Reports from the Environmental Archaeology Unit, York **98/32**, *126 pp.*

The archaeological significance of insect and other invertebrate remains from Keay's and Law's Lanes, The Lanes, Carlisle. Technical report.

By Harry Kenward, Frances Large and John Carrott

Summary

Macro-invertebrate assemblages from 111 subsamples from 91 contexts at Keay's and Law's Lanes, The Lanes, Carlisle, have been recorded, of which 104 from 85 contexts were of Roman date. A large proportion of the samples were also examined for eggs of parasitic nematodes via a 'squash'.

Most samples yielded at least a small macro-invertebrate assemblage, and beetles were abundant in a good number of cases. Many assemblages included large numbers of grain pests, and there was often ; 'house fauna' and a suite of decomposers regarded as typical of dung or stable manure. The broad impression given by the remains of Roman date is of an area devoted to the keeping of livestock, almost certainly horses. There were a few 'stable manure' assemblages, but many of the deposits examined seem to have included primarily surface soil which contained dung. The soil was in situ *in many cases, but had apparently also been dumped or naturally silted into numerous cuts. The best interpretation is probably that - in the stages giving good waterlogged preservation - the area was used for corralling of equines, and its surface was trampled, supported a few weeds, was perhaps occasionally pooled, and was extensively scattered with dung. There was a little evidence (from eggs of* Trichuris*) to suggest the presence of human faeces in some cuts.*

The small group of samples of medieval date gave no grain pests. The fauna indicated foul conditions in cuts.

Two specimens of the pubic louse Pthirus pubis, *one Roman and the other medieval, represent the first ancient records of this species.*

Keywords: KEAY'S AND LAW'S LANES, THE LANES, CARLISLE; ROMAN; MEDIEVAL; INVERTEBRATES; PARASITE EGGS; *TRICHURIS*; *OXYURIS*; *ASCARIS*; INSECTS; GRAIN PESTS; STABLE MANURE; DUNG; PUBIC LOUSE; *PTHIRUS PUBIS*

Authors' address:

Environmental Archaeology Unit
Department of Biology,
University of York
PO Box 373
York YO10 5YW

Prepared for:

John Zant
Carlisle Archaeological Unit
Carlisle City Council
Department of Leisure Services
Civic Centre
Carlisle CA3 8QU

8 December 1998

List of figures

Figure 1. Keay's Lane and Law's Lane, The Lanes, Carlisle: proportion of 'outdoor' individuals of adult beetles and bugs plotted against minimum number of individuals of these groups.

Figure 2. Keay's Lane and Law's Lane, The Lanes, Carlisle: proportion of individuals of adult aquatic beetles and bugs plotted against minimum number of individuals of these groups.

List of tables

Table 1. Complete list of invertebrate taxa from KLA and LAL, The Lanes, Carlisle, with the ecological codes assigned to them.

Table 2 Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) from samples from KLA and LAL, The Lanes, Carlisle.

Table 3.Species lists in rank order for invertebrate macrofossils from samples from KLA and LAL, The Lanes, Carlisle.

Table 4. Abbreviations for ecological codes and statistics used for interpretation of insect remains in text and tables.

Table 5. Measurements (in microns) of Trichuris *eggs from samples from KLA and LAL, The Lanes, Carlisle.*

The archaeological significance of insect and other invertebrate remains from Keay's and Law's Lanes, The Lanes, Carlisle. Technical report.

Introduction

The long series of excavations in The Lanes area of Carlisle during the late 1970s and early 1980s produced a large corpus of samples (General Biological Analysis, GBA, samples, *sensu* Dobney *et al.* 1992) for bioarchaeological analysis. Analysis of the invertebrates in samples from Old Grapes Lane A (OGL A), Old Grapes Lane B (OGL B), and Lewthwaites Lane A (LEL A) has been reported elsewhere (Kenward *et al.* 1992 a-c). The samples from a second group of sites remained uninvestigated and their analysis is reported here. These were Keay's and Law's Lanes, each represented by a series of trenches (KLA A-D; LAL B-D). Following an assessment (Carrott *et al.* 1995), in which priorities were assigned to the samples examined, a project to investigate insects and other invertebrates was proposed to English Heritage (McCarthy and Kenward1996), who subsequently agreed to provide funding. In addition to its value in routine reconstruction of the environment of the sites themselves, the material was regarded of importance in investigating zonation in Roman Carlisle when combined with the results from the other Lanes sites, and from Castle Street (Allison *et al.* 1991a, b) and Annetwell Street ('technical reports': Large and Kenward 1986, 1987a-c, 1988a-e, revised data for insect assemblages made available by Kenward 1998).

The Roman sequence for the 'core' trenches for the present sites is described in detail by Zant (1997). A small amount of medieval material has also been analysed and the results are reported here, but full archaeological information regarding it has not been made available yet.

Methods

Practical methods: A large corpus of samples was submitted to the EAU. Most were afforded a brief visual examination in the laboratory.

Parasite eggs (and other microfossils) were investigated during assessment by means of 'squashes' (*sensu* Dainton 1992). Those samples for which the squashes revealed any recognisable eggs were subsequently re-examined where possible. When sufficient eggs of trichurids were present, measurements of total length, 'standard length' (ie. excluding the polar plugs), and width were made. *Trichuris* (whipworm) eggs were identified on the basis of these measurements, by comparison with data quoted by Jones (1982). No reagents were used, to avoid the possiblity of their causing changes in dimensions (cf. Jones *loc. cit.*).

All of the samples assigned P1 (first priority) in assessment and for which material remained have been examined for macro-invertebrates. In addition, a number of second priority samples and a selection of those not seen during assessment have been analysed. Preference was given to samples from cut features, although after the analyses were carried out it was realised that more of the surface-laid deposits contained useful fossils than had been predicted on the basis of the assessment.

The sample material was described in the laboratory using a standard pro-forma. The 1 kg 'test' subsamples used for the assessment exercise yielded rather small numbers of insect remains. To provide larger assemblages, the largest possible subsamples were used in most cases for the main post-excavation analysis reported here, but unfortunately only a rather small amount of sediment remained for some samples. A 'washover' (Kenward *et al.* 1980) was used where it appeared that no more than a trace of plant or invertebrate material was present. More usually, paraffin flotation (*ibid.*) was employed to recover invertebrate macrofossils. Insects were identified by comparison with modern reference material and using the standard works. In the main phase of analysis, adult beetles and bugs, other than aphids and scale insects, were usually recorded fully quantitatively and a minimum number of individuals estimated on the basis of the fragments present. In one case, numbers of a very abundant taxon were estimated more crudely. For one or two assemblages the commoner beetles were recorded semi-quantitatively to save time, as were the 'other invertebrate' macrofossils for most samples, using the scale described by Kenward *et al.* (1986) and Kenward (1992) and again using estimates for extremely abundant taxa. The lists made during assessment were often semi-quantitative and had all been prepared quickly; they have been treated as 'rapid scans' (as defined by Kenward 1992).

The manuscript lists and notes made during insect recording were entered to a Paradox database. From this, principal statistics and species lists in rank order for each assemblage were produced. Further analyses were made using Paradox and the spreadsheet package Excel.

Interpretative methods: The interpretative methods for insect remains employed in this study were essentially as employed in work on a variety of sites by Kenward and co-workers (see Kenward 1978, with modifications outlined by, for example, Hall and Kenward 1990, Kenward 1982; 1988 and Kenward and Hall 1995). Thus, interpretation rests primarily on a number of `main statistics' of whole assemblages of adult beetles and bugs, and on the recognition of ecologically-related groups of species.

The main statistics used include: (a) a measure of species-richness (or diversity), α of Fisher *et al.* (1943), for the whole assemblage and for components of it; and (b) proportions of `outdoor' species (OB), aquatics (W), waterside species (D), phytophages (plant feeders) (P), species associated with dead wood (L), moorland/heathland taxa (M), and decomposers (species associated with decomposing matter of some kind). Decomposers are subdivided into (a) species primarily associated with somewhat dry habitats (RD), (b) those found mostly in rather, to very, foul habitats (RF), and (c) a residuum not easily assignable to one of these. The category 'RT' includes all three of these groups of decomposers.

A further ecological component quantified for the present site was the synanthropes, i.e. those species favoured by human activity (see Kenward 1997). Taxa have been assigned codes for degree of synanthropy as follows: 'sf' - facultative synanthrope, common in 'natural' habitats but clearly favoured by artificial ones; 'st' - particularly favoured by, and typical of, artificial habitats but believed to be able to survive in nature in the long term; 'ss' - strong synanthrope, essentially dependent on human activity for survival. These have been quantified by site to give corresponding categories (SF, ST, SS). All of these have been summed to give the category 'SA'. Free-

living phytophages and open-field dung beetles favoured by human activity have been excluded. It is emphasised that these codes are in many cases only a first guess which is subject to modification. Subsumed within the synanthropic group is 'house fauna', a group of species which appeared to have been particularly associated with wooden buildings (and to an extent with stone ones) in the past (Hall and Kenward 1990, Kenward and Hall 1995).

The quantification of an `outdoor' component is useful when working with any deposits associated, even if rather indirectly, with human occupation, reflecting the input of 'background fauna' as well as the development of semi-natural communities *in situ*.

The abundance of these 'ecological' groups is discussed against the background of values for many other assemblages from a large number of occupation sites. Thus, % N OB = 30 is a high value, but % N RT = 30 is low; while % N W or RF is high at 10.

The index of diversity offers a guide to the presence or absence of remains of insects which bred in or on the developing deposit (autochthones), low values indicating breeding communities, high ones faunas of mixed origins. Note that `significantly' low values differ for the various components of assemblages; the more inherently rich a component is, the higher the value of the index of diversity for a living community will be. Thus, `outdoor' communities associated with natural vegetation tend to give a high value of α, while very specialised communities, such as those of decaying matter deposited by humans, or stored grain, have low or very low ones.

Biota regarded as certainly or possibly originating in stable manure are abundant in Roman deposits in Carlisle. This group, which for the invertebrates includes grain pests, insects associated with hay in the field and in storage, 'house fauna' which lived in the stable, species imported with materials used as litter, and the invaders of the foul stable accumulation, has been discussed particularly by Kenward and Hall (1997). Important for the present site are teneral (newly-emerged, pale and soft) weevils believed to have originated in cut hay. It is also worth noting at this point that human fleas (*Pulex irritans*) are commonly found in archaeological stable manure associations, doubtless because the maggot-like larvae developed in the stable floor litter.

Results

Macro-invertebrate assemblages from 111 subsamples from 91 contexts have been recorded, of which 104 from 85 contexts were of Roman date. A complete list of the taxa recorded is given in Table 1. Table 2 summarises some statistics of the assemblages of adult beetles and bugs from individual subsamples and from the combined assemblage for the site as a whole. Species lists by sample are given in Table 3.

This group of samples illustrated a problem which has occurred during work on other sites (eg. Davenham Church Moss, Cheshire, Hughes *et al.* 1998), the under-estimation of concentrations in assessment. Assessment suggested that many samples from KLA and LAL had low concentrations of remains, so that large subsamples would be required in the main phase. In the event, a considerable number of these samples produced far more remains than expected. To an extent this is illustrated by the mean concentrations of remains from the /T subsamples (22) and for /1 subsamples (49), although the difference is exaggerated by the selection of richer samples for full analysis. In fact, of 19 cases where a /T and a /1 subsample were processed, the

estimated concentration was about equal in four cases, much higher in the /1 in ten cases, and higher or much higher in the /T in five cases. Under-estimation was thus common. The different recording method used for /T and /1 subsamples are not likely to be more than partly responsible for such differences. It has been argued elsewhere (Issitt *et al.* 1995) that increasing sample size will often produce an apparent *reduction* in concentration (as calculated using a minimum number of individuals estimate). The problem is believed to have arisen during the current project through a failure of paraffin floatation in assessment; a change of brand of paraffin appears to have largely overcome it!

The general nature of the assemblages

Unless otherwise stated, all plant and invertebrate remains were preserved by anoxic 'waterlogging'. Preservation of insect remains was often rather good, although the fossils of some species from some samples showed a substantial degree of fragmentation, reflected in the number of taxa which could not be specifically identified. A substantial proportion of the samples contained fossils which were rather decayed, in some cases with a range of preservational states. The latter *may* indicate decay in storage, although of course it is impossible to be sure that this was so. A wide range of invertebrates was noted, including numerous mites, spiders, cladocerans, fly larvae, pupae, puparia and adults, ants, beetle larvae, scale insects and fleas, as well as beetles and bugs.

Main statistics for the assemblages of adult beetles and bugs (based on MNI and excluding aphids and scale insects) are given in Table 2. Of the 111 assemblages recorded, 29 included less than 10 individuals, and nine subsamples gave none at all. There were 33 assemblages of more than 100 individuals (a good working minimum for confident identification), 16 with more than 200, and eight with more than 300. Concentrations varied greatly, with a mean of 34 individuals per kilogramme, and 33/kg for Roman samples. There were eight cases where the concentration was over 100/kg. For the fill contexts the mean was 47, and for non-fills 27, reflecting a difference seen at most sites. It is worth noting that a substantial number of samples yielded appreciable numbers of invertebrates but rather few non-charred plant remains.

In broad terms the assemblages were very similar in their general nature to those from other Roman sites in Carlisle (and to a large extent, those elsewhere, notably. Tanner Row, York, Hall and Kenward 1990). The recurring elements were grain pests, 'house fauna', a range of species belonging to the decomposer community of foul matter of various kinds, plant feeders, ground beetles, aquatics and peatland taxa.

Grain pests often contributed a large proportion of the assemblages: the mean concentration of grain beetles was 22, while for nine assemblages (of those with >9 individuals) more than half of the individuals were grain beetles. The 'site mean' (ie. the proportion in the combined assemblages, rather than the mean of sample values) for percentage of grain beetles was 32, so almost a third of the identified insects belonged in this ecological group. House fauna was usually present in small to moderate amounts, but only rarely very abundant (10% of the fauna of the site fell in this category, defining it narrowly as 'association A' of Carrott and Kenward (1998).

The proportion of 'outdoor' fauna varied very greatly between assemblages, and was, generally speaking, in inverse proportion to assemblage size (Figure 1). This probably reflects the origin of much of the outdoor fauna either as background rain or as part of

the autochthonous and circumjacent components in open areas of disturbed ground with a few weeds. In some samples, however, all or most of the outdoor insects were probably imported in hay or turf, or in some cases both. The small component of heath or moor taxa present in some assemblages almost certainly reflects the importation of turf. The site mean for PNOB was about 20, rising to 29% if the grain beetles were subtracted from the site total.

The mean percentage of aquatic beetles and bugs across the subsample assemblages was 5 (where N >9), but the site mean was 3% (the difference probably resulting from the presence of a larger proportion of 'background' aquatics in the smaller assemblages, Figure 2). Only for very few subsamples was this value much greater than 10% (five cases where N > 20, none of these greater than 14%). These aquatics may have lived in cut features, probably in temporary pools, but most were likely to be of background origin, while some were perhaps imported in turf, and others may have arrived in the guts of livestock, having been taken in during drinking. Damp ground/waterside species were rather poorly represented, with a mean of 3%. Plant feeders and other species strongly tied to live plants were consistently present, with a site mean of 7%. Species associated with heathland or moorland habitats were present in a proportion of the samples, but overall were rare (site mean PNM = <0.5%).

Dead wood habitats were generally poorly represented except by the common *Anobium punctatum* (woodworm), and to a much smaller extent by the powder post beetle *Lyctus linearis*. It was the former species which was responsible for elevating the site PNL value to 1%; the number of other wood-associated insects was vanishingly small (10 taxa, 12 individuals).

Beetles recognised in the ecological coding system as associated with decaying matter of various kinds (decomposers) contributed a rather small proportion of the fauna at these sites, by comparison with a range of others (site PNRT = 38). This was substantially a result of the great abundance of grain pests, which diluted the rest of the fauna. After removal of grain pests, the percentage of coded decomposer individuals rose to 55. Even this is not a particularly high value; for some other sites it has been in the range 60-80% (see the last line of table 2 in Kenward 1997). The proportion of decomposer associated with rather dry material (RD) was, at PNRD = 9, rising to 12 % after removal of grain pests, not too far from the values seen at other sites (see for example the data for Anglo-Scandinavian 16-22 Coppergate, York, Kenward and Hall 1995). Species associated with foul matter were quite well represented (site PNRF = 7, correcting to 10% after subtraction of grain pests).

Synanthropes - including grain pests - were important at the sites: they contributed well over half of the total assemblage, reflecting the near-total control of ecological conditions by human activity. Facultative synanthropes were quite common (PNSF = 11), perhaps partly because there were open-air habitats. Species typically found in synanthropic habitats contributed 10% of the fauna, and strong synanthropes (among which are numbered the grain beetles) accounted for 23%.

Some notable taxa

The records of *Pthirus pubis*, the pubic louse, are of particular note, but are discussed in a later section.

The small staphylinid beetle *Anotylus nitidulus* requires further consideration in the context of

the present sites. Modern records suggest that this beetle can exploit a wide range of decaying-matter habitats, but it may be most typical of waterside and fenland litter in modern-day Britain. The species is certainly not at all common in northern England (the writer having failed to find it in more than two decades, for example). However, it was abundant on occupation sites in the past, both in towns, eg. in York (Kenward 1978, 44; Kenward and Hall 1995) and at some rural sites, eg. at North Cave (Allison *et al.* in press), where it was the most abundant decomposer species) and at Wharram Percy (Girling and Robinson 1988 AML 36/88), where it was abundant in one sample. There must be a strong suspicion that it typically occurred in artificial accumulations of foul matter in the past, and perhaps even with dung in the fields. It is conceivable that two morphologically similar species with different habitat preferences exist, the wetland species having survived to the present day in Britain, the foul-matter species having been dependent on some special kind of artificial accumulations of decaying matter in the past (or on elevated temperatures), and having now become extinct or at least very rare.

The presence of a total of 18 individuals of the spider beetle *Tipnus unicolor* in Roman deposits at these sites is notable; as pointed out by Kenward (forthcoming) there are almost no other records of this species from deposits in Carlisle, although it is common in York and elsewhere.

Alphitobius diaperinus, a species almost exclusively associated with stored products in Britain, was rather more common than at other sites, although total numbers were still low.

The sites have provided a further record of the rare terrestrial 'water beetle' *Helophorus tuberculatus* (from KLA A 1063.4 220/1, where it occurred with the rather similar *H. nubilus*). This beetle has now been found in numerous archaeological deposits; one possibility it that it was imported in moorland turf.

Thymalus limbatus: This member of the family Peltidae is given Notable B status by Hyman and Parsons (1992). It is associated with ancient broad-leaf woodland and pasture-woodland, where it is found under bark (typically of oak and beech) and in bracket fungi (especially on birch). The specimen recovered from Context **811.01**, Subsample 376/1, was most probably imported with dead wood intended for firewood.

Dating

The following scheme of dating applies (J. Zant *in litt.* May 1997):

Site periods	Dating
0, 1, 2	Pre-Roman
1-5, 3, 4, 5	Early Roman, *c.* late 1st-mid 2nd century
6, 7, 8, 9, 10, 7-9, 7-8A, 10A-11B, pre-10C	Mid Roman, *c.* second half of 2nd century
11, 12	Late Roman, *c.* 3rd-4th century
13, 14	Early medieval, *c.* 12th-13th century
15, 16, 17, 15-17	Later medieval, *c.* 14th-16th century
18, 19	Post-medieval, *c.* 17th-20th century

Sample-by-sample account

The material is considered by trench, and within trench in site period order. The suffix '/T' indicates a sample processed during

assessment, using the 'test' methodology described by Kenward *et al.* (1986). Although recorded in assessment, the record made approximates to a 'rapid scan' (sometimes semi-quantitative), *sensu* Kenward (1992). The data from these subsamples has been used in generating assemblage statistics (Table 3). Refer to Table 2 throughout for values of the parameters discussed for individual assemblages (and for the material from the site as a whole), and to Table 3 for complete species lists in rank order. Where appropriate, a note has been made of salient results of the botanical analyses (Huntley, in preparation).

The sediment descriptions made before processing have not been given in the text under the head '*Laboratory description*'. It was clear that many (or most) of the samples had undergone considerable change in storage. There was no relationship between the extent to which samples had dehydrated (many were completely dry and had crumbled to dust) and the condition of the fossils recovered. Samples recorded as 'dry' contained slightly fewer remains (a mean concentration of 30 individuals/kg as opposed to 35). However, the 'outdoor' component of the 'dry' samples was slightly larger (PNOB = 33) than those not recorded as dry (26), suggesting that perhaps the former were from sediments deposited where there was a relatively small decomposer fauna, which were inherently less likely to contain abundant fossils.

Trench KLA A

Site period 01-05

Fills of pit 1097 [Deep rectangular feature, near-vertical sides, perhaps not bottomed at 2 m. Fills: 1096.3 = primary, black silt with much organic material filling lower half, not sampled; 1096.2 = mixed grey-brown loam; 1096.1 = upper fill of clean, dark grey-black silty loam]

Context **1096.01**, Subsample 239/P and 239/T (0.98 kg)

Laboratory sediment description: Dry, light grey (mid grey/brown when moist), indurated, crumbly (just plastic when wet), humic sandy silt with 2-20 mm size stones and ?mortar/plaster present.

Microfossil squash: Assessment - mostly inorganic, with a little organic detritus and a few fungal hyphae.

Macro-invertebrates: There were numerous *?Heterodera* cysts and a few *Daphnia* ephippia (water flea resting eggs), the former suggesting soil and the latter at least temporary water, but other invertebrates were rare. The group of single individuals of twelve beetle taxa included synanthropes, but had no obvious mode of origin. This may have been backfill into the water-filled pit. Plant remains were rare (perhaps because they had decayed in a biologically active surface deposit?).

Context **1096.02**, Subsamples 238/P, 238/1 (1.8 kg) and 238/T (1.0 kg)

Laboratory sediment description: Dry, light-mid grey, indurated (working crumbly), slightly humic, sandy, clay silt with 2-60 mm size stones present. When wet, the sediment was mid brown and soft, working just plastic.

Microfossil squash: Assessment - inorganic with a little organic detritus.

Macro-invertebrates: A modest-sized assemblage of beetles in the /1 subsample (N = 77, S = 54) was accompanied by remains of numerous other invertebrates. There were perhaps more aquatic beetles than might be expected to be present by accident (six individuals of five taxa), and the hypothesis that this pit held water was strengthened by the numerous *Daphnia* ephippia (but see the

comments on the origin of aquatics made below). There was no evidence that large amounts of organic waste had been dumped; indeed, the fauna might be largely of 'background' origin, reflecting the average of conditions in the surroundings. If so, there was probably organic filth (such as stable manure) nearby. Just possibly there was a component from turf, perhaps simply scatter. Plant remains were rare.

Subsample /T gave only twelve individuals of eleven beetle taxa. These, and the other invertebrates recorded, appeared to represent a random extract from a fauna like that found in the larger subsample.

Site period 07

Fills of gulley 1030 [E-W linear gulley, probably a timber-lined drain, 0.8-0.9 m wide and 0.6-0.75 m deep. Fills: 1020 = lower 0.4 m, dark brown/black silty loam; 982 = thin layer of black silty loam; 981 = upper fill, grey-brown silty loam, not sampled]

Context **982**, Subsample 201/T [Upper fill of gulley 1030, lower = 1020] (1.0 kg)

Laboratory sediment description: Moist, mid brown and mid-dark grey/brown (with lighter and darker mottles on a 10 mm scale), firm to crumbly, sandy, silty clay. Flecks of ?mortar, 2-6 mm scale stones, and patches of fine charcoal were all present.

Microfossil squash: Assessment - mostly inorganic, a little organic detritus, one spore and two pollen grains.

Macro-invertebrates: Only a few, poorly preserved, remains were recovered, all beetles (N = 6, S = 6). They gave no indication of conditions in the gulley and may have been introduced in backfill or natural silting. There were only traces of plant remains.

Context **1020**, Subsample 205/T [Lower fill of gulley 1030, upper = 982] (1.0 kg)

Laboratory sediment description: Moist, mid-dark grey/brown (with slightly lighter and darker mottles on a 10 mm scale), plastic and rather soft, slightly sandy, clay silt. A patch of fine charcoal was also present.

Macro-invertebrates: This lower fill also contained very few remains, only seven individuals of four beetle taxa and a trace of other remains being noted. There were three individuals of the ground beetle *Clivina fossor*, so this species at least may have lived *in situ*. Nettle (*Urtica*) seeds were very abundant, suggesting that the plant grew nearby or that the seeds were imported with dumped soil; other plant remains were rare and did not offer much further information.

Fills of gulley 1070 [= KLA-B 1281, 1282; N-S aligned gulley, 1.1 - 1.35 m wide. Fills: 1064.3 = lowest, brown sand clay; then 1064.2 = grey-black silty loam with some organic material; 1064.1 = mixed sandy clay loam, not sampled]

Context **1064.02**, Subsamples 244/P, 244/1 (2.6 kg) and 244/T (1.0 kg)

Laboratory sediment description: Dry, light brown, brittle and indurated (working unconsolidated), sandy, clay silt with stones present in the size range 2-60 mm. When wet the sediment was grey/brown and worked just plastic.

Microfossil squash: Assessment - mostly inorganic, a little organic detritus and a few fungal hyphae.

Macro-invertebrates: A substantial assemblage of invertebrates was recovered from subsample /1; there were 170 individuals of 76 beetle and bug taxa, and a range of other

remains. Grain pests contributed about a quarter of the individuals (PNG = 24), with *Oryzaephilus surinamensis* (28 individuals) much the most abundant species in the assemblage. There were also ten *Cryptolestes ferrugineus* and two *Sitophilus granarius*. 'House fauna' was present, but not in a well-developed form (there were ten *Lathridius minutus* group, five *Cryptophagus* sp., and three *Ptinus fur*, but only single individuals of other taxa placed in this group). Whether this group arrived in manure is not clear, for typical stable manure decomposers were present but in rather limited numbers (*Cercyon analis* and *Falagria caesa*, each with five individuals, and *Oxytelus sculptus*, with three, might belong here). There were some dung beetle (including five *Aphodius prodromus* and two *A. granarius*), so perhaps there was dung on nearby surfaces. Some of the 'outdoor' forms may have lived immediately by the gulley, but a random 'background' component seems to have been present too. Overall, it appears likely that this fill accumulated slowly (or was dumped material scraped from a surface), in an area with decaying matter, perhaps in the form of scattered stable manure or animal droppings on an open surface. The botanical evidence offered little help in interpretation: there was some charcoal and a modest quantity of wood, but no other plant remains were recorded.

The /T subsample produced only 34 individuals of 26 taxa of adult beetles and bugs, an assemblage broadly similar in character to that from the larger subsample, although disproportionally smaller in relation to the amount of sediment processed.

Context **1064.03**, Subsample 232/T (1.0 kg)

Laboratory sediment description: Wet, mid-dark brown (with pinkish/orange streaks up to 1cm in scale), 'cheesy', humic, silty clay.

Macro-invertebrates: This assessment-recorded subsample yielded few remains; only single individuals of six beetles and one fly puparium. These insects were of no interpretative significance in the context of the present site. Plant remains indicated mixed origins, with ruderals and fen taxa, and some food remains.

Site period 08B

Fills of pit 1073 [Large circular pit, 2.4 m in diameter, 1.2 m deep, with seven fills: lowest 1031.7 to latest 1031.1, mainly dark grey-brown or black silty deposits, not all sampled]

Context **1031.01**, Subsamples 212/P and 212/T (1.0 kg)

Laboratory sediment description: Moist, light-mid brown to dark brown, stiff (working plastic), sandy clay, with 10mm and 1mm scale mottles. Charcoal, and stones in the size range 2-20 mm, were present.

Microfossil squash: Assessment - mostly inorganic, some organic detritus with a few pollen grains and fungal hyphae.

Macro-invertebrates: Invertebrates were rare (N = 7, S = 7) and uninformative. Sample 213 from this context was analysed for plant remains, but little was found.

Context **1031.02**, Subsample 217/T (1.0 kg)

Laboratory sediment description: Wet, light, mid, and dark brown, plastic, sandy clay with 2-6 mm size stones present.

Microfossil squash: Assessment - mostly inorganic, much organic detritus and a few fungal spores; two unidentified ?parasite eggs. Further investigation failed to produce sufficient well-preserved, measurable, eggs for specific identification.

Macro-invertebrates: This group was recorded semi-quantitatively during assessment. Of the beetles, only the grain pests *C. ferrugineus* and *O. surinamensis* were represented by more than one individual (there were 'several' of each). Whether these were dumped with spoiled grain or stable manure, or arrived in some other way, can only be guessed. The remaining fauna was of mixed character, quite possibly being background fauna. Plant remains suggested that the deposit included the remains of hay or flooring.

Context **1031.03**, Subsample 213/P, 213/1 (5.0 kg) and 213/T (1.0 kg)

Laboratory sediment description: Moist, mid-dark grey/brown, brittle to crumbly (working just plastic), sandy, clay silt. Some pale orange sandy clay, a patch of compressed amorphous organic sediment, and 2-6 mm size stones were also present.

Microfossil squash: Assessment - half inorganic grains and half organic detritus with a few fungal hyphae. *Trichuris* present [1 pp (1), 0 pp (1)]; many pollen grains/spores. Further investigation failed to produce sufficient well-preserved, measurable, eggs for specific identification.

Macro-invertebrates: The large subsample produced a substantial group of insect remains (124 adult individuals of 57 beetle and bug taxa and a variety of other remains). However, grain pests predominated (29 *O. surinamensis*, 13 *C. ferrugineus*, four *S. granarius* and two *P. ratzeburgi*). The remaining beetles included small numbers of a range of house fauna and decomposer taxa which perhaps originated in stable manure (eg. four *Cercyon atricapillus*, and three each of *Ptenidium* sp., *Oxytelus sculptus*, and *Lathridius minutus* group). The presence of a component of surface soil is suggested by the presence of 'several' *?Heterodera* sp. cysts.

The assessment subsample contained rather few remains (N = 13, S = 10), suggesting a random sample from the fauna of the larger subsample. Some cladoceran ephippia were noted - perhaps from water drunk by stock?

Context **1031.04**, Subsample 250/T

Laboratory sediment description: Dry, light brown to dark brown (mid brown when wet), indurated, sandy, clay silt.

Macro-invertebrates: The assessment record showed rather few adult beetles and bugs to have been present (N = 41, S = 35), although beetle larvae were quite numerous. Fly puparia and unidentified pupal remains were also abundant. The significance of the fauna is not clear - much may have been background fauna which entered directly or secondarily in dumped material from elsewhere. The nature of the sediment (basically mineral according to the site record) suggests that this was not a rapidly-buried dump of organic material, so the immature insects may not have originated *in situ*. The plant remains did not clarify matters: well-preserved grass caryopses were abundant, and a range of other species present.

Fill of pit 1074 [Largely destroyed by later features, at least 2.5 x 0.4 m and 0.5 m deep. Three fills, all brown or brown-black clays or silty clays. Only 1052.2, the middle fill, sampled]

Context **1052.02**, Subsample 214/P and 214/T (1.0 kg)

Laboratory sediment description: Moist, mid-dark grey/brown, consolidated and firm (working crumbly to just plastic), silt/clay. There were also millimetre scale paler patches

(possibly more sandy) and stones present in the size range 2-60 mm.

Microfossil squash: Assessment - mostly inorganic, with much organic detritus, a few fungal hyphae and some *Polypodium* spores.

Macro-invertebrates: Invertebrates were present in only small numbers; apart from single individuals of three beetle taxa there were only 'many' ?*Heterodera* sp. (soil nematode) cysts and an earthworm egg capsule, remains perhaps suggesting soil used as backfill. The rarity of plant remains other than charcoal supported this interpretation.

Fills of pit 1069 [Large pit 2.6 x at least 2.6 m, depth not recorded. Fills: 1055.3 - 1055.1, earliest to latest, all sampled. 1055.2 and 1055.3 mixed and with some organic material]

Context **1055.01**, Subsample 245/P and 245/T (1.0 kg)

Laboratory sediment description: Dry, light-mid grey/brown, brittle and 'biscuity' (working unconsolidated), humic, silty sand. When wet the sediment was mid-dark brown, working just plastic. Also present were 2-20 mm scale stones, ?concretions, wood, and a trace of mammal bone.

Microfossil squash: Assessment - mostly inorganic, with a little organic detritus.

Macro-invertebrates: The large flot contained few invertebrate remains, including single individuals of 13 beetle taxa. This may have been backfill. Plant remains were scarce.

Context **1055.02**, Subsamples 243/P, 243/1 (4.15 kg) and 243/T (1.0 kg)

Laboratory sediment description: Dry, light grey/brown, indurated (working crumbly), humic, moderately stony, sandy silt with 2-60 mm scale stones, and twigs present. The sediment was mid brown when wet and worked just plastic.

Microfossil squash: Assessment - mostly inorganic with a trace of organic detritus.

Macro-invertebrates: The large subsample yielded one of the more substantial assemblages from these sites; 210 adult individuals of 96 beetle and bug taxa and a rich variety of other remains. The fauna was an ecologically-diverse mixture of elements suggesting foul matter (perhaps dung on nearby surfaces or stable manure since there was an element of house fauna, although this may have arrived in dung, having been eaten with fodder) and open ground with some weed vegetation. The numerous bug nymphs (28 were counted) may have come from hay, or originated on vegetation nearby. The grain pests and house fauna (both present in moderate numbers) may have arrived via either route. Possibly surface soil bearing some dung or scattered stable manure was dumped into the pit. Plant remains were varied, with indications of taxa from floors and soil surfaces.

The assessment subsample gave a rather characterless assemblage (N = 32, S = 29), most probably dominated by background fauna and insects of circumjacent origin - though whether they entered directly or in dumped soil cannot be more than guessed.

Context **1055.03**, Subsamples 246/1 (5.0 kg) and 246/T

Laboratory sediment description: Dry, light brown, indurated (working crumbly), humic, slightly stony, sandy, clay silt with stones (some angular) present in the size range 2-60 mm. When wet the sediment was mid-dark brown, soft, and worked plastic.

Macro-invertebrates: A substantial group of invertebrate remains was recovered from the large /1 subsample; there were 113 adult individuals of 77 beetle and bug taxa, and numerous fossils of other groups. Amongst the beetles and bugs, no species were particularly abundant (there were five *O. surinamensis* and four each of *Anotylus rugosus*, *Gyrohypnus angustatus* and a staphylinine) and both ecological and mathematical diversity were high (alpha = 107, SE = 20), one of the highest values for a substantial assemblage from the site). Like numerous other groups from the sites, these may be a combination of remains from background fauna and scatter, perhaps in redeposited surface material. Homoptera nymphs were numerous, the former perhaps introduced with soil which had borne vegetation. The abundant mites and beetle larvae may have originated in the same way. Aquatics may have lived in the cut (there were seven individuals of six taxa), but may have been background fauna. The plant remains included taxa which may have been introduced in soil.

The fauna from the assessment subsample echoed that from the larger one; there were 37 individuals of 34 beetle and bug taxa reflecting a range of habitats.

Fills of pit 1066 [About 1.4 m diameter, depth not recorded. Fills, all brown or dark brown-black silty or sandy loams: 1063.4, probably earliest but not properly recorded; 1063.3, earliest of those recorded, not sampled; 1063.2; 1063.1, not sampled]

Context **1063.02**, Subsamples 219/P, 219/1 (3.0 kg) and 219/T (1.0 kg)

Laboratory sediment description: Moist, mid brown (with a hint of grey and some lighter and darker 10 mm scale mottles), soft, working just plastic, slightly humic, sandy, clay silt with stones present in the size range 2-20 mm.

Microfossil squash: Assessment - mostly organic detritus, with a single *Polypodium* spore, many fungal spores, some pollen grains and some fragments of plant tissue.

Macro-invertebrates: The larger subsample yielded an abundant and diverse assemblage of adult beetles and bugs (N = 150, S = 95, alpha = 111, SE = 17). Almost two fifths (39%) of the individuals were of 'outdoor' taxa. While much of this fauna may have had a 'background' origin, the abundance of *Anotylus nitidulus* (16 individuals) and *Aphodius prodromus* (6) was such that they may have lived in the immediate surroundings. Probably the deposit was a backfill of surface 'soil' from the immediate surroundings, bringing both a range of insects living on it and background fauna. Plant remains were varied but dominated by seeds likely to have been introduced in dumped surface soil.

The smaller subsample gave 55 individuals of 40 beetle and bug taxa and a range of other remains. The fauna represented a plausible variation on that from Subsample /1, and doubtless reflected similar conditions. The presence of some soil nematode (?*Heterodera* sp.) cysts perhaps reinforces an origin as 'soil'.

Context **1063.04**, Subsamples 220/1 (4.7 kg) and 220/T (1.0 kg)

Laboratory sediment description: Moist, mid-dark brown, slightly sandy, clay silt with considerable heterogeneity (pale orange, sandy clay and assorted other facies). Charcoal, a few beetle fragments, and 2-20 mm scale stones were also present.

Macro-invertebrates: Invertebrate remains were very abundant in the flot from the larger subsample (for adult beetles and bug, N = 346,

S = 112; there were large numbers of other invertebrates). This was an unusual assemblage, undoubtedly reflecting an open area with much decaying organic matter, probably dung. Much the most abundant beetle was *Anotylus nitidulus*, of which there were at least 73 individuals. This is a problematic beetle, whose significance is discussed below; it seems likely to have exploited dung and artificial accumulations of organic matter on occupation sites in the past. This would accord with its occurrence in the present assemblage with numerous *Aphodius contaminatus* (18), *A. prodromus* (16) and *Anotylus sculpturatus* group (11), and smaller numbers of other dung-associated taxa such as *Aphodius fimetarius* (5) and *Platystethus arenarius* (3). The surroundings seem to have supported a fauna likely to occur where there was open ground with sparse vegetation; there were 18 *Trechus obtusus*, five *Calathus fuscipes*, and three each of *Trechus quadristriatus*, *Bembidion lampros*, *Amara* sp. and *Harpalus rufipes* (all ground beetles tolerant of disturbance), seven *Gastrophysa polygoni* (on docks and knotgrasses), three *Simplocaria ?semistriata* (often amongst mosses on bare ground), three *Chaetocnema concinna* (also on docks and knotgrasses). There were smaller numbers of various other species which might have co-existed with them, for example a range of ground beetles, the ladybird *Rhizobius litura*, and *Ceutorhynchus erysimi* (which feeds on crucifers, including weeds). Whether this fauna entered this pit while it lay open, or represents the fauna of surface soil used as backfill is not clear. The rarity of aquatics suggests that the pit did not remain open and water-filled so as to act as a trap for flying and walking insects, favouring the interpretation of the deposit as dumped soil. This interpretation is very strongly supported by the plant remains, which included numerous weed seeds, perhaps with a component from hay or grass.

The /T subsample was notable for the much lower estimated concentration of remains (29 beetles and bugs per kg, as opposed to 74 for the /1 subsample). Whether this reflects variation in the deposit or a failure of methodology is uncertain, but the smaller group resembled a random sample from the larger.

Fill of pit 1068 [Largely destroyed by later features, at least 1.2 m diameter, 1 m deep. Fills, both grey-brown silty loam: 1067.2, presumed lowest, not sampled; 1061.1, presumed upper]

Context **1067.01**, Subsamples 233/P, 233/1 (3.0 kg) and 233/T (1.0 kg)

Laboratory sediment description: Just moist, mid brown (with lighter, 1 mm scale mottles), brittle (working crumbly), slightly humic, sandy, silty clay. When wetted the sediment became sticky when worked.

Microfossil squash: Assessment - mostly inorganic with some organic detritus, one *Polypodium* spore and a few phytoliths.

Macro-invertebrates: The 3.0 kg subsample yielded a moderately large group of adult beetles and bugs (N = 100, S = 58) and a range of other invertebrates. There was a mixture of grain pests and decomposers most likely to have occurred in stable manure, perhaps rapidly cleaned out as house fauna was rare. Less probably it reflected dung deposited directly onto an external surface. There were numerous homopteran nymphs, apparently of a planthopper, and some beetles which may indicate a soil surface. This group perhaps entered the pit as a backfill of surface soil; there was nothing to suggest that the layer ever contained much organic matter. The plant remains were dominated by wood fragments, including twigs, while a few spelt

glumes suggested the presence of the remains of straw.

The assessment subsample gave a rather small group of beetles (and a single bug; N = 42, S = 34) whose character was subjectively of a similar character to that from Subsample /1.

Site period 10C

Fill of pit 880 [One of four small intercutting pits, a pit or depression, 2.4 x 0.35 m, 0.4 m deep, only partly within excavated area. Fill: black silt]

Context **879**, Subsample 195/T (1.0 kg)

Laboratory sediment description: Moist, dark grey/brown, crumbly (working soft and just plastic), very humic silt with a few flecks of pale clay.

Macro-invertebrates: No invertebrate remains were observed during assessment. Plant remains, too were rare, and did not clarify interpretation.

Unphased

Fill of pit 675 [Pit with various fills, 605.04 apparently being the lowest sampled]

Context **605.04**, Subsample 184/P and 184/T (1.0 kg)

Laboratory sediment description: Just moist, mid-dark grey/brown, brittle (working crumbly, and plastic when wet), slightly humic, sandy, silty clay. Sand grains were visible as pale orange flecks and stones in the size range 2-6 mm were present and in the size range 6-20 mm they were common.

Microfossil squash: Assessment - mostly inorganic, some organic detritus, phytoliths (>15) and a few fungal hyphae.

Macro-invertebrates: Remains of three adult beetles and a few other remains including several *Daphnia* ephippia were recovered. As one of the beetles was a *Helophorus* sp. it is just possible that the pit held water.

Trench KLA B

Site period 02

Old ground surfaces [Two of several patches of black silty soil - in one case described as 'soft and spongy', suggesting an organic component. Almost certainly parts of an old ground surface.

Context **1230**, Subsample 218/T [= 1231] (1.0 kg)

Laboratory sediment description: Moist, mid-dark brown, almost stiff (working crumbly to plastic and sticky to very plastic when wetted), humic, sandy, clay/silt. Some millimetre scale pale flecks and stones in the size range 2-20 mm were present.

Macro-invertebrates: No invertebrate remains were found.

Context **1231**, Subsample 204/T [= 1230] (1.0 kg)

Laboratory sediment description: Moist, mid-dark brown, soft (working crumbly to plastic), very humic, clay silt. Possibly primarily an amorphous organic sediment.

Macro-invertebrates: The flot contained no recognisable invertebrate remains.

Site period 05A

Fill of slot 237 [Probably one of a series of beam trenches, and part of building KLA C 1993. All were narrow, up to 0.2 m wide, and rather shallow, with flat bottom and near-

vertical sides, and with grey or brown silts or silty clay loam fills]

Context **224** [= various others], Subsample 59/T(1.0 kg)

Laboratory sediment description: Moist, mid-dark brown, 'cheesy' (working soft to just plastic), humic, slightly sandy, clay silt.

Macro-invertebrates: Only a single, unidentifiable, beetle was noted, and there were no other macro-invertebrate remains. There were only traces of plant remains.

Site period 05B

Slot fill [One of a series of presumed beam-slots of 0.45-0.7 m wide and up to 0.3 m deep. Various fills]

Context **1223**, Subsample 215/T (1.0 kg)

Laboratory sediment description: Moist sediment, heterogeneous: pale orange/brown ?sandy clay; some mid brown sandy silt or clay; some pale brown-whitish patches of ?ash; mid-dark brown ?humic patches; some intermediate lumps, and a charcoal-rich patch. Looks rather like breccia but the overall impression is of a burnt sediment.

The flot was barren of invertebrate remains.

Site period 06

Deposits [Two of several, perhaps fragments of an old ground surface. Most described as mid-grey in colour and of a 'sticky' texture]

Context **84** [? = 219, 1278], Subsample 31/T (1.0 kg)

Laboratory sediment description: Just moist, light-mid brown/grey, stiff (working crumbly to just plastic), slightly sandy clay with 2-6 mm size stones and ?mortar flecks present. The sediment was darker and worked sticky to plastic when wetted.

Macro-invertebrates: No invertebrates were noted in the washover. There were no plant remains other than charcoal and two charred spelt grains.

Context **219** [? = 84, 1278], Subsamples 54/P and 54/T1 (1.0 kg)

Laboratory sediment description: Just moist, mid-dark grey/brown, brittle (working crumbly, then sticky to plastic when wetted), sandy clay. Charcoal, white flecks, and 6-20 mm size stones were present.

Microfossil squash: Assessment - mostly mineral particles, with some organic detritus and a few ?pollen grains.

Macro-invertebrates: The washover contained only small numbers of invertebrates (including nine individuals of eight beetles) apart from numerous *?Heterodera* (soil nematode) cysts. Presumably this was an active soil in which the remains of invertebrates decayed rapidly. Plant remains offered little by way of clarification.

Site period 07

Fill of gulley/drain 1289 [A large E-W aligned gulley, probably a timber-lined drain, 1.1 m wide a lip, 0.5 at base, and 0.45 m deep. Primary fill dark grey sandy silt 1285, not sampled, overlaid by 1282, a dark blue-grey organic silt. Upper fill 1281, mixed grey-pink/brown silty clay, sampled but not analysed]

Context **1282**, Subsample 235/T see note (1.0 kg)

Laboratory sediment description: Just moist, mid orange/brown, stiff to crumbly (working

sticky and plastic), clay sand. A patch of pinkish brown clay, 2-60 mm size stones (including rotted sandstone), some very rotted wood, and some mould were also present.

Microfossil squash: Assessment - mostly inorganic particles, with a trace of organic detritus.

Macro-invertebrates: The assessment revealed a very small group of invertebrates including about 16 individuals of ten beetle taxa (recording of one species was semi-quantitative). Grain pests were represented by three species, including 'several' *Oryzaephilus surinamensis*. This assemblage was too small to be of interpretative value. Plant remains, other than charcoal and wood, were rare.

Site period 07-08A

Fills of pit 396 [= 398. Rectangular, 2.7 by over 2.8 m, at least 0.7 m deep (probably not bottomed). Fills 358.1-8, mainly black or grey-brown soils with lenses of clay in the upper layers. Four layers sampled: 358.1-4, of which two were analysed]

Context **358.02**, Subsamples 66/P and 66/T (0.89 kg)

Laboratory sediment description: Moist, dark brown, plastic, very humic, sandy, clay silt with a large amorphous organic component.

Microfossil squash: Assessment - mostly inorganic, with some organic detritus, a few fungal hyphae and a few spores/pollen grains.

Macro-invertebrates: A small group of invertebrates was recorded during assessment; these included 23 species of beetles (28 individuals). There were three *Cercyon analis* and two each of *Megasternum obscurum*, *Anotylus rugosus* and *Cordalia obscura*. It thus appears likely that there was decaying matter, perhaps in small quantities, and possibly originally on a surface, but not in conditions conducive to the development of a rich fauna. Plant remains did little to clarify interpretation.

Context **358.04**, Subsamples 71/P and 71/T (1.0 kg)

Laboratory sediment description: Just moist, mid-dark brown, stiff (working crumbly to sticky to plastic), very sandy clay. Some parts of the sediment were darker and lighter. Stones in the size range 2-20 mm were present.

Microfossil squash: Assessment - mostly mineral particles, with a little organic detritus and one *Polypodium* spore.

Macro-invertebrates: This layer too seems to have lacked a well-developed fauna (N = 12, S = 11, and only a few other remains); the presence of 'several' *?Heterodera* cysts perhaps indicates that the layer was soil backfilling the pit.

Site period 08B

Fill of gulley/?drain 114 [= 93. Probably part of a long E-W gulley. This section 0.35-0.45 m wide and 0.25 m deep, but truncated. Fills: 93.01 in lower part, dark grey/black silt; sealed by 93.02, dark brown silty loam]

Context **93.01**, Subsample 33/T (1.0 kg)

Laboratory sediment description: Wet, mid-dark brown, crumbly and plastic (working plastic), humic, slightly sandy, clay with millimetre scale paler patches.

Macro-invertebrates: The washover produced only single individuals of two beetles. There were almost no plant remains.

Context **93.02**, Subsamples 34/P and 34/T (1.0 kg)

Laboratory sediment description: Wet, mid-dark grey/brown, stiff (working plastic), sandy, clay silt with some pale pinkish brown lumps and stones present.

Microfossil squash: Assessment - mostly mineral particles, with much organic detritus, many fungal spores, a few fungal hyphae and one very poorly preserved *Trichuris* egg. Further investigation failed to produce sufficient well-preserved, measurable, eggs for specific identification.

Macro-invertebrates: There were remains of four beetles in the washover, no other invertebrates being seen. Plant remains were virtually absent.

Fill of gulley/?drain 112 [= 99. N-S arm of 114. Fills: dark silts 99.1 over 99.2; only the latter sampled]

Context **99.02**, Subsample 29/T (1.0 kg)

Laboratory sediment description: Wet, mid-dark grey/brown, plastic and slightly sticky (working plastic), humic, slightly sandy clay with traces of charcoal and 2-6mm size stones present. There were also some millimetre scale patches of pale orange sediment and patches of pale grey.

Macro-invertebrates: No invertebrate remains were found during assessment. There were no plant remains.

Site period 09

Demolition infill of Period 7-9 construction trench 105 [Building KLA B 1308.About 0.8 m wide and deep. Fills: primary backfill not sampled; above this was 97, gravel/clay]

Context **97**, Subsample 51/T (1.0 kg)

Laboratory sediment description: Wet, dark brown, plastic, soft and slightly sticky, amorphous organic sediment.

Macro-invertebrates: There were single adult individuals of nine beetles and bugs and a trace of other remains. These were probably background fauna accidentally incorporated with the mineral backfill.

Fill of pit 1220 [About 1.3 m in diameter. Fills: primary fill 1220.2, sandy silts; upper fill 1220.1, beige sandy clay loam, not sampled]

Context **1220.02**, Subsamples 224/P, 224/1 (3.8 kg) and 224/T (1.0 kg)

Laboratory sediment description: Moist, mid brown, stiff (working crumbly to plastic), sandy, clay silt with some 10 mm scale orangeish mottles. Stones in the size range 2-60 mm and some charcoal were present.

Microfossil squash: Assessment - mostly inorganic, with a little organic detritus, a few diatoms and one *Polypodium* spore. Fifteen eggs of *Trichuris* were noted, but unfortunately no further sample material could be located for systematic measurements to be made.

Macro-invertebrates: The larger subsample contained very poorly preserved, often colourless, insect fossils, some of which were twisted; this appears not to have been an effect of drying in storage since the sample was described as 'moist' in the laboratory. A moderately large assemblage of adult beetles and bugs (N = 109, S = 54) was accompanied by a few other invertebrate remains. The most abundant beetle was an *Aphodius* species, with 12 individuals, suggesting foul matter, probably dung. Other species likely to have co-existed with this were *Anotylus nitidulus* (8

individuals; see below), *Platystethus arenarius* (5), and a range of taxa at lower frequencies. Some other species seem likely to have exploited open ground with scattered plants. Traces of house fauna may have been background fauna or have arrived in animal faeces, having been accidentally eaten with fodder. The lithology of this deposit, taken with the fauna, perhaps suggests that it was material scraped from a ground surface on which there was dung. There may, however, also have been human faeces which had been disposed of in the pit.

The assessment subsample gave a small assemblage broadly similar to that from the larger subsample. *?Heterodera* cysts were abundant, suggesting the incorporation of soil.

Posthole fills [Two examined: 187, rectangular, 1.2 x 0.7 m, 0.25 m deep, filled with mixed grey silt; and 1204, 0.7 x 0.4 m and over 1 m deep, with primary fill of grey organic silt 1204.2, sealed by beige sandy clay loam 1204.1, sampled but not analysed]

Context **187**, Subsample 48/T (1.0 kg)

Laboratory sediment description: Moist, mid orangeish grey/brown, crumbly (working plastic and sticky), slightly sandy clay with 2-20 mm size stones present.

Macro-invertebrates: Invertebrate remains were sparse, single individuals of four beetles and an earthworm egg capsule being the only fossils recorded. There were almost no plant remains.

Context **1204.02**, Subsample 222/T (1.0 kg)

Laboratory sediment description: Wet, mid brown, plastic and soft, very humic, slightly sandy 'silt' with some decayed wood and 2-6 mm size stones present.

Macro-invertebrates: A modest-sized group of beetles and bugs was recorded during assessment (semi-quantitative recording: N approximately 82, S = 41). A *Carpelimus* species was rather abundant and there were several *Anotylus rugosus* and *A. sculpturatus* group. Some other taxa suggested foul matter in the open and this assemblage would not have been considered out of place in a cesspit. It is suggested that the feature may not have been a posthole but a waste pit. Plant remains from two other samples from this context included abundant food remains, supporting this interpretation.

Deposits [Four were examined: 1186, 1268 and 1280 were part of a series of mainly brownish or orange-pink-brown silty clay loams of clay silts covering earlier, infilled, pits. Overlying these was 1234 (= KLA 1013), an accumulation of black silty soil 0.02-0.15 m thick]

Context **1186**, Subsample 203/T (1.0 kg)

Laboratory sediment description: Just moist, mid brown, just brittle (working crumbly to plastic), sandy clay with charcoal present. Some millimetre scale patches of orange ?sand and yellow ?silt (probably including ash) were present. When wetted the sediment became darker and was sticky and plastic when worked.

Macro-invertebrates: There were only traces of invertebrate remains (including two beetles) in the washover. There were 'several' *?Heterodera* cysts, perhaps indicating that this was at some time a soil.

Context **1234**, Subsamples 208/1 (2.7 kg) and 208/T (1.0 kg)

Laboratory sediment description: Moist, brittle and layered (working crumbly to unconsolidated), herbaceous detritus and amorphous organic sediment.

Macro-invertebrates: The /1 subsample produced an assemblage of modest size, including 59 adult beetles and bugs of 38 taxa. There were also numerous fragments of holly (*Ilex*) leaves. Fly puparia were abundant and presumably developed in organic material *in situ* or at some other point from which it was cleared. The remaining fauna did not have clear implications, although subjectively there were indications of stable manure and a community of open ground with scattered litter (but little evidence of plants). The most abundant taxa, *Lathridius minutus* group (9 individuals), *Oryzaephilus surinamensis* (6) and *Enicmus* sp. (5) *may* have originated in dryish stable manure, and the fourth most abundant taxon, *Apion* sp. (3) *may* have originated in hay *via* stable manure. The plant remains may have represented fodder, supporting the presence of stable manure.

The smaller subsample repeated the general pattern of the larger.

Context **1268**, Subsamples 211/1 (3.0 kg) and 211/T (1.0 kg)

Laboratory sediment description: Just moist, mid-dark orangeish/brown, stiff (working crumbly), slightly sandy, silty clay with stones present in the size range 6-60 mm.

Subsample /1 gave a modest-sized assemblage of invertebrates, with 67 adult beetles and bugs (47 taxa). The fauna was subjectively like that from Context 1234, with *Lathridius minutus* group (9), *O. surinamensis* (6), *Enicmus* sp. (5) and *Apion* sp. (3) the most abundant beetles. This too appears to be the limited fauna of a surface with some scattered organic waste and a few 'weed' plants.

Context **1280**, Subsample 229/T (1.0 kg)

Laboratory sediment description: Just moist, mid orange/brown, firm (working crumbly to just plastic, then sticky and plastic when wet), sandy clay. Pot, charcoal and 2-6 mm size stones were present and 6-60 mm size stones were common.

Macro-invertebrates: Assessment revealed only rare invertebrate remains in the washover; single individuals of nine beetle taxa and an earthworm egg capsule. There were traces of charcoal, but no other plant remains.

Site period 10C

Deposits [Dark grey-brown/black sandy loams overlying much of the remains of building KLA B 1309]

Context **975** [? = 1065], Subsample 197/T (1.0 kg)

Laboratory sediment description: Just moist, dark grey/brown, just brittle (working crumbly), humic, sandy, clay silt with 2-20 mm size stones. When wetted the sediment was darker, and slightly sticky when worked.

The washover contained no invertebrate remains.

Context **1065** [? = 975], Subsample 200/T (1.0 kg)

Laboratory sediment description: Just moist, mid-dark brown, consolidated, humic, sandy clay with 2-20 mm size stones present. Some 'breccia-like', millimetre scale paler lumps were also present. When wetted the sediment

became darker and worked crumbly to sticky and plastic.

Macro-invertebrates: Four beetles (three taxa) were found in the washover.

Site period 12

Deposit [Overlying latest floors of stone building; series of dark grey/black silty clay loams. One was analysed]

Context **728**, Subsample 192/T (1.0 kg)

Laboratory sediment description: Dry, mid grey with a yellowish cast to mid-dark brown when wetted, unconsolidated (working soft to plastic when wet), slightly humic, sandy clay.

Macro-invertebrates: The washover was barren.

Site period 14A - medieval

Gulley fill [No other information]

Context **717**, Subsamples 193/P, 193/1 (2.4 kg) and 193/T (1.0 kg)

Laboratory sediment description: Moist, dark grey/brown, just consolidated (working crumbly to just plastic), very humic clay/?amorphous organic sediment. The sediment worked softer, slightly sticky and plastic when wetted.

Microfossil squash: Assessment - mostly organic detritus with a some mineral particles, many phytoliths, several plant tissue fragments and a few fungal spores and hyphae.

Macro-invertebrates: The 1.0 kg assessment sample produced a small assemblage (N = 28, S =21), but rather more remains than the larger /1 subsample (N = 16, S = 15). Preservation was poor in both cases. Taken together, the assemblages suggest that there was some foul matter, perhaps stable manure, incorporated into the fill. There may have been a component of soil, since *?Heterodera* cysts were abundant in the smaller subsample. There were no grain pests.

Unphased (but Roman, perhaps site phase 10A-B)

Internal surface, Building KLA-B 1316 [Probable floor surface of olive-grey silty clay]

Context **296**, Subsample 63/T (1.0 kg)

Laboratory sediment description: Just moist, mid-dark grey/brown, unconsolidated (working sticky), clay sand with stones present in the size range >60 mm.

Macro-invertebrates: The washover contained no recognisable invertebrate remains.

Trench KLA C

Site period 04A

Fill of P3 ditch 1245/1967 [Various fills, of which '1923, Sample 413' analysed; not clear from archaeological text which layer this is or what it was like in the field]

Context **1923**, Subsample 413/1 (4.7 kg)

Laboratory sediment description: Moist, dark grey/brown, just brittle (working crumbly to just plastic), humic, very slightly sandy, clay silt. Twig/root, ?mortar/plaster, and stones in the size range 6-20 mm were all present.

Macro-invertebrates: A small group of beetles (N = 46, S = 38) was accompanied by abundant mites and a few other remains. Many of the fragments were well-decayed and in some cases they were unidentifiable as a result. It is possible that the layer incorporated

the remains of turf, for *Ochthephilum fracticorne*, *Dyschirius ?globosus* and *Acidota crenata* seem most likely to have arrived in such a way. Other species may have come with them if the turf was grazed, or originated on the site (indeed, of the identified beetles, only *Gyrohypnus fracticornis* would not be likely to be found in semi-natural conditions). Plant remains offered little by way of clarification; twigs 'of hawthorn-type' were abundant in a bulk sample from this context, suggesting that more than one kind of material was incorporated.

Site period 05A-B

Fill of pit 1270 [Sub-rectangular, 3.5 x 1.35 m, to 0.33 m deep. Four fills, of which only 1269.2 sampled; it was a secondary fill of dark brown organic sandy silt]

Context **1269.02**, Subsamples 394/P and 394/1 (4.25 kg)

Laboratory sediment description: Moist, mid-dark brown, just brittle and soft (working crumbly to just plastic then sticky and plastic when wet), humic, slightly sandy, clay silt with charcoal and some 2-20 mm size stones present. In places the sediment was near black and much more humic (probably amorphous organic sediment). There was also a millimetre scale patch of orange sediment.

Microfossil squash: Assessment - 50% organic and 50% inorganic detritus, with many phytoliths, several fungal spores, two *Polypodium* spores and a few pollen grains/spores.

Macro-invertebrates: The insects, which were abundant (N = 335, S = 84), showed patchy decay to red-yellow which limited identification. The grain pests *Oryzaephilus surinamensis* and *Cryptolestes ferrugineus* dominated the assemblage, with 134 and 51 individuals respectively; there were also two *Palorus ratzeburgi* and one *Sitophilus granarius* in this ecological group, as well as a larva of the stored-products prest *Tenebroides mauritanicus*. There was a little house fauna (principally five each of *Anobium punctatum* and *Lathridius minutus* group) and a few decomposers often found in stable manure assemblages (eight *Cercyon analis*, seven *Acritus nigricornis*, and four each of *Platystethus arenarius* and *Gyrohypnus angustatus*, for example). This layer seems to have incorporated stable manure. The numerous bug nymphs may have originated on local vegetation and entered with soil, or have been imported in some kind of fodder or in turf (there were weak hints of the latter, for example from *Ulopa reticulata* and *Dyschirius ?globosus*). Although charred heather shoots were present, the plant assemblage was dominated by weeds, with a trace of food remains.

Whatever the origin of the fauna, a notable record is a single pubic louse, *Pthirus pubis*, archaeological occurrences of which are discussed below.

Fill of pit 1351 [1.9 x 1.8 m, 1.2 m deep. Fills: lower half 1350.2, brown/black sandy silt/loam with organic material; upper fill similar, but not numbered; which layer sample represents is not clear]

Context **1350**, Subsamples 399/P and 399/1 (3.6 kg)

Laboratory sediment description: Moist, mid brown, soft to crumbly (working sticky and plastic when wet), slightly humic, sandy, clay silt. Charcoal, twigs, and 6-20 mm scale stones were present.

Microfossil squash: Assessment - mostly mineral particles, with a trace of organic detritus and a few phytoliths.

Macro-invertebrates: A fairly large assemblage of adult beetles and bugs was recorded (N = 140, S = 66), and there were a few other invertebrates. The most abundant species was the dung beetle *Aphodius prodromus* (22 individuals at least), and there were other beetles likely to have exploited similar material, of which the more abundant were *Anotylus nitidulus* and *A. tetracarinatus* (8 each), *A. complanatus* and *Aphodius ?fimetarius* (7 each), and *Megasternum obscurum* (3). A quarter of the fauna was contributed by species associated with very foul decomposer habitats. Although there were traces of house fauna, grain pests and decomposers of stable manure-like material, the overall impression is of the fauna of dung in the open, with ground beetles and plant feeders likely to have lived on a disturbed surface with some scattered plants. The lithology and fauna both suggest that this fill is soil from a surface with dung and a few plants.

Site period 06

Deposit [Part of a general build-up of dark soils, with many equivalences. These were mostly mid-dark brown or grey-brown silty or sandy loams or clay loams, sometimes with patches of orange/pink clay. A sample from one has been analysed]

Context **1920**, Subsample 412/1 (5.0 kg)

Laboratory sediment description: Just moist, mid brown, consolidated (working crumbly), slightly sandy, silty clay with 2-20 mm size stones present. In places the sediment was darker brown (more silty) and orange-ish (more sand).

Macro-invertebrates: The only invertebrates recorded were single individuals of ten beetle taxa, described as very fragmented. Their implications were obviously uncertain, but deposition on a surface in the open seems likely. The lack of plant remains, suggesting complete humification, perhaps supports this.

Site period 07

Fill of gulley 1195 [Gulley or trench, over 3.8 m by 0.6 m and 0.18 m deep. Fill: 1189.2, primary, dark grey silt]

Context **1189**, Subsample 390/T (1.0 kg)

Laboratory sediment description: Moist, very dark brown, just fissile, fine herbaceous detritus and amorphous organic sediment, working crumbly to unconsolidated; soft when wetted.

Microfossil squash: Assessment - mostly organic detritus with a little inorganic matter and a few pollen grains/spores.

Macro-invertebrates: Assessment notes (no list made): 'Large and difficult flot. Small number of insects of unclear significance. Would need larger subsample but probably not worthwhile.' Plant remains offered little useful evidence.

Fill of Gulley 1324 [Large E-W gulley or trench; over 5.1 m by 1-1.2 m, up to 0.3 m deep. Fill: dark brown/black organic clay loam]

Context **1324**, Subsamples 396/P and 396/1 (3.3 kg)

Laboratory sediment description: Moist, very dark brown, locally compressed and locally fissile, noticeably undense, amorphous organic matter with some burnt mammal bone present.

Microfossil squash: Assessment - about half mineral and half organic particles, with a few ?diatoms and two *Trichuris* (both lacking polar plugs). Further investigation failed to

produce sufficient well-preserved, measurable, eggs for specific identification.

Macro-invertebrates: The substantial group of adult beetles (no bugs; N = 137, S = 57) was accompanied by numerous froghopper (Homoptera) nymphs and a variety of other invertebrates. The commonest taxa were the grain beetles *O. surinamensis* (29) and *C. ferrugineus* (17). There were suggestions of a house fauna component and a group of decomposers which would be at home in foul mouldering matter, a teneral (freshly emerged) *Apion* weevil, and *Hypera* sp., together representing typical insect components of stable manure assemblages (Kenward and Hall 1997). The bug nymphs may have been brought in cut vegetation used as fodder, but there were hints that the deposit included a component from an exposed soil surface, including numerous soil nematode cysts.

Fill of gulley 1921 [Extensive N-S gulley, 1.2 m wide and up to 1 m deep running parallel with the east wall of Building KLA C 1995. Fills: lowest 1858.3, mixed pink clay and brown soil, not sampled; over this 1858.2, dark grey organic sandy clay loam; upper fill 1858.1, dark brown sandy loam with some organic content (sampled but not analysed). Context 1871 was another part of the cut as well as its fill, and it is not clear whether it was equivalent to any of the other fills]

Context **1858.02** [=1871], Subsamples 401/P and 401/1 (5.6 kg)

Laboratory sediment description: Moist, mid brown, crumbly (working plastic and sticky when wet), very humic, clay silt with some stones in the size range 2-20 mm present.

Microfossil squash: Assessment - mostly mineral, with a trace of organic detritus, a few phytoliths, diatoms, and fungal spores and hyphae.

Macro-invertebrates: A total of 105 adult beetles and bugs included 60 taxa; there were also quite large numbers of other invertebrates, especially mites and fly puparia. The beetles were ecologically heterogeneous, representing grain, water (11 individuals of 7 taxa), foul decaying matter, and vegetation typical of disturbed ground. This deposit probably represented backfill or fairly rapid natural infilling, and the fauna reflects conditions like those implied by a substantial proportion of the assemblages from these sites. A bulk sample from Context 1858.2 gave numerous fly puparia and a wider range of seeds suggesting soil and grassland (perhaps calcareous), so perhaps foul matter such as dung was incorporated.

Context **1871** [= 1858], Subsamples 404/P and 404/1 (3.8 kg)

Laboratory sediment description: Just moist, mid brown to light-mid orange/brown, just consolidated (working crumbly then slightly sticky and just plastic when wet), clay sand. Some herbaceous detritus was also present. The sediment also had paler patches of sandy silty clay and some millimetre scale, heterogeneous lumps of ?sawdust.

Microfossil squash: Assessment - mostly organic detritus with abundant mineral particles and a few fungal hyphae.

Macro-invertebrates: This subsample yielded a fairly substantial assemblage (N = 100, S = 59) broadly similar in character to that from Context 1858.02. A notable difference was the presence of three *?Haematopinus* sp., the genus to which the pig lice belong. Unfortunately the preservational condition of these remains was such that confident identification could not be made.

A bulk sample from 'Context 1858' produced wood and charcoal, with (for the site)

abundant charred seeds, including cereals and weeds.

Fills of gulley 1976 [1.2 - 1.4 m wide, 0.25 m deep, with various fills, described as dark grey/black silty or sandy loam. Three fills sampled: 1865, 1870 and 1876, the last two analysed]

Context **1870**, Subsample 403/1 (5 kg)

Laboratory sediment description: Moist, very dark grey/brown, just consolidated (working crumbly), amorphous organic sediment with millimetre scale clay patches and streaks of paler mineral material. Also present was some brick/tile and wood was common.

Macro-invertebrates: A large assemblage of adult beetles and bugs was recorded (N = 160, S = 86), and there were abundant mites and smaller numbers of other invertebrates. There was a component from heath or moor vegetation (eg. two *Ulopa reticulata*, *Dischirius globosus*, *Pterostichus ?diligens*, *Olophrum ?fuscum*, and *Euaesthetus laeviusculus*, and single *Macrodema micropterum*, *Scolopostethus ?decoratus*, *Helophorus tuberculatus*, *Acidota crenata*, and *Micrelus ericae*), most likely to have been introduced in turf in view of its diversity, its generally poor preservation, and the presence of three soil-dwelling larvae of the click beetle *Actenicerus sjaelandicus*. Other ecological groups included traces of house fauna and some grain pests (notably 26 *O. surinamensis*). This seems to have been a backfill or slump of turf, but the possibility that it was turf which had been used as an absorbent floor for stables cannot be ruled out; alternatively there may have been a separate component of equine dung or stable manure.

Context **1876**, Sample 405/1 (5.5 kg)

Laboratory sediment description: Moist, mid brown, slightly consolidated (working crumbly to just plastic then sticky and still just plastic when wetted), very slightly humic, slightly sandy, clay silt. Some paler, millimetre scale patches of ?silt were also present.

Macro-invertebrates: The assemblage of beetles and bugs was of modest size, with 55 taxa and 98 individuals. Preservation was generally rather good, though variable. There was a rather substantial aquatic component (PNW = 11; eleven individuals of five taxa, all rapid invaders) so there were probably at least short-lived pools. There may have been some decaying matter, but a developed decomposer fauna was lacking. Probably most of the insects had entered with soil backfill, bringing with it background fauna and insects able to exist on a disturbed area with scattered plants and waste matter. Botanical analysis revealed 'quite abundant' slug shells, and a seed assemblage dominated by plants typical of open and nutrient rich soils.

Fill of pit 1893 [Sub-rectangular pit 2.7 x 1.2 m, 0.4 m deep. Fill: 1887, dark grey-brown silty loam]

Context **1887**, Subsamples 406/P and 406/1 (4.1 kg)

Laboratory sediment description: Moist, mid-dark brown, stiff (working plastic), slightly sandy, clay silt. The sediment was considearably heterogeneous being paler and darker in patches with silt and clay in separate places.

Microfossil squash: Assessment - inorganic, with a little organic detritus.

Macro-invertebrates: There were numerous grain pests (23 *O. surinamensis*, 16 *C. ferrugineus*, four *P. ratzeburgi* and a single *S. granarius*, together contributing 80% of the

assemblage) but few other invertebrates were recorded (even mites were apparently absent). A trace of house fauna (including three *Ptinus ?fur*) might have originated in a grain store or in stable manure.

Site period 08A

Fill of gulley 1196 [E-W gulley, 5.2 m long, 0.6-0.7 m wide, 0.2 m deep. Fill: 1882, dark brown/black organic silty loam]

Context **1182**, Subsamples 387/P and 387/1 (2.15 kg)

Laboratory sediment description: Moist, mid-dark brown, just consolidated (working crumbly to just plastic), very humic, slightly sandy, clay silt. The sediment was locally darker and lighter brown and when wetted it worked sticky and just plastic. Also present were: centimetre scale patches of pale, silty clay; local layered fine herbaceous detritus, patches of just decayed plant material.

Microfossil squash: Assessment - mostly organic detritus, with some diatoms, plant tissue, fungal spores and a few pollen grains/spores.

Macro-invertebrates: Of modest size (N= 112, S = 40), this was a characteristic assemblage. It included the following components: grain pests (25 *O. surinamensis*, 14 *C. ferrugineus*, seven *S. granarius* and three *Palorus ratzeburgi*); a weakly-developed house fauna (eg. seven *Lathridius minutus* group, three *Cryptophagus* sp. and two *Anobium punctatum*); taxa which may have been imported in hay (four *Apion* sp., of which one was teneral, and one *Mecinus ?pyraster*, and four *Typhaea stercorea*, likely to have invaded stored hay); and decomposer species regarded as typical of stable manure (eg. three *Oxytelus sculptus*, two *Cercyon atricapillus* and *Lithocharis ochracea*, and single individuals of several others). The consistency of this association of 'stable manure' insects (Kenward and Hall 1997), low diversity (alpha = 23, SE = 3) and rarity of other ecological components, strongly indicate that this assemblage mostly originated in stable manure. Plant remains suggested a 'rather grassy' community, although with no taxa specific to hay or fen meadow communities.

Gulley fill [No further information given]

Context **1203**, Subsamples 391/P and 391/T (4.25 kg)

Laboratory sediment description: Moist, dark brown, brittle, soft, and slightly fissile (working crumbly then sticky and just plastic when wetted), very humic, sandy, clay silt with flecks of ?mortar/plaster present.

Microfossil squash: Assessment - mostly organic detritus with abundant mineral particles, several phytoliths and a few fungal spores and hyphae. A single *Trichuris* egg was present. Further investigation failed to produce sufficient well-preserved, measurable, eggs for specific identification.

Macro-invertebrates: Invertebrates were abundant in the flot; there were 180 adult individuals of 62 beetle and bug taxa and a range of other remains. Some fossils were very pale and had the appearance of having been damaged by drying, although the sediment was described as 'moist' before processing. Diversity was rather low (alpha = 34, SE = 4), and the ecological range of the fauna rather limited. As for Context 1182, the characteristic 'stable manure' components were recognised. Grain pests were abundant (39 *O. surinamensis*, 23 *C. ferrugineus* and three *Sitophilus granarius*; the mealworm beetle *Tenebrio obscurus* may have arrived with these); decomposers associated with foul, open-textured material were clearly

represented (notably by 13 *Oxytelus sculptus*, three *Anthicus formicarius*, two each of *Cercyon atricapillus*, *Lithocharis ochracea*, *Monotoma bicolor* and *M. longicollis*)); there was a hint of 'hay' fauna (including two *Apion*, one of which was teneral, a *Gymnetron* sp., and two *Typhaea stercorea*), and there was a little house fauna (eg. five *Lathridius minutus* group, and three *Xylodromus ?concinnus* and *Cryptophagus* sp.). The remaining 'outdoor' component of this fauna may have lived near to the point of deposition, but equally may have been imported in hay. This gulley undoubtedly received stable manure among its fills.

Site period 14B [Medieval]

Pit fill [Fill 372; no other information]

Context **758**, Subsamples 372/P and 372/T (2.8 kg)

Laboratory sediment description: Moist, dark brown, compressed, fine herbaceous detritus and amorphous organic sediment.

Microfossil squash: Assessment - mostly organic detritus, with some mineral particles, several diatoms, many phytoliths, rather abundant fungal hyphae and spores, and many plant tissue fragments.

Macro-invertebrates: In addition to a large and rich assemblage of beetles (N = 252, S = 93) there were numerous other invertebrates, including abundant fly puparia. The origin of this fauna was not clear. The more abundant taxa were decomposers which might co-exist in plant matter with a varying moisture content: *Cercyon analis* (21); *Atomaria* spp. (16 and 8); a *Cryptophagus* (13); *Monotoma picipes* (12), *Gyrohypnus fracticornis* (8); *Cercyon atricapillus* and *Xylodromus concinnus* (6 each); *Cercyon terminatus*, *Anotylus rugosus*, *Monotoma longicollis* and *Anthicus floralis* or *formicarius* (all 5). Almost all of the remaining beetles might have lived in one or other of the communities implied by the abundant species, although there were some ground beetles and plant feeders which may have lived on adjacent surfaces. The question is: was this the community of the pit fill in situ, or does it represent some other location, perhaps a floor, or the combination of both faunas? There was some house fauna (several of the taxa already listed fall in this category; there were also five *Anobium punctatum*, three *Lathridius minutus* group, and single *Ptinus ?fur* and *Cryptophagus scutellatus*). Arguing in favour of a domestic origin are the lice, *Pediculus humanus* (head or body louse) and *Pthirus pubis* (public louse - an important record discussed in more detail below). These would also have been candidates for removal in a latrine, but neither insect fauna nor the microfossil squash gave any indication that the present pit had such a function. A third louse was identified as *?Damalinia* sp. (preservation was poor), and this may have been *D. ovis*, likely to have a domestic origin in wool cleanings. There was also an unidentified flea, most likely to b the human flea.

Fill of pit 994 [No further information. Fill: 759]

Context **759**, Subsamples 373/P and 373/1 (2.7 kg)

Laboratory sediment description: Moist, dark brown, slightly fissile, slightly sandy, fine herbaceous detritus and amorphous organic sediment.

Microfossil squash: Assessment - mostly organic detritus with some mineral particles, several diatoms and fungal spores, many phytoliths and a few plant tissue fragments. Ten *Trichuris* eggs were recorded.

Thirty-two eggs of *Trichuris* were measured (Table 5); they were *T. trichiura* L. of humans.

Macro-invertebrates: Invertebrates were abundant: there were 213 adult beetles and bugs, and a rich variety of other forms including huge quantities of fly pupae and puparia. It appears that a rich decomposer fauna associated with fairly foul conditions had developed in the pit, exemplified by *Cercyon analis* (15), *Anotylus tetracarinatus* (14), *A. nitidulus* (12), *A complanatus* (7) and various other rarer species. Conditions may have been wet at times, for there were remains of several 'rat-tailed maggots' (hoverfly, Syrphidae, larvae). A range of other insects may have originated on an adjacent surface which was disturbed and bore some vegetation (various ground beetles and plant feeders). There were weak hints of a house fauna component, some of which may have lived in the pit in somewhat drier patches: *Atomaria* sp and *Lathridius minutus* group (7 each), *Cryptophagus* sp. (5). Of beetles more tied to buildings only *Ptinus fur* (3) was represented by more than two individuals. There were, however, seven human fleas (*Pulex irritans*), together with an adult sheep ked (*Melophagus ovinus*), perhaps shed when wool was cleaned and typical of house floors at some sites (eg. 16-22 Coppergate, York, Kenward and Hall 1995). It may be that this material included ejectamenta from a house or stable (fleas seem often to have bred in the latter). This, and perhaps human faeces, were then colonised by foul decomposers in the pit, and complemented by a background fauna, predominantly from the adjacent area of heavily-disturbed ground.

A single honey bee, *Apis mellifera*, was recorded from this subsample.

Fill of pit 988 [No other information. Fills: 811.1, 811.2]

Context **811.01**, Subsample 376/1(1.5 kg)

Laboratory sediment description: Dry, light grey, locally very pale grey, indurated (working crumbly), ?humic, slightly sandy, clay silt with some ?concretions and ?mineralized wood present. When wetted the sediment became dark brown and worked just plastic.

Macro-invertebrates: Invertebrates were rather abundant, and there were 121 adult individuals of 77 beetle and bug taxa. There were indications that a house fauna component had been incorporated (six *Atomaria nigripennis* and *Lathridius minutus* group and three *Cryptophagus* sp. and *Xylodromus concinnus*, two *Ptinus fur* and *Mycetaea hirta*), suggesting a possible origin in a structure, but there was a group of *Anotylus* and *Platystethus* species in moderate numbers, which probably invaded in situ. There was probably also abundant background fauna from a disturbed area with a few weeds (this was supported by the very high diversity: alpha = 91, SE =16). *Heterodera*-type cysts were abundant, perhaps suggesting a component of soil backfill or the formation of a soil on the pit after infilling. This may have been the source of some or much of the fauna.

An intriguing component in this assemblage was associated with natural dead wood habitats: *Thymalus limbatus*, *Taphrorychus bicolor* and *Xyloterus ?signatus*, all as single individuals. The first is discussed in more detail above; the last two are bark beetles, the former in a range of broad-leaf trees, the latter mainly in oak (*Quercus*) and beech (*Fagus*). Most probably these insects were brought in firewood.

Context **811.02**, Subsamples 377/P and 377/1(1.25 kg)

Laboratory sediment description: Just moist, dark grey/brown, just compressed (working crumbly, then slightly sticky to plastic when wetted), sandy, clay silt. Stones in the size range 2-6 mm and some mammal bone were present.

Microfossil squash: Assessment - mineral particles with a trace of organic detritus, and a few phytoliths and fungal hyphae.

Macro-invertebrates: Adult beetles were not very abundant, and bugs absent. The fauna was rather mixed ecologically, but there were indications of foul matter. Fly puparia were very abundant, probably taking advantage of foul matter too. The pit may have been wet at this stage as remains of rat-tailed maggots (Syrphidae) were found. Single individuals of the human louse (*Pediculus humanus*) and flea (*Pulex irritans*) were noted. The mode of entry of much of the fauna is uncertain; there may *possibly* have been house sweepings, but this is only a subjective impression.

Trench KLA D

Site period 01-05

Fill of pit 559 [One of three small intercutting pits. Small, oval 1.3 x 0.9 m, 0.85 m deep. Fill 546.1, 546.2, lithology not recorded on site, both sampled but only the former analysed]

Context **546.01**, Subsamples 19/P, 19/1 (3.7 kg) and 19/T (2.13 kg)

Laboratory sediment description: Dry, mid grey/brown, brittle (working crumbly), silty sand with stones present in the size range 6-60 mm.

Microfossil squash: Assessment - mostly inorganic, with a little organic detritus, one *Polypodium* spore, a few fungal spores and hyphae and a single *Ascaris* egg. Further investigation failed to produce sufficient well-preserved, measurable, eggs for specific identification.

Macro-invertebrates: Beetles were rather abundant in the larger subsample, there were a few adult bugs (N = 148, S = 78), and a range of other invertebrates was present, some in large numbers. The fauna was ecologically mixed. There were indications of standing water from numerous *Daphnia* ephippia (water flea resting eggs), one ephippium of a second cladoceran, and 13 individuals of seven water beetles. Most of the remaining fauna would have found habitats in non-submerged organic waste in the pit, or on disturbed surfaces with dung and other decaying matter and some plants.

The /T subsample gave 36 adult individuals of 35 beetle and bug taxa, only *Cercyon analis* being represented by more than one individual. The fauna was broadly reminiscent of that from Subsample /1.

Site period 03

Fills of ditch 557 [2.1-2.2 m wide, 1.85 m deep. Fills: primary 540.4, rapid silting from the sides; overlaid by 540.3, a layer of brushwood; then 540.2, dark brown silty loam with black and buff-grey silty lenses; then 540.1, apparently almost entirely wood chippings. Layer 540.5 appears not to be mentioned in the stratigraphic report]

Context **540.02**, Subsamples 17/P, 17/1 (4.4 kg) and 17/T (1.81 kg)

Laboratory sediment description: Moist, mid-dark grey/brown, soft to crumbly (working

plastic when wet), very humic, slightly sandy, silty clay with a patch of pinkish brown ?ash.

Microfossil squash: Assessment - mostly mineral particles, with some organic detritus, a few fragmentary phytoliths, *Polypodium* spores and fungal hyphae.

Macro-invertebrates: Other than very large numbers of mites, invertebrates were rather rare, and there were only 34 adults of 29 beetles (no bugs). The fauna had no obvious implications, although no aquatics were present and no decomposer community had developed. The remains were pale, tending to yellow, and the sample was still moist on receipt, so perhaps these were remains from a soil surface, decayed before deposition and with numerous soil mites.

Subsample /T gave a similarly bland fauna, with only 14 individuals of 13 beetles; mites were again rather abundant, and there were quite large numbers of froghopper nymphs, good candidates for an origin in soil which bore at least some vegetation.

Context **540.05**, Subsamples 18/P, 18/1 (4.5 kg) and 18/T (1.98 kg)

Laboratory sediment description: Totally dry, light brown, indurated and unconsolidated silty sand. Charcoal was present and 2-20 mm size stones were common. The sediment was mid brown when wetted.

Microfossil squash: Assessment - mostly mineral particles, with a little organic detritus, a ?seed fragment, four *Polypodium* spores and a few fungal hyphae.

Macro-invertebrates: The larger subsample gave a modest-sized group of invertebrates, including abundant mites (N = 62, s = 38). True dung beetles were proportionally well-represented (12 *Aphodius contaminatus*, with two *A. ?prodromus* and *A.* sp., often rotted and rolled, probably by drying rather than by bird predation), and other beetles likely to have exploited dung were present as single individuals (eg. *Sphaeridium* sp., *Cercyon haemorrhoidalis*). There were traces of grain pests, house fauna and 'stable manure' decomposers, and although these may have been background fauna the incorporation of dung or soil on which dung lay seems possible. Aphids were numerous, and perhaps the route of entry of these (and a single *Apion* weevil) was via hay then dung.

The second subsample (/T) gave a small but rather similar fauna (including several *Aphodius* sp.).

Site period 06

Deposit [= 521, 523. 515 described as an accumulation of dark soil which blanketed the entire trench; dark grey-brown sandy loam with lenses of black silts, grey clay and charcoal]

Context 515, Subsamples 10/P and 10/T (2.37 kg)

Laboratory sediment description: Moist, mid-dark grey/brown, unconsolidated (working plastic), slightly humic, slightly sandy clay. Stones in the size range 6-20 mm were present and 20-60 mm size stones were common.

Microfossil squash: Assessment - half organic detritus and half inorganic, with a few fungal hyphae and ?phytolith fragments.

Invertebrates were rare, and there were only single adult individuals of 17 beetles. Dominated by 'outdoor' forms, (approximately half of the beetles fell in this category), this was probably background fauna and the sparse fauna of the accumulating layer.

Site period 07

Fills of gulley 526 [Running parallel to east side of Building KLA C 1995, probably a drain. Fills: 524.3-1, earliest to latest, layers of dark silty soil with much organic material]

Context **524.01**, Subsamples 11/P, 11/1 (5.0 kg) and 11/T (1.85 kg)

Laboratory sediment description: Moist, mid-dark brown, crumbly and soft, woody herbaceous detritus and amorphous organic sediment.

Microfossil squash: Assessment - half mineral particles and half organic detritus, with many fungal spores and some fungal hyphae.

Macro-invertebrates: A very distinctive group of insects was recovered (N = 208, S = 77), consisting of a mixture of grain pests, a little house fauna, a few putative 'stable manure' decomposers, and abundant remains which seem to have been brought in hay. This seems to have been stable manure. The grain pests were represented by *O. surinamensis* (27), *C. ferrugineus* (26) and *S. granarius* (3); house fauna by *Lathridius minutus* group (11) and small numbers of a few other species; and foul open-textured organic matter by small numbers of a few species. Most convincing as evidence as an origin as stable manure (or just possibly dumped hay) were 23 individuals of the genus *Apion*, of which 16 were teneral (newly-emerged) and can hardly have arrived without human intervention. The number of *Apion* was probably under-estimated as the remains were very pale and flexible and hard to see in the flot. These *Apion*, which were of the 'clover weevil' group, and single teneral *Hypera* and *Gymnetron*, almost certainly represent hay. A final notable component was a trace of heath/moor fauna: the groundbug *Macrodema micropterum*, and a *Scolopostethus* (probably the heathland *S. decoratus*). These may have arrived in turf used for construction, but perhaps came from turf, peat or cut vegetation used for bedding in stables. A single human flea (*Pulex irritans*) may also have arrived in stable manure, for it appears that this flea regularly occurred in stables, where its larvae would have found a suitable habitat.

The smaller subsample yielded only 28 adult beetles, representing 25 taxa, and rather few other invertebrates. The fauna was rather mixed, and no ecological group predominated.

Context **524.03**, Subsamples 13/P, 13/1 (4.4 kg) and 13/T (2.03 kg)

Laboratory sediment description: Moist, mid greyish brown with ginger-coloured patches, soft (working crumbly to plastic), slightly humic, silty clay.

Microfossil squash: Assessment - mostly mineral, with some organic detritus and a few phytoliths and fungal hyphae.

Macro-invertebrates: Mites and fly immatures were rather abundant in Subsample /1, and smaller numbers of a range of other invertebrates were recorded. There were modest numbers of beetles and bugs (N = 73, S =51). Aquatics were rather well represented (10 individuals of four species; PNW = 14), and were amongst the most abundant beetles (*Helophorus grandis* at rank 2 with four individuals; *H.* sp. at rank 3 with three). The most numerous beetle was a *Carpelimus*, probably *corticinus*, which is found mostly in waterside mud. It thus seems likely that the gulley was open, muddy, and held water from time to time. The Nematocera larvae, which were abundant, would have been at home in muddy pools, as would the rat tailed maggots (Syrphidae larvae).The remaining fauna might have a 'background' origin, representing a random selection of fauna typical of the Lanes

assemblages and all present in small numbers. Presumably the surroundings were sparsely vegetated and there was only scattered decaying matter.

The /T subsample gave an assemblage of similar character, consisting of single individuals of 21 beetle and bug taxa and a trace of other invertebrates.

Site period 08A

Surface? [Between structures; 512, a small patch of light gray clay, 2.0 x 1.1 m at greatest extent]

Context **512**, Subsample 6/T (2.84 kg)

Laboratory sediment description: Just moist, mid grey/brown, unconsolidated (working crumbly), slightly sandy clay with patches of grey, orange, purple and pale yellow. Looks ashy. Stones were also present in the size ranges 2-6 mm and 20-60 mm.

Macro-invertebrates: Invertebrates were rare and included only single individuals of seven beetle and bug taxa. There were several fly puparia. No interpretation can reasonably be offered.

Site period 08B

Fills of pit 569 [2 x over 2.1 m across and 1.55 m deep. Fills: 464.3, primary, dark grey/black silty loam; overlaid by 464.2, dark grey-brown organic silts; sealed by 464.1, upper fill of dark grey-brown sandy loam with some organic material, probably represented by Sample 1, not analysed]

Context **464.02**, Subsamples 2/P, 2/1 (3.25 kg) and 2/T (0.82 kg)

Laboratory sediment description: Moist, mid-dark brown, layered and compressed, slightly sandy herbaceous detritus and amorphous organic sediment.

Microfossil squash: Assessment - mostly organic detritus, with much inorganic material, several phytoliths and a few plant tissue fragments, fungal hyphae, ?pollen grains , and *Polypodium* spores.

Macro-invertebrates: The larger subsample yielded quite large numbers of adult beetles and bugs (N = 105, S = 39), numerous fly puparia, and a few other remains. Grain pests were predominant (22 *O. surinamensis* and 20 *C. ferrugineus*, with three *P. ratzeburgi* and a single *S. granarius*). Of the remaining taxa, only *Lathridius minutus* group (10) and a *Cryptophagus* species (6) were at all abundant, but it seems likely that a mixture of house fauna and decomposers associated with foul open-textured material was present - suggesting stable manure or equine dung cleared from a surface. This interpretation was strongly supported by the presence of several *Apion* weevils, of which some were newly-emerged, and *Hypera* sp.; these were probably brought in cut vegetation.

The smaller subsample gave few remains (including seven individuals of five beetle taxa).

Context **464.03**, Subsamples 3/P, 3/1 (2.8 kg) and 3/T (2.65 kg)

Laboratory sediment description: Moist, light-mid orange-ish brown, slightly soft (working crumbly to plastic), slightly sandy clay with 2-6mm size stones present. The sediment also appeared to have the last, damaged remains of woody and herbaceous detritus.

Microfossil squash: Assessment - half organic detritus and half mineral particles, with three *Trichuris* eggs and a few fungal spores. Further investigation failed to produce

sufficient well-preserved, measurable, eggs for specific identification.

Macro-invertebrates: Although of similar size, the two subsamples gave very different quantities of invertebrates, the concentration in Subsample /T being estimated as about three times that in /1.

The assemblage from Subsample 3/T included numerous beetle larvae, mites, fly puparia and unidentified larvae. There were about 78 individuals of 54 beetle taxa (recording was semi-quantitative). This fauna was very mixed and gave no clear evidence of habitats in situ or nearby. The most plausible interpretation is that this was backfill from the surrounding surface, bringing background fauna and some species able to colonise patches of decaying matter and scattered plants. The smaller group from Subsample /1 doubtless represented another facies of this fauna.

Deposit [Patchy layer of grey-buff silty clay 2m x 1.3 m]

Context **480**, Subsamples 4/P and 4/T (2.22 kg)

Laboratory sediment description: Just moist, light-mid yellowish grey/brown (slightly darker on wetting), crumbly (working crumbly then plastic when wetted), slightly sandy, silty clay. Mottles on a 1-10 mm scale were visible (?ash). Also present were 2-20 mm size stones.

Microfossil squash: Assessment - inorganic, with a trace of organic detritus and a few ?phytoliths.

Macro-invertebrates: Invertebrates were present only in small numbers and included single individuals of eleven beetle taxa. This was a mixed group, not out of place at the present sites.

Unphased (but Roman)

Fill of gulley 541 [Gulley or trench cutting soil assigned to Site Period 2; at least 2.6 m long, 1 m wide, 0.7 m deep. Fill: Lower, 531.2, dark grey silty clay loam; upper, 531.1, dark brown sandy loam]

Context **531.01**, Subsamples 14/P and 14/T (1.84 kg)

Laboratory sediment description: Dry, light grey (mid brown when wetted), indurated and unconsolidated, sandy, silty clay with patches of ?burnt sediment. Stones were present in the size range 2-60 mm.

Microfossil squash: Assessment - mostly mineral particles, with a trace of organic detritus.

Macro-invertebrates: Few invertebrates were present, including only single adult individuals of six beetles. Grain pests (*C. ferrugineus* and *O. surinamensis*) were recorded.

Context **531.02**, Subsamples 15/P and 15/T (1.69 kg)

Laboratory sediment description: Barely moist, unconsolidated and brittle, sandy, silty clay with 2-60 mm size stones present.

Microfossil squash: Assessment - mostly inorganic, with some organic detritus and a few phytoliths and diatoms.

Macro-invertebrates: Here, too, there were few remains (N = S = 11). The same grain pests were present.

Site period 14B (medieval)

Fill of pit 21/22 [No further information]

Context **2**, Subsamples 16/P and 16/T (1.61 kg)

Laboratory sediment description: Moist, mid-dark greyish brown, crumbly (working plastic), sandy, silty clay. Concretions, white streaks and 6-60 mm size stones were all present.

Microfossil squash: Assessment - matrix mostly organic with abundant mineral grains, very many ?diatoms and ?phytoliths, some fungal spores, a poorly preserved *Ascaris* egg, two *Trichuris* and 13 *?Trichuris*. Concretions examined separately: mostly inorganic, with much organic detritus, five *Trichuris*, seven *?Trichuris* and few ?diatoms and ?phytoliths. Unfortunately, no material could be located for further analyses.

Macro-invertebrates: Few invertebrates were noted, among them single individuals of three beetle species.

Trench LAL B

Site period 08B

Fill of pit 300 [4.1 x over 3.8 m, but only 0.55 m deep. Four fills, 257.1-4, but no information as to which was represented by Sample 23]

Context **257**, Subsamples 23/P and 23/T (3.2 kg)

Laboratory sediment description: Dry, light grey (mid brown when wetted), brittle and indurated (working unconsolidated then plastic when wetted), sandy, clay silt. Also present were 20-60 mm size stones.

Microfossil squash: Assessment - mainly mineral grains, with a trace of organic detritus, a few phytoliths and a few plant tissue fragments.

Macro-invertebrates: The assemblage of beetles and bugs was of modest size (N = 78, S = 48), but apart from including small numbers of a range of species probably originating - perhaps at some remove - from stable manure, it had no clear implications. Aquatics were perhaps more abundant than likely by chance (seven individuals of six taxa), so perhaps the pit held water at times or received waste water. There were some waterlogged plant remains, including spelt glume bases and weeds.

Trench LAL C

Site period 07

Fill of gulley 387 [Up to 1.4 m wide and 0.54 m deep. Five fills (375.1-5), all primarily of mineral sediment, the only sample not, however, being allocated to a specific one]

Context **375**, Subsample 26/1 (2.75 kg)

Laboratory sediment description: Moist, mid-dark brown, just plastic (working plastic and sticky when wetted), sandy, clay silt with some paler, ?sandy, millimetre scale mottles.

Macro-invertebrates: Moderately large numbers of beetles (N = 111, S = 64) were accompanied by a range of other invertebrates. The most abundant beetle was *Cercyon haemorrhoidalis* (13 individuals), suggesting foul rotting matter, and this interpretation was supported by the presence of five *Aphodius granarius*, four each of *Megasternum obscurum* and a second *Aphodius*, and smaller numbers of several other taxa. The proportion of foul decomposers was large (23 % of the whole assemblage, and more than half of the decomposers were coded 'rf'). The remaining fauna was of mixed character, probably background fauna, the colonists of disturbed ground, or remains accidentally eaten by livestock (?horses). There was either dung *in*

situ or it was dumped with surface soil. Fat hen (*Chenopodium album* L.) seeds were abundant, accompanied by a range of open ground to ruderal taxa, and there were blackberry (*Rubus*) seeds which may have been food or naturally dispersed.

Site period 10A

Fill of pit 323 [Related to pit 312. Large rectangular pit or trench 4.8 x 2 m, 0.47 m deep. Fills: 290 = 295, grey/black sandy loam with an obvious organic content]

Context **290** [= 295], Subsamples 15/P and 15/T (3.0 kg)

Laboratory sediment description: Moist, mid-dark grey/brown, crumbly (working just plastic), humic, slightly sandy, clay silt and fine herbaceous detritus with some clasts of light grey 'pure' clay.

Microfossil squash: Assessment - mostly organic detritus, with some inorganic matter, many phytoliths, and a few diatoms and pollen grains/spores. One *Trichuris* egg was present. Further investigation failed to produce sufficient well-preserved, measurable, eggs for specific identification.

Macro-invertebrates: A modest-sized assemblage of beetles (and one bug, N = 86, S = 38), and quite large numbers of other invertebrates were noted. Only three taxa were at all numerous, but the fauna as a whole suggested that stable manure has been incorporated; there was a mixture of grain pests (eg. 27 *O. surinamensis* and seven *C. ferrugineus*), characteristic decomposers (eg. ten *Oxytelus sculptus*), and one candidate for importation in hay (a teneral *Apion*). Plant remains appeared to have become humified, and gave no clear indication of the nature of the fill.

Context **295** [= 290], Subsamples 16/P, 16/1 (2.3 kg) and 16/T (0.9 kg)

Laboratory sediment description: Moist, mid-dark brown, crumbly and brittle, very humic, slightly silty, fine herbaceous detritus and amorphous organic sediment with some 6-20 mm size stones and ?bark/wood shavings present. Some lumps of the sediment contained patches of paler clay and layers of herbaceous detritus.

Microfossil squash: Assessment - about half organic and half inorganic, with a few fungal spores and hyphae.

Macro-invertebrates: The concentration of remains was high in this sample. The larger subsample gave 318 adult individuals of 102 beetle and bug taxa; preservation was, however, variable, the fossils ranging from a majority which were in very good or good condition to some which were reduced to pale films. Other invertebrates included immense numbers of mites (Acarina) and numerous fly puparia. The fauna included several distinctive components. Abundant grain pests (eg. 84 *O. surinamensis* and 41 *C. ferrugineus*), decomposers associated with foul open-textured material (eg. 19 *Oxytelus sculptus*, nine *Cercyon atricapillus* and three *Lithocharis ochraceus*) and some house fauna (eg. eight *Lathridius minutus* group and three *Ptinus fur*) combined to suggest the presence of stable manure. A heath/moor group (larvae of *Actenicerus sjaelandicus* (4), *Ulopa reticulata* and *Bradycellus ?ruficollis* (3), *Micrelus ericae* (2) and single *Macrodema micropterum* and *Stignocoris pedestris*) perhaps came in turf, peat or cut vegetation used on the stable floor (turf or peat seem most probable, for some of these insects were poorly preserved). Most of the remaining fauna probably belonged to one or other of these groups, and the deposit probably

included stable manure in appreciable amounts.

A notable record was of eight *Alphitobius diaperinus*, probably part of the grain component, and discussed further below. There were two human fleas; the association of these with stable manure is also considered below.

The smaller subsample produced an estimated 143 individuals of 49 beetle and bug taxa (recording was semi-quantitative and so the difference in diversity between the two subsample assemblages is perhaps not real). The same species occupied the first four ranks of abundance, and the mixture of components was similar to, and as clear as in, Subsample /1.

Fill of pit 312 [Related to pit 323. At least 1.45 by 1.5 m, and 0.95 m deep. Two fills, dark brown/black organic sandy silt. Both samples but only 302.01 analysed]

Context **302.01**, Subsamples 17/P and 17/1 (3.4 kg)

Laboratory sediment description: Moist, very dark grey/brown to black, crumbly, humic, slightly sandy silt with some charcoal present.

Microfossil squash: Assessment - 50% organic and 50% inorganic, with a few diatoms and several phytoliths.

Macro-invertebrates: Invertebrates were abundant in the flot, but often rather pale. There were 230 adult beetles and bugs of 60 taxa, although the assemblage was swamped by abundant *Oryzaephilus surinamensis* (123 individuals). There were also 18 *Cryptolestes ferrugineus* and four *Palorus ratzeburgi* (but no *Sitophilus granarius*). A component imported in peat or turf was clearly present, for there were three *Actenicerus sjaelandicus* larvae, and single *Pachybrachius fracticollis*, *Macrodema micropterum*, *Ulopa reticulata*, and a nymph of *Strophingia ?ericae*. *Lathrobium* sp. (8), *Cyphon* sp. (5), *Agonum* sp. (2), and single *Dyschirius ?globosus*. *Olophrum piceum*, *Anthophagus caraboides* and *Plateumaris* sp. can also be regarded as most probably originating in peat or turf. A likely origin for this mixture is in turf or peat used as flooring in a stable, but the components may have had separate origins (turf and spoiled grain). Sample 18 from this context gave almost no plant remains.

Pit fill [Pit 329, largely destroyed by later features, 2.7 x at least 0.85 m, depth not recorded. Fill: red-brown clay loam with numerous wood fragments]

Context **329**, Subsamples 19/P and 19/1 (1.25 kg)

Laboratory sediment description: Moist, black, crumbly (working soft), fine herbaceous detritus and amorphous organic sediment with pale grey 1 mm scale mottles. Lumps of burnt clay and 2-6 mm size stones were also present.

Microfossil squash: Assessment - about 50% organic and 50% inorganic matter, with a few phytoliths, fungal hyphae and plant tissue fragments.

Macro-invertebrates: Only grain pests were at all abundant (44 *O. surinamensis* and 13 *C. ferrugineus*; also two *P. ratzeburgi*), and the remaining assemblage of beetles and bugs was small (N = 87, 28 after subtraction of grain pests, S = 27). There were hints of peat or turf (notably from *Ulopa reticulata*), so like Context 302.01 this may have been material from a stable floor strewn with such materials. There were no seeds or other interpretatively useful plant remains.

Deposit [One of a series of layers and leses of dark brown/black sandy clay loam and silty loam]

Context **334**, Subsample 21/T (1.0 kg)

Laboratory sediment description: Just moist, very dark grey-brown, brittle and crumbly (working crumbly), slightly sandy fine herbaceous detritus and amorphous organic sediment.

Microfossil squash: Assessment - mostly organic detritus with some inorganic matter and many fragments of plant tissue.

Macro-invertebrates: Assessment (no list made) - "Modest numbers of remains; hints of natural community perhaps from moss or turf, plus 'stable manure' elements. Larger subsample desirable". The only plant remains present were a few sedge nutlets.

Trench LAL D

Site period 04C

Fill of pit/depression 1494 [Very shallow rectangular pit or depression, 2.1 x 1.45 m, 0.05 m deep. Fills: Lowest 1357.3, black organic sandy clay; 1357.2, grey sandy clay; 1357.1, black organic silts with twigs. Two samples collected, but layer of origin not given; one analysed]

Context **1357**, Subsamples 8/P and 8/1 (3.65 kg)

Laboratory sediment description: Moist, dark brown, fissile, coarse herbaceous detritus and some amorphous organic sediment.

Microfossil squash: Assessment - about half organic detritus and half inorganic particles. Many fungal spores, several phytoliths and a few diatoms. One ?modern arthropod, a single poorly preserved *?Trichuris* and a few fragments of plant tissue. Further investigation failed to produce sufficient well-preserved, measurable, eggs for specific identification.

Macro-invertebrates: Numerous invertebrates were recorded, including 333 adult individuals of Coleoptera and Hemiptera of the groups used in compiling statistics (there were also quite large numbers of scale insects). The assemblage was dominated by grain pests (74 *O. surinamensis*, 36 *C. ferrugineus*, four *S. granarius*, one *P. ratzeburgi*), and these contributed 35% of the fauna. However, the remaining more abundant species were mostly regarded as components of the community of open-textured foul matter, the most characteristic being *Oxytelus sculptus* (14), *Cercyon terminatus* (7), *Leptacinus pusillus* (6), *Anthicus formicarius* (5), *Cercyon atricapillus* (4) and the *Monotoma* species. Almost all of the remaining fauna might have co-existed with these in stable manure of varying moisture content and degree of compaction. Those which could not have done seem likely to have been introduced in hay (eg. the three *Apion* species, the *Sitona*, and if hay was cut in damp meadows, *Notaris acridulus*), or peat/turf (numerous taxa, but notably *Scolopostethus* sp., *Conomelus anceps*, *Zicrona caerulea*, *Dyschirius ?globosus*, and *Micrelus ericae*). The origin of the scale insects, which were not in an identifiable state, is not clear, but if the sampled layer was 1357.1 they may have originated on the twigs - which themselves may have represented the remains of fodder. This was surely a dump of stable manure. Plant remains included bracken stems, small and twiggy wood and a trace of sloe stones; the bracken at least presumably represents litter. Bulk sample 14 from Context 1492 yielded a wetland and grassland assemblage - presumably from hay.

Site period 05A

Fill of slot 1270 [Elongate slot up to 0.35 m wide and 0.24 m deep, perhaps originally plank-lined. Two fills in the sampled part: 1269.1 and 1269.2, dark red-brown silty clay with a variable content of pebbles. The sample record does not reveal which of these the sample came from]

Context **1269**, Subsample 5/1 (3.1 kg)

Laboratory sediment description: Moist, mid brown, crumbly (working plastic), slightly sandy, silty clay with patches of mid orange clay. Charcoal, charred twigs, and 20-60 mm size stones were all present.

Macro-invertebrates: Very little was recovered in the flot, and the few insects (N = 18, S = 17) and mites were no more than a random extract from the fauna of the site as a whole.

Site period 06

Deposit [Several layers of dark silty soil, of which 1249 analysed]

Context **1249**, Subsamples 3/P and 3/1 (4.0 kg)

Laboratory sediment description: Moist, mid-dark brown, layered, fine and coarse herbaceous detritus with patches of paler mineral sediment. Concretions and fly puparia were present.

Microfossil squash: Assessment - The matrix consisted mostly of organic detritus with abundant inorganic particles, several phytoliths, a few diatoms, pollen grains/spores, fungal spores and hyphae. Two eggs of *Trichuris* and one of *Ascaris* were present. A concretion, examined separately, was mostly organic detritus with a little non-organic matter and a few fungal hyphae. Further investigation failed to produce sufficient well-preserved, measurable, eggs for specific identification.

Macro-invertebrates: The abundance and quality of preservation of the invertebrates in this material was considered surprising in view of the context type. Assuming no error has been made in labelling, the dark colour presumably came from a high organic content.

There were large numbers of beetles (and a few bugs; N = 314, S = 90), together with large numbers of fly pupae and puparia and a variety of other invertebrates. Grain pests were abundant and, unusually, there were numerous grain weevils (40 *C. ferrugineus*; 37 *S. granarius*; 27 *O. surinamensis*; 19 *Palorus ratzeburgi*, together occupying the first four ranks of abundance and accounting for 39% of the fauna). Following these in abundance were two species associated with very foul material: *Platystethus arenarius* (18) and *Cercyon haemorrhoidalis* (13). Various other species might have lived in the same habitat as these, and foul-matter beetles (RF) contributed 15% of the fauna (25% if grain pests were subtracted). Water beetles seemed rather too abundant for all to be background fauna (16 individuals of 8 taxa, although only 5% of the total fauna), and there were also modest numbers of water flea resting eggs. A 'hay' component may have been present (three *Apion* species and *Sitona ?lepidus*), but may have been background fauna or have colonised plants *in situ*.

The most likely explanation for this fauna in a surface deposit is that it consisted of well-decayed stable manure or dung which had been moist enough for colonisation by species associated with very foul rotting matter; the water beetles may have been attracted to pools (but conceivably were background fauna or had arrived via drinking water for livestock).

Ground beetles, exploiters of litter in the open, and various plant-feeders (including the abundant planthopper nymphs) were probably the fauna of the ground surface. If this explanation is true, then there would doubtless also have been a component of background fauna. Plant remains included grass stems, buttercups, heather shoots and legume flowers, compatible with the interpretation from the invertebrates, if not actually supporting it.

Fill of pit/scoop 1268 [1.5 x at least 0.85 m. Fills: primary 1267.2, dark brown/black silty soil; sealed by 1267.1, yellow-brown sandy silt with much bone. One sample; record does not say from which of the fills, but laboratory description included the phrase 'amorphous organic sediment' - so probably the lower fill]

Context **1267**, Subsamples 6/P and 6/1 (2.5 kg)

Laboratory sediment description: Moist to wet, soft, amorphous organic sediment of three main colours: dark brown, mid brown, and pale pinkish brown. Stones of the size 2-20 mm were common.

Microfossil squashes: Assessment - mostly mineral, with much organic detritus, a few phytoliths and five eggs of *Trichuris*.

Thirty-two *Trichuris* eggs were subsequently measured (Table 5) and proved to be *T. trichiura* of humans. There were three unfertilised *Ascaris* eggs whose condition was too poor for useful measurement.

A single egg of *Oxyuris* type was probably *O. equi*, a parasite of horses and their relatives, previously recorded from Castle Street in Carlisle (Jones *et al.* 1988). Its operculum (plug) was absent. Measurements were: length 77.5 µm and width 37.5 µm.

Macro-invertebrates: In total 319 adult beetles (no bugs) were noted, with 61 taxa. There was also a varied group of other invertebrates. Grain pests were numerous, and there were 158 *O. surinamensis*, by far the most numerous species in the assemblage. *C. ferrugineus* was the next most abundant taxon (41); there were also five each of *P. ratzeburgi* and *S. granarius*. House fauna was restricted in range but clearly represented by *Lathridius minutus* group (11), *Ptinus fur* (10), *Anobium punctatum* (7), and *Xylodromus concinnus* (2). Decomposers likely to have occurred together in foul mouldering conditions included *Carpelimus pusillus* group (7), *Cercyon analis* (6), and numerous less abundant species. Hay was perhaps represented by *Typhaea stercorea* and *Gymnetron* sp. (both single individuals, however). This seems likely to have been a dump of stable manure.

Site period 10A

Deposit [1021, an extensive layer of dark brown/black organic sandy silt loam]

Context **1021**, Subsample 30/1 (3.25 kg)

Laboratory sediment description: Just moist, dark grey/brown, just brittle (working crumbly), slightly sandy, amorphous organic sediment.

Macro-invertebrates: The small flot consisted mostly of invertebrate remains, but adult beetles and bugs were not very numerous (N = 69, S = 41). The commonest beetles were grain pests (nine *O.surinamensis* and six *C. ferrugineus*, with single individuals of other taxa), house fauna (six *Lathridius minutus* group but only traces of others) and decomposers believed typical of stable manure (five *Platystethus arenarius*, two each of *Cercyon atricapillus*, *Oxytelus sculptus* and *Anthicus formicarius*, and single individuals of

some others). This deposit seems to have contained stable manure. There were several *Daphnia* ephippia, suggesting that there were pools, or perhaps originating via horse guts (having been taken in with drinking water). A soil may have begun to develop; there were numerous *Heterodera*-type soil nematode cysts and a click-beetle (Elateridae) larva. Plant remains suggested a damp grassland community, and there was some bracken; this material presumably was fodder or litter.

Site period 10B

Deposit [Dark brown/black organic silt, one of numerous small interleaving layers]

Context **1017**, Subsample 29/1 (3.0 kg)

Laboratory sediment description: Just moist, very dark brown, just brittle (working crumbly then slightly sticky and slightly plastic when wetted), amorphous organic sediment. A little sand was visible locally.

Macro-invertebrates: The flot was minute and contained only single individuals of six beetle taxa, a fly puparium, and several earthworm egg capsules. This is consistent with an origin as a surface layer, but no more. The plant assemblage was dominated by sedge and tormentil; numerous fungal resting spores suggested deposition in an active soil.

Site period pre-10C

Primary fill of barrel well 1016/1027 [Various fills, several sampled but only one sampled]

Context **1016.07**, Subsamples 45/P and 45/1 (2.2 kg)

Laboratory sediment description: Moist to wet, very dark grey/brown, plastic, very humic silt with some nutshell present.

Microfossil squash: Assessment - 75% organic matter, 25% inorganic, many fungal spores, some fungal hyphae, fragments of plant tissue, some pollen and a few *Polypodium* spores.

Macro-invertebrates: Invertebrate remains were very abundant, and included 234 adult beetles and bugs of 83 taxa, and a wide range of other insects and mites. The fauna included numerous grain pests; there were 23 *C. ferrugineus*, 22 *O. surinamensis*, five *P. ratzeburgi* and four *S. granarius*. House fauna was represented by *Lathridius minutus* group (22), *Cryptophagus* sp. and *Atomaria* sp. (nine of each), *Anobium punctatum* and *Cryptophagus scutellatus* (three of each), two *Atomaria ?nigripennis* and single individuals of a few others.

The third component consisted of decomposers likely to be found together in open textured foul matter: *Cercyon analis* (15), *Ptenidium ?pusillum* (10), *Gyrohypnus angustatus* (3), amongst others. Lastly, there was a strong component which almost certainly originated from cut vegetation *and* turf (the two merging in this assemblage), among them being *Conomelus anceps* (5), *Apion* spp. (3 and 1), and *Berytinus* sp., *Metabletus foveatus*, *Olophrum ?piceum*, *Sitona* sp., and *Gymnetron labile* (all single individuals). There seems little doubt that this was a dump of stable manure.

Site period 11D

Fills of well 226 [Circular stone-lined well 1.1 m internal diameter and at least 10 m deep. Numerous fills, of which 17 sampled. Context number run from highest at bottom. The following were processed: 232.06, dark brown/black organic sandy loam; 232.12, grey-brown clay loam; 232.16, dark

grey/black organic silt; 232.19 and 232.20, dark grey-brown silty organic soils]

Context **232.20**, Subsample 16/1 (2.0 kg)

Laboratory sediment description: Wet, dark greyish brown, just plastic, humic, sandy silt with some woody herbaceous detritus. Also present were some charred twigs and ?nutshell.

Macro-invertebrates: Invertebrates were rather abundant and included 230 adult individuals of 83 beetle and bug taxa. Grain pests were plentiful (54 *O. surinamensis*, 34 *C. ferrugineus*, 14 *P. ratzeburgi* and three *S. granarius*; also a single adult and abundant larvae of *Tenebroides mauritanicus*). There were clear indications of foul matter, probably open-textured, from *Carpelimus fuliginosus* (21), *Cercyon analis* (13), *Oxytelus sculptus* (10), and smaller numbers of several other taxa. There were indications of turf (eg. from single individuals of *Stignocoris pedestris*, *Dyschirius ?globosus* and *Bradycellus ruficollis*, and a *?Denticollis linearis* larva; several other taxa may have come with these). Another group of remains may have originated in hay: single individuals of two *Apion* species and *Sitona cambricus*. Overall, the evidence strongly suggests that the layer included stable manure, where turf had been used as bedding. A range of plant remains suggested an origin in a rich hay meadow - very much in accord with the invertebrates.

Context **232.19**, Subsample 15/1 (2.2 kg)

Laboratory sediment description: Wet, dark greyish brown, just plastic, humic, sandy silt with some woody herbaceous detritus. Also present were some charred twigs and ?nutshell.

Microfossil squash: Assessment - mostly organic detritus with much inorganic matter, a few fungal spores and hyphae, two *Polypodium* spores and several plant tissue fragments.

Macro-invertebrates: beetles were very abundant (although no bugs were recorded, N = 516, S = 63). The same ecological groups were apparent as in Sample 16, although with only a single flea and a less clear component from turf. Cut hay-like vegetation was indicated by five *Apion* sp., of which three were teneral (freshly emerged).

Context **232.16**, Subsamples 12/P and 12/T (2.25 kg)

Laboratory sediment description: Wet, dark greyish brown, just plastic, humic, sandy silt with some woody herbaceous detritus. Also present were some charred twigs and ?nutshell.

Microfossil squash: Assessment - about half organic matter and half inorganic particles, some fungal hyphae, a few fungal spores and some diatoms`.

Macro-invertebrates: A very large group of beetles and a few bugs was recovered (N = 610, S = 76). 'Other' invertebrates were abundant. Grain pests were enormously common (totalling 427 individuals and filling the first four ranks of abundance; there were two *Tenebroides mauritanicus* larvae, too). House fauna was clearly present in some abundance but decomposers considered typical of stable manure were not very numerous. The presence of a component from a domestic building or stable is suggested by the record of six human fleas (*Pulex irritans*), and there were hints of turf (eg. from *Conomelus anceps* and *Ctenicera ?cuprea*, and the numerous earthworm egg capsules). On balance this layer probably included stable manure. Apart from wood chips and twigs, plant remains were rare.

Context **232.12**, Subsample 37/1 (2.25 kg)

Laboratory sediment description: Moist, mid-dark brown, crumbly (working soft), fine and coarse herbaceous detritus and amorphous organic sediment. Also present were: rotted mortar/plaster, ash, ?faecal concretions, charcoal, wood, twigs (some burnt), bark.

Macro-invertebrates: The assemblage was dominated by grain pests (first four ranks, totalling 159 individuals), among which may be included three *Tenebroides* larvae (there was also an adult of this species). There was a clear component of house fauna and hints foul matter, but whether this came from stable manure or spoiled grain is hard to determine from the fauna. Plant remains were dominated by wood; waterlogged seeds were rare apart from abundant sorrel.

Context **232.06**, Subsamples 32/P and 32/1 (3.25 kg)

Laboratory sediment description: Moist, dark grey/brown, just brittle (working crumbly then plastic when wetted), humic, sandy silt with stones present in the size range 2-60 mm.

Microfossil squash: Assessment - mostly mineral particles, with much organic detritus, a few fungal spores and hyphae, several phytoliths, a few diatoms and a few fragments of plant tissue.

Macro-invertebrates: A total of 107 adult beetles (33 taxa) was recorded, but other invertebrates were rare. The first four ranks were occupied by the common grain pests, and these contributed 71 individuals. There were also three *Tribolium castaneum* and three *Tenebroides mauritanicus* larvae, which almost certainly originated with the grain beetles. Much of the remaining fauna might have come from spoiled grain, or have had a rather random origin. Possibly spoiled grain was dumped into the well, as seems to have been the case at Skeldergate, York (Hall *et al.* 1980). Plant remains included spelt and conrcockle seeds, perhaps supporting the hyposthesis that spoiled grain had been dumped into the well.

Discussion

The following refers to the material of Roman date; the medieval assemblages are briefly considered at the end.

It appears that this area of the Lanes was, in the parts of the Roman period represented by the deposits examined for insect remains, very much concerned with livestock, probably mainly horses or other equines. Unfortunately the only parasite of equines recorded was a single tentatively identified *Oxyuris equi* (Schrank).

There was clear evidence - from grain pests, house fauna, characteristic decomposers, and 'hay' fauna - of dumped stable manure from some samples. In addition, many assemblages included a range of remains (including elements likely to have been imported in turf) which probably originated in this material. Other deposits seemed to have originated as surface accumulations in disturbed areas with scattered plants, where equine dung or scattered stable manure was present. In a number of cases it was not clear whether the insect assemblages represented stable manure as such. Sometimes it seemed possble that the layers included only dung deposited directly on to the ground in the open, which by chance contained fauna eaten by horses with hay or grain.

A substantial number of the assemblages had a high proportion of outdoor fauna (Figure 1). Some were seemingly dominated by a rather random fauna (probably much of it 'background fauna'); such assemblages were

recovered from many of the cuts, perhaps representing insects from the adjacent open ground which had arrived naturally or in dumped soil. The typical environment of the sites seems to have been disturbed open ground with scattered plants, with various amounts of filth - in some cases surely dung - on the surface.

Most of the samples gave few, and more often no, eggs of intestinal parasitic nematodes. Only in two cases (both pitfills) were more than traces of *Trichuris* present. In one case, it was possible to make sufficient measurements to identify these eggs as *T. trichiura*, the species found in humans. Human faeces thus do not appear to have been a significant component of the Roman deposits at the present sites.

These deposits have yielded abundant evidence of insect parasites of humans. Both human fleas (*Pulex irritans*) and human lice (*Pediculus humanus*) were recorded from several samples. About 20 subsamples of Roman date gave heads of human fleas or less diagnostic body parts which were probably of that species. It has been noted above that human fleas are commonly found in archaeological stable manure associations. Human lice (*Pediculus humanus*) were found in two samples. Preservation probably limited recovery of the very delicate lice - many samples had dried out in storage and there were hints that insects had oxidised after excavation.

The records of pubic lice (*Pthirus pubis*) from these sites require further consideration. Two specimens were recovered. The first was from deposits of Roman date, Context 1269.02, a Period 5A-B pit fill at KLA C. Although described as a 'secondary' fill, there can be little doubt from the insect assemblage that the layer incorporated stable manure and possibly other waste. The second record was from a deposit of medieval date, a pit fill (Context 758), perhaps containing house floor cleanings, also at KLA C. The specimen from Context 758 consisted of an entire thorax and abdomen, together with part of the head and the bases of the legs. Much of the structure could be seen clearly, including the very characteristic arrangement of the abdominal spiracles (the anterior two pairs being well removed from the lateral margins) and the setae of the abdominal terminalia. The Roman specimen (from 1269.02) appeared to be mineralised, and detail was obscured. It could be identified by its general body form and such structure as could be discerned.

Pubic lice are by their nature perhaps unlikely to become incorporated into archaeological deposits. Although separation of the subspecies is extremely difficult in fossil material, it is probable that most of the numerous human lice (*Pediculus humanus*) found in archaeological deposits are the subspecies *capitis*, occurring in the head hair, which is far more likely to be shed in large numbers as a result of grooming. By contrast, the only previous record of the pubic louse appears to be that of Girling (1984) from eighteenth century deposits in the City of London. The specimens from The Lanes are thus of very great importance, pushing back the presence of the louse into the medieval and then the Roman period.

Busvine (1976), in his compendious but effectively un-indexed review of parasitic insects in history, mentions (p. 188) Roman sources which appear to refer to the treatment of crab lice infesting the eyelashes. He also mentions texts of the fifteenth century onwards which seem, with various degrees of certainty, to deal with these creatures. He reproduces an illustration of 1688 which clearly shows *P. pubis* (p. 154). The fossils records serve to support the interpretation of

the earlier literary references as truly being to *P. pubis*.

Insect parasites of livestock were poorly represented at KLA and LAL: there were four records of non-diagnostic remains of the genus *Damalinia*, various species of which are parasitic on particular domestic mammals, and one of the sheep ked *Melophagus ovinus*. The former may have been rare because they had been lost to the fossil record (these lice are extremely delicate), but the puparia at least of *D. ovinus* are very robust.

The evidence from this site has raised once again the possibility that aquatic insects and water fleas were brought to the site in water, or even via dung of horses which has drunk from ponds, ditches or troughs with a fauna of beetles and cladocerans. In a few cases it seems likely that aquatics may have lived on site: in fills of gulleys 1921 and 526, in a fill of pit 300; and perhaps in pools on deposit 1249. Otherwise, most of the aquatic insects may have been background fauna.

The heath/moor component appears rather likley to have originated in material used in stabling. Other possibilities are that they were imported in turf used for construction, that they were eaten by livestock in the field, or brought in vegetation intended for fodder or animal bedding.

The insect assemblages from medieval deposits, although small in number were conspicuously lacking in grain pests. They represented a range of cut features, which mostly appear to have had foul fills. Two fills contained numerous eggs of the whipworm *Trichuris*, confirmed in one case as *T. trichiura*, indicating the presence of human faeces.

Comparison with other sites in Carlisle

An overt component of the project to investigate the insect and other invertebrate remains from The Lanes 2 was to consider zonation in the Roman town and its immediate surroundings. This will be reported in detail elsewhere when comparative data analysis is completed. Together the previously-investigated sites in Roman Carlisle which gave extensive waterlogged preservation represent a range from intensive military use (Annetwell Street), via a rather dirty service area of broadly urban character (Castle Street), to an almost rural settlement serving the town (Old Grapes Lane and Lewthwaites Lane). This mapping of land use is complemented by the material from Keay's and Law's Lanes. The insect assemblages from these sites suggest characteristics somewhere between those of Castle Street and Old Grapes Lane. Most of the fauna seems to have originated in stables or - more often - on external surfaces in yards. There is no evidence for the sort of 'field boundary' ditches seen at the Old Grapes Lane. On the other hand, there were rather few highly-developed 'stable manure' assemblages.

Archive

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

Acknowledgements

We are grateful to Mike McCarthy for his part in setting up this project, and to Cathy Brooks and John Zant for providing archaeological information. Processing was carried out by

Michael Issitt, Barrie McKenna, Tom Shaw and Darren Worthy.

References

Allison, E. P., Hutchinson, A., Jones, A. K. G., Kenward, H. K. and Morgan, L. M. (1991a). *passim* in McCarthy, M. R., The structural sequence and environmental remains from Castle Street, Carlisle: excavations 1981-2. *Cumberland and Westmorland Antiquarian and Archaeological Society Research Series* **5** (fascicule 1).

Allison, E. P., Hutchinson, A., Kenward, H. K., Jones, A. K. G., and Morgan, L. M. (1991b). *passim* in volume and fiche in McCarthy, M. R., The Roman waterlogged remains and later features at Castle Street, Carlisle: excavations 1981-2. *Cumberland and Westmorland Antiquarian and Archaeological Society Research Series* **5** (main volume).

Busvine, J. R. (1976). *Insects, hygiene and history*. London: Althone Press.

Carrott, J., Issitt, M., Kenward, H., Large, F. and McKenna, B. (1995). An assessment of insect remains from excavations at the Lanes, Carlisle (site code: CAR79-82). *Reports from the Environmental Archaeology Unit, York* **95/4**, 42 pp.

Carrott, J. and Kenward, H. (1998). Species associations in insect death assemblages from urban archaeological deposits are significant in reconstructing the past human environment. Submitted to *Ecological Entomology*.

Dainton, M. (1992). A quick, semi-quantitative method for recording nematode gut parasite eggs from archaeological deposits. *Circaea, the Journal of the Association for Environmental Archaeology* **9**, 58-63.

Dobney, K., Hall, A. R., Kenward, H. K. and Milles, A. (1992 for 1991). A working classification of sample types for environmental archaeology. *Circaea, the Journal of the Association for Environmental Archaeology* **9**, 24-6.

Fisher, R. A., Corbet, A. S. and Williams, C. B. (1943). The relation between the number of species and the number of individuals in a random sample of an animal population. *Journal of Animal Ecology* **12**, 42-58.

Girling, M. A. (1984). Eighteenth century records of human lice (Pthiraptera, Anoplura) and fleas (Siphonaptera, Pulicidae) in the City of London. *Entomologist's monthly Magazine* **120**, 207-210.

Hall, A. R., Kenward, H. K. and Williams, D. (1980). Environmental evidence from Roman deposits in Skeldergate. *The Archaeology of York* **14** (3), 101-56. London: Council for British Archaeology.

Hughes, P., Kenward, H., Hall, A. and Large, F. (1998). Technical report: Reconstruction of Lateglacial and Early Postglacial mire succession and rates of climatic change from plant macrofossils, invertebrate remains and pollen at Church Moss, Davenham, Cheshire (site code: DV95). *Reports from the Environmental Archaeology Unit, York* **98/26**, 95 pp.

Hyman, P. S. and Parsons, M. S. (1992). A review of the scarce and threatened Coleoptera of Great Britain 1. *UK Nature Conservation* **3**. Peterborough: UK Joint Nature Conservation Committee.

Issitt, M., Kenward, H. and Milles, A. (1995). Invertebrate remains from excavations at Low Hauxley, Northumberland (site code: LH94): an assessment. *Reports from the Environmental Archaeology Unit, York* **95/16**, 13 pp.

Jones, A. K. G. (1982). *Human parasite remains: prospects for a quantitative approach*, pp. 66-70 in Hall, A. R. and Kenward, H. K. (eds). Environmental archaeology in the urban context. *Council for British Archaeology Research Reports* **43**.

Jones, A. K. G., Hutchinson, A. R. and Nicholson, C. (1988). The worms of Roman horses and other finds of intestinal parasite eggs from unpromising deposits. *Antiquity* **62**, 275-6.

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

Kenward, H. (1997). *Synanthropic decomposer insects and the size, remoteness and longevity of archaeological occupation sites: applying concepts from biogeography to past 'islands' of human occupation*, pp. 135-152 in Ashworth, A. C., Buckland, P. C. and Sadler, J. T. (Eds.), Studies in Quaternary Entomology: an inordinate fondness for insects. *Quaternary Proceedings* **5**.

Kenward, H. (1998). Data archive: insect assemblages from Annetwell Street, Carlisle. *Reports from the Environmental Archaeology Unit, York* **98/1**, 107 pp.

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

Kenward, H. K., Allison, E. P., Dainton, M., Kemenes, I. K. and Carrott, J. B. (1992a). Evidence from insect remains and parasite eggs from Old Grapes Lane A, The Lanes, Carlisle: Technical report. *Ancient Monuments Laboratory Report* **78/92**. [*Reports from the Environmental Archaeology Unit, York* **92/30**]

Kenward, H. K., Dainton, M., Kemenes, I. K. and Carrott, J. B. (1992b). Evidence from insect remains and parasite eggs from the Old Grapes Lane B site, The Lanes, Carlisle: Technical report. *Ancient Monuments Laboratory Report* **76/92**. [*Reports from the Environmental Archaeology Unit, York* **92/31**]

Kenward, H. K., Dainton, M., Kemenes, I. K. and Carrott, J. B. (1992c). Evidence from insect remains and parasite eggs from the Lewthwaites Lane A site, The Lanes, Carlisle: Technical report. *Ancient Monuments Laboratory Report* **77/92**. [*Reports from the Environmental Archaeology Unit, York* **92/32**]

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

Kenward, H. K., Hall, A. R. and Jones, A. K. G. (1980). A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. *Science and Archaeology* **22**, 3-15.

Kenward, H. K. and Large, F. D. (1986). *Insect remains from the Annetwell Street site, Carlisle. Report 1. Selected samples from Level X.* Archive deposited at Environmental Archaeology Unit, Carlisle Archaeology Unit and Ancient Monuments Laboratory. [*Reports from the Environmental Archaeology Unit, York* **86/20**]

Kloet, G. S. and Hincks, W. D. (1964-77). *A check list of British insects. Parts 1-5.* London: Royal Entomological Society.

Large, F. D. and Kenward, H. K. (1987a). *Insect remains from the Annetwell Street site, Carlisle. Report 2. Samples from Level VI.* Deposited at Carlisle Archaeological Unit, Ancient Monuments Laboratory. [*Reports from the Environmental Archaeology Unit, York* **87/14**]

Large, F. D. and Kenward, H. K. (1987b). *Insect remains from the Annetwell Street site, Carlisle. Report 3. Samples from Level IV.* Deposited at Carlisle Archaeological Unit, Ancient Monuments Laboratory. [*Reports from the Environmental Archaeology Unit, York* **87/15**]

Large, F. D. and Kenward, H. K. (1987c). *Insect remains from the Annetwell Street site, Carlisle. Report 4. Period 3A structures.* Deposited at Carlisle Archaeological Unit, Ancient Monuments Laboratory. [*Reports from the Environmental Archaeology Unit, York* **87/16**]

Large, F. D. and Kenward, H. K. (1988a). *Insect remains from the Annetwell Street site, Carlisle. Report 5. Period 3 structures.* Deposited at Carlisle Archaeological Unit, Ancient Monuments Laboratory. [*Reports from the Environmental Archaeology Unit, York* **88/15**]

Large, F. D. and Kenward, H. K. (1988b). *Insect remains from the Annetwell Street site, Carlisle. Report 6. Samples from Period 3 roads.* Deposited at Carlisle Archaeological Unit, Ancient Monuments Laboratory. [*Reports from the Environmental Archaeology Unit, York* **88/16**]

Large, F. D. and Kenward, H. K. (1988c). *Insect remains from the Annetwell Street site, Carlisle. Report 7. Miscellaneous samples from Period Pre-3 to Period 4.* Deposited at Carlisle Archaeological Unit, Ancient Monuments Laboratory. [*Reports from the Environmental Archaeology Unit, York* **88/17**]

Large, F. D. and Kenward, H. K. (1988d). *Insect remains from the Annetwell Street site, Carlisle. Report 8. Level X structures.* Deposited at Carlisle Archaeological Unit, Ancient Monuments Laboratory. [*Reports from the Environmental Archaeology Unit, York* **88/18**]

Large, F. D. and Kenward, H. K. (1988e). *Insect remains from the Annetwell Street site, Carlisle. Report 9. Miscellaneous samples from Level VII, Level IX, Level X and Period 3.* Deposited at Carlisle Archaeological Unit, Ancient Monuments Laboratory. [*Reports from the Environmental Archaeology Unit, York* **88/19**]

McCarthy, M. R. and Kenward, H. K. (1996). *A research design for insect remains from the northern end of The Lanes, Carlisle, Cumbria.* Unpublished document submitted to English Heritage.

Zant, J. (1997). *The Lanes 2, Carlisle. Keay's and Law's Lanes, the Roman sequence.* Carlisle Archaeological Unit.

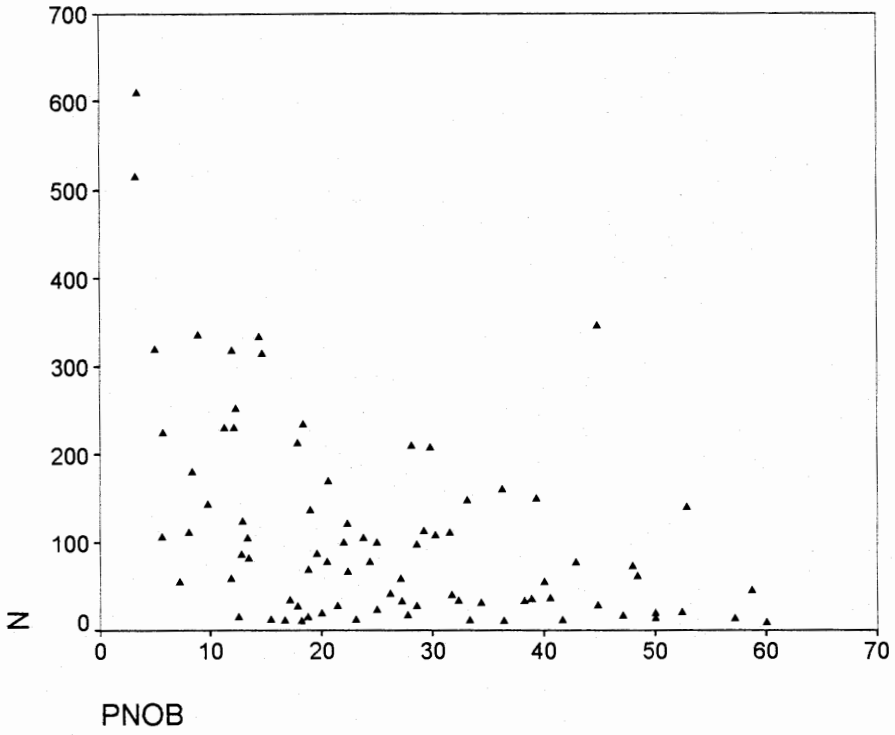

Figure 1. Keay's Lane and Law's Lane, The Lanes, Carlisle: proportion of 'outdoor' individuals of adult beetles and bugs plotted against minimum number of individuals of these groups. No correction has been made for grain pests and only assemblages with more than nine individuals in total are included.

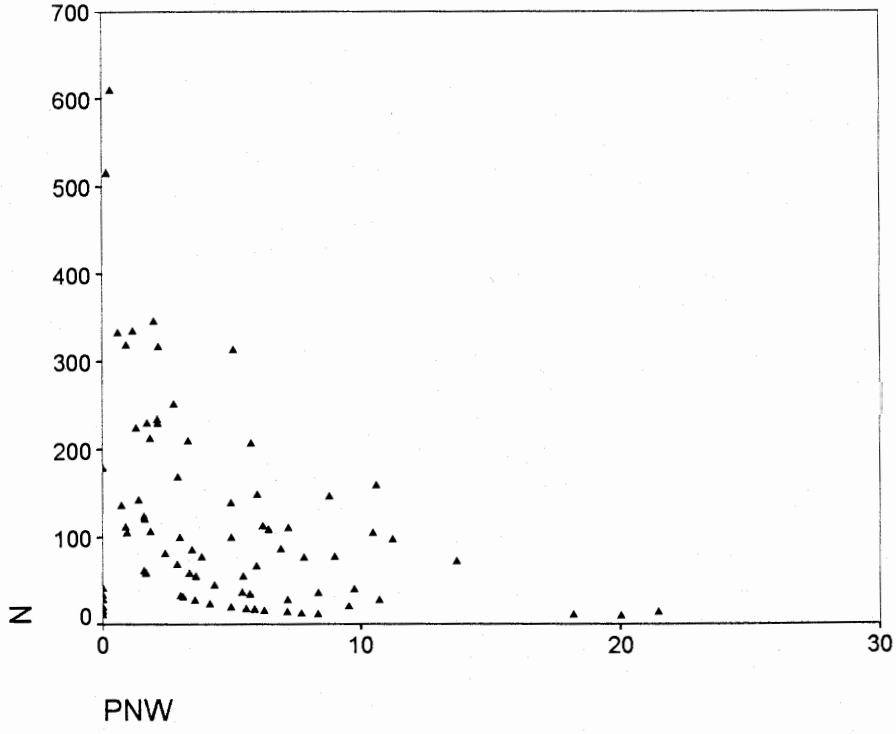

Figure 2. *Keay's Lane and Law's Lane, The Lanes, Carlisle: proportion of individuals of adult aquatic beetles and bugs plotted against minimum number of individuals of these groups. No correction has been made for grain pests and only assemblages with more than nine individuals in total are included.*

*Table 1. Complete list of invertebrate taxa from KLA and LAL, The Lanes, Carlisle, with the ecological codes assigned to them. Order and nomenclature follow Kloet and Hincks (1964-77). Where both secure and tentative identifications for a given taxon were recorded, only the former are listed here. * = not used in calculating assemblage statistics (Table 2). For explanation of ecological codes see Table 4.*

NEMATODA	
**?*Heterodera* sp. (cyst)	u
ANNELIDA	
*Oligochaeta sp. (egg capsule)	u
CRUSTACEA: CLADOCERA	
**Daphnia* sp. (ephippium)	oa-w
*Cladocera spp. (ephippium)	oa-w
INSECTA	
DERMAPTERA	
**Forficula auricularia* Linnaeus	rt
**Forficula* sp. indet.	u
*Dermaptera sp.	u
ANOPLURA (SIPHUNCULATA)	
**?Haematopinus* sp.	u
**Pediculus humanus* Linnaeus	u
**Pthirus pubis* (Linnaeus)	ss
MALLOPHAGA	
**Damalinia* sp.	u
*Mallophaga sp.	u
*Louse (s.l.) sp.	u
THYSANOPTERA	
*Thysanoptera sp.	oa-w
HEMIPTERA	
Zicrona caerulea (Linnaeus)	oa-p
Pentatomidae sp.	oa-p
Pachybrachius fracticollis (Schilling)	oa-p
Macrodema micropterum (Curtis)	oa-p-m
Stignocoris fuligineus (Geof. in Fourc.)	oa
Stignocoris pedestris (Fallen)	oa
Stignocoris rusticus (Fallen)	oa
Scolopostethus ?decoratus (Hahn)	oa-p-m
Scolopostethus sp. indet.	oa-p
Lygaeidae sp.	oa-p
Berytinus sp.	oa-p
Anthocoris sp.	oa-p
Lyctocoris campestris (Fabricius)	rd-st
Cimicidae sp. indet.	oa-p
Saldula ?saltatoria (Linnaeus)	oa-d
Saldula sp. indet.	oa-d
Saldidae sp. indet.	oa-d
Heteroptera sp.	u
*Heteroptera sp. (nymph)	u
Ulopa reticulata (Fabricius)	oa-p-m
Aphrodes flavostriatus (Donovan)	oa-p-d
Aphrodes sp.	oa-p
Conomelus anceps (Germar)	oa-p
Delphacidae spp.	oa-p
Auchenorhyncha spp.	oa-p
Auchenorhyncha sp. A	oa-p
*Auchenorhyncha spp. (nymph)	oa-p
*Psyllidae sp. (nymph)	oa-p
**Strophingia ?ericae* (Curtis) (nymph)	oa-p-m
**Strophingia* sp. (nymph)	oa-p-m
Psylloidea sp.	oa-p
*Aphidoidea spp.	u
*Coccoidea sp.	u
PSOCOPTERA	
*?Psocoptera sp.	oa-w
LEPIDOPTERA	
*Lepidoptera sp. (pupa)	u
*Lepidoptera sp.	u
DIPTERA	
*Bibionidae sp.	u
*Nematocera sp. (larva)	u
*Syrphidae sp. (larva)	u
*Sepsidae sp. (puparium)	u
**Melophagus ovinus* (Linnaeus)	u
**Melophagus ovinus* puparium)	u
*Diptera sp. (adult)	u
*Diptera sp. (larva)	u
*Diptera sp. (pupa)	u
*Diptera sp. (puparium)	u
SIPHONAPTERA	
*Pulex irritans Linnaeus	ss
*Siphonaptera sp.	u
HYMENOPTERA	
*Chalcidoidea sp.	u
**?Spalangia* sp.	u
*Proctotrupoidea sp.	u
*Hymenoptera Parasitica sp.	u
**Myrmica* sp.	u
*Formicidae sp. and sp. indet.	u
**Apis mellifera* Linnaeus	u
*Apoidea sp. and sp. indet.	u
*Hymenoptera sp.	u
COLEOPTERA	
Carabus nemoralis Muller	oa
Carabus sp. indet.	oa
Nebria brevicollis (Fabricius)	oa

Notiophilus biguttatus (Fabricius)	oa
Notiophilus sp. indet.	oa
Loricera pilicornis (Fabricius)	oa
Dyschirius globosus (Herbst)	oa
Clivina fossor (Linnaeus)	oa
Patrobus ?atrorufus (Strom)	oa
Patrobus sp. indet.	oa
Trechus obtusus Erichson	oa
Trechus quadristriatus (Schrank)	oa
Trechus obtusus or *quadristriatus*	oa
Trechus micros (Herbst)	u
Trechus sp. indet.	ob
Bembidion lampros (Herbst)	oa
Bembidion lampros or *properans*	oa
Bembidion ?saxatile Gyllenhal	oa-d
Bembidion quadrimaculatum (Linnaeus)	oa
Bembidion ?doris (Panzer)	oa-d
Bembidion guttula or *mannerheimi*	oa
Bembidion (*Philochthus*) sp.	oa
Bembidion spp. and spp. indet.	oa
Pterostichus cupreus (Linnaeus)	oa
Pterostichus diligens (Sturm)	oa-d
Pterostichus melanarius (Illiger)	ob
Pterostichus niger (Schaller)	oa
Pterostichus ?nigrita (Paykull)	oa-d
Pterostichus diligens or *strenuus*	oa
Pterostichus (*Poecilus*) sp.	oa
Pterostichus spp. indet.	ob
Calathus fuscipes (Goeze)	oa
Calathus ?piceus (Marsham)	oa
Calathus sp.	oa
Laemostenus terricola (Herbst)	ss
Agonum sp.	oa
Amara spp.	oa
Harpalus rufipes (Degeer)	oa
Harpalus spp.	oa
Bradycellus ruficollis (Stephens)	oa-m
Bradycellus sp.	oa
Dromius linearis (Olivier)	oa
?Microlestes sp.	oa
Metabletus foveatus (Fourcroy)	oa
Carabidae spp. and spp. indet.	ob
Hydroporus spp.	oa-w
Porhydrus lineatus (Fabricius)	oa-w
Hydroporinae sp.	oa-w
Agabus bipustulatus (Linnaeus)	oa-w
Agabus sp.	oa-w
Ilybius sp.	oa-w
Agabus or *Ilybius* sp.	oa-w
Colymbetes fuscus (Linnaeus)	oa-w
Dytiscidae sp. indet.	oa-w
Helophorus aquaticus (Linnaeus)	oa-w
Helophorus grandis Illiger	oa-w
Helophorus nubilus Fabricius	oa
Helophorus tuberculatus Gyllenhal	oa
Helophorus spp.	oa-w
Coelostoma orbiculare (Fabricius)	oa-w
Sphaeridium ?bipustulatum Fabricius	rf
Sphaeridium sp. indet.	rf
Cercyon analis (Paykull)	rt-sf
Cercyon atricapillus (Marsham)	rf-st
Cercyon haemorrhoidalis (Fabricius)	rf-sf
Cercyon ?quisquilius (Linnaeus)	rf-st
Cercyon terminatus (Marsham)	rf-st
Cercyon unipunctatus (Linnaeus)	rf-st
Cercyon spp. indet.	u
Megasternum obscurum (Marsham)	rt
Cryptopleurum minutum (Fabricius)	rf-st
Hydrobius fuscipes (Linnaeus)	oa-w
Anacaena ?globulus (Paykull)	oa-w
?Anacaena sp.	oa-w
?Laccobius sp.	oa-w
Enochrus sp.	oa-w
Hydrophilinae sp. indet.	oa-w
Acritus nigricornis (Hoffmann)	rt-st
Dendrophilus punctatus (Herbst)	rt-sf
Onthophilus striatus (Forster)	rt
Peranus bimaculatus (Linnaeus)	rt-sf
Histerinae sp.	rt
Ochthebius ?minimus (Fabricius)	oa-w
Ochthebius sp. and sp. indet.	oa-w
Limnebius sp.	oa-w
Ptenidium ?pusillum (Gyllenhal)	rt-sf
Ptenidium sp. indet.	rt
Acrotrichis spp.	rt
Ptiliidae sp.	u
Catops sp.	u
Nicrophorus sp.	u
Aclypea opaca (Linnaeus)	ob-rt
Silpha atrata Linnaeus	u
Silpha sp.	u
Silphidae sp. indet.	u
Scydmaenidae spp.	u
Micropeplus fulvus Erichson	rt
Micropeplus staphylinoides (Marsham)	rt
Micropeplus sp. indet.	rt
Megarthrus ?depressus (Paykull)	rt-sf
Megarthrus sp. indet.	rt
Proteinus sp.	rt
Olophrum ?fuscum (Gravenhorst)	oa
Olophrum piceum (Gyllenhal)	oa
Acidota crenata (Fabricius)	oa
Lesteva longoelytrata (Goeze)	oa-d
Lesteva sp.	oa-d
?Geodromicus sp.	oa-d
Anthophagus caraboides (Linnaeus)	oa
Eusphalerum ?sorbi (Gyllenhal)	u
Phyllodrepa ?floralis (Paykull)	rt-sf
?Phyllodrepa sp. indet.	rt
Dropephylla sp.	u
Omalium ?caesum Gravenhorst	rt-sf
Omalium caesum or *italicum*	rt-sf
Omalium excavatum Stephens	rt-sf
Omalium rivulare (Paykull)	rt-sf
Omalium sp. indet.	rt
Xylodromus concinnus (Marsham)	rt-st

?Xylodromus sp. indet.	rt-st
Omaliinae sp. and spp. indet.	rt
Coprophilus striatulus (Fabricius)	rt-st
Bledius sp.	oa-d
Carpelimus bilineatus Stephens	rt-sf
Carpelimus corticinus (Gravenhorst)	oa-d
Carpelimus fuliginosus (Gravenhorst)	st
Carpelimus ?gracilis (Mannerheim)	u
Carpelimus pusillus (Gravenhorst)	rt-sf
Carpelimus pusillus group indet.	u
Carpelimus spp. indet.	u
Aploderus caelatus (Gravenhorst)	rt
Platystethus arenarius (Fourcroy)	rf
Platystethus cornutus group	oa-d
Platystethus nitens (Sahlberg)	oa-d
Platystethus sp. indet.	oa-d
Anotylus complanatus (Erichson)	rt-sf
Anotylus nitidulus (Gravenhorst)	rt-d
Anotylus rugosus (Fabricius)	rt
Anotylus sculpturatus group	rt
Anotylus tetracarinatus (Block)	rt
Anotylus sp. indet.	rt
Oxytelus sculptus Gravenhorst	rt-st
Stenus ?crassus Stephens	rt
Stenus spp.	u
Euaesthetus bipunctatus (Ljungh)	oa
Euaesthetus laeviusculus Mannerheim	oa
Euaesthetus ?ruficapillus Bois. & Lac.	oa
Lathrobium spp.	u
Ochthephilum fracticorne (Paykull)	oa-d
Lithocharis ochracea (Gravenhorst)	rt-st
Rugilus orbiculatus (Paykull)	rt-sf
Rugilus sp. indet.	rt
Paederinae sp.	u
Othius myrmecophilus Kiesenwetter	rt
Othius punctulatus (Goeze)	rt-st
Othius sp. indet.	rt
Leptacinus pusillus (Stephens)	rt-st
Leptacinus sp.	rt-st
Gyrohypnus angustatus Stephens	rt-st
Gyrohypnus fracticornis (Muller)	rt-st
Gyrohypnus punctulatus (Paykull)	rt-st
Gyrohypnus sp. imdet.	rt
Xantholinus glabratus (Gravenhorst)	rt
Xantholinus linearis (Olivier)	rt-sf
Xantholinus longiventris Heer	rt-sf
Xantholinus linearis or *longiventris*	rt-sf
Xantholinus sp. indet.	u
Xantholininae sp. indet.	u
Neobisnius sp.	u
Philonthus spp.	u
Gabrius sp.	rt
Staphylinus olens Muller	u
Staphylinus sp.	u
Creophilus maxillosus (Linnaeus)	rt
Heterothops sp.	u
Quedius boops group	u
Quedius cinctus (Paykull)	rt
Quedius spp.	u
Philonthus or *Quedius* spp. indet.	u
Staphylininae spp. indet.	u
Mycetoporus sp.	u
Sepedophilus sp.	u
Tachyporus hypnorum (Fabricius)	u
Tachyporus spp.	u
Tachinus laticollis or *marginellus*	u
Tachinus signatus Gravenhorst	u
Tachinus subterraneus (Linnaeus)	u
Tachinus sp. and spp. indet.	u
Cilea silphoides (Linnaeus)	rt-st
Tachyporinae sp.	u
Cypha sp.	rt
Cordalia obscura (Gravenhorst)	rt-sf
Falagria caesa Erichson	rt-st
Falagria caesa or *sulcatula*	rt-sf
Falagria sp. indet.	rt-sf
Falagria or *Cordalia* sp. indet.	rt-sf
Crataraea suturalis (Mannerheim)	rt-st
Aleochara spp.	u
Aleocharinae spp.	u
Euplectini sp.	u
Pselaphaulax dresdensis Herbst	u
Pselaphus heisei (Herbst)	u
Pselaphidae spp.	u
Trox scaber (Linnaeus)	rt-sf
Geotrupes spiniger (Marsham)	oa-rf
Geotrupes sp. indet.	oa-rf
Aphodius contaminatus (Herbst)	oa-rf
Aphodius fimetarius (Linnaeus)	oa-rf
Aphodius granarius (Linnaeus)	ob-rf
Aphodius prodromus (Brahm)	ob-rf
Aphodius spp. and spp. indet.	ob-rf
Phyllopertha horticola (Linnaeus)	oa-p
Cetoniinae sp.	oa
Melolonthinae/Rutelinae/Cetoninae sp.	oa-p
Clambus armadillo (Degeer)	rt-sf
Clambus sp.	rt-sf
Cyphon sp.	oa-d
Simplocaria ?semistriata (Fabricius)	oa-p
?Byrrhus sp.	oa-p
Byrrhidae sp. indet.	oa-p
Esolus parallelepipedus (Muller)	oa-w
?Normandia nitens (Muller)	oa-w
Oulimnius sp.	oa-w
Ctenicera ?cuprea (Fabricius)	oa-p
**Actenicerus sjaelandicus* (Muller) (larva)	oa
Denticollis linearis (Linnaeus)	u
**?Denticollis linearis* (Linnaeus) (larva)	u
Elateridae spp.	ob
*Elateridae spp.indet. (larva)	ob
Cantharis sp.	ob
?Cantharidae sp.	ob
Grynobius planus (Fabricius)	l
Anobium punctatum (Degeer)	l-sf
?Anobiidae sp.	l
Tipnus unicolor (Piller & Mitterpacher)	rd-st
Ptinus fur (Linnaeus)	rd-sf

Ptinus sp. indet.	rd-sf
Lyctus linearis (Goeze)	l-sf
Tenebroides mauritanicus (Linnaeus)	rt-ss
**Tenebroides mauritanicus* (larva)	rt-ss
Thymalus limbatus (Fabricius)	l
Cleridae sp.	u
Kateretes sp.	oa-p-d
Brachypterus sp.	oa-p
Meligethes sp.	oa-p
Omosita colon (Linnaeus)	rt-sf
Omosita discoidea (Fabricius)	rt-sf
Omosita sp. indet.	rt-sf
?Nitidulidae sp.	u
Rhizophagus sp.	u
Monotoma bicolor Villa	rt-st
Monotoma longicollis (Gyllenhall)	rt-st
Monotoma picipes Herbst	rt-st
Monotoma spinicollis Aube	rt-st
Monotoma spp. indet.	rt-sf
Cryptolestes ferrugineus (Stephens)	g-ss
Oryzaephilus surinamensis (Linnaeus)	g-ss
Cryptophagus scutellatus Newman	rd-st
Cryptophagus spp.	rd-sf
Cryptophagidae sp.	u
Atomaria nigripennis (Kugelann)	rd-ss
Atomaria spp.	rd
Ephistemus globulus (Paykull)	rd-sf
Olibrus sp.	oa-p
Phalacridae sp.	oa-p
Cerylon ferrugineum Stephens	l
Orthoperus sp.	rt
Coccidula rufa (Herbst)	oa-p-d
Rhyzobius litura (Fabricius)	oa-p
Chilocorus bipustulatus (Linnaeus)	oa-p
Coccinellidae sp.	oa-p
Mycetaea hirta (Marsham)	rd-ss
Stephostethus lardarius (Degeer)	rt-st
Lathridius minutus group	rd-st
Enicmus sp.	rt-sf
Dienerella sp.	rd-sf
Corticaria spp.	rt-sf
Corticarina sp.	rt
Cortinicara gibbosa (Herbst)	rt
Corticarina or *Cortinicara* sp. indet.	rt
Corticariinae sp. indet.	rt
Typhaea stercorea (Linnaeus)	rd-ss
Aglenus brunneus (Gyllenhal)	rt-ss
Teredus cylindricus (Olivier)	l
Blaps sp.	rt-ss
Tribolium castaneum (Herbst)	ss
Palorus ratzeburgi (Wissman)	g-ss
Alphitobius diaperinus (Panzer)	rt-ss
Tenebrio obscurus Fabricius	rt-ss
Rabocerus foveolatus (Ljungh)	l
Salpingidae sp.	l
Anthicus formicarius (Goeze)	rt-st
Anthicus floralis or *formicarius*	rt-st
Anthicus sp. indet.	rt
?Bruchus sp.	u
Donacia sp.	oa-d-p
Plateumaris sp.	oa-d-p
Donaciinae sp. indet.	oa-d-p
?Chrysolina sp.	oa-p
Gastrophysa polygoni (Linnaeus)	oa-p
Gastrophysa viridula (Degeer)	oa-p
Hydrothassa sp.	oa-d-p
Prasocuris phellandrii (Linnaeus)	oa-p-d
?Chrysomela aenea Linnaeus	oa-p
Chrysomela sp.	oa-p
Chrysomelinae spp. and spp. indet.	oa-p
Galerucella sp.	oa-p
Galerucinae sp. indet.	oa-p
Phyllotreta nemorum group	oa-p
Phyllotreta sp.	oa-p
Longitarsus spp.	oa-p
Altica sp.	oa-p
Crepidodera sp.	oa-p
Chalcoides sp.	oa-p
Chaetocnema arida group	oa-p
Chaetocnema concinna (Marsham)	oa-p
?Chaetocnema sp.	oa-p
?Sphaeroderma sp.	oa-p
Psylliodes spp.	oa-p
Halticinae spp. indet.	oa-p
Cassida sp.	oa-p
Apion (*Erythrapion*) sp.	oa-p
Apion (*Oxystoma*) sp.	oa-p
Apion spp.	oa-p
Otiorhynchus ligneus (Oliver)	oa-p
Otiorhynchus sp. indet.	oa-p
Phyllobius or *Polydrusus* sp.	oa-p
?Barypeithes sp.	oa-p
Sciaphilus asperatus (Bonsdorff)	oa-p
Tropiphorus sp.	oa
Sitona cambricus Stephens	oa-p
Sitona lepidus Gyllenhal	oa-p
Sitona suturalis Stephens	oa-p
Sitona spp. indet.	oa-p
Hypera punctata (Fabricius)	oa-p
Hypera sp.	oa-p
Sitophilus granarius (Linnaeus)	g-ss
Trachodes hispidus (Linnaeus)	u
Notaris acridulus (Linnaeus)	oa-d-p
Micrelus ericae (Gyllenhal)	oa-p-m
Cidnorhinus quadrimaculatus (Linnaeus)	oa-p
Ceuthorhynchidius sp.	oa-p
Ceutorhynchus contractus (Marsham)	oa-p
Ceutorhynchus erysimi (Fabricius)	oa-p
Ceutorhynchus ?melanostictus (Marsham)	oa-p
Ceutorhynchus pollinarius (Forster)	oa-p
Ceutorhynchus spp. and spp. indet.	oa-p
Rhinoncus ?bruchoides (Herbst)	oa-p
Rhinoncus castor (Fabricius)	oa-p
Rhinoncus pericarpius (Linnaeus)	oa-p
Rhinoncus sp. indet.	oa-p
Phytobius sp.	oa-d

Ceuthorhynchinae spp. indet.	oa-p
?Baris sp.	oa-p
Mecinus ?pyraster (Herbst)	oa-p
Gymnetron labile (Herbst)	oa-p
Gymnetron ?pascuorum (Gyllenhal)	oa-p
Gymnetron sp. and sp. indet.	oa-p
Curculionidae spp. and spp. indet.	oa
Dryocoetinus villosus (Fabricius)	l
Taphrorychus bicolor (Herbst)	l
Xyloterus ?signatus (Fabricius)	l
?Scolytidae sp.	l
Coleoptera spp. and spp. indet.	u
*Coleoptera sp. indet. (larva)	u
*Insecta sp. (larva)	u
*Insecta sp. pupa	u
ARACHNIDA	
*Pseudoscorpiones sp.	u
*Opiliones sp.	u
*Aranae sp.	u
*Acarina sp.	u

Table 2 (following pages). Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) from samples from KLA and LAL, The Lanes, Carlisle. All assemblages contribute to the 'Site' statistics (last column). For explanation of abbreviations, see Table 4. NB the decimal extensions on context numbers do not appear in this table for technical reasons; subcontexts may be identified from the sample number.

Trench		KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A
Context		605	879	982	1020	1031	1031	1031	1031	1031	1052
Sample	All	184	195	201	205	212	217	213	213	250	214
Subsample		/T	/T	/T	/T	/T	/T	/1	/T	/T	/T
S	598	3	0	6	4	7	14	57	10	35	3
N	9275	3	0	6	7	7	24	124	13	41	3
ALPHA	143	0	0	0	0	0	14	41	0	111	0
SEALPHA	3	0	0	0	0	0	5	6	0	47	0
SOB	299	1	0	2	3	2	6	14	2	11	2
PSOB	50	33	0	33	75	29	43	25	20	31	67
NOB	1820	1	0	2	5	2	6	16	2	13	2
PNOB	20	33	0	33	71	29	25	13	15	32	67
ALPHAOB	102	0	0	0	0	0	0	0	0	0	0
SEALPHAOB	4	0	0	0	0	0	0	0	0	0	0
SW	35	1	0	0	0	0	1	1	0	2	0
PSW	6	33	0	0	0	0	7	2	0	6	0
NW	301	1	0	0	0	0	1	2	0	4	0
PNW	3	33	0	0	0	0	4	2	0	10	0
ALPHAW	10	0	0	0	0	0	0	0	0	0	0
SEALPHAW	1	0	0	0	0	0	0	0	0	0	0
SD	36	0	0	0	0	0	0	1	0	1	0
PSD	6	0	0	0	0	0	0	2	0	3	0
ND	324	0	0	0	0	0	0	1	0	1	0
PND	3	0	0	0	0	0	0	1	0	2	0
ALPHAD	10	0	0	0	0	0	0	0	0	0	0
SEALPHAD	1	0	0	0	0	0	0	0	0	0	0
SP	129	0	0	0	0	1	0	7	1	4	0
PSP	22	0	0	0	0	14	0	12	10	11	0
NP	618	0	0	0	0	1	0	7	1	4	0
PNP	7	0	0	0	0	14	0	6	8	10	0
ALPHAP	50	0	0	0	0	0	0	0	0	0	0
SEALPHAP	3	0	0	0	0	0	0	0	0	0	0
SM	6	0	0	0	0	0	0	0	0	0	0
PSM	1	0	0	0	0	0	0	0	0	0	0
NM	25	0	0	0	0	0	0	0	0	0	0
PNM	0	0	0	0	0	0	0	0	0	0	0
ALPHAM	3	0	0	0	0	0	0	0	0	0	0
SEALPHAM	1	0	0	0	0	0	0	0	0	0	0
SL	15	0	0	1	0	0	0	1	0	1	0
PSL	3	0	0	17	0	0	0	2	0	3	0
NL	108	0	0	1	0	0	0	2	0	1	0
PNL	1	0	0	17	0	0	0	2	0	2	0
ALPHAL	5	0	0	0	0	0	0	0	0	0	0
SEALPHAL	1	0	0	0	0	0	0	0	0	0	0
SRT	1440	0	0	0	1	2	7	28	6	13	3
PSRT	241	0	0	0	25	29	50	49	60	37	100
NRT	3480	0	0	0	1	2	7	45	7	14	3
PNRT	38	0	0	0	14	29	29	36	54	34	100
ALPHART	920	0	0	0	0	0	0	32	0	0	0

Sample	All	184	195	201	205	212	217	213	213	250	214
Subsample		/T	/T	/T	/T	/T	/T	/1	/T	/T	/T
SEALPHART	25	0	0	0	0	0	0	9	0	0	0
SRD	301	0	0	0	0	0	1	6	1	1	0
PSRD	50	0	0	0	0	0	7	11	10	3	0
NRD	779	0	0	0	0	0	1	9	2	1	0
PNRD	8	0	0	0	0	0	4	7	15	2	0
ALPHARD	180	0	0	0	0	0	0	0	0	0	0
SEALPHARD	10	0	0	0	0	0	0	0	0	0	0
SRF	288	0	0	0	1	0	2	4	1	3	2
PSRF	48	0	0	0	25	0	14	7	10	9	67
NRF	615	0	0	0	1	0	2	9	1	3	2
PNRF	7	0	0	0	14	0	8	7	8	7	67
ALPHARF	211	0	0	0	0	0	0	0	0	0	0
SEALPHARF	14	0	0	0	0	0	0	0	0	0	0
SSA	128	0	0	2	1	3	3	25	5	13	0
PSSA	21	0	0	33	25	43	21	44	50	37	0
NSA	5226	0	0	2	2	3	13	83	8	13	0
PNSA	56	0	0	33	29	43	54	67	62	32	0
ALPHASA	24	0	0	0	0	0	0	12	0	0	0
SEALPHASA	1	0	0	0	0	0	0	2	0	0	0
SSF	58	0	0	1	0	1	1	11	3	7	0
PSSF	10	0	0	17	0	14	7	19	30	20	0
NSF	1086	0	0	1	0	1	1	16	4	7	0
PNSF	12	0	0	17	0	14	4	13	31	17	0
ALPHASF	13	0	0	0	0	0	0	0	0	0	0
SEALPHASF	1	0	0	0	0	0	0	0	0	0	0
SST	45	0	0	0	0	0	0	9	0	1	0
PSST	8	0	0	0	0	0	0	16	0	3	0
NST	1069	0	0	0	0	0	0	18	0	1	0
PNST	12	0	0	0	0	0	0	15	0	2	0
ALPHAST	10	0	0	0	0	0	0	0	0	0	0
SEALPHAST	1	0	0	0	0	0	0	0	0	0	0
SSS	25	0	0	1	1	2	2	5	2	5	0
PSSS	4	0	0	17	25	29	14	9	20	14	0
NSS	3071	0	0	1	2	2	12	49	4	5	0
PNSS	33	0	0	17	29	29	50	40	31	12	0
ALPHASS	4	0	0	0	0	0	0	1	0	0	0
SEALPHASS	0	0	0	0	0	0	0	0	0	0	0
SG	7	0	0	1	1	2	2	4	2	4	0
PSG	1	0	0	17	25	29	14	7	20	11	0
NG	2963	0	0	1	2	2	12	48	4	4	0
PNG	32	0	0	17	29	29	50	39	31	10	0
ALPHAG	1	0	0	0	0	0	0	1	0	0	0
SEALPHAG	0	0	0	0	0	0	0	0	0	0	0

Trench	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A
Context	1055	1055	1055	1055	1055	1063	1063	1063	1063	1064
Sample	245	243	243	246	246	219	219	220	220	244
Subsample	/T	/1	/T	/1	/T	/1	/T	/1	/T	/1
S	13	96	29	77	34	95	40	112	18	76
N	13	210	32	113	37	150	55	346	29	170
ALPHA	0	68	144	106	197	111	65	57	21	53
SEALPHA	0	8	83	20	113	17	19	5	7	7
SOB	3	35	11	27	12	41	18	58	7	27
PSOB	23	36	38	35	35	43	45	52	39	36
NOB	3	59	11	33	15	59	22	155	13	35
PNOB	23	28	34	29	41	39	40	45	45	21
ALPHAOB	0	37	0	68	0	59	48	34	0	53
SEALPHAOB	0	9	0	29	0	16	27	4	0	20
SW	1	4	1	6	1	4	2	5	0	4
PSW	8	4	3	8	3	4	5	4	0	5
NW	1	7	1	7	2	9	3	7	0	5
PNW	8	3	3	6	5	6	5	2	0	3
ALPHAW	0	0	0	0	0	0	0	0	0	0
SEALPHAW	0	0	0	0	0	0	0	0	0	0
SD	0	4	1	1	1	3	2	3	2	6
PSD	0	4	3	1	3	3	5	3	11	8
ND	0	12	1	3	1	18	4	77	7	8
PND	0	6	3	3	3	12	7	22	24	5
ALPHAD	0	0	0	0	0	0	0	1	0	0
SEALPHAD	0	0	0	0	0	0	0	0	0	0
SP	1	14	4	8	4	20	7	28	1	7
PSP	8	15	14	10	12	21	18	25	6	9
NP	1	22	4	10	4	22	7	54	1	8
PNP	8	10	13	9	11	15	13	16	3	5
ALPHAP	0	17	0	0	0	101	0	24	0	0
SEALPHAP	0	7	0	0	0	70	0	6	0	0
SM	0	0	0	1	0	0	0	0	0	0
PSM	0	0	0	1	0	0	0	0	0	0
NM	0	0	0	1	0	0	0	0	0	0
PNM	0	0	0	1	0	0	0	0	0	0
ALPHAM	0	0	0	0	0	0	0	0	0	0
SEALPHAM	0	0	0	0	0	0	0	0	0	0
SL	1	1	0	1	0	0	0	1	0	1
PSL	8	1	0	1	0	0	0	1	0	1
NL	1	2	0	1	0	0	0	1	0	1
PNL	8	1	0	1	0	0	0	0	0	1
ALPHAL	0	0	0	0	0	0	0	0	0	0
SEALPHAL	0	0	0	0	0	0	0	0	0	0
SRT	3	38	13	35	13	28	14	35	8	30
PSRT	23	40	45	45	38	29	35	31	44	39
NRT	3	99	16	53	14	67	22	198	18	72
PNRT	23	47	50	47	38	45	40	57	62	42
ALPHART	0	23	0	45	0	18	17	12	0	19

Sample	245	243	243	246	246	219	219	220	220	244
Subsample	/T	/1	/T	/1	/T	/1	/T	/1	/T	/1
SEALPHART	0	4	0	12	0	4	7	2	0	4
SRD	1	6	3	5	3	5	1	4	2	6
PSRD	8	6	10	6	9	5	3	4	11	8
NRD	1	14	4	6	3	8	1	12	2	22
PNRD	8	7	13	5	8	5	2	3	7	13
ALPHARD	0	0	0	0	0	0	0	0	0	3
SEALPHARD	0	0	0	0	0	0	0	0	0	1
SRF	0	7	2	6	2	5	3	8	3	5
PSRF	0	7	7	8	6	5	8	7	17	7
NRF	0	14	2	7	3	15	5	47	8	11
PNRF	0	7	6	6	8	10	9	14	28	6
ALPHARF	0	0	0	0	0	0	0	3	0	0
SEALPHARF	0	0	0	0	0	0	0	1	0	0
SSA	3	28	6	25	9	17	8	17	3	24
PSSA	23	29	21	32	26	18	20	15	17	32
NSA	3	81	6	41	9	26	9	38	3	88
PNSA	23	39	19	36	24	17	16	11	10	52
ALPHASA	0	15	0	28	0	22	0	12	0	11
SEALPHASA	0	3	0	8	0	9	0	3	0	2
SSF	2	12	3	12	2	9	3	10	2	10
PSSF	15	13	10	16	6	9	8	9	11	13
NSF	2	23	3	15	2	13	3	18	2	22
PNSF	15	11	9	13	5	9	5	5	7	13
ALPHASF	0	10	0	0	0	0	0	0	0	7
SEALPHASF	0	4	0	0	0	0	0	0	0	3
SST	0	11	1	8	3	6	4	5	0	9
PSST	0	11	3	10	9	6	10	4	0	12
NST	0	35	1	14	3	11	5	17	0	24
PNST	0	17	3	12	8	7	9	5	0	14
ALPHAST	0	6	0	0	0	0	0	0	0	5
SEALPHAST	0	2	0	0	0	0	0	0	0	2
SSS	1	5	2	5	4	2	1	2	1	5
PSSS	8	5	7	6	12	2	3	2	6	7
NSS	1	23	2	12	4	2	1	3	1	42
PNSS	8	11	6	11	11	1	2	1	3	25
ALPHASS	0	2	0	0	0	0	0	0	0	2
SEALPHASS	0	1	0	0	0	0	0	0	0	0
SG	1	4	1	4	4	2	1	2	1	4
PSG	8	4	3	5	12	2	3	2	6	5
NG	1	22	1	11	4	2	1	3	1	41
PNG	8	10	3	10	11	1	2	1	3	24
ALPHAG	0	2	0	0	0	0	0	0	0	1
SEALPHAG	0	1	0	0	0	0	0	0	0	0

Trench	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-A	KLA-B	KLA-B
Context	1064	1064	1067	1067	1096	1096	1096	84	93
Sample	244	232	233	233	239	238	238	31	33
Subsample	/T	/T	/1	/T	/T	/1	/T	/T	/T
S	26	6	58	34	12	54	11	0	2
N	34	6	100	42	12	77	12	0	2
ALPHA	50	0	57	82	0	80	0	0	0
SEALPHA	19	0	10	31	0	19	0	0	0
SOB	10	4	19	10	5	27	2	0	0
PSOB	38	67	33	29	42	50	18	0	0
NOB	11	4	22	11	5	33	2	0	0
PNOB	32	67	22	26	42	43	17	0	0
ALPHAOB	0	0	64	0	0	68	0	0	0
SEALPHAOB	0	0	37	0	0	29	0	0	0
SW	0	1	2	0	1	5	1	0	0
PSW	0	17	3	0	8	9	9	0	0
NW	0	1	3	0	1	6	1	0	0
PNW	0	17	3	0	8	8	8	0	0
ALPHAW	0	0	0	0	0	0	0	0	0
SEALPHAW	0	0	0	0	0	0	0	0	0
SD	0	1	4	0	0	3	0	0	0
PSD	0	17	7	0	0	6	0	0	0
ND	0	1	5	0	0	8	0	0	0
PND	0	17	5	0	0	10	0	0	0
ALPHAD	0	0	0	0	0	0	0	0	0
SEALPHAD	0	0	0	0	0	0	0	0	0
SP	4	1	8	1	1	11	0	0	0
PSP	15	17	14	3	8	20	0	0	0
NP	5	1	8	2	1	12	0	0	0
PNP	15	17	8	5	8	16	0	0	0
ALPHAP	0	0	0	0	0	0	0	0	0
SEALPHAP	0	0	0	0	0	0	0	0	0
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	1	1	1	1	0	1	1	0	0
PSL	4	17	2	3	0	2	9	0	0
NL	1	1	1	1	0	1	1	0	0
PNL	3	17	1	2	0	1	8	0	0
ALPHAL	0	0	0	0	0	0	0	0	0
SEALPHAL	0	0	0	0	0	0	0	0	0
SRT	9	2	24	13	7	23	7	0	0
PSRT	35	33	41	38	58	43	64	0	0
NRT	10	2	45	17	7	39	8	0	0
PNRT	29	33	45	40	58	51	67	0	0
ALPHART	0	0	21	0	0	24	0	0	0

Sample	244	232	233	233	239	238	238	31	33
Subsample	/T	/T	/1	/T	/T	/1	/T	/T	/T
SEALPHART	0	0	6	0	0	7	0	0	0
SRD	3	0	3	1	3	4	1	0	0
PSRD	12	0	5	3	25	7	9	0	0
NRD	4	0	9	2	3	10	1	0	0
PNRD	12	0	9	5	25	13	8	0	0
ALPHARD	0	0	0	0	0	0	0	0	0
SEALPHARD	0	0	0	0	0	0	0	0	0
SRF	1	1	3	2	2	4	1	0	0
PSRF	4	17	5	6	17	7	9	0	0
NRF	1	1	6	2	2	5	1	0	0
PNRF	3	17	6	5	17	6	8	0	0
ALPHARF	0	0	0	0	0	0	0	0	0
SEALPHARF	0	0	0	0	0	0	0	0	0
SSA	12	1	20	12	4	10	5	0	0
PSSA	46	17	34	35	33	19	45	0	0
NSA	19	1	51	16	4	16	6	0	0
PNSA	56	17	51	38	33	21	50	0	0
ALPHASA	0	0	12	0	0	0	0	0	0
SEALPHASA	0	0	3	0	0	0	0	0	0
SSF	5	1	9	6	3	6	3	0	0
PSSF	19	17	16	18	25	11	27	0	0
NSF	5	1	13	7	3	7	3	0	0
PNSF	15	17	13	17	25	9	25	0	0
ALPHASF	0	0	0	0	0	0	0	0	0
SEALPHASF	0	0	0	0	0	0	0	0	0
SST	4	0	7	2	1	3	2	0	0
PSST	15	0	12	6	8	6	18	0	0
NST	5	0	17	3	1	8	3	0	0
PNST	15	0	17	7	8	10	25	0	0
ALPHAST	0	0	0	0	0	0	0	0	0
SEALPHAST	0	0	0	0	0	0	0	0	0
SSS	3	0	4	4	0	1	0	0	0
PSSS	12	0	7	12	0	2	0	0	0
NSS	9	0	21	6	0	1	0	0	0
PNSS	26	0	21	14	0	1	0	0	0
ALPHASS	0	0	2	0	0	0	0	0	0
SEALPHASS	0	0	1	0	0	0	0	0	0
SG	3	0	4	3	0	1	0	0	0
PSG	12	0	7	9	0	2	0	0	0
NG	9	0	21	5	0	1	0	0	0
PNG	26	0	21	12	0	1	0	0	0
ALPHAG	0	0	2	0	0	0	0	0	0
SEALPHAG	0	0	1	0	0	0	0	0	0

Trench	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B
Context	93	97	99	187	219	224	296	358	358	717
Sample	34	51	29	48	54	59	63	66	71	193
Subsample	/T	/T	/T	/T	/T1	/T	/T	/T	/T	/1
S	4	9	0	4	8	1	0	23	11	15
N	4	9	0	5	9	1	0	28	12	16
ALPHA	0	0	0	0	0	0	0	59	0	0
SEALPHA	0	0	0	0	0	0	0	28	0	0
SOB	2	6	0	1	5	0	0	6	4	2
PSOB	50	67	0	25	63	0	0	26	36	13
NOB	2	6	0	1	5	0	0	6	4	2
PNOB	50	67	0	20	56	0	0	21	33	13
ALPHAOB	0	0	0	0	0	0	0	0	0	0
SEALPHAOB	0	0	0	0	0	0	0	0	0	0
SW	0	1	0	0	0	0	0	2	1	0
PSW	0	11	0	0	0	0	0	9	9	0
NW	0	1	0	0	0	0	0	2	1	0
PNW	0	11	0	0	0	0	0	7	8	0
ALPHAW	0	0	0	0	0	0	0	0	0	0
SEALPHAW	0	0	0	0	0	0	0	0	0	0
SD	0	0	0	0	0	0	0	1	0	1
PSD	0	0	0	0	0	0	0	4	0	7
ND	0	0	0	0	0	0	0	1	0	1
PND	0	0	0	0	0	0	0	4	0	6
ALPHAD	0	0	0	0	0	0	0	0	0	0
SEALPHAD	0	0	0	0	0	0	0	0	0	0
SP	0	1	0	0	1	0	0	1	0	0
PSP	0	11	0	0	13	0	0	4	0	0
NP	0	1	0	0	1	0	0	1	0	0
PNP	0	11	0	0	11	0	0	4	0	0
ALPHAP	0	0	0	0	0	0	0	0	0	0
SEALPHAP	0	0	0	0	0	0	0	0	0	0
SM	0	0	0	0	0	0	0	0	0	0
PSM	0	0	0	0	0	0	0	0	0	0
NM	0	0	0	0	0	0	0	0	0	0
PNM	0	0	0	0	0	0	0	0	0	0
ALPHAM	0	0	0	0	0	0	0	0	0	0
SEALPHAM	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	0	1	0	0	0	0	2
PSL	0	0	0	0	13	0	0	0	0	13
NL	0	0	0	0	1	0	0	0	0	2
PNL	0	0	0	0	11	0	0	0	0	13
ALPHAL	0	0	0	0	0	0	0	0	0	0
SEALPHAL	0	0	0	0	0	0	0	0	0	0
SRT	2	4	0	1	1	0	0	10	5	9
PSRT	50	44	0	25	13	0	0	43	45	60
NRT	2	4	0	2	1	0	0	15	5	10
PNRT	50	44	0	40	11	0	0	54	42	63
ALPHART	0	0	0	0	0	0	0	0	0	0

Sample	34	51	29	48	54	59	63	66	71	193
Subsample	/T	/T	/T	/T	/T1	/T	/T	/T	/T	/1
SEALPHART	0	0	0	0	0	0	0	0	0	0
SRD	0	0	0	0	0	0	0	1	2	1
PSRD	0	0	0	0	0	0	0	4	18	7
NRD	0	0	0	0	0	0	0	1	2	1
PNRD	0	0	0	0	0	0	0	4	17	6
ALPHARD	0	0	0	0	0	0	0	0	0	0
SEALPHARD	0	0	0	0	0	0	0	0	0	0
SRF	0	3	0	0	1	0	0	2	2	3
PSRF	0	33	0	0	13	0	0	9	18	20
NRF	0	3	0	0	1	0	0	2	2	3
PNRF	0	33	0	0	11	0	0	7	17	19
ALPHARF	0	0	0	0	0	0	0	0	0	0
SEALPHARF	0	0	0	0	0	0	0	0	0	0
SSA	0	0	0	1	1	0	0	9	3	9
PSSA	0	0	0	25	13	0	0	39	27	60
NSA	0	0	0	1	1	0	0	12	4	9
PNSA	0	0	0	20	11	0	0	43	33	56
ALPHASA	0	0	0	0	0	0	0	0	0	0
SEALPHASA	0	0	0	0	0	0	0	0	0	0
SSF	0	0	0	0	0	0	0	3	0	6
PSSF	0	0	0	0	0	0	0	13	0	40
NSF	0	0	0	0	0	0	0	6	0	6
PNSF	0	0	0	0	0	0	0	21	0	38
ALPHASF	0	0	0	0	0	0	0	0	0	0
SEALPHASF	0	0	0	0	0	0	0	0	0	0
SST	0	0	0	0	0	0	0	3	1	3
PSST	0	0	0	0	0	0	0	13	9	20
NST	0	0	0	0	0	0	0	3	1	3
PNST	0	0	0	0	0	0	0	11	8	19
ALPHAST	0	0	0	0	0	0	0	0	0	0
SEALPHAST	0	0	0	0	0	0	0	0	0	0
SSS	0	0	0	1	1	0	0	3	2	0
PSSS	0	0	0	25	13	0	0	13	18	0
NSS	0	0	0	1	1	0	0	3	3	0
PNSS	0	0	0	20	11	0	0	11	25	0
ALPHASS	0	0	0	0	0	0	0	0	0	0
SEALPHASS	0	0	0	0	0	0	0	0	0	0
SG	0	0	0	1	1	0	0	3	2	0
PSG	0	0	0	25	13	0	0	13	18	0
NG	0	0	0	1	1	0	0	3	3	0
PNG	0	0	0	20	11	0	0	11	25	0
ALPHAG	0	0	0	0	0	0	0	0	0	0
SEALPHAG	0	0	0	0	0	0	0	0	0	0

Trench	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B
Context	717	728	975	1065	1186	1204	1220	1220	1223	1230	1231
Sample	193	192	197	200	203	222	224	224	215	218	204
Subsample	/T	/T	/T	/T	/T	/T	/1	/T	/T	/T	/T
S	21	0	0	3	2	41	54	12	0	0	0
N	28	0	0	4	2	82	109	14	0	0	0
ALPHA	39	0	0	0	0	33	43	0	0	0	0
SEALPHA	17	0	0	0	0	6	7	0	0	0	0
SOB	5	0	0	2	0	9	15	5	0	0	0
PSOB	24	0	0	67	0	22	28	42	0	0	0
NOB	5	0	0	2	0	11	33	7	0	0	0
PNOB	18	0	0	50	0	13	30	50	0	0	0
ALPHAOB	0	0	0	0	0	0	11	0	0	0	0
SEALPHAOB	0	0	0	0	0	0	3	0	0	0	0
SW	1	0	0	0	0	2	3	3	0	0	0
PSW	5	0	0	0	0	5	6	25	0	0	0
NW	1	0	0	0	0	2	7	3	0	0	0
PNW	4	0	0	0	0	2	6	21	0	0	0
ALPHAW	0	0	0	0	0	0	0	0	0	0	0
SEALPHAW	0	0	0	0	0	0	0	0	0	0	0
SD	0	0	0	0	0	2	1	0	0	0	0
PSD	0	0	0	0	0	5	2	0	0	0	0
ND	0	0	0	0	0	2	8	0	0	0	0
PND	0	0	0	0	0	2	7	0	0	0	0
ALPHAD	0	0	0	0	0	0	0	0	0	0	0
SEALPHAD	0	0	0	0	0	0	0	0	0	0	0
SP	0	0	0	0	0	1	5	1	0	0	0
PSP	0	0	0	0	0	2	9	8	0	0	0
NP	0	0	0	0	0	1	8	1	0	0	0
PNP	0	0	0	0	0	1	7	7	0	0	0
ALPHAP	0	0	0	0	0	0	0	0	0	0	0
SEALPHAP	0	0	0	0	0	0	0	0	0	0	0
SM	0	0	0	0	0	0	0	0	0	0	0
PSM	0	0	0	0	0	0	0	0	0	0	0
NM	0	0	0	0	0	0	0	0	0	0	0
PNM	0	0	0	0	0	0	0	0	0	0	0
ALPHAM	0	0	0	0	0	0	0	0	0	0	0
SEALPHAM	0	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	0	0	0	0	0	0	0	0
PSL	0	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0	0	0
PNL	0	0	0	0	0	0	0	0	0	0	0
ALPHAL	0	0	0	0	0	0	0	0	0	0	0
SEALPHAL	0	0	0	0	0	0	0	0	0	0	0
SRT	11	0	0	1	0	16	29	6	0	0	0
PSRT	52	0	0	33	0	39	54	50	0	0	0
NRT	18	0	0	1	0	32	70	8	0	0	0
PNRT	64	0	0	25	0	39	64	57	0	0	0
ALPHART	0	0	0	0	0	13	19	0	0	0	0

Sample	193	192	197	200	203	222	224	224	215	218	204
Subsample	/T	/T	/T	/T	/T	/T	/1	/T	/T	/T	/T
SEALPHART	0	0	0	0	0	4	4	0	0	0	0
SRD	1	0	0	0	0	4	6	2	0	0	0
PSRD	5	0	0	0	0	10	11	17	0	0	0
NRD	2	0	0	0	0	7	14	2	0	0	0
PNRD	7	0	0	0	0	9	13	14	0	0	0
ALPHARD	0	0	0	0	0	0	0	0	0	0	0
SEALPHARD	0	0	0	0	0	0	0	0	0	0	0
SRF	2	0	0	1	0	3	6	2	0	0	0
PSRF	10	0	0	33	0	7	11	17	0	0	0
NRF	4	0	0	1	0	5	24	4	0	0	0
PNRF	14	0	0	25	0	6	22	29	0	0	0
ALPHARF	0	0	0	0	0	0	3	0	0	0	0
SEALPHARF	0	0	0	0	0	0	1	0	0	0	0
SSA	7	0	0	1	1	9	17	3	0	0	0
PSSA	33	0	0	33	50	22	31	25	0	0	0
NSA	13	0	0	2	1	20	28	3	0	0	0
PNSA	46	0	0	50	50	24	26	21	0	0	0
ALPHASA	0	0	0	0	0	6	19	0	0	0	0
SEALPHASA	0	0	0	0	0	2	7	0	0	0	0
SSF	4	0	0	0	0	2	8	0	0	0	0
PSSF	19	0	0	0	0	5	15	0	0	0	0
NSF	5	0	0	0	0	3	13	0	0	0	0
PNSF	18	0	0	0	0	4	12	0	0	0	0
ALPHASF	0	0	0	0	0	0	0	0	0	0	0
SEALPHASF	0	0	0	0	0	0	0	0	0	0	0
SST	3	0	0	0	0	3	8	3	0	0	0
PSST	14	0	0	0	0	7	15	25	0	0	0
NST	8	0	0	0	0	5	14	3	0	0	0
PNST	29	0	0	0	0	6	13	21	0	0	0
ALPHAST	0	0	0	0	0	0	0	0	0	0	0
SEALPHAST	0	0	0	0	0	0	0	0	0	0	0
SSS	0	0	0	1	1	4	1	0	0	0	0
PSSS	0	0	0	33	50	10	2	0	0	0	0
NSS	0	0	0	2	1	12	1	0	0	0	0
PNSS	0	0	0	50	50	15	1	0	0	0	0
ALPHASS	0	0	0	0	0	0	0	0	0	0	0
SEALPHASS	0	0	0	0	0	0	0	0	0	0	0
SG	0	0	0	1	1	3	1	0	0	0	0
PSG	0	0	0	33	50	7	2	0	0	0	0
NG	0	0	0	2	1	11	1	0	0	0	0
PNG	0	0	0	50	50	13	1	0	0	0	0
ALPHAG	0	0	0	0	0	0	0	0	0	0	0
SEALPHAG	0	0	0	0	0	0	0	0	0	0	0

Trench	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-B	KLA-C	KLA-C	KLA-C	KLA-C
Context	1234	1234	1268	1268	1280	1282	758	759	811	811
Sample	208	208	211	211	229	235	372	373	376	377
Subsample	/1	/T	/1	/T	/T	/T	/T	/1	/1	/1
S	38	24	47	27	9	10	93	96	77	39
N	59	33	67	35	9	16	252	213	121	59
ALPHA	47	40	70	53	0	0	53	67	91	50
SEALPHA	12	15	17	20	0	0	5	8	16	13
SOB	14	9	13	6	3	3	24	29	22	6
PSOB	37	38	28	22	33	30	26	30	29	15
NOB	16	9	15	6	3	3	31	38	27	7
PNOB	27	27	22	17	33	19	12	18	22	12
ALPHAOB	0	0	0	0	0	0	50	55	54	0
SEALPHAOB	0	0	0	0	0	0	21	20	26	0
SW	2	1	3	2	0	1	3	3	2	1
PSW	5	4	6	7	0	10	3	3	3	3
NW	2	1	4	2	0	1	7	4	2	1
PNW	3	3	6	6	0	6	3	2	2	2
ALPHAW	0	0	0	0	0	0	0	0	0	0
SEALPHAW	0	0	0	0	0	0	0	0	0	0
SD	1	1	1	1	0	0	1	3	7	1
PSD	3	4	2	4	0	0	1	3	9	3
ND	1	1	2	1	0	0	1	14	14	2
PND	2	3	3	3	0	0	0	7	12	3
ALPHAD	0	0	0	0	0	0	0	0	0	0
SEALPHAD	0	0	0	0	0	0	0	0	0	0
SP	6	5	7	0	0	0	11	11	11	1
PSP	16	21	15	0	0	0	12	11	14	3
NP	8	5	8	0	0	0	13	13	11	1
PNP	14	15	12	0	0	0	5	6	9	2
ALPHAP	0	0	0	0	0	0	0	0	0	0
SEALPHAP	0	0	0	0	0	0	0	0	0	0
SM	0	0	0	0	0	0	0	0	0	0
PSM	0	0	0	0	0	0	0	0	0	0
NM	0	0	0	0	0	0	0	0	0	0
PNM	0	0	0	0	0	0	0	0	0	0
ALPHAM	0	0	0	0	0	0	0	0	0	0
SEALPHAM	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	0	0	0	3	3	5	0
PSL	0	0	0	0	0	0	3	3	6	0
NL	0	0	0	0	0	0	7	4	5	0
PNL	0	0	0	0	0	0	3	2	4	0
ALPHAL	0	0	0	0	0	0	0	0	0	0
SEALPHAL	0	0	0	0	0	0	0	0	0	0
SRT	17	10	19	12	5	3	46	45	33	25
PSRT	45	42	40	44	56	30	49	47	43	64
NRT	31	17	23	13	5	3	177	132	70	41
PNRT	53	52	34	37	56	19	70	62	58	69
ALPHART	16	0	50	0	0	0	20	24	25	28

Sample	208	208	211	211	229	235	372	373	376	377
Subsample	/1	/T	/1	/T	/T	/T	/T	/1	/1	/1
SEALPHART	5	0	26	0	0	0	2	3	5	8
SRD	4	2	3	1	0	0	7	8	7	3
PSRD	11	8	6	4	0	0	8	8	9	8
NRD	13	6	3	1	0	0	44	26	21	3
PNRD	22	18	4	3	0	0	17	12	17	5
ALPHARD	0	0	0	0	0	0	2	4	4	0
SEALPHARD	0	0	0	0	0	0	1	1	1	0
SRF	2	1	2	2	2	1	7	6	6	4
PSRF	5	4	4	7	22	10	8	6	8	10
NRF	2	1	2	2	2	1	22	11	9	7
PNRF	3	3	3	6	22	6	9	5	7	12
ALPHARF	0	0	0	0	0	0	4	0	0	0
SEALPHARF	0	0	0	0	0	0	1	0	0	0
SSA	11	7	15	8	3	4	32	32	24	16
PSSA	29	29	32	30	33	40	34	33	31	41
NSA	29	13	29	14	3	9	132	81	51	27
PNSA	49	39	43	40	33	56	52	38	42	46
ALPHASA	7	0	13	0	0	0	14	20	18	17
SEALPHASA	2	0	4	0	0	0	2	4	4	6
SSF	7	3	7	4	0	1	13	16	13	6
PSSF	18	13	15	15	0	10	14	17	17	15
NSF	12	6	8	5	0	1	61	52	24	14
PNSF	20	18	12	14	0	6	24	24	20	24
ALPHASF	0	0	0	0	0	0	5	8	12	0
SEALPHASF	0	0	0	0	0	0	1	2	4	0
SST	1	1	4	2	1	0	16	12	9	8
PSST	3	4	9	7	11	0	17	13	12	21
NST	9	3	5	2	1	0	66	25	19	11
PNST	15	9	7	6	11	0	26	12	16	19
ALPHAST	0	0	0	0	0	0	7	9	0	0
SEALPHAST	0	0	0	0	0	0	1	3	0	0
SSS	3	3	4	2	2	3	3	4	2	2
PSSS	8	13	9	7	22	30	3	4	3	5
NSS	8	4	16	7	2	8	5	4	8	2
PNSS	14	12	24	20	22	50	2	2	7	3
ALPHASS	0	0	0	0	0	0	0	0	0	0
SEALPHASS	0	0	0	0	0	0	0	0	0	0
SG	3	3	4	2	2	3	0	0	0	0
PSG	8	13	9	7	22	30	0	0	0	0
NG	8	4	16	7	2	8	0	0	0	0
PNG	14	12	24	20	22	50	0	0	0	0
ALPHAG	0	0	0	0	0	0	0	0	0	0
SEALPHAG	0	0	0	0	0	0	0	0	0	0

Trench	KLA-C	KLA-C	KLA-C	KLA-C	KLA-C	KLA-C	KLA-C	KLA-C	KLA-C	KLA-C
Context	1182	1203	1269	1324	1350	1858	1870	1871	1876	1887
Sample	387	391	394	396	399	401	403	404	405	406
Subsample	/1	/T	/1	/1	/1	/1	/1	/1	/1	/1
S	40	62	84	57	66	60	86	59	55	13
N	112	180	335	137	140	105	160	100	98	55
ALPHA	22	34	36	37	49	58	76	60	52	5
SEALPHA	3	4	3	5	7	10	10	11	9	1
SOB	6	14	23	22	37	16	40	23	20	4
PSOB	15	23	27	39	56	27	47	39	36	31
NOB	9	15	30	26	74	25	58	25	28	4
PNOB	8	8	9	19	53	24	36	25	29	7
ALPHAOB	0	0	46	66	30	20	57	132	32	0
SEALPHAOB	0	0	20	34	6	8	15	91	13	0
SW	1	0	3	1	6	4	9	4	5	2
PSW	3	0	4	2	9	7	10	7	9	15
NW	1	0	4	1	7	11	17	5	11	2
PNW	1	0	1	1	5	10	11	5	11	4
ALPHAW	0	0	0	0	0	0	0	0	0	0
SEALPHAW	0	0	0	0	0	0	0	0	0	0
SD	0	0	2	1	4	2	6	3	2	1
PSD	0	0	2	2	6	3	7	5	4	8
ND	0	0	2	1	12	4	11	4	4	1
PND	0	0	1	1	9	4	7	4	4	2
ALPHAD	0	0	0	0	0	0	0	0	0	0
SEALPHAD	0	0	0	0	0	0	0	0	0	0
SP	4	9	10	8	12	5	14	12	6	0
PSP	10	15	12	14	18	8	16	20	11	0
NP	7	10	13	9	16	5	15	13	6	0
PNP	6	6	4	7	11	5	9	13	6	0
ALPHAP	0	0	0	0	0	0	0	0	0	0
SEALPHAP	0	0	0	0	0	0	0	0	0	0
SM	0	0	1	0	0	0	4	0	1	0
PSM	0	0	1	0	0	0	5	0	2	0
NM	0	0	1	0	0	0	5	0	1	0
PNM	0	0	0	0	0	0	3	0	1	0
ALPHAM	0	0	0	0	0	0	0	0	0	0
SEALPHAM	0	0	0	0	0	0	0	0	0	0
SL	1	1	1	1	1	0	1	1	1	0
PSL	3	2	1	2	2	0	1	2	2	0
NL	2	1	5	3	1	0	2	1	1	0
PNL	2	1	1	2	1	0	1	1	1	0
ALPHAL	0	0	0	0	0	0	0	0	0	0
SEALPHAL	0	0	0	0	0	0	0	0	0	0
SRT	22	29	40	22	24	24	28	23	22	5
PSRT	55	47	48	39	36	40	33	39	40	38
NRT	41	73	90	39	83	38	48	44	38	7
PNRT	37	41	27	28	59	36	30	44	39	13
ALPHART	20	18	28	21	11	28	28	20	22	0

Sample	387	391	394	396	399	401	403	404	405	406
Subsample	/1	/T	/1	/1	/1	/1	/1	/1	/1	/1
SEALPHART	5	3	5	6	2	9	8	5	7	0
SRD	3	4	9	4	4	2	6	5	4	2
PSRD	8	6	11	7	6	3	7	8	7	15
NRD	14	11	18	12	9	2	15	15	8	4
PNRD	13	6	5	9	6	2	9	15	8	7
ALPHARD	0	0	0	0	0	0	0	0	0	0
SEALPHARD	0	0	0	0	0	0	0	0	0	0
SRF	3	6	5	3	7	4	3	2	4	1
PSRF	8	10	6	5	11	7	3	3	7	8
NRF	4	12	10	4	35	8	7	2	4	1
PNRF	4	7	3	3	25	8	4	2	4	2
ALPHARF	0	0	0	0	3	0	0	0	0	0
SEALPHARF	0	0	0	0	1	0	0	0	0	0
SSA	22	27	32	21	12	19	21	17	18	7
PSSA	55	44	38	37	18	32	24	29	33	54
NSA	87	130	254	80	24	39	67	42	36	49
PNSA	78	72	76	58	17	37	42	42	37	89
ALPHASA	10	10	10	9	10	15	11	11	15	2
SEALPHASA	2	2	1	2	4	4	2	3	4	1
SSF	7	8	15	10	7	8	10	8	7	1
PSSF	18	13	18	18	11	13	12	14	13	8
NSF	14	19	35	16	17	12	17	15	13	3
PNSF	13	11	10	12	12	11	11	15	13	5
ALPHASF	0	0	10	0	0	0	0	0	0	0
SEALPHASF	0	0	3	0	0	0	0	0	0	0
SST	10	13	12	6	4	6	5	5	7	2
PSST	25	21	14	11	6	10	6	8	13	15
NST	20	38	29	13	6	8	12	11	12	2
PNST	18	21	9	9	4	8	8	11	12	4
ALPHAST	8	7	8	0	0	0	0	0	0	0
SEALPHAST	3	2	2	0	0	0	0	0	0	0
SSS	5	6	5	5	1	5	6	4	4	4
PSSS	13	10	6	9	2	8	7	7	7	31
NSS	53	73	190	51	1	19	38	16	11	44
PNSS	47	41	57	37	1	18	24	16	11	80
ALPHASS	1	2	1	1	0	0	2	0	0	1
SEALPHASS	0	0	0	0	0	0	1	0	0	0
SG	4	4	4	3	1	4	4	3	4	4
PSG	10	6	5	5	2	7	5	5	7	31
NG	49	70	188	49	1	18	36	15	11	44
PNG	44	39	56	36	1	17	23	15	11	80
ALPHAG	1	1	1	1	0	0	1	0	0	1
SEALPHAG	0	0	0	0	0	0	0	0	0	0

Trench	KLA-C	KLA-C	KLA-D	KLA-D	KLA-D	KLA-D	KLA-D	KLA-D	KLA-D	KLA-D
Context	1920	1923	2	464	464	464	464	480	512	515
Sample	412	413	16	2	2	3	3	4	6	10
Subsample	/1	/1	/T	/1	/T	/1	/T	/T	/T	/T
S	10	38	3	39	5	18	54	11	7	17
N	10	46	3	105	7	20	78	11	7	17
ALPHA	0	101	0	23	0	82	77	0	0	0
SEALPHA	0	38	0	4	0	57	18	0	0	0
SOB	6	21	0	11	1	4	16	2	4	8
PSOB	60	55	0	28	20	22	30	18	57	47
NOB	6	27	0	14	1	4	19	2	4	8
PNOB	60	59	0	13	14	20	24	18	57	47
ALPHAOB	0	45	0	0	0	0	0	0	0	0
SEALPHAOB	0	21	0	0	0	0	0	0	0	0
SW	2	2	0	1	0	0	3	0	1	1
PSW	20	5	0	3	0	0	6	0	14	6
NW	2	2	0	1	0	0	3	0	1	1
PNW	20	4	0	1	0	0	4	0	14	6
ALPHAW	0	0	0	0	0	0	0	0	0	0
SEALPHAW	0	0	0	0	0	0	0	0	0	0
SD	2	1	0	1	1	1	2	0	0	0
PSD	20	3	0	3	20	6	4	0	0	0
ND	2	3	0	1	1	1	6	0	0	0
PND	20	7	0	1	14	5	8	0	0	0
ALPHAD	0	0	0	0	0	0	0	0	0	0
SEALPHAD	0	0	0	0	0	0	0	0	0	0
SP	0	4	0	7	1	2	5	0	3	3
PSP	0	11	0	18	20	11	9	0	43	18
NP	0	4	0	10	1	2	5	0	3	3
PNP	0	9	0	10	14	10	6	0	43	18
ALPHAP	0	0	0	0	0	0	0	0	0	0
SEALPHAP	0	0	0	0	0	0	0	0	0	0
SM	0	0	0	0	0	0	0	0	0	0
PSM	0	0	0	0	0	0	0	0	0	0
NM	0	0	0	0	0	0	0	0	0	0
PNM	0	0	0	0	0	0	0	0	0	0
ALPHAM	0	0	0	0	0	0	0	0	0	0
SEALPHAM	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	1	1	0	1	0	0	0
PSL	0	0	0	3	20	0	2	0	0	0
NL	0	0	0	1	1	0	1	0	0	0
PNL	0	0	0	1	14	0	1	0	0	0
ALPHAL	0	0	0	0	0	0	0	0	0	0
SEALPHAL	0	0	0	0	0	0	0	0	0	0
SRT	4	12	2	21	1	10	23	3	2	5
PSRT	40	32	67	54	20	56	43	27	29	29
NRT	4	18	2	42	1	11	34	3	2	5
PNRT	40	39	67	40	14	55	44	27	29	29
ALPHART	0	0	0	17	0	0	32	0	0	0

Sample	412	413	16	2	2	3	3	4	6	10
Subsample	/1	/1	/T	/1	/T	/1	/T	/T	/T	/T
SEALPHART	0	0	0	5	0	0	11	0	0	0
SRD	0	1	0	5	1	2	4	2	0	1
PSRD	0	3	0	13	20	11	7	18	0	6
NRD	0	1	0	20	1	2	11	2	0	1
PNRD	0	2	0	19	14	10	14	18	0	6
ALPHARD	0	0	0	2	0	0	0	0	0	0
SEALPHARD	0	0	0	1	0	0	0	0	0	0
SRF	1	4	0	4	0	2	3	0	0	1
PSRF	10	11	0	10	0	11	6	0	0	6
NRF	1	8	0	5	0	2	4	0	0	1
PNRF	10	17	0	5	0	10	5	0	0	6
ALPHARF	0	0	0	0	0	0	0	0	0	0
SEALPHARF	0	0	0	0	0	0	0	0	0	0
SSA	0	3	2	21	4	6	20	4	1	1
PSSA	0	8	67	54	80	33	37	36	14	6
NSA	0	4	2	84	6	8	35	4	1	1
PNSA	0	9	67	80	86	40	45	36	14	6
ALPHASA	0	0	0	9	0	0	20	0	0	0
SEALPHASA	0	0	0	2	0	0	6	0	0	0
SSF	0	2	0	11	1	3	9	1	0	0
PSSF	0	5	0	28	20	17	17	9	0	0
NSF	0	3	0	20	1	4	11	1	0	0
PNSF	0	7	0	19	14	20	14	9	0	0
ALPHASF	0	0	0	10	0	0	0	0	0	0
SEALPHASF	0	0	0	4	0	0	0	0	0	0
SST	0	1	2	5	1	1	7	0	0	1
PSST	0	3	67	13	20	6	13	0	0	6
NST	0	1	2	16	1	1	14	0	0	1
PNST	0	2	67	15	14	5	18	0	0	6
ALPHAST	0	0	0	0	0	0	0	0	0	0
SEALPHAST	0	0	0	0	0	0	0	0	0	0
SSS	0	0	0	5	2	2	4	3	1	0
PSSS	0	0	0	13	40	11	7	27	14	0
NSS	0	0	0	48	4	3	10	3	1	0
PNSS	0	0	0	46	57	15	13	27	14	0
ALPHASS	0	0	0	1	0	0	0	0	0	0
SEALPHASS	0	0	0	0	0	0	0	0	0	0
SG	0	0	0	4	2	2	4	2	1	0
PSG	0	0	0	10	40	11	7	18	14	0
NG	0	0	0	46	4	3	10	2	1	0
PNG	0	0	0	44	57	15	13	18	14	0
ALPHAG	0	0	0	1	0	0	0	0	0	0
SEALPHAG	0	0	0	0	0	0	0	0	0	0

Trench	KLA-D	KLA-D	KLA-D	KLA-D	KLA-D	KLA-D	KLA-D	KLA-D	KLA-D	KLA-D
Context	524	524	524	524	531	531	540	540	540	540
Sample	11	11	13	13	14	15	17	17	18	18
Subsample	/1	/T	/1	/T	/T	/T	/1	/T	/1	/T
S	77	25	51	21	6	11	29	13	38	14
N	208	28	73	21	6	11	34	14	62	20
ALPHA	44	108	75	0	0	0	91	0	42	21
SEALPHA	5	63	18	0	0	0	43	0	10	10
SOB	27	8	25	11	3	4	12	8	17	5
PSOB	35	32	49	52	50	36	41	62	45	36
NOB	62	8	35	11	3	4	13	8	30	10
PNOB	30	29	48	52	50	36	38	57	48	50
ALPHAOB	18	0	40	0	0	0	0	0	17	0
SEALPHAOB	4	0	14	0	0	0	0	0	6	0
SW	5	3	4	2	1	2	0	1	1	1
PSW	6	12	8	10	17	18	0	8	3	7
NW	12	3	10	2	1	2	0	1	1	1
PNW	6	11	14	10	17	18	0	7	2	5
ALPHAW	0	0	0	0	0	0	0	0	0	0
SEALPHAW	0	0	0	0	0	0	0	0	0	0
SD	2	0	2	0	0	0	0	0	0	0
PSD	3	0	4	0	0	0	0	0	0	0
ND	6	0	6	0	0	0	0	0	0	0
PND	3	0	8	0	0	0	0	0	0	0
ALPHAD	0	0	0	0	0	0	0	0	0	0
SEALPHAD	0	0	0	0	0	0	0	0	0	0
SP	14	1	9	5	0	0	2	1	5	2
PSP	18	4	18	24	0	0	7	8	13	14
NP	39	1	9	5	0	0	2	1	5	2
PNP	19	4	12	24	0	0	6	7	8	10
ALPHAP	8	0	0	0	0	0	0	0	0	0
SEALPHAP	2	0	0	0	0	0	0	0	0	0
SM	1	0	0	0	0	0	0	0	0	0
PSM	1	0	0	0	0	0	0	0	0	0
NM	1	0	0	0	0	0	0	0	0	0
PNM	0	0	0	0	0	0	0	0	0	0
ALPHAM	0	0	0	0	0	0	0	0	0	0
SEALPHAM	0	0	0	0	0	0	0	0	0	0
SL	1	1	1	0	0	0	0	0	0	0
PSL	1	4	2	0	0	0	0	0	0	0
NL	1	1	1	0	0	0	0	0	0	0
PNL	0	4	1	0	0	0	0	0	0	0
ALPHAL	0	0	0	0	0	0	0	0	0	0
SEALPHAL	0	0	0	0	0	0	0	0	0	0
SRT	31	8	15	7	2	3	9	3	15	4
PSRT	40	32	29	33	33	27	31	23	39	29
NRT	73	10	22	7	2	3	12	3	38	10
PNRT	35	36	30	33	33	27	35	21	61	50
ALPHART	21	0	21	0	0	0	0	0	9	0

Sample	11	11	13	13	14	15	17	17	18	18
Subsample	/1	/T	/1	/T	/T	/T	/1	/T	/1	/T
SEALPHART	4	0	9	0	0	0	0	0	3	0
SRD	10	3	3	2	0	0	0	0	2	2
PSRD	13	12	6	10	0	0	0	0	5	14
NRD	31	3	5	2	0	0	0	0	10	3
PNRD	15	11	7	10	0	0	0	0	16	15
ALPHARD	5	0	0	0	0	0	0	0	0	0
SEALPHARD	2	0	0	0	0	0	0	0	0	0
SRF	3	1	2	1	1	1	5	1	5	1
PSRF	4	4	4	5	17	9	17	8	13	7
NRF	5	1	2	1	1	1	6	1	18	6
PNRF	2	4	3	5	17	9	18	7	29	30
ALPHARF	0	0	0	0	0	0	0	0	0	0
SEALPHARF	0	0	0	0	0	0	0	0	0	0
SSA	20	8	13	2	3	3	4	0	9	3
PSSA	26	32	25	10	50	27	14	0	24	21
NSA	95	8	18	2	3	3	6	0	18	4
PNSA	46	29	25	10	50	27	18	0	29	20
ALPHASA	8	0	0	0	0	0	0	0	0	0
SEALPHASA	1	0	0	0	0	0	0	0	0	0
SSF	10	4	8	1	1	0	2	0	1	1
PSSF	13	16	16	5	17	0	7	0	3	7
NSF	20	4	11	1	1	0	3	0	1	1
PNSF	10	14	15	5	17	0	9	0	2	5
ALPHASF	8	0	0	0	0	0	0	0	0	0
SEALPHASF	3	0	0	0	0	0	0	0	0	0
SST	7	1	1	1	0	1	1	0	5	2
PSST	9	4	2	5	0	9	3	0	13	14
NST	19	1	2	1	0	1	2	0	13	3
PNST	9	4	3	5	0	9	6	0	21	15
ALPHAST	0	0	0	0	0	0	0	0	0	0
SEALPHAST	0	0	0	0	0	0	0	0	0	0
SSS	3	3	4	0	2	2	1	0	3	0
PSSS	4	12	8	0	33	18	3	0	8	0
NSS	56	3	5	0	2	2	1	0	4	0
PNSS	27	11	7	0	33	18	3	0	6	0
ALPHASS	1	0	0	0	0	0	0	0	0	0
SEALPHASS	0	0	0	0	0	0	0	0	0	0
SG	3	3	4	0	2	2	1	0	3	0
PSG	4	12	8	0	33	18	3	0	8	0
NG	56	3	5	0	2	2	1	0	4	0
PNG	27	11	7	0	33	18	3	0	6	0
ALPHAG	1	0	0	0	0	0	0	0	0	0
SEALPHAG	0	0	0	0	0	0	0	0	0	0

Trench	KLA-D	KLA-D	LAL-B	LAL-C	LAL-C	LAL-C	LAL-C	LAL-C	LAL-C	LAL-D
Context	546	546	257	290	295	295	302	329	375	232
Sample	19	19	23	15	16	16	17	19	26	32
Subsample	/1	/T	/T	/T	/1	/T	/1	/1	/1	/1
S	78	35	48	38	102	49	60	27	64	33
N	148	36	78	86	318	143	230	87	111	107
ALPHA	67	565	53	26	52	26	27	14	63	16
SEALPHA	9	502	11	5	5	4	3	2	11	3
SOB	33	14	15	11	30	12	21	14	24	5
PSOB	42	40	31	29	29	24	35	52	38	15
NOB	49	14	16	11	38	14	28	17	35	6
PNOB	33	39	21	13	12	10	12	20	32	6
ALPHAOB	45	0	0	0	65	0	39	0	34	0
SEALPHAOB	13	0	0	0	25	0	17	0	12	0
SW	7	3	6	3	6	2	4	5	5	1
PSW	9	9	13	8	6	4	7	19	8	3
NW	13	3	7	3	7	2	4	6	8	2
PNW	9	8	9	3	2	1	2	7	7	2
ALPHAW	0	0	0	0	0	0	0	0	0	0
SEALPHAW	0	0	0	0	0	0	0	0	0	0
SD	4	0	3	1	1	1	3	2	4	1
PSD	5	0	6	3	1	2	5	7	6	3
ND	7	0	3	1	3	3	7	3	4	4
PND	5	0	4	1	1	2	3	3	4	4
ALPHAD	0	0	0	0	0	0	0	0	0	0
SEALPHAD	0	0	0	0	0	0	0	0	0	0
SP	13	6	2	4	13	4	9	6	7	1
PSP	17	17	4	11	13	8	15	22	11	3
NP	18	6	2	4	17	4	10	7	7	1
PNP	12	17	3	5	5	3	4	8	6	1
ALPHAP	0	0	0	0	0	0	0	0	0	0
SEALPHAP	0	0	0	0	0	0	0	0	0	0
SM	0	0	1	0	4	1	2	1	0	0
PSM	0	0	2	0	4	2	3	4	0	0
NM	0	0	1	0	9	1	2	1	0	0
PNM	0	0	1	0	3	1	1	1	0	0
ALPHAM	0	0	0	0	0	0	0	0	0	0
SEALPHAM	0	0	0	0	0	0	0	0	0	0
SL	1	0	0	1	1	1	1	1	1	1
PSL	1	0	0	3	1	2	2	4	2	3
NL	1	0	0	1	1	6	2	1	1	1
PNL	1	0	0	1	0	4	1	1	1	1
ALPHAL	0	0	0	0	0	0	0	0	0	0
SEALPHAL	0	0	0	0	0	0	0	0	0	0
SRT	33	16	23	18	41	22	22	5	25	20
PSRT	42	46	48	47	40	45	37	19	39	61
NRT	81	17	41	31	110	72	32	6	51	24
PNRT	55	47	53	36	35	50	14	7	46	22
ALPHART	21	0	22	18	24	11	32	0	20	55

Sample	19	19	23	15	16	16	17	19	26	32
Subsample	/1	/T	/T	/T	/1	/T	/1	/1	/1	/1
SEALPHART	4	0	6	6	4	2	12	0	5	28
SRD	4	4	2	4	8	4	4	0	5	6
PSRD	5	11	4	11	8	8	7	0	8	18
NRD	13	4	6	7	20	7	5	0	6	6
PNRD	9	11	8	8	6	5	2	0	5	6
ALPHARD	0	0	0	0	5	0	0	0	0	0
SEALPHARD	0	0	0	0	2	0	0	0	0	0
SRF	7	4	5	1	6	6	3	1	5	2
PSRF	9	11	10	3	6	12	5	4	8	6
NRF	15	4	7	1	15	25	5	1	25	2
PNRF	10	11	9	1	5	17	2	1	23	2
ALPHARF	0	0	0	0	0	3	0	0	2	0
SEALPHARF	0	0	0	0	0	1	0	0	1	0
SSA	19	10	19	20	34	21	18	8	16	19
PSSA	24	29	40	53	33	43	30	30	25	58
NSA	46	11	40	66	220	102	169	65	40	89
PNSA	31	31	51	77	69	71	73	75	36	83
ALPHASA	12	0	14	10	11	8	5	2	10	8
SEALPHASA	3	0	4	2	1	1	1	1	3	1
SSF	10	5	6	8	14	7	8	3	9	6
PSSF	13	14	13	21	14	14	13	11	14	18
NSF	27	6	11	10	26	20	14	4	21	7
PNSF	18	17	14	12	8	14	6	5	19	7
ALPHASF	6	0	0	0	13	4	0	0	6	0
SEALPHASF	2	0	0	0	4	1	0	0	2	0
SST	5	3	9	7	14	10	5	1	3	6
PSST	6	9	19	18	14	20	8	4	5	18
NST	12	3	17	18	55	49	8	1	4	6
PNST	8	8	22	21	17	34	3	1	4	6
ALPHAST	0	0	0	0	6	4	0	0	0	0
SEALPHAST	0	0	0	0	1	1	0	0	0	0
SSS	4	2	4	5	6	4	5	4	4	7
PSSS	5	6	8	13	6	8	8	15	6	21
NSS	7	2	12	38	139	33	147	60	15	76
PNSS	5	6	15	44	44	23	64	69	14	71
ALPHASS	0	0	0	2	1	1	1	1	0	2
SEALPHASS	0	0	0	1	0	0	0	0	0	0
SG	3	2	4	3	4	4	3	3	3	4
PSG	4	6	8	8	4	8	5	11	5	12
NG	6	2	12	36	130	33	145	59	14	71
PNG	4	6	15	42	41	23	63	68	13	66
ALPHAG	0	0	0	1	1	1	1	1	0	1
SEALPHAG	0	0	0	0	0	0	0	0	0	0

Trench	LAL-D	LAL-D	LAL-D	LAL-D	LAL-D	LAL-D	LAL-D	LAL-D	LAL-D	LAL-D
Context	232	232	232	232	1016	1017	1021	1249	1267	1269
Sample	37	12	15	16	45	29	30	3	6	5
Subsample	/1	/T	/1	/1	/1	/1	/1	/1	/1	/1
S	51	76	63	65	83	6	41	90	61	17
N	225	610	516	230	234	6	69	314	319	18
ALPHA	21	23	19	30	46	0	43	42	22	0
SEALPHA	2	2	2	3	5	0	10	4	2	0
SOB	13	20	13	23	37	2	13	31	14	5
PSOB	25	26	21	35	45	33	32	34	23	29
NOB	13	21	17	26	43	2	13	45	16	5
PNOB	6	3	3	11	18	33	19	14	5	28
ALPHAOB	0	187	0	92	124	0	0	45	0	0
SEALPHAOB	0	167	0	54	53	0	0	14	0	0
SW	3	2	1	3	5	1	2	8	2	1
PSW	6	3	2	5	6	17	5	9	3	6
NW	3	2	1	5	5	1	2	16	3	1
PNW	1	0	0	2	2	17	3	5	1	6
ALPHAW	0	0	0	0	0	0	0	0	0	0
SEALPHAW	0	0	0	0	0	0	0	0	0	0
SD	2	3	1	2	2	0	0	2	1	0
PSD	4	4	2	3	2	0	0	2	2	0
ND	2	3	1	3	2	0	0	3	1	0
PND	1	0	0	1	1	0	0	1	0	0
ALPHAD	0	0	0	0	0	0	0	0	0	0
SEALPHAD	0	0	0	0	0	0	0	0	0	0
SP	5	8	5	11	21	0	4	12	6	1
PSP	10	11	8	17	25	0	10	13	10	6
NP	5	8	9	12	27	0	4	12	7	1
PNP	2	1	2	5	12	0	6	4	2	6
ALPHAP	0	0	0	0	45	0	0	0	0	0
SEALPHAP	0	0	0	0	21	0	0	0	0	0
SM	0	0	0	1	0	0	0	0	0	0
PSM	0	0	0	2	0	0	0	0	0	0
NM	0	0	0	1	0	0	0	0	0	0
PNM	0	0	0	0	0	0	0	0	0	0
ALPHAM	0	0	0	0	0	0	0	0	0	0
SEALPHAM	0	0	0	0	0	0	0	0	0	0
SL	1	2	2	1	1	0	1	1	2	0
PSL	2	3	3	2	1	0	2	1	3	0
NL	5	11	5	2	3	0	1	1	8	0
PNL	2	2	1	1	1	0	1	0	3	0
ALPHAL	0	0	0	0	0	0	0	0	0	0
SEALPHAL	0	0	0	0	0	0	0	0	0	0
SRT	26	39	37	28	28	2	20	40	25	5
PSRT	51	51	59	43	34	33	49	44	41	29
NRT	37	110	90	63	111	2	32	122	58	5
PNRT	16	18	17	27	47	33	46	39	18	28
ALPHART	39	22	24	20	12	0	23	21	17	0

Sample	37	12	15	16	45	29	30	3	6	5
Subsample	/1	/T	/1	/1	/1	/1	/1	/1	/1	/1
SEALPHART	14	3	4	4	2	0	8	3	4	0
SRD	8	8	10	4	9	0	5	6	6	2
PSRD	16	11	16	6	11	0	12	7	10	12
NRD	16	39	42	10	49	0	10	22	27	2
PNRD	7	6	8	4	21	0	14	7	8	11
ALPHARD	0	3	4	0	3	0	0	3	3	0
SEALPHARD	0	1	1	0	1	0	0	1	1	0
SRF	4	4	5	7	3	1	4	10	3	1
PSRF	8	5	8	11	4	17	10	11	5	6
NRF	5	5	6	8	3	1	9	47	5	1
PNRF	2	1	1	3	1	17	13	15	2	6
ALPHARF	0	0	0	0	0	0	0	4	0	0
SEALPHARF	0	0	0	0	0	0	0	1	0	0
SSA	27	32	32	24	27	2	19	28	23	5
PSSA	53	42	51	37	33	33	46	31	38	29
NSA	196	522	472	180	154	2	40	197	265	5
PNSA	87	86	91	78	66	33	58	63	83	28
ALPHASA	9	8	8	8	10	0	14	9	6	0
SEALPHASA	1	1	1	1	1	0	4	1	1	0
SSF	11	10	12	12	12	1	8	11	11	2
PSSF	22	13	19	18	14	17	20	12	18	12
NSF	17	40	34	32	62	1	8	43	34	2
PNSF	8	7	7	14	26	17	12	14	11	11
ALPHASF	0	4	7	7	5	0	0	5	6	0
SEALPHASF	0	1	2	2	1	0	0	1	2	0
SST	7	14	11	6	8	0	5	12	6	1
PSST	14	18	17	9	10	0	12	13	10	6
NST	12	45	67	41	34	0	13	30	19	1
PNST	5	7	13	18	15	0	19	10	6	6
ALPHAST	0	7	4	2	3	0	0	8	0	0
SEALPHAST	0	2	1	1	1	0	0	2	0	0
SSS	9	8	9	6	7	1	6	5	6	2
PSSS	18	11	14	9	8	17	15	6	10	12
NSS	167	437	371	107	58	1	19	124	212	2
PNSS	74	72	72	47	25	17	28	39	66	11
ALPHASS	2	1	2	1	2	0	0	1	1	0
SEALPHASS	0	0	0	0	1	0	0	0	0	0
SG	4	4	4	4	4	1	4	4	4	2
PSG	8	5	6	6	5	17	10	4	7	12
NG	159	427	359	105	54	1	17	123	209	2
PNG	71	70	70	46	23	17	25	39	66	11
ALPHAG	1	1	1	1	1	0	0	1	1	0
SEALPHAG	0	0	0	0	0	0	0	0	0	0

Trench	LAL-D
Context	1357
Sample	8
Subsample	/1
S	104
N	333
ALPHA	52
SEALPHA	5
SOB	37
PSOB	36
NOB	47
PNOB	14
ALPHAOB	79
SEALPHAOB	27
SW	2
PSW	2
NW	2
PNW	1
ALPHAW	0
SEALPHAW	0
SD	6
PSD	6
ND	14
PND	4
ALPHAD	0
SEALPHAD	0
SP	19
PSP	18
NP	24
PNP	7
ALPHAP	43
SEALPHAP	22
SM	1
PSM	1
NM	1
PNM	0
ALPHAM	0
SEALPHAM	0
SL	1
PSL	1
NL	1
PNL	0
ALPHAL	0
SEALPHAL	0
SRT	41
PSRT	39
NRT	134
PNRT	40
ALPHART	20

Sample	**8**
Subsample	**/1**
SEALPHART	3
SRD	9
PSRD	9
NRD	27
PNRD	8
ALPHARD	5
SEALPHARD	2
SRF	6
PSRF	6
NRF	19
PNRF	6
ALPHARF	0
SEALPHARF	0
SSA	29
PSSA	28
NSA	213
PNSA	64
ALPHASA	9
SEALPHASA	1
SSF	13
PSSF	13
NSF	37
PNSF	11
ALPHASF	7
SEALPHASF	2
SST	12
PSST	12
NST	61
PNST	18
ALPHAST	5
SEALPHAST	1
SSS	4
PSSS	4
NSS	115
PNSS	35
ALPHASS	1
SEALPHASS	0
SG	4
PSG	4
NG	115
PNG	35
ALPHAG	1
SEALPHAG	0

Table 3.Species lists in rank order for invertebrate macrofossils from samples from KLA and LAL, The Lanes, Carlisle. For each sample assemblage the adult Hemiptera (bugs) and Coleoptera (beetles) are listed first, followed by the remaining invertebrates. Weight is in kilogrammes, ec = ecological code; n = minimum number of individuals; sq = semi-quantitative (e = estimate; - = fully quantitative, m = 'many', translated as 15 individuals; s = several, translated as 6). For translation of ecological codes, see Table 4. 'Null' indicates that there were no identifiable remains of macro-invertebrates, although there may have been decayed scraps unassignable to Class.

Context: **605.04** Sample: 184/T CA: KLA-A ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Very small flot; a few seeds and some scraps of plant tissue. Recorded in flot.

	n	sq	ec
Helophorus sp.	1	-	oa-w
Aleocharinae sp.	1	-	u
Coleoptera sp.	1	-	u
*Daphnia sp. (ephippium)	6	s	oa-w
*Diptera sp. (puparium)	3	-	u
*Coleoptera sp. (larva)	2	-	u
*Dermaptera sp.	1	-	u
*Diptera sp. (pupa)	1	-	u

Context: **879** Sample: 195/T CA: KLA-A ReM: S
Weight: 1.00 E: 0.00 F: 0.00

Notes: One dish flot, a little fine charcoal and some plant debris

	n	sq	ec
null	0	-	u

Context: **982** Sample: 201/T CA: KLA-A ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: One dish of flot. A few seeds, ?mostly nettle. Recorded in flot. A few poorly preserved fragments only

	n	sq	ec
Carabidae sp.	1	-	ob
Cercyon sp.	1	-	u
?Elateridae sp.	1	-	ob
Anobium punctatum	1	-	l-sf
Oryzaephilus surinamensis	1	-	g-ss
Coleoptera sp.	1	-	u

Context: **1,020** Sample: 205/T CA: KLA-A ReM: R
Weight: 1.00 E: 4.00 F: 3.50

Notes: Assessment list

	n	sq	ec
Clivina fossor	3	-	oa
Oryzaephilus surinamensis	2	-	g-ss
Aphodius sp.	1	-	ob-rf
Curculionidae sp.	1	-	oa
*Diptera sp. (puparium)	2	-	u
*Coleoptera sp. (larva)	1	-	u

Context: **1031.01** Sample: 212/T CA: KLA-A ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment record. Flot mainly charcoal, some sand and plant debris

	n	sq	ec
Cercyon ?analis	1	-	rt-sf
Cercyon sp.	1	-	u
Anotylus ?rugosus	1	-	rt
Cryptolestes ferrugineus	1	-	g-ss
Oryzaephilus surinamensis	1	-	g-ss
Chrysomelinae sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
*?Heterodera sp. (cyst)	1	-	u
*Diptera sp. (puparium)	1	-	u

Context: **1031.02** Sample: 217/T CA: KLA-A ReM: RS
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment record. One-dish flot

	n	sq	ec
Cryptolestes ferrugineus	6	s	g-ss
Oryzaephilus surinamensis	6	s	g-ss
Trechus obtusus or quadristriatus	1	-	oa
Helophorus sp.	1	-	oa-w
Anotylus ?tetracarinatus	1	-	rt
Gyrohypnus sp.	1	-	rt
Falagria sp.	1	-	rt-sf
Pselaphidae sp.	1	-	u
Aphodius granarius	1	-	ob-rf
Aphodius sp.	1	-	ob-rf
?Elateridae sp.	1	-	ob
Atomaria sp.	1	-	rd
Corticarina or Cortinicara sp.	1	-	rt
Curculionidae sp.	1	-	oa
*Opiliones sp.	15	m	u
*Diptera sp. (larva)	6	s	u
*Diptera sp. (pupa)	6	s	u
*Diptera sp. (puparium)	6	s	u
*Coleoptera sp. (larva)	2	-	u
*Acarina sp.	1	-	u

*Diptera sp. (adult)	1	-	u
*Hemiptera sp. (nymph)	1	-	u

Context: **1031.03** Sample: 213/1 CA: KLA-A ReM: D
Weight: 5.00 E: 0.00 F: 0.00

Notes: Small flot, recorded in flot and on filter paper.

	n	sq	ec
Oryzaephilus surinamensis	29	-	g-ss
Cryptolestes ferrugineus	13	-	g-ss
Cercyon atricapillus	4	-	rf-st
Sitophilus granarius	4	-	g-ss
Cercyon analis	3	-	rt-sf
Ptenidium sp.	3	-	rt
Oxytelus sculptus	3	-	rt-st
Philonthus sp. A	3	-	u
Lathridius minutus group	3	-	rd-st
Helophorus sp.	2	-	oa-w
Xylodromus concinnus	2	-	rt-st
Platystethus arenarius	2	-	rf
Gyrohypnus angustatus	2	-	rt-st
Xantholinus linearis	2	-	rt-sf
Philonthus sp. B	2	-	u
Aleocharinae sp. D	2	-	u
Aphodius prodromus	2	-	ob-rf
Anobium punctatum	2	-	l-sf
Ptinus fur	2	-	rd-sf
Palorus ratzeburgi	2	-	g-ss
Auchenorhyncha sp. A	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Trechus obtusus	1	-	oa
Calathus sp.	1	-	oa
Harpalus sp. A	1	-	oa
Harpalus sp. B	1	-	oa
Carabidae sp.	1	-	ob
Cercyon sp.	1	-	u
Cryptopleurum minutum	1	-	rf-st
Onthophilus striatus	1	-	rt
Ptiliidae sp.	1	-	u
Scydmaenidae sp.	1	-	u
Omalium caesum or italicum	1	-	rt-sf
Carpelimus bilineatus	1	-	rt-sf
Anotylus nitidulus	1	-	rt-d
Anotylus tetracarinatus	1	-	rt
Stenus sp.	1	-	u
Cordalia obscura	1	-	rt-sf
Falagria sp.	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. E	1	-	u
Phyllopertha horticola	1	-	oa-p
Tipnus unicolor	1	-	rd-st
Meligethes sp.	1	-	oa-p
Monotoma picipes	1	-	rt-st
Monotoma sp.	1	-	rt-sf
Cryptophagus sp.	1	-	rd-sf
Atomaria sp.	1	-	rd
Corticaria sp.	1	-	rt-sf
Corticariinae sp.	1	-	rt
Typhaea stercorea	1	-	rd-ss
Anthicus floralis or formicarius	1	-	rt-st
?Gastrophysa sp.	1	-	oa-p
Halticinae sp.	1	-	oa-p
Ceuthorhynchinae sp.	1	-	oa-p
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*Insecta sp. pupa	15	m	u
*Coleoptera sp. (larva)	6	s	u
*?Heterodera sp. (cyst)	6	s	u
*Diptera sp. (larva)	6	s	u
*Coccoidea sp.	3	-	u
*Aranae sp.	3	-	u
*Hemiptera sp. (nymph)	2	-	u
*Diptera sp. (adult)	1	-	u
*Siphonaptera sp.	1	-	u

Context: **1031.03** Sample: 213/T CA: KLA-A ReM: D
Weight: 1.00 E: 0.00 F: 0.00

Notes: Small flot sorted and basic record FL. Completed recording in flot and on paper, HK 1998.

	n	sq	ec
Oryzaephilus surinamensis	3	-	g-ss
Ptinus sp.	2	-	rd-sf
Ptenidium sp.	1	-	rt
Omaliinae sp.	1	-	rt
Carpelimus ?bilineatus	1	-	rt-sf
Falagria sp.	1	-	rt-sf
Aphodius sp.	1	-	ob-rf
Cryptolestes ferrugineus	1	-	g-ss
Phyllotreta sp.	1	-	oa-p
Coleoptera sp.	1	-	u
*Acarina sp.	6	s	u
*Diptera sp. (puparium)	3	-	u
*Daphnia sp. (ephippium)	1	-	oa-w
*Diptera sp. (pupa)	1	-	u

Context: **1031.04** Sample: 250/T CA: KLA-A ReM: R
Weight: 1.00 E: 2.00 F: 3.00

Notes: Assessment record as rapid scan. One dish flot, many seeds. Recorded in flot and on filter paper.

	n	sq	ec
Aleocharinae sp. A	3	-	u
Helophorus sp.	2	-	oa-w
Helophorus sp. B	2	-	oa-w
Anotylus rugosus	2	-	rt
Aleocharinae sp. B	2	-	u
Auchenorhyncha sp.	1	-	oa-p
Hemiptera sp.	1	-	u
Trechus obtusus or quadristriatus	1	-	oa
Bembidion sp.	1	-	oa

Laemostenus terricola	1	-	ss
Carabidae sp.	1	-	ob
Cercyon analis	1	-	rt-sf
Cercyon ?unipunctatus	1	-	rf-st
Megasternum obscurum	1	-	rt
Carpelimus ?bilineatus	1	-	rt-sf
Anotylus complanatus	1	-	rt-sf
Anotylus nitidulus	1	-	rt-d
Anotylus tetracarinatus	1	-	rt
Lathrobium sp.	1	-	u
Falagria or Cordalia sp.	1	-	rt-sf
Aleocharinae sp.	1	-	u
Aleocharinae sp. C	1	-	u
Staphylinidae sp.	1	-	u
Aphodius granarius	1	-	ob-rf
Aphodius sp.	1	-	ob-rf
Anobium punctatum	1	-	l-sf
Brachypterus sp.	1	-	oa-p
Cryptolestes ferrugineus	1	-	g-ss
Oryzaephilus surinamensis	1	-	g-ss
Cryptophagus sp.	1	-	rd-sf
Corticaria sp.	1	-	rt-sf
?Palorus ratzeburgi	1	-	g-ss
Halticinae sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Ceutorhynchus ?erysimi	1	-	oa-p
*Coleoptera sp. (larva)	15	m	u
*Diptera sp. (puparium)	15	m	u
*Insecta sp. pupa	15	m	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Aranae sp.	1	-	u
*Diptera sp. (adult)	1	-	u
*Opiliones sp.	1	-	u
*Syrphidae sp. (larva)	1	-	u

Context: **1052.02** Sample: 214/T CA: KLA-A ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment record. Washover. Two-dish flot. Charcoal up to 15 mm, some plant debris and sand. Recorded in flot and on paper. Trace of remains and other unidentified scraps.

	n	sq	ec
Megasternum obscurum	1	-	rt
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
*?Heterodera sp. (cyst)	15	m	u
*Oligochaeta sp. (egg capsule)	1	-	u

Context: **1055.01** Sample: 245/T CA: KLA-A ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. Flot 1 cm in jar, moss and tissue fragments. Recorded in flot.

	n	sq	ec
Helophorus sp.	1	-	oa-w
Megasternum obscurum	1	-	rt
Catops sp.	1	-	u
Omalium sp.	1	-	rt
Staphylininae sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Anobium punctatum	1	-	l-sf
Oryzaephilus surinamensis	1	-	g-ss
Cryptophagus sp.	1	-	rd-sf
Apion sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
*Diptera sp. (puparium)	6	s	u
*Coleoptera sp. (larva)	1	-	u
*Formicidae sp.	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u

Context: **1055.02** Sample: 243/1 CA: KLA-A ReM: S
Weight: 4.15 E: 0.00 F: 0.00

Notes: Started by FL, finished by HK in 1998. Quite large flot, many seeds and much plant debris. Recorded in flot and on filter paper.

	n	sq	ec
Aleocharinae sp. G	11	-	u
Cryptolestes ferrugineus	10	-	g-ss
Anotylus rugosus	9	-	rt
Gyrohypnus angustatus	9	-	rt-st
Lathridius minutus group	9	-	rd-st
Anotylus nitidulus	7	-	rt-d
Aphodius prodromus	6	-	ob-rf
Sitophilus granarius	6	-	g-ss
Trechus obtusus	5	-	oa
Megasternum obscurum	5	-	rt
Brachypterus sp.	5	-	oa-p
Oryzaephilus surinamensis	5	-	g-ss
Cercyon analis	4	-	rt-sf
Oxytelus sculptus	4	-	rt-st
Helophorus sp.	3	-	oa-w
Platystethus nitens	3	-	oa-d
Gyrohypnus fracticornis	3	-	rt-st
Falagria caesa or sulcatula	3	-	rt-sf
Meligethes sp.	3	-	oa-p
Omosita colon	3	-	rt-sf
Corticaria sp.	3	-	rt-sf
Corticarina sp.	3	-	rt
Gastrophysa viridula	3	-	oa-p
Dyschirius ?globosus	2	-	oa
Clivina fossor	2	-	oa
Helophorus aquaticus or grandis	2	-	oa-w
Cercyon atricapillus	2	-	rf-st
Cercyon unipunctatus	2	-	rf-st
Ptenidium sp.	2	-	rt
Omalium rivulare	2	-	rt-sf
Anotylus tetracarinatus	2	-	rt
Stenus sp. A	2	-	u
Neobisnius sp.	2	-	u

Tachyporus ?hypnorum	2	-	u
Aleocharinae sp. B	2	-	u
Aleocharinae sp. D	2	-	u
Anobium punctatum	2	-	l-sf
Anthicus formicarius	2	-	rt-st
Lygaeidae sp.	1	-	oa-p
Psylloidea sp.	1	-	oa-p
Notiophilus sp.	1	-	oa
Bembidion sp. A	1	-	oa
Bembidion sp. B	1	-	oa
Pterostichus melanarius	1	-	ob
Pterostichus sp.	1	-	ob
Carabidae sp.	1	-	ob
Cercyon haemorrhoidalis	1	-	rf-sf
Acritus nigricornis	1	-	rt-st
Onthophilus striatus	1	-	rt
Ochthebius sp.	1	-	oa-w
Ptiliidae sp.	1	-	u
Silphidae sp.	1	-	u
Scydmaenidae sp.	1	-	u
Omalium caesum or italicum	1	-	rt-sf
Xylodromus concinnus	1	-	rt-st
Carpelimus sp.	1	-	u
Stenus sp. B	1	-	u
Stenus sp. C	1	-	u
Lathrobium sp.	1	-	u
Rugilus sp.	1	-	rt
Paederinae sp.	1	-	u
Othius myrmecophilus	1	-	rt
Philonthus sp.	1	-	u
Quedius sp.	1	-	u
Tachinus signatus	1	-	u
Tachinus sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. E	1	-	u
Aleocharinae sp. F	1	-	u
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Aphodius sp. C	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Clambus sp.	1	-	rt-sf
Oulimnius sp.	1	-	oa-w
Elateridae sp.	1	-	ob
Cantharis sp.	1	-	ob
Omosita discoidea	1	-	rt-sf
Monotoma longicollis	1	-	rt-st
Cryptophagus scutellatus	1	-	rd-st
Cryptophagus sp. A	1	-	rd-sf
Cryptophagus sp. B	1	-	rd-sf
Atomaria nigripennis	1	-	rd-ss
Atomaria sp.	1	-	rd
Palorus ratzeburgi	1	-	g-ss
Anthicus sp.	1	-	rt
Donaciinae sp.	1	-	oa-d-p
Phyllotreta nemorum group	1	-	oa-p
Halticinae sp.	1	-	oa-p
Apion sp.	1	-	oa-p
?Sitona sp.	1	-	oa-p
Notaris acridulus	1	-	oa-d-p
Ceutorhynchus ?melanostictus	1	-	oa-p
?Baris sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
*Auchenorhyncha sp. (nymph)	28	-	oa-p
*Coleoptera sp. (larva)	15	m	u
*Acarina sp.	15	m	u
*Diptera sp. (adult)	6	s	u
*Diptera sp. (puparium)	6	s	u
*Coccoidea sp.	4	-	u
*Aranae sp.	2	-	u
*Pulex irritans	1	-	ss
*?Damalinia sp.	1	-	u
*Bibionidae sp.	1	-	u
*Dermaptera sp.	1	-	u
*Formicidae sp.	1	-	u

Context: **1055.02** Sample: 243/T CA: KLA-A ReM: R
Weight: 1.00 E: 4.00 F: 2.00

Notes: Assessment record treated as rapid scan. Two dish flot with many seeds and some plant debris. Recorded in flot.

	n	sq	ec
Anotylus rugosus	3	-	rt
Atomaria sp.	2	-	rd
Clivina fossor	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
?Pterostichus sp.	1	-	ob
Carabidae sp.	1	-	ob
Helophorus sp.	1	-	oa-w
Cercyon ?analis	1	-	rt-sf
Megasternum obscurum	1	-	rt
Histerinae sp.	1	-	rt
Platystethus arenarius	1	-	rf
Lathrobium sp.	1	-	u
Rugilus sp.	1	-	rt
Gyrohypnus sp.	1	-	rt
Falagria sp.	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Aphodius sp.	1	-	ob-rf
?Phyllopertha horticola	1	-	oa-p
Brachypterus sp.	1	-	oa-p
Oryzaephilus surinamensis	1	-	g-ss
Cryptophagus sp.	1	-	rd-sf
Lathridius minutus group	1	-	rd-st
Aglenus brunneus	1	-	rt-ss
Donaciinae sp.	1	-	oa-d-p
?Chrysolina sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
Coleoptera sp.	1	-	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Diptera sp. (puparium)	6	s	u
*Coleoptera sp. (larva)	3	-	u
*Acarina sp.	2	-	u
*Aphidoidea sp.	1	-	u

Context: **1055.03** Sample: 246/1 CA: KLA-A ReM: S
Weight: 5.00 E: 0.00 F: 0.00

Notes: Three dish flot. Recorded in flot and on filter paper (latter to tobe).

	n	sq	ec
Oryzaephilus surinamensis	5	-	g-ss
Anotylus rugosus	4	-	rt
Gyrohypnus angustatus	4	-	rt-st
Staphylininae sp. B	4	-	u
Anotylus nitidulus	3	-	rt-d
Oxytelus sculptus	3	-	rt-st
Aleocharinae sp. B	3	-	u
Corticarina or Cortinicara sp.	3	-	rt
Phyllotreta nemorum group	3	-	oa-p
Sitophilus granarius	3	-	g-ss
Trechus ?quadristriatus	2	-	oa
Helophorus sp. A	2	-	oa-w
Cercyon analis	2	-	rt-sf
Megasternum obscurum	2	-	rt
Acidota crenata	2	-	oa
Stenus sp. A	2	-	u
Falagria caesa or sulcatula	2	-	rt-sf
Aphodius sp.	2	-	ob-rf
Cryptolestes ferrugineus	2	-	g-ss
Lathridius minutus group	2	-	rd-st
Enicmus sp.	2	-	rt-sf
Pentatomidae sp.	1	-	oa-p
Ulopa reticulata	1	-	oa-p-m
Carabus nemoralis	1	-	oa
Loricera pilicornis	1	-	oa
Clivina fossor	1	-	oa
Bembidion sp. A	1	-	oa
Bembidion sp. B	1	-	oa
Pterostichus ?melanarius	1	-	ob
Carabidae sp.	1	-	ob
Helophorus aquaticus	1	-	oa-w
Helophorus grandis	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Helophorus sp. C	1	-	oa-w
Cercyon haemorrhoidalis	1	-	rf-sf
Cryptopleurum minutum	1	-	rf-st
Onthophilus striatus	1	-	rt
Peranus bimaculatus	1	-	rt-sf
Ochthebius sp.	1	-	oa-w
Ptenidium sp.	1	-	rt
Micropeplus sp.	1	-	rt
Omalium sp.	1	-	rt
Carpelimus ?bilineatus	1	-	rt-sf
Platystethus arenarius	1	-	rf
Anotylus tetracarinatus	1	-	rt
Stenus sp. B	1	-	u
Othius sp.	1	-	rt
Gyrohypnus fracticornis	1	-	rt-st
Neobisnius sp.	1	-	u
Staphylininae sp. A	1	-	u
Staphylininae sp. C	1	-	u
Tachyporus sp.	1	-	u
Tachinus laticollis or marginellus	1	-	u
Cordalia obscura	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Pselaphaulax dresdensis	1	-	u
Trox scaber	1	-	rt-sf
Aphodius sp. B	1	-	ob-rf
Aphodius sp. C	1	-	ob-rf
Anobium ?punctatum	1	-	l-sf
Ptinus sp.	1	-	rd-sf
Monotoma bicolor	1	-	rt-st
Monotoma picipes	1	-	rt-st
Cryptophagus sp.	1	-	rd-sf
Atomaria sp.	1	-	rd
Corticaria sp.	1	-	rt-sf
Typhaea stercorea	1	-	rd-ss
Palorus ratzeburgi	1	-	g-ss
Anthicus formicarius	1	-	rt-st
Longitarsus sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Sitona sp.	1	-	oa-p
Rhinoncus pericarpius	1	-	oa-p
Gymnetron ?pascuorum	1	-	oa-p
Curculionidae sp.	1	-	oa
*Auchenorhyncha sp. (nymph)	15	m	oa-p
*Coleoptera sp. (larva)	15	m	u
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*Coccoidea sp.	6	s	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Insecta sp. (larva)	6	s	u
*Diptera sp. (pupa)	6	s	u
*Diptera sp. (adult)	3	-	u
*Aranae sp.	2	-	u
*Hymenoptera Parasitica sp.	2	-	u
*Cladocera sp. F (ephippium)	1	-	oa-w
*Dermaptera sp.	1	-	u
*Diptera sp. (larva)	1	-	u
*Heteroptera sp. (nymph)	1	-	u

Context: **1055.03** Sample: 246/T CA: KLA-A ReM: R
Weight: 1.00 E: 2.00 F: 2.00

Notes: Asessment record as rapid scan. Flot 5mm in jar. Many seeds, charcoal. Fungal resting bodies. Recorded in flot. Finished by HK.

	n	sq	ec
Trechus obtusus or quadristriatus	2	-	oa
Helophorus sp.	2	-	oa-w
Aphodius sp.	2	-	ob-rf
Auchenorhyncha sp.	1	-	oa-p
Hemiptera sp.	1	-	u
?Loricera pilicornis	1	-	oa
Dyschirius globosus	1	-	oa
?Clivina sp.	1	-	oa
Carabidae sp.	1	-	ob
Cryptopleurum minutum	1	-	rf-st
Histerinae sp.	1	-	rt

Acrotrichis sp.	1	-	rt
Omaliinae sp.	1	-	rt
Platystethus sp.	1	-	oa-d
Anotylus ?rugosus	1	-	rt
Anotylus tetracarinatus	1	-	rt
Oxytelus sculptus	1	-	rt-st
Stenus sp.	1	-	u
Lathrobium sp.	1	-	u
Gyrohypnus sp.	1	-	rt
Xantholininae sp.	1	-	u
Philonthus sp.	1	-	u
Aleocharinae sp.	1	-	u
Phyllopertha horticola	1	-	oa-p
Ptinus fur	1	-	rd-sf
?Meligethes sp.	1	-	oa-p
Cryptolestes ferrugineus	1	-	g-ss
Oryzaephilus surinamensis	1	-	g-ss
Atomaria sp.	1	-	rd
Lathridius minutus group	1	-	rd-st
Corticaria sp.	1	-	rt-sf
Palorus ratzeburgi	1	-	g-ss
Chrysomelinae sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
*Coleoptera sp. (larva)	15	m	u
*Diptera sp. (puparium)	15	m	u
*Acarina sp.	6	s	u
*Aranae sp.	2	-	u

Context: **1063.02** Sample: 219/1 CA: KLA-A ReM: S
Weight: 3.00 E: 0.00 F: 0.00

Notes: Medium-sized flot with numerous invertebrates, many seeds, some plant debris. Recorded in flot and on paper.

	n	sq	ec
Anotylus nitidulus	16	-	rt-d
Aphodius prodromus	6	-	ob-rf
Trechus obtusus	5	-	oa
Helophorus sp. A	5	-	oa-w
Cercyon analis	3	-	rt-sf
Platystethus arenarius	3	-	rf
Anotylus tetracarinatus	3	-	rt
Stenus sp. B	3	-	u
Falagria caesa	3	-	rt-st
Aphodius contaminatus	3	-	oa-rf
Lathridius minutus group	3	-	rd-st
Corticarina sp.	3	-	rt
Psylloidea sp.	2	-	oa-p
Helophorus sp. B	2	-	oa-w
Megasternum obscurum	2	-	rt
Cryptopleurum minutum	2	-	rf-st
Anotylus rugosus	2	-	rt
Philonthus sp. A	2	-	u
Aleocharinae sp. C	2	-	u
Aleocharinae sp. E	2	-	u
Simplocaria ?semistriata	2	-	oa-p
Monotoma sp.	2	-	rt-sf
Cryptophagus sp.	2	-	rd-sf
Delphacidae sp.	1	-	oa-p
Auchenorhyncha sp. A	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Trechus micros	1	-	u
Bembidion ?saxatile	1	-	oa-d
?Pterostichus sp.	1	-	ob
Pterostichus sp.	1	-	ob
?Calathus sp.	1	-	oa
Amara sp.	1	-	oa
Carabidae sp.	1	-	ob
Carabidae sp. B	1	-	ob
Agabus sp.	1	-	oa-w
Cercyon sp. A	1	-	u
Cercyon sp. B	1	-	u
Cercyon sp. C	1	-	u
Hydrobius fuscipes	1	-	oa-w
Onthophilus striatus	1	-	rt
Histeridae sp.	1	-	u
Silphidae sp.	1	-	u
Omalium caesum or italicum	1	-	rt-sf
Carpelimus pusillus group	1	-	u
Carpelimus sp.	1	-	u
Platystethus nitens	1	-	oa-d
Stenus sp. A	1	-	u
Gyrohypnus angustatus	1	-	rt-st
Gyrohypnus fracticornis	1	-	rt-st
Xantholinus linearis	1	-	rt-sf
Neobisnius sp.	1	-	u
Philonthus sp.	1	-	u
Philonthus sp. B	1	-	u
Staphylinus sp.	1	-	u
Heterothops sp.	1	-	u
Quedius sp.	1	-	u
Cordalia obscura	1	-	rt-sf
Aleochara sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. D	1	-	u
Aleocharinae sp. F	1	-	u
Trox scaber	1	-	rt-sf
Aphodius ?fimetarius	1	-	oa-rf
Phyllopertha horticola	1	-	oa-p
?Byrrhus sp.	1	-	oa-p
Elateridae sp.	1	-	ob
Omosita colon	1	-	rt-sf
Monotoma longicollis	1	-	rt-st
Cryptolestes ferrugineus	1	-	g-ss
Oryzaephilus surinamensis	1	-	g-ss
Atomaria sp. A	1	-	rd
Atomaria sp. B	1	-	rd
Atomaria sp. C	1	-	rd
Enicmus sp.	1	-	rt-sf
Gastrophysa sp.	1	-	oa-p
Chrysomelinae sp.	1	-	oa-p
?Chaetocnema sp.	1	-	oa-p
Halticinae sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Sitona sp.	1	-	oa-p
Sitona sp. A	1	-	oa-p
Sitona sp. B	1	-	oa-p
Hypera punctata	1	-	oa-p

Ceutorhynchus erysimi	1	-	oa-p
Ceutorhynchus sp.	1	-	oa-p
Ceuthorhynchinae sp. A	1	-	oa-p
Ceuthorhynchinae sp. B	1	-	oa-p
Curculionidae sp. A	1	-	oa
Curculionidae sp. B	1	-	oa
Curculionidae sp. C	1	-	oa
Curculionidae sp. D	1	-	oa
Coleoptera sp.	1	-	u
Coleoptera sp. A	1	-	u
Coleoptera sp. B	1	-	u
*Coleoptera sp. (larva)	15	m	u
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*Diptera sp. (adult)	6	s	u
*Insecta sp. pupa	6	s	u
*Hemiptera sp. (nymph)	5	-	u
*Diptera sp. (larva)	3	-	u
*Aranae sp.	2	-	u
*Coccoidea sp.	1	-	u
*Opiliones sp.	1	-	u

Context: **1063.02** Sample: 219/T CA: KLA-A ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. One dish flot, many seeds and some moss. Recorded in flot.

	n	sq	ec
Anotylus tetracarinatus	4	-	rt
Stenus sp. A	4	-	u
Anotylus nitidulus	3	-	rt-d
Bembidion (Philochthus) sp.	2	-	oa
Helophorus sp.	2	-	oa-w
Oxytelus sculptus	2	-	rt-st
Aleocharinae sp. A	2	-	u
Aleocharinae sp. D	2	-	u
Aphodius contaminatus	2	-	oa-rf
Aphodius ?prodromus	2	-	ob-rf
Clivina ?fossor	1	-	oa
Carabidae sp.	1	-	ob
Helophorus ?aquaticus	1	-	oa-w
Cercyon sp.	1	-	u
Megasternum obscurum	1	-	rt
Ptiliidae sp.	1	-	u
Scydmaenidae sp.	1	-	u
Platystethus nitens	1	-	oa-d
Stenus sp. B	1	-	u
Leptacinus sp.	1	-	rt-st
Gyrohypnus angustatus	1	-	rt-st
Philonthus sp.	1	-	u
Cordalia obscura	1	-	rt-sf
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Aphodius sp.	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Cryptophagus sp.	1	-	rd-sf
Corticaria sp.	1	-	rt-sf
Corticarina or Cortinicara sp.	1	-	rt
Anthicus floralis or formicarius	1	-	rt-st
Gastrophysa polygoni	1	-	oa-p
Chrysomelinae sp.	1	-	oa-p
Phyllotreta nemorum group	1	-	oa-p
Sitona sp. A	1	-	oa-p
Sitona sp. B	1	-	oa-p
Sitophilus granarius	1	-	g-ss
?Gymnetron sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
Curculionidae sp. B	1	-	oa
*Coleoptera sp. (larva)	15	m	u
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*?Heterodera sp. (cyst)	6	s	u
*Diptera sp. (adult)	6	s	u
*Insecta sp. pupa	6	s	u
*Oligochaeta sp. (egg capsule)	2	-	u
*Coccoidea sp.	1	-	u
*Dermaptera sp.	1	-	u

Context: **1063.04** Sample: 220/1 CA: KLA-A ReM: D
Weight: 4.70 E: 0.00 F: 0.00

Notes: Partly listed by FL, finished by HK in 1998. Recorded in flot and on filter paper

	n	sq	ec
Anotylus nitidulus	73	-	rt-d
Trechus obtusus	18	-	oa
Aphodius contaminatus	18	-	oa-rf
Aphodius prodromus	16	-	ob-rf
Anotylus sculpturatus group	11	-	rt
Corticarina sp.	8	-	rt
Lathridius minutus group	7	-	rd-st
Cortinicara gibbosa	7	-	rt
Gastrophysa polygoni	7	-	oa-p
Aleocharinae sp. C	6	-	u
Calathus fuscipes	5	-	oa
Carpelimus pusillus	5	-	rt-sf
Anotylus tetracarinatus	5	-	rt
Gyrohypnus fracticornis	5	-	rt-st
Aphodius fimetarius	5	-	oa-rf
Phyllotreta nemorum group	5	-	oa-p
Longitarsus sp.	5	-	oa-p
Auchenorhyncha sp. A	4	-	oa-p
?Gabrius sp.	4	-	rt
Conomelus anceps	3	-	oa-p
Trechus quadristriatus	3	-	oa
Bembidion lampros	3	-	oa
Amara sp. B	3	-	oa
Harpalus rufipes	3	-	oa
Platystethus arenarius	3	-	rf
Falagria caesa	3	-	rt-st
Simplocaria ?semistriata	3	-	oa-p
Chaetocnema concinna	3	-	oa-p
Saldula ?saltatoria	2	-	oa-d
Auchenorhyncha sp. B	2	-	oa-p
Calathus ?piceus	2	-	oa
Helophorus aquaticus or grandis	2	-	oa-w

Helophorus sp.	2	-	oa-w
Omalium caesum or italicum	2	-	rt-sf
Platystethus nitens	2	-	oa-d
Anotylus rugosus	2	-	rt
Stenus sp. A	2	-	u
Xantholinus linearis or longiventris	2	-	rt-sf
Philonthus sp. A	2	-	u
Philonthus sp. B	2	-	u
Aleocharinae sp. D	2	-	u
Aleocharinae sp. E	2	-	u
Geotrupes spiniger	2	-	oa-rf
Oryzaephilus surinamensis	2	-	g-ss
Cryptophagus sp.	2	-	rd-sf
Atomaria sp.	2	-	rd
Rhyzobius litura	2	-	oa-p
Enicmus sp.	2	-	rt-sf
Ceutorhynchus erysimi	2	-	oa-p
Lygaeidae sp.	1	-	oa-p
Anthocoris sp.	1	-	oa-p
Delphacidae sp.	1	-	oa-p
Auchenorhyncha sp. C	1	-	oa-p
Nebria brevicollis	1	-	oa
Clivina fossor	1	-	oa
Bembidion sp. A	1	-	oa
Bembidion sp. B	1	-	oa
Pterostichus cupreus	1	-	oa
Pterostichus niger	1	-	oa
Pterostichus sp.	1	-	ob
Amara sp. A	1	-	oa
Hydroporinae sp.	1	-	oa-w
Helophorus nubilus	1	-	oa
Helophorus tuberculatus	1	-	oa
Cercyon ?atricapillus	1	-	rf-st
Cercyon sp.	1	-	u
Hydrobius fuscipes	1	-	oa-w
Onthophilus striatus	1	-	rt
Histeridae sp.	1	-	u
Ochthebius sp.	1	-	oa-w
Ptenidium sp.	1	-	rt
Catops sp.	1	-	u
Silphidae sp.	1	-	u
Micropeplus fulvus	1	-	rt
Carpelimus bilineatus	1	-	rt-sf
Stenus sp. B	1	-	u
Gyrohypnus ?angustatus	1	-	rt-st
Xantholinus glabratus	1	-	rt
Neobisnius sp.	1	-	u
Philonthus sp. C	1	-	u
Quedius boops group	1	-	u
Quedius cinctus	1	-	rt
Tachyporus sp. A	1	-	u
Tachyporus sp. B	1	-	u
Tachinus ?signatus	1	-	u
Cordalia obscura	1	-	rt-sf
Aleochara sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aphodius granarius	1	-	ob-rf
Aphodius sp.	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Cleridae sp.	1	-	u
Brachypterus sp.	1	-	oa-p
Meligethes sp.	1	-	oa-p
Omosita sp.	1	-	rt-sf
Ephistemus globulus	1	-	rd-sf
Olibrus sp.	1	-	oa-p
Corticaria sp.	1	-	rt-sf
Palorus ratzeburgi	1	-	g-ss
Rabocerus foveolatus	1	-	l
Chrysomelinae sp.	1	-	oa-p
Phyllotreta sp.	1	-	oa-p
Psylliodes sp. A	1	-	oa-p
Psylliodes sp. B	1	-	oa-p
Halticinae sp.	1	-	oa-p
Apion (Oxystoma) sp.	1	-	oa-p
Ceutorhynchus contractus	1	-	oa-p
Ceutorhynchus sp. A	1	-	oa-p
Ceutorhynchus sp. B	1	-	oa-p
Ceutorhynchus sp. C	1	-	oa-p
Coleoptera sp.	1	-	u
*Coccoidea sp.	15	-	u
*Coleoptera sp. (larva)	15	m	u
*Acarina sp.	15	m	u
*Diptera sp. (adult)	15	m	u
*Diptera sp. (puparium)	15	m	u
*Insecta sp. pupa	15	m	u
*Aranae sp.	6	s	u
*Auchenorhyncha sp. (nymph)	5	-	oa-p
*Psyllidae sp. (nymph)	4	-	oa-p
*Hymenoptera sp.	2	-	u
*Aphidoidea sp.	1	-	u
*Daphnia sp. (ephippium)	1	-	oa-w
*Dermaptera sp.	1	-	u
*Siphonaptera sp.	1	-	u

Context: **1063.04** Sample: 220/T CA: KLA-A ReM: RS
Weight: 1.00 E: 2.00 F: 3.00

Notes: Assessment record; appears to be at RS level. One dish flot, many seeds. Recorded in flot, problems on paper.

	n	sq	ec
Anotylus nitidulus	6	s	rt-d
Aphodius sp.	6	s	ob-rf
Trechus obtusus or quadristriatus	2	-	oa
Bembidion lampros or properans	1	-	oa
?Cercyon sp.	1	-	u
Carpelimus pusillus group	1	-	u
Platystethus cornutus group	1	-	oa-d
Anotylus tetracarinatus	1	-	rt
Philonthus sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Geotrupes sp.	1	-	oa-rf
Aphodius sp. B	1	-	ob-rf
Cryptolestes ferrugineus	1	-	g-ss
Cryptophagus sp.	1	-	rd-sf
Atomaria sp.	1	-	rd
Corticaria sp.	1	-	rt-sf

Phyllotreta nemorum group	1	-	oa-p
*Coleoptera sp. (larva)	15	m	u
*Diptera sp. (pupa)	15	m	u
*Diptera sp. (puparium)	15	m	u
*Acarina sp.	6	s	u
*Diptera sp. (adult)	6	s	u
*Dermaptera sp.	1	-	u

Context: **1064.02** Sample: 244/1 CA: KLA-A ReM: S
Weight: 2.60 E: 0.00 F: 0.00

Notes: Started FL, finished HK 1998. Small flot with high proportion of invertebrate material. Some seeds and plant debris. Recorded in flot and on filter paper. Some confusion as to what Fran had and had not listed; HK tried to sort this out.

	n	sq	ec
Oryzaephilus surinamensis	28	-	g-ss
Cryptolestes ferrugineus	10	-	g-ss
Lathridius minutus group	10	-	rd-st
Aleocharinae sp. C	7	-	u
Cercyon analis	5	-	rt-sf
Falagria caesa	5	-	rt-st
Aphodius prodromus	5	-	ob-rf
Cryptophagus sp.	5	-	rd-sf
Anotylus rugosus	4	-	rt
Carpelimus bilineatus	3	-	rt-sf
Anotylus nitidulus	3	-	rt-d
Anotylus tetracarinatus	3	-	rt
Oxytelus sculptus	3	-	rt-st
Aleocharinae sp. A	3	-	u
Aleocharinae sp. D	3	-	u
Ptinus fur	3	-	rd-sf
Trechus ?obtusus	2	-	oa
Helophorus sp. B	2	-	oa-w
Ptenidium sp.	2	-	rt
Platystethus arenarius	2	-	rf
Aleocharinae sp. B	2	-	u
Aleocharinae sp. G	2	-	u
Aphodius granarius	2	-	ob-rf
Meligethes sp.	2	-	oa-p
Atomaria sp. A	2	-	rd
Sitophilus granarius	2	-	g-ss
Lyctocoris campestris	1	-	rd-st
?Nebria brevicollis	1	-	oa
Notiophilus sp.	1	-	oa
Bembidion ?saxatile	1	-	oa-d
Bembidion sp.	1	-	oa
Pterostichus diligens	1	-	oa-d
Pterostichus ?melanarius	1	-	ob
?Laemostenus terricola	1	-	ss
Amara sp.	1	-	oa
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Hydroporinae sp.	1	-	oa-w
Helophorus sp. A	1	-	oa-w
Cercyon atricapillus	1	-	rf-st
Cercyon sp.	1	-	u
Hydrobius fuscipes	1	-	oa-w
Acritus nigricornis	1	-	rt-st
Histeridae sp.	1	-	u
Ptiliidae sp.	1	-	u
Silphidae sp.	1	-	u
Scydmaenidae sp.	1	-	u
Lesteva ?longoelytrata	1	-	oa-d
Omalium caesum or italicum	1	-	rt-sf
Omalium rivulare	1	-	rt-sf
Xylodromus concinnus	1	-	rt-st
Platystethus nitens	1	-	oa-d
Stenus sp.	1	-	u
Lathrobium sp.	1	-	u
Gyrohypnus angustatus	1	-	rt-st
Philonthus sp.	1	-	u
Gabrius sp.	1	-	rt
Tachinus sp.	1	-	u
Cilea silphoides	1	-	rt-st
Aleocharinae sp. E	1	-	u
Aleocharinae sp. F	1	-	u
Aphodius ?fimetarius	1	-	oa-rf
Elateridae sp.	1	-	ob
Anobium punctatum	1	-	l-sf
Brachypterus sp.	1	-	oa-p
Monotoma sp.	1	-	rt-sf
Atomaria sp. B	1	-	rd
Enicmus sp.	1	-	rt-sf
Corticaria sp.	1	-	rt-sf
Corticarina sp.	1	-	rt
Palorus ratzeburgi	1	-	g-ss
Chrysomelinae sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Notaris acridulus	1	-	oa-d-p
Ceutorhynchus erysimi	1	-	oa-p
Gymnetron ?pascuorum	1	-	oa-p
*Coleoptera sp. (larva)	15	m	u
*Acarina sp.	15	m	u
*Auchenorhyncha sp. (nymph)	8	-	oa-p
*Diptera sp. (puparium)	6	s	u
*Coccoidea sp.	3	-	u
*Aranae sp.	3	-	u
*Diptera sp. (adult)	2	-	u
*Daphnia sp. (ephippium)	1	-	oa-w

Context: 1064.02 Sample: 244/T CA: KLA-A ReM: R
Weight: 1.00 E: 3.00 F: 3.00

Notes: Assessment record as rapid scan. One dish flot, many seeds. Recorded in flot.

	n	sq	ec
Oryzaephilus surinamensis	6	s	g-ss
Cryptophagus ?scutellatus	2	-	rd-st
Palorus ratzeburgi	2	-	g-ss
Apion sp.	2	-	oa-p
Hemiptera sp.	1	-	u
Bembidion sp.	1	-	oa
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
?Xylodromus concinnus	1	-	rt-st

Carpelimus ?bilineatus	1	-	rt-sf
Gyrohypnus fracticornis	1	-	rt-st
Falagria sp.	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Aphodius sp.	1	-	ob-rf
?Elateridae sp.	1	-	ob
Anobium punctatum	1	-	l-sf
Ptinus ?fur	1	-	rd-sf
?Meligethes sp.	1	-	oa-p
Cryptolestes ferrugineus	1	-	g-ss
Lathridius minutus group	1	-	rd-st
Corticaria sp.	1	-	rt-sf
Chrysomelinae sp.	1	-	oa-p
Phyllotreta sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
*Acarina sp.	6	s	u
*Diptera sp. (puparium)	6	s	u
*Daphnia sp. (ephippium)	1	-	oa-w

Context: **1064.03** Sample: 232/T CA: KLA-A ReM: R
Weight: 1.00 E: 4.00 F: 3.00

Notes: Assessment record treated as rapid scan. One dish flot, many seeds.Recorded in flot.

	n	sq	ec
Carabidae sp.	1	-	ob
Helophorus sp.	1	-	oa-w
Anotylus ?nitidulus	1	-	rt-d
Aphodius sp.	1	-	ob-rf
Anobium punctatum	1	-	l-sf
Meligethes sp.	1	-	oa-p
*Diptera sp. (puparium)	1	-	u

Context: **1067.01** Sample: 233/1 CA: KLA-A ReM: D
Weight: 3.00 E: 0.00 F: 0.00

Notes: Started by FL, finished by HK in 1998. Small flot, mostly invertebrates, some sand and many seeds. Recorded in flot and on filter paper.

	n	sq	ec
Oryzaephilus surinamensis	12	-	g-ss
Lathridius minutus group	6	-	rd-st
Gyrohypnus angustatus	5	-	rt-st
Cryptolestes ferrugineus	5	-	g-ss
Anotylus rugosus	3	-	rt
Aleocharinae sp. B	3	-	u
Aphodius contaminatus	3	-	oa-rf
Helophorus sp. B	2	-	oa-w
Cercyon analis	2	-	rt-sf
Acritus nigricornis	2	-	rt-st
Carpelimus bilineatus	2	-	rt-sf
Platystethus arenarius	2	-	rf
Anotylus nitidulus	2	-	rt-d
Anotylus tetracarinatus	2	-	rt
Tachyporus hypnorum	2	-	u
Cryptophagus sp.	2	-	rd-sf
Corticaria sp.	2	-	rt-sf
Palorus ratzeburgi	2	-	g-ss
Sitophilus granarius	2	-	g-ss
Auchenorhyncha sp.	1	-	oa-p
Clivina fossor	1	-	oa
Trechus obtusus	1	-	oa
Bembidion lampros	1	-	oa
Pterostichus sp.	1	-	ob
Helophorus sp. A	1	-	oa-w
Onthophilus striatus	1	-	rt
Silphidae sp.	1	-	u
Lesteva longoelytrata	1	-	oa-d
Omalium ?caesum	1	-	rt-sf
Carpelimus corticinus	1	-	oa-d
Oxytelus sculptus	1	-	rt-st
Leptacinus sp.	1	-	rt-st
Xantholinus sp.	1	-	u
Philonthus sp.	1	-	u
Gabrius sp.	1	-	rt
Tachinus sp.	1	-	u
Cilea silphoides	1	-	rt-st
Tachyporinae sp.	1	-	u
Cordalia obscura	1	-	rt-sf
Falagria sp.	1	-	rt-sf
Aleochara sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Aleocharinae sp. E	1	-	u
Aphodius sp.	1	-	ob-rf
Simplocaria ?semistriata	1	-	oa-p
Elateridae sp.	1	-	ob
Anobium punctatum	1	-	l-sf
Meligethes sp.	1	-	oa-p
Monotoma sp.	1	-	rt-sf
Atomaria sp.	1	-	rd
Anthicus floralis or formicarius	1	-	rt-st
Plateumaris sp.	1	-	oa-d-p
Chaetocnema concinna	1	-	oa-p
Halticinae sp.	1	-	oa-p
?Barypeithes sp.	1	-	oa-p
Ceutorhynchus sp.	1	-	oa-p
*Auchenorhyncha sp. (nymph)	16	-	oa-p
*Coleoptera sp. (larva)	15	m	u
*Diptera sp. (puparium)	15	m	u
*Acarina sp.	6	s	u
*Insecta sp. (larva)	6	s	u
*Coccoidea sp.	2	-	u
*Aranae sp.	2	-	u
*Bibionidae sp.	2	-	u
*Opiliones sp.	1	-	u

Context: 1067.01 Sample: 233/T CA: KLA-A ReM: R
Weight: 1.00 E: 2.00 F: 2.00

Notes: Assessment record treated as rapid scan. One dish flot, many seeds and some moss. Recorded in flot and on filter paper. Some remains put in tube by FL for later consideration.

	n	sq	ec
Anotylus rugosus	3	-	rt
Aleocharinae sp. A	2	-	u
Oryzaephilus surinamensis	2	-	g-ss
Lathridius minutus group	2	-	rd-st
Corticaria sp.	2	-	rt-sf
Halticinae sp.	2	-	oa-p
Sitophilus granarius	2	-	g-ss
Hemiptera sp.	1	-	u
Clivina fossor	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Bembidion sp. A	1	-	oa
Bembidion sp. B	1	-	oa
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Cercyon analis	1	-	rt-sf
Cercyon sp. A	1	-	u
Cercyon sp. B	1	-	u
Megasternum obscurum	1	-	rt
Carpelimus bilineatus	1	-	rt-sf
Oxytelus sculptus	1	-	rt-st
Stenus sp.	1	-	u
Gyrohypnus sp.	1	-	rt
Xantholinus sp.	1	-	u
Cordalia obscura	1	-	rt-sf
Aleocharinae sp. B	1	-	u
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Anobium punctatum	1	-	l-sf
Monotoma sp.	1	-	rt-sf
Cryptolestes ferrugineus	1	-	g-ss
?Tenebrio obscurus	1	-	rt-ss
Curculionidae sp.	1	-	oa
Coleoptera sp. A	1	-	u
Coleoptera sp. B	1	-	u
*Coleoptera sp. (larva)	15	m	u
*Diptera sp. (puparium)	15	m	u
*Acarina sp.	6	s	u
*Diptera sp. (adult)	6	s	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p

Context: 1096.01 Sample: 239/T CA: KLA-A ReM: R
Weight: 0.98 E: 4.00 F: 4.00

Notes: Assessment record treated as rapid scan. One dish flot with many seeds. One modern Dienerella

	n	sq	ec
Carabidae sp.	1	-	ob
Helophorus sp.	1	-	oa-w
Cercyon analis	1	-	rt-sf
Aleocharinae sp.	1	-	u
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
?Cryptophagus sp.	1	-	rd-sf
Atomaria sp.	1	-	rd
Lathridius minutus group	1	-	rd-st
Corticaria sp.	1	-	rt-sf
Apion sp.	1	-	oa-p
Coleoptera sp.	1	-	u
*?Heterodera sp. (cyst)	15	m	u
*Daphnia sp. (ephippium)	6	s	oa-w
*Coleoptera sp. (larva)	2	-	u
*Diptera sp. (puparium)	2	-	u
*Insecta sp. pupa	2	-	u
*Diptera sp. (adult)	1	-	u
*Opiliones sp.	1	-	u

Context: 1096.02 Sample: 238/1 CA: KLA-A ReM: D
Weight: 1.80 E: 0.00 F: 0.00

Notes: Two dish flot. recorded in flot, problems on filter paper. Scan or detail is moot.

	n	sq	ec
Anotylus nitidulus	6	-	rt-d
Lathridius minutus group	4	-	rd-st
Clivina fossor	3	-	oa
Megasternum obscurum	3	-	rt
Cryptophagus scutellatus	3	-	rd-st
Corticarina sp.	3	-	rt
Scolopostethus sp.	2	-	oa-p
Amara sp.	2	-	oa
Helophorus sp. A	2	-	oa-w
Aleocharinae sp. A	2	-	u
Aleocharinae sp. C	2	-	u
Aphodius ?prodromus	2	-	ob-rf
Cryptophagus sp.	2	-	rd-sf
Stignocoris fuligineus	1	-	oa
Anthocoris sp.	1	-	oa-p
Conomelus anceps	1	-	oa-p
Psylloidea sp.	1	-	oa-p
Dyschirius globosus	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Carabidae sp.	1	-	ob
Hydroporinae sp.	1	-	oa-w
Helophorus aquaticus or grandis	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Sphaeridium sp.	1	-	rf
Cercyon analis	1	-	rt-sf
Histerinae sp.	1	-	rt
Ptenidium sp.	1	-	rt
Aclypea opaca	1	-	ob-rt
Lesteva longoelytrata	1	-	oa-d
Anotylus rugosus	1	-	rt
Anotylus tetracarinatus	1	-	rt
Othius sp.	1	-	rt
Gyrohypnus fracticornis	1	-	rt-st
Xantholinus linearis or longiventris	1	-	rt-sf
Philonthus sp.	1	-	u
Quedius sp.	1	-	u

Tachinus laticollis or marginellus	1	-	u
Aleocharinae sp. B	1	-	u
Aphodius contaminatus	1	-	oa-rf
Aphodius sp.	1	-	ob-rf
?Normandia nitens	1	-	oa-w
Brachypterus sp.	1	-	oa-p
Meligethes sp.	1	-	oa-p
Oryzaephilus ?surinamensis	1	-	g-ss
Atomaria sp.	1	-	rd
Enicmus sp.	1	-	rt-sf
Corticaria sp.	1	-	rt-sf
Corticaria sp. A	1	-	rt-sf
Salpingidae sp.	1	-	l
Gastrophysa ?viridula	1	-	oa-p
Chrysomelinae sp.	1	-	oa-p
Phyllotreta sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Notaris acridulus	1	-	oa-d-p
*Acarina sp.	15	m	u
*Daphnia sp. (ephippium)	15	m	oa-w
*Oligochaeta sp. (egg capsule)	6	s	u
*Diptera sp. (pupa)	6	s	u
*Diptera sp. (puparium)	6	s	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Bibionidae sp.	1	-	u
*Chalcidoidea sp.	1	-	u
*Hymenoptera sp.	1	-	u
*Diptera sp. (larva)	1	-	u

Context: 1096.02 Sample: 238/T CA: KLA-A ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment record treated as rapid scan. One dish flot with many seeds. Recorded in flot

	n	sq	ec
Gyrohypnus angustatus	2	-	rt-st
Helophorus sp.	1	-	oa-w
Megasternum obscurum	1	-	rt
Anotylus rugosus	1	-	rt
Stenus sp.	1	-	u
Rugilus orbiculatus	1	-	rt-sf
Aphodius sp.	1	-	ob-rf
Anobium punctatum	1	-	l-sf
Lathridius minutus group	1	-	rd-st
Corticaria sp.	1	-	rt-sf
Coleoptera sp.	1	-	u
*Diptera sp. (pupa)	6	s	u
*Diptera sp. (puparium)	6	s	u
*Coleoptera sp. (larva)	2	-	u
*Daphnia sp. (ephippium)	1	-	oa-w

Context: 84 Sample: 31/T CA: KLA-B ReM: S
Weight: 1.00 E: 0.00 F: 0.00

Notes: Flot 1 dish, sand and charcoal (to 5 mm), No invertebrates seen.

	n	sq	ec
null	0	-	u

Context: 93.01 Sample: 33/T CA: KLA-B ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Washover. Assessment record as rapid scan. Three dish flot, mostly plant debris and charcoal (to 5mm). Recorded in flot. Fragments of cuticle and two taxa listed here.

	n	sq	ec
Cercyon sp.	1	-	u
Xantholininae sp.	1	-	u

Context: 93.02 Sample: 34/T CA: KLA-B ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Washover. Assessment record as rapid scan. Two dish washover, mainly charcoal (to 10 mm) and some sand with a little plant debris. Recorded in flot.

	n	sq	ec
Megasternum obscurum	1	-	rt
Rugilus sp.	1	-	rt
?Elateridae sp.	1	-	ob
?Curculionidae sp.	1	-	oa

Context: 97 Sample: 51/T CA: KLA-B ReM: R
Weight: 1.00 E: 3.00 F: 3.00

Notes: Assessment record as rapid scan. One dish flot, some sand and plant debris. Recorded in flot.

	n	sq	ec
Lygaeidae sp.	1	-	oa-p
Carabidae sp.	1	-	ob
?Ochthebius sp.	1	-	oa-w
Tachyporus sp.	1	-	u
Staphylinidae sp.	1	-	u
Geotrupes sp.	1	-	oa-rf
Aphodius sp.	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Corticarina or Cortinicara sp.	1	-	rt
*Coleoptera sp. (larva)	2	-	u
*Diptera sp. (puparium)	2	-	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Acarina sp.	1	-	u

Context: 99.02 Sample: 29/T CA: KLA-B ReM: S
Weight: 1.00 E: 0.00 F: 0.00

Notes: Flot 1 dish mainly charcoal (to 5 mm) and some sand. A few pieces of plant debris. No invertebrates seen.

	n	sq	ec
null	0	-	u

Context: 187 Sample: 48/T CA: KLA-B ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. One dish flot, charcoal to 10 mm and a little plant debris. Recorded in flot.

	n	sq	ec
Megasternum obscurum	2	-	rt
Oryzaephilus surinamensis	1	-	g-ss
Curculionidae sp.	1	-	oa
Coleoptera sp.	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u

Context: 219 Sample: 54/T1 CA: KLA-B ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Washover. Rapid scan record from assessment notes. Recorded in spirit, problems on filter paper.

	n	sq	ec
Cercyon sp.	2	-	u
Carabidae sp.	1	-	ob
Aphodius sp.	1	-	ob-rf
Oryzaephilus surinamensis	1	-	g-ss
Apion sp.	1	-	oa-p
Curculionidae sp. A	1	-	oa
Curculionidae sp. B	1	-	oa
?Scolytidae sp.	1	-	l
*?Heterodera sp. (cyst)	15	m	u
*Diptera sp. (puparium)	6	s	u
*Coleoptera sp. (larva)	5	-	u

Context: 224 Sample: 59/T CA: KLA-B ReM: S
Weight: 1.00 E: 0.00 F: 0.00

Notes: Washover. Mostly charcoal and sand, some seeds and plant debris. Recorded in washover.

	n	sq	ec
Coleoptera sp.	1	-	u

Context: 296 Sample: 63/T CA: KLA-B ReM: S
Weight: 1.00 E: 0.00 F: 0.00

Notes: Washover. Three dishes, charcoal and sand.

	n	sq	ec
null	0	-	u

Context: 358.02 Sample: 66/T CA: KLA-B ReM: R
Weight: 0.89 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. Recorded in flot, problems on filter paper (some to tube).

	n	sq	ec
Cercyon analis	3	-	rt-sf
Megasternum obscurum	2	-	rt
Anotylus rugosus	2	-	rt
Cordalia obscura	2	-	rt-sf
Helophorus sp. A	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Cercyon atricapillus	1	-	rf-st
Onthophilus striatus	1	-	rt
Platystethus sp.	1	-	oa-d
Stenus sp.	1	-	u
Gyrohypnus fracticornis	1	-	rt-st
Xantholininae sp.	1	-	u
Tachinus sp.	1	-	u
Aleocharinae sp.	1	-	u
Staphylinidae sp.	1	-	u
Aphodius sp.	1	-	ob-rf
Cryptolestes ferrugineus	1	-	g-ss
Oryzaephilus surinamensis	1	-	g-ss
Lathridius minutus group	1	-	rd-st
Corticaria sp.	1	-	rt-sf
Apion sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Curculionidae sp.	1	-	oa
*Coleoptera sp. (larva)	6	s	u
*Diptera sp. (puparium)	6	s	u

Context: 358.04 Sample: 71/T CA: KLA-B ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Washover. Assessment record as rapid scan. Recorded in spirit, problems on filter paper.

	n	sq	ec
Oryzaephilus surinamensis	2	-	g-ss
Helophorus sp.	1	-	oa-w
Cercyon sp.	1	-	u
Anotylus sp.	1	-	rt
Aleocharinae sp.	1	-	u
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Cryptolestes ferrugineus	1	-	g-ss
Atomaria sp.	1	-	rd
Lathridius minutus group	1	-	rd-st
Curculionidae sp.	1	-	oa
*?Heterodera sp. (cyst)	6	s	u
*Coleoptera sp. (larva)	3	-	u
*Acarina sp.	2	-	u
*Oligochaeta sp. (egg capsule)	1	-	u
*Diptera sp. (puparium)	1	-	u

Context: 717 Sample: 193/1 CA: KLA-B ReM: S
Weight: 2.40 E: 0.00 F: 0.00

Notes: Two dish flot; recorded in flot. Remains poorly preserved, oxidised to orange-brown.

	n	sq	ec
Anotylus rugosus	2	-	rt

Carabidae sp.	1	-	ob
Cercyon ?atricapillus	1	-	rf-st
Cercyon sp.	1	-	u
Cryptopleurum minutum	1	-	rf-st
Carpelimus ?bilineatus	1	-	rt-sf
Platystethus arenarius	1	-	rf
Anotylus complanatus	1	-	rt-sf
Gyrohypnus fracticornis	1	-	rt-st
Philonthus sp.	1	-	u
Falagria or Cordalia sp.	1	-	rt-sf
Cyphon sp.	1	-	oa-d
Anobium punctatum	1	-	l-sf
Lyctus linearis	1	-	l-sf
Cryptophagus sp.	1	-	rd-sf
*Acarina sp.	6	s	u
*Diptera sp. (puparium)	6	s	u
*Dermaptera sp.	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u
*Insecta sp. (larva)	1	-	u
*Diptera sp. (pupa)	1	-	u

Context: 717 Sample: 193/T CA: KLA-B ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. Recorded in flot (2 dish, mostly plant detritus, a few seeds). Insects poorly preserved.

	n	sq	ec
Cercyon atricapillus	3	-	rf-st
Oxytelus sculptus	3	-	rt-st
Acrotrichis sp.	2	-	rt
Lithocharis ochracea	2	-	rt-st
Cryptophagus sp.	2	-	rd-sf
Carabidae sp.	1	-	ob
Helophorus sp.	1	-	oa-w
Cercyon sp.	1	-	u
Megasternum obscurum	1	-	rt
Carpelimus sp.	1	-	u
Platystethus arenarius	1	-	rf
Anotylus complanatus	1	-	rt-sf
Neobisnius sp.	1	-	u
Philonthus sp.	1	-	u
Staphylinidae sp.	1	-	u
Elateridae sp. A	1	-	ob
Elateridae sp. B	1	-	ob
Monotoma sp.	1	-	rt-sf
?Enicmus sp.	1	-	rt-sf
Anthicus sp.	1	-	rt
Curculionidae sp.	1	-	oa
*?Heterodera sp. (cyst)	15	m	u
*Diptera sp. (puparium)	15	m	u
*Acarina sp.	6	s	u
*Insecta sp. pupa	6	s	u
*Aranae sp.	1	-	u

Context: 728 Sample: 192/T CA: KLA-B ReM: S
Weight: 1.00 E: 0.00 F: 0.00

Notes: Three dish washover; chacoal.

	n	sq	ec
null	0	-	u

Context: 975 Sample: 197/T CA: KLA-B ReM: S
Weight: 1.00 E: 0.00 F: 0.00

Notes: Two dish washover; recorded in spirit. Charcoal (to 8 mm) and sand.

	n	sq	ec
null	0	-	u

Context: 1065 Sample: 200/T CA: KLA-B ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment as rapid scan. One dish flot, mostly charcoal and sand, trace of plant debris.

	n	sq	ec
Oryzaephilus surinamensis	2	-	g-ss
?Carabidae sp.	1	-	ob
Aphodius sp.	1	-	ob-rf

Context: 1186 Sample: 203/T CA: KLA-B ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Recorded in washover of three dishes; charcoal to 20 mm and plant debris.

	n	sq	ec
Oryzaephilus surinamensis	1	-	g-ss
Coleoptera sp.	1	-	u
*?Heterodera sp. (cyst)	6	s	u

Context: 1204.02 Sample: 222/T CA: KLA-B ReM: RS
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. Four dish flot, mainly plant debris. Recorded in flot.

	n	sq	ec
Carpelimus sp.	15	m	u
Anotylus rugosus	6	s	rt
Anotylus sculpturatus group	6	s	rt
Cryptolestes ferrugineus	6	s	g-ss
Aphodius sp. A	3	-	ob-rf
Lathridius minutus group	3	-	rd-st
Sitophilus granarius	3	-	g-ss
Cercyon sp. A	2	-	u
Neobisnius sp.	2	-	u
Philonthus sp.	2	-	u

Ptinus sp.	2	-	rd-sf
Oryzaephilus surinamensis	2	-	g-ss
Orthoperus sp.	2	-	rt
Hemiptera sp. A	1	-	u
Hemiptera sp. B	1	-	u
Trechus micros	1	-	u
Carabidae sp.	1	-	ob
Helophorus sp. A	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Cercyon sp. B	1	-	u
Megasternum obscurum	1	-	rt
Onthophilus striatus	1	-	rt
Omalium sp.	1	-	rt
Coprophilus striatulus	1	-	rt-st
Carpelimus fuliginosus	1	-	st
Platystethus arenarius	1	-	rf
Platystethus cornutus group	1	-	oa-d
Anotylus nitidulus	1	-	rt-d
Anotylus tetracarinatus	1	-	rt
Xantholininae sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Aphodius sp. B	1	-	ob-rf
Elateridae sp.	1	-	ob
Rhizophagus sp.	1	-	u
Cryptophagus sp.	1	-	rd-sf
Typhaea stercorea	1	-	rd-ss
Halticinae sp.	1	-	oa-p
?Curculionidae sp.	1	-	oa
*Acarina sp.	6	s	u
*Coleoptera sp. (larva)	1	-	u
*Aranae sp.	1	-	u
*Diptera sp. (puparium)	1	-	u
*Insecta sp. pupa	1	-	u

Context: 1220.02 Sample: 224/1 CA: KLA-B ReM: S
Weight: 3.80 E: 0.00 F: 0.00

Notes: Recorded in flot and on filter paper; fossils to tube. Preservation very poor; fossils often colourless, some twisted; dehydration? The Apion was teneral and the Scolopostethus all in poor condition.

	n	sq	ec
Aphodius sp.	12	-	ob-rf
Anotylus nitidulus	8	-	rt-d
Lathridius minutus group	6	-	rd-st
Platystethus arenarius	5	-	rf
Scolopostethus sp.	4	-	oa-p
Helophorus sp.	4	-	oa-w
Aleochara sp.	4	-	u
Aleocharinae sp. E	4	-	u
Cercyon ?haemorrhoidalis	3	-	rf-sf
Megasternum obscurum	3	-	rt
Anotylus rugosus	3	-	rt
Anotylus tetracarinatus	3	-	rt
Ephistemus globulus	3	-	rd-sf
Cryptopleurum minutum	2	-	rf-st
Ochthebius ?minimus	2	-	oa-w
Ptenidium sp.	2	-	rt
Aleocharinae sp. B	2	-	u
Atomaria sp.	2	-	rd
Corticaria sp. A	2	-	rt-sf
Nebria ?brevicollis	1	-	oa
Dyschirius ?globosus	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Calathus sp.	1	-	oa
Carabidae sp.	1	-	ob
Helophorus grandis	1	-	oa-w
Sphaeridium sp.	1	-	rf
Cercyon ?terminatus	1	-	rf-st
Onthophilus striatus	1	-	rt
Histerinae sp.	1	-	rt
Coprophilus striatulus	1	-	rt-st
Carpelimus ?bilineatus	1	-	rt-sf
Othius punctulatus	1	-	rt-st
Leptacinus sp.	1	-	rt-st
Gyrohypnus ?angustatus	1	-	rt-st
Philonthus sp.	1	-	u
Staphylininae sp.	1	-	u
Tachinus laticollis or marginellus	1	-	u
Tachinus 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
Ptinus sp.	1	-	rd-sf
Cryptophagus ?scutellatus	1	-	rd-st
Cryptophagus sp.	1	-	rd-sf
Orthoperus sp.	1	-	rt
Corticaria sp. B	1	-	rt-sf
Corticarina sp.	1	-	rt
?Gastrophysa viridula	1	-	oa-p
Phyllotreta nemorum group	1	-	oa-p
Longitarsus sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Curculionidae sp.	1	-	oa
*Acarina sp.	6	s	u
*Diptera sp. (puparium)	6	s	u
*?Spalangia sp.	2	-	oa-w
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Daphnia sp. (ephippium)	1	-	oa-w
*Diptera sp. (adult)	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u

Context: 1220.02 Sample: 224/T CA: KLA-B ReM: R
Weight: 1.00 E: 4.00 F: 3.00

Notes: Assessment record as rapid scan. One dish flot, mostly plant detritus; a few seeds and a little charcoal. Recorded in flot.

	n	sq	ec
Aphodius sp.	3	-	ob-rf
Dytiscidae sp.	1	-	oa-w

Helophorus sp.	1	-	oa-w
Cercyon ?atricapillus	1	-	rf-st
Cercyon sp.	1	-	u
Hydrophilinae sp.	1	-	oa-w
Acrotrichis sp.	1	-	rt
Omalium sp.	1	-	rt
Aleochara sp.	1	-	u
Cryptophagus scutellatus	1	-	rd-st
Lathridius minutus group	1	-	rd-st
Chrysomelinae sp.	1	-	oa-p
*?Heterodera sp. (cyst)	15	m	u
*Diptera sp. (puparium)	2	-	u
*Acarina sp.	1	-	u
*Diptera sp. (adult)	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u

Context: 1223 Sample: 215/T CA: KLA-B ReM: S
Weight: 1.00 E: 0.00 F: 0.00

Notes: One dish, recorded in flot.

	n	sq	ec
null	0	-	u

Context: 1230 Sample: 218/T CA: KLA-B ReM: S
Weight: 1.00 E: 0.00 F: 0.00

Notes: One dish washover; sand and charcoal.

	n	sq	ec
null	0	-	u

Context: 1231 Sample: 204/T CA: KLA-B ReM: S
Weight: 1.00 E: 0.00 F: 0.00

Notes: Onse dish flot, charcoal and plant debris.

	n	sq	ec
null	0	-	u

Context: 1234 Sample: 208/1 CA: KLA-B ReM: S
Weight: 2.70 E: 0.00 F: 0.00

Notes: Sorted DW, checked rather rapidly by HK. Holly leaf fragments abundant. Recorded in flot and on filter paper; remains to tube. Preservation rather good.

	n	sq	ec
Lathridius minutus group	9	-	rd-st
Oryzaephilus surinamensis	6	-	g-ss
Enicmus sp.	5	-	rt-sf
Apion sp.	3	-	oa-p
Cryptophagus sp.	2	-	rd-sf
Corticarina or Cortinicara sp.	2	-	rt
Aphrodes sp.	1	-	oa-p
Auchenorhyncha sp. A	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Trechus ?quadristriatus	1	-	oa
Pterostichus sp.	1	-	ob
Calathus fuscipes	1	-	oa
?Bradycellus sp.	1	-	oa
Hydroporinae sp.	1	-	oa-w
Helophorus sp.	1	-	oa-w
Cercyon analis	1	-	rt-sf
Megasternum obscurum	1	-	rt
Acrotrichis sp.	1	-	rt
Catops sp.	1	-	u
Omalium ?rivulare	1	-	rt-sf
Platystethus arenarius	1	-	rf
Anotylus nitidulus	1	-	rt-d
Anotylus rugosus	1	-	rt
Anotylus tetracarinatus	1	-	rt
Neobisnius sp.	1	-	u
Philonthus sp.	1	-	u
Falagria or Cordalia sp.	1	-	rt-sf
Aleocharinae sp.	1	-	u
Pselaphidae sp.	1	-	u
Aphodius contaminatus	1	-	oa-rf
Elateridae sp.	1	-	ob
Ptinus ?fur	1	-	rd-sf
Meligethes sp.	1	-	oa-p
Cryptolestes ?ferrugineus	1	-	g-ss
Atomaria sp.	1	-	rd
Corticaria sp.	1	-	rt-sf
Palorus ratzeburgi	1	-	g-ss
Galerucella sp.	1	-	oa-p
*Diptera sp. (puparium)	50	e	u
*Diptera sp. (adult)	15	m	u
*Acarina sp.	6	s	u
*Dermaptera sp.	2	-	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Actenicerus sjaelandicus (larva)	1	-	oa
*Formicidae sp.	1	s	u
*Siphonaptera sp.	1	-	u

Context: 1234 Sample: 208/T CA: KLA-B ReM: R
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. Recorded in flot, problems on filter paper.

	n	sq	ec
Cryptophagus sp.	3	-	rd-sf
Lathridius minutus group	3	-	rd-st
Corticarina sp.	3	-	rt
Aleocharinae sp.	2	-	u
Oryzaephilus surinamensis	2	-	g-ss
Corticaria sp.	2	-	rt-sf
Auchenorhyncha sp. A	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Trechus obtusus or quadristriatus	1	-	oa
Helophorus sp.	1	-	oa-w
Cercyon ?analis	1	-	rt-sf
Cercyon sp.	1	-	u
Megasternum obscurum	1	-	rt

Omalium sp.	1	-	rt
Anotylus nitidulus	1	-	rt-d
Anotylus rugosus	1	-	rt
Staphylinidae sp.	1	-	u
Aphodius sp.	1	-	ob-rf
Elateridae sp.	1	-	ob
Meligethes sp.	1	-	oa-p
Cryptolestes ferrugineus	1	-	g-ss
Palorus ratzeburgi	1	-	g-ss
Phyllotreta nemorum group	1	-	oa-p
Apion sp.	1	-	oa-p
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*Coleoptera sp. (larva)	6	s	u
*Diptera sp. (adult)	6	s	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Coccoidea sp.	1	-	u

Context: 1268 Sample: 211/1 CA: KLA-B ReM: S
Weight: 3.00 E: 0.00 F: 0.00

Notes: Two dish flot. Recorded in flot.

	n	sq	ec
Oryzaephilus surinamensis	9	-	g-ss
Cryptolestes ferrugineus	5	-	g-ss
Aleocharinae sp. B	3	-	u
Helophorus sp.	2	-	oa-w
Carpelimus ?bilineatus	2	-	rt-sf
Anotylus nitidulus	2	-	rt-d
Anotylus rugosus	2	-	rt
Gyrohypnus angustatus	2	-	rt-st
Phyllopertha horticola	2	-	oa-p
Auchenorhyncha sp. A	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Hemiptera sp.	1	-	u
Bembidion lampros or properans	1	-	oa
Pterostichus sp.	1	-	ob
Helophorus grandis	1	-	oa-w
Cercyon analis	1	-	rt-sf
Megasternum obscurum	1	-	rt
Cryptopleurum minutum	1	-	rf-st
Histerinae sp.	1	-	rt
Ochthebius sp.	1	-	oa-w
Ptenidium sp.	1	-	rt
Catops sp.	1	-	u
Omalium caesum or italicum	1	-	rt-sf
Xylodromus concinnus	1	-	rt-st
Stenus sp.	1	-	u
Rugilus sp.	1	-	rt
Xantholinus linearis or longiventris	1	-	rt-sf
Xantholinus sp.	1	-	u
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Staphylininae sp. A	1	-	u
Staphylininae sp. B	1	-	u
Tachyporus sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. C	1	-	u
Aphodius sp.	1	-	ob-rf
Ptinus sp.	1	-	rd-sf
Atomaria sp.	1	-	rd
Lathridius minutus group	1	-	rd-st
Enicmus sp.	1	-	rt-sf
Corticaria sp.	1	-	rt-sf
Palorus ratzeburgi	1	-	g-ss
Gastrophysa viridula	1	-	oa-p
Longitarsus sp.	1	-	oa-p
Crepidodera sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Ceutorhynchus sp.	1	-	oa-p
*Acarina sp.	6	s	u
*Diptera sp. (puparium)	6	s	u
*Insecta sp. (larva)	2	-	u
*Daphnia sp. (ephippium)	1	-	oa-w
*Hymenoptera sp.	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u

Context: 1268 Sample: 211/T CA: KLA-B ReM: RS
Weight: 1.00 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. One dish flot; recorded in flot, problems on filter paper.

	n	sq	ec
Oryzaephilus surinamensis	6	s	g-ss
Anotylus complanatus	2	-	rt-sf
Xantholinus sp.	2	-	u
Aleocharinae sp. B	2	-	u
Dyschirius globosus	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Helophorus sp. A	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Cercyon analis	1	-	rt-sf
Xylodromus ?concinnus	1	-	rt-st
Carpelimus sp.	1	-	u
Platystethus arenarius	1	-	rf
Anotylus nitidulus	1	-	rt-d
Anotylus rugosus	1	-	rt
Anotylus tetracarinatus	1	-	rt
Gyrohypnus punctulatus	1	-	rt-st
Philonthus sp.	1	-	u
Tachinus ?signatus	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Aphodius sp.	1	-	ob-rf
Cryptophagus sp.	1	-	rd-sf
Corticaria sp.	1	-	rt-sf
Corticarina sp.	1	-	rt
Sitophilus granarius	1	-	g-ss
Curculionidae sp.	1	-	oa
*Diptera sp. (puparium)	6	s	u
*Acarina sp.	3	-	u
*Coleoptera sp. (larva)	2	-	u
*Aranae sp.	1	-	u
*Diptera sp. (adult)	1	-	u

Context: 1280 Sample: 229/T CA: KLA-B ReM: R
Weight: 1.00 E: 4.00 F: 4.00

Notes: Washover. Assessment record as rapid scan. Recorded in washover. Three dish, mostly charcoal and plant debris.

	n	sq	ec
Trechus sp.	1	-	ob
Megasternum obscurum	1	-	rt
?Xylodromus sp.	1	-	rt-st
Gyrohypnus sp.	1	-	rt
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Cryptolestes ferrugineus	1	-	g-ss
Oryzaephilus surinamensis	1	-	g-ss
Coleoptera sp.	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u

Context: 1282 Sample: 235/T CA: KLA-B ReM: R
Weight: 1.00 E: 3.00 F: 3.00

Notes: Assessment record as rapid scan. One dish flot, mostly fine yellow plant debris. Recorded in flot.

	n	sq	ec
Oryzaephilus surinamensis	6	s	g-ss
Staphylininae sp.	2	-	u
Carabidae sp.	1	-	ob
Helophorus sp.	1	-	oa-w
Carpelimus sp.	1	-	u
Anotylus rugosus	1	-	rt
Aphodius sp.	1	-	ob-rf
Cryptolestes ferrugineus	1	-	g-ss
Corticaria sp.	1	-	rt-sf
Palorus ratzeburgi	1	-	g-ss
*Diptera sp. (puparium)	3	-	u
*Coleoptera sp. (larva)	1	-	u
*Acarina sp.	1	-	u
*Diptera sp. (pupa)	1	-	u

Context: 758 Sample: 372/T CA: KLA-C ReM: S
Weight: 2.80 E: 0.00 F: 0.00

Notes: Half jar flot sorted DW checked HK. Recorded on filter paper and in flot.

	n	sq	ec
Cercyon analis	21	-	rt-sf
Atomaria sp. B	16	-	rd
Cryptophagus sp. A	13	-	rd-sf
Monotoma picipes	12	-	rt-st
Gyrohypnus fracticornis	8	-	rt-st
Aleocharinae sp. G	8	-	u
Atomaria sp. A	8	-	rd
Cercyon atricapillus	6	-	rf-st
Xylodromus concinnus	6	-	rt-st
Cercyon terminatus	5	-	rf-st
Anotylus rugosus	5	-	rt
Anobium punctatum	5	-	l-sf
Monotoma longicollis	5	-	rt-st
Anthicus floralis or formicarius	5	-	rt-st
Helophorus sp.	4	-	oa-w
Megasternum obscurum	4	-	rt
Omalium ?rivulare	4	-	rt-sf
Anotylus complanatus	4	-	rt-sf
Philonthus sp. A	4	-	u
Cryptopleurum minutum	3	-	rf-st
Carpelimus bilineatus	3	-	rt-sf
Platystethus arenarius	3	-	rf
Anotylus tetracarinatus	3	-	rt
Oxytelus sculptus	3	-	rt-st
Stenus sp.	3	-	u
Leptacinus sp.	3	-	rt-st
Philonthus sp. B	3	-	u
Philonthus sp. D	3	-	u
Lathridius minutus group	3	-	rd-st
Helophorus grandis	2	-	oa-w
Cercyon unipunctatus	2	-	rf-st
Acritus nigricornis	2	-	rt-st
Onthophilus striatus	2	-	rt
Omalium excavatum	2	-	rt-sf
Xantholinus linearis	2	-	rt-sf
Philonthus sp. C	2	-	u
Falagria sp.	2	-	rt-sf
Aleocharinae sp. C	2	-	u
Aphodius prodromus	2	-	ob-rf
Corticaria sp.	2	-	rt-sf
Typhaea stercorea	2	-	rd-ss
Aglenus brunneus	2	-	rt-ss
Altica sp.	2	-	oa-p
Sitona sp.	2	-	oa-p
Dyschirius globosus	1	-	oa
Trechus micros	1	-	u
Bembidion guttula or mannerheimi	1	-	oa
Bembidion sp. A	1	-	oa
Bembidion sp. B	1	-	oa
Pterostichus ?melanarius	1	-	ob
Carabidae sp.	1	-	ob
Hydroporus sp.	1	-	oa-w
Sphaeridium ?bipustulatum	1	-	rf
Peranus bimaculatus	1	-	rt-sf
Histerinae sp.	1	-	rt
Histeridae sp.	1	-	u
Ptenidium sp.	1	-	rt
Silpha atrata	1	-	u
Dropephylla sp.	1	-	u
Omalium sp.	1	-	rt
Aploderus caelatus	1	-	rt
Anotylus nitidulus	1	-	rt-d
Anotylus sculpturatus group	1	-	rt
Euaesthetus ?ruficapillus	1	-	oa
Lathrobium sp.	1	-	u
Lithocharis ochracea	1	-	rt-st
Neobisnius sp.	1	-	u
Quedius sp.	1	-	u
Staphylininae sp.	1	-	u
Tachinus signatus	1	-	u
Cilea silphoides	1	-	rt-st

Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. D	1	-	u
Aleocharinae sp. E	1	-	u
Aleocharinae sp. F	1	-	u
Clambus armadillo	1	-	rt-sf
Elateridae sp.	1	-	ob
Ptinus ?fur	1	-	rd-sf
Cryptophagus scutellatus	1	-	rd-st
Teredus cylindricus	1	-	l
Blaps sp.	1	-	rt-ss
Longitarsus sp.	1	-	oa-p
Chaetocnema arida group	1	-	oa-p
Chaetocnema ?concinna	1	-	oa-p
Halticinae sp.	1	-	oa-p
Apion (Erythrapion) sp.	1	-	oa-p
Hypera sp.	1	-	oa-p
Ceutorhynchus pollinarius	1	-	oa-p
?Rhinoncus sp.	1	-	oa-p
Gymnetron sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
Dryocoetinus villosus	1	-	l
*Diptera sp. (puparium)	50	e	u
*Acarina sp.	15	m	u
*Diptera sp. (pupa)	15	m	u
*Coleoptera sp. (larva)	6	s	u
*Proctotrupoidea sp.	6	s	u
*?Spalangia sp.	3	-	u
*Thysanoptera sp.	3	-	oa-w
*Formicidae sp.	2	-	u
*Pediculus humanus	1	-	u
*Pthirus pubis	1	-	ss
*?Damalinia sp.	1	-	u
*Aranae sp.	1	-	u
*Cladocera sp. (ephippium)	1	-	oa
*Diptera sp. (adult)	1	-	u
*Forficula sp.	1	-	u
*Hymenoptera Parasitica sp.	1	-	u
*Hymenoptera sp.	1	-	u
*Siphonaptera sp.	1	-	u
*Syrphidae sp. (larva)	1	-	u
*Lepidoptera sp. (pupa)	1	-	u

Context: 759 Sample: 373/1 CA: KLA-C ReM: D
Weight: 2.70 E: 0.00 F: 0.00

Notes: Flot of 1 cm in jar; vast number of puparia and pupae. Recorded in flot and on filter paper; remains to tube. One modern thrips.

	n	sq	ec
Cercyon analis	15	-	rt-sf
Anotylus tetracarinatus	14	-	rt
Anotylus nitidulus	12	-	rt-d
Anotylus complanatus	7	-	rt-sf
Atomaria sp. B	7	-	rd
Lathridius minutus group	7	-	rd-st
Stenus sp. A	6	-	u
Philonthus sp. A	5	-	u
Falagria caesa or sulcatula	5	-	rt-sf
Aleocharinae sp. G	5	-	u
Aphodius prodromus	5	-	ob-rf
Cryptophagus sp. B	5	-	rd-sf
Carpelimus bilineatus	4	-	rt-sf
Anotylus rugosus	4	-	rt
Gyrohypnus fracticornis	4	-	rt-st
Aleocharinae sp. F	4	-	u
Clivina fossor	3	-	oa
Acritus nigricornis	3	-	rt-st
Philonthus sp. B	3	-	u
Aleocharinae sp. E	3	-	u
Ptinus fur	3	-	rd-sf
Chaetocnema concinna	3	-	oa-p
Helophorus sp. A	2	-	oa-w
Ptenidium sp.	2	-	rt
Phyllodrepa ?floralis	2	-	rt-sf
Omalium ?rivulare	2	-	rt-sf
Platystethus arenarius	2	-	rf
Oxytelus sculptus	2	-	rt-st
Stenus sp. B	2	-	u
Neobisnius sp.	2	-	u
Aleocharinae sp. B	2	-	u
Aleocharinae sp. D	2	-	u
Anobium punctatum	2	-	l-sf
Anthicus formicarius	2	-	rt-st
Delphacidae sp.	1	-	oa-p
Auchenorhyncha sp.	1	-	oa-p
Carabus nemoralis	1	-	oa
Nebria brevicollis	1	-	oa
Patrobus ?atrorufus	1	-	oa
Bembidion lampros	1	-	oa
Bembidion quadrimaculatum	1	-	oa
Pterostichus ?melanarius	1	-	ob
Pterostichus melanarius	1	-	ob
Harpalus rufipes	1	-	oa
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Helophorus ?aquaticus	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Cercyon atricapillus	1	-	rf-st
Cercyon haemorrhoidalis	1	-	rf-sf
Cercyon terminatus	1	-	rf-st
Acrotrichis sp.	1	-	rt
Scydmaenidae sp.	1	-	u
Lesteva longoelytrata	1	-	oa-d
Xylodromus concinnus	1	-	rt-st
Carpelimus sp.	1	-	u
Aploderus caelatus	1	-	rt
Anotylus sculpturatus group	1	-	rt
Lathrobium sp.	1	-	u
Leptacinus sp.	1	-	rt-st
Gyrohypnus angustatus	1	-	rt-st
Xantholinus linearis or longiventris	1	-	rt-sf
Philonthus sp. C	1	-	u
Creophilus maxillosus	1	-	rt
Staphylininae sp.	1	-	u
Crataraea suturalis	1	-	rt-st
Aleochara sp. A	1	-	u
Aleochara sp. B	1	-	u

Aleocharinae sp. A	1	-	u
Aleocharinae sp. C	1	-	u
Aphodius ?granarius	1	-	ob-rf
Elateridae sp.	1	-	ob
Grynobius planus	1	-	l
Lyctus linearis	1	-	l-sf
Omosita sp.	1	-	rt-sf
Monotoma picipes	1	-	rt-st
Cryptophagus sp. A	1	-	rd-sf
Atomaria sp. A	1	-	rd
Ephistemus globulus	1	-	rd-sf
Phalacridae sp.	1	-	oa-p
Orthoperus sp.	1	-	rt
Mycetaea hirta	1	-	rd-ss
Corticaria sp. B	1	-	rt-sf
Corticarina or Cortinicara sp.	1	-	rt
Aglenus brunneus	1	-	rt-ss
?Blaps sp.	1	-	rt-ss
Tenebrio obscurus	1	-	rt-ss
?Bruchus sp.	1	-	u
Prasocuris phellandrii	1	-	oa-p-d
Chrysomelinae sp.	1	-	oa-p
Phyllotreta nemorum group	1	-	oa-p
Longitarsus sp.	1	-	oa-p
Chaetocnema arida group	1	-	oa-p
Trachodes hispidus	1	-	u
Ceutorhynchus sp.	1	-	oa-p
Rhinoncus castor	1	-	oa-p
*Diptera sp. (pupa)	1000	e	u
*Diptera sp. (puparium)	100	e	u
*Acarina sp.	50	e	u
*Proctotrupoidea sp.	50	e	u
*Nematocera sp. (larva)	15	m	u
*Pulex irritans	7	-	ss
*Syrphidae sp. (larva)	6	s	u
*Aranae sp.	3	-	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Coleoptera sp. (larva)	1	-	u
*Apis mellifera	1	-	u
*Dermaptera sp.	1	-	u
*Hymenoptera sp.	1	-	u
*Melophagus ovinus	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u
*Pseudoscorpiones sp.	1	-	u

Context: 811.01 Sample: 376/1 CA: KLA-C ReM: S
Weight: 1.50 E: 0.00 F: 0.00

Notes: Very large flot (was in two jars). Started FL, finihsed HK 1998. Recorded in flot and on filter paper.

	n	sq	ec
Anotylus complanatus	6	-	rt-sf
Atomaria nigripennis	6	-	rd-ss
Lathridius minutus group	6	-	rd-st
Anotylus nitidulus	5	-	rt-d
Platystethus nitens	4	-	oa-d
Anotylus tetracarinatus	4	-	rt
Aleocharinae sp. A	4	-	u
Cercyon analis	3	-	rt-sf
Xylodromus concinnus	3	-	rt-st
Aphodius sp. B	3	-	ob-rf
Cryptophagus sp. A	3	-	rd-sf
Cercyon terminatus	2	-	rf-st
Anotylus rugosus	2	-	rt
Oxytelus sculptus	2	-	rt-st
Stenus sp. B	2	-	u
Gyrohypnus angustatus	2	-	rt-st
Ptinus fur	2	-	rd-sf
Omosita colon	2	-	rt-sf
Mycetaea hirta	2	-	rd-ss
Anthocoris sp.	1	-	oa-p
Saldula ?saltatoria	1	-	oa-d
Aphrodes flavostriatus	1	-	oa-p-d
Trechus obtusus or quadristriatus	1	-	oa
Carabidae sp.	1	-	ob
Helophorus aquaticus or grandis	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Cercyon ?haemorrhoidalis	1	-	rf-sf
Cercyon unipunctatus	1	-	rf-st
Megasternum obscurum	1	-	rt
Ptenidium sp.	1	-	rt
Megarthrus ?depressus	1	-	rt-sf
Lesteva sp.	1	-	oa-d
?Phyllodrepa sp.	1	-	rt
Omalium rivulare	1	-	rt-sf
Stenus sp. A	1	-	u
Rugilus sp.	1	-	rt
Leptacinus pusillus	1	-	rt-st
Neobisnius sp.	1	-	u
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Philonthus sp. C	1	-	u
Philonthus sp. D	1	-	u
Tachinus sp.	1	-	u
Falagria or Cordalia sp.	1	-	rt-sf
Aleochara sp.	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Aleocharinae sp. F	1	-	u
Aleocharinae sp. G	1	-	u
Aleocharinae sp. H	1	-	u
Aleocharinae sp. I	1	-	u
Aleocharinae sp. J	1	-	u
Aleocharinae sp. K	1	-	u
Aleocharinae sp. L	1	-	u
Aphodius granarius	1	-	ob-rf
Aphodius sp. A	1	-	ob-rf
Cyphon sp.	1	-	oa-d
Anobium punctatum	1	-	l-sf
Lyctus linearis	1	-	l-sf
Thymalus limbatus	1	-	l
Meligethes sp.	1	-	oa-p
Cryptophagus scutellatus	1	-	rd-st
Cryptophagus sp. B	1	-	rd-sf
Corticaria sp.	1	-	rt-sf
Corticarina sp.	1	-	rt
Anthicus formicarius	1	-	rt-st

Gastrophysa sp.	1	-	oa-p
?Hydrothassa sp.	1	-	oa-d-p
Phyllotreta nemorum group	1	-	oa-p
Chaetocnema concinna	1	-	oa-p
Sitona sp.	1	-	oa-p
Ceutorhynchus erysimi	1	-	oa-p
Ceutorhynchus sp.	1	-	oa-p
Ceuthorhynchinae sp.	1	-	oa-p
Taphrorychus bicolor	1	-	l
Xyloterus ?signatus	1	-	l
*?Heterodera sp. (cyst)	15	m	u
*Acarina sp.	15	m	u
*Insecta sp. pupa	15	m	u
*Aranae sp.	2	-	u
*Apoidea sp.	1	-	u
*Opiliones sp.	1	-	u

Context: 811.02 Sample: 377/1 CA: KLA-C ReM: S
Weight: 1.25 E: 0.00 F: 0.00

Notes: Sorted DW, checked HK. Recorded in flot and on filter paper, remains to tube.

	n	sq	ec
Anotylus complanatus	7	-	rt-sf
Platystethus arenarius	4	-	rf
Aleocharinae sp. A	4	-	u
Gyrohypnus fracticornis	3	-	rt-st
Bembidion (Philochthus) sp.	2	-	oa
Cercyon analis	2	-	rt-sf
Omalium ?rivulare	2	-	rt-sf
Anotylus nitidulus	2	-	rt-d
Anotylus rugosus	2	-	rt
Gyrohypnus angustatus	2	-	rt-st
Trechus micros	1	-	u
Bembidion sp.	1	-	oa
Harpalus rufipes	1	-	oa
Helophorus aquaticus or grandis	1	-	oa-w
Cercyon haemorrhoidalis	1	-	rf-sf
Cercyon terminatus	1	-	rf-st
Cercyon unipunctatus	1	-	rf-st
Acritus nigricornis	1	-	rt-st
Ptenidium sp.	1	-	rt
Dropephylla sp.	1	-	u
Omalium sp.	1	-	rt
Coprophilus striatulus	1	-	rt-st
Carpelimus bilineatus	1	-	rt-sf
Anotylus tetracarinatus	1	-	rt
Stenus ?crassus	1	-	rt
Neobisnius sp.	1	-	u
Philonthus sp.	1	-	u
Staphylininae sp.	1	-	u
Tachinus subterraneus	1	-	u
?Crataraea suturalis	1	-	rt-st
Aleocharinae sp. B	1	-	u
Elateridae sp.	1	-	ob
Ptinus ?fur	1	-	rd-sf
Atomaria sp.	1	-	rd
Lathridius minutus group	1	-	rd-st
Corticarina or Cortinicara sp.	1	-	rt
Aglenus brunneus	1	-	rt-ss
Tenebrio obscurus	1	-	rt-ss
Halticinae sp.	1	-	oa-p
*Diptera sp. (puparium)	50	e	u
*Coleoptera sp. (larva)	6	s	u
*Acarina sp.	6	s	u
*Aranae sp.	2	-	u
*Syrphidae sp. (larva)	2	-	u
*Pediculus humanus	1	-	u
*Pulex irritans	1	-	ss
*Diptera sp. (adult)	1	-	u
*Forficula sp.	1	-	u
*Proctotrupoidea sp.	1	-	u
*Thysanoptera sp.	1	-	oa-w

Context: 1182 Sample: 387/1 CA: KLA-C ReM: S
Weight: 2.15 E: 0.00 F: 0.00

Notes: Sorted DW, echecked HK. Recorded in flot and on filter paper. One Apion teneral

	n	sq	ec
Oryzaephilus surinamensis	25	-	g-ss
Cryptolestes ferrugineus	14	-	g-ss
Lathridius minutus group	7	-	rd-st
Sitophilus granarius	7	-	g-ss
Typhaea stercorea	4	-	rd-ss
Apion sp.	4	-	oa-p
Oxytelus sculptus	3	-	rt-st
Neobisnius sp.	3	-	u
Philonthus sp. B	3	-	u
Falagria caesa or sulcatula	3	-	rt-sf
Cryptophagus sp.	3	-	rd-sf
Enicmus sp.	3	-	rt-sf
Palorus ratzeburgi	3	-	g-ss
Cercyon atricapillus	2	-	rf-st
Lithocharis ochracea	2	-	rt-st
Anobium punctatum	2	-	l-sf
Dromius linearis	1	-	oa
Helophorus ?aquaticus	1	-	oa-w
Cercyon haemorrhoidalis	1	-	rf-sf
Megasternum obscurum	1	-	rt
Acritus nigricornis	1	-	rt-st
Histerinae sp.	1	-	rt
Ptenidium sp.	1	-	rt
Omalium ?rivulare	1	-	rt-sf
Xylodromus concinnus	1	-	rt-st
Carpelimus ?bilineatus	1	-	rt-sf
Platystethus arenarius	1	-	rf
Anotylus rugosus	1	-	rt
Stenus sp.	1	-	u
Leptacinus sp.	1	-	rt-st
Philonthus sp. A	1	-	u
Staphylininae sp.	1	-	u
Aleocharinae sp.	1	-	u
Euplectini sp.	1	-	u
?Meligethes sp.	1	-	oa-p
Monotoma longicollis	1	-	rt-st

Monotoma ?picipes	1	-	rt-st
Anthicus floralis or formicarius	1	-	rt-st
Longitarsus sp.	1	-	oa-p
Mecinus ?pyraster	1	-	oa-p
*Diptera sp. (puparium)	15	m	u
*Coleoptera sp. (larva)	6	s	u
*Acarina sp.	6	s	u
*Dermaptera sp.	1	-	u
*Diptera sp. (adult)	1	-	u

Context: 1203 Sample: 391/T CA: KLA-C ReM: S
Weight: 4.25 E: 0.00 F: 0.00

Notes: Two dish flot. Recorded in flot. Tereral Apion. Some remains very pale, appear to be damaged by drying out in store (some twisted). Preservation was probably originally good.

	n	sq	ec
Oryzaephilus surinamensis	39	-	g-ss
Cryptolestes ferrugineus	23	-	g-ss
Oxytelus sculptus	13	-	rt-st
Falagria caesa or sulcatula	8	-	rt-sf
Platystethus arenarius	6	-	rf
Lathridius minutus group	5	-	rd-st
Palorus ratzeburgi	5	-	g-ss
Stenus sp.	4	-	u
Xylodromus ?concinnus	3	-	rt-st
Carpelimus ?bilineatus	3	-	rt-sf
Cryptophagus sp.	3	-	rd-sf
Anthicus formicarius	3	-	rt-st
Sitophilus granarius	3	-	g-ss
Cercyon atricapillus	2	-	rf-st
Acrotrichis sp.	2	-	rt
Carpelimus sp. B	2	-	u
Anotylus tetracarinatus	2	-	rt
Lithocharis ochracea	2	-	rt-st
Leptacinus sp.	2	-	rt-st
Neobisnius sp.	2	-	u
Philonthus sp. A	2	-	u
Aleocharinae sp. A	2	-	u
Monotoma bicolor	2	-	rt-st
Monotoma longicollis	2	-	rt-st
Typhaea stercorea	2	-	rd-ss
Apion sp.	2	-	oa-p
Lyctocoris campestris	1	-	rd-st
Delphacidae sp.	1	-	oa-p
Auchenorhyncha sp. A	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Auchenorhyncha sp. C	1	-	oa-p
Trechus obtusus or quadristriatus	1	-	oa
Pterostichus sp.	1	-	ob
Carabidae sp.	1	-	ob
Cercyon ?haemorrhoidalis	1	-	rf-sf
Cercyon terminatus	1	-	rf-st
Megasternum obscurum	1	-	rt
Acritus nigricornis	1	-	rt-st
Ptenidium sp.	1	-	rt
Silphidae sp.	1	-	u
Omalium ?rivulare	1	-	rt-sf
Carpelimus fuliginosus	1	-	st
Carpelimus sp. A	1	-	u
Philonthus sp. B	1	-	u
Staphylininae sp.	1	-	u
Sepedophilus sp.	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Trox scaber	1	-	rt-sf
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Anobium punctatum	1	-	l-sf
Meligethes sp.	1	-	oa-p
Corticaria sp.	1	-	rt-sf
Corticarina sp.	1	-	rt
Tenebrio obscurus	1	-	rt-ss
Phyllotreta nemorum group	1	-	oa-p
Halticinae sp.	1	-	oa-p
Gymnetron sp.	1	-	oa-p
Coleoptera sp. A	1	-	u
Coleoptera sp. B	1	-	u
*Acarina sp.	50	e	u
*Diptera sp. (puparium)	15	m	u
*Coleoptera sp. (larva)	6	s	u
*Aranae sp.	2	-	u
*Dermaptera sp.	1	-	u
*Diptera sp. (adult)	1	-	u
*Proctotrupoidea sp.	1	-	u
*Thysanoptera sp.	1	-	oa-w
*Heteroptera sp. (nymph)	1	-	u
*Lepidoptera sp. (pupa)	1	-	u

Context: 1269.02 Sample: 394/1 CA: KLA-C ReM: S
Weight: 4.25 E: 0.00 F: 0.00

Notes: Two-dish flot, but full of insects so done as several. Recorded in flot, problems on paper. Patchy decay to red/yellow which limited identification.

	n	sq	ec
Oryzaephilus surinamensis	134	-	g-ss
Cryptolestes ferrugineus	51	-	g-ss
Cercyon analis	8	-	rt-sf
Acritus nigricornis	7	-	rt-st
Anotylus rugosus	6	-	rt
Anobium punctatum	5	-	l-sf
Lathridius minutus group	5	-	rd-st
Platystethus arenarius	4	-	rf
Gyrohypnus angustatus	4	-	rt-st
Aleocharinae sp. B	4	-	u
Longitarsus sp.	4	-	oa-p
Onthophilus striatus	3	-	rt
Acrotrichis sp.	3	-	rt
Omalium ?rivulare	3	-	rt-sf
Xylodromus concinnus	3	-	rt-st
Stenus sp. A	3	-	u
Falagria caesa or sulcatula	3	-	rt-sf
Aleocharinae sp. A	3	-	u

Aphodius ?prodromus	3	-	ob-rf
Ptinus ?fur	3	-	rd-sf
Pterostichus ?melanarius	2	-	ob
Helophorus aquaticus or grandis	2	-	oa-w
Megasternum obscurum	2	-	rt
Oxytelus sculptus	2	-	rt-st
Gyrohypnus fracticornis	2	-	rt-st
Cordalia obscura	2	-	rt-sf
Aleocharinae sp. C	2	-	u
Cryptophagus sp. A	2	-	rd-sf
Atomaria sp.	2	-	rd
Corticaria sp.	2	-	rt-sf
Typhaea stercorea	2	-	rd-ss
Palorus ratzeburgi	2	-	g-ss
Lygaeidae sp.	1	-	oa-p
?Lyctocoris campestris	1	-	rd-st
Saldidae sp.	1	-	oa-d
Ulopa reticulata	1	-	oa-p-m
Psylloidea sp.	1	-	oa-p
Dyschirius ?globosus	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Bembidion sp. A	1	-	oa
Bembidion sp. B	1	-	oa
Helophorus sp. A	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Cercyon ?atricapillus	1	-	rf-st
Cercyon sp.	1	-	u
Cryptopleurum minutum	1	-	rf-st
Ptenidium sp.	1	-	rt
Scydmaenidae sp.	1	-	u
Micropeplus fulvus	1	-	rt
Acidota crenata	1	-	oa
Omalium sp.	1	-	rt
Carpelimus ?bilineatus	1	-	rt-sf
Carpelimus sp.	1	-	u
Anotylus tetracarinatus	1	-	rt
Stenus sp. B	1	-	u
Ochthephilum fracticorne	1	-	oa-d
Rugilus orbiculatus	1	-	rt-sf
Paederinae sp.	1	-	u
Leptacinus sp.	1	-	rt-st
Xantholinus linearis or longiventris	1	-	rt-sf
Neobisnius sp.	1	-	u
Philonthus sp.	1	-	u
Staphylininae sp. A	1	-	u
Staphylininae sp. B	1	-	u
Tachyporus sp.	1	-	u
Tachinus laticollis or marginellus	1	-	u
Aleocharinae sp. D	1	-	u
Aphodius sp.	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
?Simplocaria sp.	1	-	D
?Tipnus unicolor	1	-	rd-st
Cryptophagus sp. B	1	-	rd-sf
Ephistemus globulus	1	-	rd-sf
Enicmus sp.	1	-	rt-sf
Corticaria sp. B	1	-	rt-sf
Corticarina or Cortinicara sp.	1	-	rt
Anthicus floralis or formicarius	1	-	rt-st
Phyllotreta nemorum group	1	-	oa-p
Apion sp.	1	-	oa-p
Otiorhynchus ligneus	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Ceutorhynchus sp.	1	-	oa-p
Rhinoncus sp.	1	-	oa-p
Coleoptera sp.	1	-	u
*Auchenorhyncha sp. (nymph)	50	e	oa-p
*Coleoptera sp. (larva)	6	s	u
*Acarina sp.	6	s	u
*Diptera sp. (puparium)	6	s	u
*Pthirus pubis	1	-	ss
*Coccoidea sp.	1	-	u
*Tenebroides mauritanicus (larva)	1	-	rt-ss
*Aphidoidea sp.	1	-	u
*Aranae sp.	1	-	u
*Hymenoptera sp.	1	-	u

Context: 1324 Sample: 396/1 CA: KLA-C ReM: S
Weight: 3.30 E: 0.00 F: 0.00

Notes: Medium-sized flot, many seeds, some plant debris. Recorded in flot and on fitler paper. Apion teneral.

	n	sq	ec
Oryzaephilus surinamensis	29	-	g-ss
Cryptolestes ferrugineus	17	-	g-ss
Neobisnius sp.	7	-	u
Lathridius minutus group	6	-	rd-st
Anotylus rugosus	5	-	rt
Aleocharinae sp. B	4	-	u
Trechus obtusus	3	-	oa
Cercyon sp. B	3	-	u
Gyrohypnus angustatus	3	-	rt-st
Anobium punctatum	3	-	l-sf
Cryptophagus sp.	3	-	rd-sf
Sitophilus granarius	3	-	g-ss
Cercyon sp. A	2	-	u
Megasternum obscurum	2	-	rt
Carpelimus bilineatus	2	-	rt-sf
Aphodius prodromus	2	-	ob-rf
Ptinus fur	2	-	rd-sf
Halticinae sp.	2	-	oa-p
Bembidion lampros or properans	1	-	oa
Pterostichus ?melanarius	1	-	ob
Pterostichus sp.	1	-	ob
Laemostenus sp.	1	-	ss
Amara sp.	1	-	oa
Carabidae sp.	1	-	ob
Helophorus sp.	1	-	oa-w
Silphidae sp.	1	-	u
Scydmaenidae sp.	1	-	u
Omalium caesum or italicum	1	-	rt-sf
Omalium rivulare	1	-	rt-sf
Xylodromus concinnus	1	-	rt-st
Platystethus nitens	1	-	oa-d
Anotylus tetracarinatus	1	-	rt
Oxytelus sculptus	1	-	rt-st
Stenus sp. A	1	-	u
Stenus sp. B	1	-	u

Philonthus sp.	1	-	u
Tachinus sp.	1	-	u
Falagria sp.	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aphodius ?contaminatus	1	-	oa-rf
Aphodius granarius	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Elateridae sp.	1	-	ob
Cryptophagus scutellatus	1	-	rd-st
Enicmus sp.	1	-	rt-sf
Corticaria sp. A	1	-	rt-sf
Corticaria sp. B	1	-	rt-sf
Alphitobius ?diaperinus	1	-	rt-ss
Anthicus floralis or formicarius	1	-	rt-st
Gastrophysa sp.	1	-	oa-p
Chrysomelinae sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Phyllobius or Polydrusus sp.	1	-	oa-p
Hypera sp.	1	-	oa-p
Ceuthorhynchinae sp.	1	-	oa-p
Curculionidae sp. A	1	-	oa
Curculionidae sp. B	1	-	oa
*Auchenorhyncha sp. (nymph)	22	-	oa-p
*Coleoptera sp. (larva)	15	m	u
*?Heterodera sp. (cyst)	15	m	u
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*Coccoidea sp.	3	-	u
*Elateridae sp. (larva)	1	-	ob

Context: 1350 Sample: 399/1 CA: KLA-C ReM: S
Weight: 3.60 E: 0.00 F: 0.00

Notes: Small flot. Many seeds, some plant debris. Recorded in flot and on filter paper. List finished HK 1998.

	n	sq	ec
Aphodius prodromus	22	-	ob-rf
Anotylus nitidulus	8	-	rt-d
Anotylus tetracarinatus	8	-	rt
Anotylus complanatus	7	-	rt-sf
Aphodius ?fimetarius	7	-	oa-rf
Aleocharinae sp. C	6	-	u
Megasternum obscurum	3	-	rt
Cryptophagus sp.	3	-	rd-sf
Atomaria sp. B	3	-	rd
Trechus obtusus or quadristriatus	2	-	oa
Bembidion lampros or properans	2	-	oa
Bembidion (Philochthus) sp.	2	-	oa
Helophorus sp. C	2	-	oa-w
Bledius sp.	2	-	oa-d
Gyrohypnus angustatus	2	-	rt-st
Falagria sp.	2	-	rt-sf
Aleocharinae sp. B	2	-	u
Aphodius ?contaminatus	2	-	oa-rf
Phyllopertha horticola	2	-	oa-p
Simplocaria ?semistriata	2	-	oa-p
Lathridius minutus group	2	-	rd-st
Corticaria sp.	2	-	rt-sf
Corticarina sp.	2	-	rt
Phyllotreta nemorum group	2	-	oa-p
Chaetocnema concinna	2	-	oa-p
Carabus ?nemoralis	1	-	oa
Nebria brevicollis	1	-	oa
Dyschirius globosus	1	-	oa
Clivina fossor	1	-	oa
Bembidion ?saxatile	1	-	oa-d
Pterostichus sp.	1	-	ob
Amara sp.	1	-	oa
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Agabus bipustulatus	1	-	oa-w
Ilybius sp.	1	-	oa-w
Helophorus aquaticus or grandis	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Cercyon ?haemorrhoidalis	1	-	rf-sf
Cercyon sp.	1	-	u
Histerinae sp.	1	-	rt
Omalium rivulare	1	-	rt-sf
Platystethus arenarius	1	-	rf
Oxytelus sculptus	1	-	rt-st
Stenus sp. B	1	-	u
Rugilus ?orbiculatus	1	-	rt-sf
Philonthus sp.	1	-	u
Tachyporus sp.	1	-	u
Aleocharinae sp. A	1	-	u
Geotrupes sp.	1	-	oa-rf
Aphodius sp.	1	-	ob-rf
Oulimnius sp.	1	-	oa-w
Elateridae sp.	1	-	ob
Brachypterus sp.	1	-	oa-p
Oryzaephilus surinamensis	1	-	g-ss
Atomaria sp. A	1	-	rd
Olibrus sp.	1	-	oa-p
Salpingidae sp.	1	-	l
Anthicus floralis or formicarius	1	-	rt-st
Gastrophysa sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Sitona sp.	1	-	oa-p
Notaris ?acridulus	1	-	oa-d-p
Rhinoncus sp.	1	-	oa-p
Ceuthorhynchinae sp.	1	-	oa-p
Coleoptera sp.	1	-	u
*Acarina sp.	6	s	u
*Diptera sp. (adult)	6	s	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Auchenorhyncha sp. (nymph)	3	-	oa-p
*Bibionidae sp.	2	-	u
*Aranae sp.	1	-	u
*Dermaptera sp.	1	-	u
*Diptera sp. (larva)	1	-	u

Context: 1858.02 Sample: 401/1 CA: KLA-C ReM: S
Weight: 5.60 E: 0.00 F: 0.00

Notes: Four dish flot sorted DW checked HK. Recorded in flot and on filter paper; remains to tube. Preservation mderately good.

	n	sq	ec
Oryzaephilus surinamensis	14	-	g-ss
Helophorus sp. A	6	-	oa-w
Falagria caesa or sulcatula	4	-	rt-sf
Aleocharinae sp. A	4	-	u
Aleocharinae sp. C	4	-	u
Helophorus aquaticus	3	-	oa-w
Platystethus arenarius	3	-	rf
Anotylus nitidulus	3	-	rt-d
Stenus sp. D	3	-	u
Gyrohypnus fracticornis	3	-	rt-st
Aphodius ?prodromus	3	-	ob-rf
Ptenidium sp.	2	-	rt
Carpelimus sp.	2	-	u
Anotylus tetracarinatus	2	-	rt
Aleocharinae sp. B	2	-	u
Cryptolestes ferrugineus	2	-	g-ss
Corticaria sp. A	2	-	rt-sf
Carabus sp.	1	-	oa
Bembidion (Philochthus) sp.	1	-	oa
Carabidae sp.	1	-	ob
Helophorus sp. B	1	-	oa-w
Cercyon analis	1	-	rt-sf
Cercyon haemorrhoidalis	1	-	rf-sf
Megasternum obscurum	1	-	rt
Acritus nigricornis	1	-	rt-st
Ochthebius sp.	1	-	oa-w
Acrotrichis sp.	1	-	rt
Omalium sp.	1	-	rt
Carpelimus ?bilineatus	1	-	rt-sf
Carpelimus ?fuliginosus	1	-	st
Platystethus nitens	1	-	oa-d
Oxytelus sculptus	1	-	rt-st
Stenus sp. A	1	-	u
Stenus sp. B	1	-	u
Stenus sp. C	1	-	u
Leptacinus ?pusillus	1	-	rt-st
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Staphylininae sp. A	1	-	u
Staphylininae sp. B	1	-	u
Tachyporus sp.	1	-	u
Aleochara sp.	1	-	u
Aleocharinae sp. D	1	-	u
Aleocharinae sp. E	1	-	u
Pselaphidae sp.	1	-	u
Geotrupes sp.	1	-	oa-rf
Phyllopertha horticola	1	-	oa-p
Ptinus sp.	1	-	rd-sf
Atomaria sp.	1	-	rd
Corticaria sp.	1	-	rt-sf
Corticaria sp. B	1	-	rt-sf
Aglenus brunneus	1	-	rt-ss
Palorus ratzeburgi	1	-	g-ss
Anthicus formicarius	1	-	rt-st
Gastrophysa viridula	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Cidnorhinus quadrimaculatus	1	-	oa-p
Rhinoncus ?bruchoides	1	-	oa-p
Rhinoncus pericarpius	1	-	oa-p
Curculionidae sp.	1	-	oa
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*Oligochaeta sp. (egg capsule)	3	-	u
*Coleoptera sp. (larva)	2	-	u
*Aphidoidea sp.	2	-	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Daphnia sp. (ephippium)	1	-	oa-w
*Hymenoptera Parasitica sp.	1	-	u
*Hymenoptera sp.	1	-	u
*Siphonaptera sp.	1	-	u

Context: 1870 Sample: 403/1 CA: KLA-C ReM: S
Weight: 5.00 E: 0.00 F: 0.00

Notes: Eight dish flot. Preservation not very good- remains reddened. Recorded in flot and on filter paper; remains to tube. Appears to b a peatland component, much of which is poorly preserved.

	n	sq	ec
Oryzaephilus surinamensis	26	-	g-ss
Lathridius minutus group	8	-	rd-st
Cryptolestes ferrugineus	6	-	g-ss
Helophorus sp. B	5	-	oa-w
Aphodius prodromus	5	-	ob-rf
Hydroporus sp. A	4	-	oa-w
Anotylus nitidulus	4	-	rt-d
Pselaphidae sp.	4	-	u
Corticaria sp.	4	-	rt-sf
Aleocharinae sp. C	3	-	u
Sitophilus granarius	3	-	g-ss
Ulopa reticulata	2	-	oa-p-m
Dyschirius globosus	2	-	oa
Pterostichus ?diligens	2	-	oa-d
Hydroporus sp. B	2	-	oa-w
Olophrum ?fuscum	2	-	oa
Lesteva longoelytrata	2	-	oa-d
Euaesthetus laeviusculus	2	-	oa
Lathrobium sp. B	2	-	u
Falagria or Cordalia sp.	2	-	rt-sf
Aleocharinae sp. A	2	-	u
Anobium punctatum	2	-	l-sf
Ptinus sp.	2	-	rd-sf
Cryptophagus sp.	2	-	rd-sf
Macrodema micropterum	1	-	oa-p-m
Scolopostethus ?decoratus	1	-	oa-p-m
Delphacidae sp.	1	-	oa-p
Auchenorhyncha sp.	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Dyschirius ?globosus	1	-	oa
Trechus sp.	1	-	ob
Bembidion sp.	1	-	oa
Pterostichus ?melanarius	1	-	ob
Amara sp.	1	-	oa
Carabidae sp.	1	-	ob
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Hydroporus sp. C	1	-	oa-w

Agabus sp.	1	-	oa-w
Helophorus aquaticus or grandis	1	-	oa-w
Helophorus tuberculatus	1	-	oa
Helophorus sp. A	1	-	oa-w
Cercyon sp.	1	-	u
Megasternum obscurum	1	-	rt
Hydrophilinae sp.	1	-	oa-w
Acritus nigricornis	1	-	rt-st
Ochthebius ?minimus	1	-	oa-w
Acrotrichis sp.	1	-	rt
Acidota crenata	1	-	oa
Omalium sp.	1	-	rt
Xylodromus concinnus	1	-	rt-st
Carpelimus ?bilineatus	1	-	rt-sf
Platystethus arenarius	1	-	rf
Anotylus rugosus	1	-	rt
Anotylus tetracarinatus	1	-	rt
Stenus sp.	1	-	u
Lathrobium sp. A	1	-	u
Lathrobium sp. C	1	-	u
Leptacinus sp.	1	-	rt-st
Xantholinus ?linearis	1	-	rt-sf
Xantholinus longiventris	1	-	rt-sf
Staphylininae sp.	1	-	u
Tachyporus sp.	1	-	u
Cypha sp.	1	-	rt
Aleocharinae sp. B	1	-	u
Aleocharinae sp. D	1	-	u
Pselaphus heisei	1	-	u
Pselaphidae sp. B	1	-	u
Aphodius sp.	1	-	ob-rf
Denticollis linearis	1	-	u
Omosita sp.	1	-	rt-sf
Atomaria sp. A	1	-	rd
Atomaria sp. B	1	-	rd
Enicmus sp.	1	-	rt-sf
Typhaea stercorea	1	-	rd-ss
Aglenus brunneus	1	-	rt-ss
Palorus ratzeburgi	1	-	g-ss
Anthicus floralis or formicarius	1	-	rt-st
Donacia sp.	1	-	oa-d-p
?Plateumaris sp.	1	-	oa-d-p
Hydrothassa sp.	1	-	oa-d-p
Chalcoides sp.	1	-	oa-p
Sciaphilus asperatus	1	-	oa-p
Hypera sp.	1	-	oa-p
Micrelus ericae	1	-	oa-p-m
Gymnetron sp.	1	-	oa-p
*Acarina sp.	50	e	u
*Diptera sp. (puparium)	6	s	u
*Actenicerus sjaelandicus (larva)	3	-	oa
*Aphidoidea sp.	2	-	u
*Myrmica sp.	2	-	u
*?Coccoidea sp.	1	-	u
*Coleoptera sp. (larva)	1	-	u
*Aranae sp.	1	-	u
*Formicidae sp. B	1	-	u
*Hymenoptera Parasitica sp.	1	-	u
*Hymenoptera sp.	1	-	u
*Siphonaptera sp.	1	-	u

Context: 1871 Sample: 404/1 CA: KLA-C ReM: S
Weight: 3.80 E: 0.00 F: 0.00

Notes: Several dish flot. Preservation varied; some very oxidised. Recorded in flot, problems on filter paper then to tube

	n	sq	ec
Oryzaephilus surinamensis	8	-	g-ss
Lathridius minutus group	7	-	rd-st
Cryptolestes ferrugineus	5	-	g-ss
Enicmus sp.	4	-	rt-sf
Omalium ?rivulare	3	-	rt-sf
Aleocharinae sp. A	3	-	u
Aleocharinae sp. C	3	-	u
Atomaria sp. B	3	-	rd
Corticarina sp.	3	-	rt
Helophorus sp.	2	-	oa-w
Cercyon analis	2	-	rt-sf
Megasternum obscurum	2	-	rt
Anotylus nitidulus	2	-	rt-d
Anotylus rugosus	2	-	rt
Stenus sp.	2	-	u
Tachyporus sp.	2	-	u
Cryptophagus sp.	2	-	rd-sf
Atomaria sp. A	2	-	rd
Gastrophysa viridula	2	-	oa-p
Sitophilus granarius	2	-	g-ss
Cimicidae sp.	1	-	oa-p
Saldula sp.	1	-	oa-d
Auchenorhyncha sp.	1	-	oa-p
Auchenorhyncha sp. A	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Clivina ?fossor	1	-	oa
Bembidion ?doris	1	-	oa-d
Pterostichus diligens or strenuus	1	-	oa
Helophorus aquaticus or grandis	1	-	oa-w
Ochthebius sp.	1	-	oa-w
Acrotrichis sp.	1	-	rt
Silpha atrata	1	-	u
Omalium caesum or italicum	1	-	rt-sf
Carpelimus ?bilineatus	1	-	rt-sf
Carpelimus sp.	1	-	u
Oxytelus sculptus	1	-	rt-st
Lathrobium sp.	1	-	u
Gyrohypnus fracticornis	1	-	rt-st
Gyrohypnus fracticornis	1	-	rt-st
Neobisnius sp.	1	-	u
Staphylinus olens	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. D	1	-	u
Aphodius ?prodromus	1	-	ob-rf
Aphodius sp.	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Esolus parallelepipedus	1	-	oa-w
Elateridae sp.	1	-	ob
Anobium punctatum	1	-	l-sf
Monotoma bicolor	1	-	rt-st
Corticaria sp.	1	-	rt-sf
Cortinicara gibbosa	1	-	rt

?Typhaea stercorea	1	-	rd-ss
Anthicus floralis or formicarius	1	-	rt-st
Chrysomelinae sp.	1	-	oa-p
Galerucella sp.	1	-	oa-p
Phyllotreta nemorum group	1	-	oa-p
Apion sp.	1	-	oa-p
?Sitona sp.	1	-	oa-p
Ceuthorhynchinae sp.	1	-	oa-p
*Acarina sp.	15	m	u
*Auchenorhyncha sp. (nymph)	3	-	oa-p
*?Haematopinus sp.	3	-	u
*Diptera sp. (puparium)	3	-	u
*Diptera sp. (adult)	2	-	u
*Coleoptera sp. (larva)	1	-	u
*Aranae sp.	1	-	u
*Myrmica sp.	1	-	u
*Diptera sp. (pupa)	1	-	u

Context: 1876 Sample: 405/1 CA: KLA-C ReM: S
Weight: 5.50 E: 0.00 F: 0.00

Notes: Several dish flot. Preservation variable but generally fairly good. Recorded in flot and on filter paper; remains to tube.

	n	sq	ec
Aleocharinae sp. C	7	-	u
Cercyon analis	6	-	rt-sf
Oryzaephilus surinamensis	6	-	g-ss
Helophorus grandis	4	-	oa-w
Helophorus sp. B	4	-	oa-w
Lathridius minutus group	4	-	rd-st
Anotylus nitidulus	3	-	rt-d
Anotylus rugosus	3	-	rt
Gyrohypnus fracticornis	3	-	rt-st
Aleocharinae sp. D	3	-	u
Trechus obtusus or quadristriatus	2	-	oa
Bembidion sp.	2	-	oa
Stenus sp. A	2	-	u
Philonthus sp.	2	-	u
Aleocharinae sp. A	2	-	u
Aleocharinae sp. B	2	-	u
Cryptolestes ferrugineus	2	-	g-ss
Atomaria sp.	2	-	rd
Enicmus sp.	2	-	rt-sf
Sitophilus granarius	2	-	g-ss
Ulopa reticulata	1	-	oa-p-m
Auchenorhyncha sp. A	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Nebria brevicollis	1	-	oa
Clivina fossor	1	-	oa
Bembidion lampros or properans	1	-	oa
?Microlestes sp.	1	-	oa
Hydroporinae sp.	1	-	oa-w
Colymbetes fuscus	1	-	oa-w
Helophorus sp. A	1	-	oa-w
Cercyon unipunctatus	1	-	rf-st
Cryptopleurum minutum	1	-	rf-st
Acritus nigricornis	1	-	rt-st
Ptenidium sp.	1	-	rt
Micropeplus fulvus	1	-	rt
?Geodromicus sp.	1	-	oa-d
Xylodromus concinnus	1	-	rt-st
Carpelimus ?bilineatus	1	-	rt-sf
Platystethus arenarius	1	-	rf
Stenus sp. B	1	-	u
Lathrobium sp.	1	-	u
Othius sp.	1	-	rt
Leptacinus sp.	1	-	rt-st
Tachinus signatus	1	-	u
Falagria sp.	1	-	rt-sf
Aphodius sp.	1	-	ob-rf
?Phyllopertha horticola	1	-	oa-p
Anobium punctatum	1	-	l-sf
Cryptophagus sp.	1	-	rd-sf
Ephistemus globulus	1	-	rd-sf
Corticarina or Cortinicara sp.	1	-	rt
Palorus ratzeburgi	1	-	g-ss
Phyllotreta sp.	1	-	oa-p
Longitarsus sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
*Coleoptera sp. (larva)	6	s	u
*Acarina sp.	6	s	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Insecta sp. (larva)	6	s	u
*Nematocera sp. (larva)	6	s	u
*Diptera sp. (puparium)	6	s	u
*Aphidoidea sp.	2	-	u
*Aranae sp.	2	-	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*?Louse s.l. sp.	1	-	u
*Diptera sp. (adult)	1	-	u
*Hymenoptera Parasitica sp.	1	-	u

Context: 1887 Sample: 406/1 CA: KLA-C ReM: S
Weight: 4.10 E: 0.00 F: 0.00

Notes: One dish flot sorted DW checked HK. Recorded in flot and on filter paper; remains to tube, some left in flot. No mites could be found!

	n	sq	ec
Oryzaephilus surinamensis	23	-	g-ss
Cryptolestes ferrugineus	16	-	g-ss
Palorus ratzeburgi	4	-	g-ss
Ptinus ?fur	3	-	rd-sf
Carabidae sp.	1	-	ob
Hydroporus sp.	1	-	oa-w
Helophorus aquaticus or grandis	1	-	oa-w
Anotylus nitidulus	1	-	rt-d
Othius punctulatus	1	-	rt-st
Aleocharinae sp.	1	-	u
Aphodius sp.	1	-	ob-rf
Lathridius minutus group	1	-	rd-st
Sitophilus granarius	1	-	g-ss
*Diptera sp. (puparium)	2	-	u
*Coleoptera sp. (larva)	1	-	u
*?Myrmica sp.	1	-	u

Context: 1920 Sample: 412/1 CA: KLA-C ReM: S
Weight: 5.00 E: 0.00 F: 0.00

Notes: Trace flot sorted DW checked HK. recorded in flot and on filter paper. Remains mostly very fragmented; no 'other orders' noted.

	n	sq	ec
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Helophorus aquaticus or grandis	1	-	oa-w
Helophorus sp.	1	-	oa-w
Platystethus ?nitens	1	-	oa-d
Anotylus nitidulus	1	-	rt-d
Anotylus rugosus	1	-	rt
Othius ?myrmecophilus	1	-	rt
Aleocharinae sp.	1	-	u
Aphodius sp.	1	-	ob-rf

Context: 1923 Sample: 413/1 CA: KLA-C ReM: S
Weight: 4.70 E: 0.00 F: 0.00

Notes: Four dish flot sorted DW checked HK. Recored in flot and on filter paper, remains to tube. Many well-decayed, unidentifiable, fragments; plant materil seems to have rotted too.

	n	sq	ec
Aphodius ?prodromus	5	-	ob-rf
Ochthephilum fracticorne	3	-	oa-d
Othius sp.	2	-	rt
Xantholinus linearis or longiventris	2	-	rt-sf
Nebria ?brevicollis	1	-	oa
Dyschirius ?globosus	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Bembidion (Philochthus) sp.	1	-	oa
Pterostichus sp.	1	-	ob
Calathus sp.	1	-	oa
Harpalus sp.	1	-	oa
Helophorus sp. A	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Megasternum obscurum	1	-	rt
Acidota crenata	1	-	oa
Anotylus rugosus	1	-	rt
Stenus sp. A	1	-	u
Stenus sp. B	1	-	u
Stenus sp. C	1	-	u
Rugilus sp.	1	-	rt
Gyrohypnus fracticornis	1	-	rt-st
?Philonthus sp.	1	-	u
Mycetoporus sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Geotrupes sp.	1	-	oa-rf
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
?Phyllopertha horticola	1	-	oa-p
Elateridae sp.	1	-	ob
Meligethes sp.	1	-	oa-p
Atomaria sp.	1	-	rd
Corticaria sp.	1	-	rt-sf
Longitarsus sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
*Acarina sp.	100	e	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Coleoptera sp. (larva)	3	-	u
*Bibionidae sp.	2	-	u
*Formicidae sp.	2	-	u
*Lepidoptera sp. (pupa)	1	-	u

Context: 2 Sample: 16/T CA: KLA-D ReM: R
Weight: 1.61 E: 0.00 F: 0.00

Notes: Medieval. Assessment record as rapid scan. One dish, recorded in flot. Some bran and 5 Sambucus seeds. Poor preservation. Some mineralisation.

	n	sq	ec
Cercyon sp.	1	-	u
?Xylodromus concinnus	1	-	rt-st
Oxytelus sculptus	1	-	rt-st
*Insecta sp. pupa	6	s	u

Context: 464.02 Sample: 2/1 CA: KLA-D ReM: S
Weight: 3.25 E: 0.00 F: 0.00

Notes: Four dish flot; sorted DW checked HK. Recorded in flot and on filter paper, remains to tube. Some teneral Apion.

	n	sq	ec
Oryzaephilus surinamensis	22	-	g-ss
Cryptolestes ferrugineus	20	-	g-ss
Lathridius minutus group	10	-	rd-st
Cryptophagus sp.	6	-	rd-sf
Corticaria sp. A	3	-	rt-sf
Palorus ratzeburgi	3	-	g-ss
Apion sp. A	3	-	oa-p
Cercyon analis	2	-	rt-sf
Cercyon unipunctatus	2	-	rf-st
Falagria caesa or sulcatula	2	-	rt-sf
Typhaea stercorea	2	-	rd-ss
Anthicus floralis or formicarius	2	-	rt-st
Longitarsus sp.	2	-	oa-p
Auchenorhyncha sp.	1	-	oa-p
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Helophorus sp.	1	-	oa-w
Cercyon atricapillus	1	-	rf-st
Omalium ?rivulare	1	-	rt-sf
Omalium sp.	1	-	rt
Carpelimus ?bilineatus	1	-	rt-sf
Platystethus arenarius	1	-	rf
Anotylus tetracarinatus	1	-	rt

Philonthus sp.	1	-	u
Tachinus ?signatus	1	-	u
Cordalia obscura	1	-	rt-sf
Aleocharinae sp.	1	-	u
Aphodius sp.	1	-	ob-rf
Anobium ?punctatum	1	-	l-sf
Ptinus sp.	1	-	rd-sf
Monotoma spinicollis	1	-	rt-st
Atomaria sp.	1	-	rd
Enicmus sp.	1	-	rt-sf
Corticaria sp. B	1	-	rt-sf
Hydrothassa sp.	1	-	oa-d-p
Phyllotreta nemorum group	1	-	oa-p
Apion sp. B	1	-	oa-p
Hypera sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
*Diptera sp. (puparium)	50	e	u
*Acarina sp.	6	s	u
*Coleoptera sp. (larva)	1	-	u
*Forficula auricularia	1	-	rt
*Hymenoptera Parasitica sp.	1	-	u
*Siphonaptera sp.	1	-	u

Context: 464.02 Sample: 2/T CA: KLA-D ReM: R
Weight: 0.82 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. Recorded in flot. Flot 15 mm in jar, plant debris.

	n	sq	ec
Oryzaephilus surinamensis	3	-	g-ss
Anobium punctatum	1	-	l-sf
Cryptolestes ferrugineus	1	-	g-ss
Lathridius minutus group	1	-	rd-st
Donaciinae sp.	1	-	oa-d-p
*Diptera sp. (puparium)	15	m	u

Context: 464.03 Sample: 3/1 CA: KLA-D ReM: S
Weight: 2.80 E: 0.00 F: 0.00

Notes: Two dish flot. Recorded in flot and on filter paper; remains to tube. Preservation good.

	n	sq	ec
Cercyon analis	2	-	rt-sf
Cryptolestes ferrugineus	2	-	g-ss
Delphacidae sp.	1	-	oa-p
Pterostichus sp.	1	-	ob
Megasternum obscurum	1	-	rt
Xylodromus concinnus	1	-	rt-st
Platystethus arenarius	1	-	rf
Anotylus nitidulus	1	-	rt-d
Anotylus ?rugosus	1	-	rt
Philonthus sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aphodius sp.	1	-	ob-rf
Cryptophagus sp.	1	-	rd-sf
Atomaria sp.	1	-	rd
Enicmus sp.	1	-	rt-sf
Apion sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
*Acarina sp.	6	s	u
*Diptera sp. (puparium)	6	s	u
*Diptera sp. (pupa)	2	-	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Coleoptera sp. (larva)	1	-	u
*Diptera sp. (adult)	1	-	u
*Formicidae sp.	1	-	u
*Hymenoptera sp.	1	-	u
*Syrphidae sp. (larva)	1	-	u

Context: 464.03 Sample: 3/T CA: KLA-D ReM: SS
Weight: 2.65 E: 0.00 F: 0.00

Notes: Assessment record but appears to be at semi-quantitative scan level. Flot 10 mm in jar, fine plant debris, many seeds. Recorded in flot, problems on filter paper.

	n	sq	ec
Oryzaephilus surinamensis	6	s	g-ss
Lathridius minutus group	6	s	rd-st
Platystethus nitens	4	-	oa-d
Aleocharinae sp. A	3	-	u
Cercyon analis	2	-	rt-sf
Cryptopleurum minutum	2	-	rf-st
Anotylus nitidulus	2	-	rt-d
Oxytelus sculptus	2	-	rt-st
Tachyporus sp.	2	-	u
Aleocharinae sp. C	2	-	u
Cryptolestes ferrugineus	2	-	g-ss
Cryptophagus sp.	2	-	rd-sf
Atomaria sp.	2	-	rd
Trechus obtusus or quadristriatus	1	-	oa
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Carabidae sp. C	1	-	ob
Carabidae sp. D	1	-	ob
Helophorus sp. A	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Cercyon sp.	1	-	u
Megasternum obscurum	1	-	rt
Ochthebius sp.	1	-	oa-w
Catops sp.	1	-	u
Omalium caesum or italicum	1	-	rt-sf
Xylodromus concinnus	1	-	rt-st
Omaliinae sp.	1	-	rt
Carpelimus bilineatus	1	-	rt-sf
Anotylus complanatus	1	-	rt-sf
Anotylus tetracarinatus	1	-	rt
Leptacinus sp.	1	-	rt-st
Gyrohypnus angustatus	1	-	rt-st
Xantholinus sp.	1	-	u
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Falagria or Cordalia sp.	1	-	rt-sf
?Crataraea suturalis	1	-	rt-st

Aleochara sp.	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. D	1	-	u
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Anobium punctatum	1	-	l-sf
Ptinus sp.	1	-	rd-sf
Corticaria sp.	1	-	rt-sf
?Cortinicara gibbosa	1	-	rt
Palorus ratzeburgi	1	-	g-ss
?Chrysomela aenea	1	-	oa-p
Chrysomelinae sp.	1	-	oa-p
Chrysomelinae sp. A	1	-	oa-p
Chrysomelinae sp. B	1	-	oa-p
Halticinae sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Coleoptera sp.	1	-	u
*Coleoptera sp. (larva)	15	m	u
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*Insecta sp. pupa	15	m	u
*Diptera sp. (adult)	6	s	u
*Syrphidae sp. (larva)	2	-	u

Context: 480 Sample: 4/T CA: KLA-D ReM: R
Weight: 2.22 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. One dish flot; recorded in flot, problems on filter paper.

	n	sq	ec
Carabidae sp.	1	-	ob
Cercyon sp. A	1	-	u
Cercyon sp. B	1	-	u
Carpelimus sp.	1	-	u
Anotylus sp.	1	-	rt
Aleocharinae sp.	1	-	u
?Elateridae sp.	1	-	ob
Ptinus sp.	1	-	rd-sf
Cryptolestes ferrugineus	1	-	g-ss
Mycetaea hirta	1	-	rd-ss
Sitophilus granarius	1	-	g-ss
*Acarina sp.	6	s	u
*Diptera sp. (pupa)	6	s	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p

Context: 512 Sample: 6/T CA: KLA-D ReM: R
Weight: 2.84 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. One dish flot, many seeds. Recorded in flot. Very few insects. Perhaps a weedy external area?

	n	sq	ec
Auchenorhyncha sp.	1	-	oa-p
Helophorus sp.	1	-	oa-w
Onthophilus striatus	1	-	rt
Anotylus rugosus	1	-	rt
Cryptolestes ferrugineus	1	-	g-ss
?Gastrophysa sp.	1	-	oa-p
?Chaetocnema concinna	1	-	oa-p
*Diptera sp. (puparium)	6	s	u
*Oligochaeta sp. (egg capsule)	3	-	u
*Coleoptera sp. (larva)	1	-	u
*Hymenoptera Parasitica sp.	1	-	u

Context: 515 Sample: 10/T CA: KLA-D ReM: R
Weight: 2.37 E: 0.00 F: 0.00

Notes: Assessment record as rapid scan. One dish flot; recorded in flot, problems on filter paper.

	n	sq	ec
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Helophorus sp.	1	-	oa-w
Cercyon sp.	1	-	u
Megasternum obscurum	1	-	rt
Stenus sp.	1	-	u
Gyrohypnus sp.	1	-	rt
Aleocharinae sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aphodius sp.	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
?Orthoperus sp.	1	-	rt
Lathridius minutus group	1	-	rd-st
Chrysomelinae sp.	1	-	oa-p
Phyllotreta ?nemorum group	1	-	oa-p
Curculionidae sp.	1	-	oa
*Coleoptera sp. (larva)	6	s	u
*Acarina sp.	6	s	u
*Auchenorhyncha sp. (nymph)	3	-	oa-p
*Diptera sp. (puparium)	1	-	u

Context: 524.01 Sample: 11/1 CA: KLA-D ReM: D
Weight: 5.00 E: 0.00 F: 0.00

Notes: Recorded in flot and on filter paper; remains to tube. Some fossils very pale. Sixteen of 23 Apions teneral (these very hard to see and some probably overlooked). Hypera and Gymnetron teneral.

	n	sq	ec
Oryzaephilus surinamensis	27	-	g-ss
Cryptolestes ferrugineus	26	-	g-ss
Apion sp.	23	-	oa-p
Lathridius minutus group	11	-	rd-st
Helophorus grandis	6	-	oa-w
Anotylus nitidulus	5	-	rt-d
Atomaria sp. D	5	-	rd
Enicmus sp.	5	-	rt-sf
Anotylus rugosus	4	-	rt
Atomaria sp. B	4	-	rd
Carpelimus ?bilineatus	3	-	rt-sf
Falagria sp.	3	-	rt-sf

Aphodius prodromus	3	-	ob-rf
Meligethes sp.	3	-	oa-p
Atomaria sp. C	3	-	rd
Cortinicara gibbosa	3	-	rt
Sitophilus granarius	3	-	g-ss
Bembidion lampros	2	-	oa
Helophorus sp.	2	-	oa-w
Ochthebius sp.	2	-	oa-w
Carpelimus ?gracilis	2	-	u
Stenus sp. B	2	-	u
Gyrohypnus angustatus	2	-	rt-st
Gyrohypnus fracticornis	2	-	rt-st
Aleocharinae sp. B	2	-	u
Cryptophagus sp. A	2	-	rd-sf
Ephistemus globulus	2	-	rd-sf
Galerucella sp.	2	-	oa-p
Macrodema micropterum	1	-	oa-p-m
Scolopostethus sp.	1	-	oa-p
Auchenorhyncha sp.	1	-	oa-p
Carabus sp.	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Pterostichus sp.	1	-	ob
Carabidae sp.	1	-	ob
Agabus bipustulatus	1	-	oa-w
Cercyon analis	1	-	rt-sf
Hydrobius fuscipes	1	-	oa-w
Ptenidium sp.	1	-	rt
Catops sp.	1	-	u
Proteinus sp.	1	-	rt
Omalium sp.	1	-	rt
?Xylodromus concinnus	1	-	rt-st
Anotylus tetracarinatus	1	-	rt
Stenus sp. A	1	-	u
Lathrobium sp.	1	-	u
Othius myrmecophilus	1	-	rt
Leptacinus sp.	1	-	rt-st
Neobisnius sp.	1	-	u
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Tachyporus sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Aleocharinae sp. E	1	-	u
Aleocharinae sp. F	1	-	u
Aleocharinae sp. G	1	-	u
Aleocharinae sp. H	1	-	u
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Anobium punctatum	1	-	l-sf
Ptinus ?fur	1	-	rd-sf
Cryptophagus ?scutellatus	1	-	rd-st
Cryptophagus sp. B	1	-	rd-sf
Atomaria sp. A	1	-	rd
Corticaria sp.	1	-	rt-sf
Anthicus floralis or formicarius	1	-	rt-st
Donaciinae sp.	1	-	oa-d-p
Phyllotreta nemorum group	1	-	oa-p
Longitarsus sp.	1	-	oa-p
Chaetocnema concinna	1	-	oa-p
Phyllobius or Polydrusus sp.	1	-	oa-p
Hypera sp.	1	-	oa-p
Gymnetron sp.	1	-	oa-p
Coleoptera sp.	1	-	u
*Acarina sp.	15	m	u
*Coleoptera sp. (larva)	6	s	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Nematocera sp. (larva)	6	s	u
*Auchenorhyncha sp. (nymph)	3	-	oa-p
*Aphidoidea sp.	2	-	u
*Pulex irritans	1	-	ss
*Aranae sp.	1	-	u
*Dermaptera sp.	1	-	u
*Diptera sp. (adult)	1	-	u
*Proctotrupoidea sp.	1	-	u

Context: 524.01 Sample: 11/T CA: KLA-D ReM: R
Weight: 1.85 E: 3.00 F: 3.00

Notes: Assessment record as rapid scan. Flot 10 mm in jar, assorted plant debris. Recorded in flot.

	n	sq	ec
Anotylus rugosus	3	-	rt
Carpelimus pusillus group	2	-	u
Trechus obtusus or quadristriatus	1	-	oa
Pterostichus sp.	1	-	ob
Carabidae sp.	1	-	ob
Helophorus aquaticus or grandis	1	-	oa-w
Helophorus sp.	1	-	oa-w
Cercyon analis	1	-	rt-sf
Cercyon sp.	1	-	u
Hydrobius fuscipes	1	-	oa-w
Omaliinae sp.	1	-	rt
Neobisnius sp.	1	-	u
Philonthus sp.	1	-	u
Tachyporus sp.	1	-	u
Falagria or Cordalia sp.	1	-	rt-sf
Aleocharinae sp.	1	-	u
Aphodius sp.	1	-	ob-rf
?Anobium punctatum	1	-	l-sf
Cryptolestes ferrugineus	1	-	g-ss
Oryzaephilus surinamensis	1	-	g-ss
Cryptophagus sp.	1	-	rd-sf
Atomaria sp.	1	-	rd
Lathridius minutus group	1	-	rd-st
Apion sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
*Diptera sp. (puparium)	15	m	u
*Acarina sp.	6	s	u
*Oligochaeta sp. (egg capsule)	2	-	u

Context: 524.03 Sample: 13/1 CA: KLA-D ReM: S
Weight: 4.40 E: 0.00 F: 0.00

Notes: One dish flot, sorted DW checked HK. recorded in flot and on filter paper; remains to tube.Preservation normal

chemically but some fossils (especially outdoor taxa) very fragmentary.

	n	sq	ec
Carpelimus ?corticinus	5	-	oa-d
Helophorus grandis	4	-	oa-w
Helophorus sp. A	3	-	oa-w
Falagria sp.	3	-	rt-sf
Aleocharinae sp. E	3	-	u
Helophorus sp. B	2	-	oa-w
Megasternum obscurum	2	-	rt
Anotylus rugosus	2	-	rt
Aleocharinae sp. A	2	-	u
Aleocharinae sp. D	2	-	u
Oryzaephilus surinamensis	2	-	g-ss
Atomaria sp.	2	-	rd
Lathridius minutus group	2	-	rd-st
Enicmus sp.	2	-	rt-sf
Stignocoris rusticus	1	-	oa
Lygaeidae sp.	1	-	oa-p
Anthocoris sp.	1	-	oa-p
Delphacidae sp.	1	-	oa-p
Auchenorhyncha sp. A	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Carabus nemoralis	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Pterostichus sp. A	1	-	ob
Pterostichus sp. B	1	-	ob
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Hydroporinae sp.	1	-	oa-w
Cercyon analis	1	-	rt-sf
Histerinae sp.	1	-	rt
Olophrum sp.	1	-	oa
Carpelimus ?bilineatus	1	-	rt-sf
Carpelimus sp.	1	-	u
Anotylus nitidulus	1	-	rt-d
Stenus sp.	1	-	u
Tachyporus sp.	1	-	u
Cordalia obscura	1	-	rt-sf
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Anobium ?punctatum	1	-	l-sf
Meligethes sp.	1	-	oa-p
Cryptolestes ?ferrugineus	1	-	g-ss
Cryptophagus sp.	1	-	rd-sf
Corticaria sp.	1	-	rt-sf
Palorus ratzeburgi	1	-	g-ss
Gastrophysa viridula	1	-	oa-p
Halticinae sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Curculionidae sp.	1	-	oa
*Acarina sp.	15	m	u
*Nematocera sp. (larva)	15	m	u
*Diptera sp. (puparium)	15	m	u
*Hymenoptera Parasitica sp.	6	s	u
*Hymenoptera sp.	6	s	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Coleoptera sp. (larva)	3	-	u
*Bibionidae sp.	3	-	u
*Syrphidae sp. (larva)	2	-	u
*Coccoidea sp.	1	-	u
*Diptera sp. (adult)	1	-	u
*Formicidae sp.	1	-	u
*Diptera sp. (pupa)	1	-	u

Context: 524.03 Sample: 13/T CA: KLA-D ReM: R
Weight: 2.03 E: 3.00 F: 4.00

Notes: Assessment record as rapid scan. Flot of about 8 mm in jar; fine fibrous plant debris. Recorded in flot.

	n	sq	ec
Lygaeidae sp.	1	-	oa-p
Clivina ?fossor	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Colymbetes fuscus	1	-	oa-w
Helophorus sp.	1	-	oa-w
Megasternum obscurum	1	-	rt
Anotylus rugosus	1	-	rt
Stenus sp.	1	-	u
Gyrohypnus sp.	1	-	rt
Staphylininae sp.	1	-	u
Tachyporus sp.	1	-	u
Aleocharinae sp.	1	-	u
Aphodius sp.	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Elateridae sp.	1	-	ob
Cryptophagus sp.	1	-	rd-sf
Lathridius minutus group	1	-	rd-st
Cortinicara gibbosa	1	-	rt
?Gastrophysa viridula	1	-	oa-p
Chrysomelinae sp.	1	-	oa-p
Apion sp.	1	-	oa-p
*Diptera sp. (puparium)	2	-	u
*Auchenorhyncha sp. (nymph)	1	-	oa-p
*Aphidoidea sp.	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u
*Diptera sp. (pupa)	1	-	u

Context: 531.01 Sample: 14/T CA: KLA-D ReM: S
Weight: 1.84 E: 0.00 F: 0.00

Notes: Context not in listing from CAU. Assessment record as rapid scan. One dish flot; recorded in flot. Many seeds. Preservation poor.

	n	sq	ec
Carabidae sp.	1	-	ob
Helophorus sp.	1	-	oa-w
Anotylus ?complanatus	1	-	rt-sf
Aphodius sp.	1	-	ob-rf
Cryptolestes ferrugineus	1	-	g-ss
Oryzaephilus surinamensis	1	-	g-ss
*Diptera sp. (puparium)	1	-	u

Context: 531.02 Sample: 15/T CA: KLA-D ReM: R
Weight: 1.69 E: 2.00 F: 3.00

Notes: Assessment record as rapid scan. One dish flot, mostly seeds. Recorded in flot. Few insects.

	n	sq	ec
Trechus obtusus or quadristriatus	1	-	oa
Agabus bipustulatus	1	-	oa-w
Helophorus sp.	1	-	oa-w
Cercyon sp.	1	-	u
Megasternum obscurum	1	-	rt
Stenus sp.	1	-	u
Leptacinus sp.	1	-	rt-st
?Philonthus sp.	1	-	u
Aphodius sp.	1	-	ob-rf
Cryptolestes ferrugineus	1	-	g-ss
Oryzaephilus surinamensis	1	-	g-ss
*Acarina sp.	1	-	u
*Daphnia sp. (ephippium)	1	-	oa-w

Context: 540.02 Sample: 17/1 CA: KLA-D ReM: S
Weight: 4.40 E: 0.00 F: 0.00

Notes: Two dish flot, sorted DW checked HK. Recorded in flot and on filter paper. Most remains pail, tending to yellow.

	n	sq	ec
Lathrobium sp.	3	-	u
Gyrohypnus fracticornis	2	-	rt-st
Xantholinus linearis or longiventris	2	-	rt-sf
Aphodius ?contaminatus	2	-	oa-rf
Trechus obtusus or quadristriatus	1	-	oa
Bembidion lampros or properans	1	-	oa
Carabidae sp.	1	-	ob
Cercyon sp.	1	-	u
Platystethus arenarius	1	-	rf
Stenus sp. A	1	-	u
Stenus sp. B	1	-	u
Othius ?myrmecophilus	1	-	rt
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Philonthus sp. C	1	-	u
Quedius sp.	1	-	u
Falagria or Cordalia sp.	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Aphodius sp.	1	-	ob-rf
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Cetoniinae sp.	1	-	oa
Elateridae sp.	1	-	ob
Oryzaephilus surinamensis	1	-	g-ss
Chrysomelinae sp.	1	-	oa-p
Tropiphorus sp.	1	-	oa
*Acarina sp.	100	e	u
*Diptera sp. (puparium)	6	s	u
*Elateridae sp. A (larva)	3	-	ob
*Auchenorhyncha sp. (nymph)	2	-	oa-p
*Elateridae sp. B (larva)	1	-	ob
*Coleoptera sp. (larva)	1	-	u
*Bibionidae sp.	1	-	u
*Formicidae sp.	1	-	u

Context: 540.02 Sample: 17/T CA: KLA-D ReM: R
Weight: 1.81 E: 4.00 F: 3.00

Notes: Assessment record as rapid scan. One dish flot; recorded in flot, problems on filter paper.

	n	sq	ec
Philonthus sp.	2	-	u
Bembidion sp.	1	-	oa
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Carabidae sp. C	1	-	ob
Helophorus sp.	1	-	oa-w
Omalium sp.	1	-	rt
Anotylus sp.	1	-	rt
Aleocharinae sp.	1	-	u
Aphodius sp.	1	-	ob-rf
Elateridae sp.	1	-	ob
Halticinae sp.	1	-	oa-p
Coleoptera sp.	1	-	u
*Acarina sp.	15	m	u
*Auchenorhyncha sp. (nymph)	10	e	oa-p
*Diptera sp. (puparium)	6	s	u
*Coccoidea sp.	1	-	u
*Dermaptera sp.	1	-	u

Context: 540.05 Sample: 18/1 CA: KLA-D ReM: S
Weight: 4.50 E: 0.00 F: 0.00

Notes: Sorted DW, checked HK. Recorded in flot and on filter paper, remains to tube. Aphodius often rotted, rolled and folded - drying? (less probably birds).

	n	sq	ec
Aphodius contaminatus	12	-	oa-rf
Lathridius minutus group	9	-	rd-st
Corticarina or Cortinicara sp.	3	-	rt
Aphodius ?prodromus	2	-	ob-rf
Aphodius sp.	2	-	ob-rf
Oryzaephilus surinamensis	2	-	g-ss
Auchenorhyncha sp.	1	-	oa-p
Carabus nemoralis	1	-	oa
Clivina fossor	1	-	oa
?Pterostichus sp.	1	-	ob
Calathus sp.	1	-	oa
Amara sp.	1	-	oa
Harpalus sp.	1	-	oa
Carabidae sp.	1	-	ob
Helophorus sp.	1	-	oa-w
Sphaeridium sp.	1	-	rf

Cercyon haemorrhoidalis	1	-	rf-sf
Megasternum obscurum	1	-	rt
Catops sp.	1	-	u
Anotylus tetracarinatus	1	-	rt
Oxytelus sculptus	1	-	rt-st
Stenus sp.	1	-	u
Othius sp.	1	-	rt
Gyrohypnus fracticornis	1	-	rt-st
?Xantholinus sp.	1	-	u
Philonthus sp.	1	-	u
Staphylininae sp.	1	-	u
Tachyporus sp.	1	-	u
Byrrhidae sp.	1	-	oa-p
Cryptolestes ?ferrugineus	1	-	g-ss
Atomaria sp.	1	-	rd
Stephostethus lardarius	1	-	rt-st
Anthicus formicarius	1	-	rt-st
Longitarsus sp.	1	-	oa-p
Chaetocnema arida group	1	-	oa-p
Apion sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Curculionidae sp.	1	-	oa
*Acarina sp.	50	e	u
*Aphidoidea sp.	15	m	u
*Diptera sp. (puparium)	6	s	u
*Diptera sp. (adult)	3	-	u
*Elateridae sp. (larva)	1	-	ob
*Aranae sp.	1	-	u
*Forficula sp.	1	-	u
*Formicidae sp. A	1	-	u
*Formicidae sp. B	1	-	u
*Hymenoptera Parasitica sp.	1	-	u

Context: 540.05 Sample: 18/T CA: KLA-D ReM: R
Weight: 1.98 E: 3.00 F: 3.00

Notes: Assessment record as rapid scan. One dish flot, seeds, moss, twig fragments. Recorded in flot.

	n	sq	ec
Aphodius sp.	6	s	ob-rf
Lathridius minutus group	2	-	rd-st
Carabus sp.	1	-	oa
Helophorus sp.	1	-	oa-w
Cercyon sp.	1	-	u
Oxytelus sculptus	1	-	rt-st
Stenus sp.	1	-	u
Philonthus sp.	1	-	u
Philonthus or Quedius sp.	1	-	u
Aleocharinae sp.	1	-	u
Staphylinidae sp.	1	-	u
Cryptophagus sp.	1	-	rd-sf
Chrysomelinae sp. A	1	-	oa-p
Chrysomelinae sp. B	1	-	oa-p
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	6	s	u
*Elateridae sp. (larva)	1	-	ob
*Dermaptera sp.	1	-	u
*Formicidae sp.	1	-	u

Context: 546.01 Sample: 19/1 CA: KLA-D ReM: S
Weight: 3.70 E: 0.00 F: 0.00

Notes: Recorded in flot, problems on filter paper; remains to tube. One teneral Apion.

	n	sq	ec
Anotylus tetracarinatus	6	-	rt
Cercyon analis	5	-	rt-sf
Megasternum obscurum	5	-	rt
Aleocharinae sp. A	5	-	u
Aphodius prodromus	5	-	ob-rf
Helophorus sp.	4	-	oa-w
Oryzaephilus surinamensis	4	-	g-ss
Cryptophagus sp.	4	-	rd-sf
Atomaria sp.	4	-	rd
Lathridius minutus group	4	-	rd-st
Enicmus sp.	4	-	rt-sf
Corticaria sp.	4	-	rt-sf
Helophorus aquaticus	3	-	oa-w
Platystethus arenarius	3	-	rf
Anotylus nitidulus	3	-	rt-d
Anotylus rugosus	3	-	rt
Gyrohypnus angustatus	3	-	rt-st
Tachyporus sp.	3	-	u
Falagria caesa or sulcatula	3	-	rt-sf
Cortinicara gibbosa	3	-	rt
Longitarsus sp. B	3	-	oa-p
Bembidion lampros or properans	2	-	oa
Helophorus grandis	2	-	oa-w
Cercyon atricapillus	2	-	rf-st
Cercyon haemorrhoidalis	2	-	rf-sf
Carpelimus sp. B	2	-	u
Gyrohypnus fracticornis	2	-	rt-st
Cordalia obscura	2	-	rt-sf
Apion sp.	2	-	oa-p
Sitona suturalis	2	-	oa-p
Notaris acridulus	2	-	oa-d-p
Saldidae sp.	1	-	oa-d
Delphacidae sp.	1	-	oa-p
Auchenorhyncha sp. A	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Carabus ?nemoralis	1	-	oa
Nebria ?brevicollis	1	-	oa
Dyschirius globosus	1	-	oa
Bembidion guttula or mannerheimi	1	-	oa
Bembidion sp.	1	-	oa
?Pterostichus sp.	1	-	ob
Carabidae sp.	1	-	ob
Agabus bipustulatus	1	-	oa-w
Coelostoma orbiculare	1	-	oa-w
Hydrobius fuscipes	1	-	oa-w
Onthophilus striatus	1	-	rt
Histerinae sp.	1	-	rt
Ochthebius sp.	1	-	oa-w
Ptenidium sp.	1	-	rt
Silphidae sp.	1	-	u
Micropeplus staphylinoides	1	-	rt
Omaliinae sp.	1	-	rt

Carpelimus ?bilineatus	1	-	rt-sf
Carpelimus sp. A	1	-	u
Stenus sp.	1	-	u
Othius ?myrmecophilus	1	-	rt
Leptacinus sp.	1	-	rt-st
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Staphylininae sp.	1	-	u
Tachinus signatus	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Geotrupes sp.	1	-	oa-rf
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
?Anobium punctatum	1	-	l-sf
Omosita colon	1	-	rt-sf
Cryptolestes ?ferrugineus	1	-	g-ss
Orthoperus sp.	1	-	rt
Typhaea stercorea	1	-	rd-ss
Palorus ratzeburgi	1	-	g-ss
Hydrothassa sp.	1	-	oa-d-p
Chrysomelinae sp.	1	-	oa-p
Longitarsus sp.	1	-	oa-p
Longitarsus sp. A	1	-	oa-p
Sitona lepidus	1	-	oa-p
*Coleoptera sp. (larva)	15	m	u
*Acarina sp.	15	m	u
*Daphnia sp. (ephippium)	15	m	oa-w
*Diptera sp. (pupa)	15	m	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Diptera sp. (larva)	6	s	u
*Diptera sp. (puparium)	6	s	u
*Auchenorhyncha sp. (nymph)	3	-	oa-p
*Aphidoidea sp.	2	-	u
*Coccoidea sp.	1	-	u
*Aranae sp.	1	-	u
*Cladocera sp. F (ephippium)	1	-	oa-w
*Diptera sp. (adult)	1	-	u
*Hymenoptera Parasitica sp.	1	-	u
*Siphonaptera sp.	1	-	u
*Insecta sp. (larva)	1	-	u
*Lepidoptera sp. (pupa)	1	-	u

Context: 546.01 Sample: 19/T CA: KLA-D ReM: R
Weight: 2.13 E: 3.00 F: 3.00

Notes: Assessment record as rapid scan. Flot 5 mm in jar; recorded in flot.

	n	sq	ec
Cercyon analis	2	-	rt-sf
Auchenorhyncha sp.	1	-	oa-p
Dyschirius ?globosus	1	-	oa
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
Helophorus grandis	1	-	oa-w
Helophorus sp.	1	-	oa-w
Sphaeridium sp.	1	-	rf
Cercyon ?haemorrhoidalis	1	-	rf-sf
Hydrophilinae sp.	1	-	oa-w
Acritus nigricornis	1	-	rt-st
Onthophilus striatus	1	-	rt
Histerinae sp.	1	-	rt
Omaliinae sp.	1	-	rt
Carpelimus pusillus group	1	-	u
Anotylus rugosus	1	-	rt
Stenus sp.	1	-	u
Gyrohypnus sp.	1	-	rt
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Geotrupes sp.	1	-	oa-rf
Aphodius ?granarius	1	-	ob-rf
Ptinus sp.	1	-	rd-sf
?Omosita sp.	1	-	rt-sf
Cryptolestes ferrugineus	1	-	g-ss
Cryptophagus ?scutellatus	1	-	rd-st
Cryptophagus sp.	1	-	rd-sf
Lathridius minutus group	1	-	rd-st
Apion sp.	1	-	oa-p
Sitona sp.	1	-	oa-p
Hypera punctata	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Ceuthorhynchinae sp.	1	-	oa-p
Gymnetron sp.	1	-	oa-p
Coleoptera sp.	1	-	u
*Diptera sp. (puparium)	15	m	u
*Auchenorhyncha sp. (nymph)	2	-	oa-p
*Aphidoidea sp.	1	-	u
*Bibionidae sp.	1	-	u
*Cladocera sp. (ephippium)	1	-	oa
*Daphnia sp. (ephippium)	1	-	oa-w
*Insecta sp. (larva)	1	-	u

Context: 257 Sample: 23/T CA: LAL-B ReM: D
Weight: 3.20 E: 0.00 F: 0.00

Notes: Sorted DW, checked HK. Recorded in flot and on filter paper; remains to tube.

	n	sq	ec
Oryzaephilus surinamensis	7	-	g-ss
Lathridius minutus group	5	-	rd-st
Anotylus rugosus	4	-	rt
Neobisnius sp.	4	-	u
Falagria sp.	4	-	rt-sf
Platystethus arenarius	3	-	rf
Oxytelus sculptus	3	-	rt-st
Gyrohypnus angustatus	3	-	rt-st
Cryptolestes ferrugineus	3	-	g-ss
Helophorus sp.	2	-	oa-w
Cercyon analis	2	-	rt-sf
Carpelimus ?bilineatus	2	-	rt-sf
Ulopa reticulata	1	-	oa-p-m
Dyschirius ?globosus	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Bembidion ?doris	1	-	oa-d
Pterostichus ?melanarius	1	-	ob

Hydroporinae sp.	1	-	oa-w
Dytiscidae sp.	1	-	oa-w
Helophorus ?aquaticus	1	-	oa-w
Cercyon atricapillus	1	-	rf-st
Cercyon ?unipunctatus	1	-	rf-st
Hydrobius fuscipes	1	-	oa-w
?Laccobius sp.	1	-	oa-w
Acritus nigricornis	1	-	rt-st
Silpha sp.	1	-	u
Lesteva longoelytrata	1	-	oa-d
Omalium sp.	1	-	rt
Xylodromus ?concinnus	1	-	rt-st
Carpelimus sp.	1	-	u
Anotylus nitidulus	1	-	rt-d
Stenus sp.	1	-	u
Othius sp.	1	-	rt
Gyrohypnus fracticornis	1	-	rt-st
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aphodius ?granarius	1	-	ob-rf
Aphodius ?prodromus	1	-	ob-rf
Cryptophagus sp.	1	-	rd-sf
Enicmus sp.	1	-	rt-sf
Corticaria sp.	1	-	rt-sf
Corticarina or Cortinicara sp.	1	-	rt
Palorus ratzeburgi	1	-	g-ss
Anthicus floralis or formicarius	1	-	rt-st
Longitarsus sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
*Auchenorhyncha sp. (nymph)	6	s	oa-p
*Acarina sp.	6	s	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Diptera sp. (puparium)	6	s	u
*Coleoptera sp. (larva)	1	-	u
*Cladocera sp. F (ephippium)	1	-	oa-w
*Siphonaptera sp.	1	-	u
*Diptera sp. (larva)	1	-	u

Context: 290 Sample: 15/T CA: LAL-C ReM: S
Weight: 3.00 E: 0.00 F: 0.00

Notes: Recorded in flot; problems on filter paper and to tube. Remains pale. Teneral Apion.

	n	sq	ec
Oryzaephilus surinamensis	27	-	g-ss
Oxytelus sculptus	10	-	rt-st
Cryptolestes ferrugineus	7	-	g-ss
Lathridius minutus group	3	-	rd-st
Cercyon analis	2	-	rt-sf
Cercyon sp.	2	-	u
Staphylininae sp.	2	-	u
Cryptophagus sp.	2	-	rd-sf
Palorus ratzeburgi	2	-	g-ss
Lygaeidae sp.	1	-	oa-p
Trechus obtusus or quadristriatus	1	-	oa
Bradycellus sp.	1	-	oa

Hydroporinae sp.	1	-	oa-w
Helophorus aquaticus or grandis	1	-	oa-w
Hydrophilinae sp.	1	-	oa-w
Olophrum sp.	1	-	oa
Omalium ?rivulare	1	-	rt-sf
Omalium sp.	1	-	rt
Xylodromus concinnus	1	-	rt-st
Carpelimus ?bilineatus	1	-	rt-sf
Carpelimus fuliginosus	1	-	st
Anotylus nitidulus	1	-	rt-d
Stenus sp. A	1	-	u
Stenus sp. B	1	-	u
Gyrohypnus angustatus	1	-	rt-st
Falagria caesa or sulcatula	1	-	rt-sf
Aleocharinae sp.	1	-	u
Trox scaber	1	-	rt-sf
Aphodius sp. A	1	-	ob-rf
Anobium ?punctatum	1	-	l-sf
Ptinus sp.	1	-	rd-sf
Tenebroides mauritanicus	1	-	rt-ss
Brachypterus sp.	1	-	oa-p
Monotoma picipes	1	-	rt-st
Typhaea stercorea	1	-	rd-ss
Anthicus formicarius	1	-	rt-st
Gastrophysa sp.	1	-	oa-p
Apion sp.	1	-	oa-p
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*Coleoptera sp. (larva)	6	s	u
*Auchenorhyncha sp. (nymph)	2	-	oa-p
*Coccoidea sp.	1	-	u
*Aphidoidea sp.	1	-	u
*Aranae sp.	1	-	u
*Diptera sp. (adult)	1	-	u
*Opiliones sp.	1	-	u

Context: 295 Sample: 16/1 CA: LAL-C ReM: D
Weight: 2.30 E: 0.00 F: 0.00

Notes: Sorted DW, checked HK. Recorded in flot and on filter paper. Preservation ranges from very good to pale films; latter perhaps imported in turf? Some too poorly preserved to identify.

	n	sq	ec
Oryzaephilus surinamensis	84	-	g-ss
Cryptolestes ferrugineus	41	-	g-ss
Oxytelus sculptus	19	-	rt-st
Cercyon atricapillus	9	-	rf-st
Lathridius minutus group	8	-	rd-st
Alphitobius diaperinus	8	-	rt-ss
Cercyon analis	4	-	rt-sf
Carpelimus bilineatus	4	-	rt-sf
Falagria caesa or sulcatula	4	-	rt-sf
Ulopa reticulata	3	-	oa-p-m
Bradycellus ?ruficollis	3	-	oa-m
Anotylus nitidulus	3	-	rt-d
Stenus sp. A	3	-	u
Lathrobium sp. A	3	-	u

Lithocharis ochracea	3	-	rt-st
Leptacinus sp.	3	-	rt-st
Aleocharinae sp. E	3	-	u
Pselaphus heisei	3	-	u
Ptinus fur	3	-	rd-sf
Atomaria sp.	3	-	rd
Sitophilus granarius	3	-	g-ss
Auchenorhyncha sp. A	2	-	oa-p
Bembidion sp. A	2	-	oa
Hydroporus sp. B	2	-	oa-w
Cercyon unipunctatus	2	-	rf-st
Megasternum obscurum	2	-	rt
Acritus nigricornis	2	-	rt-st
Ptenidium sp.	2	-	rt
Acrotrichis sp.	2	-	rt
Xylodromus concinnus	2	-	rt-st
Carpelimus ?pusillus group	2	-	u
Carpelimus sp. A	2	-	u
Anotylus tetracarinatus	2	-	rt
Othius myrmecophilus	2	-	rt
Neobisnius sp.	2	-	u
Philonthus sp. A	2	-	u
Philonthus sp. C	2	-	u
Monotoma longicollis	2	-	rt-st
Dienerella sp.	2	-	rd-sf
Palorus ratzeburgi	2	-	g-ss
Micrelus ericae	2	-	oa-p-m
Macrodema micropterum	1	-	oa-p-m
Stignocoris pedestris	1	-	oa
Cimicidae sp.	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Auchenorhyncha sp. C	1	-	oa-p
Bembidion sp. B	1	-	oa
?Pterostichus sp. A	1	-	ob
?Pterostichus sp. B	1	-	ob
?Amara sp.	1	-	oa
Hydroporus sp. A	1	-	oa-w
Helophorus ?aquaticus	1	-	oa-w
Helophorus sp.	1	-	oa-w
Sphaeridium sp.	1	-	rf
Cercyon haemorrhoidalis	1	-	rf-sf
?Anacaena sp.	1	-	oa-w
Onthophilus striatus	1	-	rt
Peranus bimaculatus	1	-	rt-sf
Histeridae sp.	1	-	u
Ochthebius sp.	1	-	oa-w
Ptiliidae sp.	1	-	u
Scydmaenidae sp.	1	-	u
Olophrum ?piceum	1	-	oa
Eusphalerum ?sorbi	1	-	u
Omalium ?rivulare	1	-	rt-sf
Platystethus arenarius	1	-	rf
Stenus sp. B	1	-	u
Stenus sp. C	1	-	u
Euaesthetus bipunctatus	1	-	oa
Lathrobium sp. B	1	-	u
Gyrohypnus ?angustatus	1	-	rt-st
Gyrohypnus fracticornis	1	-	rt-st
Xantholinus linearis or longiventris	1	-	rt-sf
Philonthus sp. B	1	-	u
Staphylininae sp.	1	-	u
Tachyporus sp. A	1	-	u
Tachyporus sp. B	1	-	u
Tachinus laticollis or marginellus	1	-	u
Cordalia obscura	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Aleocharinae sp. D	1	-	u
Aleocharinae sp. F	1	-	u
Aleocharinae sp. G	1	-	u
Trox scaber	1	-	rt-sf
Aphodius sp.	1	-	ob-rf
?Phyllopertha horticola	1	-	oa-p
Anobium punctatum	1	-	l-sf
?Tipnus unicolor	1	-	rd-st
Omosita colon	1	-	rt-sf
Cryptophagus scutellatus	1	-	rd-st
Cryptophagus sp.	1	-	rd-sf
Orthoperus sp.	1	-	rt
Typhaea stercorea	1	-	rd-ss
Anthicus floralis or formicarius	1	-	rt-st
Chrysomelinae sp.	1	-	oa-p
Phyllotreta nemorum group	1	-	oa-p
Chaetocnema ?concinna	1	-	oa-p
Cassida sp.	1	-	oa-p
Ceutorhynchus sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
*Acarina sp.	100	e	u
*Diptera sp. (puparium)	50	e	u
*Auchenorhyncha sp. (nymph)	6	s	oa-p
*Actenicerus sjaelandicus (larva)	4	-	oa
*Coleoptera sp. (larva)	3	-	u
*Pulex irritans	2	-	ss
*Aranae sp.	2	-	u
*Formicidae sp.	2	-	u
*?Spalangia sp.	1	-	oa-w
*Dermaptera sp.	1	-	u
*Hymenoptera sp.	1	-	u
Cercyon atricapillus	15	m	rf-st
Oxytelus sculptus	15	m	rt-st
Cryptolestes ferrugineus	15	m	g-ss
Oryzaephilus surinamensis	15	m	g-ss
Cercyon analis	6	s	rt-sf
Xylodromus concinnus	6	s	rt-st
Aleocharinae sp. B	6	s	u
Anobium punctatum	6	s	l-sf
Cercyon unipunctatus	4	-	rf-st
Platystethus arenarius	3	-	rf
Platystethus nitens	3	-	oa-d
Lathridius minutus group	3	-	rd-st
Omalium sp.	2	-	rt
Carpelimus bilineatus	2	-	rt-sf
Xantholinus sp.	2	-	u
Falagria sp.	2	-	rt-sf
Aleocharinae sp. A	2	-	u
Aleocharinae sp. C	2	-	u
Cryptophagus sp.	2	-	rd-sf
Palorus ratzeburgi	2	-	g-ss
Anthicus floralis or formicarius	2	-	rt-st

Macrodema micropterum	1	-	oa-p-m
Trechus sp.	1	-	ob
Carabidae sp. A	1	-	ob
Carabidae sp. B	1	-	ob
?Dytiscidae sp.	1	-	oa-w
Helophorus sp.	1	-	oa-w
Megasternum obscurum	1	-	rt
Cryptopleurum minutum	1	-	rf-st
Coprophilus striatulus	1	-	rt-st
Anotylus rugosus	1	-	rt
Gyrohypnus fracticornis	1	-	rt-st
Neobisnius sp.	1	-	u
Philonthus sp.	1	-	u
Staphylininae sp. A	1	-	u
Staphylininae sp. B	1	-	u
Cordalia obscura	1	-	rt-sf
Aphodius sp.	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Melolonthinae/Rutelinae/Cetoninae sp.	1	-	oa-p
Ptinus fur	1	-	rd-sf
?Nitidulidae sp.	1	-	u
Cryptophagus scutellatus	1	-	rd-st
Chrysomelinae sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Ceutorhynchus sp.	1	-	oa-p
Coleoptera sp. A	1	-	u
Coleoptera sp. B	1	-	u
Coleoptera sp. C	1	-	u
*Coleoptera sp. (larva)	15	m	u
*Acarina sp.	15	m	u
*Diptera sp. (pupa)	15	m	u
*Diptera sp. (puparium)	15	m	u
*?Heterodera sp. (cyst)	6	s	u
*Diptera sp. (adult)	6	s	u
*Coccoidea sp.	1	-	u
*Louse (s.l.) sp.	1	-	u
*Siphonaptera sp.	1	-	u

Context: 302.01 Sample: 17/1 CA: LAL-C ReM: S
Weight: 3.40 E: 0.00 F: 0.00

Notes: Flot 10 mm in jar. Sorted DW checked HK. Recorded in flot and on filter paper; remains to tube. Fossils often very pale.

	n	sq	ec
Oryzaephilus surinamensis	123	-	g-ss
Cryptolestes ferrugineus	18	-	g-ss
Lathrobium sp.	8	-	u
Cyphon sp.	5	-	oa-d
Palorus ratzeburgi	4	-	g-ss
Cercyon ?analis	3	-	rt-sf
Gyrohypnus angustatus	3	-	rt-st
Auchenorhyncha sp. A	2	-	oa-p
Agonum sp.	2	-	oa
Scydmaenidae sp. A	2	-	u
Carpelimus bilineatus	2	-	rt-sf
Platystethus arenarius	2	-	rf
Oxytelus sculptus	2	-	rt-st
Stenus sp. A	2	-	u
Xantholinus linearis or longiventris	2	-	rt-sf
Staphylininae sp. A	2	-	u
Pselaphidae sp. B	2	-	u
Aphodius ?prodromus	2	-	ob-rf
Anobium punctatum	2	-	l-sf
Ptinus sp.	2	-	rd-sf
Pachybrachius fracticollis	1	-	oa-p
Macrodema micropterum	1	-	oa-p-m
Heteroptera sp.	1	-	u
Ulopa reticulata	1	-	oa-p-m
Auchenorhyncha sp. B	1	-	oa-p
Dyschirius ?globosus	1	-	oa
Patrobus sp.	1	-	oa
Pterostichus sp.	1	-	ob
Hydroporus sp.	1	-	oa-w
Helophorus sp.	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Cercyon ?haemorrhoidalis	1	-	rf-sf
Enochrus sp.	1	-	oa-w
Histerinae sp.	1	-	rt
Acrotrichis sp.	1	-	rt
Scydmaenidae sp. B	1	-	u
Olophrum piceum	1	-	oa
Anthophagus caraboides	1	-	oa
Xylodromus ?concinnus	1	-	rt-st
Omaliinae sp.	1	-	rt
Anotylus nitidulus	1	-	rt-d
Anotylus rugosus	1	-	rt
Stenus sp. B	1	-	u
Leptacinus sp.	1	-	rt-st
Quedius sp.	1	-	u
Staphylininae sp. B	1	-	u
Falagria sp.	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. C	1	-	u
Pselaphidae sp. A	1	-	u
Phyllopertha horticola	1	-	oa-p
Cryptophagus sp.	1	-	rd-sf
Lathridius minutus group	1	-	rd-st
Corticarina sp.	1	-	rt
Typhaea stercorea	1	-	rd-ss
Alphitobius diaperinus	1	-	rt-ss
Plateumaris sp.	1	-	oa-d-p
Phyllotreta nemorum group	1	-	oa-p
Halticinae sp.	1	-	oa-p
*Acarina sp.	50	e	u
*Diptera sp. (puparium)	15	m	u
*Coleoptera sp. (larva)	6	s	u
*Actenicerus sjaelandicus (larva)	3	-	oa
*Oligochaeta sp. (egg capsule)	2	-	u
*Strophingia ?ericae (nymph)	1	-	oa-p-m
*Coccoidea sp.	1	-	u
*Aranae sp.	1	-	u
*Formicidae sp.	1	-	u

Context: 329 Sample: 19/1 CA: LAL-C ReM: S
Weight: 1.25 E: 0.00 F: 0.00

Notes: Flot 6 mm in jar, sorted DE and checked HK. Recorded in flot and on filter paper; remains to tube. Preservation generally very poor, some fossils very decayed.

	n	sq	ec
Oryzaephilus surinamensis	44	-	g-ss
Cryptolestes ferrugineus	13	-	g-ss
Auchenorhyncha sp.	2	-	oa-p
Hydroporinae sp.	2	-	oa-w
Cercyon analis	2	-	rt-sf
Cyphon sp.	2	-	oa-d
Palorus ratzeburgi	2	-	g-ss
Lygaeidae sp.	1	-	oa-p
Ulopa reticulata	1	-	oa-p-m
Trechus ?micros	1	-	u
Carabidae sp.	1	-	ob
Agabus or Ilybius sp.	1	-	oa-w
Helophorus sp.	1	-	oa-w
Hydrophilinae sp.	1	-	oa-w
Ochthebius sp.	1	-	oa-w
Silpha atrata	1	-	u
Xylodromus concinnus	1	-	rt-st
Stenus sp.	1	-	u
Lathrobium sp.	1	-	u
Falagria sp.	1	-	rt-sf
Aleocharinae sp.	1	-	u
Aphodius sp.	1	-	ob-rf
Anobium ?punctatum	1	-	l-sf
Alphitobius diaperinus	1	-	rt-ss
Plateumaris sp.	1	-	oa-d-p
Chrysomelinae sp.	1	-	oa-p
Apion sp.	1	-	oa-p
*Diptera sp. (puparium)	6	s	u
*Coleoptera sp. (larva)	2	-	u
*Acarina sp.	1	-	u
*Hymenoptera sp.	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u
*Nematocera sp. (larva)	1	-	u

Context: 375 Sample: 26/1 CA: LAL-C ReM: S
Weight: 2.75 E: 0.00 F: 0.00

Notes: Four dish flot sorted DW checked HK. Recorded in flot and on filter paper, fossils to tube. Preservation poor - remains pale.

	n	sq	ec
Cercyon haemorrhoidalis	13	-	rf-sf
Oryzaephilus surinamensis	9	-	g-ss
Aphodius granarius	5	-	ob-rf
Megasternum obscurum	4	-	rt
Aphodius sp. B	4	-	ob-rf
Helophorus sp. A	3	-	oa-w
Anotylus rugosus	3	-	rt
Aleocharinae sp. D	3	-	u
Palorus ratzeburgi	3	-	g-ss
Bembidion lampros	2	-	oa
Helophorus ?aquaticus	2	-	oa-w
Platystethus arenarius	2	-	rf
Stenus sp.	2	-	u
Aleochara sp.	2	-	u
Aleocharinae sp. A	2	-	u
Aleocharinae sp. C	2	-	u
Cryptolestes ferrugineus	2	-	g-ss
Lathridius minutus group	2	-	rd-st
Loricera pilicornis	1	-	oa
Patrobus ?atrorufus	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Bembidion sp.	1	-	oa
Pterostichus melanarius	1	-	ob
Pterostichus ?nigrita	1	-	oa-d
Carabidae sp.	1	-	ob
Helophorus sp. B	1	-	oa-w
Cercyon analis	1	-	rt-sf
Hydrobius fuscipes	1	-	oa-w
Histerinae sp.	1	-	rt
Ochthebius sp.	1	-	oa-w
Nicrophorus sp.	1	-	u
Megarthrus sp.	1	-	rt
Omalium sp.	1	-	rt
Anotylus nitidulus	1	-	rt-d
Anotylus tetracarinatus	1	-	rt
Rugilus ?orbiculatus	1	-	rt-sf
Othius sp.	1	-	rt
Gyrohypnus ?angustatus	1	-	rt-st
Gyrohypnus fracticornis	1	-	rt-st
Staphylinus sp.	1	-	u
Staphylininae sp.	1	-	u
Staphylininae sp. B	1	-	u
Tachyporus sp.	1	-	u
Tachinus laticollis or marginellus	1	-	u
Tachinus ?signatus	1	-	u
Aleocharinae sp. B	1	-	u
Aphodius sp. A	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Anobium ?punctatum	1	-	l-sf
Kateretes sp.	1	-	oa-p-d
Meligethes sp.	1	-	oa-p
Omosita sp.	1	-	rt-sf
Rhizophagus sp.	1	-	u
Cryptophagus sp. A	1	-	rd-sf
Cryptophagus sp. B	1	-	rd-sf
Atomaria sp.	1	-	rd
Enicmus sp.	1	-	rt-sf
Corticaria sp.	1	-	rt-sf
Typhaea stercorea	1	-	rd-ss
Gastrophysa sp.	1	-	oa-p
Chrysomela sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Notaris acridulus	1	-	oa-d-p
Curculionidae sp.	1	-	oa
*Acarina sp.	6	s	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Diptera sp. (puparium)	6	s	u
*Coleoptera sp. (larva)	2	-	u
*Cladocera sp. F (ephippium)	2	-	oa-w

*Aranae sp.	1	-	u
*Daphnia sp. (ephippium)	1	-	oa-w

Context: 232.06 Sample: 32/1 CA: LAL-D ReM: S
Weight: 3.25 E: 0.00 F: 0.00

Notes: One dish flot, sorted DW checked HK. Recorded in flot and on filter paper.

	n	sq	ec
Cryptolestes ferrugineus	25	-	g-ss
Oryzaephilus surinamensis	25	-	g-ss
Palorus ratzeburgi	11	-	g-ss
Sitophilus granarius	10	-	g-ss
Anotylus nitidulus	4	-	rt-d
Tribolium castaneum	3	-	ss
Helophorus sp.	2	-	oa-w
Falagria sp.	2	-	rt-sf
Clivina ?fossor	1	-	oa
?Bradycellus sp.	1	-	oa
Cercyon sp.	1	-	u
Acritus nigricornis	1	-	rt-st
Xylodromus ?concinnus	1	-	rt-st
Platystethus arenarius	1	-	rf
Anotylus rugosus	1	-	rt
Anotylus tetracarinatus	1	-	rt
Stenus sp.	1	-	u
Leptacinus sp.	1	-	rt-st
Xantholinus linearis or longiventris	1	-	rt-sf
Staphylininae sp.	1	-	u
Aphodius sp.	1	-	ob-rf
Anobium ?punctatum	1	-	l-sf
?Tipnus unicolor	1	-	rd-st
Cryptophagus sp.	1	-	rd-sf
Atomaria sp. A	1	-	rd
Atomaria sp. B	1	-	rd
Lathridius minutus group	1	-	rd-st
Enicmus sp.	1	-	rt-sf
Corticaria sp.	1	-	rt-sf
Typhaea stercorea	1	-	rd-ss
Aglenus brunneus	1	-	rt-ss
Anthicus floralis or formicarius	1	-	rt-st
Halticinae sp.	1	-	oa-p
*Tenebroides mauritanicus (larva)	3	-	rt-ss
*Acarina sp.	2	-	u
*Diptera sp. (puparium)	2	-	u
*Hymenoptera Parasitica sp.	1	-	u
*Diptera sp. (pupa)	1	-	u

Context: 232.12 Sample: 37/1 CA: LAL-D ReM: S
Weight: 2.25 E: 0.00 F: 0.00

Notes: Sorted DW, checked HK. Listed in flot and on filter paper; remains to tube. One charred beetle indet.

	n	sq	ec
Oryzaephilus surinamensis	64	-	g-ss
Cryptolestes ferrugineus	46	-	g-ss
Palorus ratzeburgi	25	-	g-ss
Sitophilus granarius	24	-	g-ss
Anobium punctatum	5	-	l-sf
Tipnus unicolor	5	-	rd-st
Neobisnius sp.	3	-	u
Typhaea stercorea	3	-	rd-ss
Xylodromus concinnus	2	-	rt-st
Platystethus arenarius	2	-	rf
Aleocharinae sp. B	2	-	u
Aleocharinae sp. D	2	-	u
Ptinus sp.	2	-	rd-sf
Cryptophagus sp. A	2	-	rd-sf
Aglenus brunneus	2	-	rt-ss
Conomelus anceps	1	-	oa-p
Auchenorhyncha sp.	1	-	oa-p
?Loricera pilicornis	1	-	oa
Laemostenus ?terricola	1	-	ss
Bradycellus sp.	1	-	oa
Carabidae sp.	1	-	ob
Porhydrus lineatus	1	-	oa-w
Helophorus aquaticus or grandis	1	-	oa-w
Helophorus sp.	1	-	oa-w
Cercyon analis	1	-	rt-sf
Cercyon haemorrhoidalis	1	-	rf-sf
Cercyon terminatus	1	-	rf-st
Platystethus nitens	1	-	oa-d
Anotylus nitidulus	1	-	rt-d
Anotylus tetracarinatus	1	-	rt
Leptacinus sp.	1	-	rt-st
Gyrohypnus fracticornis	1	-	rt-st
Xantholinus longiventris	1	-	rt-sf
Philonthus sp.	1	-	u
Cordalia obscura	1	-	rt-sf
Aleocharinae sp. A	1	-	u
Aleocharinae sp. C	1	-	u
Trox scaber	1	-	rt-sf
Aphodius ?granarius	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Tenebroides mauritanicus	1	-	rt-ss
Cryptophagus sp. B	1	-	rd-sf
Atomaria sp.	1	-	rd
Ephistemus globulus	1	-	rd-sf
Lathridius minutus group	1	-	rd-st
Corticaria sp.	1	-	rt-sf
Blaps sp.	1	-	rt-ss
Anthicus floralis or formicarius	1	-	rt-st
Chrysomelinae sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Coleoptera sp.	1	-	u
*Acarina sp.	6	s	u
*Oligochaeta sp. (egg capsule)	6	s	u
*Tenebroides mauritanicus (larva)	3	-	rt-ss
*Aphidoidea sp.	1	-	u
*Aranae sp.	1	-	u
*Hymenoptera Parasitica sp.	1	-	u
*Pseudoscorpiones sp.	1	-	u
*Siphonaptera sp.	1	-	u

Context: 232.16 Sample: 12/T CA: LAL-D ReM: S
Weight: 2.25 E: 0.00 F: 0.00

Notes: Recorded in flot and on filter paper; problems to tube after recording. Two dish flot. Remains yellow-red in colour. Charred Lathridius minutus group and ?Pterostichus.

	n	sq	ec
Cryptolestes ferrugineus	194	-	g-ss
Oryzaephilus surinamensis	178	-	g-ss
Palorus ratzeburgi	37	-	g-ss
Sitophilus granarius	18	-	g-ss
Aleocharinae sp. A	16	-	u
Cercyon analis	12	-	rt-sf
Anobium punctatum	10	-	l-sf
Lathridius minutus group	7	-	rd-st
Typhaea stercorea	7	-	rd-ss
Stenus sp. A	6	-	u
Tipnus unicolor	6	-	rd-st
Cryptophagus scutellatus	6	-	rd-st
Cryptophagus sp.	6	-	rd-sf
Ptenidium sp.	5	-	rt
Anotylus rugosus	5	-	rt
Philonthus sp.	5	-	u
Carpelimus bilineatus	4	-	rt-sf
Neobisnius sp.	4	-	u
Monotoma bicolor	4	-	rt-st
Atomaria sp.	4	-	rd
Acritus nigricornis	3	-	rt-st
Xylodromus concinnus	3	-	rt-st
Oxytelus sculptus	3	-	rt-st
Leptacinus sp.	3	-	rt-st
Gyrohypnus fracticornis	3	-	rt-st
Aleocharinae sp. B	3	-	u
Acrotrichis sp. A	2	-	rt
Acrotrichis sp. B	2	-	rt
Carpelimus fuliginosus	2	-	st
Falagria caesa or sulcatula	2	-	rt-sf
Crataraea suturalis	2	-	rt-st
Aleocharinae sp. C	2	-	u
Aphodius contaminatus	2	-	oa-rf
Ptinus ?fur	2	-	rd-sf
Lygaeidae sp.	1	-	oa-p
Saldidae sp.	1	-	oa-d
Aphrodes sp.	1	-	oa-p
Conomelus anceps	1	-	oa-p
Delphacidae sp.	1	-	oa-p
Psylloidea sp.	1	-	oa-p
Dyschirius ?globosus	1	-	oa
Clivina ?fossor	1	-	oa
Pterostichus ?melanarius	1	-	ob
?Pterostichus sp.	1	-	ob
Helophorus aquaticus or grandis	1	-	oa-w
Helophorus sp.	1	-	oa-w
Cercyon ?quisquilius	1	-	rf-st
Cercyon sp.	1	-	u
Ptiliidae sp.	1	-	u
Catops sp.	1	-	u
Lesteva longoelytrata	1	-	oa-d
Phyllodrepa ?floralis	1	-	rt-sf
Omalium ?rivulare	1	-	rt-sf
Omalium sp.	1	-	rt
Anotylus nitidulus	1	-	rt-d
Anotylus sculpturatus group	1	-	rt
Stenus sp. B	1	-	u
Gyrohypnus angustatus	1	-	rt-st
Quedius cinctus	1	-	rt
Staphylininae sp.	1	-	u
Tachinus signatus	1	-	u
Tachinus subterraneus	1	-	u
Trox scaber	1	-	rt-sf
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Ctenicera ?cuprea	1	-	oa-p
Elateridae sp.	1	-	ob
Coccinellidae sp.	1	-	oa-p
Dienerella sp.	1	-	rd-sf
Cortinicara gibbosa	1	-	rt
Aglenus brunneus	1	-	rt-ss
Blaps sp.	1	-	rt-ss
Tenebrio obscurus	1	-	rt-ss
Salpingidae sp.	1	-	l
Anthicus floralis or formicarius	1	-	rt-st
*Acarina sp.	50	e	u
*Aranae sp.	15	m	u
*Hymenoptera Parasitica sp.	15	m	u
*Oligochaeta sp. (egg capsule)	15	m	u
*Syrphidae sp. (larva)	15	m	u
*Diptera sp. (puparium)	15	m	u
*Pulex irritans	6	s	ss
*Coleoptera sp. (larva)	6	s	u
*Insecta sp. (larva)	6	s	u
*Diptera sp. (adult)	3	-	u
*Coccoidea sp.	2	-	u
*Tenebroides mauritanicus (larva)	2	-	rt-ss
*Hymenoptera sp.	2	-	u
*Damalinia sp.	1	-	u
*Formicidae sp.	1	-	u
*Lepidoptera sp.	1	-	u

Context: 232.19 Sample: 15/1 CA: LAL-D ReM: S
Weight: 2.20 E: 0.00 F: 0.00

Notes: Sorted DW, checked HK. Recorded in flot and on filter paper, remains to tube. Three teneral Apion.

	n	sq	ec
Cryptolestes ferrugineus	186	-	g-ss
Oryzaephilus surinamensis	130	-	g-ss
Carpelimus fuliginosus	32	-	st
Palorus ratzeburgi	32	-	g-ss
Lathridius minutus group	17	-	rd-st
Sitophilus granarius	11	-	g-ss
Cercyon analis	7	-	rt-sf
Typhaea stercorea	7	-	rd-ss
Carpelimus bilineatus	6	-	rt-sf
Cryptophagus sp. C	6	-	rd-sf
Apion sp.	5	-	oa-p

Oxytelus sculptus	4	-	rt-st
Anobium punctatum	4	-	l-sf
Xylodromus concinnus	3	-	rt-st
Neobisnius sp.	3	-	u
Aleocharinae sp. A	3	-	u
Tipnus unicolor	3	-	rd-st
Cercyon atricapillus	2	-	rf-st
Acritus nigricornis	2	-	rt-st
Carpelimus sp.	2	-	u
Anotylus rugosus	2	-	rt
Aleocharinae sp. B	2	-	u
Aleocharinae sp. D	2	-	u
Ptinus ?fur	2	-	rd-sf
Tenebroides mauritanicus	2	-	rt-ss
Cryptophagus sp. B	2	-	rd-sf
Atomaria sp. A	2	-	rd
Corticaria sp.	2	-	rt-sf
Nebria brevicollis	1	-	oa
Cercyon ?unipunctatus	1	-	rf-st
Megasternum obscurum	1	-	rt
Anacaena ?globulus	1	-	oa-w
Acrotrichis sp.	1	-	rt
Acidota crenata	1	-	oa
Omalium sp.	1	-	rt
Anotylus nitidulus	1	-	rt-d
Anotylus tetracarinatus	1	-	rt
Stenus sp.	1	-	u
Lathrobium sp.	1	-	u
Othius sp.	1	-	rt
Leptacinus sp.	1	-	rt-st
Gyrohypnus fracticornis	1	-	rt-st
Philonthus sp.	1	-	u
Falagria or Cordalia sp.	1	-	rt-sf
Aleocharinae sp. C	1	-	u
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Aphodius sp. C	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Elateridae sp.	1	-	ob
Lyctus linearis	1	-	l-sf
Omosita sp.	1	-	rt-sf
Cryptophagus scutellatus	1	-	rd-st
Cryptophagus sp. A	1	-	rd-sf
Atomaria sp. B	1	-	rd
Enicmus sp.	1	-	rt-sf
Aglenus brunneus	1	-	rt-ss
Blaps sp.	1	-	rt-ss
Tenebrio obscurus	1	-	rt-ss
Galerucella sp.	1	-	oa-p
Longitarsus sp. A	1	-	oa-p
Longitarsus sp. B	1	-	oa-p
Curculionidae sp.	1	-	oa
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*Coleoptera sp. (larva)	6	s	u
*Hymenoptera sp.	6	s	u
*Tenebroides mauritanicus (larva)	2	-	rt-ss
*Chalcidoidea sp.	2	-	u
*Coccoidea sp.	1	-	u
*Pulex irritans	1	-	ss
*Apoidea sp.	1	-	u
*Cladocera sp. F (ephippium)	1	-	oa-w
*Pseudoscorpiones sp.	1	-	u
*Syrphidae sp. (larva)	1	-	u

Context: 232.20 Sample: 16/1 CA: LAL-D ReM: S
Weight: 2.00 E: 0.00 F: 0.00

Notes: Recorded in flot and on filter paper; problems to tube. Preservation moderately good, though some fossils appear oxidised.

	n	sq	ec
Oryzaephilus surinamensis	54	-	g-ss
Cryptolestes ferrugineus	34	-	g-ss
Carpelimus fuliginosus	21	-	st
Palorus ratzeburgi	14	-	g-ss
Cercyon analis	13	-	rt-sf
Oxytelus sculptus	10	-	rt-st
Carpelimus bilineatus	6	-	rt-sf
Lathridius minutus group	6	-	rd-st
Aleocharinae sp. B	3	-	u
Sitophilus granarius	3	-	g-ss
Delphacidae sp.	2	-	oa-p
Hydroporus sp.	2	-	oa-w
Helophorus sp.	2	-	oa-w
Cercyon atricapillus	2	-	rf-st
Carpelimus sp. A	2	-	u
Carpelimus sp. B	2	-	u
Anotylus nitidulus	2	-	rt-d
Xantholinus linearis or longiventris	2	-	rt-sf
Philonthus sp. A	2	-	u
Anobium punctatum	2	-	l-sf
Cryptophagus sp.	2	-	rd-sf
Stignocoris pedestris	1	-	oa
Auchenorhyncha sp.	1	-	oa-p
Auchenorhyncha sp. C	1	-	oa-p
Auchenorhyncha sp. D	1	-	oa-p
Dyschirius ?globosus	1	-	oa
Pterostichus sp.	1	-	ob
Calathus fuscipes	1	-	oa
Bradycellus ruficollis	1	-	oa-m
Sphaeridium ?bipustulatum	1	-	rf
Cercyon haemorrhoidalis	1	-	rf-sf
Anacaena ?globulus	1	-	oa-w
Dendrophilus punctatus	1	-	rt-sf
Acrotrichis sp.	1	-	rt
Xylodromus concinnus	1	-	rt-st
Platystethus arenarius	1	-	rf
Anotylus rugosus	1	-	rt
Anotylus tetracarinatus	1	-	rt
Stenus sp.	1	-	u
Gyrohypnus fracticornis	1	-	rt-st
Neobisnius sp.	1	-	u
Philonthus sp. B	1	-	u
Staphylininae sp. A	1	-	u
Staphylininae sp. B	1	-	u
Cordalia obscura	1	-	rt-sf
Falagria caesa or sulcatula	1	-	rt-sf

Aleocharinae sp. A	1	-	u
Aleocharinae sp. C	1	-	u
Trox scaber	1	-	rt-sf
Geotrupes sp.	1	-	oa-rf
Aphodius contaminatus	1	-	oa-rf
Aphodius sp.	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Tenebroides mauritanicus	1	-	rt-ss
Monotoma sp.	1	-	rt-sf
Atomaria sp.	1	-	rd
Ephistemus globulus	1	-	rd-sf
Tenebrio obscurus	1	-	rt-ss
Phyllotreta nemorum group	1	-	oa-p
Halticinae sp.	1	-	oa-p
Apion sp. A	1	-	oa-p
Apion sp. B	1	-	oa-p
Sitona cambricus	1	-	oa-p
Ceuthorhynchidius sp.	1	-	oa-p
Phytobius sp.	1	-	oa-d
*Tenebroides mauritanicus (larva)	15	m	rt-ss
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*Coccoidea sp.	6	s	u
*?Psocoptera sp.	6	s	oa-w
*Pseudoscorpiones sp.	6	s	u
*Oligochaeta sp. (egg capsule)	3	-	u
*Auchenorhyncha sp. (nymph)	2	-	oa-p
*Aranae sp.	2	-	u
*Insecta sp. (larva)	2	-	u
*?Denticollis linearis (larva)	1	-	u
*Coleoptera sp. (larva)	1	-	u
*Aphidoidea sp.	1	-	u
*Hymenoptera Parasitica sp.	1	-	u
*Myrmica sp.	1	-	u
*Syrphidae sp. (larva)	1	-	u

Context: 1016.07 Sample: 45/1 CA: LAL-D ReM: S
Weight: 2.20 E: 0.00 F: 0.00

Notes: This sample/context combination not in CAU listing.
Sorted DW, checked HK. Stained meths yellow-orange.
Recorded in flot and on filter paper. Most Apion remains pale.
Some dwarfed S. granarius

	n	sq	ec
Cryptolestes ferrugineus	23	-	g-ss
Oryzaephilus surinamensis	22	-	g-ss
Lathridius minutus group	22	-	rd-st
Cercyon analis	15	-	rt-sf
Ptenidium ?pusillum	10	-	rt-sf
Enicmus sp.	10	-	rt-sf
Cryptophagus sp.	9	-	rd-sf
Atomaria sp. A	9	-	rd
Corticaria sp.	8	-	rt-sf
Conomelus anceps	5	-	oa-p
Palorus ratzeburgi	5	-	g-ss
Sitophilus granarius	4	-	g-ss
Gyrohypnus angustatus	3	-	rt-st
Aleocharinae sp. A	3	-	u
Aleocharinae sp. B	3	-	u
Aleocharinae sp. C	3	-	u
Anobium punctatum	3	-	l-sf
Cryptophagus scutellatus	3	-	rd-st
Apion sp. A	3	-	oa-p
Carpelimus ?bilineatus	2	-	rt-sf
Philonthus sp. A	2	-	u
Philonthus sp. B	2	-	u
Aleocharinae sp. F	2	-	u
Aleocharinae sp. G	2	-	u
Atomaria ?nigripennis	2	-	rd-ss
Anthicus formicarius	2	-	rt-st
Scolopostethus sp.	1	-	oa-p
Berytinus sp.	1	-	oa-p
Delphacidae sp. A	1	-	oa-p
Delphacidae sp. B	1	-	oa-p
Auchenorhyncha sp. A	1	-	oa-p
Auchenorhyncha sp. B	1	-	oa-p
Psylloidea sp.	1	-	oa-p
Pterostichus diligens	1	-	oa-d
Pterostichus melanarius	1	-	ob
Calathus fuscipes	1	-	oa
Metabletus foveatus	1	-	oa
Carabidae sp.	1	-	ob
Hydroporus sp. A	1	-	oa-w
Hydroporus sp. B	1	-	oa-w
Hydroporus sp. C	1	-	oa-w
Helophorus sp. A	1	-	oa-w
Anacaena ?globulus	1	-	oa-w
Silphidae sp.	1	-	u
Olophrum ?piceum	1	-	oa
Omalium ?rivulare	1	-	rt-sf
Xylodromus concinnus	1	-	rt-st
Oxytelus sculptus	1	-	rt-st
Stenus sp. A	1	-	u
Lathrobium sp. A	1	-	u
Lathrobium sp. B	1	-	u
Rugilus sp.	1	-	rt
Leptacinus sp.	1	-	rt-st
Quedius sp.	1	-	u
Staphylininae sp.	1	-	u
Tachyporus sp.	1	-	u
Cordalia obscura	1	-	rt-sf
Falagria sp.	1	-	rt-sf
?Crataraea suturalis	1	-	rt-st
Aleocharinae sp. D	1	-	u
Aleocharinae sp. E	1	-	u
Geotrupes sp.	1	-	oa-rf
Aphodius ?contaminatus	1	-	oa-rf
Aphodius ?prodromus	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
?Cantharidae sp.	1	-	ob
Atomaria sp. B	1	-	rd
Ephistemus globulus	1	-	rd-sf
Dienerella sp.	1	-	rd-sf
Typhaea stercorea	1	-	rd-ss
Tenebrio obscurus	1	-	rt-ss
Plateumaris sp.	1	-	oa-d-p
?Chrysolina sp.	1	-	oa-p
Chrysomelinae sp.	1	-	oa-p

Galerucella sp.	1	-	oa-p
Longitarsus sp.	1	-	oa-p
?Chaetocnema sp.	1	-	oa-p
?Sphaeroderma sp.	1	-	oa-p
Apion sp. B	1	-	oa-p
Otiorhynchus sp.	1	-	oa-p
Sitona sp.	1	-	oa-p
Gymnetron labile	1	-	oa-p
Curculionidae sp.	1	-	oa
*Diptera sp. (pupa)	100	e	u
*Diptera sp. (puparium)	100	e	u
*Acarina sp.	50	e	u
*Auchenorhyncha sp. (nymph)	15	m	oa-p
*Coleoptera sp. (larva)	6	s	u
*Aranae sp.	6	s	u
*Diptera sp. (adult)	6	s	u
*Formicidae sp.	2	-	u
*Pulex irritans	1	-	ss
*Mallophaga sp.	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u
*Pseudoscorpiones sp.	1	-	u
*Aphidoidea sp. A	1	-	u
*Aphidoidea sp. B	1	-	u
*Heteroptera sp. (nymph)	1	-	u

Context: 1017 Sample: 29/1 CA: LAL-D ReM: S
Weight: 3.00 E: 0.00 F: 0.00

Notes: Trace flot; recorded in flot,

	n	sq	ec
Helophorus sp.	1	-	oa-w
Carpelimus sp.	1	-	u
Stenus sp.	1	-	u
Aphodius sp.	1	-	ob-rf
Cryptolestes ?ferrugineus	1	-	g-ss
Corticaria sp.	1	-	rt-sf
*Oligochaeta sp. (egg capsule)	6	s	u
*Diptera sp. (puparium)	1	-	u

Context: 1021 Sample: 30/1 CA: LAL-D ReM: S
Weight: 3.25 E: 0.00 F: 0.00

Notes: Very small flot, mostly invertebrates, some plant debris and seeds. Recorded in flot and on filter paper.

	n	sq	ec
Oryzaephilus surinamensis	9	-	g-ss
Cryptolestes ferrugineus	6	-	g-ss
Lathridius minutus group	6	-	rd-st
Platystethus arenarius	5	-	rf
Aleocharinae sp.	4	-	u
Cercyon atricapillus	2	-	rf-st
Oxytelus sculptus	2	-	rt-st
Anthicus formicarius	2	-	rt-st
Scolopostethus sp.	1	-	oa-p
Heteroptera sp.	1	-	u
Pterostichus sp.	1	-	ob
Carabidae sp.	1	-	ob
Hydroporinae sp.	1	-	oa-w
Helophorus sp.	1	-	oa-w
Cercyon analis	1	-	rt-sf
Omalium sp.	1	-	rt
Carpelimus bilineatus	1	-	rt-sf
Carpelimus pusillus group	1	-	u
Anotylus tetracarinatus	1	-	rt
Stenus sp.	1	-	u
Gyrohypnus fracticornis	1	-	rt-st
Falagria sp.	1	-	rt-sf
Staphylinidae sp.	1	-	u
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
Elateridae sp.	1	-	ob
Anobium punctatum	1	-	l-sf
Ptinus ?fur	1	-	rd-sf
Cryptophagus sp.	1	-	rd-sf
Atomaria sp.	1	-	rd
Enicmus sp.	1	-	rt-sf
Corticaria sp.	1	-	rt-sf
Typhaea stercorea	1	-	rd-ss
Aglenus brunneus	1	-	rt-ss
Palorus ratzeburgi	1	-	g-ss
Phyllotreta nemorum group	1	-	oa-p
Halticinae sp.	1	-	oa-p
Sitophilus granarius	1	-	g-ss
Curculionidae sp. A	1	-	oa
Curculionidae sp. B	1	-	oa
*?Heterodera sp. (cyst)	15	m	u
*Acarina sp.	15	m	u
*Diptera sp. (larva)	15	m	u
*Insecta sp. pupa	15	m	u
*Daphnia sp. (ephippium)	6	s	oa-w
*?Damalinia sp.	2	-	u
*Elateridae sp. (larva)	1	-	ob
*Bibionidae sp.	1	-	u

Context: 1249 Sample: 3/1 CA: LAL-D ReM: S
Weight: 4.00 E: 0.00 F: 0.00

Notes: Sorted DW checked HK (very many insects had been left in). Recorded in flot and on filter paper. Preservation rather good.

	n	sq	ec
Cryptolestes ferrugineus	40	-	g-ss
Sitophilus granarius	37	-	g-ss
Oryzaephilus surinamensis	27	-	g-ss
Palorus ratzeburgi	19	-	g-ss
Platystethus arenarius	18	-	rf
Cercyon haemorrhoidalis	13	-	rf-sf
Cryptophagus sp.	9	-	rd-sf
Stenus sp. A	8	-	u
Lathridius minutus group	8	-	rd-st
Helophorus aquaticus	5	-	oa-w
Cercyon analis	5	-	rt-sf
Anotylus tetracarinatus	5	-	rt

Falagria caesa or sulcatula	5	-	rt-sf
Aphodius ?prodromus	5	-	ob-rf
Carpelimus ?bilineatus	4	-	rt-sf
Gyrohypnus fracticornis	4	-	rt-st
Aleocharinae sp. C	4	-	u
Helophorus sp. A	3	-	oa-w
Helophorus sp. B	3	-	oa-w
Cercyon atricapillus	3	-	rf-st
Philonthus sp. B	3	-	u
Aleocharinae sp. D	3	-	u
Aphodius granarius	3	-	ob-rf
Corticarina sp.	3	-	rt
Anthicus formicarius	3	-	rt-st
Megasternum obscurum	2	-	rt
Onthophilus striatus	2	-	rt
Xylodromus concinnus	2	-	rt-st
Anotylus nitidulus	2	-	rt-d
Oxytelus sculptus	2	-	rt-st
Xantholinus linearis	2	-	rt-sf
Staphylininae sp. A	2	-	u
Monotoma picipes	2	-	rt-st
Cryptophagus scutellatus	2	-	rd-st
Lygaeidae sp.	1	-	oa-p
Delphacidae sp.	1	-	oa-p
Trechus ?quadristriatus	1	-	oa
Trechus micros	1	-	u
Pterostichus ?melanarius	1	-	ob
Pterostichus diligens or strenuus	1	-	oa
Calathus sp.	1	-	oa
Carabidae sp.	1	-	ob
Helophorus grandis	1	-	oa-w
Cercyon unipunctatus	1	-	rf-st
Cryptopleurum minutum	1	-	rf-st
Hydrobius fuscipes	1	-	oa-w
Histerinae sp.	1	-	rt
Ochthebius sp.	1	-	oa-w
Limnebius sp.	1	-	oa-w
Ptenidium sp.	1	-	rt
Megarthrus sp.	1	-	rt
Omalium sp.	1	-	rt
Anotylus sculpturatus group	1	-	rt
Stenus sp. B	1	-	u
Leptacinus sp.	1	-	rt-st
Gyrohypnus ?angustatus	1	-	rt-st
Neobisnius sp.	1	-	u
Philonthus sp. A	1	-	u
Philonthus sp. C	1	-	u
Philonthus sp. D	1	-	u
Tachyporus sp.	1	-	u
Tachinus signatus	1	-	u
Aleochara sp.	1	-	u
Aleocharinae sp. A	1	-	u
Aleocharinae sp. B	1	-	u
Aleocharinae sp. E	1	-	u
Geotrupes sp.	1	-	oa-rf
Aphodius sp. A	1	-	ob-rf
Aphodius sp. B	1	-	ob-rf
Simplocaria ?semistriata	1	-	oa-p
Oulimnius sp.	1	-	oa-w
Elateridae sp.	1	-	ob
Anobium punctatum	1	-	l-sf
Ptinus sp.	1	-	rd-sf
Omosita ?colon	1	-	rt-sf
Cryptophagidae sp.	1	-	u
Ephistemus globulus	1	-	rd-sf
Orthoperus sp.	1	-	rt
Enicmus sp.	1	-	rt-sf
Typhaea stercorea	1	-	rd-ss
Gastrophysa ?polygoni	1	-	oa-p
?Hydrothassa sp.	1	-	oa-d-p
Galerucinea sp.	1	-	oa-p
Phyllotreta nemorum group	1	-	oa-p
Longitarsus sp.	1	-	oa-p
?Crepidodera sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Apion sp. A	1	-	oa-p
Apion sp. B	1	-	oa-p
Sitona ?lepidus	1	-	oa-p
*Diptera sp. (pupa)	100	e	u
*Diptera sp. (puparium)	50	e	u
*Auchenorhyncha sp. (nymph)	15	m	oa-p
*Coleoptera sp. (larva)	15	m	u
*Acarina sp.	15	m	u
*Cladocera sp. F (ephippium)	6	s	oa-w
*Diptera sp. (adult)	6	s	u
*Myrmica sp.	2	-	u
*Oligochaeta sp. (egg capsule)	2	-	u
*Coccoidea sp.	1	-	u
*Aranae sp.	1	-	u
*Pseudoscorpiones sp.	1	-	u
*Siphonaptera sp.	1	-	u

Context: 1267 Sample: 6/1 CA: LAL-D ReM: S
Weight: 2.50 E: 0.00 F: 0.00

Notes: Recorded in flot and on filter paper.

	n	sq	ec
Oryzaephilus surinamensis	158	-	g-ss
Cryptolestes ferrugineus	41	-	g-ss
Lathridius minutus group	11	-	rd-st
Ptinus fur	10	-	rd-sf
Carpelimus pusillus group	7	-	u
Anobium punctatum	7	-	l-sf
Cercyon analis	6	-	rt-sf
Palorus ratzeburgi	5	-	g-ss
Sitophilus granarius	5	-	g-ss
Aleocharinae sp. A	3	-	u
Anthocoris sp.	2	-	oa-p
Helophorus sp.	2	-	oa-w
Cercyon atricapillus	2	-	rf-st
Xylodromus concinnus	2	-	rt-st
Platystethus arenarius	2	-	rf
Anotylus tetracarinatus	2	-	rt
Oxytelus sculptus	2	-	rt-st
Stenus sp. B	2	-	u
Falagria sp.	2	-	rt-sf
Aleocharinae sp. C	2	-	u
Aleocharinae sp. D	2	-	u

Aleocharinae sp. G	2	-	u
Cryptophagus sp. A	2	-	rd-sf
Cryptophagus sp. B	2	-	rd-sf
Aglenus brunneus	2	-	rt-ss
Dyschirius ?globosus	1	-	oa
Trechus obtusus or quadristriatus	1	-	oa
Pterostichus sp.	1	-	ob
Harpalus sp.	1	-	oa
Helophorus aquaticus or grandis	1	-	oa-w
Histeridae sp.	1	-	u
Ptenidium sp.	1	-	rt
Ptiliidae sp.	1	-	u
Lesteva longoelytrata	1	-	oa-d
Omalium rivulare	1	-	rt-sf
Anotylus rugosus	1	-	rt
Anotylus sculpturatus group	1	-	rt
Stenus sp. A	1	-	u
Leptacinus sp.	1	-	rt-st
Philonthus sp. A	1	-	u
Philonthus sp. B	1	-	u
Philonthus sp. C	1	-	u
Tachinus sp.	1	-	u
Cordalia obscura	1	-	rt-sf
Aleocharinae sp. B	1	-	u
Aleocharinae sp. E	1	-	u
Aleocharinae sp. F	1	-	u
Trox scaber	1	-	rt-sf
Aphodius ?prodromus	1	-	ob-rf
Phyllopertha horticola	1	-	oa-p
?Anobiidae sp.	1	-	l
Meligethes sp.	1	-	oa-p
Monotoma picipes	1	-	rt-st
Atomaria sp.	1	-	rd
Corticaria sp. A	1	-	rt-sf
Corticaria sp. B	1	-	rt-sf
Typhaea stercorea	1	-	rd-ss
Phyllotreta nemorum group	1	-	oa-p
Halticinae sp.	1	-	oa-p
Gymnetron sp.	1	-	oa-p
Coleoptera sp. A	1	-	u
*Acarina sp.	15	m	u
*Diptera sp. (adult)	15	m	u
*Diptera sp. (pupa)	15	m	u
*Aranae sp.	6	s	u
*Homoptera sp. (nymph)	2	-	oa-p
*Coccoidea sp.	2	-	u
*Syrphidae sp. (larva)	2	-	u
*Strophingia sp. (nymph)	1	-	oa-p-m
*Coleoptera sp. (larva)	1	-	u
*Bibionidae sp.	1	-	u
*Formicidae sp.	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u
*Opiliones sp.	1	-	u

Context: 1269 Sample: 5/1 CA: LAL-D ReM: S
Weight: 3.10 E: 0.00 F: 0.00

Notes: Very small flot, many seeds.

	n	sq	ec
Aleocharinae sp. A	2	-	u
Hemiptera sp.	1	-	u
Carabidae sp.	1	-	ob
Helophorus sp.	1	-	oa-w
Cercyon sp.	1	-	u
Megasternum obscurum	1	-	rt
Xantholinus linearis or longiventris	1	-	rt-sf
Philonthus sp.	1	-	u
Aleocharinae sp. B	1	-	u
Aphodius sp.	1	-	ob-rf
Cryptolestes ferrugineus	1	-	g-ss
Oryzaephilus surinamensis	1	-	g-ss
Cryptophagus sp.	1	-	rd-sf
Lathridius minutus group	1	-	rd-st
Chrysomelinae sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
Coleoptera sp.	1	-	u
*Acarina sp.	6	s	u
*Sepsidae sp. (puparium)	4	-	u
*Insecta sp. (larva)	1	-	u
*Diptera sp. (puparium)	1	-	u

Context: 1357 Sample: 8/1 CA: LAL-D ReM: S
Weight: 3.65 E: 0.00 F: 0.00

Notes: Flot more than 10 mm in jar sorted DW checked HK. Recorded in flot and on filter paper; fossils to tube. Preservation good to rather poor.

	n	sq	ec
Oryzaephilus surinamensis	74	-	g-ss
Cryptolestes ferrugineus	36	-	g-ss
Lathridius minutus group	17	-	rd-st
Oxytelus sculptus	14	-	rt-st
Cercyon analis	11	-	rt-sf
Carpelimus ?bilineatus	9	-	rt-sf
Cercyon terminatus	7	-	rf-st
Carpelimus sp. B	7	-	u
Anotylus nitidulus	7	-	rt-d
Leptacinus pusillus	6	-	rt-st
Aleocharinae sp. C	5	-	u
Anthicus formicarius	5	-	rt-st
Cercyon atricapillus	4	-	rf-st
Anotylus tetracarinatus	4	-	rt
Aleocharinae sp. A	4	-	u
Corticaria sp. A	4	-	rt-sf
Sitophilus granarius	4	-	g-ss
Ptenidium sp.	3	-	rt
Carpelimus corticinus	3	-	oa-d
Platystethus arenarius	3	-	rf
Cordalia obscura	3	-	rt-sf
Aleocharinae sp. B	3	-	u
Aphodius prodromus	3	-	ob-rf
Atomaria sp. A	3	-	rd
Scolopostethus sp.	2	-	oa-p
Conomelus anceps	2	-	oa-p
Trechus obtusus or quadristriatus	2	-	oa
Megasternum obscurum	2	-	rt

Acrotrichis sp.	2	-	rt
Anotylus rugosus	2	-	rt
Lathrobium sp.	2	-	u
Gyrohypnus fracticornis	2	-	rt-st
Philonthus sp. B	2	-	u
Falagria sp.	2	-	rt-sf
Phyllopertha horticola	2	-	oa-p
Meligethes sp.	2	-	oa-p
Monotoma picipes	2	-	rt-st
Chilocorus bipustulatus	2	-	oa-p
Zicrona caerulea	1	-	oa-p
?Stignocoris pedestris	1	-	oa
Lyctocoris campestris	1	-	rd-st
Notiophilus biguttatus	1	-	oa
Dyschirius ?globosus	1	-	oa
Pterostichus (Poecilus) sp.	1	-	oa
Pterostichus sp.	1	-	ob
Calathus sp.	1	-	oa
?Bradycellus sp.	1	-	oa
Helophorus sp. A	1	-	oa-w
Helophorus sp. B	1	-	oa-w
Cercyon sp.	1	-	u
Scydmaenidae sp.	1	-	u
Micropeplus fulvus	1	-	rt
Olophrum sp.	1	-	oa
Omalium sp.	1	-	rt
Xylodromus concinnus	1	-	rt-st
Carpelimus sp. A	1	-	u
Platystethus nitens	1	-	oa-d
Stenus sp. A	1	-	u
Stenus sp. B	1	-	u
Stenus sp. C	1	-	u
Stenus sp. D	1	-	u
Lithocharis ochracea	1	-	rt-st
Xantholinus linearis or longiventris	1	-	rt-sf
Philonthus sp. A	1	-	u
Philonthus sp. C	1	-	u
Philonthus sp. D	1	-	u
Quedius boops group	1	-	u
Staphylininae sp. B	1	-	u
Tachinus sp.	1	-	u
Aleochara sp.	1	-	u
Aleocharinae sp. D	1	-	u
Aleocharinae sp. E	1	-	u
Aphodius ?granarius	1	-	ob-rf
Aphodius sp.	1	-	ob-rf
Clambus sp.	1	-	rt-sf
Simplocaria ?semistriata	1	-	oa-p
Elateridae sp.	1	-	ob
Rhizophagus sp.	1	-	u
Monotoma longicollis	1	-	rt-st
Cryptophagus sp. A	1	-	rd-sf
Cryptophagus sp. B	1	-	rd-sf
Atomaria sp. B	1	-	rd
Atomaria sp. C	1	-	rd
Atomaria sp. D	1	-	rd
Ephistemus globulus	1	-	rd-sf
Cerylon ferrugineum	1	-	l
Coccidula rufa	1	-	oa-p-d
Coccinellidae sp.	1	-	oa-p
Enicmus sp.	1	-	rt-sf
Corticaria sp. B	1	-	rt-sf
Corticaria sp. C	1	-	rt-sf
Palorus ratzeburgi	1	-	g-ss
Prasocuris phellandrii	1	-	oa-p-d
Galerucinea sp.	1	-	oa-p
Longitarsus sp.	1	-	oa-p
Altica sp.	1	-	oa-p
Chaetocnema arida group	1	-	oa-p
Apion (Oxystoma) sp.	1	-	oa-p
Apion sp.	1	-	oa-p
Sitona sp.	1	-	oa-p
Notaris acridulus	1	-	oa-d-p
Micrelus ericae	1	-	oa-p-m
Ceuthorhynchinae sp.	1	-	oa-p
Curculionidae sp.	1	-	oa
*Coccoidea sp.	15	m	u
*Acarina sp.	15	m	u
*Diptera sp. (puparium)	15	m	u
*Coleoptera sp. (larva)	6	s	u
*Heteroptera sp. (nymph)	6	s	u
*Diptera sp. (pupa)	6	s	u
*Hymenoptera sp.	2	-	u
*?Pulex irritans	1	-	ss
*?Spalangia sp.	1	-	oa-w
*Formicidae sp.	1	-	u
*Hymenoptera Parasitica sp.	1	-	u
*Oligochaeta sp. (egg capsule)	1	-	u
*Pseudoscorpiones sp.	1	-	u

Table 4. 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 1 for codes assigned to taxa from KLA and LAL, The Lanes, Carlisle. Indivs - individuals (based on MNI); No - number.

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

Table 5. Measurements (in microns) of Trichuris *eggs from samples from KLA and LAL, The Lanes, Carlisle. T - total length; S - 'standard' length; W - width; n/m - not measureable.*

Context 1267, Sample 6

T	S	W	
n/m	52.5	27.5	
n/m	52.5	27.5	
56.3	50.0	27.5	
n/m	50.0	27.5	
n/m	50.0	25.0	
n/m	47.5	27.5	
n/m	47.5	25.0	
55.0	47.5	27.5	
55.0	47.5	26.3	
55.0	46.3	23.8	
55.0	47.5	27.5	
52.5	46.3	27.5	
58.8	48.8	27.5	
n/m	52.5	26.3	
n/m	48.8	25.0	
n/m	51.3	27.5	
58.8	50.0	27.5	
50.0	45.0	32.5	
n/m	51.3	27.5	
n/m	48.8	26.3	
57.5	51.3	33.8	
n/m	48.8	27.5	
n/m	50.0	30.0	
n/m	51.3	27.5	
n/m	50.0	27.5	
n/m	47.5	27.5	
n/m	48.8	28.8	
n/m	51.3	25.0	
50.0	47.5	27.5	
n/m	46.3	28.8	
52.5	47.5	27.5	
n/m	52.5	25.0	
54.69	**49.18**	**27.38**	**Mean**
2.97	**2.10**	**1.99**	**sd**

Context 759, Sample 373

T	S	W	
56.3	50.0	27.5	
52.5	47.5	27.5	
55.0	47.5	27.5	
52.5	47.5	27.5	
n/m	47.5	26.3	
52.5	47.5	28.8	
n/m	50.0	28.8	
50.0	45.0	27.5	
56.3	50.0	27.5	
n/m	47.5	27.5	
56.3	51.3	27.5	
55.0	50.0	26.3	
n/m	48.8	27.5	
n/m	50.0	27.5	
n/m	51.3	28.8	
55.0	51.3	26.3	
58.8	52.5	25.0	
n/m	50.0	27.5	
n/m	48.8	26.3	
55.0	48.8	25.0	
60.0	52.5	27.5	
n/m	52.5	26.3	
n/m	50.0	27.5	
58.8	52.5	25.0	
57.5	51.3	27.5	
n/m	47.5	26.3	
55.0	50.0	27.5	
n/m	47.5	27.5	
n/m	50.0	27.5	
57.5	47.5	27.5	
n/m	47.5	28.8	
57.5	50.0	27.5	
55.63	**49.41**	**27.19**	**Mean**
2.58	**1.90**	**1.00**	**sd**

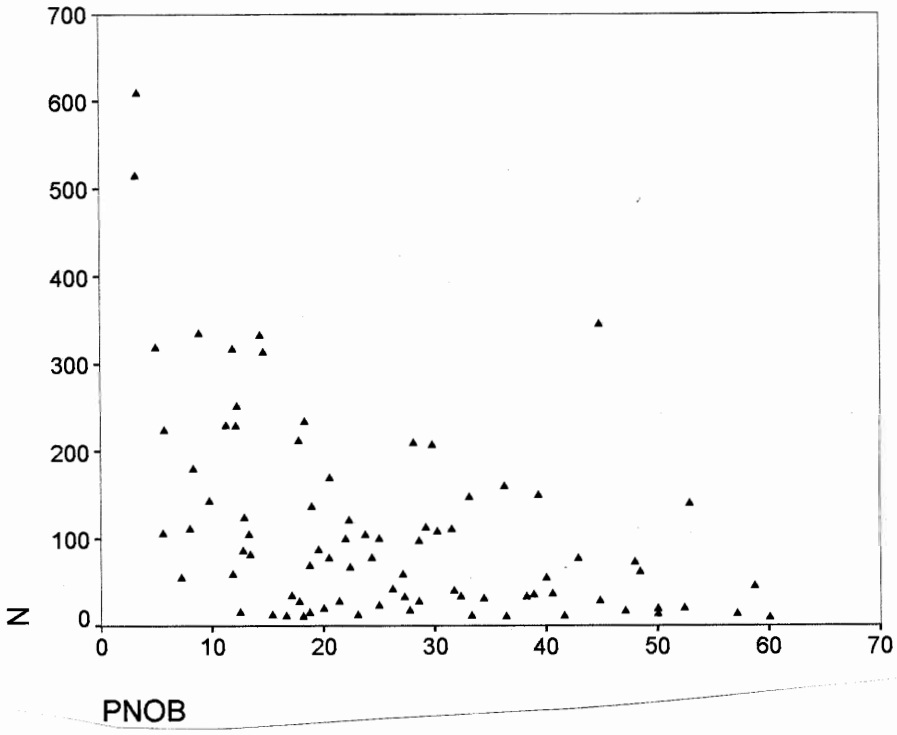

Figure 1. Keay's Lane and Law's Lane, The Lanes, Carlisle: proportion of 'outdoor' individuals of adult beetles and bugs plotted against minimum number of individuals of these groups. No correction has been made for grain pests and only assemblages with more than nine individuals in total are included.

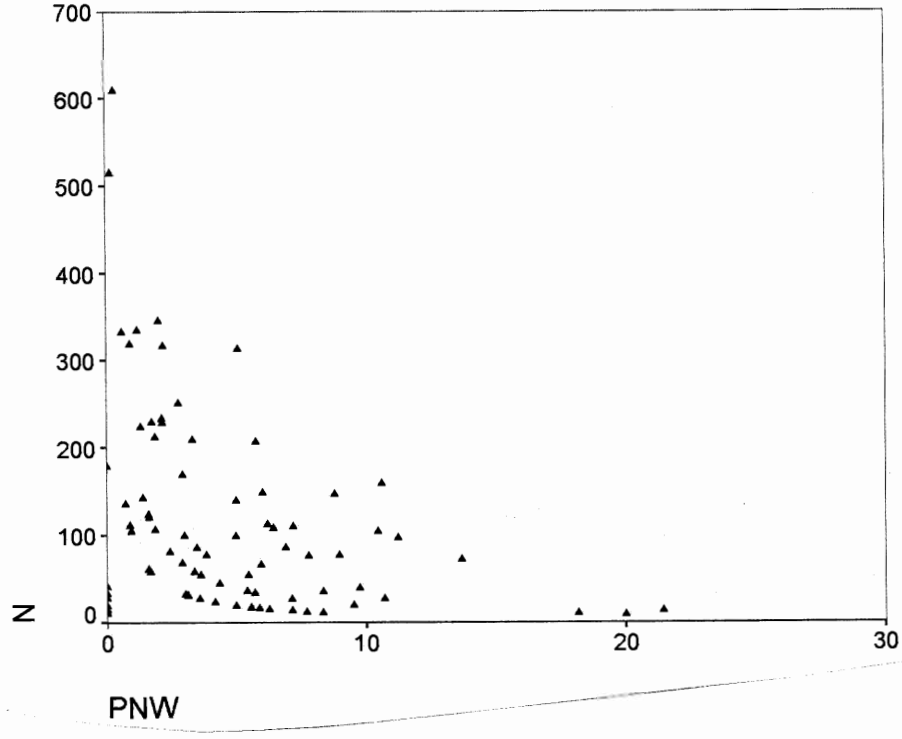

Figure 2. *Keay's Lane and Law's Lane, The Lanes, Carlisle: proportion of individuals of adult aquatic beetles and bugs plotted against minimum number of individuals of these groups. No correction has been made for grain pests and only assemblages with more than nine individuals in total are included.*