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**An evaluation of biological remains from excavations at
Keldgate, Beverley (site code: KEL94)**

by

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Summary

A series of sediment samples from late 12th-13th century deposits in Keldgate was examined for their content of biological remains. All those analysed gave at least modest assemblages of plant and/or insect remains. The deposits included floors, which appeared to have had domestic use, and pits, which had received human excrement (in one case), stable manure (in at least one other), and some possible tan bark (in one or two more). A single surface deposit of unspecified nature may also have contained some stable manure and have represented a floor. The deposit underneath the earliest archaeological layers appeared to have formed in a wetland environment and presumably represents land on which the earliest occupation was established.

These samples are considered to merit further investigation both for site interpretation and for broader synthesis.

A small assemblage of hand-collected bone has also been examined. Though it is too small to offer much useful interpretative information, material of this period from well-dated deposits is sparse in the region and it is recommended that any further excavation should involve systematic recovery of bone to provide unbiased groups.

A list of timbers identified from the site is appended.

Keywords: Keldgate; Beverley; medieval; insect remains; plant remains; bone; timber

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Introduction and methods

GBA samples

All of the samples were inspected in the laboratory and a description of their lithology recorded using a standard *pro forma*. Subsamples of 1 kg were taken from ten of the samples for extraction of macrofossil remains, following procedures of Kenward *et al.* (1980; 1986). Eight of these samples were also examined for the eggs of parasitic nematodes using the methods of Dainton (1992).

Bone

The hand-collected animal bone assemblage consisted of a single box (45 x 31 x 20 cm) containing bones from 22 contexts. Material from context 1 has been excluded from the analysis because of the obviously disturbed nature and the broad date of this deposit. The remaining 21 contexts were all from Phases 4-6, dating to the 13th and early 14th centuries.

Results

The sediment samples

The results of the investigations are presented in phase and context number order, with information from the excavator concerning context types in square brackets. Samples for which no analysis was made are represented by a sediment description alone.

Results of analyses of parasite eggs were negative except where otherwise indicated.

Natural

Context 130 [organic layer over natural]
Sample 14

Moist, dark brown, fibrous, fine and coarse woody and herbaceous detritus, including abundant mats of moss and some lumps of grey silty clay. 'Straw' was present and wood was abundant.

The rather large residue was mostly organic but also included about 15% by volume of sand. The >4 mm fraction was notable for containing several large (to 40 mm) chunks of tree bark with rather large amounts of moss, including *Eurhynchium praelongum*, *Calliargon cuspidatum*, *Cirriphyllum piliferum*, *Rhytidiadelphus squarrosus* and *Pseudoscleropodium purum*. Together, these indicate grassland habitats, several tending to wetter or shadier habitats. The presence of trees in a damp habitat is confirmed by the moderate amounts of material from alder—buds and bud-scales, fruits, female cone fragments and twig debris. Taxa such as *Stellaria holostea* (a seed and some stem fragments), *Ajuga reptans* (nutlet), *Veronica beccabunga* type (seeds) and *Angelica sylvestris* (a fruit), as well as abundant *Filipendula ulmaria* achenes all indicate wetland, perhaps tall herb vegetation in fen carr or a wet meadow bordering an area of wetter ground. Although several of the other taxa could not be identified beyond genera which include weeds and waste ground plants, they were all potentially consistent with the interpretation of this assemblage as coming from a wetland habitat, presumably *in situ*. Only traces of charcoal <5 mm attest the likely presence of man.

The smallish group of insect remains included some excellently preserved material. Aquatics and species associated with damp moss were well represented (ostracods were also recorded). Terrestrial forms comprised decomposers (some typically found in natural habitats and some more usually associated with artificial ones), plant-feeders and a single species found under bark. This assemblage accords well with the evidence from the plant remains.

Sample 15

The sediment was identical in lithology to sample 14.

Phase 1 (late 12th century)

Context 196 [lowest deposits excavated]
Sample 100

Black, slightly indurated, slightly layered, very humic silt with some fine and coarse herbaceous detritus and lumps of grey clay. 2-20 mm stones, vivianite and mammal bone were present.

Phase 1-3 (late 12th/early 13th century)

Context 54 [layer from which pit 96 is cut]
Sample 18

Moist, varicoloured (from light grey to buff to dark brown, dark reddish brown and black), brittle (working crumbly), slightly stony, sandy silt. Stones in the size range 20-60 mm were present. Leather, wood, twigs and mammal bone were also present.

The moderately large residue was about 50:50 organic debris and grit/sand. There were traces of pot, charcoal, fish bone and leather, indicating occupation material. The identifiable plant remains included some probable foodplants (apple, elderberry, sloe, 'bran'), with wetland taxa and modest numbers of weed seeds. It is possible that a litter component including hay and or straw and a little bracken and perhaps also fen peat was present. A single snail was recovered from the residue; it was a specimen of an succineid, perhaps *Oxyloma pfeifferi*, a species of marsh habitats, and consistent with several of the mosses and vascular plants present in the sample.

The flot contained a modest-sized assemblage of insect remains, with abundant evidence of decomposing matter similar to stable litter. There were two human fleas, perhaps indicating human occupation, although fleas would be able to breed in other kinds of litter.

Phase 4 (early 13th century)

Context 88 [fill of pit 124. Leather offcuts]
Sample 17

Moist, very dark brown, layered, fibrous and compressed, slightly sandy and silty, fine and coarse herbaceous detritus with some small fawn clay lumps. 'Straw' was abundant and leather and mammal bone were present.

The residue was very rich in organic material, with about 15% by volume of sand. Much of the former was fine to medium herbaceous detritus and much of this, in turn, was probably 'monocot' stem and leaf debris from grasses, cereals, or similar plants. Grass or cereal culm fragments and culm-nodes were quite frequent. There were a few wood fragments, including chips of oak, and twig fragments which included hazel. Some small fen peat fragments may also have been present. The well preserved fruits and seeds, present in moderate numbers, were a mixture of weeds and wetland taxa with no particular component predominant. Flax capsule fragments and seeds were recorded and there was a moderate amount of very fine 'bran', but 'useful' plants were otherwise lacking. The overall impression gained is of a deposit rich in hay/straw and perhaps other litter (bracken frond fragments were present in small numbers, for example).

Insects were rare in the flot. There were hints at a very subjective level of a component from dung. The finely comminuted nature of many of the plant remains gave the impression of cow rather than horse dung, but of course some other mechanism may have produced the observed material.

Context 100 [fill of wood-lined culvert]
Sample 13

Just moist, dark grey-brown but very oxidised to orange in patches throughout, fine and coarse herbaceous detritus with a noticeably undense character. Large stones (>60 mm) were present.

The large residue was rich in organic detritus but there was about 30% by volume of sand and grit. Most of the organic component

comprised herbaceous detritus and no positive identification of the nature of this was possible—it may have included plant litter like hay or straw (there were some culm and chaff fragments of cereals and/or grasses). Preservation of fruits and seeds was moderately good and their concentration was quite high. The commonest taxa were weeds but grassland and wetland plants were also present and there were moderate numbers of oak buds and bud-scales, perhaps from brushwood.

Insect remains were rare and gave no indication as to conditions within the culvert.

Context 188 [primary fill of pit 187]
Sample 16

Moist, dark grey/brown, crumbly, slightly sandy clay silt with fine and coarse herbaceous detritus. Wood and twigs were present.

There is no doubt that this pit fill consisted in large part of human faecal matter; concretions (to 35 mm) typical of such deposits were present and a large part of the disaggregated material comprised wheat/rye 'bran' and corncockle (*Agrostemma githago*) fragments both ultimately derived from flour. Other foodplants included apple, 'cherry' and 'plum' with elderberry and blackberry. The parasite egg 'squash' gave large numbers of *Trichuris* eggs with a trace of *Ascaris*, confirming the likely nature of this material as human faeces. Preservation of plant remains was mostly very good, the concentrations of identifiable fruits and seeds being moderately high. A modest range of non-foodplants was present, reflecting a background of weeds and wetland taxa typical of these occupation deposits. Small amounts of bark, wood and twig fragments were also present.

Fly puparia were rather abundant in the flot, but other insects were present only in small numbers.

Phase 5 (13th century)

Context 17 [floor]
Sample 1

Moist, dark grey, through grey to light yellowish brown, brittle and layered (working crumbly), slightly humic, slightly sandy silt. Very fine charcoal was common.

Context 52 [floor]
Sample 2

Just moist, varicoloured (from dark grey/brown to yellow to mid brown with white flecks), crumbly, slightly layered and compressed sandy silt. Charcoal was present.

Context 55 [floor]
Sample 3

Dry to just moist, mid yellow/brown to dark grey/brown and mid/dark brown, crumbly, brittle and slightly layered, sandy silt with some wood chips present.

Context 57 [floor]
Sample 4

Just moist, light to mid brown and dark grey, brittle, layered and compressed, working crumbly, sandy silt.

The rather large residue contained much sand and a little grit; There were moderate amounts of concreted (slightly calcareous) sediment to 15 mm maximum dimension, together with moderate amounts of wood fragments to 15 mm and charcoal to 5 mm. The concentration of identifiable plant macrofossils was quite high with preservation very variable (from excellent to poor). With the exception of moderate numbers of hazel nutshell fragments, the more frequent taxa were all weeds of waste ground or cultivated soils, notably weld (*Reseda luteola*) and stinking mayweed (*Anthemis cotula*), but there were also some wetland plants in very small amounts and perhaps also some hints of grassland. A fragment of a 'cherry' stone and capsule fragments of flax were the only potentially useful plants recorded other than the hazel nutshell. Other indicators of occupation were several small fish bones and a trace of eggshell.

There were small numbers of very fragmented insect remains in the flot, although the fossils appeared to have undergone little chemical erosion. This may have been a result of trampling or short-term drying of the deposit. The few beetles were a mixture of species likely to occur in a building and outdoor forms. There were remains of at least four lice, probably the human louse *Pediculus humanus* (identification could not be confirmed within the time constraints of an evaluation). The evidence of insect remains is thus consistent with the archaeological identification of this context, the lice strongly suggesting domestic occupation. The rather small number of domestic insects indicates that the structure was kept rather clean. It seems likely that a substantial proportion of the biological remains originated with the mineral sediment, perhaps at least partly as 'trample'. The remains of plants and animals reflecting food consumption or preparation are also entirely consistent with a domestic earth floor.

Context 58 [floor? organic surface/lining]
Sample 5

Moist, mid brown and black, crumbly, working soft and slightly sticky, silt and fine, coarse and woody detritus. Bone was present and wood and twigs were common.

The rather large residue included moderate amounts of charred wood and twigs to 25 mm but the largest component was charred straw debris. It is likely that much or most of this may have been from oats since charred and partly-charred spikelets and grains of *Avena* (some identifiable as cultivated oat, *A. sativa*) were present in modest numbers. At least one well preserved grain of barley was also observed, however. A few other charred and uncharred plant remains were present, but these were of no interpretative value. The residue also contained moderate amounts of sand, a few stones to 30 mm, and traces of pot, and burnt and unburnt mammal bone. Insect remains were lacking in the flot.

Context 60 [burnt dump; fill of pit 96]
Sample 7

Moist, very mixed and varicoloured from grey

to reddish brown and black, crumbly and compressed, thin layers of grey ?mortar or lime with rotted straw and some silt. ?Mortar/plaster and 'straw' were abundant, mammal bone was present.

The rather large residue contained some slightly concreted grey sediment intimately mixed with charcoal; this was probably ash. Charcoal was common in the residue, but there were also some wood fragments, including 'chips', and some burnt bone. The other plant remains included modest numbers of *Sphagnum* leaves and some other wetland taxa and it is possible that wetland peat or vegetation had been part of the material contributing to the ash—a primary objective of further analysis of this material would be to establish unequivocally whether burnt and unburnt peat fragments (tentatively identified during this exercise) were indeed present. Traces of leather and wheat/rye 'bran' indicate an 'occupation' component of the deposit.

The flot contained very few insects. The only notable records were of fragments of an adult and a puparium of the sheep ked *Melophagus ovinus*.

Context 64 [floor]
Sample 6

Just moist, dark grey/brown to mid brown with pale grey layers and patches of red-brown/orange and buff, brittle, layered and compressed sandy silt.

The rather large residue consisted in large part of sand and grit, with charcoal (to 10 mm) and charred straw fragments (in the <2 mm fraction). Some concreted sediment similar to that observed in the subsample from sample 4 was also present. Plant remains included charred and uncharred fruits and seeds in low concentrations and with uncharred material rather poorly preserved. Apart from a wheat grain, a spikelet and grain of cultivated oats, and a trace of hazel nutshell, 'useful' plants were lacking and the assemblage consisted of a mixture of weeds and wetland plants of no particular character.

Modest numbers of insect remains were present in the flot. They included small numbers of some species typical of buildings and a variety of outdoor forms including several aquatics. There was a single undiagnostic flea and remains of an adult and a puparium of the sheep ked.

The biological remains from this sample were compatible with the identification of this layer as a floor deposit, and subjectively it appears to have had domestic use.

Context 77 [fill of pit 96]
Sample 10

Dark red-brown, crumbly, 'granular', fine and coarse woody detritus. Looks like wood-working debris (coarse sawdust). Birch bark rolls were present, ?wattle was abundant and ?mortar/plaster was present.

There was a very large residue in which bark made up the bulk of the material, with smaller amounts of wood and a little sand. The bark and wood reached 30 mm in maximum dimension. Perhaps not surprisingly, a large part of the finer fractions comprised tiny bast fragments and other material released by decay of bark. It is very tempting to conclude that this was material destined for or resulting from the tanning of hides or skins (a little leather was present). The small numbers of well-preserved plant macrofossils were all typical of urban medieval occupation deposits but added nothing to the interpretation.

The flot contained moderate numbers of insects, which subjectively constituted an unusual group whose preservational state differed from that normal in archaeological deposits. There was a component of species typical of occupation, notably *Lathridius minutus* group (of which there were several) and the woodworm *Anobium punctatum* (two). Insects from somewhat foul decaying matter were present in small numbers, and there were a few outdoor forms.

The parasite squash gave a single *Trichuris* egg with two polar plugs; this concentration is at the level of 'background' for deposits of this kind.

Context 79 [primary fill of pit 96]
Sample 11

Wet, crumbly and spongy, red-brown, fine and coarse wood debris with plant fragments and patches of orange oxidised material. Bird bone was present.

Sample 790/T

This sample had been collected during a site visit and processed prior to this evaluation exercise; in the interests of economy a further subsample was not disaggregated.

The large residue was almost entirely of organic matter with only a little sand. Bark made up the vast bulk of this and there were many small bast fragments in the finer fractions no doubt originating from the bark. Apart from a trace of wheat/rye 'bran', the few well-preserved seeds and moss fragments were either consistent with an origin in woodland or on the bark itself or were typical of urban occupation deposits and interpretatively neutral. It is possible that the bark was waste from tanning, although leather was not recorded in this sample.

The flot produced a small number of insect remains, with a variety of fly puparia and some beetles. There were numerous *Lathridius minutus* group and single individuals of several other species which might have co-existed with these in mouldering plant debris.

Context 80 [floor above wattle]
Sample 9

Just moist, colours very mixed; orange-grey, grey, mid brown, yellow, mid grey-brown, crumbly sandy silt with white flecks and a trace of rotted wood. Some slight layering within larger clasts.

Bones

Preservation was uniformly good, with the colour of the bones ranging from ginger to dark brown. In most cases the colour was homogeneous throughout the material from

single contexts. Butchery was evident on a high proportion of the bones. A number of fragments showed signs of having been burnt to high temperatures: they were white in colour. Gnawing attributable to dogs was present, but only in low frequencies.

The assemblage was quite small, having a total of 243 fragments weighing 2850 g, of which 82 were identifiable to species. There were 23 measurable bones and four mandibles with teeth.

The species represented are shown in Table 1. The major domesticates, i.e. cattle, caprines and pigs, were the most common taxa (48 fragments), with caprines the most numerous (27 fragments). Of these, two were positively identified as sheep (one horncore and one phalanx I) and two as goats (one metacarpal and one phalanx I). Cattle and pig fragments were represented in almost equal amounts. A single fragment of roe deer metatarsal was also recovered from context 72.

Cat was represented by 4 fragments (one tibia, two femora and one humerus) from context 49 and these were probably from the same immature individual. The tibia appeared to have been burnt mid-shaft where it had subsequently broken. The humerus was interesting since the characteristic lateral foramen was wholly absent. If the identification is correct this may suggest a developmental anomaly.

Birds were represented by fragments of domestic fowl (8), goose (9) and duck (1). The goose bones represent a range of sizes, with the smallest elements consistent with the black geese (*Branta* spp.). The larger individuals represent either domestic stock or members of the larger grey geese (*Anser* spp.). Similarly, the duck was mallard-sized, possibly also representing a wild individual. Of the 18 bird bones present, most (15) were of wing elements (i.e. coracoid, humerus, radius, ulna and carpometacarpus). Within this group of bones, the main non meat-bearing elements carry the flight feathers which, in the past, had a variety of uses (e.g. fletching arrows and making quill pens). Alternatively these elements may simply represent the waste from dressed carcasses.

The fish bones recovered were all from marine species, mostly of the cod family (Gadidae). This indicates that the fish must have been brought in from coastal fisheries. There were single fragments of cod (*Gadus morhua* L.), haddock (*Melanogrammus aeglefinus* (L.)) and ?ling (cf. *Molva molva* (L.)). Also present were six lateral Triglidae (gurnard family) scutes. The ?ling ceratohyal and gadid cleithrum represent very large specimens.

Discussion

All of the deposits examined gave at least modest numbers of plant or insect remains, usually both, and they were sometimes very well preserved. Of particular interest were the floor deposits which, although they gave rather small insect groups, were of a date for which few other examples exist and deserve further investigation. The preliminary evidence obtained during this evaluation suggested that the floors represented rather clean human occupation build-up (e.g. sample 4, context 57, with several ?human lice). Aspects of the biological remains in these floors were reminiscent of certain of the clearly domestic floor accumulations of Anglo-Scandinavian date at 16-22 Coppergate, York (Kenward and Hall, in press; Hall and Kenward, forthcoming).

One of the pit fills was certainly largely composed of human faecal material; others were rich in tree bark and it has been suggested that this was material used for tanning, the more likely given the scraps of leather in several of the deposits examined.

Perhaps the most unusual deposit encountered was the 'organic layer over natural' (context 130). Plant and insect remains pointed to this being an undisturbed wetland deposit, perhaps formed in alder carr with tall-herb vegetation. It appears to have built-up *in situ* and if so indicates the nature of the area onto which occupation took place in this area in the late 12th century.

Statement of potential

Potential for site interpretation

Fuller analysis of the material documented here (but preferably together with recovery of larger plant and insect assemblages from the unprocessed samples and the remains of those samples already partly examined) undoubtedly would produce information of great value in defining the nature and use of the site in the periods represented by the excavated deposits. The floor deposits, in particular, represent a rare opportunity to examine occupation layers of the 13th century, a period for which few such contexts with good preservation have yet been studied. One constraint on such work would be the difficulty of obtaining large enough assemblages of insects from certain layers for interpretation; another would be the fragmentary nature of many of the remains. Lastly, many of the species represented are not easily identified, carrying the implication of a considerable investment of time.

Potential for elucidation of wider issues

Apart from the wider comparative importance of the floor deposits (mentioned above), the deposits at Keldgate are clearly vital to an understanding of occupation history on the south-west fringes of the medieval settlement in an area which was presumably always marginal for habitation, lying on the edges of undrained land to the west.

The hand-collected animal bone assemblage is, as it stands, of little interpretative value, mainly because of its small size. However a good proportion of the material is very well preserved and tightly dated between the 12th and 14th centuries. This is a period particularly poorly represented in the region.

Additional material from Keldgate would provide important comparanda with other assemblages from Beverley, including Lurk Lane (Scott 1991) and Eastgate

(Scott 1992), as well as other small medieval assemblages from York, Hull and Lincoln.

Recommendations

It is desirable that further investigation of the samples should take place and, if the remaining deposits are threatened by development, an opportunity to excavate and sample further should not be missed.

It is highly likely that a moderately large, well preserved bone assemblage would be recovered should further excavation be undertaken and this is recommended. Systematic recovery procedures would also ensure that a more representative range of species and elements was recovered.

Retention and disposal

All the material should be retained for the present. The sediment samples should be kept under cool, dark conditions, since many have fossils with only a limited potential for survival.

Archive

All extracted fossils from the test subsamples, and the residues and flots are currently stored in the Environmental Archaeology Unit, University of York, along with paper and electronic records pertaining to the work described here.

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Table 1: Hand-collected bone from recorded contexts.

Species	Total fragments	Total weight (g)	No. measurable	No. mandibles with teeth
Cattle	10		2	1
Caprine	27		7	2
Pig	11		4	1
Roe deer	1		-	-
Cat	4		-	-
Goose	9		5	-
Chicken	8		5	-
Duck	1		-	-
Fish	11		-	-
Subtotal	82	1517	23	4
Unidentifiable	161	1333	-	-
Total	243	2850	23	4

Appendix**Timber identifications: Keldgate, Beverley (KEL94)**

Context	Timber	Identification	Comments
53	-	oak	squared post/beam
60	-	alder	roundwood
	-	oak	squared rod
	-	oak	very eroded ?rod
73	-	oak	squared rod, partly charred
77	-	oak	plank fragment
90	-	birch	roundwood 'sail' from wattle panel
90	-	hazel	brushwood from rods for wattle panel; twigs varied from 5 to 25 mm, most were strongly compressed and there was a moderate amount of decay; where annual rings could be distinguished, the wood was perhaps up to 5 years in age at cutting
99/100	-	oak	plank from plank-lined drain
101	73	hazel	worked wood
	74	alder	do.
	75	hazel	do.
104	-	oak	large post/beam