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**Investigations of plant and invertebrate macrofossil remains from excavations in
2004 at 62-8 Low Petergate, York (site code 2002.421)**

by

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Summary

Plant and invertebrate (mainly beetle) remains have been examined from a series of subsamples of occupation deposits from excavations at Low Petergate in 2004.

There were some rich assemblages of plants with evidence for a modest range of taxa likely to have been useful to the inhabitants of the site, including barley, wheat, oat, hemp, flax, apple, strawberry, grape and walnut. There was some evidence for the presence of peat and/or turves, probably brought to the site to be used as fuel, litter or in construction. There was also evidence of human faeces, which confirms the archaeological interpretation of several features as cess or garderobe pits. Charcoal and wood chips were present in the majority of the samples, together with concentrations of hazel nutshell. It is probable that most of the contexts included material of mixed origins, in the manner of occupation levels where refuse accumulated.

The insect remains from the GBA samples included a variety of taxa typically associated with human occupation. Several of the assemblages comprised two distinct components, consistent with indoor and outdoor ecological groupings, which may have arisen from the dumping of indoor refuse (probably floor sweepings) in the backyard areas. Evidence from insect remains for cut vegetation and peat was present in the majority of samples, as well as some remains which may relate to wool cleaning.

Overall, the samples represent occupation build up including domestic waste associated with the dwellings on the site.

Keywords:

62-8 LOW PETERGATE; YORK; OCCUPATION DEPOSITS; LATE MEDIEVAL; MACROFOSSIL PLANT REMAINS; INSECT REMAINS

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Investigation of plant and invertebrate macrofossil remains from excavations in 2004 at 62-8 Low Petergate, York (site code 2002.421)

Introduction

An archaeological excavation was carried out by York Archaeological Trust (YAT) at 62-8 Low Petergate, York (centred on NGR SE 6039 5204), between March and July 2004. Archaeological deposits and structural remnants of the medieval and post-medieval periods were encountered, including pits, post holes, wall foundations, hearths and furnaces, and occupation layers and floors. Some of the pits were thought to have been used as cess pits (though perhaps not exclusively). The samples originate from the back yard areas of four properties (whose boundaries and alignments are thought to originate in the late medieval period).

Twenty-five sediment samples were assessed for their bioarchaeological potential by Akeret *et al.* (2003). Based on this assessment, ten samples were selected for further investigation and they form the basis for this report. Also examined was further material from one other context, revealed during an evaluation at the site by YAT in February 2003, assessment of which was reported by Hall *et al.* (2003).

Methods

Following description and selection, subsamples of raw sediment from the ten selected samples were processed, using methods described by Kenward *et al.* (1980). This involved paraffin flotation in order to extract any insect remains, plant remains then being extracted by means of a 'washover' to concentrate the lighter, organic fraction. The washovers consisted mainly of uncharred material (preserved by anoxic waterlogging). The volumes of this and of the heavier mineral fraction were both measured, and the components of both fractions recorded whilst wet. The washovers were stored wet, the residues dried

Inspection of the washovers was carried out by RM and ARH, who recorded the nature of the plant material and other components after re-sieving into convenient fractions (usually 10, 4, 2, 1 and 0.3 mm). A four-point semi-quantitative scale of abundance was used, from '1' – one or a few specimens (less than an estimated six per kg of raw sediment) to '4' – abundant remains (many specimens per kg, or a major component of the matrix). Data were recorded on paper and subsequently on a personal computer using a Microsoft *Access* database.

For technical reasons the convention 'sp(p)' to denote that more than one species was or may have been present, is used throughout, even where only one specimen of the taxon was recorded (and thus only one species could have been present). For plant remains, 'cf.' is used to indicate a 'best guess' as to the identity of fossil specimens.

The 'flots' (in alcohol) resulting from the paraffin flotation were thoroughly examined by LG and HKK for insect remains, using a low-powered light microscope. The fragments were kept in damp Petri dishes together with a few thymol crystals to prevent mould, before being identified. Coleoptera identification manuals and a reference collection of modern specimens were used. Once identified, the fragments were stored in alcohol. Species lists were recorded on standard forms, and data subsequently transferred to a personal computer using *Paradox* software. Adult beetles and

bugs were recorded fully quantitatively, and the minimum number of individuals estimated using the fragments. The minimum numbers of individuals were counted rather than the total number as it provides a more realistic estimate of assemblage composition.

The insect remains have been interpreted using ecologically-related groups, as defined by Kenward and Hall (1995), as seen in Table 6. The main abbreviations used are as follows; certain and probable outdoor species (oa/ob, both making up group OB), aquatics (w), damp ground/waterside taxa (d), strongly plant-associated taxa (p), heathland/moorland taxa (m), wood associated taxa (l) and grain pests (g). Decomposers have been subdivided into those associated with dry habitats (rd), those associated with foul habitats (rf), and those which cannot easily be assigned to either subdivision (rt). The group 'RT' includes all decomposer indicators (rd + rf + rt). Synanthropic species have been subdivided into facultative synanthropes, common in natural and artificial habitats (sf), those which are typically synanthropic but able to survive in natural conditions (st), and strong synanthropes, absent from or very rare in natural habitats (ss); these together are totalled to group SA, all synanthropes. An important group of these synanthropic species has been termed 'house fauna' (Carrott and Kenward 2001; Kenward and Hall 1995; Allison, Hall and Kenward 1999).

Results

Tables presenting the results of the analyses and detailed descriptions of the material examined on a sample-by-sample basis are given in the Appendices. The tables include complete lists of taxa, sample-by-sample semi-quantified lists of plants and other components recorded during the plant macrofossil analysis, species lists and main statistics for the insect assemblages, and a key to the ecological groupings applied to adult beetles and bugs.

Discussion

At least some remains of plant or insect macrofossils were present in all the samples examined and in some cases there were sizeable assemblages of identifiable remains of considerable interpretative value. The quality of preservation varied amongst the samples, however, the majority of the remains being preserved by anoxic waterlogging, although with some samples producing small amounts of charred (contexts 4977, 4919, 4088 4710, and 4995) and mineralised (4977, 4088, 4162, and 4175) plant material. All of the samples produced charcoal fragments.

Two groups of plant remains were most prominent in the assemblages: those likely to represent food waste of various kinds, and those originating in weeds likely to have been brought with cereal crops. Thus, most of the samples contained cereal bran, which must represent milled grains in the form of flour. (The tissue concerned is the periderm, consisting of two superimposed layers of thin-walled rectilinear cells crossing each other at right angles or obliquely, the diagnostic cross-cells which distinguish wheat from rye in very well preserved material being absent, cf. Kenward and Hall 1995, 753.)

Another, more indirect, indicator of cereals being used on site is the large proportion of remains of arable weeds that were found in most of the samples. Among these weeds, some of which are characteristic of cereal fields and rarely found elsewhere, are *Agrostemma githago* (corncockle), which was usually present. Very few complete seeds of corncockle were recovered, with the remains mostly consisting of fragments. This probably indicates that the seeds were present in the grain during milling, as they are relatively large and are difficult to remove by winnowing or sieving

(Kenward and Hall 1995, 758). *Centaurea cyanus* (cornflower), *Chrysanthemum segetum* (corn marigold), and *Scandix pecten-veneris* (shepherd's needle) were also present in over half the samples, and would almost certainly have been brought to the site together with harvested cereals.

The sample from Context 4977 contained a rather large number of stored grain pests: *Sitophilus granarius*. While indicative of stored products, these are typical of stable manure assemblages. *Crataraea suturalis* is a typical 'house fauna' element which may have exploited stored hay (Carrott and Kenward 2001; Kenward forthcoming). *Mycetophagus quadriguttatus* was also rather abundant in Context 4977 and, although associated with wood (Kenward and Hall 1995), it is also found amongst stored products (Buckland and Buckland 2006).

The records of uncharred oat in Contexts 4977, 4088, 4710 and 4175 may represent material originally intended as animal feed, as the samples also contained remains of chaff which was preserved by anoxic 'waterlogging' and does not seem to have been the remains of a cleaned crop appropriate for human consumption (cf. Kenward and Hall 1995, 753). Further evidence for the presence of animals at, or in close proximity to the site, is the presence of one individual of the sheep ked *Melophagus ovinus* which was found in Context 2113, and is usually an indicator of wool processing or sheep butchering (Hall and Kenward 2003).

Of the plant taxa recorded in half, or more, of the samples, *Agrostemma githago* seed fragments, *Polygonum lapathifolium*, *Chrysanthemum segetum*, *Lapsana communis*, *Atriplex*, *Rumex* and *Centaurea* all seem likely to have arrived as crop weeds, and the remains of *Brassica*, identified only to genus, may also fall in this group.

The similarly frequent remains of fig (*Ficus carica*) and hazel nut (*Corylus avellana*) on the other hand must represent other foods. The nut shell was perhaps the remnants of a 'snack' food. Remains of other edible fruits were found in several of the samples, those from Context 4175, a late 14th century cobble-lined garderobe pit, being particularly rich. This can be seen through the presence of *Vitis vinifera* (grape), fig, *Malus sylvestris* (apple), *Prunus domestica* and *P. domestica* ssp. *insititia* (plums), *Prunus spinosa* (sloe), *Rubus fruticosus* (blackberry) and *Fragaria vesca* (strawberry). This sample also produced other food remains—the spice coriander (and perhaps also black pepper, *Piper nigrum*, though the identification is not thought sound enough to have included it in the data tables), as well as the pulse, field bean (*Vicia faba*). As is normal for material of this date, there was a considerable morphological variation in the stones of *Prunus*. Some were relatively small (essentially <10 mm in long axis)—and these can be identified with reasonable certainty as sloe; some were much larger and are similar in size to the stones of small modern dessert plums. With the exception of the nutshell, all these food plant remains are likely to represent human faecal waste. This is reinforced by the presence of faecal concretions in three of the contexts—4027, 4162 and 4175—so it is probable that these samples were from features which served at least at some stage as cess pits. Several samples have a similar composition of plant and insect remains but no direct evidence of faeces. In some cases the insect remains were more suggestive of stable manure than animal dung, dung beetles being less likely to have invaded within a building.

The presence of *Carpelimus bilineatus* suggests that the conditions of the house floors would not have been too dry, unless it invaded after dumping outdoors. The woodworm beetle *Anobium punctatum* may be so common because it lived in wooden structures at the site. It is almost universally abundant in urban archaeological deposits. However, it was suggested by Kenward and Large (1998) that this beetle, which is robust and recognisable from minute fragments, could be so frequent in archaeological deposits partly because of constant small-scale redeposition. In the

present case, the large numbers and condition of the specimens suggest that it was breeding nearby, probably in the structures from which the house fauna originated.

One very characteristic group of plant remains at this site must have originated in peat or turves—blocks of dead plant matter from a fen or bog, or blocks or sheets of plant material and soil cut from the surface of an area of living vegetation (Hall 2003, 1). The acid peat bog taxa such as *Sphagnum imbricatum*, cross-leaved heath (*Erica tetralix*), and cotton grass (*Eriophorum vaginatum*) seem most likely to represent imported peat, whilst other taxa may have come with fen peat (bogbean *Menyanthes trifoliata*, marsh cinquefoil *Potentilla palustris*, and saw-sedge *Cladium mariscus*, for example), and yet other material largely from sods with a turf mat of heathland vegetation. Contexts 4977, 4919 and 4482 were particularly rich in these types of remains. Various insect species support the plant evidence for cut peatland vegetation and/or peat having been brought onto the site. Some or all of the aquatic organisms may have been brought with plant material, trapped amongst stems or in peat, turf or cut vegetation like reeds; such materials perhaps account for a significant proportion of wetland invertebrates in occupation sites (Kenward forthcoming). *Hydroporus*, *Agabus* and *Helophorus* species are aquatics which, on the evidence from various sites, seem often to have been transported with peat. *Micrelus ericae* and *Strophosomus sus* (the latter found in both subsamples from Context 4977) are found on heathland and moorland and there is strong evidence that they too were carried onto sites with peat. Deposits containing heathland plants and insects that have been interpreted as the remains of turves were also encountered at 16-22 Coppergate (Kenward and Hall 1995) and many other sites of 10th to 15th century date in the city (Hall and Kenward 2004). It is probable that this material was not brought to the site to be deliberately burnt as fuel, but that its original purpose was for use in construction, perhaps litter (as an absorbent layer in stables), and—in the case of turves—thatching (Hall and Huntley 2007, Kenward forthcoming). Another material which may have served as litter was wood chips, recorded in abundance in two contexts.

The bean weevil *Bruchus rufimanus*, *Donacia* sp., *Plateumaris* sp., *Apion* sp., *Ceutorhynchus* sp., *Sitona lineatus* and *Gymnetron labile* are associated with plants, and again believed often to have brought onto sites with cut vegetation. However, the individual numbers of each species at the present site were very low, mainly single individuals in any assemblage, with a maximum of only two individuals for *Ceutorhynchus* sp. The beetle *Notaris acridulus* (one individual from Context 4628) is a waterside weevil associated with a number of wetland plants of the kinds recorded; it may indicate imported water, or equally cut vegetation, in this case probably the latter. This context is also the only one from which the water-flea *Daphnia* sp., and other unidentified cladoceran ephippia were recorded. Perhaps pools of water were present on the site, but it is just as likely that they came from peat or stuck onto cut plants.

Hemp (*Cannabis sativa*) fruits (achenes) were found as single fragments in several of the samples. The plant may have been used on the site as a source of fibre for rope or cloth, though its seeds are edible and are rich in an edible oil, which finds uses similar to those of linseed oil (from flax, *Linum usitatissimum*). The latter was also used for its edible oil, and it, too, was found in several of the samples. As well as being used as oil, it is likely to have been eaten in bread and other foods, though its seeds may stand as evidence of a second fibre crop.

The insect remains from all the samples yielding interpretively useful assemblages were consistent with an occupation site, with a large number of species favouring human activity (synanthropes). Each assemblage was dominated by 'house fauna', for example *Lathridius minutus* group, *Tipnus unicolor*, *Cryptophagus scutellatus* and *Ptinus fur*. The subterranean beetle *Aglenus brunneus*, known for occurring abundantly in archaeological samples (Allison, Hall and Kenward 1999) most likely lived and reproduced in the accumulations of decaying organic matter, especially in protected

situations such as house floors, and may have burrowed into the more deeply buried organic matter (Kenward 1975). Here it is likely to have co-existed with other post-depositional invader species such as, *Trechus micros* (12 individuals in 4 samples), *Coprophilus striatulus* (14 individuals in 5 samples), *Quedius mesomelinus* (8 individuals in context 4027), *Rhizophagus parallellocollis* (6 individuals in 2 samples) and *Anommatus duodecimstriatus* (6 individuals in Context 4027). As these species are most likely to have been ‘invaders’ the archaeological information they provide cannot be relied upon (Carrott and Kenward 2001; Kenward forthcoming).

Concluding remarks

Overall, the samples represent occupation build-up of domestic waste, perhaps including stable manure, from the dwellings on the site and in several cases it is likely that faecal waste formed part of the deposits recovered, consistent with the archaeological interpretations. Both the plant and insect remains suggest that some of the material being deposited was imported to the site for flooring or thatching; peat and hay may have been used in stables, for example, as indeed may have been the wood chips. The insects often suggested the presence of stable manure. Evidence of cultivation is visible in the majority of the samples through the presence of weed seeds, which are generally found in arable fields, and brought to urban sites with cut vegetation and crop remains. The plant remains also indicate the exploitation by the inhabitants of a variety of foods, some likely to have been imported (fig, grape), others probably collected from the countryside beyond the city (sloe, blackberry, strawberry). As usual in medieval deposits in the city, the assemblages were generally rather mixed in nature and may often have formed through accumulation of waste from a number of sources. Perhaps surprisingly, none of the deposits examined gave any very clear evidence for craft activities, with the possible exception of the records of sheep keds, which may relate to wool cleaning or fleece handling.

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Appendix 1: data tables

Table 1. Plant taxa recorded from samples at 62-8 Low Petergate showing the number of samples in which each taxa was present. Mosses were recorded as leaf/leaves and/or shoot fragment(s) unless otherwise indicated. Order and nomenclature follow Tutin et al. (1964-80) for vascular plants and Smith (1978) for mosses.

Taxon	Common Name	Parts recorded	No. Samples
<i>Juglans regia</i> L.	walnut	nutshell fragment(s)	1
<i>Corylus avellana</i> L.	hazel	charred nut(s) and/or nutshell fragment(s) nut(s) and/or nutshell fragment(s)	1
<i>Quercus</i> sp(p).	oak	bud(s) and/or bud-scale(s)	5
<i>Ficus carica</i> L.	fig	seed(s)	1
<i>Cannabis sativa</i> L.	hemp	achene(s)	7
<i>Urtica dioica</i> L.	stinging nettle	achene(s)	4
<i>Urtica urens</i> L.	annual nettle	achene(s)	2
<i>Polygonum aviculare</i> L.	knotgrass	fruit(s)	2
<i>P. hydropiper</i> L.	water-pepper	fruit(s)	5
<i>P. persicaria</i> L.	persicaria/red shank	fruit(s)	2
<i>P. lapathifolium</i> L.	pale persicaria	fruit(s)	4
<i>Polygonum</i> sp(p).	knotweeds, etc.	fruit(s)	6
<i>Bilderdykia convolvulus</i> (L.) Dumort.	black bindweed	fruit(s)	1
<i>Rumex acetosella</i> L.	sheep's sorrel	fruit(s)	5
<i>Rumex</i> sp(p).	docks	fruit(s)	7
<i>Chenopodium album</i> L.	fat hen	seed(s)	3
<i>Chenopodium</i> sp(p).	goosefoots	seed(s)	2
<i>Chenopodium/Atriplex</i> sp(p).	goosefoot/orache	seed(s)	2
<i>Atriplex</i> sp(p).	oraches	mineralised seed(s) seed(s)	1 7
<i>Stellaria media</i> (L.) Vill.	chickweed	seed(s)	4
<i>Stellaria cf. neglecta</i> Weihe in Bluff & Fingerh.	?greater chickweed	seed(s)	1
<i>Cerastium</i> sp(p).	mouse-ear chickweeds	seed(s)	1
<i>Scleranthus annuus</i> L.	annual knawel	fruit(s)	1
<i>Spergula arvensis</i> L.	corn spurrey	seed(s)	2
<i>Lychnis flos-cuculi</i> L.	ragged robin	seed(s)	1
<i>Agrostemma githago</i> L.	corncockle	charred seed(s) seed fragment(s) seed(s)	1 7 2
<i>Silene</i> sp(p).	campions, etc.	seed(s)	2
<i>Silene vulgaris</i> (Moench) Garcke	bladder campion	seed(s)	1
<i>Caltha palustris</i> L.	marsh marigold	seed(s)	1
<i>Ranunculus</i> sp(p).	buttercups, etc.	achene(s)	1
<i>Ranunculus Section Ranunculus</i> bulbous buttercup	meadow/creeping/ bulbous buttercup	achene(s)	6
<i>R. sardous</i> Crantz	hairy buttercup	achene(s)	3
<i>R. flammula</i> L.	lesser spearwort	achene(s)	2
<i>Ranunculus Subgenus Batrachium</i>	water crowfoots	achene(s)	1
<i>Aquilegia vulgaris</i> L.	columbine	seed(s)	2

<i>Papaver argemone</i> L.	long prickly-headed poppy	seed(s)	1
<i>Papaver</i> sp(p).	poppies	seed(s)	1
<i>Fumaria</i> sp(p).	fumitories	seed(s)	1
<i>Cruciferae</i>	cabbage family	seed(s)	1
<i>Lepidium campestre</i> (L.) R. Br. in Aiton	pepperwort	seed(s)	1
<i>Brassica</i> sp(p).	cabbages, etc.	mineralised seed(s)	1
		seed(s)	5
<i>Brassica rapa</i> L.	'turnip'	seed(s)	3(?1)
<i>Brassica</i> sp./ <i>Sinapis arvensis</i>	brassica/charlock	seed(s)	2
<i>Raphanus raphanistrum</i> L.	wild radish	pod segments and/or fragment(s)	1(?1)
		seed(s)	2
<i>Reseda luteola</i> L.	weld/dyer's rocket	seed(s)	3
<i>Rubus fruticosus</i> agg.	blackberry/bramble	seed(s)	4
<i>Rubus caesius</i> L.	dewberry	seed(s)	1
<i>Potentilla palustris</i> (L.) Scop.	marsh cinquefoil	achene(s)	1
<i>Potentilla</i> cf. <i>erecta</i> (L.) Räuschel	tormentil	achene(s)	2
<i>Fragaria</i> cf. <i>vesca</i> L.	wild strawberry	achene(s)	2
<i>Malus sylvestris</i> Miller	crab apple	endocarp seed(s)	2 2
		mineralised seed(s)/embryo(s)	1
		immature seed(s)	1
<i>Crataegus monogyna</i> Jacq.	hawthorn	pyrene(s)	1
<i>Prunus</i> cf. <i>spinosa</i> L.	?sloe	fruitstone(s)	1
<i>P. domestica</i> ssp. <i>domestica</i>	plums, etc.	fruitstone(s)	1
<i>P. domestica</i> ssp. <i>insititia</i> (L.) C. K. Schneider	plums, etc.	fruitstone(s)	2
<i>P. domestica</i> cf. ssp. <i>insititia</i>	plums, etc.	fruitstone(s)	1
<i>P. Section Cerasus</i>	cherry	fruitstone(s)	1
<i>Prunus</i> sp(p).	sloe/plum/cherry, etc.	fruitstone(s)	1
<i>Leguminosae</i>	pea family	charred seed(s)	1
<i>Vicia faba</i> L.	field bean	mineralised testa fragment(s)	1
<i>Pisum sativum</i> L.	garden/field pea	waterlogged hilum/a	1
<i>Linum usitatissimum</i> L.	cultivated flax	seed(s)	3
<i>Vitis vinifera</i> L.	grapes	seed(s)	2
<i>Viola</i> sp(p).	violets/pansies, etc.	seed(s)	1
<i>Hydrocotyle vulgaris</i> L.	marsh pennywort	mericarp(s)	1
<i>Anthriscus sylvestris</i> (L.) Hoffm.	cow parsley	mericarp(s)	1
<i>Scandix pecten-veneris</i> L.	shepherd's needle	mericarp(s)	3
<i>Coriandrum sativum</i> L.	coriander	seed(s) (fr interiors)	1
<i>Aegopodium podagraria</i> L./ <i>Conium maculatum</i> L.	ground elder/hemlock	mericarp(s)	1
<i>Aethusa cynapium</i> L.	fool's parsley	mericarp(s)	3
<i>Bupleurum rotundifolium</i> L.	hare's-ear/thorow-wax	mericarp(s)	1
<i>Apium graveolens</i> L.	wild celery	mericarp(s)	1
<i>Heracleum sphondylium</i> L.	hogweed	mericarp(s)	1
<i>Erica tetralix</i> L.	cross-leaved heath	leaf/leaves	1
<i>Calluna vulgaris</i> (L.) Hull	heather, ling	flower(s)	3
		charred root and/or basal twig fragment(s)	2(?1)
		root and/or basal	

		twig fragment(s)	3(?1)
		shoot fragment(s)	2
		shoot tip(s)	1
<i>Vaccinium</i> sp(p).	bilberries	seed(s)	1
<i>Fraxinus excelsior</i> L.	ash	testa fragment(s)	1
<i>Menyanthes trifoliata</i> L.	bogbean	seed(s)	2
<i>Galium</i> sp(p).	bedstraws, etc.	fruit(s)	1
<i>Boraginaceae</i>	borage family	nutlet(s)	2
<i>Galeopsis</i> Subgenus <i>Galeopsis</i>	hemp-nettles	nutlet(s)	2
<i>Galeopsis</i> sp(p).	hemp-nettles	nutlet(s)	2
<i>Prunella vulgaris</i> L.	selfheal	nutlet(s)	3
<i>Satureja hortensis</i> L.	summer savory	nutlet(s)	1
<i>Lycopus europaeus</i> L.	gipsywort	nutlet(s)	1
<i>Hyoscyamus niger</i> L.	henbane	seed(s)	1
<i>Rhinanthus</i> sp(p).	yellow rattles	seed(s)	2
<i>Sambucus nigra</i> L.	elder	seed(s)	2
<i>Valerianella dentata</i> (L.) Pollich	narrow-fruited cornsalad	fruit(s)	3
<i>Knautia arvensis</i> (L.) Coulter	field scabious	fruit fragment(s)	1
		fruit(s)	2
<i>Compositae</i>	daisy family	achene(s)	1
<i>Anthemis cotula</i> L.	stinking mayweed	achene(s)	5
<i>Chrysanthemum segetum</i> L.	corn marigold	achene(s)	5
<i>Senecio</i> sp(p).	groundsels/ragworts, etc.	achene(s)	2
<i>Centaurea</i> sp(p).	knapweeds, etc.	achene(s)	5
		mineralised achene(s)	1
<i>Centaurea cf. cyanus</i> L.	?cornflower	achene(s)	2
<i>Hypochoeris</i> sp(p).	cat's ears	achene(s)	1
<i>Leontodon</i> sp(p).	hawkbits	achene(s)	3
<i>Picris hieracioides</i> L.	hawkweed ox-tongue	achene(s)	1
<i>Sonchus asper</i> (L.) Hill	prickly sow-thistle	achene(s)	2
<i>S. oleraceus</i> L.	sow-thistle	achene(s)	1
<i>S. cf. oleraceus</i> L.	?sow-thistle	achene(s)	1
<i>Lapsana communis</i> L.	nipplewort	achene(s)	6
<i>Luzula</i> sp(p).	woodrushes	seed(s)	1
<i>Gramineae</i>	grasses	waterlogged caryopsis/es	3
<i>Gramineae/Cerealialia</i>	grasses/cereals	charred caryopsis/es	1
		waterlogged culm fragment(s)	1
		waterlogged culm node(s)	1
<i>Cerealialia</i> indet.	cereals	waterlogged rachis fragment(s)	1
<i>Cerealialia</i> indet.	cereals	waterlogged spikelet(s)/fragment(s)	1
<i>Triticum cf. aestivum</i> L.	?bread wheat	charred caryopsis/es	1
<i>Triticum</i> sp(p).	wheats	charred caryopsis/es	1
		charred rachis internode(s)	1
<i>Triticum/Secale</i>	wheat/rye	waterlogged periderm	
		fragment(s)	6
<i>Secale cereale</i> L.	rye	charred caryopsis/es	2
<i>Hordeum</i> sp(p).	barley	charred caryopsis/es	2
		charred rachis internode(s)	2
		waterlogged rachis	
		fragment(s)	1
		waterlogged rachis	
		internode(s)	1
<i>Avena</i> sp(p).	oats	charred caryopsis/es	3(?1)
		mineralised caryopsis/es	2
		waterlogged caryopsis/es	1

<i>Lemna</i> sp(p).	duckweeds	seed(s)	1
<i>Eriophorum vaginatum</i> L.	cotton-grass	charred sclerenchyma spindle(s) (from leaf sheaths)	1
<i>Eleocharis palustris</i> sl	common spike-rush	sclerenchyma spindles	1
<i>Eleocharis cf. multicaulis</i> (Sm.) Desv.	?many-stalked spike- rush	nutlet(s)	3
<i>Eleocharis</i> sp(p).	spike-rushes	nutlet(s)	1
<i>Cladium mariscus</i> (L.) Pohl	great sedge/saw-sedge	nutlet(s)	1
<i>Carex</i> sp(p).	sedges	nutlet(s)	8
<i>Sphagnum imbricatum</i> Hornsch. ex Russ.		leaf/leaves	3
<i>Sphagnum</i> sp(p).		capsule(s) and/or lid(s)	1
		leaf/leaves	1
			1
<i>Polytrichum cf. commune</i> Hedw.			1
<i>Polytrichum</i> sp(p).		leaf/leaves/leaf-base(s) and/or shoot fragment(s)	1
<i>Dicranum</i> sp(p).			1
<i>Leucodon sciuroides</i> (Hedw.) Schwaegr.			1
<i>Antitrichia curtispindula</i> (Hedw.) Brid.			1
<i>Neckera complanata</i> (Hedw.) Hüb.			3
<i>Thuidium cf. tamariscinum</i> (Hedw.) Br. Eur.			1
<i>Homalothecium sericeum/lutescens</i>			1
<i>Eurhynchium cf. praelongum</i> (Hedw.) Br. Eur.			1
<i>Hypnum cf. cupressiforme</i> Hedw.			1
<i>Hylocomium splendens</i> (Hedw.) Br. Eur.			2

Table 2. Lists of plant remains and other components of the samples from excavations at 62-8 Low Petergate, York. Identified plant taxa are listed in taxonomic order as in Table 1, with other components in alphabetical order following each species list.

Key: *b/bs*—bud(s) and/or bud-scale(s); *ch*—charred; *c/n*—culm-nodes; *endo*—endocarp; *ff*—fruit fragments; *fgts*—fragments; *fls*—flowers; *imm*—immature; *lvs*—leaves; *m*—mericarp; *min*—mineral-replaced; *rt-tw*—root/basal twig; *s*—seeds; *scl sp*—sclerenchyma spindles; *segs*—segments; *sf*—seed fragments; *sht*—shoot; *spkls*—spikelets; *w/l*—waterlogged.

Context 2113, Sample 2/1 (2 kg)

Corylus avellana	1
Ficus carica	1
Cannabis sativa	1
Urtica dioica	1
Polygonum lapathifolium	1
Rumex sp(p).	1
Rumex acetosella	1
Atriplex sp(p).	1
Stellaria media	1
Scleranthus annuus	1
Spergula arvensis	1
Agrostemma githago (sf)	1
Ranunculus Section Ranunculus	1
Ranunculus sardous	1
Ranunculus flammula	1
Aquilegia vulgaris	1
Brassica sp(p).	1
Brassica rapa	1
Brassica sp./Sinapis arvensis	1
Raphanus raphanistrum	1
Potentilla palustris	1
Prunus cf. spinosa	1
Pisum sativum (hila)	1
Linum usitatissimum	1
Hydrocotyle vulgaris	1
Scandix pecten-veneris	1
Calluna vulgaris (fls)	1
Calluna vulgaris (rt-tw fgts)	1
Calluna vulgaris (sht fgts)	1
Menyanthes trifoliata	1
Prunella vulgaris	1
Hyoscyamus niger	1
Rhinanthus sp(p).	1
Valerianella dentata	1
Anthemis cotula	1
Chrysanthemum segetum	1
Centaurea sp(p).	1
Leontodon sp(p).	1
Lapsana communis	1
Luzula sp(p).	1
Gramineae	1
Gramineae/Cerealia (c/n)	1
Hordeum sp(p). (rachis internodes)	1
Hordeum sp(p). (w/l rachis internodes)	1
Eriophorum vaginatum (ch scl sp)	1
Eriophorum vaginatum (scl sp)	1
Eleocharis palustris sl	1

Cladium mariscus	1
Carex sp(p).	1
Sphagnum imbricatum (lvs)	2
Dicranum sp(p).	1
Eurhynchium cf. praelongum	1
bird tracheal ring	1
bone fgts	1 max 20 mm
brick/tile	1
buds	1
burnt bone fgts	1
charcoal	2 max 30 mm
earthworm egg caps	1
eggshell fgts	1
fish bone	1
moss	1
pottery	1 max 40 mm
sand	1
slag	1
stone	1
wood chips	3 max 45 mm

Context 4027, Sample 88/1 (3 kg)

Juglans regia	1
Ficus carica	1
Polygonum persicaria	1
Polygonum lapathifolium	1
Rumex sp(p).	1
Rumex acetosella	1
Chenopodium album	1
Atriplex sp(p).	1
Stellaria media	1
Stellaria cf. neglecta	1
Cerastium sp(p).	1
Lychnis flos-cuculi	1
Agrostemma githago (sf)	1
Silene sp(p).	1
Ranunculus Section Ranunculus	1
Brassica sp(p).	1
Brassica sp./Sinapis arvensis	1
cf. Raphanus raphanistrum	
(pod segs/fgts)	1
Rubus fruticosus agg.	1
Rubus caesius	1
Prunus domestica ssp. insititia	1
Anthriscus sylvestris	1
Fraxinus excelsior (testa fgts)	1
Centaurea sp(p).	1

Triticum/Secale ('bran' fgts)	1		Atriplex sp(p).	1
Carex sp(p).	1		Agrostemma githago (sf)	1
			Cruciferae	1
bone fgts	1		Malus sylvestris	1
brick/tile	1	max 45 mm	Malus sylvestris (min)	1
burnt bone fgts	1		Prunus sp(p).	1
charcoal	1		Vitis vinifera	1
eggshell fgts	1		Knautia arvensis	1
faecal concretions	1		Centaurea sp(p).	1
Fe corrosion fgts	1		Lapsana communis	1
Fe object(s)	1		Cerealium indet. (w/1 spkls/fgts)	1
fish scale	1		Triticum/Secale ('bran' fgts)	1
fly pupae	3		Carex sp(p).	1
glass	1			
hair	1		bone fgts	1
mortar	1		brick/tile	1
pottery	1	max 30 mm	catkin fgts (imm)	1
sand	1		charcoal	2
slag	1		eggshell membrane fgts	1
stone	1		faecal concretions	2
twig fgts	1		fish bone	1
wood chips	1		fish scale	1
wood fgts	1		fly pupae	1
			grit	1
			leaf ab pads	1
			mortar	1
			sand	1
			shell fgts	1
			twig fgts	1
			wood fgts	2
Context 4088, Sample 16/1 (3 kg)				
Rumex sp(p).	1			
Chenopodium sp(p).	1			
Atriplex sp(p). (min)	1			
Agrostemma githago (ch)	1			
Agrostemma githago (sf)	1			
Papaver sp(p).	1			
Reseda luteola	1			
Leguminosae	1			
Calluna vulgaris (ch rt-tw fgts)	1			
Galium sp(p).	1			
Sambucus nigra	1			
Centaurea sp(p). (min)	1			
Triticum cf. aestivum	1			
Secale cereale	1			
Hordeum sp(p).	1			
Avena sp(p).	1			
Lemna sp(p).	1			
brick/tile	1	max 55 mm		
Cenococcum (ch sclerotia)	1			
charcoal	2			
coal	2			
fish bone	1			
fish scale	1			
sand	1			
shell fgts	1	max 30 mm		
stone	1	max 50 mm		
twig fgts	1			
wood fgts	1			
Context 4162, Sample 23/1 (3 kg)				
Ficus carica	1			
Polygonum lapathifolium	1			
			Context 4175, Sample 27/1 (1 kg)	
			Corylus avellana	1
			Quercus sp(p). (b/bs)	1
			Ficus carica	3
			Polygonum aviculare	1
			Polygonum hydropiper	1
			Rumex sp(p).	1
			Rumex acetosella	1
			Agrostemma githago (sf)	2
			Ranunculus Section Ranunculus	1
			Ranunculus flammula	1
			Lepidium campestre	1
			Brassica sp(p).	1
			Raphanus raphanistrum	1
			Reseda luteola	1
			Rubus fruticosus agg.	1
			Fragaria cf. vesca	1
			Malus sylvestris	1
			Malus sylvestris (endo)	1
			Prunus domestica ssp. domestica	1
			Prunus domestica ssp. insititia	1
			Vicia faba (min testa fgts)	1
			Vitis vinifera	1
			Coriandrum sativum (m fgts)	1
			Coriandrum sativum (s)	1
			Calluna vulgaris (sht tips)	1
			Vaccinium sp(p).	1
			Prunella vulgaris	1

Knautia arvensis (ff)	1	Chenopodium sp(p).	1
Anthemis cotula	1	Chenopodium album	1
Centaurea sp(p).	1	Atriplex sp(p).	1
Hypochoeris sp(p).	1	Stellaria media	1
Leontodon sp(p).	1	Agrostemma githago	1
Sonchus asper	1	Caltha palustris	1
Lapsana communis	1	Ranunculus sp(p).	1
Triticum/Secale ('bran' fgts)	3	Ranunculus Section Ranunculus	1
Hordeum sp(p). (w/l rachis fgts)	1	Papaver argemone	1
Avena sp(p). (min)	1	Brassica cf. rapa	1
Carex sp(p).	1	Raphanus raphanistrum (pod segs/fgts)	1
Sphagnum imbricatum (lvs)	1	Rubus fruticosus agg.	1
Neckera complanata	1	Potentilla cf. erecta	1
Homalothecium sericeum/lutescens	1	Malus sylvestris (imm s)	1
Hylocomium splendens	1	Aethusa cynapium	1
		Apium graveolens	1
bone fgts	1	cf. Calluna vulgaris (ch rt-tw fgts)	1
brick/tile	1	Menyanthes trifoliata	1
buds	1	Galeopsis Subgenus Galeopsis	1
charcoal	1	Prunella vulgaris	1
earthworm egg caps	1	Lycopus europaeus	1
faecal concretions	1	Rhinanthus sp(p).	1
fish bone	1	Sambucus nigra	1
fly pupae	1	Valerianella dentata	1
leaf ab pads	1	Anthemis cotula	1
shell fgts	1	Chrysanthemum segetum	1
stone	1	Centaurea cf. cyanus	1
Trichuris (eggs)	1	Sonchus oleraceus	1
wood chips	1	Lapsana communis	1
		Triticum/Secale ('bran' fgts)	2
Context 4482, Sample 36/1 (3 kg)		Hordeum sp(p).	1
Calluna vulgaris (rt-tw fgts)	1	Hordeum sp(p). (rachis internodes)	1
		Eleocharis palustris sl	1
bone fgts	1	Carex sp(p).	1
brick/tile	1 max 50 mm	Sphagnum sp(p). (lvs)	2
burnt bone fgts	1 max 30 mm		
charcoal	2 max 25 mm	bone fgts	1
coal	1	brick/tile	1
earthworm egg caps	1	buds	1
grit	1	charcoal	2
iron fgts	1 max 40 mm	coal	1
mortar	1 max 40 mm	fish scale	1
sand	1	fly puparia	1
shell fgts	1	gravel	1
stone	1 max 30 mm	insects	1
twig fgts	1	leaf ab pads	1
		leather fgts	1 max 30 mm
		mortar	1
		moss (contaminant)	1
Context 4628, Sample 48/1 (3kg)		pottery	1
Corylus avellana	1	sand	2
Ficus carica	1	shell fgts	1
Cannabis sativa	1	slag	1
Urtica urens	1	twig fgts	1 max 10 mm
Polygonum aviculare	1	wood chips	3
Polygonum persicaria	1	wood fgts	2 max 50 mm
Polygonum lapathifolium	1		
Bilderdykia convolvulus	1		
Rumex sp(p).	1		
Rumex acetosella	1		
		Context 4710, Sample 54/1 (3 kg)	
		Rumex sp(p).	1

Atriplex sp(p).	1	sand	1
Brassica sp(p).	1	stone	1
Scandix pecten-veneris	1	twig fgts	1
Gramineae	1	wood fgts	3 max 180 mm
Triticum sp(p).	1		
Secale cereale	1		
Avena sp(p).	1		
		Context 4977, Sample 76/1 (3 kg)	
charcoal	2	Corylus avellana	1
cinders	1	Ficus carica	1
coal	1	Cannabis sativa	1
hair	1	Polygonum aviculare	1
leaf ab pads	1	Polygonum hydropiper	1
twig fgts	1	Polygonum persicaria	1
wood fgts	2	Polygonum lapathifolium	1
		Rumex acetosella	2
		Chenopodium album	1
Context 4919, Sample 67/1 (3 kg)		Atriplex sp(p).	1
Corylus avellana	1	Stellaria media	1
Corylus avellana (ch)	1	Spergula arvensis	1
Cannabis sativa	1	Agrostemma githago (sf)	1
Urtica urens	1	Silene vulgaris	1
Polygonum aviculare	1	Ranunculus Section Ranunculus	1
Polygonum lapathifolium	1	Fumaria sp(p).	1
Rumex sp(p).	1	Brassica sp(p). (min)	1
Chenopodium/Atriplex sp(p).	1	Brassica rapa	2
Atriplex sp(p).	1	Reseda luteola	1
Agrostemma githago	1	Rubus fruticosus agg.	1
Ranunculus sardous	1	Potentilla cf. erecta	1
Brassica rapa	1	Crataegus monogyna	1
Malus sylvestris (endo)	1	Linum usitatissimum	1
Prunus domestica cf. ssp. insititia	1	Viola sp(p).	1
Prunus Section Cerasus	1	Scandix pecten-veneris	1
Linum usitatissimum	1	Aethusa cynapium	1
Bupleurum rotundifolium	1	Heracleum sphondylium	1
Calluna vulgaris (fls)	1	Erica tetralix (lvs)	1
Boraginaceae	1	Calluna vulgaris (fls)	1
Galeopsis sp(p).	1	Calluna vulgaris (sht fgts)	1
Galeopsis Subgenus Galeopsis	1	cf. Calluna vulgaris (rt-tw fgts)	1
Knautia arvensis	1	Boraginaceae	1
Anthemis cotula	1	Galeopsis sp(p).	1
Chrysanthemum segetum	1	Anthemis cotula	2
Centaurea cf. cyanus	1	Chrysanthemum segetum	2
Sonchus asper	1	Senecio sp(p).	1
Lapsana communis	1	Centaurea sp(p).	1
Triticum sp(p). (rachis internodes)	1	Leontodon sp(p).	1
Triticum/Secale ('bran' fgts)	1	Picris hieracioides	1
Eleocharis sp(p).	1	Sonchus cf. oleraceus	1
Carex sp(p).	1	Lapsana communis	1
Sphagnum imbricatum (lvs)	1	Gramineae/Cerealialia (culm fgts)	1
Antitrichia curtipendula	1	Cerealialia indet. (w/l rachis fgts)	1
Neckera complanata	1	Triticum/Secale ('bran' fgts)	1
		Avena sp(p).	1
brick/tile	1	Avena sp(p). (min)	1
charcoal	3	Avena sp(p). (w/l)	1
fly puparia	1	Carex sp(p).	1
gravel	1	Sphagnum sp(p).	1
iron fgts	1	Sphagnum sp(p). (caps/lids)	1
leaf ab pads	1	Polytrichum sp(p).	1
mortar	1	Polytrichum cf. commune	1

Leucodon sciuroides	1	Fragaria cf. vesca	1
Neckera complanata	1	Aegopodium podagraria/	
Hypnum cf. cupressiforme	1	Conium maculatum	1
Hylocomium splendens	1	Aethusa cynapium	1
		Calluna vulgaris (ch rt-tw fgts)	1
bone fgts	1 max 120mm	Calluna vulgaris (rt-tw fgts)	1
brick/tile	1	Satureja hortensis	1
catkin fgts	1	Valerianella dentata	1
charcoal	1	Compositae	1
fly puparia	1	Chrysanthemum segetum	1
gravel	1	Senecio sp(p).	1
iron fgts	1 max 30 mm	Gramineae	1
leather fgts	1	Gramineae/Cerealia (ch)	1
mortar	1 max 50 mm	Eleocharis palustris sl	1
moss	2	Eleocharis cf. multicaulis	1
peat fgts	2	Carex sp(p).	1
pottery	1 max 40 mm	Thuidium cf. tamariscinum	1
sand	1		
stone	1 max 60 mm	bone fgts	1 max 55 mm
twig fgts	2 max 50 mm	brick/tile	1 max 60 mm
wood fgts	2 max 150 mm	buds	1
		burnt bone fgts	1
		charcoal	1 max 30 mm
		eggshell fgts	1
Context 4995, Sample 79/1 (3 kg)		Fe corrosion fgts	1
Ficus carica	2	fish bone	1
Urtica dioica	1	fish scale	1
Polygonum sp(p).	1	fly pupae	1
Polygonum aviculare	1	grit	1
Polygonum persicaria	1	mortar	1 max 50 mm
Chenopodium/Atriplex sp(p).	1	oyster shell fgts	1
Agrostemma githago (sf)	1	sand	1
Silene sp(p).	1	slag	1
Ranunculus Section Ranunculus	1	stone	1
Ranunculus sardous	1	twig fgts	1
Ranunculus Subgenus Batrachium	1	wood fgts	1
Aquilegia vulgaris	1		
Brassica sp(p).	1		

Table 3. Complete list of invertebrate remains recorded from samples from 62-8 Low Petergate, York. Order and nomenclature follow Kloet and Hincks (1964-77) for insects. Where both secure and tentative identifications for a given taxon were recorded, only the former are listed here. Ecological codes used in calculating statistics (Table 4) are given (they are explained in Table 6) together with the number of samples in which each taxon was recorded. * = not used in calculating assemblage statistics. The remains were of adults unless stated. ec - ecological code; 'sp.' indicates that record was probably an additional taxon, 'sp. indet.' that the material may have been of a taxon listed above it.

Taxon	ec
*Oligochaeta sp. (egg capsule)	u
*Isopoda sp.	u
*Daphnia sp.	oa-w
*Cladocera sp. (ephippium)	oa-w
*Dermaptera sp.	u
<i>Zicrona caerulea</i> (Linnaeus)	oa-p
<i>Macrodema micropterum</i> (Curtis)	oa-p-m
<i>Lyctocoris campestris</i> (Fabricius)	rd-st
Heteroptera sp.	u
Delphacidae sp.	oa-p
*Lepidoptera sp. (pupa)	u
* <i>Melophagus ovinus</i> (Linnaeus)	u
*Diptera sp. (adult)	u
*Diptera sp. (larva)	u
* <i>Pulex irritans</i> Linnaeus	ss
<i>Nebria brevicollis</i> (Fabricius)	oa
<i>Notiophilus</i> sp.	oa
<i>Loricera pilicornis</i> (Fabricius)	oa
<i>Dyschirius globosus</i> (Herbst)	oa
<i>Clivina fossor</i> (Linnaeus)	oa
<i>Trechus obtusus</i> or <i>quadristriatus</i>	oa
<i>Trechus</i> sp.	ob
<i>Bembidion lampros</i> or <i>properans</i>	oa
<i>Bembidion obtusum</i> Serville	oa
<i>Bembidion</i> sp.	oa
<i>Pterostichus ?melanarius</i> (Illiger)	ob
<i>Pterostichus</i> sp.	ob
<i>Calathus melanocephalus</i> (Linnaeus)	oa
<i>Laemostenus ?terricola</i> (Herbst)	ss
<i>Agonum albipes</i> (Fabricius)	oa-d
<i>Agonum (Europhilus)</i> sp.	oa
<i>Amara</i> sp.	oa
<i>Harpalus rufipes</i> (Degeer)	oa
Carabidae spp. and spp. indet.	ob
<i>Hydroporus</i> spp.	oa-w
Hydroporinae sp.	oa-w

<i>Agabus</i> sp.	oa-w
<i>Helophorus aquaticus</i> or <i>grandis</i>	oa-w
<i>Helophorus</i> spp.	oa-w
<i>Sphaeridium</i> sp.	rf
<i>Cercyon analis</i> (Paykull)	rt-sf
<i>Cercyon atricapillus</i> (Marsham)	rf-st
<i>Cercyon haemorrhoidalis</i> (Fabricius)	rf-sf
<i>Cercyon ?quisquilius</i> (Linnaeus)	rf-st
<i>Cercyon terminatus</i> (Marsham)	rf-st
<i>Cercyon unipunctatus</i> (Linnaeus)	rf-st
<i>Cercyon</i> spp. indet.	u
<i>Megasternum obscurum</i> (Marsham)	rt
<i>Cryptopleurum minutum</i> (Fabricius)	rf-st
<i>Hydrophilinae</i> sp.	oa-w
<i>Acritus nigricornis</i> (Hoffmann)	rt-st
<i>Dendrophilus punctatus</i> (Herbst)	rt-sf
<i>Histerinae</i> sp.	rt
<i>Ochthebius</i> spp.	oa-w
<i>Hydraena</i> sp.	oa-w
<i>Ptenidium</i> sp.	rt
<i>Acrotrichis</i> spp.	rt
<i>Catops</i> sp.	u
<i>Silphidae</i> sp.	u
<i>Micropeplus fulvus</i> (Erichson)	rt
<i>Olophrum</i> sp.	oa
<i>Lesteva longoelytrata</i> (Goeze)	oa-d
<i>Lesteva</i> sp.	oa-d
<i>Phyllodrepa ?floralis</i> (Paykull)	rt-sf
<i>Dropephylla ?vilis</i> (Erichson)	l
<i>?Dropephylla</i> sp.	u
<i>Omalium allardi</i> (Fairmaire & Brisout)	rt
<i>Omalium caesum</i> (Gravenhorst)	rt-sf
<i>Omalium caesum</i> or <i>italicum</i>	rt-sf
<i>Omalium rivulare</i> (Paykull)	rt-sf
<i>Xylodromus concinnus</i> (Marsham)	rt-st
<i>Xylodromus</i> sp. indet.	rt-st
<i>Omalinae</i> sp.	rt
<i>Coprophilus striatulus</i> (Fabricius)	rt-st
<i>Bledius</i> sp.	oa-d
<i>Carpelimus bilineatus</i> (Stephens)	rt-sf
<i>Carpelimus</i> spp.	u
<i>Platystethus arenarius</i> (Fourcroy)	rf
<i>Platystethus cornutus</i> (Gravenhorst)	oa-d
<i>Platystethus degener</i> Mulsant & Rey	oa-d
<i>Platystethus cornutus</i> group	oa-d
<i>Platystethus ?nitens</i> (Sahlberg)	oa-d
<i>Anotylus complanatus</i> (Erichson)	rt-sf
<i>Anotylus nitidulus</i> (Gravenhorst)	rt
<i>Anotylus rugosus</i> (Fabricius)	rt
<i>Anotylus sculpturatus</i> group	rt
<i>Anotylus tetracarinatus</i> (Block)	rt
<i>Oxytelus sculptus</i> Gravenhorst	rt-st
<i>Stenus</i> spp.	u
<i>Lathrobium</i> sp.	u
<i>Paederinae</i> sp.	u
<i>Leptacinus ?pusillus</i> (Stephens)	rt-st
<i>Leptacinus</i> sp.	rt-st
<i>Gyrohypnus angustatus</i> Stephens	rt-st
<i>Gyrohypnus fracticornis</i> (Muller)	rt-st

<i>Xantholinus linearis</i> (Olivier)	rt-sf
<i>Xantholinus longiventris</i> Heer	rt-sf
<i>Neobisnius</i> sp.	u
<i>Philonthus</i> spp.	u
<i>Creophilus maxillosus</i> (Linnaeus)	rt
<i>Heterothops</i> sp.	u
<i>Quedius mesomelinus</i> (Marsham)	rt
<i>Quedius</i> sp.	u
<i>Staphylininae</i> sp. indet.	u
<i>Mycetoporus</i> sp.	u
<i>Tachyporus</i> spp.	u
<i>Tachinus laticollis</i> or <i>marginellus</i>	u
<i>Tachinus signatus</i> Gravenhorst	u
<i>Tachinus</i> sp. indet.	u
<i>Cypha</i> sp.	rt
<i>Cordalia obscura</i> (Gravenhorst)	rt-sf
<i>Falagria</i> or <i>Cordalia</i> sp.	rt-sf
<i>Crataraea suturalis</i> (Mannerheim)	rt-st
<i>Aleochara</i> sp.	u
<i>Aleocharinae</i> spp.	u
<i>Trox scaber</i> (Linnaeus)	rt-sf
<i>Aphodius granarius</i> (Linnaeus)	ob-rf
<i>Aphodius prodromus</i> or <i>sphacelatus</i>	ob-rf
<i>Aphodius</i> spp. and spp. indet.	ob-rf
<i>Phyllopertha horticola</i> (Linnaeus)	oa-p
<i>Clambus</i> sp.	rt-sf
<i>Cyphon</i> sp.	oa-d
<i>Melanotus erythropus</i> (Gmelin)	l
<i>Elateridae</i> sp.	ob
<i>Dermestidae</i> sp.	rt-sf
<i>Anobium punctatum</i> (Degeer)	l-sf
<i>Niptus hololeucus</i> (Falderman)	rd-ss
<i>Tipnus unicolor</i> (Piller & Mitterpacher)	rt-ss
<i>Ptinus fur</i> (Linnaeus)	rd-sf
<i>Ptinus</i> sp. indet.	rd-sf
<i>Rhyzopertha dominica</i> (Fabricius)	ss
<i>Lyctus linearis</i> (Goeze)	l-sf
<i>Meligethes</i> sp.	oa-p
<i>Omosita discoidea</i> (Fabricius)	rt-sf
<i>Omosita</i> sp. indet.	rt-sf
<i>Nitidulidae</i> sp.	u
<i>Rhizophagus parallelocollis</i> Gyllenhal	rt-sf
<i>Monotoma bicolor</i> Villa	rt-st
<i>Monotoma picipes</i> Herbst	rt-st
<i>Monotoma</i> sp. indet.	rt-sf
<i>Oryzaeophilus surinamensis</i> (Linnaeus)	g-ss
<i>Cryptophagus scutellatus</i> Newman	rd-st
<i>Cryptophagus</i> spp.	rd-sf
<i>Atomaria</i> spp.	rd
<i>Ephistemus globulus</i> (Paykull)	rd-sf
<i>Anommatus duodecimstriatus</i> (Muller)	rt-st
<i>Mycetaea hirta</i> (Marsham)	rd-ss
<i>Lathridius minutus</i> group	rd-st
<i>Thes bergrothi</i> (Reitter)	rd-st
<i>Enicmus</i> sp.	rt-sf
<i>Dienerella</i> sp.	rd-sf
<i>Corticaria</i> spp.	rt-sf
<i>Corticarina</i> sp.	rt
<i>Corticarina</i> or <i>Cortinicara</i> sp. indet.	rt

<i>Mycetophagus quadriguttatus</i> Muller	l
<i>Typhaea stercorea</i> (Linnaeus)	rd-ss
<i>Aglenus brunneus</i> (Gyllenhal)	rt-ss
<i>Blaps</i> sp.	rt-ss
<i>Tenebrio obscurus</i> Fabricius	rt-ss
<i>Anthicus floralis</i> (Linnaeus)	rt-st
<i>Anthicus floralis</i> or <i>formicarius</i>	rt-st
<i>Bruchus ?rufimanus</i> Boheman	st
<i>Bruchidae</i> sp. indet.	u
<i>Donacia</i> sp.	oa-d-p
<i>Plateumaris</i> sp.	oa-d-p
<i>Donaciinae</i> spp. indet.	oa-d-p
<i>Phaedon</i> sp.	oa-p
<i>Phyllotreta</i> sp.	oa-p
<i>Longitarsus</i> sp.	oa-p
<i>Apion</i> (Oxystoma) sp.	oa-p
<i>Apion</i> spp.	oa-p
<i>Strophosomus sus</i> Stephens	oa-p-m
<i>Sitona ?hispidulus</i> (Fabricius)	oa-p
<i>Sitona ?lineatus</i> (Linnaeus)	oa-p
<i>Sitona</i> sp. indet.	oa-p
<i>Hypera nigrirostris</i> (Fabricius)	oa-p
<i>Sitophilus granarius</i> (Linnaeus)	g-ss
<i>Sitophilus oryzae</i> (Linnaeus)	g-ss
<i>Bagous</i> sp.	oa-w
<i>Notaris acridulus</i> (Linnaeus)	oa-d-p
<i>Micrelus ericae</i> (Gyllenhal)	oa-p-m
<i>Ceuthorhynchidius</i> sp.	oa-p
<i>Ceutorhynchus</i> sp.	oa-p
<i>Gymnetron ?labile</i> (Herbst)	oa-p
<i>Curculionidae</i> sp.	oa
<i>Coleoptera</i> spp.	u
* <i>Coleoptera</i> sp. (larva)	u
*Formicidae sp.	u
*Hymenoptera Aculeata sp.	u
*Hymenoptera Parasitica sp.	u
*Hymenoptera sp.	u
*Proctotrupoidea sp.	u
*Insecta sp. (larva)	u
*Pseudoscorpiones sp.	u
*Acarina sp.	u

Table 4. Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) from samples from Low Petergate, York. For explanation of abbreviations, see Table 6.

Context	2113	4027	4162	4175	4628	4919	4977	4977	4995	Whole site
Sample	1	88	23	27	48	67	76	76	79	
Ext	/T	/T	/T	/T	/T	/T	/T	T2	/T	
S	73	85	17	38	78	48	104	54	39	256
N	128	313	34	109	140	73	632	152	55	1636
ALPHA	70	39	0	21	72	61	36	30	59	86
SEALPHA	11	4	0	3	11	14	2	4	17	4
SOB	24	14	0	9	22	5	30	13	3	82
PSOB	33	16	0	24	28	10	29	24	8	32
NOB	25	17	0	9	28	6	42	15	3	145
PNOB	20	5	0	8	20	8	7	10	5	9
ALPHAOB	268	0	0	0	49	0	48	0	0	78
SEALPHAOB	239	0	0	0	22	0	16	0	0	12
SW	7	1	0	1	4	0	6	2	0	14
PSW	10	1	0	3	5	0	6	4	0	5
NW	7	1	0	1	6	0	10	2	0	27
PNW	5	0	0	1	4	0	2	1	0	2
ALPHAW	0	0	0	0	0	0	0	0	0	12
SEALPHAW	0	0	0	0	0	0	0	0	0	4
SD	4	0	0	1	5	0	4	2	0	13
PSD	5	0	0	3	6	0	4	4	0	5
ND	4	0	0	1	5	0	8	2	0	20
PND	3	0	0	1	4	0	1	1	0	1
ALPHAD	0	0	0	0	0	0	0	0	0	17
SEALPHAD	0	0	0	0	0	0	0	0	0	7
SP	10	7	0	3	7	1	8	4	0	27
PSP	14	8	0	8	9	2	8	7	0	11
NP	10	10	0	3	7	1	14	5	0	50
PNP	8	3	0	3	5	1	2	3	0	3
ALPHAP	0	0	0	0	0	0	0	0	0	24
SEALPHAP	0	0	0	0	0	0	0	0	0	6
SM	1	0	0	0	0	0	1	2	0	3
PSM	1	0	0	0	0	0	1	4	0	1
NM	1	0	0	0	0	0	1	2	0	4
PNM	1	0	0	0	0	0	0	1	0	0
ALPHAM	0	0	0	0	0	0	0	0	0	0
SEALPHAM	0	0	0	0	0	0	0	0	0	0
SL	2	1	1	1	3	2	4	4	1	6
PSL	3	1	6	3	4	4	4	7	3	2
NL	4	3	3	2	9	4	55	7	2	89
PNL	3	1	9	2	6	5	9	5	4	5
ALPHAL	0	0	0	0	0	0	1	0	0	2
SEALPHAL	0	0	0	0	0	0	0	0	0	0
SRT	36	47	9	20	34	30	52	27	23	266
PSRT	49	55	53	53	44	63	50	50	59	104
NRT	83	240	18	88	73	48	419	84	35	1088
PNRT	65	77	53	81	52	66	66	55	64	67
ALPHART	24	18	0	8	25	35	16	14	30	107
SEALPHART	4	2	0	1	5	10	1	2	10	5
SRD	9	11	5	10	9	7	11	9	8	79

PSRD	12	13	29	26	12	15	11	17	21	31
NRD	24	117	8	52	19	16	110	21	10	377
PNRD	19	37	24	48	14	22	17	14	18	23
ALPHARD	5	3	0	4	0	0	3	6	0	28
SEALPHARD	2	1	0	1	0	0	1	2	0	2
SRF	4	6	0	0	5	3	3	2	2	25
PSRF	5	7	0	0	6	6	3	4	5	10
NRF	5	10	0	0	7	5	3	2	2	34
PNRF	4	3	0	0	5	7	0	1	4	2
ALPHARF	0	0	0	0	0	0	0	0	0	43
SEALPHARF	0	0	0	0	0	0	0	0	0	17
SSA	30	38	11	17	24	25	45	27	18	88
PSSA	41	45	65	45	31	52	43	50	46	34
NSA	79	218	22	72	65	41	475	99	32	1103
PNSA	62	70	65	66	46	56	75	65	58	67
ALPHASA	18	13	0	7	14	28	12	12	17	23
SEALPHASA	3	2	0	1	3	8	1	2	6	1
SSF	15	13	4	10	18	12	24	12	9	43
PSSF	21	15	24	26	23	25	23	22	23	17
NSF	28	67	6	26	47	17	208	40	15	454
PNSF	22	21	18	24	34	23	33	26	27	28
ALPHASF	13	5	0	6	11	0	7	6	0	12
SEALPHASF	5	1	0	2	3	0	1	2	0	1
SST	8	15	3	3	5	8	15	8	5	30
PSST	11	18	18	8	6	17	14	15	13	12
NST	18	101	8	12	16	14	187	35	9	400
PNST	14	32	24	11	11	19	30	23	16	24
ALPHAST	0	5	0	0	0	0	4	3	0	8
SEALPHAST	0	1	0	0	0	0	1	1	0	1
SSS	7	10	4	4	1	5	6	7	4	15
PSSS	10	12	24	11	1	10	6	13	10	6
NSS	33	50	8	34	2	10	80	24	8	249
PNSS	26	16	24	31	1	14	13	16	15	15
ALPHASS	3	4	0	1	0	0	2	3	0	4
SEALPHASS	1	1	0	0	0	0	0	1	0	1
SG	2	4	2	1	0	1	2	2	1	5
PSG	3	5	12	3	0	2	2	4	3	2
NG	5	8	2	3	0	2	66	18	2	106
PNG	4	3	6	3	0	3	10	12	4	6
ALPHAG	0	0	0	0	0	0	0	0	0	1
SEALPHAG	0	0	0	0	0	0	0	0	0	0

Table 5. Insects and other macro-invertebrates recorded from 62-8 Low Petergate: species lists by sample. Taxa are listed in descending order of abundance.

Key: n - minimum number of individuals; q - quantification (s - semi-quantitative 'several', m - semi-quantitative 'many', both sensu Kenward et al. (1986), e - estimate); ecodes - ecological codes (see Table 6 for explanation); * - not used in calculation of statistics in Table 4.

Context: 2113 Sample: 1/T ReM: S
Weight: 2.00 E: 0.00 F: 0.00

Notes: Grey clay, wood fragments, stones, pottery. Very dirty. Left to soak overnight. Small amount of material lost whilst cleaning.

	n	q	ecodes
<i>Aglenus brunneus</i>	18	-	rt-ss
<i>Mycetaea hirta</i>	5	-	rd-ss
<i>Xylodromus concinnus</i>	4	-	rt-st
<i>Crataraea suturalis</i>	4	-	rt-st
<i>Lathridius minutus</i> group	4	-	rd-st
<i>Sitophilus granarius</i>	4	-	g-ss
<i>Carpelimus ?bilineatus</i>	3	-	rt-sf
<i>Anobium punctatum</i>	3	-	l-sf
<i>Tipnus unicolor</i>	3	-	rt-ss
<i>Cryptophagus</i> sp. B	3	-	rd-sf
<i>Cryptophagus</i> sp. C	3	-	rd-sf
<i>Pterostichus</i> sp.	2	-	ob
<i>Cercyon atricapillus</i>	2	-	rf-st
<i>Omalium caesum</i>	2	-	rt-sf
<i>Anotylus rugosus</i>	2	-	rt
<i>Aleocharinae</i> sp. B	2	-	u
<i>Aleocharinae</i> sp. C	2	-	u
<i>Trox</i> sp.	2	-	rt
<i>Ptinus fur</i>	2	-	rd-sf
<i>Cryptophagus</i> sp. A	2	-	rd-sf
<i>Atomaria</i> sp.	2	-	rd
<i>Dienerella</i> sp.	2	-	rd-sf
<i>Corticaria</i> sp. A	2	-	rt-sf
<i>Heteroptera</i> sp.	1	-	u
<i>Delphacidae</i> sp.	1	-	oa-p
? <i>Trechus</i> sp.	1	-	ob
<i>Laemostenus</i> sp.	1	-	ss
<i>Hydroporus</i> sp. A	1	-	oa-w
<i>Hydroporus</i> sp. B	1	-	oa-w
<i>Agabus</i> sp.	1	-	oa-w
<i>Helophorus</i> sp. A	1	-	oa-w
<i>Helophorus</i> sp. B	1	-	oa-w
<i>Cercyon analis</i>	1	-	rt-sf
<i>Cercyon haemorrhoidalis</i>	1	-	rf-sf
<i>Hydrophilinae</i> sp.	1	-	oa-w
<i>Histerinae</i> sp.	1	-	rt
<i>Acrotichis</i> sp. A	1	-	rt
<i>Acrotichis</i> sp. B	1	-	rt
<i>Omalium ?rivulare</i>	1	-	rt-sf
<i>Platystethus cornutus</i> group	1	-	oa-d
<i>Anotylus nitidulus</i>	1	-	rt
<i>Anotylus tetracarinatus</i>	1	-	rt
<i>Oxytelus sculptus</i>	1	-	rt-st

<i>Stenus</i> sp. A	1	-	u
<i>Stenus</i> sp. B	1	-	u
<i>Philonthus</i> sp.	1	-	u
? <i>Heterothops</i> sp.	1	-	u
<i>Cypha</i> sp.	1	-	rt
<i>Aleocharinae</i> sp. A	1	-	u
<i>Aphodius</i> sp.	1	-	ob-rf
<i>Aphodius</i> sp.	1	-	ob-rf
<i>Cyphon</i> sp.	1	-	oa-d
<i>Lyctus linearis</i>	1	-	l-sf
<i>Meligethes</i> sp.	1	-	oa-p
<i>Omosita</i> sp.	1	-	rt-sf
<i>Nitidulidae</i> sp.	1	-	u
<i>Monotoma bicolor</i>	1	-	rt-st
<i>Oryzaeophilus ?surinamensis</i>	1	-	g-ss
<i>Cryptophagus scutellatus</i>	1	-	rd-st
<i>Corticaria</i> sp. B	1	-	rt-sf
<i>Mycetophagus</i> sp.	1	-	u
<i>Blaps</i> sp.	1	-	rt-ss
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st
<i>Donacia</i> sp.	1	-	oa-d-p
<i>Plateumaris</i> sp.	1	-	oa-d-p
<i>Phyllotreta</i> sp.	1	-	oa-p
<i>Apion</i> sp. A	1	-	oa-p
<i>Apion</i> sp. B	1	-	oa-p
<i>Hypera ?nigrirostris</i>	1	-	oa-p
<i>Bagous</i> sp.	1	-	oa-w
<i>Micrelus ericae</i>	1	-	oa-p-m
<i>Ceuthorhynchidius</i> sp.	1	-	oa-p
<i>Curculionidae</i> sp.	1	-	oa
* <i>Coleoptera</i> sp. (larva)	11	-	u
* <i>Pulex irritans</i>	3	-	ss
* <i>Melophagus ovinus</i>	1	-	u

Context: 4027 Sample: 88/T ReM: S

Weight: 3.00 E: 0.00 F: 0.00

Notes: Grey clay, mud clasts, faeces, thousands of fly puparia. Washed through 0.3mm sieve and left to soak overnight due to large mud clasts. Washed again after paraffining because so dirty and boiled for approx. 1 hour. Then washed and paraffined as normal.

	n	q	ecodes
<i>Dienerella</i> sp.	28	-	rd-sf
<i>Cryptophagus scutellatus</i>	25	-	rd-st
<i>Tipnus unicolor</i>	21	-	rt-ss
<i>Xylodromus concinnus</i>	20	-	rt-st
<i>Lathridius minutus</i> group	17	-	rd-st
<i>Ptinus fur</i>	15	-	rd-sf
<i>Thes bergrothi</i>	11	-	rd-st
<i>Omalium ?allardi</i>	10	-	rt
<i>Philonthus</i> sp. D	10	-	u
<i>Typhaea stercorea</i>	9	-	rd-ss
<i>Quedius mesomelinus</i>	8	-	rt
<i>Oxytelus sculptus</i>	7	-	rt-st
<i>Niptus hololeucus</i>	7	-	rd-ss
<i>Anommatus duodecimstriatus</i>	6	-	rt-st
<i>Trechus micros</i>	4	-	u
<i>Coprophilus striatulus</i>	4	-	rt-st

<i>Philonthus</i> sp. E	4	-	u
<i>Aleocharinae</i> sp. A	4	-	u
<i>Aleocharinae</i> sp. D	4	-	u
<i>Carpelimus bilineatus</i>	3	-	rt-sf
<i>Anotylus tetracarinatus</i>	3	-	rt
<i>Philonthus</i> sp. A	3	-	u
<i>Anobium punctatum</i>	3	-	l-sf
<i>Rhizophagus parallelocollis</i>	3	-	rt-sf
<i>Oryzaeophilus</i> sp.	3	-	g-ss
<i>Sitophilus oryzae</i>	3	-	g-ss
<i>Cercyon analis</i>	2	-	rt-sf
<i>Cercyon atricapillus</i>	2	-	rf-st
<i>Cercyon haemorrhoidalis</i>	2	-	rf-sf
<i>Cercyon ?quisquilius</i>	2	-	rf-st
<i>Cercyon unipunctatus</i>	2	-	rf-st
<i>Omalius rivulare</i>	2	-	rt-sf
<i>Anotylus rugosus</i>	2	-	rt
<i>Creophilus maxillosus</i>	2	-	rt
<i>Tachinus signatus</i>	2	-	u
<i>Aleocharinae</i> sp. B	2	-	u
<i>Dermestidae</i> sp.	2	-	rt-sf
<i>Rhyzopertha dominica</i>	2	-	ss
<i>Mycetaea hirta</i>	2	-	rd-ss
<i>Enicmus</i> sp.	2	-	rt-sf
<i>Corticaria</i> sp. A	2	-	rt-sf
<i>Corticaria</i> sp. B	2	-	rt-sf
<i>Sitona ?hispidulus</i>	2	-	oa-p
<i>Hypera nigrirostris</i>	2	-	oa-p
<i>Ceutorhynchus</i> sp.	2	-	oa-p
<i>Lycocoris campestris</i>	1	-	rd-st
<i>Nebria brevicollis</i>	1	-	oa
<i>Trechus obtusus quadristriatus</i>	1	-	oa
<i>Pterostichus</i> sp.	1	-	ob
<i>Laemostenus ?terricola</i>	1	-	ss
<i>Agonum</i> sp.	1	-	oa
<i>Amara</i> sp.	1	-	oa
<i>Helophorus</i> sp.	1	-	oa-w
<i>Cercyon terminatus</i>	1	-	rf-st
<i>Megasternum obscurum</i>	1	-	rt
<i>Histerinae</i> sp.	1	-	rt
<i>Ptenidium</i> sp.	1	-	rt
<i>Acrotrichis</i> sp.	1	-	rt
<i>?Dropephylla</i> sp.	1	-	u
<i>Anotylus nitidulus</i>	1	-	rt
<i>Anotylus sculpturatus</i> group	1	-	rt
<i>Lathrobium</i> sp.	1	-	u
<i>Paederinae</i> sp.	1	-	u
<i>Leptacinus</i> sp.	1	-	rt-st
<i>Philonthus</i> sp. B	1	-	u
<i>Philonthus</i> sp. C	1	-	u
<i>Tachyporus</i> sp. A	1	-	u
<i>Tachyporus</i> sp. B	1	-	u
<i>Tachyporus</i> sp. C	1	-	u
<i>Cypha</i> sp.	1	-	rt
<i>Aleocharinae</i> sp. C	1	-	u
<i>Aleocharinae</i> sp. E	1	-	u
<i>Aphodius</i> sp.	1	-	ob-rf
<i>Clambus</i> sp.	1	-	rt-sf
<i>Meligethes</i> sp.	1	-	oa-p
<i>Monotoma picipes</i>	1	-	rt-st

<i>Oryzaeophilus surinamensis</i>	1	-	g-ss
<i>Atomaria</i> sp. A	1	-	rd
<i>Atomaria</i> sp. B	1	-	rd
<i>Corticarina</i> sp.	1	-	rt
<i>Anthicus floralis</i>	1	-	rt-st
<i>Apion</i> sp.	1	-	oa-p
<i>Sitona ?lineatus</i>	1	-	oa-p
<i>Sitophilus granarius</i>	1	-	g-ss
<i>Gymnetron ?labile</i>	1	-	oa-p
*Diptera sp. (puparium)	1000	-	u
*Coleoptera sp. (larva)	3	-	u

Context: 4162 Sample: 23/T ReM: S
Weight: 3.00 E: 0.00 F: 0.00

	n	q	ecodes
<i>Aleocharinae</i> sp. A	6	-	u
<i>Xylodromus concinnus</i>	5	-	rt-st
<i>Anobium punctatum</i>	3	-	l-sf
<i>Tipnus unicolor</i>	3	-	rt-ss
<i>Mycetaea hirta</i>	3	-	rd-ss
<i>Philonthus</i> sp. B	2	-	u
<i>Lathridius minutus</i> group	2	-	rd-st
<i>Phyllodrepa ?floralis</i>	1	-	rt-sf
<i>Philonthus</i> sp. A	1	-	u
<i>Aleocharinae</i> sp. B	1	-	u
<i>Dermestidae</i> sp.	1	-	rt-sf
<i>Oryzaeophilus surinamensis</i>	1	-	g-ss
<i>Cryptophagus scutellatus</i>	1	-	rd-st
<i>Cryptophagus</i> sp.	1	-	rd-sf
<i>Atomaria</i> sp.	1	-	rd
<i>Sitophilus granarius</i>	1	-	g-ss
? <i>Coleoptera</i> sp.	1	-	u
*Diptera sp. (larva)	7	-	u
*Oligochaeta sp. (egg capsule)	1	-	u
*Hymenoptera Parasitica sp.	1	-	u
*Hymenoptera sp.	1	-	u
*Diptera sp. (adult)	1	-	u
*Proctotrupoidea sp.	1	-	u
*Pseudoscorpiones sp.	1	-	u

Context: 4175 Sample: 27/T ReM: S
Weight: 1.00 E: 0.00 F: 0.00

Notes: Full of grapes which were removed and examined by AH. Very fine sediment.

	n	q	ecodes
<i>Tipnus unicolor</i>	21	-	rt-ss
<i>Atomaria</i> sp. C	12	-	rd
<i>Mycetaea hirta</i>	9	-	rd-ss
<i>Cryptophagus</i> sp. B	8	-	rd-sf
<i>Lathridius minutus</i> group	8	-	rd-st
<i>Cryptophagus</i> sp. C	7	-	rd-sf
<i>Omalium allardi</i>	3	-	rt
<i>Xylodromus concinnus</i>	3	-	rt-st
<i>Oryzaeophilus surinamensis</i>	3	-	g-ss
<i>Atomaria</i> sp. D	3	-	rd

<i>Corticaria</i> sp.	3	-	rt-sf
<i>Anobium punctatum</i>	2	-	l-sf
<i>Atomaria</i> sp. B	2	-	rd
<i>Trechus</i> sp.	1	-	ob
<i>Bembidion</i> sp.	1	-	oa
<i>Agonum albipes</i>	1	-	oa-d
<i>Carabidae</i> sp.	1	-	ob
<i>Helophorus</i> sp.	1	-	oa-w
<i>Cercyon</i> sp.	1	-	u
<i>Silphidae</i> sp.	1	-	u
<i>Phyllodrepa</i> ? <i>floralis</i>	1	-	rt-sf
<i>Xantholinus longiventris</i>	1	-	rt-sf
<i>Quedius</i> sp.	1	-	u
<i>Aleocharinae</i> sp. A	1	-	u
<i>Aleocharinae</i> sp. B	1	-	u
<i>Ptinus</i> sp.	1	-	rd-sf
<i>Omosita discoidea</i>	1	-	rt-sf
<i>Cryptophagus</i> sp. A	1	-	rd-sf
<i>Atomaria</i> sp. A	1	-	rd
<i>Enicmus</i> sp.	1	-	rt-sf
<i>Aglenus brunneus</i>	1	-	rt-ss
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st
<i>Bruchidae</i> sp.	1	-	u
<i>Phyllotreta</i> sp.	1	-	oa-p
<i>Apion</i> sp.	1	-	oa-p
<i>Sitona</i> sp.	1	-	oa-p
<i>Curculionidae</i> sp.	1	-	oa
Coleoptera sp.	1	-	u
*Diptera sp. (adult)	50	-	u
*Hymenoptera sp.	3	-	u
*Isopoda sp.	1	-	u
*Diptera sp. (larva)	1	-	u

Context: 4628 Sample: 48/T ReM: S

Weight: 3.00 E: 0.00 F: 0.00

Notes: Lumps of grey clay (cm scale).

	n	q	ecodes
<i>Anotylus complanatus</i>	16	-	rt-sf
<i>Anobium punctatum</i>	7	-	l-sf
<i>Trechus micros</i>	6	-	u
<i>Lathridius minutus</i> group	6	-	rd-st
<i>Anotylus nitidulus</i>	4	-	rt
<i>Trechus obtusus</i> or <i>quadristriatus</i>	3	-	oa
<i>Helophorus</i> sp.	3	-	oa-w
<i>Cercyon analis</i>	3	-	rt-sf
<i>Xylodromus concinnus</i>	3	-	rt-st
<i>Coprophilus striatulus</i>	3	-	rt-st
<i>Neobisnius</i> sp.	3	-	u
<i>Cryptophagus scutellatus</i>	3	-	rd-st
<i>Clivina fossor</i>	2	-	oa
<i>Amara</i> sp.	2	-	oa
<i>Cercyon haemorrhoidalis</i>	2	-	rf-sf
<i>Cercyon</i> sp.	2	-	u
<i>Carpelimus bilineatus</i>	2	-	rt-sf
<i>Platystethus arenarius</i>	2	-	rf
<i>Neobisnius</i> sp.	2	-	u
<i>Aleocharinae</i> sp. A	2	-	u

<i>Aleocharinae</i> sp. F	2	-	u
<i>Tipnus unicolor</i>	2	-	rt-ss
<i>Ptinus</i> sp. A	2	-	rd-sf
<i>Cryptophagus</i> sp. A	2	-	rd-sf
<i>Dienerella</i> sp.	2	-	rd-sf
<i>Corticaria</i> sp. A	2	-	rt-sf
<i>Heteroptera</i> sp.	1	-	u
<i>Notiophilus</i> sp.	1	-	oa
<i>Loricera pilicornis</i>	1	-	oa
<i>Bembidion lampros</i> or <i>properans</i>	1	-	oa
<i>Calathus melanocephalus</i>	1	-	oa
<i>Hydroporinae</i> sp.	1	-	oa-w
<i>Sphaeridium</i> sp.	1	-	rf
<i>Cercyon unipunctatus</i>	1	-	rf-st
<i>Megasternum obscurum</i>	1	-	rt
<i>Ochthebius</i> sp. A	1	-	oa-w
<i>Ochthebius</i> sp. B	1	-	oa-w
<i>Ptenidium</i> sp.	1	-	rt
<i>Acrotrichis</i> sp.	1	-	rt
<i>Lesteva longoelytrata</i>	1	-	oa-d
<i>Lesteva</i> sp.	1	-	oa-d
<i>Dropephylla ?vilis</i>	1	-	l
<i>Omalium caesum</i> or <i>italicum</i>	1	-	rt-sf
<i>Omalium rivulare</i>	1	-	rt-sf
<i>Carpelimus</i> sp.	1	-	u
<i>Platystethus cornutus</i>	1	-	oa-d
<i>Anotylus rugosus</i>	1	-	rt
<i>Anotylus ?sculpturatus</i>	1	-	rt
<i>Xantholinus linearis</i>	1	-	rt-sf
<i>?Philonthus</i> sp. A	1	-	u
<i>Philonthus</i> sp. B	1	-	u
<i>Creophilus maxillosus</i>	1	-	rt
<i>Quedius</i> sp.	1	-	u
<i>Staphylininae</i> sp.	1	-	u
<i>Tachinus</i> sp.	1	-	u
<i>Aleochara</i> sp.	1	-	u
<i>Aleocharinae</i> sp. B	1	-	u
<i>Aleocharinae</i> sp. C	1	-	u
<i>Aleocharinae</i> sp. D	1	-	u
<i>Aleocharinae</i> sp. E	1	-	u
<i>Aleocharinae</i> sp. G	1	-	u
<i>Trox scaber</i>	1	-	rt-sf
<i>Trox</i> sp.	1	-	rt
<i>Aphodius prodromus</i> or <i>sphacelatus</i>	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
<i>Ptinus</i> sp. B	1	-	rd-sf
<i>Lyctus linearis</i>	1	-	l-sf
<i>Cryptophagus</i> sp. B	1	-	rd-sf
<i>Cryptophagus</i> sp. C	1	-	rd-sf
<i>Atomaria</i> sp.	1	-	rd
<i>?Corticaria</i> sp.	1	-	rt-sf
<i>Plateumaris</i> sp.	1	-	oa-d-p
<i>Phyllotreta ?nemorum</i>	1	-	oa-p
<i>Phyllotreta</i> sp.	1	-	oa-p
<i>Longitarsus</i> sp.	1	-	oa-p
<i>Apion</i> sp.	1	-	oa-p
<i>Notaris acridulus</i>	1	-	oa-d-p
Coleoptera sp.	1	-	u
*Dermaptera sp.	3	-	u

*Daphnia sp.	1	-	oa-w
*Cladocera sp. (ephippium)	1	-	oa-w
*Diptera sp. (adult)	1	-	u
*Pulex irritans	1	-	ss
*Hymenoptera Aculeata sp.	1	-	u
*Insecta sp. (larva)	1	-	u

Context: 4919 Sample: 67/T ReM: S

Weight: 3.00 E: 0.00 F: 0.00

Notes: sieved through 4mm to taked out large charcoal fragments, with 0.3mm sieve underneath. Fine sediment only paraffined. Lumps grey/brown clay (cm scale).

	n	q	ecodes
<i>Lathridius minutus</i> group	6	-	rd-st
<i>Anotylus nitidulus</i>	4	-	rt
<i>Cercyon</i> sp. B	3	-	u
<i>Anobium punctatum</i>	3	-	l-sf
<i>Cryptophagus</i> sp.	3	-	rd-sf
<i>Mycetaea hirta</i>	3	-	rd-ss
<i>Aglenus brunneus</i>	3	-	rt-ss
<i>Cercyon terminatus</i>	2	-	rf-st
<i>Anotylus complanatus</i>	2	-	rt-sf
<i>Anotylus rugosus</i>	2	-	rt
<i>Aleocharinae</i> sp. A	2	-	u
<i>Aphodius granarius</i>	2	-	ob-rf
<i>Sitophilus granarius</i>	2	-	g-ss
Coleoptera sp.	2	-	u
<i>Agonum</i> sp.	1	-	oa
<i>Harpalus rufipes</i>	1	-	oa
<i>Cercyon</i> sp. A	1	-	u
<i>Acritus nigricornis</i>	1	-	rt-st
<i>Micropeplus fulvus</i>	1	-	rt
<i>Omalium ?rivulare</i>	1	-	rt-sf
<i>Xylodromus concinnus</i>	1	-	rt-st
<i>Carpelimus ?bilineatus</i>	1	-	rt-sf
<i>Anotylus sculpturatus</i> group	1	-	rt
<i>Oxytelus sculptus</i>	1	-	rt-st
<i>Leptacinus ?pusillus</i>	1	-	rt-st
<i>Gyrohypnus ?fracticornis</i>	1	-	rt-st
<i>Neobisnius</i> sp.	1	-	u
<i>Philonthus</i> sp.	1	-	u
<i>Quedius</i> sp.	1	-	u
<i>Staphylininae</i> sp.	1	-	u
<i>Mycetoporus</i> sp.	1	-	u
<i>Falagria</i> or <i>Cordalia</i> sp.	1	-	rt-sf
<i>Aleocharinae</i> sp. B	1	-	u
<i>Aleocharinae</i> sp. C	1	-	u
<i>Aleocharinae</i> sp. D	1	-	u
<i>Trox scaber</i>	1	-	rt-sf
<i>Aphodius</i> sp.	1	-	ob-rf
<i>Tipnus unicolor</i>	1	-	rt-ss
<i>Ptinus</i> sp.	1	-	rd-sf
<i>Lyctus linearis</i>	1	-	l-sf
<i>Omosita</i> sp.	1	-	rt-sf
<i>Cryptophagus scutellatus</i>	1	-	rd-st
<i>Atomaria</i> sp. A	1	-	rd
<i>Atomaria</i> sp. B	1	-	rd
<i>Corticaria</i> sp. A	1	-	rt-sf
<i>Corticaria</i> sp. B	1	-	rt-sf

<i>Blaps</i> sp.	1	-	rt-ss
<i>Apion</i> sp.	1	-	oa-p
*Proctotrupoidea sp.	8	-	u
*Hymenoptera sp.	2	-	u

Context: 4977 Sample: 76/T ReM: S

Weight: 3.00 E: 0.00 F: 0.00

Notes: washed twice due to very fine concentration of sediment. lumps of grey clay (cm scale). P1 full of fine sediment and large wood fragments (0.3mm and 4mm sieves used). P2 left overnight.

	n	q	ecodes
<i>Cratarea suturalis</i>	75	-	rt-st
<i>Xylodromus concinnus</i>	63	-	rt-st
<i>Sitophilus granarius</i>	48	-	g-ss
<i>Carpelimus bilineatus</i>	45	-	rt-sf
<i>Cryptophagus</i> sp. A	45	-	rd-sf
<i>Anobium punctatum</i>	29	-	l-sf
<i>Anotylus nitidulus</i>	28	-	rt
<i>Cercyon analis</i>	22	-	rt-sf
<i>Mycetophagus quadriguttatus</i>	22	-	l
<i>Lathridius minutus</i> group	19	-	rd-st
<i>Oryzaeophilus surinamensis</i>	18	-	g-ss
<i>Ptinus fur</i>	17	-	rd-sf
<i>Cryptophagus</i> sp. B	15	-	rd-sf
<i>Heterothops</i> sp.	8	-	u
<i>Oxytelus sculptus</i>	6	-	rt-st
<i>Gyrophypnus angustatus</i>	6	-	rt-st
<i>Aleocharinae</i> sp. B	6	-	u
<i>Aleocharinae</i> sp. D	6	-	u
<i>Corticaria</i> sp. B	6	-	rt-sf
<i>Aglenus brunneus</i>	6	-	rt-ss
<i>Coprophilus striatulus</i>	5	-	rt-st
<i>Cordalia obscura</i>	5	-	rt-sf
<i>Aleocharinae</i> sp. A	5	-	u
<i>Mycetaea hirta</i>	5	-	rd-ss
<i>Donaciinae</i> sp.	5	-	oa-d-p
<i>Neobisnius</i> sp.	4	-	u
<i>Quedius</i> sp.	4	-	u
<i>Aleocharinae</i> sp. C	4	-	u
<i>Dyschirius globosus</i>	3	-	oa
<i>Helophorus</i> sp.	3	-	oa-w
<i>Ptenidium</i> sp.	3	-	rt
<i>Gyrophypnus fracticornis</i>	3	-	rt-st
<i>Philonthus</i> sp. A	3	-	u
<i>Lyctus linearis</i>	3	-	l-sf
<i>Atomaria</i> sp. A	3	-	rd
<i>Hydroporus</i> sp. B	2	-	oa-w
<i>Helophorus aquaticus</i> or <i>grandis</i>	2	-	oa-w
<i>Acritus nigricornis</i>	2	-	rt-st
<i>Dendrophilus punctatus</i>	2	-	rt-sf
<i>Omalium caesum</i> or <i>italicum</i>	2	-	rt-sf
<i>Xantholinus longiventris</i>	2	-	rt-sf
<i>Philonthus</i> sp. B	2	-	u
<i>Philonthus</i> sp. C	2	-	u
<i>Trox scaber</i>	2	-	rt-sf
<i>Ephistemus globulus</i>	2	-	rd-sf
<i>Corticaria</i> sp. D	2	-	rt-sf
<i>Tenebrio obscurus</i>	2	-	rt-ss

<i>Anthicus floralis</i>	2	-	rt-st
<i>Apion</i> sp. B	2	-	oa-p
<i>Sitona ?lineatus</i>	2	-	oa-p
<i>Zicrona caerulea</i>	1	-	oa-p
<i>Lyctocoris campestris</i>	1	-	rd-st
<i>Clivina</i> sp.	1	-	oa
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Trechus micros</i>	1	-	u
<i>Bembidion lampros</i> or <i>properans</i>	1	-	oa
<i>Pterostichus</i> sp.	1	-	ob
<i>Agonum</i> (<i>Europhilus</i>) sp.	1	-	oa
<i>Amara</i> sp.	1	-	oa
<i>Carabidae</i> sp. A	1	-	ob
<i>Carabidae</i> sp. B	1	-	ob
<i>Hydroporus</i> sp.	1	-	oa-w
<i>Hydroporus</i> sp. A	1	-	oa-w
<i>Megasternum obscurum</i>	1	-	rt
<i>Cryptopleurum minutum</i>	1	-	rf-st
<i>Hydraena</i> sp.	1	-	oa-w
<i>Catops</i> sp.	1	-	u
<i>Micropeplus fulvus</i>	1	-	rt
<i>Olophrum</i> sp.	1	-	oa
<i>Lesteva</i> sp.	1	-	oa-d
<i>Xylodromus</i> sp.	1	-	rt-st
<i>Platystethus degener</i>	1	-	oa-d
<i>Platystethus ?nitens</i>	1	-	oa-d
<i>Anotylus complanatus</i>	1	-	rt-sf
<i>Anotylus sculpturatus</i> group	1	-	rt
<i>Stenus</i> sp. A	1	-	u
<i>Stenus</i> sp. B	1	-	u
<i>Lathrobium</i> sp.	1	-	u
<i>Leptacinus</i> sp. A	1	-	rt-st
<i>Leptacinus</i> sp. B	1	-	rt-st
<i>Creophilus maxillosus</i>	1	-	rt
<i>Tachyporus</i> sp.	1	-	u
<i>Tachinus laticollisor marginellus</i>	1	-	u
<i>Cypha</i> sp.	1	-	rt
<i>Aphodius granarius</i>	1	-	ob-rf
<i>Aphodius</i> sp.	1	-	ob-rf
<i>Melanotus ?erythropus</i>	1	-	l
<i>Elateridae</i> sp.	1	-	ob
<i>Dermestidae</i> sp.	1	-	rt-sf
<i>Omosita</i> sp.	1	-	rt-sf
<i>Monotoma</i> sp.	1	-	rt-sf
<i>Atomaria</i> sp. B	1	-	rd
<i>Enicmus</i> sp.	1	-	rt-sf
<i>Dienerella</i> sp.	1	-	rd-sf
<i>Corticaria</i> sp. A	1	-	rt-sf
<i>Corticaria</i> sp. C	1	-	rt-sf
<i>Corticaria</i> sp. E	1	-	rt-sf
<i>Corticarina</i> or <i>Cortinicara</i> sp.	1	-	rt
<i>Typhaea stercorea</i>	1	-	rd-ss
<i>Bruchus ?rufimanus</i>	1	-	st
<i>Phaedon</i> sp.	1	-	oa-p
<i>Phyllotreta</i> sp.	1	-	oa-p
<i>Apion</i> sp. A	1	-	oa-p
<i>Strophosomus sus</i>	1	-	oa-p-m
* <i>Proctotrupoidea</i> sp.	20	-	u
* <i>Formicidae</i> sp.	1	-	u

Context: 4977 Sample: 76/T2 ReM: S
 Weight: 1.00 E: 0.00 F: 0.00

	n	q	ecodes
<i>Sitophilus granarius</i>	16	-	g-ss
<i>Xylodromus concinnus</i>	14	-	rt-st
<i>Crataraea suturalis</i>	9	-	rt-st
<i>Carpelimus bilineatus</i>	8	-	rt-sf
<i>Aleocharinae</i> sp. A	8	-	u
<i>Cercyon analis</i>	7	-	rt-sf
<i>Aleocharinae</i> sp. C	6	-	u
<i>Ptinus ?fur</i>	6	-	rd-sf
<i>Falagria</i> or <i>Cordalia</i> sp.	5	-	rt-sf
<i>Lathridius minutus</i>	5	-	rd-st
<i>Cercyon</i> sp.	4	-	u
<i>Anotylus rugosus</i>	4	-	rt
<i>Gyrohypnus angustatus</i>	3	-	rt-st
<i>Aleocharinae</i> sp. B	3	-	u
<i>Aleocharinae</i> sp. D	3	-	u
<i>Anobium punctatum</i>	3	-	l-sf
<i>Cryptophagus</i> sp. A	3	-	rd-sf
<i>Trechus obtusus</i> or <i>quadristriatus</i>	2	-	oa
<i>Philonthus</i> sp. B	2	-	u
<i>Oryzaeophilus surinamensis</i>	2	-	g-ss
<i>Cryptophagus</i> sp. B	2	-	rd-sf
<i>Corticaria</i> sp.	2	-	rt-sf
<i>Mycetophagus quadriguttatus</i>	2	-	l
<i>Aglenus brunneus</i>	2	-	rt-ss
<i>Apion</i> (<i>Oxystoma</i>) sp.	2	-	oa-p
<i>Macrodera micropterum</i>	1	-	oa-p-m
<i>Clivina ?fossor</i>	1	-	oa
<i>Bembidion obtusum</i>	1	-	oa
<i>Pterostichus ?melanarius</i>	1	-	ob
<i>Hydroporus</i> sp.	1	-	oa-w
<i>Helophorus</i> sp.	1	-	oa-w
<i>Coprophilus striatulus</i>	1	-	rt-st
<i>Bledius</i> sp.	1	-	oa-d
<i>Oxytelus sculptus</i>	1	-	rt-st
<i>Lathrobium</i> sp.	1	-	u
<i>Gyrohypnus fracticornis</i>	1	-	rt-st
<i>Xantholinus linearis</i>	1	-	rt-sf
<i>Neobisnius</i> sp.	1	-	u
<i>Philonthus</i> sp. A	1	-	u
<i>Staphylininae</i> sp.	1	-	u
<i>Trox scaber</i>	1	-	rt-sf
<i>Aphodius ?granarius</i>	1	-	ob-rf
<i>Aphodius</i> sp.	1	-	ob-rf
<i>Melanotus erythropus</i>	1	-	l
<i>Lyctus linearis</i>	1	-	l-sf
<i>Cryptophagus ?scutellatus</i>	1	-	rd-st
<i>Cryptophagus</i> sp. C	1	-	rd-sf
<i>Atomaria</i> sp.	1	-	rd
<i>Mycetaea hirta</i>	1	-	rd-ss
<i>Typhaea stercorea</i>	1	-	rd-ss
<i>Blaps</i> sp.	1	-	rt-ss
<i>Tenebrio obscurus</i>	1	-	rt-ss
<i>Donaciinae</i> sp.	1	-	oa-d-p
<i>Strophosomus sus</i>	1	-	oa-p-m
*Acarina sp.	30	-	u

*Proctotrupoidea sp.	9	-	u
*Lepidoptera sp. (pupa)	2	-	u
*Hymenoptera Parasitica sp.	1	-	u
*Hymenoptera sp.	1	-	u

Context: 4995 Sample 79/T ReM: S
 Weight: 3.00 E: 0.00 F: 0.00

	n	q	ecodes
<i>Omalius caesum</i> or <i>italicum</i>	3	-	rt-sf
<i>Xylodromus concinnus</i>	3	-	rt-st
<i>Philonthus</i> sp.	3	-	u
<i>Tipnus unicolor</i>	3	-	rt-ss
<i>Rhizophagus parallelocollis</i>	3	-	rt-sf
<i>Lathridius minutus</i> group	3	-	rd-st
<i>Cordalia obscura</i>	2	-	rt-sf
<i>Anobium punctatum</i>	2	-	l-sf
<i>Oryzaeophilus surinamensis</i>	2	-	g-ss
<i>Aglenus brunneus</i>	2	-	rt-ss
<i>Trechus ?micros</i>	1	-	u
<i>Bembidion</i> sp.	1	-	oa
<i>Omaliinae</i> sp.	1	-	rt
<i>Coprophilus striatulus</i>	1	-	rt-st
<i>Carpelimus</i> sp. A	1	-	u
<i>Carpelimus</i> sp. B	1	-	u
<i>Oxytelus sculptus</i>	1	-	rt-st
<i>Stenus</i> sp.	1	-	u
<i>Neobisnius</i> sp.	1	-	u
<i>Creophilus maxillosus</i>	1	-	rt
<i>Cypha</i> sp.	1	-	rt
<i>Aleochara</i> sp.	1	-	u
<i>Aleocharinae</i> sp. A	1	-	u
<i>Aleocharinae</i> sp. B	1	-	u
<i>Aleocharinae</i> sp. C	1	-	u
<i>Aleocharinae</i> sp. D	1	-	u
<i>Trox scaber</i>	1	-	rt-sf
<i>Aphodius</i> sp. A	1	-	ob-rf
<i>Aphodius</i> sp. B	1	-	ob-rf
<i>Cryptophagus scutellatus</i>	1	-	rd-st
<i>Cryptophagus</i> sp. A	1	-	rd-sf
<i>Cryptophagus</i> sp. B	1	-	rd-sf
<i>Atomaria</i> sp. A	1	-	rd
<i>Atomaria</i> sp. B	1	-	rd
<i>Mycetaea hirta</i>	1	-	rd-ss
<i>Dienerella</i> sp.	1	-	rd-sf
<i>Coleoptera</i> sp.	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u

Table 6. Abbreviations for ecological codes and statistics used for interpretation of insect remains in text and tables. Lower case codes in parentheses are those assigned to taxa and used to calculate the group values (the codes in capitals). See Table 3 for codes assigned to taxa from the present site. Alpha - the index of diversity alpha (Fisher et al. 1943); Indivs - individuals (based on MNI); No - number.

No taxa	S
Estimated number of indivs (MNI)	N
Index of diversity (α)	alpha
Standard error of alpha	SE alpha
No 'certain' outdoor taxa (oa)	SOA
Percentage of 'certain' outdoor taxa	PSOA
No 'certain' outdoor indivs	NOA
Percentage of 'certain' outdoor indivs	PNOA
No OA and probable outdoor taxa (oa+ob)	SOB
Percentage of OB taxa	PSOB
No OB indivs	NOB
Percentage OB indivs	PNOB
Index of diversity of the OB component	alphaOB
Standard error	SEalphaOB
No aquatic taxa (w)	SW
Percentage of aquatic taxa	PSW
No aquatic indivs	NW
Percentage of W indivs	PNW
Index of diversity of the W component	alphaW
Standard error	SEalphaW
No damp ground/waterside taxa (d)	SD
Percentage D taxa	PSD
No damp D indivs	ND
Percentage of D indivs	PND
Index of diversity of the D component	alphaD
Standard error	SEalphaD
No strongly plant-associated taxa (p)	SP
Percentage of P taxa	PSP
No strongly P indivs	NP
Percentage of P indivs	PNP
Index of diversity of the P component	alphaP
Standard error	SEalphaP
No heathland/moorland taxa (m)	SM
Percentage of M taxa	PSM
No M indivs	NM
Percentage of M indivs	PNM
Index of diversity of the M component	alphaM
Standard error	SEalphaM
No wood-associated taxa (l)	SL
Percentage of L taxa	PSL
No L indivs	NL
Percentage of L indivs	PNL
Index of diversity of the L component	alphaL
Standard error	SEalphaL
No indivs of grain pests (g)	NG
Percentage of indivs of grain pests	PNG
No decomposer taxa (rt + rd + rf)	SRT
Percentage of RT taxa	PSRT
No RT indivs	NRT
Percentage of RT indivs	PNRT
Index of diversity of RT component	alpha RT
Standard error	SEalphaRT

No 'dry' decomposer taxa (rd)	SRD
Percentage of RD taxa	PSRD
No RD indivs	NRD
Percentage of RD indivs	PNRD
Index of diversity of the RD component	alphaRD
Standard error	SEalphaRD
No 'foul' decomposer taxa (rf)	SRF
Percentage of RF taxa	PSRF
No RF indivs	NRF
Percentage of RF indivs	PNRF
Index of diversity of the RF component	alphaRF
Standard error	SEalphaRF
No synanthropic taxa (sf+st+ss)	SSA
Percentage of synanthropic taxa	PSSA
No synanthropic indivs	NSA
Percentage of SA indivs	PNSA
Index of diversity of SA component	ALPHASA
Standard error	SEALPHASA
No facultatively synanthropic taxa (sf)	SSF
Percentage of SF taxa	PSSF
No SF indivs	NSF
Percentage of SF indivs	PNSF
Index of diversity of SF component	ALPHASF
Standard error	SEALPHASF
No typical synanthropic taxa (st)	SST
Percentage of ST taxa	PSST
No ST indivs	NST
Percentage of ST indivs	PNST
Index of diversity of ST component	ALPHAST
Standard error	SEALPHAST
No strongly synanthropic taxa (ss)	SSS
Percentage of SS taxa	PSSS
No SS indivs	NSS
Percentage of SS indivs	PNSS
Index of diversity of SS component	ALPHASS
Standard error	SEALPHASS
No uncoded taxa (u)	SU
Percentage of uncoded indivs	PNU

Appendix 2: Sample-by-sample descriptions

Tenement One

Phase 1.4

Group 65: Build-up and dumps – 14th Century

Context 4977 ('dump' deposit), Sample 76/T (3kg processed)

There was a wide range of plant remains, mostly present in very small numbers. The majority were weeds of some kind, but there was a distinctive component originating in peatland, including heather, cross-leaved heath, and *Sphagnum* moss. Indeed, peat fragments were present in modest amounts and it seems clear that peatland material was brought to the site, perhaps used as a building material (e.g. cut heather or turves), as litter, or as fuel. Uncharred cereal remains were also present in the sample, represented by wheat/rye 'bran', oat grains, and wheat rachis (ear stalk). Many of the weeds may well have originated in cornfields and poorly-threshed straw is a possible source for many of these remains. Overall, the remains represent a range of habitats and ecological groupings, characteristic of a domestic dump area.

The subsample contained a large number of mites, parasitic wasps, ants, moth puparia (Lepidoptera) and Hymenoptera. There were very large numbers of beetles (and two bugs: N = 632; S = 104). The assemblage seems to have included two components, probably of indoor and outdoor origin, the latter contributing only a small part of the fauna (% NOB = 7). Diversity was low (alpha = 36, SE = 2), indicating dominance by a single autochthonous community. The most abundant species were essentially typical 'house' fauna (cf. Carrott and Kenward 2001; Kenward and Hall 1995): *Crataeraea suturalis* (75 individuals), *Xylodromus concinnus* (63), *Anobium punctatum* (29), *Ptinus fur* (17), *Cryptophagus* sp. (15) and *Lathridius minutus* group (19). To these may be added *Carpelimus bilineatus* (45), a small rove beetle very typical of house floors at Anglo-Scandinavian 16-22 Coppergate (Kenward and Hall 1995). *Mycetophagus quadriguttatus*, another indoor species, was present in quite large numbers, the first time it has been found in abundance in an archaeological deposit. Many of the less common taxa—including *Aglenus brunneus* (6) and *Mycetaea hirta* (5) are also typical of house fauna assemblages.

Grain beetles were numerous, *Oryzaephilus surinamensis* (18) and *Sitophilus granarius* (48), providing strong evidence for the presence of grain in the vicinity of the site. There were also a number of species which seem to be associated with fouler but well oxygenated conditions on occupation sites, including *Anotylus nitidulus* (28), *Oxytelus sculptus* (6), *Gyrophypnus angustatus* (6), *Neobisnius* sp. (4), and smaller numbers of several others. The foul-matter component was vanishingly small, however (only three individuals coded rf).

There were a number of plant-associated species which may have been brought in peat (consistent with the evidence mentioned above)—five individuals of a donaciine 'reed beetle', *Strophosomus sus* (1), *Dyschirius globosus* (3), *Hydroporus* spp (3 species, four individuals), and *Helophorus* sp. (two taxa totalling five individuals). The shield bug *Zicrona caerulea* (1) may also have come with these. The water beetles may have been brought to the site by a separate route, however, or be background fauna. *Apion* spp, *Sitona ?lineatus* and some others may have been brought in cut vegetation, but their numbers were small and again a background origin is equally likely.

This insect assemblage clearly originated in large part from within a building. The 'foul mouldering' component may have invaded house floor material after it was dumped in the open, or the material may more probably have been stable manure, the cereals originating as horse feed, the peat as floor litter.

Sample 76/T2 (1 kg)

This subsample varied slightly from the first, species occupying different ranks of abundance, but was broadly similar in composition and implications. Fifty four beetle and bug taxa (152 individuals) were recorded.

Phase 1.9

Group 183: Pit fills and overburden – late 14th Century

Context 4088 (pit fill), Sample 16/T (3 kg)

The assemblage of plant remains from this subsample was very small and interpretation is difficult. There were charred remains representing cultivated plants: various cereals (oat, wheat, barley and rye), together with some charred material of corncockle, presumably a cereal contaminant. Charred material of heather may represent fuel, building material or litter. For the rest there was a small range of weeds but intriguingly a trace of seeds of duckweed (*Lemna*) perhaps arriving with water or mud.

Tenement Two

Phase 2.3

Group 57: Pit Fills – 14th/15th Century

Context 4919 (pit fill), Sample 67/T (3kg)

This sample yielded quite a large assemblage of plant remains though none was present in more than very small amounts and mixed origins are indicated. Conspicuous components were plants likely to have served as food (sloe, apple, hazel nut, cherry and plum), as well a wheat/rye 'bran, though no evidence for faecal concretions that might indicate this was primarily the fill of a cess pit. Most of the other taxa were weeds of various kinds, some certainly from cornfields, but there was also a hint—in the form of leaf material of the raised-bog moss *Sphagnum imbricatum* and flowers of heather—for imported peat or peatland material.

For the insects, there were 73 individuals of 48 taxa of adult beetles and bugs, and some parasitic wasps and other Hymenoptera were recorded. Diversity was rather high ($\alpha = 61$, $SE = 14$), suggesting mixed origins and a weak autochthonous component, and inspection of the species lists shows that the assemblage consisted of typical occupation site species which might be background fauna. However, the outdoor component was small (% N OB = 8), suggesting limited exposure to the open air (or, of course, deposition during the winter months). The most abundant taxon—represented by only six individuals—was *Lathridius minutus*, typical of house fauna. Other species typical of intensive occupation, none with more than four individuals, included *Anobium punctatum*, *Cryptophagus* sp. and *Xylodromus concinnus*, with *Anotylus complanatus*, *A. rugosus*, *A. nitidulus* and *Neobisnius* sp., the last three tolerant of moist organic-rich substrata. Two individuals of the grain weevil *Sitophilus granarius* perhaps indicated the presence of stored products on or in close proximity to the site, though a robust and abundant insect such as this may well have originated in dust or through redeposition. There were two individuals of the dung beetle *Aphodius granarius*; this species is particularly typical of occupation deposits and probably could exploit a range of foul organic materials in addition to dung. This may be domestic or other organic waste which came from an area with only a limited insect population, and which was not colonised after dumping.

Phase 2.5

Group 54: Dumps and pit fills – Mid 14th Century

Context 4628 (pit fill), Sample 48/T (3kg)

A wide range of plant taxa was represented in this sample, again mainly in small amounts; only wheat/rye 'bran' and *Sphagnum* leaves were rather more frequent. The former, with fig, apple,

blackberry, and perhaps celery seed, may represent a small component of food, though are hardly evidence for a concentration of faecal material. The *Sphagnum*, and perhaps one or two other taxa like bogbean (*Menyanthes*), may indicate some peatland material but this component was certainly not large. For the rest, there was a diversity of weeds of cornfields and waste ground. This sample also produced small amounts of offcuts of worked leather, so presumably leather working may have been carried out close by.

Insects were quite abundant: there were 139 individuals of 787 beetle taxa, and a single bug. Adult flies (Diptera), insect larvae, the human flea (*Pulex irritans*), Hymenoptera, Dermaptera, water fleas (ephippia of *Daphnia* sp. and an unidentified form) were recorded. The most abundant beetle was *Anotylus complanatus* (16), a species tolerant of very foul conditions. There were a few individuals of some other species favoured by foul conditions, e.g. *Cercyon haemorrhoidalis* (2), *Cercyon unipunctatus* (1) and *Platystethus arenarius* (2). There was also a small house fauna component, including six *Lathridius minutus* group. The second most abundant beetle, *Anobium punctatum* (7), may be indicative of wooden structural timber nearby. This sample is the only one from the site to contain *Notaris acridulus*, associated with waterside plants and hinting at the presence of cut vegetation; *Plateumaris* sp. may have had the same origin (though these and some others may have been imported with water or mud). Several individuals just conceivably associated with leather tanning, though more commonly found in other circumstances, were present, including *Creophilus maxillosus* and *Trox scaber*. This subsample contained beetles from a range of habitats, none of which were particularly prominent, and diversity was high (alpha = 72, SE = 11) and the outdoor component large (% N OB = 20). It may therefore represent background fauna.

Phase 2.7

Group 56: Cobble lined cess pit – 14th/15th Century

Context 4162 (pit fill), Sample 23/T (3kg)

This sample contained numerous fragments of faecal concretions, which confirms its use as a cess pit. Additional to this, there is the evidence of remains of mineralised apple pips—the type of preservation being characteristic of cess pits—and other edible plant foods present as waterlogged macrofossils: fig, grape, and wheat/rye ‘bran’. Some other probable foods are indicated by the presence of fish bone and scale and eggshell membrane fragments. Other plant taxa were scarce: just a few weeds.

A small group of beetles was recovered (N = 34, S = 17), together with a pseudoscorpion (entire so likely to be a recent contaminant), a number of adult flies (Diptera), fly larvae, worm egg capsules, and parasitic wasps and other Hymenoptera. There were no dung beetles or foul indicators, despite the concentration of faecal material in the sample, and no ‘outdoor’ taxa. The majority of the beetles were ‘house fauna’—*Cryptophagus scutellatus* (1), *Mycetaea hirta* (3), *Lathridius minutus* group (2) and *Xylodromus concinnus* (5). Three individuals of the woodworm beetle *Anobium punctatum* were recorded, too. There were also some grain beetles: single individuals of *Oryzaephilus surinamensis* and *Sitophilus granarius*, indicating stored grain. The insect remains from this sample give little indication of the condition or nature of the material contributing to the deposit.

Phase 2.7

Group 56: Basal fill of cobble lined cess pit – 13th/14th Century

Context 4175 (pit fill), 27/T (1kg)

The preservation of plant material in this sample was very good and three taxa were present in more than trace amounts: there were abundant seeds of fig and fragments of wheat/rye ‘bran’, and moderate numbers of seed fragments of corncockle, *Agrostemma githago*. Together with remains of strawberry, blackberry, apple, plum, field bean, grape, coriander, and ?bilberry, there is little doubt that this component indicates the presence of food waste, probably faecal in nature. This was confirmed by

detecting the presence of the eggs of the intestinal worm *Trichuris* and of traces of faecal concretion. There were also traces of some remains which may be indicative of peat.

A fairly substantial insect assemblage was recovered (N = 109, S = 38); there was a large number of adult flies (Diptera), and also some fly larvae, Hymenoptera and Isopoda. As in the case of the sample from Context 4162, this one also contained faecal material that was not directly indicated by the fossil remains of beetles: there were no foul indicators. The most abundant species were 'house fauna'—*Tipnus unicolor* (21), an *Atomaria* species (12), *Mycetaea hirta* (9), a *Cryptophagus* and *Lathridius minutus* group (both 8), a second *Cryptophagus* (7), *Xylodromus concinnus* (3) and *Anobium punctatum* (2). *Apion* sp. and *Sitona* sp. (only single individuals) may have been brought in cut vegetation, or be part of a limited background fauna. The assemblage was, however, similar to those from the other contexts at this site interpreted as containing faeces (4027 and 4162) and probably indicative of a component, with the faeces, of other domestic waste.

Tenement Three

Phase 3.2

Group 94: Brick lined latrine pit – its use deposits and backfill

Building 3.2 – 14th/15th Century

Context 4995 (pit fill), Sample 79/T (3kg)

There was a rather small assemblage of plant remains, all recorded at low concentrations, apart from fig seeds (which were moderately common). Other than some fish bone and scale and eggshell fragments, and traces of strawberry and summer savory 'seeds', other evidence for possible food waste was absent, however, and if this feature *was* a latrine pit, the fill concerned retained little strong evidence for that (it may have been a post-use deposit, for example). The remaining plant taxa were mainly weeds, representing areas of cultivated land or otherwise disturbed ground, though the record of columbine, *Aquilegia vulgaris*, perhaps points to a plant used for ornament within the town at this period (it is recorded from several sites of medieval date in York). There were a few taxa typical of wetland habitats, notably water crowfoot, *Ranunculus* Subgenus *Batrachium* and two species of spike rush (*Eleocharis*) whose route to the deposit may have involved muddy feet, buckets of water or cut wetland vegetation. Charred and uncharred heather twig may indicate a further kind of resource represented in the assemblage.

A rather small group of insects was recovered, including 55 individuals of 39 species of beetles. Earthworm egg capsules were also recorded. The beetle fauna included some typical occupation site species, but the maximum number of individuals for any species was only three. The most abundant beetles were typical of house fauna groups, for example *Omalium caesum/italicum*, *Xylodromus concinnus*, *Tipnus unicolor* and *Lathridius minutus* (all with three individuals). This sample contained a rather large number of suspected post-depositional invaders—*Rhizophagus parallellocollis* (3), *Aglenus brunneus* (2), *Trechus ?micros* (1) and *Coprophilus striatulus* (1). Again, the assemblage from this subsample suggests a dump including domestic waste, with a selection of house fauna, and a few foul-loving species which may have invaded after deposition.

Phase 3.15

Group 75: Culvert and use deposits

Culvert – 19th Century

Context 4027 (drain fill), Sample 88/T (3kg)

The presence of faecal concretions in this sample, together with a suite of remains of edible plant taxa—plum, fig, blackberry, dewberry, wheat/rye 'bran'—clearly indicates a faecal component for this deposit. Nutshell of walnut, whilst probably not voided with faeces, adds to the list of plant food taxa.

The other taxa were a modest-sized range of weeds and waste ground plants and some—like the seed-coat fragment of ash, *Fraxinus*—which are more difficult to interpret.

A very large assemblage of adult beetles was recovered: 313 individuals of 85 beetle taxa. There were very large numbers of fly puparia with partly decayed, mineralised larvae and, while these probably exploited foul matter, there were rather few beetles suggesting similar material (% N RF = 3; including two individuals of each of *Cercyon quisquilius* and *Cercyon unipunctatus*). In contrast, ‘house fauna’ was abundant: *Cryptophagus scutellatus* (25 individuals), *Tipnus unicolor* (21), *Xylodromus concinnus* (20), *Lathridius minutus* group (17), *Ptinus fur* (15), *Typhaea stercorea* (9), and *Anobium punctatum* (3). *Dienerella* sp. (28) belongs with this house fauna group, though it is not sufficiently often abundant in archaeological deposits to have been included in the analyses of Carrott and Kenward (2001). *Thes bergrothi* (11), *Niptus hololeucus* (7) are also ecologically consistent with the group. The role of *Omalium ?allardi* (10) in archaeological assemblages is uncertain—positive identifications of fossils are rare. The beetle has tentatively been identified from various cess pit deposits at other sites and is probably under-recorded as *Omalium* sp.

A few grain pests were noted, including *Oryzaephilus surinamensis* (3), *Sitophilus oryzae* (3), *Rhyzopertha dominica* (2) and *S. granarius* (1).

There were hints of the presence of hay-like cut vegetation from *Sitona ?hispidulus*, *Hypera nigrirostris*, *Ceutorhynchus* sp. (all 2), and *Apion* sp., *Sitona lineatus* and *Gymnetron ?labile* (one of each). This mix of house fauna, grain pests and ‘hay’ beetles is typical of stable manure assemblages (Kenward and Hall 1997), and this interpretation is supported by the records of some decomposers often found in stable manure associations: *Oxytelus sculptus* (7), *Cercyon atricapillus* (2) and *Monotoma picipes* and *Anthicus floralis* (1 each).

There were appreciable numbers of species which are believed typical of post-depositional invader groups—*Quedius mesomelinus* (8), *Trechus micros* (4), *Coprophilus striatulus* (4) and *Rhizophagus parallellocollis* (3). *Anommatus duodecimstriatus* (6) probably belongs with this group.

The records of *Thes bergrothi*, *Niptus hololeucus*, *Sitophilus oryzae* and *Rhyzopertha dominica* are all notable; all were probably late arrivals in Britain.

On the basis of the insect assemblage this deposit seems to have included little other than stable manure, though the plant remains and faecal concretions clearly point to the presence of human faeces.

Tenement Four

Phase 4.10

Group 118: Dump and levelling deposits

Floors and Occupation – 14th century

Context 4710 (deposit), Sample 54/T (3kg)

This deposit produced very little plant material. The species present included cereal remains—oat, rye and bread club wheat, all of which were charred. Together with the charcoal and coal fragment present within the sample, this may represent the remains of a fire or fuel waste, with the cereal being charred accidentally possibly in the cooking process. The other plant remains, preserved by waterlogging, were probably mainly from weeds of various kinds.

Phase 4.13
Group 148
Occupation deposit or backfill
Occupation of building 4.12
Context 4482 (deposit), Sample 36/1 (3kg)

Other than wood charcoal, the only plant material recorded from the sample was a trace of heather root/basal twig material. Together with the other components—ceramic building materials (CBM), mortar, an iron nail, charcoal and shell fragments, this seems to indicate an occupation deposit of no special character.

Unphased
Dump accumulation in yard – 14th Century
Context 2113 (dump), Sample 2/T (2kg)

This sample was taken during the initial evaluation of the site, and has not been tied in with the phasing from the 2004 excavations. It produced a rather rich assemblage of plant remains though with one exception none was present in more than small amounts. Amongst the other components recorded, there were modest amounts of charcoal but rather abundant quantities of wood chips. A prominent component of the assemblage of identifiable plant taxa comprised leaves of the bog moss, *Sphagnum*, which— together with fragments of flowers, shoots and root/basal twigs heather, seeds of bog bean (*Menyanthes trifoliata*), and charred and uncharred ‘sclerenchyma spindles’ of cotton-grass (*Eriophorum vaginatum*) and probably some of the other taxa, clearly point to the presence of imported peat. Other ‘useful’ plants were present, such as hazel nut and fig, linseed, pea, and columbine (as in Context 4995), as well as numerous weed species common in cultivated land. Such ecologically diverse plant assemblages suggests, indicative of an area of dumping or refuse, but probably with much of the organic material arriving as litter.

An insect assemblage of modest size was recovered, and included beetle larvae, three human fleas (*Pulex irritans*) and fragments of a sheep ked (*Melophagus ovinus*) puparium, the last offering a weak hint that wool may have been cleaned at the site. There were 128 individuals of 73 beetle and bug taxa, high diversity ($\alpha = 70$, $SE = 11$) suggesting ecological mixing, and the large proportion of outdoor individuals hinting at the presence of background fauna (% N OB = 20). The most abundant species was *Aglenus brunneus* (18 individuals), perhaps a post-depositional invader but consistent with the small house fauna component indicated by *Mycetaea hirta* (5), *Xylodromus concinnus* (4), *Crataerea suturalis* and *Lathridius minutus* group (4 each), *Anobium punctatum*, *Tipnus unicolor* and two species of *Cryptophagus* (all 3), as well as small numbers of a few other taxa. Species indicative of fouler conditions were very rare. *Hydroporus* sp., *Donacia* sp. and *Micrelus ericae* may have originated from peat.

Overall, the deposit from which this sample was taken appears to have been a dump of mixed origin, with a component from within a building. It may have been stable manure in view of the evidence for peat and the presence of a few weevils of taxa regarded as typical of hay. The presence of human fleas does not argue for a human domestic origin, since fleas are common in archaeological stable manure associations (Kenward and Hall 1997).