	0	?1	1	2	0	0		13
2045	Med	primary fill of pit 2026 [=2044]	0	1	0	0	2	3	0	0		1
2048	Med	upper fill in lower part of pit 2066	0	0	1	0	1	3	0	0		6
2052	Med	upper fill of pit 2057	1	1	0	1	2	1	2	0		28
2059	Med	seals upper step of pit 2066	0	1	0	0	2	2	1	0	1 x cockle (<i>Cerastoderma edule</i> (L.)) valve	8
2061	Med	secondary fill of pit 2060	1	0	0	1	1	1	?1	0	valve stained dark blue-grey	31
Sum/Average			20	21	8	12/?17	1.5	1.8	7/?15	10/?14		671
Sum/Average for medieval contexts	Med		17	18	7	12/?16	1.5	1.7	7/?14	9/?13		553

Table 3. Barker's Mill, Beverley, East Riding of Yorkshire: hand-collected vertebrate remains by period group. Key: Med = medieval; (?) Med = possibly medieval; Med/PM = medieval/post-medieval; PM/Mod = post-medieval/modern; Mod = modern; U/S = unstratified.

Species		Med	(?) Med	Med/PM	PM/Mod	Mod	U/S	Total
<i>Lepus</i> sp.	hare	1	-	-	-	-	-	1
<i>Canis</i> f. domestic	dog	1	-	1	-	1	-	3
<i>Felis</i> f. domestic	cat	2	-	-	-	-	-	2
<i>Equus</i> f. domestic	horse	2	1	-	-	-	1	4
<i>Sus</i> f. domestic	pig	32	-	-	1	8	-	41
<i>Bos</i> f. domestic	cow	44	2	-	1	5	2	54
Caprovid	sheep/goat	79	1	-	3	4	-	87
<i>Anser</i> sp.	goose	9	-	-	1	1	-	11
<i>Anas</i> sp.	duck	9	-	-	-	-	-	9
<i>Gallus</i> f. domestic	fowl	20	-	-	1	1	-	22
Turdidae	turdidae	1	-	-	-	-	-	1
Fish		39	-	-	4	-	-	43
Unidentified		466	3	-	21	24	-	514
Total		705	7	1	32	44	3	792