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Reports from the Environmental Archaeology Unit, York

Assessment of biological remains from 41-49 Walmgate, York (site code 1999.941)

by

Cluny Johnstone, John Carrott, Allan Hall, Harry Kenward and Darren Worthy

Report **2000/04**

Environmental Archaeology Unit
Dept. of Biology
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Summary

Excavations carried out at 41-49 Walmgate, York, as part of the Time Team Live programme, yielded a total of 34 samples and a single box of bone and shell. Of the samples, 22 (SRS and BS samples) were processed on site and eight GBA samples were processed at the EAU. Analysis was limited to Anglo-Scandinavian and medieval deposits with secure dating evidence.

Preservation of biological remains within these deposits was exceptional in a number of ways, particularly the presence of dried (and not rewetted) plant remains and charred insects in association with waterlogged material. The range of plant and insect species was very similar to that observed in Anglo-Scandinavian deposits in other areas of York. The species present were indicative of the interiors of buildings, including moist floor environments and possibly also thatch. Dyeplants and invertebrates associated with wool were present in several deposits, as in many Anglo-Scandinavian deposits from York, suggesting textile processing in the vicinity.

The shell and vertebrate assemblages, whilst being well preserved, were too small to provide any useful insights into the economy of the site, other than that they mainly represent food waste.

The exceptional preservation of all bioarchaeological remains from this site and the quantity of information gained from such a small scale intervention, has once again highlighted the potential of deposits in this area for yielding a wealth of information on the environment and economy of Anglo-Scandinavian York. It would be expected that a large scale excavation in this area would generate bioarchaeological data on a scale similar to the work at 16-22 Coppergate.

KEYWORDS: 41-9 WALMGATE; YORK; ASSESSMENT; PLANT REMAINS; CHARRED REMAINS; MICROFOSSILS; PHYTOLITHS; DIATOMS; INTESTINAL PARASITE EGGS; *TRICHURIS*; INSECTS; SHELLFISH; OYSTERS; VERTEBRATE REMAINS; FOOD; DYEPLANTS

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Assessment of biological remains from 41-49 Walmgate, York (site code 1999.941)

Introduction

Excavations at 41-49 Walmgate (NGR SE607515) took place over the weekend of 3th-5th September 1999, as part of the 'Time Team Live' television programme for Channel 4. The excavation was undertaken by York Archaeological Trust. An on-site sieving programme (using both coarse-riddling and bulk-sieving) was undertaken by staff from the EAU and the Archaeological Resource Centre, York. Samples were also taken for further analysis at the EAU.

The Time Team excavations included the re-excavation of a trench dug in 1990, by York Archaeological Trust, which revealed well-preserved deposits just under the ground surface. Work carried out on deposits recovered from that excavation (Carrott *et al* 1991) showed the potential for the recovery of useful quantities of well preserved biological remains.

Samples and vertebrate material from the 1999 intervention were recovered from layers dating to the Anglo-Scandinavian, medieval and post-medieval periods. Six phases of activity were identified and are dated as follows:

Phase 1 - Anglo-Scandinavian
Phase 2 - 11th-12th Century
Phase 3 - ?12th-14th Century
Phase 4 - Late medieval
Phase 5 - Late medieval / post-medieval
Phase 6 - Modern

Methods

Sediment samples

Descriptions of the lithologies of all of the samples were recorded using a standard *pro forma*. Site-riddling (coarse-sieving) was undertaken on site using a riddling frame with a 10 mm mesh, after disaggregation in a cement-mixer. Bulk-sieving was also performed on site using a modified Sīraf tank with a 1mm mesh and 1mm washover sieves. In addition, 'GBA' samples (*sensu* Dobney *et al.* 1992) were taken; these were processed at the EAU, following procedures of Kenward *et al.* (1980; 1986), for the recovery of plant and insect remains.

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

Plant remains and other components of the GBA and BS samples

Plant remains were examined in the dried bulk-sieving (BS) residues and washovers, and wet GBA residues and flots. A semi-quantitative record of the abundance of taxa was recorded using a three-point scale for the BS material (and for some 'finds' from BS residues resulting from on-site sorting), and a four-point scale for the GBA samples. At the same time, records were made of all other components of these fractions—items such as bark, charcoal, wood, bone of various kinds, shell, and a variety of materials from occupation, such as pottery and brick/tile. The maximum size of most of these components was also noted. Records were made directly to a computer database form.

Insect remains

Insects in paraffin flots from GBA samples were identified by comparison with modern reference

material and using the standard works. Adult beetles and bugs, other than aphids and scale insects, were recorded fully quantitatively in order to put data on record for a synthesis project currently underway. A minimum number of individuals was estimated on the basis of the fragments present. Other invertebrate macrofossils were recorded semi-quantitatively using the scale described by Kenward *et al.* (1986) and Kenward (1992), using estimates for extremely abundant taxa.

Recording of the macro-invertebrates was essentially 'detailed' in the sense of Kenward (1992): many of the identifications were pushed further than is normal under 'scan' recording. Recording of the state of preservation of invertebrates followed Kenward and Large (1998), making use of the sheet illustrated in their fig. 2.

Data pertaining to invertebrate remains were transferred from a paper record to computer databases (using Paradox software) for analysis and long-term storage.

Shell

A small quantity of shell recovered by both hand-collection and on-site riddling of sediment samples was submitted: a volume of approximately two litres, representing material from eight contexts. Five of these were poorly dated or modern and shell recovered from them was not recorded. Brief notes were made on the preservational condition of the shell and the remains identified to species where possible.

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

Vertebrate remains

For the hand-collected vertebrate remains, data were recorded electronically directly into a series of tables using a purpose-built input system and *Paradox* software. Subjective records were made of the state of preservation, colour of the fragments, and the appearance of broken surfaces ('angularity'). Additionally, semi-quantitative information was recorded for each context concerning fragment size, dog gnawing, burning, butchery and fresh breaks.

Where possible, fragments were identified to species or species group, using the reference collection at the Environmental Archaeology Unit, University of York. Fragments not identifiable to species were described as the 'unidentified' fraction. Within this fraction fragments were grouped into a number of categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal (assumed to be caprovid, pig or small cervid), bird, fish, small mammal and totally unidentifiable. As well as counts of fragments, total weights were recorded for all identifiable and unidentifiable categories.

Vertebrate remains from the samples were recorded in a similar manner.

Results

The results of these investigations are presented in the following account, supported by Table 3 for plants, Tables 4-9 for invertebrates, Table 10 for shell and Tables 11-14 for vertebrates.

Sediment samples

A list of samples, together with notes on their treatment, is given in Table 1. The material is discussed in phase order, earliest to latest.

Phase 1

Context 1003 [?floor deposit]

Sample 11/GBA (2kg subsample and microfossil 'squash')

Moist, mid to dark grey-brown, unconsolidated (working soft), clay sandy silt. Very small stones (2-6mm) were present together with charcoal.

The microfossil 'squash' was mostly organic detritus with a little inorganic material and very many phytoliths. No eggs of intestinal parasitic nematodes were seen.

The residue and flot from this subsample were characterised by the presence of rather large amounts of charred herbaceous material including stems (mostly unidentified, but with some grass and/or cereal stem nodes and traces of trigonous stem fragments, perhaps bulrush or sea clubrush, *Scirpus lacustris/maritimus*) and some extremely well preserved rachis (ear-stalk) fragments of rye (*Secale cereale*). The latter, which were sometimes on lightly charred ('toasted') bore the characteristic rows of stiff hairs along their margins. Also present were fragments of the lemma (part of the flower) of rye with their distinctive coarse marginal cilia. Some of the charred plant remains exhibited a 'lumpy', irregular charred surface perhaps result of smoke-blackening rather than charring in fire, suggesting they may be from rye straw in thatch which was subsequently partly burnt in a fire. The presence of rather frequent charred seeds of corncockle *Agrostemma githago* is consistent with this interpretation.

For the rest, the residue included large amounts of charcoal and some uncharred wood chips, sand and daub, the last consistent with the presence of material from a building. There were also some small concretions of ashy material, containing fine charred herbaceous stems, similar to material found in quantity at the Middle-Late Saxon site at Flixborough, N. Lincolnshire (Hall, in preparation) though the precise mechanism whereby these concretions form is as yet unknown. Other seeds included a range of weeds (mostly charred) with traces of uncharred flax (*Linum usitatissimum*) capsule, and charred grains or spikelets of oats (*Avena sativa*), barley (*Hordeum*), rye and bread/club wheat (*Triticum 'aestivo-compactum'*). The presence of traces of charred *Triglochin maritima* (sea arrow-grass) fruits also resonates with the evidence from Flixborough, where remains of plants from the salt-marsh habitat (though not *Triglochin* itself) were quite often encountered in ash-rich deposits.

Although a 2kg subsample of the deposit was processed, rather few invertebrates were recovered: 52 individuals of 32 beetle and bug taxa, modest numbers of mites, and smaller numbers of a few other groups. The main statistics of the beetle and bug assemblages (Table 4) were broadly similar to those for deposits at comparable sites, e.g. 16-22 Coppergate (Kenward and Hall 1995). The upper ranks of abundance included several taxa regarded traditionally as 'house fauna' (Kenward and Hall 1995, 662-7) and placed in a group typical of floors by statistical analysis (Group A, Carrott and Kenward 2000): *Xylodromus concinnus* (7 individuals); *Atomaria* sp. (4); *Cryptophagus* sp. (3); and *Crataraea suturalis* and *Lathridius minutus* group (2 each), with single individuals of various others falling in this category. Of the beetles and bugs, 44% (23) fell in Carrott and Kenward's core Group A (Table 8), and there were also two human fleas, so that there is little doubt that this was either a floor deposit or rich in floor sweepings.

There may have been traces of foul matter present, as indicated by two *Platystethus arenarius*, but this very mobile species may have arrived accidentally with the various 'outdoor' elements recorded. On balance, a fairly clean floor is indicated.

Charred insect remains were—exceptionally—fairly abundant in this deposit. Those which could be recognised are listed in Table 9 (there were other burned remains which may have been badly damaged invertebrates). The remains seem to have been charred in the floor *in situ*, although they may just possibly have been reduced in burning roofing material.

Context 1004 [?floor deposit]

Sample 12/GBA (1kg subsample and microfossil 'squash')

Moist, dark brown-black, stiff and compressed (working crumbly), slightly humic, very slightly sandy, clay silt. Very small stones (2-6mm) were present. Other inclusions were charcoal, wood and large mammal bone fragments.

The microfossil 'squash' was approximately half-and-half organic detritus and inorganic material with a few fungal spores and hyphae. No eggs of intestinal parasitic nematodes were seen.

There were moderate amounts of well preserved waterlogged (and sometimes also charred) plant remains in the residue and flot from this sample, the matrix consisting largely of small wood chips, bark, charcoal and herbaceous detritus. There were some uncharred oats (*Avena*) spikelets which looked as if they had dried and been rewetted (almost as if they were rather decayed modern specimens which had not long been buried). Some fragments of hazel (*Corylus avellana*) nutshell showed evidence of knife marks at the apex (cf. Kenward and Hall, 1995, fig. 191g, h). There were also traces of three plants likely to have been used in textile dyeing: stems fragments of the clubmoss *Diphasium complanatum*, a root fragment of madder (*Rubia tinctorum*) and a pod fragment of woad (*Isatis tinctoria*),

all recorded regularly from Anglo-Scandinavian deposits in York (e.g. Kenward and Hall 1995).

Substantial numbers of beetles were recovered from this sample: 167 individuals of 77 taxa. Other invertebrates were moderately abundant. In addition to those mentioned below there were 'many' proctotrupoid wasps and mites, 'several' earthworm egg capsules, fly puparia and beetle larvae, and three froghopper nymphs.

The beetles were somewhat mixed ecologically, but 'house fauna' taxa were numerically predominant: the most abundant species was *Xylodromus concinnus*, with 29 individuals, and there were ten *Lathridius minutus* group, eight *Crataraea suturalis*, six *Cryptophagus scutellatus*, and three each of *Ptinus ?fur* and *Atomaria nigripennis*. Carrott and Kenward's (2000) core Group A accounted for 45% of the adult beetles (Table 8), so the interpretation of this deposit as a floor seems reasonable. There were also eight human fleas (*Pulex irritans*), which would have bred in floor litter. Many of the other species recorded would have found habitats in litter which was somewhat damp, but not objectionable to humans. There were, however, some beetles typical of rather more foul conditions, notably *Platystethus arenarius* (4), and *Anotylus nitidulus* and *Gyrohypnus angustatus* (3 each). These may have been strays, or indicative of local (and perhaps very small) patches of foul matter.

The cleaning of wool or fleeces was indicated by two adult and one puparial sheep ked, *Melophagus ovinus*. The dung deposited in cleanings ('dags') may have attracted the 'foul' beetles mentioned above, and also the dung beetle *Aphodius ?prodromus*, of which there were two.

This deposit may have formed in a well-protected situation within a building, for the proportion of 'outdoor' insects (PNOB, Table 4) was low by comparison with samples from 16-22 Coppergate and other sites. This is supported to some extent by a provisional record of a head capsule of a newly-emerged individual of the very cryptic and synanthropic ground beetle *Sphodrus leucophthalmus*.

A single eel vertebra and vole/mouse (microtine/murine) astragalus were the only vertebrate remains recovered from this sample.

Sample 13/BS

See Sample 12 for description.

The small washover of about 100cm^3 from this sample, consisted mostly of woody debris but included some cereal chaff with grades between charred and uncharred, some of it rye rachis. It was noted during recording that this material might have been 'dry-preserved' (as in thatch) before being buried. The presence of saw-sedge (*Cladium mariscus*) and sedge (*Carex* spp.) nutlets with their perigynia (outer 'coats') perhaps adds weight to the interpretation that whole dried plants were becoming incorporated then buried into the deposit. As in Context 1003, there were fragments of rye lemma and rachis (and also some tentatively identified waterlogged rachis fragments), though these were not seen in the GBA subsample.

Vertebrate remains comprised two herring vertebra.

Sample 14/BS

See Sample 12 for description

A spot find of hazel nutshell was recovered from this sample. In addition, 'unidentified' vertebrate remains (weighing 9.5g) were recovered, falling into the large- and medium-sized mammal, bird, and completely unidentified categories. Preservation of the vertebrate remains appeared mixed.

Context 1005 [black humic layer]

Sample 6/SRS

Moist, dark brown, soft, very slightly humic, very slightly sandy, clay silt. Stones up to 20mm were present, together with wood fragments.

A spot find of hazel nutshell was recovered from sample 6/SRS. Vertebrate remains comprised a single bird bone and three unidentified fragments (weighing 4.2g).

Sample 8/BS

See Sample 6 for description.

The washover from sample 8/BS yielded traces of clubmoss, woad, flax, and distinct wetland (fen/marsh) and cut grassland taxa. The frequent wood fragments were rather pale and spongy, giving an appearance of material that had been dried and rewetted at some point.

Although vertebrate remains were numerous (89 fragments, weighing 9.7 g), almost all (86) were very small and unidentifiable. The remaining three consisted of a single bird bone and two fish fragments. Overall

preservation was good and colour dark brown. A few battered fragments were noted. More than half the fragments were burnt, which explains the high degree of fragmentation.

Sample 10/GBA (1kg subsample and microfossil 'squash')

See Sample 6 for description.

The microfossil 'squash' was mostly organic detritus with a little inorganic material and many phytoliths. No eggs of intestinal parasitic nematodes were seen.

The large residue consisted of less than 10% by volume of mineral material (sand and grit), the rest being rather granular to flaky woody debris (including some chips) and bark fragments. The abundant small (<2mm) wood fragments may perhaps represent 'sawdust'. Together with fragments of clubmoss there was a single decayed woad pod fragment. Other plant remains included moderate numbers of well preserved seeds and fruits of a broad range weeds (especially stinking mayweed, *Anthemis cotula*) and fat hen (*Chenopodium album*), a variety of mosses, and traces of a few plants which might represent heathland/moorland habitats (brought, for example, in peat or turves?).

Insect remains were abundant and included 184 adult individuals of 88 beetle and bug taxa. Mites were very abundant, and there were moderate numbers of earthworm egg capsules and proctotrupoid wasps. The assemblage included two main components: 'house fauna', and species found in somewhat foul, but open-textured, matter such as stable manure (and probably dyeplant waste at 16-22 Coppergate). The first group included *Xylodromus concinnus* (20 individuals), *Aglenus brunneus* (14), *Cryptophagus scutellatus* (8), and three each of *Cryptophagus* sp., *Lathridius minutus* group, *Crataraea suturalis* and *Atomaria nigripennis*. There were also three human fleas. Beetles and bugs in Carrott and Kenward's core Group A contributed 42% of the assemblage, and an origin for this deposit within a building seems extremely likely.

The second ecological group was typified by *Ptenidium* sp. and *Leptacinus pusillus* (5 each), *Gyrohypnus fracticornis* (4), *Carpelimus fuliginosus* and *Oxytelus sculptus* (3 each), and some of the less common taxa. Species representing extremely foul conditions were rare, however, and it seems likely that most of the fauna exploited various aspects of the interior of a building. That this was fairly well closed is suggested by the relative rarity of 'outdoor' insects: single individuals of 17 taxa, many of which may in any case have been imported with water or cut wetland vegetation.

Context 1014 [make up for floor]

Sample 19/BS

Just moist, light grey through mid grey and mid grey-brown to dark grey, stiff to crumbly (working soft), clay silt. Small (6-20mm) and medium-sized (20-60mm) stones and large mammal bone were present in this sample.

The very small washover (which included much undisaggregated sediment) contained flaky pale-coloured wood fragments with quite large numbers of well-preserved seeds, mainly weeds of various kinds. Flax, hop (*Humulus lupulus*) and clubmoss were all recorded. Fifty vertebrate fragments (weighing 60g) were recovered, including cattle, pig, bird, large mammal and unidentified remains. Preservation of the vertebrate remains was generally good, although a few battered fragments were noted. Colour was recorded as dark brown. Between a quarter and half the fragments were burnt.

Sample 20/GBA (1kg subsample and microfossil 'squash')

See Sample 19 for description

The microfossil 'squash' was mostly of inorganic material with some organic detritus and a few fungal hyphae and diatoms. No eggs of intestinal parasitic nematodes were seen.

This subsample yielded only a small residue consisting mainly of bark and wood fragments on the one hand, and concreted sediment (including 'root moulds'), grit and sand, on the other. There were low concentrations of moderately well-preserved seeds of which only stinking mayweed, fat hen and annual nettle (*Urtica urens*) were present in more than trace amounts. There were a few fragments of clubmoss and madder root, but otherwise most plant remains were from weeds or other wild-growing taxa.

The GBA subsample gave a modest-sized assemblage of adult beetles and bugs (44 taxa, 60 individuals) of rather mixed character. Of the other invertebrates noted, only mites and earthworm egg capsules were at all common. A quarter of the beetles (only 15 individuals) were from 'outdoor' forms, mostly probably representing open-air habitats on the site (ground beetles, dung beetles), a few

probably further-travelled (e.g. the chafer *Hoplia philanthus*). There was a trace of house fauna (a fifth of the beetles, including three *Xylodromus concinnus*, two human fleas and a sheep ked), but no more than might be present in an outdoor deposit on an occupation site, brought to level a floor, and certainly no more than might be subsequently trampled into it.

Sample 21/SRS

See Sample 19 for description.

This was an SRS sample processed on site; no biological remains were recovered.

Context 1034 [organic silt layer]

Sample 31/GBA (1kg subsample and microfossil 'squash')

Moist, mid-dark grey brown, crumbly, very humic silt with fine and coarse herbaceous detritus. Lumps of compressed, layered, sediment were present—possibly the same as the matrix but less disturbed. Wood and ?'straw' were present. A modern contaminant in the form of a lollypop stick was noted!

The microfossil 'squash' was mostly of organic detritus with a little inorganic material and many phytoliths. No eggs of intestinal parasitic nematodes were seen.

This subsample gave a very large residue of about 450cm^3 of which all but a few tens of cm^3 were organic fragments, mainly wood with some bark and charcoal. The remainder was sand and gravel. There were also a few small (<5mm) lumps of sticky material with plant remains, including seeds, pressed into it which is thought to be sealing wax (it melted easily and with a characteristic smell and hardened to a dark brittle layer on a glass slide); this may also have been responsible for the rather pronounced yellowish colouration of the ethanol in the flot.

Seeds from this sample were mostly well preserved but not especially abundant (except for stinking mayweed, which was very frequent), though there traces of root and root bark of madder and moderate numbers of stem fragments of clubmoss. *Cladium* nutlets with their perigynium present were also recorded, as were achenes of the sea aster, *Aster tripolium*, a plant characteristic of salt-marsh (and likely to have arrived, like the *Triglochin* from Samples 11, 13 and 20. There was also a distinct grassland component in Sample 31 which may have arrived in hay or stable manure.

The assemblage of adult beetles and bugs was rather limited in size (N = 65, S = 36), although a substantial range of other invertebrates was recorded. These included numerous mites, and 'several' fly puparia and proctotrupoid wasps (this group of wasps include many species parasitic in fly puparia, which are probably their main source in deposits such as these).

The beetles (and a few bugs) had an ecologically mixed character, and a quarter of the individuals were of 'outdoor' taxa. There were (limited) indications of 'house fauna' from four *Xylodromus concinnus* (the most abundant beetle), four human fleas, and a very few others, and hints of fouler matter from the oxyteline staphylinids (*Carpelimus pusillus* group and *Platystethus arenarius*, with three individuals each, being the most abundant).

Overall, this deposit appears to have formed in the open and to have received contributions from a wider range of sources. Subjectively, the insects offer a hint of the presence of material from heath or moor habitats, but the relevant taxa were too eroded and fragmentary for confident identification.

A notable record was a larval segment (bearing the characteristic spines illustrated by Peacock 1993) of the larder beetle *Dermestes lardarius*.

Three herring (*Clupea harengus*) vertebrae and two unidentified fish bones (weighing 0.2g) were recovered from this context.

Context 1035 [fill of small cut 1036]

Sample 32/GBA (1kg subsample and microfossil 'squash')

Moist, light grey to mid to dark grey brown (and points in between), unconsolidated (working soft), slightly clay sandy silt. Fragments of rotted mortar and pot sherds were present in this sample.

The microfossil 'squash' was mostly of organic detritus with a little inorganic material and many phytoliths. A live soil nematode was also noted.

The moderate-sized to large residue of about 300cm^3 was less than one-third grit, sand and gravel, the rest being wood (including chips) and charcoal and bark fragments. Again, there were rather low concentrations

of mostly well-preserved seeds, mainly of weeds but with remains of flax (seeds and capsule fragments), clubmoss and rye (rachis).

Mites were rather abundant, but other invertebrates, including beetles and bugs, were rare (N = 52, S = 36). The presence of nine *Aglenus brunneus*, four *Cryptophagus scutellatus*, three *Xylodromus concinnus*, and single individuals of some other taxa, suggests the presence of a house fauna component (and indeed half of the fauna fell into Carrott and Kenward's core Group A). There were a few remains of taxa suggesting foul conditions, but no evidence that any of them established breeding populations. There is nothing from the fauna to indicate whether this cut was located indoors, or was outdoors and received sediment containing house fauna.

Single gadid (cod family) and herring (*Clupea harengus*) vertebrae were recovered from this sample (total weight 1.2g).

Context 1039 [organic silt layer]

Sample 33/GBA (1kg subsample and microfossil 'squash')

Moist, dark brown, layered and compressed to unconsolidated, silt with fine and coarse herbaceous detritus. Rotted wood, 'straw' and moss were present.

The microfossil 'squash' was mostly of organic detritus with a little inorganic material, some fungal spores and hyphae, and many phytoliths. No eggs of intestinal parasitic nematodes were seen.

There was a very large residue of about 750cm^3 of which only a few cm^3 were dense material (mainly bone and gravel), the rest woody detritus, mainly wood (including chips) and bark, with some charcoal. The >2mm fractions were particularly 'flaky' in appearance.

A wide range of mosses was present, all in small amounts, representing woodland habitats, especially bark and shaded rocks and trees. There were only a few seeds in the coarse fractions but these included a few well-preserved charred cereals (oats and barley) and moderate numbers of flax seeds; there were also traces of clubmoss and madder, and a single small fragment of dyer's greenweed *Genista tinctoria*) stem. Particularly noticeable in the residue (and also in the flot) was the presence of fine herbaceous detritus with a 'grassy' or 'strawy' character, together with several grassland taxa represented by seeds or fruits. These may have originated in cut vegetation such as hay or straw, perhaps from stable manure. Traces of small concretions appeared to be of the kind seen in deposits rich in this kind of material rather than in deposits of human faecal matter and, indeed, an additional test for parasite eggs on one fragment of concretion proved negative.

Beetles and bugs were not abundant (72 individuals of 50 taxa being recorded), but there were very large numbers of fly puparia, mostly Sphaeroceridae, and numerous mites. Although there was a small house fauna element (core Group A accounting for a fifth of the fauna), the more abundant taxa suggest formation under fairly foul conditions in the open. *Platystethus arenarius* was the most numerous species (with five individuals), followed by *Carpelimus pusillus* group and *Anotylus complanatus*—a group of species seen repeatedly in pits at 16-22 Coppergate. The rarer taxa continued this pattern, the presence of single individuals of four *Aphodius* dung beetles being notable. The family Sphaeroceridae includes many species whose immature stages are typically found under very foul conditions.

Three large mammal shaft fragments (weighing 17.8 g) were the only vertebrate remains recovered from this sample

Phase 3

Context 1031 [?dumping/build up in backyard]

Sample 26/BS

Moist, mid-dark brown, soft (working soft/plastic), very slightly sandy silty clay. Stones under 20mm and over 60mm were present. The only other inclusion noted was large mammal bone fragments.

The very small washover included traces of seeds of a few weeds, charred ?heather (*Calluna vulgaris*) root/twig fragments and flax seeds, and at least one charred 6-row barley (*Hordeum vulgare*) grain, as well as oats and bread/club wheat.

Of the 163 fragments of bone (weighing 66.4 g) recovered from this sample, 12 were identifiable. Species present included pig, mouse (Murine sp.), cod (*Gadus morhua*), eel (*Anguilla anguilla*) and herring (*Clupea harengus*). The unidentified fraction contained fragments of bird, fish, large- and medium-sized mammal bones together with 105 completely unidentifiable small pieces. Preservation was described as good and colour as dark brown. Angularity was recorded as variable with rounded, battered and spiky fragments all present.

Sample 27/SRS

See sample 26 for description.

Two small fragments (to 23mm) of ?oyster shell were recovered from this sample.

Phase 4

Context 1013 [fill of pit 1029]

Sample 16/SRS

Moist, mid-brown, crumbly (working sticky), slightly sandy silty clay. Stones ranging from 2-60+mm were present, together with brick/tile, mortar/plaster, pottery, marine mollusc shell and large mammal bone fragments.

A spot find of hazel nutshell was recovered from this sample.

The marine mollusc shell consisted of four left and two right oyster (*Ostrea edulis*) valves, fourteen fragments of oyster shell (largest to 40mm), and a single fragment of mussel (*Mytilus edulis*) shell. In addition, three fragments of land snail (*Helix* sp.) were noted (probably all from one individual).

The vertebrate assemblage from this sample was quite extensive and reasonably well-preserved. A total of 278 fragments (weighing 949.8g) was recovered. Species present included cattle (8 fragments), pig (7) and caprovid (4), chicken (2), cod (*Gadus morhua*) (6 fragments), gadid (cod family) and haddock (*Melanogrammus aeglefinus*). The unidentified fraction included fragments of bird (7 fragments), fish (3), large (43) and medium-sized mammal (56) bones, in addition to 140 completely unidentified fragments.

Context 1030 [fill of pit 1029]

Sample 22/BS

Moist, mid-dark grey-brown, crumbly to soft (working soft), very slightly sandy clay silt. Small stones (up to 20mm) were present together with brick/tile, wood and land snails.

The small wet residue of a few hundred cm^3 of woody debris was scanned very quickly: much of the material was rather spongy and floated, as if it had dried out and then been rewetted. Again, clubmoss was present, though it was very decayed. Two further taxa, recorded only from this sample amongst the assemblages from this site, were walnut (*Juglans regia*) and pea (*Pisum* cf. *sativum*).

A total of 342 bone fragments (weighing 77.3 g) was recovered from this sample. Species identified included pig, caprovid, gadid (cod family), eel (*Anguilla anguilla*) and herring (*Clupea harengus*). The unidentified fraction included fragments of bird, fish, large- and medium-sized mammal bones together with completely unidentified remains. Preservation was generally good, although a few battered fragments were noted and the colour was brown and dark brown. Burnt fragments formed 20-50% of the assemblage.

Sample 23/SRS

See Sample 22 for description.

Four small fragments (to 35mm) of ?oyster shell and two fragments (to 23mm) of mussel shell were recovered from this sample.

Two cod (*Gadus morhua*) vertebrae and a single haddock (*Melanogrammus aeglefinus*) vertebra (weighing together 5g) were recovered from this sample.

Sample 24/GBA (1kg subsample and microfossil 'squash')

See Sample 22 for description.

The microfossil 'squash' was approximately half-and-half inorganic material and organic detritus. A few fungal spores and phytoliths and a single *Trichuris* egg were noted. This last was somewhat pale but otherwise well-preserved (and measurable).

There was a moderate-sized residue of about $300cm^3$ of which less than a third was mineral (sand, gravel, brick/tile); the rest mainly fine organic material (mainly very decayed wood). There was a little moss and some (?wool) yarn fragments but no suggestion of the presence of faecal material. There was also a possible peat/turf component. The presence of clubmoss in this late medieval context suggests that reworking of Anglo-Scandinavian material had taken place. Though preservation was generally good, the concentration of identifiable remains was low.

Only a small assemblage of adult beetles, and a single bug, was recovered (N = 36, S = 33) and other remains were rare apart from 'many' mites. Although no species was represented by more than two individuals, the beetle fauna had echos of many recorded from pits at 16-22

Coppergate, the most numerous species being *Carpelimus ?bilineatus*, *C. pusillus* group and *Platystethus arenarius* (only two of each, however). The presence of foul matter is supported by the proportion of taxa coded 'rf' (although the number of individuals is of course small, Table 5). Many of the remains were poorly preserved, and it is possible that some had completely decayed, but it seems equally likely that the deposit was buried too rapidly for a large insect population to develop following initial invasion by a range of species.

Although this deposit is dated to the late medieval period, it included no grain pests (a very constant signal in assemblages of such late date) and had a strongly 'Anglo-Scandinavian' character. This accords with the botanical evidence, strongly indicating that the layer consisted primarily of re-excavated earlier material.

Two herring (*Clupea harengus*) vertebrae, a single eel (*Anguilla anguilla*) vertebra and a bank vole (*Clethrionomys glareolus*) maxillary molar were recovered from this context. All were very well preserved.

Phase 6

Context 1000 [Backfill of previous excavation trench]

Samples 1, 2, 3 and 5

Moist, mid to dark brown, crumbly to unconsolidated (working crumbly), very slightly clay, slightly silty sand. Stones ranging from 2-60+mm were common. Other inclusions noted were mortar/plaster, brick/tile, pottery, metal, glass, tarmac, plastic, charcoal and wood. Sample 5 contained humic material and fewer stones.

These were SRS and BS samples processed on site; no further action was taken, except that material from Sample 5/BS was checked briefly for the presence of dyeplants; traces of stem fragments of the clubmoss, *Diphasium complanatum* (recorded from most samples, see below), were recovered.

Context 1001 [cleaning of previous trench]

Sample 4/SRS

Moist, mid to dark slightly greyish brown, crumbly (working soft), slightly clay, sandy silt. Stones ranging from very small to large (2-60+mm) were common. Brick/tile, twigs and large mammal bone fragments were also present. Modern roots and rootlets, together with earthworm bioturbation were noted.

The sample was processed on site, no further action as the context was a cleaning layer.

Context 1011 [machine excavated, mostly medieval finds]

Samples 7 and 17

Moist, mid-brown, crumbly to soft (working soft), sandy clay silt. Stones ranging from 2 to 60+mm were present. Mortar/plaster and pottery were also present, whilst brick/tile fragments were common. Sample 17 was darker in colour and contained less rubble.

These were SRS and BS samples processed on site; no further action was taken as the context was machine-dug. A single spot find of hazel nutshell was noted from Sample 7/SRS.

Context 1012 [cleaning of previous trench]

Samples 9 and 15

Moist, mid orange-brown, crumbly to stiff (working soft), slightly sandy clay silt. Orange and white speckles were noted Stones were present from 6-60+mm in size. Brick/tile, mortar/plaster and charcoal were also present.

These were SRS and BS samples processed on site, no further action was taken as the context was a cleaning layer.

Context 1037 [machine excavated, mostly medieval and Anglo-Scandinavian finds]

Samples 28, 29 and 30

Moist, mid-dark brown (with 1-10mm scale yellowish mottles), soft to sticky (working plastic), sandy silty clay. 2-6mm and 20-60mm stones were present. Other inclusions noted were mortar/plaster, brick/tile, wood, twigs and large mammal bone fragments.

These were SRS and BS samples processed on site; no further action was taken as the context was machine dug. A spot find of hazel nutshell, some specimens with apical knife marks, were noted from Sample 29/SRS.

Hand-collected shell

A small quantity of hand-collected oyster shell was recovered from the deposits. The material from the three well-dated contexts is summarised in Table 10.

Vertebrate remains

Vertebrate material was recovered from a total of 15 contexts (12 by hand-collection). Material (amounting to ½ box) was recorded from ten of these. The bones from the remaining five (amounting to ½ box) were not recorded, as the contexts were described as either topsoil, back-fill of the previous trench, or machine-excavated deposits. Hand-collected vertebrate material was recorded from seven contexts and bone recovered from four SRS, five BS and 5 GBA samples was also recorded (some contexts having multiple samples).

Preservation records were made for material from three hand-collected contexts and five samples (sometimes from the same contexts). Overall preservation was good, although a few fragments were noted as fair. Colour was slightly variable, being described as brown and dark brown, but the material did not appear mixed in terms of colour. However, the angularity did indicate a degree of reworking of material with battered and rounded fragments present within most contexts.

The degree of fragmentation of the hand-collected material was moderate with most fragments falling between 5 and 20cm in largest dimension. However, the whole assemblage contained a large proportion of small (less than 5cm) fragments. Dog gnawing was noted on less than 10% of the material in two contexts (1013, 1014), whilst fresh breakage was noted in similar quantities but on material in most contexts and samples. Evidence of butchery was noted on up to 20% of the fragments in four contexts.

A total of 1164 fragments (weighing 3024 g) was recorded, of which 104 (weighing 879 g) were identifiable to species or species group. Table 11 shows the numbers of fragments by species together with numbers of measurable and unfused bones, mandibles and loose teeth (of use for ageing or sexing) and weights.

Mammalian species present included the remains of domesticated cattle, caprovid, pig and cat, together with commensal/wild species such as mouse (Murine sp.), bank vole (*Clethrionomys glareolus*) and vole/mouse. Bird species were limited to domestic chicken and a duck which (on the basis of size) could be either wild or domestic. Most of the fish species identified were marine varieties, including herring (*Clupea harengus*), cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*) and gadid. Eel (*Anguilla anguilla*) was the only non-marine species present.

The unidentified fraction (1060 fragments) consisted chiefly of completely unidentifiable fragments (688), with large mammal, medium-sized mammal, bird and fish also represented.

Table 12 gives the numbers of fragments by phase and shows that about three-quarters of the fragments were recovered from Phase 4 (all from one context). The numbers of fragments are too small for any differences between phases to be significant. Table 13 shows the numbers of fragments recovered by different techniques. The results are much as would be expected, with the larger more robust fragments recovered by hand-collection and most of the small (particularly fish) bones coming from the fine sieving (BS and GBA samples).

A preliminary examination of the skeletal element representation for the main domesticates (Table 14) indicates that most of the fragments from this site were from non meat-bearing elements (i.e. head and lower limb) for all three species. However, it should be born in mind that the number of fragments was very small and the trends observed may not be significant.

Of the 104 identified fragments, nine were measurable, two had unfused epiphyses, and two mandibles and three isolated teeth (yielding ageing or sexing information) were present.

Discussion and statement of potential

Sediment samples

Plant remains from these samples were generally rather well preserved, either by charring or waterlogging, and in some cases (and unusually) specimens which were only partly charred were recorded. More than one assemblage gave evidence of remains which seemed to have entered the deposit dry and never properly to have become wetted and these, and some material with a sooty 'crust' may indicate the presence of detritus from old thatch. The rye rachis material from at least two contexts was often superbly preserved and occasionally in unbroken lengths of 1-3 cm, an unusual find for deposits in York.

The presence of dyeplant remains, especially of the clubmoss *Diphasium complanatum*, is entirely consistent with the Anglo-Scandinavian date of most of the deposits (and its presence in a context with late medieval pottery warns us against forgetting that it is quite durable and therefore likely to be reworked; the reworking of organic remains preserved by anoxic waterlogging is discussed by Dobney *et al*, 1997). Though never abundant, the remains seem rather unlikely to have reached these deposits by long-distance transport from the huge concentrations seen at 16-22 Coppergate and suggest that dyeing was also practised in the vicinity of Walmgate, though not necessarily at this particular site.

Also characteristic of Anglo-Scandinavian occupation deposits are hazel nuts exhibiting apical knife marks; they were recorded here from Contexts 1004 (Sample 12, 13 and 14), 1005 (8), 1014 (19) and 1037 (29).

No concentrations of intestinal parasitic nematode eggs were encountered. The single observed *Trichuris* egg (Context 1030) was well-preserved, however, implying that none of the examined deposits had a high content of faecal material (rather than that the evidence had not survived).

Preservation of insect remains was much as was observed in Anglo-Scandinavian deposits at 16-22 Coppergate (Kenward and Hall 1995) and Pavement (Hall *et al.* 1983), although perhaps more variable and sometimes showing a considerable degree of erosion or fragmentation (Table 7). Sometimes preservation varied continuously, but in other cases part of the fauna appeared to be in a different preservational state from the majority, and may have had a different origin (e.g. the subjectively recognised heath or moor component in Sample 31, Context 1034). The frequency of charred insects in an identifiable state in one of the samples (Context 1003, Sample 11/T) was exceptional, but charred remains were noted in some of the other samples too.

The overall character of the insect fauna was very similar to material from Coppergate and Pavement. The range of common beetles was indistinguishable, and even the rarer taxa were generally repeatedly observed at Coppergate. 'House fauna' was often abundant (Table 8), reflecting an association of most of the Walmgate deposits with buildings. The interiors seems to have been acceptably clean, with indications that conditions became rather moist here and there but probably never really foul. Human fleas were consistently present, sometimes in moderately large numbers, continuing the pattern seen at numerous other sites. Sheep keds, both adults and puparia, and presumably shed by wool cleaning, were present in most of the samples, but not abundant. An aquatic component was generally present (beetles, occasional water fleas of three kinds, and the bryozoan *Lophopus cristallinus*), but no more than might have arrived as background fauna (the

site is close to the River Foss) or in water brought to the site.

A number of notable records were made from this material, including the ground beetles *?Sphodrus leucophthalmus* (a rarely recorded strongly synanthropic form) and *Odacantha melanura* (found in reed beds and outside its present range at York, Lindroth 1974), the 'thread-legged bug' *Empicoris culiciformis* (a genus very rarely recorded from archaeological deposits but likely to have lived in thatch and birds' nests in the Anglo-Scandinavian town), the delicately patterned froghopper *Paramesus nervosus* (provisionally identified through lack of reference material, a marshland species just outside its present range (Le Quesne 1969, 77), perhaps from the same source as *O. melanura*), and the chafer *Hoplia philanthus*.

Shell

The shell assemblage is too small to be of interpretative value beyond noting that the damage from a knife (or similar implement) to some of the oyster valves indicates the consumption of these shellfish by humans.

Vertebrate remains

The vertebrate assemblage from 41-49 Walmgate was quite small and as such is of limited interpretative value. The preservation was generally good, although the variable angularity of fragments indicates the presence of reworked material. The range of vertebrate species present (particularly fish and small mammals), and the number of small artefacts recovered, has been significantly increased by the extensive sieving programme employed on this site. This shows the value of sieving, even on a small scale excavation, for highlighting the biological and artefactual potential of deposits.

Whilst the recovery of small bones and good preservation of vertebrate material from this excavation has again highlighted the potential deposits in this area of York have for yielding an interesting and useful vertebrate assemblage, the scale of the assemblage recovered is too small for any further work to be undertaken.

Recommendations

No further investigation of the microfossil content of these deposits is recommended.

A proper record of the plant remains from at least some of the samples from this site is required, not least to permit comparison with material of Anglo-Scandinavian date from other sites in York: perhaps Contexts 1003, 1034 and 1039 are the most important. Provision should be made for the preparation of a photographic record of some of the charred rye material, given that it is unusual and extremely well preserved.

The insect remains are clearly important both for reconstructing conditions at the site and in wider synthesis. It would be useful to record remains from larger subsamples in order to make more valid comparisons with sites such as Coppergate and Lloyds Bank.

No further work is recommended on the shell assemblage.

Whilst the vertebrate assemblage is too small to warrant further analytical work, it should be recorded to archive level.

Retention and disposal

All the existing material should be retained and the samples of unprocessed sediment stored under suitable conditions to prevent decay.

Archive

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

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Table 1. List of samples from 41-49 Walmgate, York with notes on their treatment.

Sample no.	Context	Phase	Approx. sample volume (l.)	Processed? (where?)	Notes	Retain?
1	1000	6	450	Y (On-site)	SRS (10mm mesh)	N/A
2	1000	6	8	Y (On-site)	BS (1mm mesh and washover)	N/A
3	1000	6	60	Y (On-site)	SRS (10mm mesh)	N/A
4	1001	6	120	Y (On-site)	SRS (10mm mesh)	N/A
5	1000	6	15	Y (On-site)	BS (1mm mesh and washover)	N/A
6	1005	1	15	Y (On-site)	SRS (10mm mesh)	N/A
7	1011	6	330	Y (On-site)	SRS (10mm mesh)	N/A
8	1005	1	15	Y (On-site)	BS (1mm mesh and washover)	N/A
9	1012	6	330	Y (On-site)	SRS (10mm mesh)	N/A
10	1005	1	20	Y (EAU)	GBA 1kg subsample. sieved to 300μm with paraffin flotation. 'Squash'.	Y
11	1003	1	10	Y (EAU)	GBA 2kg subsample. sieved to 300μm with paraffin flotation. 'Squash'.	Y
12	1004	1	10	Y (EAU)	GBA 1kg subsample, sieved to 300μm with paraffin flotation. 'Squash'.	Y
13	1004	1	10	Y (On-site)	BS (1mm mesh and washover)	N/A
14	1004	1	10	Y (On-site)	BS (1mm mesh and washover)	N/A
15	1012	6	15	Y (On-site)	BS (1mm mesh and washover)	N/A
16	1013	4	495	Y (On-site)	SRS (10mm mesh)	N/A
17	1011	6	15	Y (On-site)	BS (1mm mesh and washover)	N/A
19	1014	1	10	Y (On-site)	BS (1mm mesh and washover)	N/A
20	1014	1	10	Y (EAU)	GBA 1kg subsample, sieved to 300μm with paraffin flotation. 'Squash'.	Y
21	1014	1	10	Y (On-site)	SRS (10mm mesh)	N/A
22	1030	4	15	Y (On-site)	BS (1mm mesh and washover)	N/A
23	1030	4	210	Y (On-site)	SRS (10mm mesh)	N/A
24	1030	4	10	Y (EAU)	GBA 1kg subsample, sieved to 300μm with paraffin flotation. 'Squash'.	Y

Sample no.	Context	Phase	Approx. sample volume (l.)	Processed? (where?)	Notes	Retain?
25	1030	4	(2 bags)	SPOT		Y
26	1031	3	30	Y (On-site)	BS (1mm mesh and washover)	N/A
27	1031	3	90	Y (On-site)	SRS (10mm mesh)	N/A
28	1037	6	15	Y (On-site)	BS (1mm mesh and washover)	N/A
29	1037	6	420	Y (On-site)	SRS (10mm mesh)	N/A
30	1037	6	10	N		N
31	1034	1	10	Y (EAU)	GBA 1kg subsample, sieved to 300μm with paraffin flotation. 'Squash'.	Y
32	1035	1	10	Y (EAU)	GBA 1kg subsample, sieved to 300μm with paraffin flotation. 'Squash'.	Y
33	1039	1	10	Y (EAU)	GBA 1kg subsample, sieved to 300μm with paraffin flotation. 'Squash'.	Y
34	1037	6	10	N		N

Table 2. Complete list of plant and animal remains recorded from samples from the 41-49 Walmgate, York (Time Team) site, in taxonomic order. Although one sample came from a supposedly later medieval deposit, its flora and fauna appeared to be of Anglo-Scandinavian date and the records for it are included here. Order and nomenclature follow Tutin et al. *(1964-90) for vascular plants, Smith (1976) for mosses, and Kloet and Hincks (1964-77) for insects. Plant material not specifically noted as being preserved by charring can be taken to be uncharred. Where both secure and tentative identifications for a given taxon were recorded, only the former are listed here. For invertebrates, * = not used in calculating assemblage statistics (Table 8); ecode - ecological code used in generating main statistics (Tables 4 and 6); Sp(p). - species not previously listed; Sp(p). indet. - may be a species already listed.*

BRYOPHYTA (all remains were leaves and/or shoots unless otherwise specified)

Sphagnum sp(p). leaves
Ceratodon purpureus (Hedw.) Brid.
Dicranum scoparium Hedw.
Leucobryum glaucum (Hedw.) Ångstr.
Barbula sp(p).
Racomitrium canescens (Hedw.) Brid.
Ulota sp(p).
Leucodon sciuroides (Hedw.) Schwaegr.
Antitrichia curtipendula (Hedw.) Brid.
Neckera complanata (Hedw.) Hüb.
Thuidium tamariscinum (Hedw.) Br. Eur.
cf. *Cratoneuron filicinum* (Hedw.) Spruce
Campylium stellatum (Hedw.) Lange & Jens.
C. cf. *elodes* (Lindb.) Kindb.
cf. *Amblystegium riparium* (Hedw.) Br. Eur.
Drepanocladus sp(p).
Scorpidium scorpioides (Hedw.) Limpr.
Calliergon cf. *giganteum* (Schimp.) Kindb.
C. cuspidatum (Hedw.) Kindb.
Isothecium myurum Brid.
I. myosuroides Brid.
Homalothecium sericeum (Hedw.) Br. Eur./*H. lutescens* (Hedw.) Robins.
Eurhynchium striatum (Hedw.) Schimp.
Eurhynchium sp(p).
Hypnum cf. *cupressiforme* Hedw.
Rhytidiadelphus cf. *squarrosus* (Hedw.) Warnst.
Rhytidiadelphus sp(p).
Hylocomium cf. *brevirostre* (Brid.) Br. Eur.
H. splendens (Hedw.) Br. Eur.

PTERIDOPHYTA

Diphasium complanatum (L.) Rothm. (complanate clubmoss) charred and uncharred shoot fragments
Pteridium aquilinum (L.) Kuhn (bracken) pinnule fragments

ANGIOSPERMAE

Salix sp(p). (willow) buds
Populus sp(p). (poplar/aspen) buds and/or bud-scales
Myrica gale L. (bog myrtle/sweet gale) leaf fragments
Juglans regia L. (walnut) nutshell fragments
Betula cf. *pendula* Roth (?silver birch) bark fragments
Betula sp(p). (birch) female catkin scales, fruits
Alnus glutinosa (L.) Gaertner (alder) buds and/or bud-scales, fruits
Corylus avellana L. (hazel) charred and uncharred nuts and/or nutshell fragments, immature nuts
Quercus sp(p). (oak) buds and/or bud-scales, wood fragments
Ficus carica L. (fig) seeds
Humulus lupulus L. (hop) achenes
Cannabis sativa L. (hemp) achenes
Urtica dioica L. (stinging nettle) achenes
U. urens L. (annual nettle) achenes
Polygonum aviculare agg. (knotgrass) charred and uncharred fruits
P. hydropiper L. (water-pepper) fruits
P. persicaria L. (persicaria/red shank) fruits
P. persicaria/lapathifolium (persicarias) charred and uncharred fruits
P. lapathifolium L. (pale persicaria) fruits
Bilderdykia convolvulus (L.) Dumort. (black bindweed) charred and uncharred fruits and uncharred fruit fragments
Rumex acetosella agg. (sheep's sorrel) fruits
Rumex sp(p). (docks) charred and uncharred fruits, perianths/perianth segments,
cf. *Rumex* sp(p). (?docks) flowering stem fragments
Chenopodium Section *Pseudoblitum* (red goosefoot, etc.) seeds
C. murale L. (nettle-leaved goosefoot) seeds

C. album L. (fat hen) charred and uncharred seeds
Atriplex sp(p). (oraches) charred and uncharred seeds
Stellaria media (L.) Vill. (chickweed) seeds
S. palustris Retz./*S. graminea* L. (marsh/lesser stitchwort) seeds
Spergula arvensis L. (corn spurrey) seeds
Agrostemma githago L. (corncockle) charred and uncharred seeds and uncharred seed fragments
Silene vulgaris (Moench) Garcke (bladder campion) seeds
S. alba (Miller) Krause in Sturm (white campion) seeds
Caltha palustris L. (marsh marigold) seeds
Ranunculus Section *Ranunculus* (meadow/creeping/bulbous buttercup) achenes
R. sardous Crantz (hairy buttercup) achenes
R. flammula L. (lesser spearwort) achenes
Cruciferae (cabbage family) pedicels, seeds
Isatis tinctoria L. (woad) pod fragments
Camelina sativa (L.) Crantz (gold-of-pleasure) pods
Thlaspi arvense L. (field penny-cress) seeds
Brassica rapa L. (turnip) seeds
Brassica sp(p). (cabbages, etc.) seeds
Brassica sp./*Sinapis arvensis* (brassica/charlock) mineralised cotyledons and uncharred seeds
Raphanus raphanistrum L. (wild radish) charred and uncharred pod segments and/or fragments and uncharred seeds
Reseda luteola L. (weld/dyer's rocket) seeds
Filipendula ulmaria (L.) Maxim. (meadowsweet) achenes
Rubus fruticosus agg. (blackberry/bramble) seeds
Rubus/Rosa sp(p). (blackberry, etc./rose) prickles
Rosa sp(p). (roses) achenes
Potentilla palustris (L.) Scop. (marsh cinquefoil) achenes
P. cf. *erecta* (L.) Räuschel (?tormentil) achenes
Fragaria cf. *vesca* L. (?wild strawberry) charred and uncharred achenes
Aphanes arvensis agg. (parsley-pierts) achenes
Malus sylvestris Miller (crab apple) endocarp, seeds and seed fragments
Prunus spinosa L. (sloe) charred and uncharred fruitstones, thorns
P. domestica ssp. *insititia* (L.) C. K. Schneider (plums, etc.) fruitstones
Leguminosae (pea family) calyx/calyces, flowers and/or petals, immature seeds (waterlogged), pods and/or pod fragments
Genista tinctoria L. (dyer's greenweed) stem fragments, twig epidermis fragments
Vicia faba L. (field bean) waterlogged hila
cf. *Vicia* sp(p). (?vetches, etc.) charred seeds
Pisum cf. *sativum* L. (?garden/field pea) charred seeds
Oxalis acetosella L. (wood-sorrel) seeds
Linum usitatissimum L. (cultivated flax) capsule fragments, charred and uncharred seeds
Euphorbia helioscopia L. (sun spurge) seeds
Viola sp(p). (violets/pansies, etc.) capsule segments, charred and uncharred seeds
Umbelliferae (carrot family) mericarps
Pimpinella saxifraga L. (burnet saxifrage) mericarps
Oenanthe cf. *aquatica* (L.) Poiret in Lam. (?fine-leaved water-dropwort) mericarps
Aethusa cynapium L. (fool's parsley) charred and uncharred mericarps
Anethum graveolens L. (dill) mericarps
Torilis japonica (Houtt.) DC. (upright hedge-parsley) mericarps
Daucus carota L. (wild carrot) mericarps
Erica tetralix L. (cross-leaved heath) leaf/leaves
Calluna vulgaris (L.) Hull (heather, ling) shoot fragments
cf. *C. vulgaris* (?heather, ling) charred and uncharred root and/or basal twig fragments
Primulaceae (primrose family) seeds
Anagallis arvensis L. (scarlet pimpernel) seeds
Menyanthes trifoliata L. (bogbean) seeds
Rubia tinctorum L. (dyer's madder) root bark and root fragments
Marrubium vulgare L. (white horehound) nutlets
Galeopsis Subgenus *Ladanum* (hemp-nettles) nutlets
G. Subgenus *Galeopsis* (hemp-nettles) nutlets
Lamium Section *Lamiopsis* (annual dead-nettles) nutlets
Stachys sp(p). (woundworts) nutlets
Nepeta cataria L. (cat-mint) nutlets
Prunella vulgaris L. (selfheal) nutlets
Satureja hortensis L. (summer savory) nutlets
Hyoscyamus niger L. (henbane) seeds
Pedicularis palustris L. (marsh lousewort) seeds
Plantago major L. (greater plantain) seeds
Sambucus nigra L. (elder) charred and uncharred seeds
Valerianella dentata (L.) Pollich (narrow-fruited cornsalad) fruits
Knautia arvensis (L.) Coulter (field scabious) fruit fragments
Compositae (daisy family) involucres/fragments
Bellis perennis L. (daisy) achenes
Aster tripolium L. (sea aster) achenes
Bidens sp(p). (bur-marigolds) achenes
Anthemis cotula L. (stinking mayweed) charred and uncharred achenes
Arctium sp(p). (burdocks) achenes

Carduus/Cirsium sp(p). (thistles) achenes
Centaurea sp(p). (knapweeds, etc.) achenes
Hypochoeris sp(p). (cat's ears) achenes
Leontodon sp(p). (hawkbits) achenes
Picris hieracioides L. (hawkweed ox-tongue) achenes
Sonchus asper (L.) Hill (prickly sow-thistle) achenes
S. oleraceus L. (sow-thistle) achenes
S. palustris L./*S. arvensis* L. (marsh/corn sow-thistle) achenes
S. cf. *arvensis* L. (?corn sow-thistle) achenes
Lapsana communis L. (nipplewort) achenes
Triglochin maritima L. (sea arrowgrass) charred and uncharred carpels
Iris pseudacorus L. (yellow flag) seeds
Juncus cf. *compressus* Jacq. (?round-fruited rush) seeds
J. cf. *gerardi* Loisel. (?mud rush) seeds
J. bufonius L. (toad rush) seeds
Luzula sp(p). (woodrushes) seeds
Gramineae (grasses) charred and uncharred caryopsis/es
Gramineae/'Cerealia' (grasses/cereals) charred culm fragments, culm nodes, awns/awn fragments, caryopses, and rachis fragments and uncharred culm nodes
cf. *Glyceria* sp(p). (?sweet-grasses) caryopses
Bromus sp(p). (bromes, etc.) charred caryopses
Triticum 'aestivo-compactum' (bread/club wheat) charred caryopsis/es
Triticum sp(p). (wheats) charred caryopses
Triticum/Secale (wheat/rye) waterlogged caryopses and periderm ('bran') fragments
Secale cereale L. (rye) charred caryopses, and lemma and rachis fragments
cf. *Secale cereale* L. (?rye) charred caryopses amd uncharred rachis fragments
Hordeum vulgare L. (six-row barley) charred caryopsis/es, some twisted grains
Hordeum sp(p). (barley) charred caryopses
Avena fatua L. (wild oat) charred spikelets/spikelet fragments
A. sativa L. (cultivated oat) charred and uncharred spikelets/spikelet fragments
Avena sp(p). (oats) charred caryopses, chaff, part-charred spikelets/spikelet fragments, uncharred caryopses and spikelets/spikelet fragments
Danthonia decumbens (L.) DC. in Lam. & DC. (heath grass) caryopses
Scirpus maritimus L. (sea club-rush) nutlets
S. setaceus L. (bristle club-rush) nutlets
Eleocharis palustris s.l. (common spike-rush) charred and uncharred nutlets
Eleocharis sp(p). nutlets
Cladium mariscus (L.) Pohl (great sedge/saw-sedge) nutlets with perigynium
cf. *C. mariscus* (L.) Pohl (?great sedge/saw-sedge) charred leaf fragments
Schoenus nigricans L. (bog-rush) nutlets
Carex sp(p). (sedges) charred and uncharred nutlets

	e-code
ANNELLIDA: OLIGOCHAETA	
*Oligochaeta sp. (egg capsule)	u
CRUSTACEA: CLADOCERA	
**Daphnia* sp. (ephippium)	oa-w
*Cladocera sp. (ephippium)	oa-w
INSECTA	
DERMAPTERA	
**Forficula auricularia* Linnaeus	rt
HEMIPTERA	
Empicoris culiciformis (Degeer)	rt
Lyctocoris campestris (Fabricius)	rd-st
Chartoscirta ?cocksi (Curtis)	oa-w
*Heteroptera sp. (nymph)	u
Aphrodes sp.	oa-p
?Paramesus nervosus (Fallen)	oa-p
Delphacidae spp.	oa-p
Auchenorhyncha spp.	oa-p
*Auchenorhyncha sp. (nymph)	oa-p
*Coccoidea sp.	u
?Hemiptera sp.	u
TRICHOPTERA	
*?Trichoptera sp.	oa-w
LEPIDOPTERA	
*Lepidoptera sp. (pupa)	u
DIPTERA	
*Melophagus ovinus (Linnaeus) (puparium)	u
*Melophagus ovinus (Linnaeus) (adult)	oa-w
*Diptera sp. (adult)	u
*Diptera sp. (larva)	u
*Diptera sp. (puparium)	u
*Diptera sp. (pupa)	u
*Syrphidae sp. (larva)	u
SIPHONAPTERA	
**Pulex irritans* Linnaeus	ss
*Siphonaptera sp. indet.	u
COLEOPTERA	
?Sphodrus leucophthalmus (Linnaeus)	oa
Clivina fossor (Linnaeus)	oa
Trechus quadristriatus (Schrank)	oa

Trechus micros (Herbst)	u
?Trechus sp.	ob
Bembidion (*Philochthus*) sp.	oa
Bembidion sp.	oa
Stomis pumicatus (Panzer)	oa
Pterostichus (*Poecilus*) sp.	oa
Pterostichus sp.	ob
Agonum dorsale (Pontoppidan)	oa
Amara sp.	oa
Odacantha melanura (Linnaeus)	oa-d
Carabidae spp. and spp. indet.	ob
Helophorus ?aquaticus (Linnaeus)	oa-w
Helophorus aquaticus or *grandis*	oa-w
Helophorus spp.	oa-w
Cercyon analis (Paykull)	rt-sf
Cercyon haemorrhoidalis (Fabricius)	rf-sf
Cercyon unipunctatus (Linnaeus)	rf-st
Cryptopleurum minutum (Fabricius)	rf-st
Acritus nigricornis (Hoffmann)	rt-st
Histerinae sp.	rt
Ochthebius ?minimus (Fabricius)	oa-w
Ochthebius sp. indet.	oa-w
Hydraena sp.	oa-w
Ptenidium sp.	rt
Acrotrichis sp.	rt
Catops sp.	u
Silpha atrata Linnaeus	u
Scydmaenus sp.	u
Micropeplus fulvus Erichson	rt
Micropeplus sp. indet.	rt
Phyllodrepa ?floralis (Paykull)	rt-sf
?Phyllodrepa salicis (Gyllenhal)	rt-sf
Dropephylla ?ioptera (Stephens)	u
Dropephylla vilis (Erichson)	l
Dropephylla sp. indet.	u
Omalium excavatum Stephens	rt-sf
Omalium caesum or *italicum*	rt-sf
Omalium ?rivulare (Paykull)	rt-sf
Omalium sp. indet.	rt
Xylodromus concinnus (Marsham)	rt-st
Coprophilus striatulus (Fabricius)	rt-st
Carpelimus bilineatus Stephens	rt-sf
Carpelimus fuliginosus (Gravenhorst)	st
Carpelimus pusillus group	u
Carpelimus sp.	u
Platystethus arenarius (Fourcroy)	rf
Platystethus degener Mulsant & Rey	oa-d
Platystethus cornutus group indet.	oa-d
Platystethus nitens (Sahlberg)	oa-d
Anotylus complanatus (Erichson)	rt-sf
Anotylus nitidulus (Gravenhorst)	rt
Anotylus rugosus (Fabricius)	rt
Anotylus sculpturatus group	rt
Oxytelus sculptus Gravenhorst	rt-st
Stenus spp.	u
Lathrobium sp.	u
Leptacinus pusillus (Stephens)	rt-st
Leptacinus sp. indet.	rt-st
Phacophallus parumpunctatus (Gyllenhal)	rt-st
Gyrohypnus angustatus Stephens	rt-st
Gyrohypnus fracticornis (Muller)	rt-st
Neobisnius sp.	u
Philonthus ?politus (Linnaeus)	rt-st
Philonthus spp.	u
Creophilus maxillosus (Linnaeus)	rt
Quedius sp.	u
Staphylininae spp. and spp. indet.	u
Tachinus laticollis or *marginellus*	u
Cordalia obscura (Gravenhorst)	rt-sf
Falagria caesa or *sulcatula*	rt-sf
Falagria or *Cordalia* sp.	rt-sf
Crataraea suturalis (Mannerheim)	rt-st
Aleocharinae spp.	u
Staphylinidae sp.	u
Euplectini sp.	u
Pselaphidae sp.	u
Trox scaber (Linnaeus)	rt-sf
Aphodius granarius (Linnaeus)	ob-rf
Aphodius prodromus (Brahm)	ob-rf
Aphodius spp. and spp. indet.	ob-rf
Hoplia philanthus Illiger	oa
Clambus ?pubescens Redtenbacher	rt-sf
Clambus sp.	rt-sf
Cyphon sp.	oa-d
Elateridae spp.	ob
**Dermestes lardarius* (larva)	rd-sf
Anobium punctatum (Degeer)	l-sf
Ptinus ?fur (Linnaeus)	rd-sf
Ptinus sp. indet.	rd-sf
Ptinidae sp. indet.	rd
Lyctus linearis (Goeze)	l-sf
Meligethes sp.	oa-p
Omosita ?discoidea (Fabricius)	rt-sf
Omosita sp. indet.	rt-sf
Rhizophagus sp.	u
Monotoma spinicollis Aube	rt-st
Monotoma sp. indet.	rt-sf
Cryptophagus scutellatus Newman	rd-st
Cryptophagus spp.	rd-sf
Atomaria nigripennis (Kugelann)	rd-ss
Atomaria spp.	rd
Ephistemus globulus (Paykull)	rd-sf
Orthoperus sp.	rt
Mycetaea hirta (Marsham)	rd-ss
Lathridius minutus group	rd-st
Enicmus sp.	rt-sf
Corticaria spp.	rt-sf
Typhaea stercorea (Linnaeus)	rd-ss

Aglenus brunneus (Gyllenhal)	rt-ss
Tenebrio obscurus Fabricius	rt-ss
Salpingidae sp.	l
Anthicus formicarius (Goeze)	rt-st
Anthicus floralis or *formicarius*	rt-st
Phymatodes alni (Linnaeus)	l
Cerambycidae sp.	l
Phaedon sp.	oa-p
Phyllotreta nemorum group	oa-p
Phyllotreta sp.	oa-p
Longitarsus sp.	oa-p
?Altica sp.	oa-p
Chaetocnema ?concinna (Marsham)	oa-p
Chaetocnema sp.	oa-p
Halticinae sp.	oa-p
Apion (Oxystoma) ?subulatum Kirby	oa-p
Apion spp.	oa-p
?Strophosomus sp.	oa-p
Sitona sp.	oa-p
Cossoninae sp.	u
Dorytomus sp.	oa-p
Ceutorhynchus contractus (Marsham)	oa-p
Ceutorhynchus sp.	oa-p
Ceuthorhynchinae sp.	oa-p
Curculionidae sp.	oa
Leperisinus ?varius (Fabricius)	l
*Coleoptera sp. indet. (larva)	u

HYMENOPTERA

*Proctotrupoidea sp.	u
*Chalcidoidea sp.	u
*Hymenoptera Parasitica sp.	u
*Formicidae sp.	u
**?Apis mellifera* Linnaeus	u
*Apoidea sp. indet.	u
*Hymenoptera sp.	u

*Insecta sp. (larva)	u

ARACHNIDA

*Aranae sp.	u
*Acarina sp.	u

MOLLUSCA

*Gastropoda sp.	u

BRYOZOA

**Lophopus crystallinus* (Pallas)	oa-w

VERTEBRATA

PISCES

Clupea Harengus L. (herring)
Anguilla anguilla (L.) (eel)
Gadidae (cod family)
Gadus morhua L. (cod)
Melanogrammus aeglefinus (L.) (haddock)

AVES

Anas sp. (duck)
cf. *Gallus* f. domestic (?fowl)
Gallus f. domestic (chicken)

MAMMALIA

Microtine/Murine (vole/mouse)
Clethrionomys glareolus (Screber) (bank vole)
Murinae (mouse species)
Felis f. domestic (cat)
Sus f. domestic (pig)
Bos f. domestic (cattle)
Caprovid (sheep/goat)

Table 3. Lists of plants remains and other components of the samples from 41-9 Walmgate (Time Team site), York, in context, sample and subsample order. For each list records are presented in descending order by abundance score (on a 3- or 4-point scale as appropriate for the kind of sample) and for each score in alphabetical order.

Abbreviations: af—achene fragment(s); b—bud(s); br—bract(s); bs—bud-scale(s); caps—capsule(s); ch—charred; c/n—culm-nodes; cot—cotyledon(s); dec—decayed; dim—dimension; endo—endocarp; epid—epidermis; fcs—female catkin or cone scale(s); ff—fruit fragment(s); fgt/s—fragment/s; fls—flower(s); fr—fruit(s); inc—including; incomp—incompletely; inv—involucre/involucral; lef—leaf epidermis fragment(s); lvs—leaves; max—maximum; mc—male catkin; meso—mesocarp; mf—mericarp fragment(s); min—mineral-replaced ('mineralised'); per—perianth(s); pet—petal(s); pinn—pinnule; rt—root; s—seed(s); segs—segment(s); sf—seed fragment(s); sht—shoot; specn—specimen; spklts—spikelet(s); spr—sprouting; st—stem; tef—twig epidermis fragment(s); tw—twig; twstd—twisted; v—very.

Context 1000, Sample 5/BS		
Diphasium complanatum	1	

Context 1003, Sample 11/T		
charcoal	3	max 40mm
charred herbaceous detritus	3	
sand	3	
Agrostemma githago (ch)	2	
Gramineae/Cerealia (c/n)	2	
Secale cereale (lemma fgts)	2	
Secale cereale (rachis fgts)	2	
'ash beads'	1	
'char'	1	max 10 mm
'pinched' stems (ch)	1	
?daub	1	max 40mm
Aethusa cynapium (ch)	1	
animal hairs	1	
Anthemis cotula	1	
Anthemis cotula (ch)	1	
ash concretions	1	max 5mm
Atriplex sp(p).	1	
Avena sativa (spklts/fgts)	1	
Avena sp(p).	1	
bark fgts	1	max 20mm
Bilderdykia convolvulus (ch)	1	
Brassica rapa	1	
burnt bark fgts	1	max 10 mm
burnt bone fgts	1	max 20mm
Calliergon cf. giganteum	1	
Carex sp(p). (ch)	1	
Centaurea sp(p).	1	
Cerealia indet. (chaff)	1	
Cerealia indet. (rachis fgts)	1	
cf. Avena sp(p). (part-ch chaff)	1	
cf. Secale cereale	1	
cf. Vicia sp(p).	1	max 2mm
charred trigonous stems	1	
Chenopodium album	1	
Chenopodium album (ch)	1	
Chenopodium Section Pseudoblitum	1	
Corylus avellana	1	
earthworm egg caps	1	
fish bone	1	max 2mm
Gramineae (ch)	1	
gravel	1	max 20mm
herbaceous detritus	1	
Hordeum sp(p).	1	
Linum usitatissimum (caps fgts)	1	
Menyanthes trifoliata	1	fragment(s) only
moss (contaminant)	1	
Neckera complanata	1	
Polygonum aviculare agg. (ch)	1	
Polygonum persicaria/lapathifolium (ch)	1	
Quercus sp(p). (b/bs)	1	
Raphanus raphanistrum (pod segs/fgts)	1	part-charred ('toasted')
Rubus fruticosus agg.	1	
Rumex sp(p). (ch)	1	
Sambucus nigra	1	
Sambucus nigra (ch)	1	
Scorpidium scorpioides	1	
Secale cereale	1	
Secale cereale (part-ch rachis fgts)	1	
snails	1	
Sphagnum sp(p). (lvs)	1	
Triglochin maritima (ch)	1	
Triticum aestivo-compactum	1	
Urtica urens	1	
Viola sp(p). (ch)	1	
wood chips	1	max 10 mm
wood chips (ch)	1	some or all only partly charred; 10 mm max dim

Context 1004, Sample 12/T		
Anthemis cotula	2	
Atriplex sp(p).	2	
bark fgts	2	max 25mm
Brassica rapa	2	inc fgts
charcoal	2	max 15mm
Chenopodium album	2	
earthworm egg caps	2	
herbaceous detritus	2	mostly <1mm
Raphanus raphanistrum (pod segs/fgts)	2	
sand	2	
Urtica urens	2	
wood chips	2	max 10 mm
'char'	1	max 5mm
'coils'	1	

?peat/mor humus	1	max 5mm
Aethusa cynapium	1	
Agrostemma githago	1	
Agrostemma githago (sf)	1	
Anagallis arvensis	1	
Anthemis cotula (ch)	1	
Avena sp(p).	1	
Avena sp(p). (chaff)	1	
Avena sp(p). (part-ch spklts/fgts)	1	
Avena sp(p). (w/l spklts/fgts)	1	
Avena sp(p). (w/l)	1	
bark chips	1	max 5mm
beetles	1	
Bellis perennis	1	
Bilderdykia convolvulus	1	
bone fgts	1	max 10 mm
Brassica sp./Sinapis arvensis	1	
brick/tile	1	max 5mm
burnt bone fgts	1	max 5mm
Calliergon cf. giganteum	1	
Camelina sativa (pods)	1	
Carex sp(p).	1	
Cenococcum (sclerotia)	1	
Cerealia indet. (awns)	1	
Cerealia indet. (chaff)	1	
cf. Rumex sp(p). (flg st fgts)	1	
Corylus avellana	1	including material with apical knife marks
Danthonia decumbens	1	
Diphasium complanatum	1	very decayed
Eleocharis palustris sl	1	
fish bone	1	max 10 mm
fly puparia	1	
Galeopsis Subgenus Galeopsis	1	
Gramineae	1	
Gramineae/Cerealia (ch culm fgts)	1	
gravel	1	max 20mm
grit	1	
Hyoscyamus niger	1	
Hypnum cf. cupressiforme	1	
Isatis tinctoria (pod fgts)	1	
Isothecium myurum	1	
Juncus bufonius	1	
Juncus cf. compressus	1	
Juncus cf. gerardi	1	
Lapsana communis	1	
Leucobryum glaucum	1	
Linum usitatissimum	1	inc fgts
Linum usitatissimum (caps fgts)	1	
Marrubium vulgare	1	
Melophagus ovinus (sheep ked)	1	
Neckera complanata	1	
Polygonum aviculare agg.	1	
Polygonum persicaria	1	
Potentilla cf. erecta	1	
pottery	1	max 30mm
Prunella vulgaris	1	
Quercus sp(p). (b/bs)	1	
Ranunculus sardous	1	
Raphanus raphanistrum (s)	1	fragment(s) only
root/rootlet fgts	1	
Rubia tinctorum	1	max 2mm
Rumex acetosella agg.	1	
Rumex sp(p).	1	
Sambucus nigra	1	
Satureja hortensis	1	
Scirpus setaceus	1	
Scorpidium scorpioides	1	
Sonchus asper	1	
Sonchus palustris/arvensis	1	
Spergula arvensis	1	
Stellaria media	1	
Stellaria palustris/graminea	1	
teeth	1	fragment(s) only
Valerianella dentata	1	
Viola sp(p).	1	
Viola sp(p). (caps segs)	1	
wood fgts	1	max 15mm

Context 1004, Sample 13/BS

Anthemis cotula	2	
Avena sp(p).	2	
Chenopodium album	2	
Corylus avellana	2	including material with apical knife marks
Lapsana communis	2	
Linum usitatissimum	2	
wood fgts	2	max 20mm
Aethusa cynapium	1	
Agrostemma githago	1	
Agrostemma githago (sf)	1	
Anethum graveolens	1	
Atriplex sp(p).	1	
Avena fatua (spklts/fgts)	1	
Avena sativa (spklts/fgts)	1	
Avena sativa (w/l spklts/fgts)	1	
Avena sp(p). (chaff)	1	
bark fgts	1	max 10 mm
bast with sclereids	1	
beetles	1	
Bilderdykia convolvulus	1	
Bilderdykia convolvulus (ff)	1	
bone fgts	1	max 20mm
Brassica rapa	1	
Brassica sp./Sinapis arvensis	1	
burnt bone fgts	1	max 15mm
Calliergon cf. giganteum	1	
Carex sp(p).	1	nutlets with utricles and/or free utricles
Cerealia indet. (chaff)	1	
Cerealia indet. (w/l chaff)	1	
cf. Avena sp(p). (chaff)	1	
cf. Calluna vulgaris (ch rt-tw fgts)	1	
cf. Calluna vulgaris (rt-tw fgts)	1	
cf. Secale cereale	1	
cf. Secale cereale (w/l rachis fgts)	1	
cf. Triticum/Secale (w/l)	1	
charcoal	1	max 15mm
charred herbaceous detritus	1	
Cladium mariscus (with perig)	1	

coal	1	max 10 mm
Corylus avellana (ch)	1	
Corylus avellana (imm)	1	
Diphasium complanatum	1	very decayed
eggshell fgts	1	max 5mm
Eleocharis palustris sl	1	
Eurhynchium sp(p).	1	
fish bone	1	max 20mm
fish scale	1	max 5mm
Galeopsis Subgenus Galeopsis	1	
Genista tinctoria (tef)	1	a single spec
gravel	1	max 10 mm
Hordeum sp(p).	1	
Hyoscyamus niger	1	
Hypnum cf. cupressiforme	1	
Leguminosae (cal)	1	
Leguminosae (pods/fgts)	1	max 5mm
Leontodon sp(p).	1	
Leucobryum glaucum	1	
Linum usitatissimum (caps fgts)	1	
Malus sylvestris	1	
Malus sylvestris (endo)	1	
Malus sylvestris (seed base cups)	1	
mammal tooth	1	
Melophagus ovinus (sheep ked)	1	
moss (contaminant)	1	
Neckera complanata	1	
Pimpinella saxifraga	1	a single spec: tubed
Polygonum aviculare agg.	1	
Polygonum lapathifolium	1	
Polygonum persicaria	1	
pottery	1	max 10 mm
Prunella vulgaris	1	
Racomitrium canescens	1	
Ranunculus flammula	1	
Ranunculus sardous	1	
Ranunculus Section Ranunculus	1	
Raphanus raphanistrum (pod segs/fgts)	1	
Rumex sp(p).	1	
Sambucus nigra	1	
sand	1	
Scorpidium scorpioides	1	
Secale cereale (lemma fgts)	1	a single spec: tubed
Secale cereale (rachis fgts)	1	
Sonchus asper	1	
Spergula arvensis	1	
Sphagnum sp(p). (lvs)	1	
Stachys sp(p).	1	
Stellaria media	1	
Thuidium cf. tamariscinum	1	
Torilis japonica	1	
Triglochin maritima	1	
Triticum aestivo-compactum	1	
Umbelliferae	1	
unwashed organic sediment	1	max 30mm
Urtica dioica	1	
Urtica urens	1	
Valerianella dentata	1	
Viola sp(p).	1	
wattle/wicker fgts	1	max 25mm
wood chips	1	max 10 mm

Context 1004, Sample 14/SPT

Corylus avellana	1	including material with apical knife marks
Corylus avellana	1	
fish bone	1	max 15mm

Context 1005, Sample 8/BS

wood fgts	3	max 15mm
Anthemis cotula	2	
Atriplex sp(p).	2	
bark fgts	2	max 45mm
charcoal	2	max 20mm
Chenopodium album	2	
gravel	2	max 20mm
grit	2	
Linum usitatissimum	2	
Urtica dioica	2	
wood chips	2	max 10 mm
?daub	1	max 30mm
Aethusa cynapium	1	
Arctium sp(p).	1	
Avena cf. sativa (spklts/fgts)	1	
Avena sp(p).	1	
Avena sp(p). (chaff)	1	
beetles	1	
Bidens sp(p).	1	
Bilderdykia convolvulus	1	
Bilderdykia convolvulus (tf)	1	
bone fgts	1	max 20mm
Brassica rapa	1	
Brassica sp(p).	1	
Brassica sp./Sinapis arvensis	1	
brick/tile	1	max 5mm
Bromus sp(p).	1	
burnt bone fgts	1	max 20mm
Calliergon cuspidatum	1	
Calluna vulgaris (sht fgts)	1	
Caltha palustris	1	
Campylium stellatum	1	
Carex sp(p).	1	nutlets with utricles and/or free utricles
cf. Avena sp(p). (chaff)	1	
cf. Calluna vulgaris (ch rt-tw fgts)	1	
cf. Calluna vulgaris (rt-tw fgts)	1	
cf. Cladium mariscus (ch lf fgts)	1	
Chenopodium album (ch)	1	
Chenopodium Section Pseudoblitum	1	
Corylus avellana	1	including material with apical knife marks
Corylus avellana (ch)	1	
Cruciferae (pedicels)	1	
Daucus carota	1	very decayed
Diphasium complanatum	1	
Diphasium complanatum (ch)	1	
Drepanocladus sp(p).	1	
earthworm egg caps	1	
Eleocharis palustris sl	1	

Euphorbia helioscopia	1	
Eurhynchium cf. striatum	1	
fish bone	1	max 10 mm
fly puparia	1	
fly puparia (min)	1	
Galeopsis Subgenus Galeopsis	1	
Galeopsis Subgenus Ladanum	1	
glassy slag	1	max 10 mm
herbaceous detritus (ch)	1	
Homalothecium sericeum/lutescens	1	
Hordeum sp(p). (inc hulled)	1	
Humulus lupulus	1	
Hylocomium splendens	1	
Hypochoeris sp(p).	1	
Iris pseudacorus	1	fragment(s) only
Isatis tinctoria (pod fgts)	1	
Isothecium myosuroides	1	
Isothecium myurum	1	
Juncus bufonius	1	
Knautia arvensis (ff)	1	
Lapsana communis	1	
leather fgts	1	max 10 mm
Leguminosae (cal)	1	
Leguminosae (fls/pet)	1	
Leontodon sp(p).	1	
Leucobryum glaucum	1	
Malus sylvestris	1	
mammal tooth	1	
Melophagus ovinus (sheep ked)	1	
Menyanthes trifoliata	1	
moss (contaminant)	1	
Neckera complanata	1	
Oenanthe cf. aquatica	1	
oyster shell fgts	1	max 10 mm
Polygonum aviculare agg.	1	
Polygonum lapathifolium	1	
Polygonum persicaria	1	
Polygonum persicaria/lapathifolium (ch)	1	
Prunella vulgaris	1	
Prunus domestica ssp. insititia	1	
Quercus (wood)	1	max 25mm
Quercus sp(p). (b/bs)	1	
Ranunculus flammula	1	
Ranunculus sardous	1	
Ranunculus Section Ranunculus	1	
Raphanus raphanistrum (pod segs/fgts)	1	
Rosa sp(p).	1	
Rubus fruticosus agg.	1	
Rumex sp(p).	1	
Sambucus nigra	1	
Sambucus nigra (ch)	1	
sand	1	
Scorpidium scorpioides	1	
Sonchus asper	1	
Stachys sp(p).	1	
Stellaria media	1	
stones	1	max 70mm
Thlaspi arvense	1	
Thuidium cf. tamariscinum	1	
Triticum aestivo-compactum	1	
unwashed peaty sediment	1	
Urtica urens	1	
Valerianella dentata	1	
Viola sp(p).	1	
Viola sp(p). (caps segs)	1	
woody root fgts (?modern)	1	

Context 1005, Sample 10/T

wood fgts	3	max 25mm
Anthemis cotula	2	
bark fgts	2	max 40mm
Chenopodium album	2	
earthworm egg caps	2	
wood chips	2	max 5mm
Aethusa cynapium	1	fragment(s) only
Agrostemma githago	1	
Anthemis cotula (ch)	1	
Atriplex sp(p).	1	
Avena sativa (spklts/fgts)	1	
Avena sp(p).	1	
Avena sp(p). (part-ch spklts/fgts)	1	
beetles	1	
Bilderdykia convolvulus	1	
bone fgts	1	max 15mm
burnt bone fgts	1	max 15mm
Calluna vulgaris (sht fgts)	1	
Campylium cf. elodes	1	
Campylium stellatum	1	
Carex sp(p).	1	
Centaurea sp(p).	1	
Cerealia indet.	1	
cf. Avena sp(p). (chaff)	1	
cf. Cladium mariscus (ch lf fgts)	1	
cf. Glyceria sp(p).	1	
charcoal	1	max 15mm
Cladium mariscus (with perig)	1	
Corylus avellana	1	
dicot lf fgts	1	
Diphasium complanatum	1	
Drepanocladus sp(p).	1	
Eleocharis palustris sl	1	
Eleocharis sp(p).	1	
Filipendula ulmaria	1	
fly puparia	1	
Fragaria cf. vesca	1	
Fragaria cf. vesca (ch)	1	
Galeopsis Subgenus Ladanum	1	
Gramineae	1	
Gramineae/Cerealia (c/n)	1	
Gramineae/Cerealia (ch c/n)	1	
herbaceous detritus	1	
Hordeum sp(p).	1	
Humulus lupulus	1	
Hylocomium cf. brevirostre	1	
Hypnum cf. cupressiforme	1	
Isatis tinctoria (pod fgts)	1	very decayed
Isothecium myurum	1	
Juncus bufonius	1	
Lamium Section Lamiopsis	1	
Lapsana communis	1	
leather fgts	1	max 5mm
Leguminosae (fls/pet)	1	

Leguminosae (pods/fgts)	1	max 5mm
Leontodon sp(p).	1	
Leucodon sciuroides	1	
Linum usitatissimum	1	inc fgts
Linum usitatissimum (caps fgts)	1	
Luzula sp(p).	1	
Melophagus ovinus (sheep ked)	1	
Myrica gale (lf fgts)	1	
Picris hieracioides	1	
Polygonum aviculare agg.	1	
Polygonum hydropiper	1	
Polygonum lapathifolium	1	
Polygonum persicaria	1	
Potentilla cf. erecta	1	
Potentilla palustris	1	
pottery	1	max 15mm
Prunella vulgaris	1	
Ranunculus Section Ranunculus	1	
Raphanus raphanistrum (pod segs/fgts)	1	
Rhytidiadelphus cf. squarrosus	1	
root/rootlet fgts	1	
Rubus fruticosus agg.	1	
Rumex acetosella agg.	1	
Rumex sp(p).	1	
Sambucus nigra	1	
Satureja hortensis	1	
Scirpus setaceus	1	
Scorpidium scorpioides	1	
Secale cereale	1	
Stachys sp(p).	1	
Stellaria media	1	
Thlaspi arvense	1	
Thuidium tamariscinum	1	
Triticum aestivo-compactum	1	
Urtica urens	1	
Viola sp(p).	1	
woody root fgts (?modern)	1	

Context 1011, Sample 7/SPT

Corylus avellana	1	

Context 1013, Sample 16/SPT

Corylus avellana	1	

Context 1014, Sample 19/BS

Chenopodium album	2	
Menyanthes trifoliata	2	
Sambucus nigra	2	
?cynipid galls	1	
Aethusa cynapium	1	
Anthemis cotula	1	
Atriplex sp(p).	1	
Avena sp(p).	1	
beetles	1	
Bilderdykia convolvulus	1	
bone fgts	1	max 40mm
Brassica rapa	1	
Brassica sp./Sinapis arvensis	1	
brick/tile	1	max 10 mm
Bromus sp(p).	1	
burnt bone fgts	1	max 10 mm
Cannabis sativa	1	
Carex sp(p).	1	
cf. Secale cereale	1	
charcoal	1	max 20mm
Corylus avellana	1	including material
with apical knife marks		
Diphasium complanatum	1	very decayed
earthworm egg caps	1	
Euphorbia helioscopia	1	
Galeopsis Subgenus Galeopsis	1	
gravel	1	max 25mm
Hordeum sp(p).	1	
Humulus lupulus	1	
Hyoscyamus niger	1	
Lapsana communis	1	
Linum usitatissimum	1	
mortar	1	max 5mm
Polygonum aviculare agg.	1	
Polygonum hydropiper	1	
Polygonum lapathifolium	1	
Prunus spinosa	1	
Prunus spinosa (thorns)	1	
Ranunculus sardous	1	
Ranunculus Section Ranunculus	1	
Rubus fruticosus agg.	1	
Rumex sp(p).	1	
Scirpus maritimus	1	
Scorpidium scorpioides	1	
Sonchus cf. arvensis	1	
textile fgts	1	max 5mm
twig fgts	1	
Urtica urens	1	
Valerianella dentata	1	
vivianite	1	
wood fgts	1	max 25mm

Context 1014, Sample 20/T

Anthemis cotula	2	
bark fgts	2	max 45mm
Chenopodium album	2	
concreted sediment	2	max 10 mm
Urtica urens	2	
Aethusa cynapium	1	
Agrostemma githago (sf)	1	
Alnus glutinosa (b/bs)	1	
Atriplex sp(p).	1	
Bilderdykia convolvulus	1	
Bilderdykia convolvulus (ff)	1	
bone fgts	1	max 20mm
Brassica rapa	1	
Brassica sp./Sinapis arvensis	1	
brick/tile	1	max 5mm
Bromus sp(p).	1	
Cannabis sativa	1	fragment(s) only
Carduus/Cirsium sp(p).	1	
cf. Avena sp(p).	1	
charcoal	1	max 5mm

Corylus avellana	1	
Diphasium complanatum	1	
earthworm egg caps	1	
Eleocharis palustris sl	1	
fly puparia	1	
Galeopsis Subgenus Galeopsis	1	
Gramineae	1	
gravel	1	max 15mm
Lapsana communis	1	
Linum usitatissimum	1	fragment(s) only
Melophagus ovinus (sheep ked)	1	fragment(s) only
Menyanthes trifoliata	1	
Neckera complanata	1	
Nepeta cataria	1	
Polygonum persicaria	1	
Ranunculus sardous	1	
Raphanus raphanistrum (pod segs/fgts)	1	
root moulds (min)	1	
Rubia tinctorum	1	
Rumex sp(p). (per/segs)	1	
Sambucus nigra	1	
Scorpidium scorpioides	1	
Sonchus asper	1	
Sonchus oleraceus	1	
Stellaria media	1	
Triglochin maritima	1	
Triticum sp(p).	1	fragment(s) only
twig fgts	1	max 20mm
Urtica dioica	1	
Valerianella dentata	1	
wood chips	1	max 5mm
wood fgts	1	max 25mm

Context 1030, Sample 22/BS

bark fgts	2	max 40mm
Aethusa cynapium	1	
Agrostemma githago	1	
Anagallis arvensis	1	
Anthemis cotula	1	
Atriplex sp(p).	1	
Avena sp(p).	1	
beetles	1	
Betula cf. pendula (bark fgts)	1	max 25mm
Betula sp(p).	1	
Betula sp(p). (fcs)	1	
Bilderdykia convolvulus	1	
bone fgts	1	max 15mm
Brassica rapa	1	
Bromus sp(p).	1	
Calliergon cf. giganteum	1	
Cannabis sativa	1	
Carex sp(p).	1	nutlets with utricles and/or free utricles
Centaurea sp(p).	1	
cf. Cratoneuron filicinum	1	
cf. Rhytidiadelphus sp(p).	1	
cf. Secale cereale	1	
charcoal	1	max 25mm
Chenopodium album	1	
Chenopodium murale	1	
cinders	1	max 10 mm
coal	1	max 5mm
Corylus avellana	1	
Danthonia decumbens	1	
Diphasium complanatum	1	
Drepanocladus sp(p).	1	
earthworm egg caps	1	
fly puparia	1	
Galeopsis Subgenus Galeopsis	1	
Hordeum sp(p). (inc hulled)	1	
Isothecium myurum	1	
Juglans regia	1	
Lamium Section Lamiopsis	1	
Lapsana communis	1	
Leguminosae (cal)	1	
Leguminosae (fls/pet)	1	
Leguminosae (pods/fgts)	1	max 5mm
Leontodon sp(p).	1	
Linum usitatissimum	1	inc fgts
Malus sylvestris	1	
Melophagus ovinus (sheep ked)	1	
moss (contaminant)	1	
Neckera complanata	1	
Pedicularis palustris	1	
Pisum cf. sativum	1	
Polygonum lapathifolium	1	
Prunella vulgaris	1	
Prunus spinosa (thorns)	1	
Quercus sp(p). (b/bs)	1	
Ranunculus Section Ranunculus	1	
Raphanus raphanistrum (pod segs/fgts)	1	
Reseda luteola	1	
Rubus/Rosa sp(p). (prickles)	1	
Rumex sp(p).	1	
Rumex sp(p). (per/segs)	1	
Sambucus nigra	1	inc fgts
Satureja hortensis	1	
Schoenus nigricans	1	
Scorpidium scorpioides	1	
Sonchus asper	1	
Sphagnum sp(p). (lvs)	1	sp., not papillosum or imbricatum
Stellaria media	1	
Thuidium cf. tamariscinum	1	
Triticum aestivo-compactum	1	
Triticum sp(p).	1	
Triticum/Secale (w/l)	1	fragment(s) only
twig fgts (min)	1	max 10 mm
Urtica urens	1	
Valerianella dentata	1	
Viola sp(p).	1	
wood fgts	1	max 30mm
wood fgts (min)	1	max 10 mm

Context 1030, Sample 24/T

Anthemis cotula	2	
Chenopodium album	2	
Dicranum scoparium	2	
grit	2	
Sambucus nigra	2	inc fgts

sand	2	
Sphagnum sp(p). (lvs)	2	sp., not papillosum or imbricatum
?clumped sawdust	1	max 10 mm
?daub	1	max 25mm
Aethusa cynapium	1	
Alnus glutinosa	1	
Atriplex sp(p).	1	
Avena sp(p).	1	
Avena sp(p). (chaff)	1	
Barbula sp(p).	1	
bark fgts	1	max 20mm
beetles	1	
Betula sp(p).	1	
bone fgts	1	max 4mm
Brassica rapa	1	
Brassica sp(p).	1	
brick/tile	1	max 40mm
burnt bone fgts	1	max 20mm
Carduus/Cirsium sp(p).	1	
Carex sp(p).	1	
Ceratodon purpureus	1	
cf. Amblystegium riparium	1	
charcoal	1	max 10 mm
clinker	1	max 30mm
coal	1	max 30mm
Corylus avellana	1	
Cruciferae	1	modern
Diphasium complanatum	1	
Eleocharis palustris sl (ch)	1	
Erica tetralix (lvs)	1	
Ficus carica	1	
fish bone	1	max 4mm
fish scale	1	max 2mm
fly puparia	1	
Galeopsis Subgenus Galeopsis	1	
Genista tinctoria (st fgts)	1	
Gramineae	1	
gravel	1	max 15mm
Homalothecium sericeum/lutescens	1	
Hylocomium splendens	1	
Hyoscyamus niger	1	
Hypnum cf. cupressiforme	1	
Hypochoeris sp(p).	1	
Isothecium myurum	1	
Lamium Section Lamiopsis	1	
Lapsana communis	1	
Leucobryum glaucum	1	
Leucodon sciuroides	1	
Linum usitatissimum	1	inc fgts
Melophagus ovinus (sheep ked)	1	
mortar	1	max 20mm
Neckera complanata	1	
Picris hieracioides	1	
Polygonum aviculare agg.	1	
Populus sp(p). (b/bs)	1	
Potentilla cf. erecta	1	
pottery	1	max 10 mm
Prunus spinosa (thorns)	1	
Pteridium aquilinum (pinn fgts)	1	
Quercus sp(p). (b/bs)	1	
Ranunculus Section Ranunculus	1	
Raphanus raphanistrum	1	
Raphanus raphanistrum (pod segs/fgts)	1	
Rhytidiadelphus sp(p).	1	
root bark/epidermis fgts	1	
Rumex sp(p).	1	
Schoenus nigricans	1	
Scorpidium scorpioides	1	
Silene alba	1	
small mammal tooth	1	
Sonchus asper	1	
Sonchus palustris/arvensis	1	
Stellaria media	1	
textile/yarn fgts	1	
Thuidium tamariscinum	1	
Urtica urens	1	
wood fgts	1	max 40mm

Context 1031, Sample 26/BS

Sambucus nigra	2	
Avena sp(p).	1	
bark fgts	1	max 25mm
Betula sp(p).	1	?modern
Betula sp(p). (fcs)	1	?modern
Carex sp(p).	1	
cf. Calluna vulgaris (ch rt-tw fgts)	1	
charcoal	1	max 10 mm
Chenopodium album	1	
Hordeum vulgare (inc twstd)	1	
Linum usitatissimum (ch)	1	
Polygonum aviculare agg.	1	
Raphanus raphanistrum (ch pod segs/fgts)	1	
root/rootlet fgts (modern)	1	
Triticum aestivo-compactum	1	
wood fgts	1	max 15mm

Context 1034, Sample 31/T

Anthemis cotula	3	
wood fgts	3	max 20mm
bark fgts	2	max 40mm
charcoal	2	max 10 mm
Chenopodium album	2	
Corylus avellana	2	
Diphasium complanatum	2	very decayed
Leontodon sp(p).	2	
Valerianella dentata	2	
'coils'	1	
?bees	1	
?daub	1	max 5mm
Aethusa cynapium	1	
Agrostemma githago (sf)	1	
Anagallis arvensis	1	
Antitrichia curtipendula	1	
Aphanes arvensis agg.	1	
Aster tripolium	1	
Avena sp(p).	1	
Avena sp(p). (chaff)	1	
bast fgts	1	
bone fgts	1	max 5mm
Brassica rapa	1	

Brassica sp(p).	1	
Brassica sp./Sinapis arvensis	1	
brick/tile	1	max 4mm
burnt bone fgts	1	max 5mm
Calliergon cf. giganteum	1	
Carex sp(p).	1	
Centaurea sp(p).	1	
Cladium mariscus (with perig)	1	
Compositae (inv fgts)	1	
concretions	1	max 10 mm
Daucus carota	1	
Drepanocladus sp(p).	1	
earthworm egg caps	1	
Eleocharis palustris sl	1	
Eurhynchium striatum	1	
fish bone	1	max 15mm
fly puparia	1	
Galeopsis Subgenus Galeopsis	1	
Gramineae	1	
gravel	1	max 20mm
Homalothecium sericeum/lutescens	1	
Hordeum sp(p).	1	
Hyoscyamus niger	1	
Hypnum cf. cupressiforme	1	
Iris pseudacorus	1	
Lapsana communis	1	
leather fgts	1	max 15mm
Leguminosae (fls/pet)	1	
Leguminosae (imm s)	1	
Leguminosae (pods/fgts)	1	
Leucodon sciuroides	1	
Linum usitatissimum	1	inc fgts
Menyanthes trifoliata	1	
Neckera complanata	1	
Polygonum aviculare agg.	1	
Polygonum hydropiper	1	
Polygonum persicaria/lapathifolium	1	
Populus sp(p). (b/bs)	1	
Primulaceae	1	
Prunella vulgaris	1	
Ranunculus Section Ranunculus	1	
Raphanus raphanistrum (pod segs/fgts)	1	
Rubia tinctorum	1	max 5mm
Rubia tinctorum (root bark)	1	
Rumex acetosella agg.	1	
sand	1	
Satureja hortensis	1	
Schoenus nigricans	1	
sclereids (from bark)	1	max 1mm
Scorpidium scorpioides	1	
sealing wax	1	max 5mm
Silene vulgaris	1	
Sonchus asper	1	
Sonchus palustris/arvensis	1	
Stellaria palustris/graminea	1	
Thuidium tamariscinum	1	
Triticum/Secale (w/l)	1	
twig fgts	1	max 20mm
Viola sp(p).	1	
wood chips	1	max 10 mm

Context 1035, Sample 32/T

wood fgts	3	max 10 mm
Anthemis cotula	2	
bark fgts	2	max 20mm
charcoal	2	max 15mm
Chenopodium album	2	
grit	2	max 1mm
herbaceous detritus	2	mostly <1mm
Quercus sp(p). (b/bs)	2	
sand	2	
wood chips	2	max 10 mm
?amber	1	max 2mm
?daub	1	max 15mm
Aethusa cynapium	1	
Atriplex sp(p).	1	
Atriplex sp(p). (ch)	1	
Avena sp(p).	1	
Avena sp(p). (part-ch spklts/fgts)	1	
beetles	1	
Bilderdykia convolvulus	1	
bone fgts	1	max 15mm
Brassica rapa	1	inc fgts
Brassica sp./Sinapis arvensis	1	
Brassica sp./Sinapis arvensis (min cot)	1	
brick/tile	1	max 10 mm
burnt bone fgts	1	max 15mm
Calliergon cuspidatum	1	
Carex sp(p).	1	
Centaurea sp(p).	1	
Cerealia indet. (chaff)	1	
cf. Calluna vulgaris (ch rt-tw fgts)	1	max 5mm
charred herbaceous detritus	1	
Corylus avellana	1	
Cu/alloy fgts	1	very decayed
Daucus carota	1	
dicot lf fgts	1	max 2mm
Diphasium complanatum	1	very decayed
Eleocharis palustris sl	1	
fish bone	1	max 15mm
fish scale	1	max 2mm
fly puparia	1	
gravel	1	max 15mm
Homalothecium sericeum/lutescens	1	
Hyoscyamus niger	1	
Hypnum cf. cupressiforme	1	
Hypochoeris sp(p).	1	
leather fgts	1	very decayed, max 5mm
Leontodon sp(p).	1	
Linum usitatissimum	1	inc fgts
Linum usitatissimum (caps fgts)	1	
Marrubium vulgare	1	
Menyanthes trifoliata	1	
mortar	1	max 5mm
moss (contaminant)	1	
Neckera complanata	1	
Oxalis acetosella	1	
Plantago major	1	
Polygonum aviculare agg.	1	
Polygonum lapathifolium	1	

Polygonum persicaria	1	
pottery	1	max 35mm
Prunella vulgaris	1	
Prunus spinosa (ch)	1	a single spec
Ranunculus sardous	1	
Ranunculus Section Ranunculus	1	
Raphanus raphanistrum (pod segs/fgts)	1	
Rhytidiadelphus sp(p).	1	
Rumex acetosella agg.	1	
Rumex sp(p).	1	
Salix sp(p). (b)	1	
Sambucus nigra	1	inc fgts
sclereids (from bark)	1	max 2mm
Scorpidium scorpioides	1	
Secale cereale (rachis fgts)	1	
Sonchus asper	1	
Sonchus oleraceus	1	
Spergula arvensis	1	
Stellaria media	1	
Triticum aestivo-compactum	1	
twig fgts	1	max 10 mm
Ulota sp(p).	1	
Urtica urens	1	
Valerianella dentata	1	
Viola sp(p).	1	

Context 1037, Sample 29/SPT

Corylus avellana with apical knife marks	1	including material

Context 1039, Sample 33/T

bark fgts	3	max 40mm
herbaceous detritus	3	mostly < 2mm
wood fgts	3	max 45mm
Anthemis cotula	2	
charcoal	2	max 25mm
Juncus bufonius	2	
Linum usitatissimum	2	inc fgts
Aethusa cynapium	1	
Agrostemma githago (sf)	1	
Alnus glutinosa (b/bs)	1	
Antitrichia curtipendula	1	
Aster tripolium	1	
Avena sp(p).	1	
Avena sp(p). (chaff)	1	
beetles	1	
Bilderdykia convolvulus (ff)	1	
bone fgts	1	max 80mm
Brassica sp./Sinapis arvensis	1	
brick/tile	1	max 5mm
Calliergon cf. giganteum	1	
Calliergon cuspidatum	1	
Carex sp(p).	1	
Chenopodium album	1	
concretions	1	max 10 mm
Corylus avellana	1	
dicot lf fgts	1	
Diphasium complanatum	1	very decayed
Drepanocladus sp(p).	1	
earthworm egg caps	1	
Eleocharis palustris sl	1	
Eurhynchium striatum	1	
fly puparia	1	
Genista tinctoria (st fgts)	1	
Gramineae	1	
Gramineae/Cerealia (c/n)	1	
gravel	1	max 25mm
grit	1	
Homalothecium sericeum/lutescens	1	
Hordeum sp(p).	1	
Hypnum cf. cupressiforme	1	
Isothecium myosuroides	1	
Lapsana communis	1	
leather fgts	1	max 25mm
Leguminosae (fls/pet)	1	
Leontodon sp(p).	1	
Leucodon sciuroides	1	
part-burnt wood	1	max 25mm
Polygonum aviculare agg.	1	
Prunella vulgaris	1	
Prunus spinosa (thorns)	1	
Ranunculus flammula	1	
Ranunculus Section Ranunculus	1	
Raphanus raphanistrum (pod segs/fgts)	1	
Rhytidiadelphus sp(p).	1	
Rubia tinctorum	1	max 4mm
sand	1	
sclereids (from bark)	1	max 2mm
Sonchus asper	1	
Stellaria media	1	
Thuidium tamariscinum	1	
Triticum/Secale ('bran' fgts)	1	mostly <1mm
twig fgts	1	max. 30 x 10 mm
Ulota sp(p).	1	
undisaggreg. compressed plant debris	1	max 5mm
Vicia faba (hila)	1	
wood chips	1	max 25mm

Table 4. Assemblages of adult Coleoptera and Hemiptera (excluding Aphidoidea and Coccidoidea) from the 41-49 Walmgate, York (Time Team) site: main statistics by sample. For explanation of codes see Table 6.

Context	**1003**	**1004**	**1005**	**1014**	**1030**	**1034**	**1035**	**1039**	**Whole**
Sample	**11**	**12**	**10**	**20**	**24**	**31**	**32**	**33**	**site**
Ext	/T	/T	/T	/T	/T	/T	/T	/T	
S	37	77	88	44	33	50	36	50	185
N	52	167	184	60	36	65	52	72	688
ALPHA	57	55	66	74	185	98	51	72	83
SEALPHA	16	7	8	20	107	28	14	17	5
SOB	9	17	17	14	6	16	8	13	65
PSOB	24	22	19	32	18	32	22	26	35
NOB	9	19	17	15	6	16	8	14	104
PNOB	17	11	9	25	17	25	15	19	15
ALPHAOB	0	0	0	0	0	0	0	0	74
SEALPHAOB	0	0	0	0	0	0	0	0	14
SW	1	2	2	1	0	2	1	3	7
PSW	3	3	2	2	0	4	3	6	4
NW	1	2	2	1	0	2	1	4	13
PNW	2	1	1	2	0	3	2	6	2
ALPHAW	0	0	0	0	0	0	0	0	0
SEALPHAW	0	0	0	0	0	0	0	0	0
SD	1	1	2	2	0	0	0	1	6
PSD	3	1	2	5	0	0	0	2	3
ND	1	1	2	2	0	0	0	1	7
PND	2	1	1	3	0	0	0	1	1
ALPHAD	0	0	0	0	0	0	0	0	0
SEALPHAD	0	0	0	0	0	0	0	0	0
SP	2	7	8	3	1	9	4	4	28
PSP	5	9	9	7	3	18	11	8	15
NP	2	8	8	4	1	9	4	4	40
PNP	4	5	4	7	3	14	8	6	6
ALPHAP	0	0	0	0	0	0	0	0	42
SEALPHAP	0	0	0	0	0	0	0	0	14
SM	0	0	0	0	0	0	0	0	0
PSM	0	0	0	0	0	0	0	0	0
NM	0	0	0	0	0	0	0	0	0
PNM	0	0	0	0	0	0	0	0	0
ALPHAM	0	0	0	0	0	0	0	0	0
SEALPHAM	0	0	0	0	0	0	0	0	0
SL	3	4	3	2	0	3	3	1	7
PSL	8	5	3	5	0	6	8	2	4
NL	3	4	3	2	0	3	3	1	19
PNL	6	2	2	3	0	5	6	1	3
ALPHAL	0	0	0	0	0	0	0	0	0
SEALPHAL	0	0	0	0	0	0	0	0	0
SRT	20	41	51	23	17	27	19	27	210
PSRT	54	53	58	52	52	54	53	54	114

Context	**1003**	**1004**	**1005**	**1014**	**1030**	**1034**	**1035**	**1039**	**Whole**
Sample	**11**	**12**	**10**	**20**	**24**	**31**	**32**	**33**	**site**
Ext	/T	/T	/T	/T	/T	/T	/T	/T	
NRT	35	117	135	37	19	40	35	41	459
PNRT	67	70	73	62	53	62	67	57	67
ALPHART	20	23	30	26	0	37	17	35	150
SEALPHART	6	3	4	8	0	12	5	11	12
SRD	5	11	12	4	5	7	6	6	56
PSRD	14	14	14	9	15	14	17	12	30
NRD	11	31	31	6	5	11	11	10	116
PNRD	21	19	17	10	14	17	21	14	17
ALPHARD	0	6	7	0	0	0	0	0	43
SEALPHARD	0	2	2	0	0	0	0	0	7
SRF	2	3	4	3	5	3	2	6	28
PSRF	5	4	5	7	15	6	6	12	15
NRF	3	7	4	3	6	5	3	10	41
PNRF	6	4	2	5	17	8	6	14	6
ALPHARF	0	0	0	0	0	0	0	0	39
SEALPHARF	0	0	0	0	0	0	0	0	13
SSA	16	33	42	17	11	19	13	22	62
PSSA	43	43	48	39	33	38	36	44	34
NSA	26	103	119	23	12	27	28	31	369
PNSA	50	62	65	38	33	42	54	43	54
ALPHASA	18	17	23	30	0	29	10	34	21
SEALPHASA	7	3	3	14	0	12	3	13	2
SSF	7	16	22	9	3	12	5	13	32
PSSF	19	21	25	20	9	24	14	26	17
NSF	9	31	40	12	4	15	6	17	134
PNSF	17	19	22	20	11	23	12	24	19
ALPHASF	0	14	20	0	0	0	0	0	13
SEALPHASF	0	4	6	0	0	0	0	0	2
SST	8	13	15	8	7	6	7	8	25
PSST	22	17	17	18	21	12	19	16	14
NST	16	66	59	11	7	11	13	13	196
PNST	31	40	32	18	19	17	25	18	28
ALPHAST	0	5	7	0	0	0	0	0	8
SEALPHAST	0	1	1	0	0	0	0	0	1
SSS	1	4	5	0	1	1	1	1	5
PSSS	3	5	6	0	3	2	3	2	3
NSS	1	6	20	0	1	1	9	1	39
PNSS	2	4	11	0	3	2	17	1	6
ALPHASS	0	0	2	0	0	0	0	0	2
SEALPHASS	0	0	1	0	0	0	0	0	0
SG	0	0	0	0	0	0	0	0	0
PSG	0	0	0	0	0	0	0	0	0
NG	0	0	0	0	0	0	0	0	0
PNG	0	0	0	0	0	0	0	0	0
ALPHAG	0	0	0	0	0	0	0	0	0
SEALPHAG	0	0	0	0	0	0	0	0	0

Table 5. Insects and other macro-invertebrates from 41-49 Walmgate, York (Time Team) site: species lists by sample. Taxa are listed in descending order of abundance then in taxonomic order. 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); * - not used in calculation of statistics in Table 4.*

Context: 1003 Sample: 11/T ReM: S
Weight: 2.00 E: 4.00 F: 3.00

Notes: Entered 28.2.2000. Recording approaching 'detail'. Flot 1 cm in jar, much 'char'. Possibly some unrecognisable charred invertebrates in addition to those listed. Recorded in flot, problems on filter paper. See sheet for details of charred remains.

Taxon	n	q	ecodes
Xylodromus concinnus	7	-	rt-st
Atomaria sp.	4	-	rd
Cryptophagus sp.	3	-	rd-sf
Platystethus arenarius	2	-	rf
Anotylus rugosus	2	-	rt
Crataraea suturalis	2	-	rt-st
Lathridius minutus group	2	-	rd-st
?Lyctocoris campestris	1	-	rd-st
Trechus quadristriatus	1	-	oa
Bembidion (Philochthus) sp.	1	-	oa
Bembidion sp.	1	-	oa
Carabidae sp.	1	-	ob
Helophorus sp.	1	-	oa-w
Cercyon analis	1	-	rt-sf
Platystethus cornutus group	1	-	oa-d
Anotylus nitidulus	1	-	rt
Leptacinus sp.	1	-	rt-st
Gyrohypnus angustatus	1	-	rt-st
Neobisnius sp.	1	-	u
Philonthus ?politus	1	-	rt-st
Staphylininae sp.	1	-	u
Falagria caesa or sulcatula	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Euplectini sp.	1	-	u
Aphodius sp.	1	-	ob-rf
Anobium punctatum	1	-	l-sf
Ptinus ?fur	1	-	rd-sf
Omosita sp.	1	-	rt-sf
Corticaria sp.	1	-	rt-sf
Tenebrio obscurus	1	-	rt-ss
Salpingidae sp.	1	-	l
Anthicus floralis or formicarius	1	-	rt-st
Phymatodes alni	1	-	l
Longitarsus sp.	1	-	oa-p
Sitona sp.	1	-	oa-p
*Acarina sp.	15	m	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Proctotrupoidea sp.	6	s	u
*Pulex irritans	2	-	ss
*Lepidoptera sp. (pupa)	1	-	u
*Diptera sp. (larva)	1	-	u
*Diptera sp. (puparium)	1	-	u
*Syrphidae sp. (larva)	1	-	u
*Coleoptera sp. (larva)	1	-	u
*Gastropoda sp.	1	-	u

Context: 1004 Sample: 12/T ReM: S
Weight: 1.00 E: 3.50 F: 3.00

Notes: Entered 28/2/2000. Recording approaching 'detail'. Flot 6mm in jar. Recorded in flot and on filter paper. AH tube recorded: few remains. NB shrivelled Apion.

Taxon	n	q	ecodes
Xylodromus concinnus	29	-	rt-st
Lathridius minutus group	10	-	rd-st
Cercyon analis	8	-	rt-sf
Crataraea suturalis	8	-	rt-st
Aleocharinae sp. A	6	-	u
Cryptophagus scutellatus	6	-	rd-st
Aleocharinae sp. B	5	-	u
Platystethus arenarius	4	-	rf
Neobisnius sp.	4	-	u
Anotylus nitidulus	3	-	rt
Gyrohypnus angustatus	3	-	rt-st
Cordalia obscura	3	-	rt-sf
Ptinus ?fur	3	-	rd-sf
Atomaria nigripennis	3	-	rd-ss
Carpelimus ?bilineatus	2	-	rt-sf
Anotylus complanatus	2	-	rt-sf
Stenus sp. U	2	-	u
Gyrohypnus fracticornis	2	-	rt-st
Aphodius ?prodromus	2	-	ob-rf
Cryptophagus sp. A	2	-	rd-sf
Cryptophagus sp. B	2	-	rd-sf
Anthicus formicarius	2	-	rt-st
Phyllotreta nemorum group	2	-	oa-p
Lyctocoris campestris	1	-	rd-st
?Sphodrus leucophthalmus	1	-	oa
Bembidion sp.	1	-	oa
Pterostichus sp.	1	-	ob

Agonum dorsale	1	-	oa
Carabidae sp.	1	-	ob
Helophorus aquaticus or grandis	1	-	oa-w
Helophorus sp.	1	-	oa-w
Cercyon haemorrhoidalis	1	-	rf-sf
Acritus nigricornis	1	-	rt-st
Acrotrichis sp.	1	-	rt
Catops sp.	1	-	u
Silpha atrata	1	-	u
Micropeplus sp.	1	-	rt
Phyllodrepa ?floralis	1	-	rt-sf
Dropephylla vilis	1	-	l
Omalium ?rivulare	1	-	rt-sf
Omalium sp.	1	-	rt
Coprophilus striatulus	1	-	rt-st
Carpelimus sp.	1	-	u
Anotylus rugosus	1	-	rt
Anotylus sculpturatus group	1	-	rt
Oxytelus sculptus	1	-	rt-st
Stenus sp. A	1	-	u
Leptacinus ?pusillus	1	-	rt-st
Philonthus ?politus	1	-	rt-st
Philonthus sp.	1	-	u
Quedius sp.	1	-	u
Staphylininae sp. A	1	-	u
Staphylininae sp. B	1	-	u
Tachinus laticollis or marginellus	1	-	u
Falagria caesa or sulcatula	1	-	rt-sf
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Aleocharinae sp. E	1	-	u
Cyphon sp.	1	-	oa-d
Elateridae sp.	1	-	ob
Anobium punctatum	1	-	l-sf
Lyctus linearis	1	-	l-sf
Meligethes sp.	1	-	oa-p
Omosita ?discoidea	1	-	rt-sf
Atomaria sp. A	1	-	rd
Atomaria sp. B	1	-	rd
Ephistemus globulus	1	-	rd-sf
Corticaria sp.	1	-	rt-sf
Typhaea stercorea	1	-	rd-ss
Aglenus brunneus	1	-	rt-ss
Tenebrio obscurus	1	-	rt-ss
Cerambycidae sp.	1	-	l
Longitarsus sp.	1	-	oa-p
Chaetocnema ?concinna	1	-	oa-p
Apion (Oxystoma) ?subulatum	1	-	oa-p
Apion sp.	1	-	oa-p
Ceutorhynchus sp.	1	-	oa-p
*Proctotrupoidea sp.	15	m	u
*Acarina sp.	15	m	u
*Pulex irritans	8	-	ss
*Oligochaeta sp. (egg capsule)	6	s	u
*Diptera sp. (puparium)	6	s	u
*Coleoptera sp. (larva)	6	s	u
*Aranae sp.	6	-	u
*Auchenorhyncha sp. (nymph)	3	-	oa-p
*Melophagus ovinus (adult)	2	-	oa-w
*Melophagus ovinus (puparium)	1	-	u
*Syrphidae sp. (larva)	1	-	u
*Chalcidoidea sp.	1	-	u
*Insecta sp. (larva)	1	-	u

Context: 1005 Sample: 10/T ReM: S
Weight: 1.00 E: 2.50 F: 2.50

Notes: Entered 28.2.2000. Recording approaching 'detail'. Flot 1 cm in jar, remains part sorted to filter paper during Time Team extravaganza. Recorded in flot and on filter paper. Aleocharinae represent a minimum of the taxa present

Taxon	n	q	ecodes
Xylodromus concinnus	20	-	rt-st
Aglenus brunneus	14	-	rt-ss
Cryptophagus scutellatus	8	-	rd-st
Cercyon analis	6	-	rt-sf
Ptenidium sp.	5	-	rt
Leptacinus pusillus	5	-	rt-st
Aleocharinae sp. A	5	-	u
Gyrohypnus fracticornis	4	-	rt-st
Cryptophagus sp. B	4	-	rd-sf
Lathridius minutus group	4	-	rd-st
Micropeplus fulvus	3	-	rt
Omalium caesum or italicum	3	-	rt-sf
Carpelimus fuliginosus	3	-	st
Oxytelus sculptus	3	-	rt-st
Crataraea suturalis	3	-	rt-st
Atomaria nigripennis	3	-	rd-ss
Lyctocoris campestris	2	-	rd-st
Catops sp.	2	-	u
Omalium excavatum	2	-	rt-sf
Carpelimus bilineatus	2	-	rt-sf
Anotylus nitidulus	2	-	rt
Stenus sp.	2	-	u
Neobisnius sp.	2	-	u
Cordalia obscura	2	-	rt-sf
Aleocharinae sp. B	2	-	u
Aleocharinae sp. E	2	-	u
Pselaphidae sp.	2	-	u
Clambus ?pubescens	2	-	rt-sf
Ptinus ?fur	2	-	rd-sf
Monotoma spinicollis	2	-	rt-st
Cryptophagus sp. A	2	-	rd-sf
Atomaria sp. A	2	-	rd
Orthoperus sp.	2	-	rt
Corticaria sp. B	2	-	rt-sf

Empicoris culiciformis	1	-	rt
Chartoscirta ?cocksi	1	-	oa-w
Auchenorhyncha sp.	1	-	oa-p
Bembidion sp.	1	-	oa
Pterostichus (Poecilus) sp.	1	-	oa
Odacantha melanura	1	-	oa-d
Carabidae sp.	1	-	ob
Cercyon haemorrhoidalis	1	-	rf-sf
Cercyon unipunctatus	1	-	rf-st
Acritus nigricornis	1	-	rt-st
Ochthebius ?minimus	1	-	oa-w
Acrotrichis sp.	1	-	rt
?Phyllodrepa salicis	1	-	rt-sf
Platystethus arenarius	1	-	rf
Platystethus degener	1	-	oa-d
Anotylus complanatus	1	-	rt-sf
Anotylus rugosus	1	-	rt
Phacophallus parumpunctatus	1	-	rt-st
Philonthus ?politus	1	-	rt-st
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Creophilus maxillosus	1	-	rt
Quedius sp.	1	-	u
Staphylininae sp. A	1	-	u
Staphylininae sp. B	1	-	u
Tachinus laticollis or marginellus	1	-	u
Falagria caesa or sulcatula	1	-	rt-sf
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Aleocharinae sp. F	1	-	u
Aleocharinae sp. G	1	-	u
Aphodius sp.	1	-	ob-rf
Clambus sp.	1	-	rt-sf
Elateridae sp.	1	-	ob
Anobium punctatum	1	-	l-sf
Lyctus linearis	1	-	l-sf
Meligethes sp.	1	-	oa-p
Monotoma sp.	1	-	rt-sf
Cryptophagus sp. C	1	-	rd-sf
Atomaria sp. C	1	-	rd
Mycetaea hirta	1	-	rd-ss
Enicmus sp.	1	-	rt-sf
Corticaria sp. A	1	-	rt-sf
Typhaea stercorea	1	-	rd-ss
Tenebrio obscurus	1	-	rt-ss
Salpingidae sp.	1	-	l
Anthicus floralis or formicarius	1	-	rt-st
Phaedon sp.	1	-	oa-p
Phyllotreta sp.	1	-	oa-p
Chaetocnema sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Dorytomus sp.	1	-	oa-p
Ceutorhynchus contractus	1	-	oa-p
*Acarina sp.	100	e	u
*Oligochaeta sp. (egg capsule)	15	m	u
*Proctotrupoidea sp.	15	m	u
*Diptera sp. (pupa)	6	s	u
*Diptera sp. (puparium)	6	s	u
*Aranae sp.	6	-	u
*Pulex irritans	3	-	ss
*Coccoidea sp.	2	-	u
*Hymenoptera sp.	2	-	u
*Daphnia sp. (ephippium)	1	-	oa-w
*Cladocera sp. (ephippium)	1	-	oa-w
*Heteroptera sp. (nymph)	1	-	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Coleoptera sp. (larva)	1	-	u

Context: 1014 Sample: 20/T ReM: S
Weight: 1.00 E: 3.00 F: 3.00

Notes: Entered 28/2/2000. Recording approaching 'detail'. Flot 6-8mm in jar, very coarse. Recorded in flot, problems on filter paper. AH tube listed: little of consequence.

Taxon	n	q	ecodes
Anotylus nitidulus	6	-	rt
Cercyon analis	3	-	rt-sf
Xylodromus concinnus	3	-	rt-st
Anotylus rugosus	3	-	rt
Trechus micros	2	-	u
Gyrohypnus fracticornis	2	-	rt-st
Cryptophagus sp.	2	-	rd-sf
Atomaria sp.	2	-	rd
Ceutorhynchus contractus	2	-	oa-p
Clivina fossor	1	-	oa
Bembidion sp.	1	-	oa
Stomis pumicatus	1	-	oa
Carabidae sp.	1	-	ob
Hydraena sp.	1	-	oa-w
Omalium caesum or italicum	1	-	rt-sf
Omalium ?rivulare	1	-	rt-sf
Platystethus ?degener	1	-	oa-d
Platystethus nitens	1	-	oa-d
Anotylus complanatus	1	-	rt-sf
Oxytelus sculptus	1	-	rt-st
Stenus sp.	1	-	u
Gyrohypnus angustatus	1	-	rt-st
Neobisnius sp.	1	-	u
Falagria caesa or sulcatula	1	-	rt-sf
Crataraea suturalis	1	-	rt-st
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Staphylinidae sp.	1	-	u
Euplectini sp.	1	-	u
Aphodius granarius	1	-	ob-rf

Aphodius prodromus	1	-	ob-rf
Aphodius sp.	1	-	ob-rf
Hoplia philanthus	1	-	oa
Anobium punctatum	1	-	l-sf
Omosita sp.	1	-	rt-sf
Cryptophagus scutellatus	1	-	rd-st
Orthoperus sp.	1	-	rt
Lathridius minutus group	1	-	rd-st
Corticaria sp.	1	-	rt-sf
Anthicus floralis or formicarius	1	-	rt-st
Cerambycidae sp.	1	-	l
Longitarsus sp.	1	-	oa-p
Apion sp.	1	-	oa-p
*Acarina sp.	15	m	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Proctotrupoidea sp.	3	-	u
*Diptera sp. (puparium)	2	-	u
*Pulex irritans	2	-	ss
*Coleoptera sp. (larva)	2	-	u
*Aranae sp.	2	-	u
*?Trichoptera sp.	1	-	oa-w
*Melophagus ovinus (puparium)	1	-	u
*Hymenoptera Parasitica sp.	1	-	u
*Insecta sp. (larva)	1	-	u

Context: 1030 Sample: 24/T ReM: S
Weight: 1.00 E: 3.50 F: 3.50

Notes: Entered 28/2/2000. One dish flot. Recorded in flot, problems on filter paper.

Taxon	n	q	ecodes
Carpelimus ?bilineatus	2	-	rt-sf
Carpelimus pusillus group	2	-	u
Platystethus arenarius	2	-	rf
?Hemiptera sp.	1	-	u
?Trechus sp.	1	-	ob
Carabidae sp.	1	-	ob
Cercyon analis	1	-	rt-sf
Cercyon unipunctatus	1	-	rf-st
Cryptopleurum minutum	1	-	rf-st
Acritus nigricornis	1	-	rt-st
Carpelimus fuliginosus	1	-	st
Anotylus nitidulus	1	-	rt
Anotylus rugosus	1	-	rt
Oxytelus sculptus	1	-	rt-st
Stenus sp. A	1	-	u
Stenus sp. B	1	-	u
Lathrobium sp.	1	-	u
Neobisnius sp.	1	-	u
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Falagria or Cordalia sp.	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aphodius ?granarius	1	-	ob-rf
Aphodius sp.	1	-	ob-rf
Ptinidae sp.	1	-	rd
Rhizophagus sp.	1	-	u
Cryptophagus scutellatus	1	-	rd-st
Atomaria sp.	1	-	rd
Mycetaea hirta	1	-	rd-ss
Lathridius minutus group	1	-	rd-st
Chaetocnema sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
*Acarina sp.	15	m	u
*Proctotrupoidea sp.	3	-	u
*Diptera sp. (puparium)	2	-	u
*Cladocera sp. F (ephippium)	1	-	oa-w
*Melophagus ovinus (puparium)	1	-	u
*Siphonaptera sp.	1	-	u
*Coleoptera sp. (larva)	1	-	u
*Apoidea sp.	1	-	u
*Formicidae sp.	1	-	u

Context: 1034 Sample: 31/T ReM: S
Weight: 1.00 E: 3.50 F: 3.50

Notes: Entered 28/2/2000. Flot 5mm in jar. Recorded in flot, problems on filter paper. AH tube listed: inconsequential. Subjectively, hints of heath/moor.

Taxon	n	q	ecodes
Xylodromus concinnus	4	-	rt-st
Carpelimus pusillus group	3	-	u
Platystethus arenarius	3	-	rf
Omalium caesum or italicum	2	-	rt-sf
Anotylus complanatus	2	-	rt-sf
Anotylus nitidulus	2	-	rt
Anotylus rugosus	2	-	rt
Cryptophagus scutellatus	2	-	rd-st
Cryptophagus sp. B	2	-	rd-sf
Atomaria sp. B	2	-	rd
Lathridius minutus group	2	-	rd-st
Delphacidae sp. A	1	-	oa-p
Delphacidae sp. B	1	-	oa-p
Auchenorhyncha sp.	1	-	oa-p
Amara sp.	1	-	oa
Carabidae sp.	1	-	ob
Helophorus sp.	1	-	oa-w
Cercyon analis	1	-	rt-sf
Histerinae sp.	1	-	rt
Ochthebius sp.	1	-	oa-w
Acrotrichis sp.	1	-	rt
Phyllodrepa ?floralis	1	-	rt-sf
Dropephylla sp.	1	-	u

Omalium ?rivulare	1	-	rt-sf
Carpelimus ?bilineatus	1	-	rt-sf
Stenus sp.	1	-	u
Gyrohypnus angustatus	1	-	rt-st
Gyrohypnus fracticornis	1	-	rt-st
Falagria or Cordalia sp.	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Trox scaber	1	-	rt-sf
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Elateridae sp.	1	-	ob
Anobium punctatum	1	-	l-sf
Ptinus sp.	1	-	rd-sf
Cryptophagus sp. A	1	-	rd-sf
Atomaria sp. A	1	-	rd
Aglenus brunneus	1	-	rt-ss
Anthicus floralis or formicarius	1	-	rt-st
Phymatodes alni	1	-	l
Cerambycidae sp.	1	-	l
?Altica sp.	1	-	oa-p
Halticinae sp.	1	-	oa-p
Apion sp. A	1	-	oa-p
Apion sp. B	1	-	oa-p
?Strophosomus sp.	1	-	oa-p
?Sitona sp.	1	-	oa-p
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	6	s	u
*Proctotrupoidea sp.	6	s	u
*Pulex irritans	4	-	ss
*Oligochaeta sp. (egg capsule)	3	-	u
*Coccoidea sp.	3	-	u
*Diptera sp. (adult)	2	-	u
*Forficula auricularia	1	-	rt
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Diptera sp. (pupa)	1	-	u
*Melophagus ovinus (adult)	1	-	oa-w
*Melophagus ovinus (puparium)	1	-	u
*Syrphidae sp. (larva)	1	-	u
*Dermestes lardarius (larva)	1	-	rd-sf
*?Apis mellifera	1	-	u
*Chalcidoidea sp.	1	-	u
*Gastropoda sp.	1	-	u
*Lophopus crystallinus	1	-	oa-w

Context: 1035 Sample: 32/T ReM: S
Weight: 1.00 E: 3.50 F: 2.50

Notes: Entered 29.2.2000. Two dish flot. Recorded in flot, problems on filter paper. Recording approaching 'detail'. AH tube, with few useful remains. Entire modern Carpelimus gracilis to reference collection.

Taxon	n	q	ecodes
Aglenus brunneus	9	-	rt-ss
Cryptophagus scutellatus	4	-	rd-st
Xylodromus concinnus	3	-	rt-st
Platystethus arenarius	2	-	rf
Cryptophagus sp.	2	-	rd-sf
Lathridius minutus group	2	-	rd-st
?Lyctocoris campestris	1	-	rd-st
?Paramesus nervosus	1	-	oa-p
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Helophorus ?aquaticus	1	-	oa-w
Cercyon analis	1	-	rt-sf
Ptenidium sp.	1	-	rt
Carpelimus ?bilineatus	1	-	rt-sf
Carpelimus pusillus group	1	-	u
Anotylus nitidulus	1	-	rt
Stenus sp.	1	-	u
Gyrohypnus angustatus	1	-	rt-st
Gyrohypnus ?fracticornis	1	-	rt-st
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Crataraea suturalis	1	-	rt-st
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Trox scaber	1	-	rt-sf
Aphodius sp.	1	-	ob-rf
Lyctus linearis	1	-	l-sf
Atomaria sp. A	1	-	rd
Atomaria sp. B	1	-	rd
Orthoperus sp.	1	-	rt
Cerambycidae sp.	1	-	l
Longitarsus sp.	1	-	oa-p
Chaetocnema sp.	1	-	oa-p
Cossoninae sp.	1	-	u
Ceuthorhynchinae sp.	1	-	oa-p
Leperisinus ?varius	1	-	l
*Acarina sp.	15	m	u
*Coccoidea sp.	3	-	u
*Oligochaeta sp. (egg capsule)	2	-	u
*Auchenorhyncha sp. (nymph)	2	-	oa-p
*Cladocera sp. (ephippium)	1	-	oa-w
*Syrphidae sp. (larva)	1	-	u
*Siphonaptera sp.	1	-	u
*Insecta sp. (larva)	1	-	u

Context: 1039 Sample: 33/T ReM: S
Weight: 1.00 E: 3.50 F: 2.50

Notes: Entered 28/2/2000. Recording approaching 'detail'. Small flot. Recorded in flot, problems on filter paper. AH tube contained no significant remains.

Taxon	n	q	ecodes
Platystethus arenarius	5	-	rf
Carpelimus pusillus group	4	-	u
Anotylus complanatus	4	-	rt-sf
Lathridius minutus group	4	-	rd-st
Stenus sp. U	3	-	u
Aleocharinae sp. B	3	-	u
Helophorus sp.	2	-	oa-w
Xylodromus concinnus	2	-	rt-st
Anotylus nitidulus	2	-	rt
Gyrohypnus ?fracticornis	2	-	rt-st
Cryptophagus sp. A	2	-	rd-sf
Aphrodes sp.	1	-	oa-p
Delphacidae sp.	1	-	oa-p
Bembidion sp.	1	-	oa
Helophorus aquaticus or grandis	1	-	oa-w
Cercyon analis	1	-	rt-sf
Cercyon ?unipunctatus	1	-	rf-st
Hydraena sp.	1	-	oa-w
Scydmaenus sp.	1	-	u
Dropephylla ?ioptera	1	-	u
Omalium caesum or italicum	1	-	rt-sf
Omalium ?rivulare	1	-	rt-sf
Coprophilus striatulus	1	-	rt-st
Carpelimus bilineatus	1	-	rt-sf
Carpelimus fuliginosus	1	-	st
Platystethus nitens	1	-	oa-d
Leptacinus pusillus	1	-	rt-st
Philonthus sp.	1	-	u
Staphylininae sp.	1	-	u
Falagria or Cordalia sp.	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Aleocharinae sp. E	1	-	u
Euplectini sp.	1	-	u
Aphodius granarius	1	-	ob-rf
Aphodius ?prodromus	1	-	ob-rf
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Anobium punctatum	1	-	l-sf
Ptinus sp.	1	-	rd-sf
?Meligethes sp.	1	-	oa-p
Omosita sp.	1	-	rt-sf
Cryptophagus ?scutellatus	1	-	rd-st
Cryptophagus sp. B	1	-	rd-sf
Atomaria sp.	1	-	rd
Corticaria sp. A	1	-	rt-sf
Corticaria sp. B	1	-	rt-sf
Aglenus brunneus	1	-	rt-ss
?Longitarsus sp.	1	-	oa-p
*Diptera sp. (puparium)	300	e	u
*Acarina sp.	15	m	u
*Diptera sp. (pupa)	6	s	u
*Auchenorhyncha sp. (nymph)	3	-	oa-p
*Coccoidea sp.	3	-	u
*Coleoptera sp. (larva)	3	-	u
*Diptera sp. (adult)	2	-	u
*Oligochaeta sp. (egg capsule)	1	-	u
*Daphnia sp. (ephippium)	1	-	oa-w
*Melophagus ovinus (adult)	1	-	oa-w
*Siphonaptera sp.	1	-	u
*Chalcidoidea sp.	1	-	u
*Gastropoda sp.	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 2 for codes assigned to taxa from 41-49 Walmgate, York. Alpha - the index of diversity alpha (Fisher et al. *1943); Indivs - individuals (based on MNI); No - number.*

No taxa	S	Percentage of indivs of grain pests	PNG
Estimated number of indivs (MNI)	N	No decomposer taxa (rt + rd + rf)	SRT
Index of diversity (α)	alpha	Percentage of RT taxa	PSRT
Standard error of alpha	SE alpha	No RT indivs	NRT
No 'certain' outdoor taxa (oa)	SOA	Percentage of RT indivs	PNRT
Percentage of 'certain' outdoor taxa	PSOA	Index of diversity of RT component	alpha RT
No 'certain' outdoor indivs	NOA	Standard error	SEalphaRT
Percentage of 'certain' outdoor indivs	PNOA	No 'dry' decomposer taxa (rd)	SRD Percentage
No OA and probable outdoor taxa (oa+ob)	SOB	of RD taxa	PSRD
Percentage of OB taxa	PSOB	No RD indivs	NRD
No OB indivs	NOB	Percentage of RD indivs	PNRD
Percentage OB indivs	PNOB	Index of diversity of the RD component	alphaRD
Index of diversity of the OB component	alphaOB	Standard error	SEalphaRD
Standard error	SEalphaOB	No 'foul' decomposer taxa (rf)	SRF
No aquatic taxa (w)	SW	Percentage of RF taxa	PSRF
Percentage of aquatic taxa	PSW	No RF indivs	NRF
No aquatic indivs	NW	Percentage of RF indivs	PNRF
Percentage of W indivs	PNW	Index of diversity of the RF component	alphaRF
Index of diversity of the W component	alphaW	Standard error	SEalphaRF
Standard error	SEalphaW	No synanthropic taxa (sf+st_ss)	SSA
No damp ground/waterside taxa (d)	SD	Percentage of synanthropic taxa	PSSA
Percentage D taxa	PSD	No synanthropic indivs	NSA
No damp D indivs	ND	Percentage of SA indivs	PNSA
Percentage of D indivs	PND	Index of diversity of SA component	ALPHASA
Index of diversity of the D component	alphaD	Standard error	SEALPHASA
Standard error	SEalphaD	No facultatively synanthropic indivs	SSF
No strongly plant-associated taxa (p)	SP	Percentage of SF taxa	PSSF
Percentage of P taxa	PSP	No SF indivs	NSF
No strongly P indivs	NP	Percentage of SF indivs	PNSF
Percentage of P indivs	PNP	Index of diversity of SF component	ALPHASF
Index of diversity of the P component	alphaP	Standard error	SEALPHASF
Standard error	SEalphaP	No typical synanthropic indivs	SST
No heathland/moorland taxa (m)	SM	Percentage of ST taxa	PSST
Percentage of M taxa	PSM	No ST indivs	NST
No M indivs	NM	Percentage of ST indivs	PNST
Percentage of M indivs	PNM	Index of diversity of ST component	ALPHAST
Index of diversity of the M component	alphaM	Standard error	SEALPHAST
Standard error	SEalphaM	No strongly synanthropic taxa	SSS
No wood-associated taxa (l)	SL	Percentage of SS taxa	PSSS
Percentage of L taxa	PSL	No SS indivs	NSS
No L indivs	NL	Percentage of SS indivs	PNSS
Percentage of L indivs	PNL	Index of diversity of SS component	ALPHASS
Index of diversity of the L component	alphaL	Standard error	SEALPHASS
Standard error	SEalphaL	No uncoded taxa (u)	SU
No indivs of grain pests (g)	NG	Percentage of uncoded indivs	PNU

Table 7. 41-49 Walmgate, York (Time Team) site. Preservation records for assemblages of macro-invertebrates. Key: E - degree of chemical erosion; F - degree of fragmentation (in each case 0.5 - none ... 5.5 - extreme). For strength (of mode): W - weak; D - distinct; S - strong. See Kenward and Large (1998) for full expanation.

Context	Sample	E			F			Other
		Range	Mode	Strength	Range	Mode	Strength	
1003	11	3.0-5.0	4.0	W	2.0-5.0	3.0	W	Numerous charred remains present
1004	12	1.5-4.0	3.5	D	2.0-5.0	3.0	D	Trace of charred remains
.005	10	1.5-3.5	2.5	W	1.5-4.0	2.5	D	Crumpled *Pulex* head
1014	20	1.5-4.0	3.0	D	1.0-4.0	3.0	D	
1030	24	3.0-4.0	3.5	W	2.5-5.5	3.5	W	
1034	31	3.0-4.5	3.5	W	2.0-5.0	3.5	W	
1035	32	2.0-4.0	3.5	D	1.5-4.5	2.5	D	
1039	33	2.0-4.5	3.5	D	1.5-4.5	2.5	S	

Table 8. Assemblages of adult Coleoptera and Hemiptera (excluding Aphidoidea and Coccidoidea) from 41-49 Walmgate, York (Time Team) site: Numbers of taxa (s) and individuals (n) placed in Group A ('house fauna') by Carrott and Kenward (2000), by sample. Note that the various fleas, lice and flies placed in Group A are excluded. The 'core' group consists of taxa with strong affinities only within the group: 'shared' taxa have some affinities with members of other groups.

Context	Sample	Extension	N	s (core)	n (core)	n (core) as % of N	s (core + shared)	n (core + shared)	n (core + shared) as % of N
1,003	11	/T	52	10	23	**44**	12	25	**48**
1,004	12	/T	167	20	75	**45**	22	79	**47**
1,005	10	/T	184	22	77	**42**	29	89	**48**
1,014	20	/T	60	8	12	**20**	10	14	**23**
1,030	24	/T	36	4	4	**11**	5	5	**14**
1,034	31	/T	65	10	17	**26**	12	20	**31**
1,035	32	/T	52	11	26	**50**	11	26	**50**
1,039	33	/T	72	10	15	**21**	13	18	**25**

Table 9. 41-49 Walmgate, York (Time Team) site. Charred invertebrate remains from Sample 11/T, Context 1003. Key: abd - abdomen; hd - head capsule; th - prothorax or pronotum; us - thoracic sterna.

Taxon	**Charred parts recorded**
Diptera puparia	fragment
Pulex irritans	entire including most of appendages
Carabidae sp.	leg
Cercyon analis	?us+abd
Xylodromus concinnus	One entire
	hd (with antennae)+th+us
	hd
Euplectinae sp.	entire apart from appendages
Cryptophagus sp.	?us+abd
Atomaria sp.	hd+th+abd
	us+abd
Proctotrupoidea sp.	hd
Acarina	several entire apart from distal parts of limbs

Table 10. Summary of the shell remains recovered from well-dated contexts at 41-49 Walmgate, York (numbers of hand-collected and SRS recovered combined by Context). A '?' before numbers indicates possible numbers (e.g. '3(?4) = definitely 3, possibly 4, whereas '?3/4' = possibly 3, possibly 4). ***Key (Oyster):*** *'Rv' = number of right (or upper) valves; 'Lv' = number of left (or lower) valves; 'Iv' = number of valves of indeterminate side; 'Knife marks' = number of valves showing damage characteristic of the oyster having been opened using a knife or similar implement; 'Measurable?' = estimated number of valves intact enough to be measured usefully; 'Worm' = number of valves showing damage by polychaet worms; 'Barnacles' = number of valves with barnacles; 'Dog whelk' = number of valves showing damage from dog whelk boring.*

	Helix sp.	Mussel	Oyster							
Context			Rv	Lv	Iv	Knife marks	?Measurable	Worm	Barnacles	Dog whelk
1013	1	0	5	8	0	1(?3)	3(?4)	0	0	0
1030	0	1	2	3	0	1	4	0	0	0
1031	0	0	0	0	?1	0	0	0	0	0
Total	**1**	**1**	7	**11**	**?1**	**2(?4)**	**7(?8)**	**0**	**0**	**0**

Table 11. Total numbers of vertebrate fragments, with numbers of measurable and subadult bones, mandibles and isolated teeth yielding ageing and sexing information and weights, by species, from 41-49 Walmgate (Time Team site), York. Key: Total frags = total number of fragments; No. meas = number of measurable fragments; No. mand = number of mandibles; No. teeth = number of isolated mandibular teeth; No. unfused = number of unfused fragments.

Taxon		**No. meas**	**No. unfused**	**No. mand**	**No. teeth**	**Total frags**	**Weight (g)**
Vole/mouse	Microtine/Murine	-	-	-	-	1	0.1
Bank vole	*Clethrionomys glareolus* (Schreber)	-	-	-	-	1	0.1
Mouse	Murine sp.	-	-	-	-	1	0.1
Cat	*Felis* f. domestic	1	-	-	-	1	1.3
Pig	*Sus* f. domestic	-	-	1	1	16	152.2
Cattle	*Bos* f. domestic	1	1	1	1	24	636.8
Sheep/goat	Caprovid	3	1	-	1	12	64.5
Duck	Anas sp.	1	-	-	-	1	1.7
?Fowl	cf. *Gallus* f. domestic	1	-	-	-	1	0.5
Chicken	*Gallus* f. domestic	2	-	-	-	2	7.2
Herring	*Clupea harengus* L.	-	-	-	-	25	0.6
Eel	*Anguilla anguilla* (L.)	-	-	-	-	5	0.4
Cod family	Gadid	-	-	-	-	3	2.9
Cod	*Gadus morhua* L.	-	-	-	-	9	9.7
Haddock	*Melanogrammus aeglefinus* (L.)	-	-	-	-	2	0.7
Subtotoal		***9***	***2***	***2***	***3***	***104***	***878.8***
Large mammal		-	-	-	-	126	1377.4
Medium-sized mammal 1		-	-	-	-	164	377.7
Bird		-	-	-	-	20	7.8
Fish		-	-	-	-	62	3.1
Unidentified		-	-	-	-	688	379.0
Subtotal		-	-	-	-	***1060***	***2145***
Total		**9**	**2**	**2**	**3**	**1164**	**3023.8**

Table 12. Number of vertebrate remains by phase from 41-49 Walmgate (Time Team site), York.

Taxon		**Phase 1**	**Phase 3**	**Phase 4**	**Total no. frags**
Vole/mouse	Microtine/Murine	1	-	-	1
Bank vole	*Clethrionomys glareolus* (Schreber)	-	-	1	1
Mouse	Murine sp.	-	1	-	1
Cat	*Felis* f. domestic	-	-	1	1
Pig	*Sus* f. domestic	1	1	14	16
Cattle	*Bos* f. domestic	5	-	19	24
Sheep/goat	Caprovid	1	-	11	12
Duck	Anas sp.	-	-	1	1
?Fowl	cf. *Gallus* f. domestic	-	-	1	1
Chicken	*Gallus* f. domestic	-	-	2	2
Herring	*Clupea harengus* L.	6	7	12	25
Eel	*Anguilla anguilla* (L.)	1	2	2	5
Cod family	Gadid	1	-	2	3
Cod	*Gadus morhua* L.	-	1	8	9
Haddock	*Melanogrammus aeglefinus* (L.)	-	-	2	2
Subtotoal		***16***	***12***	***76***	***104***
Large mammal		22	6	98	126
Medium-sized mammal 1		18	19	127	164
Bird		6	2	12	20
Fish		4	19	39	62
Unidentified		132	105	451	688
Subtotal		***182***	***151***	***727***	***1060***
Total		**198**	**163**	**803**	**1164**

Table 13. Number of vertebrate remains by recovery method from 41-49 Walmgate (Time Team site), York.

Taxon		**Hand-collected**	**SRS**	**BS**	**GBA**	**Total no. frags**
Vole/mouse	Microtine/Murine	-	-	-	1	1
Bank vole	*Clethrionomys glareolus* (Schreber)	-	-	-	1	1
Mouse	Murine sp.	-	-	1	-	1
Cat	*Felis* f. domestic	1	-	-	-	1
Pig	*Sus* f. domestic	4	7	5	-	16
Cattle	*Bos* f. domestic	15	8	1	-	24
Sheep/goat	Caprovid	7	4	1	-	12
Duck	Anas sp.	1	-	-	-	1
?Fowl	cf. *Gallus* f. domestic	-	1	-	-	1
Chicken	*Gallus* f. domestic	1	1	-	-	2
Herring	*Clupea harengus* L.	-	-	19	6	25
Eel	*Anguilla anguilla* (L.)	-	-	3	2	5
Cod family	Gadid	-	1	1	1	3
Cod	*Gadus morhua* L.	-	8	1	-	9
Haddock	*Melanogrammus aeglefinus* (L.)	-	2	-	-	2
Subtotoal		***29***	***32***	***32***	***11***	***104***
Large mammal		62	44	17	3	126
Medium-sized mammal 1		49	64	51	-	164
Bird		1	10	9	-	20
Fish		-	3	57	2	62
Unidentified		63	145	480	-	688
Subtotal		***175***	***266***	***614***	***5***	***1060***
Total		**204**	**298**	**646**	**16**	**1164**

Table 14. Proportions of meat-bearing and non meat-bearing parts of the skeleton, from 41-49 Walmgate (Time Team site), York.

Species	**Meat-bearing**	**Non meat-bearing**	**Total**
Cattle	8	16	*24*
Caprovid	4	7	*11*
Pig	1	15	*16*
Total	*13*	*38*	*51*