

APPENDIX 15

INSECT AND OTHER INVERTEBRATE REMAINS

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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 sites in the southern Lanes has been reported elsewhere (Kenward *et al* 1992a; 1992b; 1992c; 2010). Following an assessment (Carrott *et al* 1995), in which priorities were assigned to the samples examined, a project to investigate insects and other invertebrates from the northern Lanes was proposed to English Heritage (now Historic England; McCarthy and Kenward 1996), which subsequently agreed to provide funding. In addition to its value in routine reconstruction of the environment of the sites themselves, the material was regarded as of importance in investigating zonation in Roman Carlisle when combined with the results from the southern Lanes (Kenward *et al* 2010), and from Castle Street (Kenward *et al* 1991) and Annetwell Street (Kenward and Large 1986; Large and Kenward 1987a; 1987b; 1987c; 1988a; 1988b; 1988c; 1988d; 1988e; revised data for insect assemblages was made available in Kenward 1998).

Methods

Practical methods

A large corpus of samples was submitted, most of which 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 possibility of their causing changes in dimensions (*cf* Jones, *loc cit*).

All of the samples assigned as the 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' sub-samples used for the assessment exercise yielded rather small numbers of insect remains. To provide larger assemblages, the largest possible sub-samples were used in most cases for the main post-excavation analysis, but 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 was 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 therefore 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 lists of species 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 were essentially the same as those 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; 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, *ie* those species favoured by human activity (see Kenward 1997). Taxa have been assigned codes for the 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 litter on the stable floor.

Results

Macro-invertebrate assemblages from 111 sub-samples from 91 contexts have been recorded, of which 104, from 85 contexts, were of Roman date (Table 82). The abbreviations used in the tables and catalogue have also been given (Table 83).

This group of samples illustrated a problem which has occurred during work on other sites (*eg* Davenham, Church Moss, Cheshire; Hughes *et al* 1998), namely the under-estimation of concentrations in assessment. Assessment suggested that many samples had low concentrations of remains, so that large sub-samples 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 sub-samples (22) and for /1 sub-samples (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 sub-sample 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.

Invertebrate taxa	Code
NEMATODA	
*? <i>Heterodera</i> sp (cyst)	u
ANNELIDA	
* <i>Oligochaeta</i> sp (egg capsule)	u
CRUSTACEA: CLADOCERA	
* <i>Daphnia</i> sp (ephippium)	oa-w
* <i>Cladocera</i> spp (ephippium)	oa-w
INSECTA	
DERMAPTERA	
* <i>Forficula auricularia</i> (Linnaeus)	rt
* <i>Forficula</i> sp indeterminate	u
* <i>Dermaptera</i> sp	u
ANOPLURA (SIPHUNCULATA)	
*? <i>Haematopinus</i> sp	u
* <i>Pediculus humanus</i> (Linnaeus)	u
* <i>Pthirus pubis</i> (Linnaeus)	ss
MALLOPHAGA	
* <i>Damalinea</i> sp	u
* <i>Mallophaga</i> sp	u
* <i>Louse</i> (sl) sp	u
THYSANOPTERA	
* <i>Thysanoptera</i> sp	oa-w
HEMIPTERA	
<i>Zicrona caerulea</i> (Linnaeus)	oa-p
Pentatomidae sp	oa-p
<i>Pachybrachius fracticollis</i> (Schilling)	oa-p
<i>Macrodema micropterum</i> (Curtis)	oa-p-m
<i>Stignocoris fuliginus</i> (Geof in Fourc)	oa
<i>Stignocoris pedestris</i> (Fallen)	oa
<i>Stignocoris rusticus</i> (Fallen)	oa
<i>Scolopostethus ?decoratus</i> (Hahn)	oa-p-m
<i>Scolopostethus</i> sp indeterminate	oa-p
Lygaeidae sp	oa-p
<i>Berytinus</i> sp	oa-p
<i>Anthocoris</i> sp	oa-p
<i>Lyctocoris campestris</i> (Fabricius)	rd-st
Cimicidae sp indeterminate	oa-p
<i>Saldula ?saltatoria</i> (Linnaeus)	oa-d
<i>Saldula</i> sp indeterminate	oa-d
Saldidae sp indeterminate	oa-d
Heteroptera sp	u
* <i>Heteroptera</i> sp (nymph)	u
<i>Ulopa reticulata</i> (Fabricius)	oa-p-m
<i>Aphrodes flavostriatus</i> (Donovan)	oa-p-d
<i>Aphrodes</i> sp	oa-p
HEMIPTERA	
<i>Conomelus anceps</i> (Germar)	oa-p

Invertebrate taxa	Code
Delphacidae spp	oa-p
Auchenorhyncha spp	oa-p
Auchenorhyncha sp A	oa-p
* <i>Auchenorhyncha</i> spp (nymph)	oa-p
* <i>Psyllidae</i> sp (nymph)	oa-p
* <i>Strophingia ?ericae</i> (Curtis) (nymph)	oa-p-m
* <i>Strophingia</i> sp (nymph)	oa-p-m
Psylloidea sp	oa-p
* <i>Aphidoidea</i> spp	u
* <i>Coccoidea</i> sp	u
PSOCOPTERA	
*? <i>Psocoptera</i> sp	oa-w
LEPIDOPTERA	
* <i>Lepidoptera</i> sp (pupa)	u
* <i>Lepidoptera</i> sp	u
DIPTERA	
* <i>Bibionidae</i> sp	u
* <i>Nematocera</i> sp (larva)	u
* <i>Syrphidae</i> sp (larva)	u
* <i>Sepsidae</i> sp (puparium)	u
* <i>Melophagus ovinus</i> (Linnaeus)	u
* <i>Melophagus ovinus</i> (puparium)	u
* <i>Diptera</i> sp (adult)	u
* <i>Diptera</i> sp (larva)	u
* <i>Diptera</i> sp (pupa)	u
* <i>Diptera</i> sp (puparium)	u
SIPHONAPTERA	
* <i>Pulex irritans</i> (Linnaeus)	ss
* <i>Siphonaptera</i> sp	u
HYMENOPTERA	
* <i>Chalcidoidea</i> sp	u
*? <i>Spalangia</i> sp	u
* <i>Proctotrupeoidea</i> sp	u
* <i>Hymenoptera Parasitica</i> sp	u
* <i>Myrmica</i> sp	u
* <i>Formicidae</i> sp and sp indeterminate	u
* <i>Apis mellifera</i> (Linnaeus)	u
* <i>Apoidea</i> sp and sp indeterminate	u
* <i>Hymenoptera</i> sp	u
COLEOPTERA	
<i>Carabus nemoralis</i> (Muller)	oa
<i>Carabus</i> sp indeterminate	oa
<i>Nebria brevicollis</i> (Fabricius)	oa
<i>Notiophilus biguttatus</i> (Fabricius)	oa
<i>Notiophilus</i> sp indeterminate	oa
<i>Loricera pilicornis</i> (Fabricius)	oa

Table 82: Complete list of invertebrate taxa, with the ecological codes assigned to them

Invertebrate taxa	Code	Invertebrate taxa	Code
<i>Dyschirius globosus</i> (Herbst)	oa	<i>Helophorus grandis</i> (Illiger)	oa-w
<i>Clivina fossor</i> (Linnaeus)	oa	<i>Helophorus nubilus</i> (Fabricius)	oa
<i>Patrobus ?atorufus</i> (Strom)	oa	<i>Helophorus tuberculatus</i> (Gyllenhal)	oa
<i>Patrobus</i> sp indeterminate	oa	<i>Helophorus</i> spp	oa-w
<i>Trechus obtusus</i> (Erichson)	oa	<i>Coelostoma orbiculare</i> (Fabricius)	oa-w
<i>Trechus quadristriatus</i> (Schrank)	oa	<i>Sphaeridium ?bipustulatum</i> (Fabricius)	rf
<i>Trechus obtusus</i> or <i>quadristriatus</i>	oa	<i>Sphaeridium</i> sp indeterminate	rf
<i>Trechus micros</i> (Herbst)	u	<i>Cercyon analis</i> (Paykull)	rt-sf
<i>Trechus</i> sp indeterminate	ob	<i>Cercyon atricapillus</i> (Marsham)	rt-sf
<i>Bembidion lampros</i> (Herbst)	oa	<i>Cercyon haemorrhoidalis</i> (Fabricius)	rt-sf
<i>Bembidion lampros</i> or <i>properans</i>	oa	<i>Cercyon ?quisquilius</i> (Linnaeus)	rt-sf
<i>Bembidion ?saxatile</i> (Gyllenhal)	oa-d	<i>Cercyon terminatus</i> (Marsham)	rt-sf
<i>Bembidion quadrimaculatum</i> (Linnaeus)	oa	<i>Cercyon unipunctatus</i> (Linnaeus)	rt-sf
<i>Bembidion ?doris</i> (Panzer)	oa-d	<i>Cercyon</i> spp indeterminate	u
<i>Bembidion guttula</i> or <i>mannerheimi</i>	oa	<i>Megasternum obscurum</i> (Marsham)	rt
<i>Bembidion (Philochthus)</i> sp	oa	<i>Cryptopleurum minutum</i> (Fabricius)	rf-st
<i>Bembidion</i> spp and spp indeterminate	oa	<i>Hydrobius fuscipes</i> (Linnaeus)	oa-w
<i>Pterostichus cupreus</i> (Linnaeus)	oa	<i>Anacaena ?globulus</i> (Paykull)	oa-w
<i>Pterostichus diligens</i> (Sturm)	oa-d	? <i>Anacaena</i> sp	oa-w
<i>Pterostichus melanarius</i> (Illiger)	ob	? <i>Laccobius</i> sp	oa-w
<i>Pterostichus niger</i> (Schaller)	oa	<i>Enochrus</i> sp	oa-w
<i>Pterostichus ?nigrata</i> (Paykull)	oa-d	Hydrophilinae sp indeterminate	oa-w
<i>Pterostichus diligens</i> or <i>strenuus</i>	oa	<i>Acrilus nigricornis</i> (Hoffmann)	rt-st
<i>Pterostichus (Poecilus)</i> sp	oa	<i>Dendrophilus punctatus</i> (Herbst)	rt-st
<i>Pterostichus</i> spp indeterminate	ob	<i>Onthophilus striatus</i> (Forster)	rt
<i>Calathus fuscipes</i> (Goeze)	oa	<i>Peranus bimaculatus</i> (Linnaeus)	rt-sf
<i>Calathus ?piceus</i> (Marsham)	oa	Histerinae sp	rt
<i>Calathus</i> sp	oa	<i>Ochthebius ?minimus</i> (Fabricius)	oa-w
<i>Laemostenus terricola</i> (Herbst)	ss	<i>Ochthebius</i> sp and sp indeterminate	oa-w
<i>Agonum</i> sp	oa	<i>Limnebius</i> sp	oa-w
<i>Amara</i> spp	oa	<i>Ptenidium ?pusillum</i> (Gyllenhal)	rt-sf
<i>Harpalus rufipes</i> (Degeer)	oa	<i>Ptenidium</i> sp indeterminate	rt
<i>Harpalus</i> spp	oa	<i>Acrotichis</i> spp	rt
<i>Bradycellus ruficollis</i> (Stephens)	oa-m	Ptiliidae sp	u
<i>Bradycellus</i> sp	oa	<i>Catops</i> sp	u
<i>Dromius linearis</i> (Olivier)	oa	<i>Nicrophorus</i> sp	u
? <i>Microlestes</i> sp	oa	<i>Aclypea opaca</i> (Linnaeus)	ob-rt
<i>Metabletus foveatus</i> (Fourcroy)	oa	<i>Silpha atrata</i> Linnaeus	u
Carabidae spp and spp indeterminate	ob	<i>Silpha</i> sp	u
<i>Hydroporus</i> spp	oa-w	Silphidae sp indeterminate	u
<i>Agabus bipustulatus</i> (Linnaeus)	oa-w	Scydmaenidae spp	u
<i>Agabus</i> sp	oa-w	<i>Micropeplus fulvus</i> (Erichson)	rt
<i>Ilybius</i> sp	oa-w	<i>Micropeplus staphylinoides</i> (Marsham)	rt
<i>Agabus</i> or <i>Ilybius</i> sp	oa-w	<i>Micropeplus</i> sp indeterminate	rt
<i>Colymbetes fuscus</i> (Linnaeus)	oa-w	<i>Megarathrus ?depressus</i> (Paykull)	rt-sf
Dytiscidae sp indeterminate	oa-w	<i>Megarathrus</i> sp indeterminate	rt
<i>Helophorus aquaticus</i> (Linnaeus)	oa-w	<i>Proteinus</i> sp	rt

Table 82: Complete list of invertebrate taxa, with the ecological codes assigned to them (cont'd)

Invertebrate taxa	Code	Invertebrate taxa	Code
<i>Olophrum ?fuscum</i> (Gravenhorst)	oa	<i>Lithocharis ochracea</i> (Gravenhorst)	rt-st
<i>Olophrum piceum</i> (Gyllenhal)	oa	<i>Rugilus orbiculatus</i> (Paykull)	rt-sf
<i>Acidota crenata</i> (Fabricius)	oa	<i>Rugilus</i> sp indeterminate	rt
<i>Lesteva longoelytrata</i> (Goeze)	oa-d	Paederinae sp	u
<i>Lesteva</i> sp	oa-d	<i>Othius myrmecophilus</i> (Kiesenwetter)	rt
? <i>Geodromicus</i> sp	oa-d	<i>Othius punctulatus</i> (Goeze)	rt-st
<i>Anthophagus caraboides</i> (Linnaeus)	oa	<i>Othius</i> sp indeterminate	rt
<i>Eusphalerum ?sorbi</i> (Gyllenhal)	u	<i>Leptacinus pusillus</i> (Stephens)	rt-st
<i>Phyllodrepa ?floralis</i> (Paykull)	rt-sf	<i>Leptacinus</i> sp	rt-st
? <i>Phyllodrepa</i> sp indeterminate	rt	<i>Gyrophypnus angustatus</i> (Stephens)	rt-st
<i>Dropephylla</i> sp	u	<i>Gyrophypnus fracticornis</i> (Muller)	rt-st
<i>Omalius ?caesum</i> (Gravenhorst)	rt-sf	<i>Gyrophypnus punctulatus</i> (Paykull)	rt-st
<i>Omalius caesum</i> or <i>italicum</i>	rt-sf	<i>Gyrophypnus</i> sp indeterminate	rt
<i>Omalius excavatum</i> (Stephens)	rt-sf	<i>Xantholinus glabratus</i> (Gravenhorst)	rt
<i>Omalius rivulare</i> (Paykull)	rt-sf	<i>Xantholinus linearis</i> (Olivier)	rt-sf
<i>Omalius</i> sp indeterminate	rt	<i>Xantholinus longiventris</i> (Heer)	rt-sf
<i>Xylodromus concinnus</i> (Marsham)	rt-st	<i>Xantholinus linearis</i> or <i>longiventris</i>	rt-sf
? <i>Xylodromus</i> sp indeterminate	rt-st	<i>Xantholinus</i> sp indeterminate	u
Omaliinae sp and spp indeterminate	rt	Xantholininae sp indeterminate	u
<i>Coprophilus striatulus</i> (Fabricius)	rt-st	<i>Neobisnius</i> sp	u
<i>Bledius</i> sp	oa-d	<i>Philonthus</i> spp	u
<i>Carpelimus bilineatus</i> (Stephens)	rt-sf	<i>Gabrius</i> sp	rt
<i>Carpelimus corticinus</i> (Gravenhorst)	oa-d	<i>Staphylinus olens</i> (Muller)	u
<i>Carpelimus fuliginosus</i> (Gravenhorst)	st	<i>Staphylinus</i> sp	u
<i>Carpelimus ?gracilis</i> (Mannerheim)	u	<i>Creophilus maxillosus</i> (Linnaeus)	rt
<i>Carpelimus pusillus</i> (Gravenhorst)	rt-sf	<i>Heterothops</i> sp	u
<i>Carpelimus pusillus</i> group indeterminate	u	<i>Quedius boops</i> group	u
<i>Carpelimus</i> spp indeterminate	u	<i>Quedius cinctus</i> (Paykull)	rt
<i>Aploderus caelatus</i> (Gravenhorst)	rt	<i>Quedius</i> spp	u
<i>Platystethus arenarius</i> (Fourcroy)	rf	<i>Philonthus</i> or <i>Quedius</i> spp indeterminate	u
<i>Platystethus cornutus</i> group	oa-d	Staphylininae spp indeterminate	u
<i>Platystethus nitens</i> (Sahlberg)	oa-d	<i>Mycetoporus</i> sp	u
<i>Platystethus</i> sp indeterminate	oa-d	<i>Sepedophilus</i> sp	u
<i>Anotylus complanatus</i> (Erichson)	rt-sf	<i>Tachyporus hypnorum</i> (Fabricius)	u
<i>Anotylus nitidulus</i> (Gravenhorst)	rt-d	<i>Tachyporus</i> spp	u
<i>Anotylus rugosus</i> (Fabricius)	rt	<i>Tachinus laticollis</i> or <i>marginellus</i>	u
<i>Anotylus sculpturatus</i> group	rt	<i>Tachinus signatus</i> (Gravenhorst)	u
<i>Anotylus tetracarinatus</i> (Block)	rt	<i>Tachinus subterraneus</i> (Linnaeus)	u
<i>Anotylus</i> sp indeterminate	rt	<i>Tachinus</i> sp and spp indeterminate	u
<i>Oxytelus sculptus</i> (Gravenhorst)	rt-st	<i>Cilea silphoides</i> (Linnaeus)	rt-st
<i>Stenus ?crassus</i> (Stephens)	rt	Tachyporinae sp	u
<i>Stenus</i> spp	u	<i>Cypha</i> sp	rt
<i>Euaesthetus bipunctatus</i> (Ljungh)	oa	<i>Cordalia obscura</i> (Gravenhorst)	rt-sf
<i>Euaesthetus laeviusculus</i> (Mannerheim)	oa	<i>Falagria caesa</i> (Erichson)	rt-st
<i>Euaesthetus ?ruficapillus</i> (Bois and Lac)	oa	<i>Falagria caesa</i> or <i>sulcatula</i>	rt-sf
<i>Lathrobium</i> spp	u	<i>Falagria</i> sp indeterminate	rt-sf
<i>Ochtheophilum fracticorne</i> (Paykull)	oa-d	<i>Falagria</i> or <i>Cordalia</i> sp indeterminate	rt-sf

Table 82: Complete list of invertebrate taxa, with the ecological codes assigned to them (cont'd)

Invertebrate taxa	Code	Invertebrate taxa	Code
<i>Crataraea suturalis</i> (Mannerheim)	rt-st	<i>Brachypterus</i> sp	oa-p
<i>Aleochara</i> spp	u	<i>Meligethes</i> sp	oa-p
Aleocharinae spp	u	<i>Omosita colon</i> (Linnaeus)	rt-sf
Euplectini sp	u	<i>Omosita discoidea</i> (Fabricius)	rt-sf
<i>Pselaphaulax dresdensis</i> (Herbst)	u	<i>Omosita</i> sp indeterminate	rt-sf
<i>Pselaphus heisei</i> (Herbst)	u	?Nitidulidae sp	u
Pselaphidae spp	u	<i>Rhizophagus</i> sp	u
<i>Trox scaber</i> (Linnaeus)	rt-sf	<i>Monotoma bicolor</i> (Villa)	rt-st
<i>Geotrupes spiniger</i> (Marsham)	oa-rf	<i>Monotoma longicollis</i> (Gyllenhal)	rt-st
<i>Geotrupes</i> sp indeterminate	oa-rf	<i>Monotoma picipes</i> (Herbst)	rt-st
<i>Aphodius contaminatus</i> (Herbst)	oa-rf	<i>Monotoma spinicollis</i> (Aube)	rt-st
<i>Aphodius fimetarius</i> (Linnaeus)	oa-rf	<i>Monotoma</i> spp indeterminate	rt-sf
<i>Aphodius granarius</i> (Linnaeus)	ob-rf	<i>Cryptolestes ferrugineus</i> (Stephens)	g-ss
<i>Aphodius prodromus</i> (Brahm)	ob-rf	<i>Oryzaeophilus surinamensis</i> (Linnaeus)	g-ss
<i>Aphodius</i> spp and spp indeterminate	ob-rf	<i>Cryptophagus scutellatus</i> (Newman)	rd-st
<i>Phyllopertha horticola</i> (Linnaeus)	oa-p	<i>Cryptophagus</i> spp	rd-st
Cetoniinae sp	oa	Cryptophagidae sp	u
Melolonthinae/Rutelinae/Cetoniinae sp	oa-p	<i>Atomaria nigripennis</i> (Kugelann)	rd-ss
<i>Clambus armadillo</i> (Degeer)	rt-sf	<i>Atomaria</i> spp	rd
<i>Clambus</i> sp	rt-sf	<i>Ephistemus globulus</i> (Paykull)	rd-sf
<i>Cyphon</i> sp	oa-d	<i>Olibrus</i> sp	oa-p
<i>Simplocaria ?semistriata</i> (Fabricius)	oa-p	Phalacridae sp	oa-p
? <i>Byrrhus</i> sp	oa-p	<i>Cerylon ferrugineum</i> (Stephens)	l
Byrrhidae sp indeterminate	oa-p	<i>Orthoperus</i> sp	rt
<i>Esolus parallelepipedus</i> (Muller)	oa-w	<i>Coccidula rufa</i> (Herbst)	oa-p-d
? <i>Normandia nitens</i> (Muller)	oa-w	<i>Rhyzobius litura</i> (Fabricius)	oa-p
<i>Oulimnius</i> sp	oa-w	<i>Chilocorus bipustulatus</i> (Linnaeus)	oa-p
<i>Ctenicera ?cuprea</i> (Fabricius)	oa-p	Coccinellidae sp	oa-p
* <i>Actenicerus sjaelandicus</i> (Muller) (larva)	oa	<i>Mycetaea hirta</i> (Marsham)	rd-ss
<i>Denticollis linearis</i> (Linnaeus)	u	<i>Stephostethus lardarius</i> (Degeer)	rt-st
*? <i>Denticollis linearis</i> (Linnaeus) (larva)	u	<i>Lathridius minutus</i> group	rd-st
Elateridae spp	ob	<i>Enicmus</i> sp	rt-sf
*Elateridae spp indeterminate (larva)	ob	<i>Dienerella</i> sp	rd-sf
<i>Cantharis</i> sp	ob	<i>Corticaria</i> spp	rt-sf
? <i>Cantharidae</i> sp	ob	<i>Corticarina</i> sp	rt
<i>Grynobius planus</i> (Fabricius)	l	<i>Corticicara gibbosa</i> (Herbst)	rt
<i>Anobium punctatum</i> (Degeer)	l-sf	<i>Corticarina</i> or <i>Corticicara</i> sp indeterminate	rt
? <i>Anobiidae</i> sp	l	Corticariinae sp indeterminate	rt
<i>Tipnus unicolor</i> (Piller and Mitterpacher)	rd-st	<i>Typhaea stercorea</i> (Linnaeus)	rd-ss
<i>Ptinus fur</i> (Linnaeus)	rd-sf	<i>Aglenus brunneus</i> (Gyllenhal)	rt-ss
<i>Ptinus</i> sp indeterminate	rd-sf	<i>Teredus cylindricus</i> (Olivier)	l
<i>Lyctus linearis</i> (Goeze)	l-sf	<i>Blaps</i> sp	rt-ss
<i>Tenebroides mauritanicus</i> (Linnaeus)	rt-ss	<i>Tribolium castaneum</i> (Herbst)	ss
* <i>Tenebroides mauritanicus</i> (larva)	rt-ss	<i>Palorus ratzeburgi</i> (Wissman)	g-ss
<i>Thymalus limbatus</i> (Fabricius)	l	<i>Alphitobius diaperinus</i> (Panzer)	rt-ss
Cleridae sp	u	<i>Tenebrio obscurus</i> (Fabricius)	rt-ss
<i>Kateretes</i> sp	oa-p-d	<i>Rabocerus foveolatus</i> (Ljungh)	l

Table 82: Complete list of invertebrate taxa, with the ecological codes assigned to them (cont'd)

Invertebrate taxa	Code	Invertebrate taxa	Code
Salpingidae sp	l	<i>Sitona suturalis</i> (Stephens)	oa-p
<i>Anthicus formicarius</i> (Goeze)	rt-st	<i>Sitona</i> spp indeterminate	oa-p
<i>Anthicus floralis</i> or <i>formicarius</i>	rt-st	<i>Hypera punctata</i> (Fabricius)	oa-p
<i>Anthicus</i> sp indeterminate	rt	<i>Hypera</i> sp	oa-p
? <i>Bruchus</i> sp	u	<i>Sitophilus granarius</i> (Linnaeus)	g-ss
<i>Donacia</i> sp	oa-d-p	<i>Trachodes hispidus</i> (Linnaeus)	u
<i>Plateumaris</i> sp	oa-d-p	<i>Notaris acridulus</i> (Linnaeus)	oa-d-p
Donaciinae sp indeterminate	oa-d-p	<i>Micrelus ericae</i> (Gyllenhal)	oa-p-m
? <i>Chrysolina</i> sp	oa-p	<i>Cidnorhinus quadrimaculatus</i> (Linnaeus)	oa-p
<i>Gastrophysa polygoni</i> (Linnaeus)	oa-p	<i>Ceuthorhynchidius</i> sp	oa-p
<i>Gastrophysa viridula</i> (Degeer)	oa-p	<i>Ceutorhynchus contractus</i> (Marsham)	oa-p
<i>Hydrothassa</i> sp	oa-d-p	<i>Ceutorhynchus erysimi</i> (Fabricius)	oa-p
<i>Prasocuris phellandrii</i> (Linnaeus)	oa-p-d	<i>Ceutorhynchus ?melanostictus</i> (Marsham)	oa-p
? <i>Chrysomela aenea</i> (Linnaeus)	oa-p	<i>Ceutorhynchus pollinarius</i> (Forster)	oa-p
<i>Chrysomela</i> sp	oa-p	<i>Ceutorhynchus</i> spp and spp indeterminate	oa-p
Chrysomelinae spp and spp indeterminate	oa-p	<i>Rhinoncus ?bruchoides</i> (Herbst)	oa-p
<i>Galerucella</i> sp	oa-p	<i>Rhinoncus castor</i> (Fabricius)	oa-p
Galerucinae sp indeterminate	oa-p	<i>Rhinoncus pericarpus</i> (Linnaeus)	oa-p
<i>Phyllotreta nemorum</i> group	oa-p	<i>Rhinoncus</i> sp indeterminate	oa-p
<i>Phyllotreta</i> sp	oa-p	<i>Phytobius</i> sp	oa-d
<i>Longitarsus</i> spp	oa-p	Ceuthorhynchinae spp indeterminate	oa-p
<i>Altica</i> sp	oa-p	? <i>Baris</i> sp	oa-p
<i>Crepidodera</i> sp	oa-p	<i>Mecinus ?pyraster</i> (Herbst)	oa-p
<i>Chalcoides</i> sp	oa-p	<i>Gymnetron labile</i> (Herbst)	oa-p
<i>Chaetocnema arida</i> group	oa-p	<i>Gymnetron ?pascuorum</i> (Gyllenhal)	oa-p
<i>Chaetocnema concinna</i> (Marsham)	oa-p	<i>Gymnetron</i> sp and sp indeterminate	oa-p
? <i>Chaetocnema</i> sp	oa-p	<i>Dryocoetinus villosus</i> (Fabricius)	l
? <i>Sphaeroderma</i> sp	oa-p	<i>Taphrorychus bicolor</i> (Herbst)	l
<i>Psylliodes</i> spp	oa-p	<i>Xyloterus ?signatus</i> (Fabricius)	l
Halticinae spp indeterminate	oa-p	?Scolytidae sp	l
<i>Cassida</i> sp	oa-p	Coleoptera spp and spp indeterminate	u
<i>Apion (Erythrapion)</i> sp	oa-p	*Coleoptera sp indeterminate (larva)	u
<i>Apion (Oxystoma)</i> sp	oa-p	*Insecta sp (larva)	u
<i>Apion</i> spp	oa-p	*Insecta sp pupa	u
<i>Otiorhynchus ligneus</i> (Oliver)	oa-p	*Pseudoscorpiones sp	u
<i>Otiorhynchus</i> sp indeterminate	oa-p	*Opiliones sp	u
<i>Phyllobius</i> or <i>Polydrusus</i> sp	oa-p	*Araneae sp	u
? <i>Barypeithes</i> sp	oa-p	*Acarina sp	u
<i>Sciaphilus asperatus</i> (Bonsdorff)	oa-p		
<i>Tropiphorus</i> sp	oa		
<i>Sitona cambricus</i> (Stephens)	oa-p		
<i>Sitona lepidus</i> (Gyllenhal)	oa-p		

Note: 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 82: Complete list of invertebrate taxa, with the ecological codes assigned to them (cont'd)

The different recording methods used for /T and /1 sub-samples 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 an estimate of the minimum number of individuals). The problem is believed to have

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

Note: Lower case codes in parentheses are those assigned to taxa and used to calculate the group values (the codes in capitals). See Table 82 for codes assigned to taxa from KLA and LAL - Individuals based on MNI; No= number.

Table 83: Abbreviations for ecological codes and statistics used for interpretation of insect remains in text and table

arisen during the current project through a failure of paraffin flotation 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.

The main statistics for the assemblages of adult beetles and bugs (based on MNI and excluding aphids and scale insects) have been calculated

(Table 84). Of the 111 assemblages recorded, 29 included less than ten individuals, and nine sub-samples 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 kilogram, and 33/kg for Roman samples. There were eight cases where the concentration was over 100/kg. For the fills, the mean was 47, and for others it was 27, reflecting a difference seen at most sites. It is worth noting that a substantial number of samples yielded appreciable amounts of invertebrates, but rather few plant remains other than charred material.

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.

Trench		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
Sub-sample		/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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects)

Trench		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
Sub-sample		/T	/T	/T	/T	/T	/T	/1	/T	/T	/T
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
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench		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
Sub-sample		/T	/T	/T	/T	/T	/T	/1	/T	/T	/T
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									
Context		1055	1055	1055	1055	1055	1063	1063	1063	1063	1064
Sample		245	243	243	246	246	219	219	220	220	244
Sub-sample		/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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-A									
	1055	1055	1055	1055	1055	1063	1063	1063	1063	1064
Context										
Sample	245	243	243	246	246	219	219	220	220	244
Sub-sample	/T	/1	/T	/1	/T	/1	/T	/1	/T	/1
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-A									
	1055	1055	1055	1055	1055	1063	1063	1063	1063	1064
Context	245	243	243	246	246	219	219	220	220	244
Sample	/T	/1	/T	/1	/T	/1	/T	/1	/T	/1
Sub-sample	23	47	50	47	38	45	40	57	62	42
PNRT	23	47	50	47	38	45	40	57	62	42
alphaRT	0	23	0	45	0	18	17	12	0	19
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-A									
Context	1055	1055	1055	1055	1055	1063	1063	1063	1063	1064
Sample	245	243	243	246	246	219	219	220	220	244
Sub-sample	/T	/1	/T	/1	/T	/1	/T	/1	/T	/1
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-B	
Context	1064	1064	1067	1067	1096	1096	1096	84	93
Sample	244	232	233	233	239	238	238	31	33
Sub-sample	/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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-A							KLA-B	
	1064	1064	1067	1067	1096	1096	1096	84	93
Context	244	232	233	233	239	238	238	31	33
Sample	244	232	233	233	239	238	238	31	33
Sub-sample	/T	/T	/1	/T	/T	/1	/T	/T	/T
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
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-A							KLA-B	
Context	1064	1064	1067	1067	1096	1096	1096	84	93
Sample	244	232	233	233	239	238	238	31	33
Sub-sample	/T	/T	/1	/T	/T	/1	/T	/T	/T
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									
Context	93	97	99	187	219	224	296	358	358	717
Sample	34	51	29	48	54	59	63	66	71	193
Sub-sample	/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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-B									
	93	97	99	187	219	224	296	358	358	717
Context										
Sample	34	51	29	48	54	59	63	66	71	193
Sub-sample	/T	/T	/T	/T	/T1	/T	/T	/T	/T	/1
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
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-B									
Context	93	97	99	187	219	224	296	358	358	717
Sample	34	51	29	48	54	59	63	66	71	193
Sub-sample	/T	/T	/T	/T	/T1	/T	/T	/T	/T	/1
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										
Context	717	728	975	1065	1186	1204	1220	1220	1223	1230	1231
Sample	193	192	197	200	203	222	224	224	215	218	204
Sub-sample	/T	/T	/T	/T	/T	/T	/1	/T	/T	/T	/T
S	21	0	0	3	2	41	54	12	0	0	0

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	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
Sub-sample	/T	/T	/T	/T	/T	/T	/1	/T	/T	/T	/T
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-B										
	717	728	975	1065	1186	1204	1220	1220	1223	1230	1231
Context	717	728	975	1065	1186	1204	1220	1220	1223	1230	1231
Sample	193	192	197	200	203	222	224	224	215	218	204
Sub-sample	/T	/T	/T	/T	/T	/T	/1	/T	/T	/T	/T
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
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	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
Sub-sample	/T	/T	/T	/T	/T	/T	/1	/T	/T	/T	/T
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-C				
Context	1234	1234	1268	1268	1280	1282	758	759	811	811	
Sample	208	208	211	211	229	235	372	373	376	377	
Sub-sample	/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	

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-B						KLA-C			
Context	1234	1234	1268	1268	1280	1282	758	759	811	811
Sample	208	208	211	211	229	235	372	373	376	377
Sub-sample	/1	/T	/1	/T	/T	/T	/T	/1	/1	/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	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
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-B						KLA-C			
Context	1234	1234	1268	1268	1280	1282	758	759	811	811
Sample	208	208	211	211	229	235	372	373	376	377
Sub-sample	/1	/T	/1	/T	/T	/T	/T	/1	/1	/1
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									
Context	1182	1203	1269	1324	1350	1858	1870	1871	1876	1887
Sample	387	391	394	396	399	401	403	404	405	406
Sub-sample	/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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-C									
	1182	1203	1269	1324	1350	1858	1870	1871	1876	1887
Context	387	391	394	396	399	401	403	404	405	406
Sample	/1	/T	/1	/1	/1	/1	/1	/1	/1	/1
Sub-sample	1	0	4	1	7	11	17	5	11	2
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
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-C									
	1182	1203	1269	1324	1350	1858	1870	1871	1876	1887
Context										
Sample	387	391	394	396	399	401	403	404	405	406
Sub-sample	/1	/T	/1	/1	/1	/1	/1	/1	/1	/1
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-C		KLA-D							
	1920	1923	2	464	464	464	464	480	512	515
Context										
Sample	412	413	16	2	2	3	3	4	6	10
Sub-sample	/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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-C		KLA-D							
	1920	1923	2	464	464	464	464	480	512	515
Context										
Sample	412	413	16	2	2	3	3	4	6	10
Sub-sample	/1	/1	/T	/1	/T	/1	/T	/T	/T	/T
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
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-C		KLA-D							
Context	1920	1923	2	464	464	464	464	480	512	515
Sample	412	413	16	2	2	3	3	4	6	10
Sub-sample	/1	/1	/T	/1	/T	/1	/T	/T	/T	/T
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									
Context	524	524	524	524	531	531	540	540	540	540
Sample	11	11	13	13	14	15	17	17	18	18
Sub-sample	/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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-D									
	524	524	524	524	531	531	540	540	540	540
Context										
Sample	11	11	13	13	14	15	17	17	18	18
Sub-sample	/1	/T	/1	/T	/T	/T	/1	/T	/1	/T
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
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-D									
Context	524	524	524	524	531	531	540	540	540	540
Sample	11	11	13	13	14	15	17	17	18	18
Sub-sample	/1	/T	/1	/T	/T	/T	/1	/T	/1	/T
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		LAL-B	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
Sub-sample	/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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-D		LAL-B	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
Sub-sample	/1	/T	/T	/T	/1	/T	/1	/1	/1	/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
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	KLA-D		LAL-B	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
Sub-sample	/1	/T	/T	/T	/1	/T	/1	/1	/1	/1
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									
Context	232	232	232	232	1016	1017	1021	1249	1267	1269
Sample	37	12	15	16	45	29	30	3	6	5
Sub-sample	/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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	LAL-D									
	232	232	232	232	1016	1017	1021	1249	1267	1269
Context	37	12	15	16	45	29	30	3	6	5
Sample	/1	/T	/1	/1	/1	/1	/1	/1	/1	/1
Sub-sample	/1	/T	/1	/1	/1	/1	/1	/1	/1	/1
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
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	LAL-D									
	232	232	232	232	1016	1017	1021	1249	1267	1269
Context	37	12	15	16	45	29	30	3	6	5
Sample	/1	/T	/1	/1	/1	/1	/1	/1	/1	/1
Sub-sample	/1	/T	/1	/1	/1	/1	/1	/1	/1	/1
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

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

Trench	LAL-D	Trench	LAL-D
Context	1357	Context	1357
Sample	8	Sample	8
Sub-sample	/1	Sub-sample	/1
S	104	alphaRT	20
N	333	SEalphaRT	3
alpha	52	SRD	9
SEalpha	5	PSRD	9
SOB	37	NRD	27
PSOB	36	PNRD	8
NOB	47	alphaRD	5
PNOB	14	SEalphaRD	2
alphaOB	79	SRF	6
SEalphaOB	27	PSRF	6
SW	2	NRF	19
PSW	2	PNRF	6
NW	2	alphaRF	0
PNW	1	SEalphaRF	0
alphaW	0	SSA	29
SEalphaW	0	PSSA	28
SD	6	NSA	213
PSD	6	PNSA	64
ND	14	alphaSA	9
PND	4	SEalphaSA	1
alphaD	0	SSF	13
SEalphaD	0	PSSF	13
SP	19	NSF	37
PSP	18	PNSF	11
NP	24	alphaSF	7
PNP	7	SEalphaSF	2
alphaP	43	SST	12
SEalphaP	22	PSST	12
SM	1	NST	61
PSM	1	PNST	18
NM	1	alphaST	5
PNM	0	SEalphaST	1
alphaM	0	SSS	4
SEalphaM	0	PSSS	4
SL	1	NSS	115
PSL	1	PNSS	35
NL	1	alphaSS	1
PNL	0	SEalphaSS	0
alphaL	0	SG	4
SEalphaL	0	PSG	4
SRT	41	NG	115
PSRT	39	PNG	35
NRT	134	alphaG	1
PNRT	40	SEalphaG	0

Note: All assemblages contribute to the 'Site' statistics (last column). NB the decimal extensions on context numbers do not appear in this table for technical reasons; sub-contexts may be identified from the sample number.

Table 84: Main statistics for assemblages of adult beetles and bugs (excluding aphids and scale insects) (contd)

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 more than nine 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 (Fig 307). 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 the percentage of probable outdoor individuals 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 sub-sample assemblages was five (where N is greater than nine), but the site mean was 3% (the difference probably resulting from the presence of a larger proportion of 'background' aquatics in the smaller assemblages; Fig 308). Only for a very few sub-samples was this value much greater than 10% (five cases where N was greater than 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 of the percentage of heathland/moorland taxa = <0.5%).

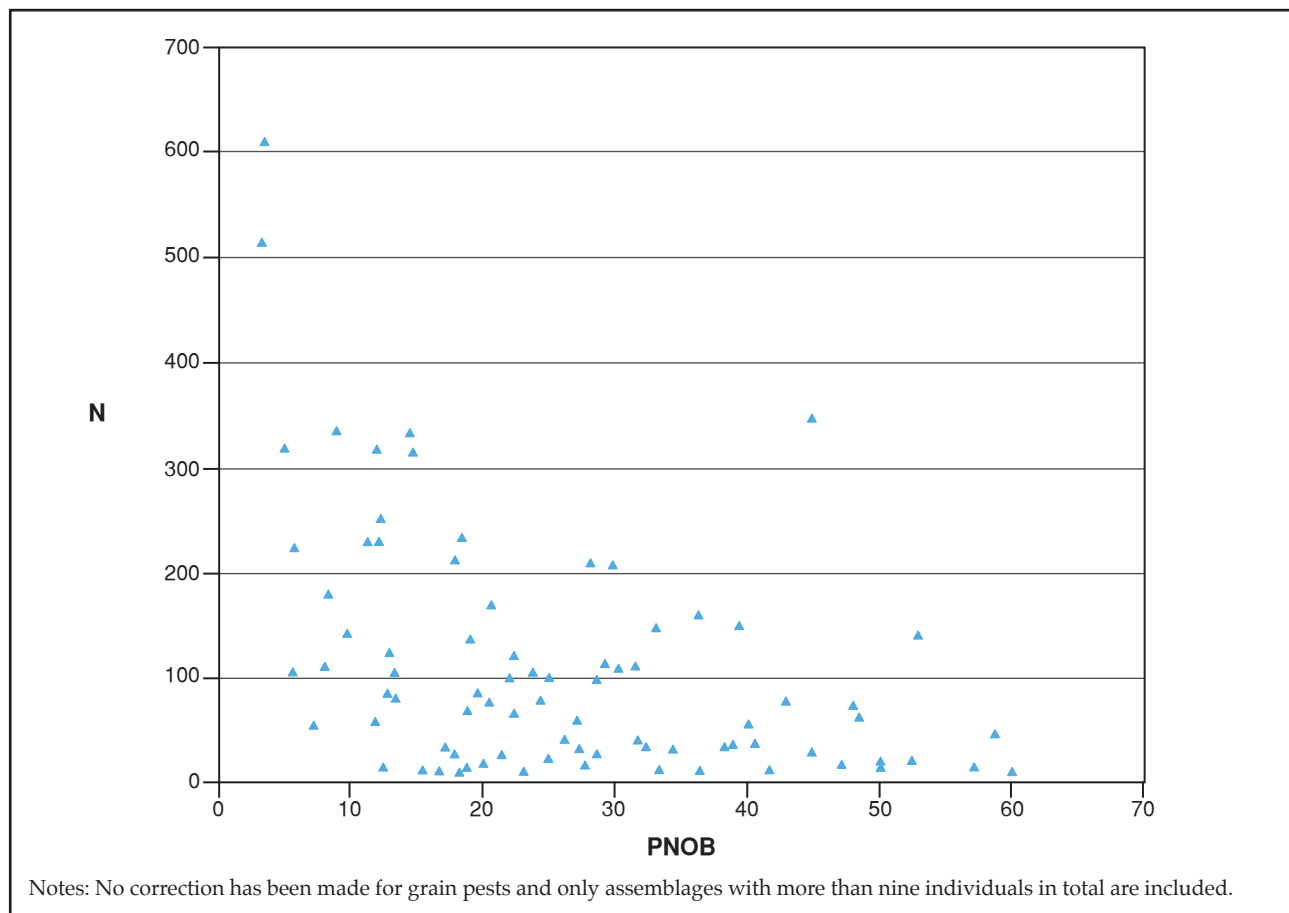


Figure 307: Proportion of 'outdoor' individuals of adult beetles and bugs plotted against minimum number of individuals of these groups

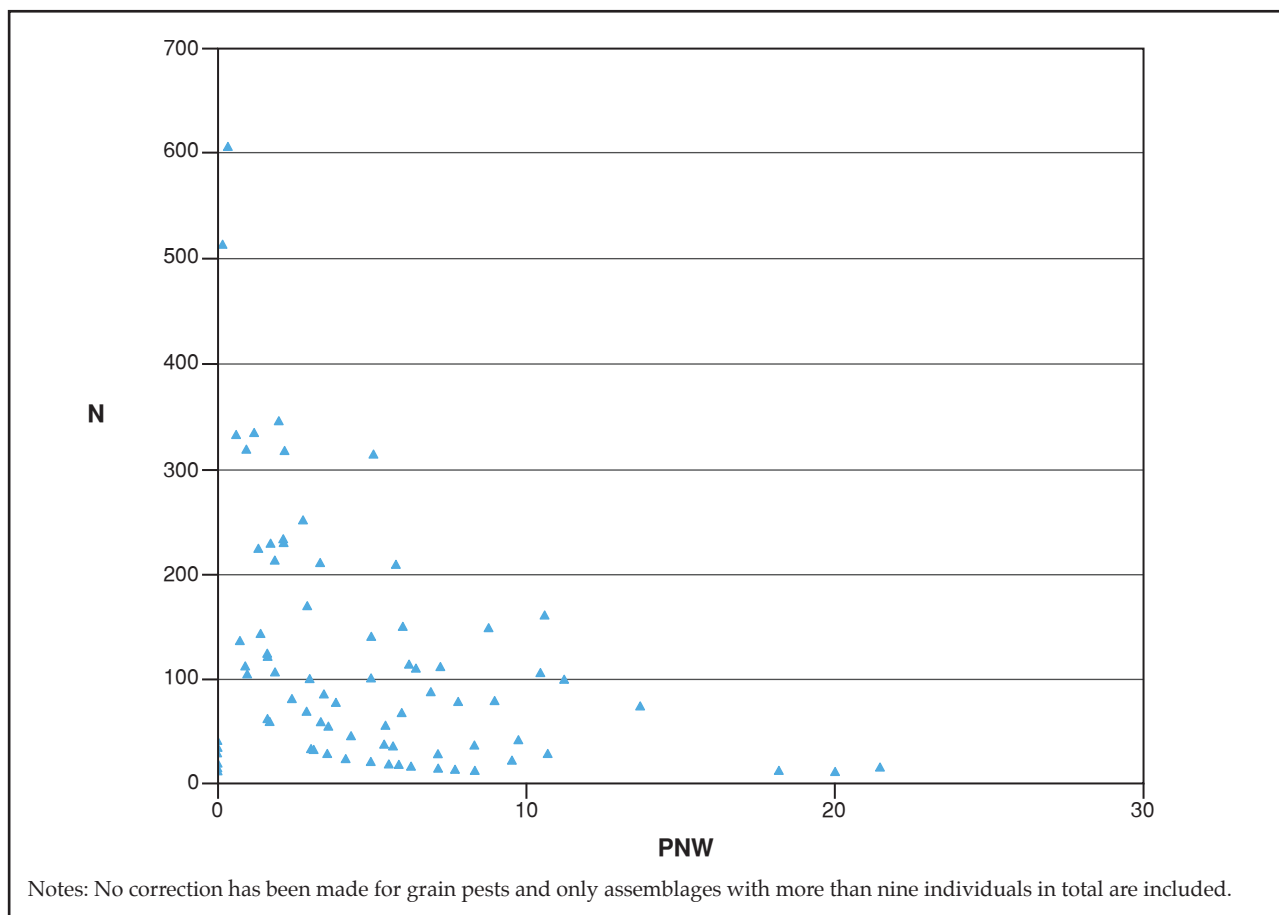


Figure 308: Proportion of individuals of adult aquatic beetles and bugs plotted against minimum number of individuals of these groups

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 percentage of wood-associated taxa value to 1%; the number of other wood-associated insects was vanishingly small (ten 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; Table 83). 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 decomposers 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: 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 (p 694). The small staphylinid beetle, *Anotylus nitidulus*, requires further consideration in the context of the northern Lanes. 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, for instance, in York (Kenward 1978, 44; Kenward and Hall 1995), and at some rural sites, for example, at North Cave (Allison *et al* 1997), where it was the most abundant decomposer species), and at Wharram Percy (Girling and Robinson 1988), 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 (2009), 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 northern Lanes has provided a further record of the rare terrestrial 'water beetle', *Helophorus tuberculatus* (from KLA A 1063.4 220/1 (a fill of Period 8B pit 1066; (Ch 3, p 66), where it occurred with the rather similar *H nubilus*). This beetle has now been found in numerous archaeological deposits; one possibility is that it was imported in moorland turf.

Results

The material is considered in 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 sub-samples have been used in generating assemblage statistics (Table 84). Where appropriate, a note has been made of salient results of the botanical analyses (Appendix 16).

The sediment descriptions made before processing have not been given, as 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.

Period 2

Old ground surfaces

Two of several patches of black silty soil were sampled, in one case described as 'soft and spongy', suggesting an organic component. These were almost certainly parts of a buried turf or soil representing the old ground surface at the beginning of the Roman period (Ch 2, p 22).

Layer KLA B 1230, Sub-sample 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.

Layer KLA B 1231, Sub-sample 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.

Period 3

Fills of ditch KLA D 557

This ditch was 2.1-2.2 m wide, and 1.85 m deep, and probably formed part of an early Roman temporary camp (Ch 2). Fills: the primary, 540.04, represented rapid silting from the sides; this was overlaid by 540.03, a layer of brushwood; then 540.02/540.05, a dark brown silty loam with black and buff-grey silty lenses; then 540.01, apparently almost entirely wood chippings.

Fill 540.02, Sub-samples 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. Sub-sample /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 frog hopper nymphs, good candidates for an origin in soil which bore at least some vegetation.

Fill 540.05, Sub-samples 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 sub-sample 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 *Aphodius* 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 and *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 sub-sample (/T) gave a small but rather similar fauna (including several *Aphodius* sp).

Period 4A

Infilling of Period 3 ditch KLA C 1245/1967

Various fills were identified, of which '1923, Sample 413' was analysed; it is not clear from the archaeological information given which this was or what it was like in the field. These fills represent deliberate infilling of the probable temporary camp ditch at the beginning of Period 4 (Ch 2).

Fill 1923, Sub-sample 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 *Ochtheophilum 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 fill, suggesting that more than one kind of material was incorporated.

Period 4C

Fill of pit/depression LAL D 1501

This was a very shallow rectangular pit or depression, 2.1 x 1.45 m, and 0.05 m deep. Fills: lowest 1357.03, black organic sandy clay; 1357.02, grey sandy clay; 1357.01, black organic silts with twigs. Two samples were collected, one analysed.

Fill 1357.01, Sub-samples 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. There were 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* (seven), *Leptacinus pusillus* (six), *Anthicus formicarius* (five), *Cercyon atricapillus* (four) 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 1357.01, 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 (*Appendix 16*); the bracken at least presumably represents litter. Bulk sample 14 from 1492 yielded a wetland and grassland assemblage, presumably from hay.

Period 5A

Fill of slot KLA B 237

This was one of a series of beam slots forming part of Building 1993 (*Ch 2*). All were narrow, up to 0.2 m wide, and rather shallow, with flat bottoms and near-vertical sides, and with grey or brown silts or silty clay-loam fills.

Fill 224 [= various others], Sub-sample 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.

Fill of slot LAL D 1270

This beam slot, also part of Building 1993 (*Ch 2*), was up to 0.35 m wide and 0.24 m deep. Two fills were present 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.

Fill 1269, Sub-sample 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.

Period 5B

Fill of slot KLA B 1223

This was one of a series of beam slots, 0.45-0.7 m wide and up to 0.3 m deep, forming part of a large building or, perhaps, a complex of buildings (Building 1994; *Ch 2*), which replaced Period 5A Building 1993. It had various fills.

Fill 1223, Sub-sample 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. It looks rather like breccia, but the overall impression is of a burnt sediment. The flot was barren of invertebrate remains.

Period 5A-B

Fill of pit KLA C 1270

This was a sub-rectangular feature, 3.5 x 1.35 m, and 0.33 m deep, one of three pits on the extreme southern edge of the site, south of Buildings 1993 and 1994 (*Ch 2*, pp 43-6). Four fills were identified, of which only 1269.02 was sampled; it was a secondary fill of dark brown organic sandy silt.

Fill 1269.02, Sub-samples 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 pest of stored products, *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 (*Appendix 16*). Whatever the origin of the fauna, a notable record is a single pubic louse, *Pthirus pubis* (p 756).

Fill of pit KLA C 1351

This feature was 1.9 x 1.8 m, and 1.2 m deep, and, like 1270 (*above*), formed part of a group of three large

pits south of Buildings 1993 and 1994 (Ch 2, pp 43-6). The lower half was filled by 1350.02, a brown/black sandy silt/loam with organic material; the upper fill (1350.01) was similar, and it is not clear which was sampled.

Fill 1350, Sub-samples 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* (eight each), *A complanatus* and *Aphodius ?fimetarius* (seven each), and *Megasternum obscurum* (three). 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.

Period 3-5

Fills of pit KLA A 1097

This was a deep rectangular feature in the north-east of the site, with near-vertical sides, perhaps not bottomed at 2 m. It was poorly stratified, and may have been contemporary with any of the activity represented by Periods 3, 4, and 5. Fills: 1096.03 = primary, black silt with much organic material filling the lower half, not sampled; 1096.02 = mixed grey-brown loam; 1096.01 = upper fill of clean, dark grey-black silty loam.

Fill 1096.01, Sub-sample 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 12 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?).

Fill 1096.02, Sub-samples 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 sub-sample (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, p 690). 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.

Sub-sample /T gave only 12 individuals of 11 beetle taxa. These, and the other invertebrates recorded, appeared to represent a random extract from a fauna like that found in the larger sub-sample.

Fill of pit KLA D 559

This was one of three small intercutting pits in the central northern part of the site that were, like 1097 (above), relatively poorly stratified. It was oval, 1.3 x 0.9 m, and 0.85 m deep. The fills, 546.01 and 546.02, did not have their lithology recorded on site, but both were sampled, although only the former was analysed.

Fill 546.01, Sub-samples 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 sub-sample, and there were a few adult bugs (N=148, S=78); 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 unsubmerged organic waste in the pit, or on disturbed surfaces, with dung and other decaying matter, and some plants.

The /T sub-sample 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 sub-sample /1.

Period 6 Deposits

Period 6 largely comprised many interleaving layers of soil and other materials, covering much of the area investigated, perhaps largely comprising dumped deposits (Ch 3). Most were described as mid-grey in colour and of a 'sticky' texture.

Layer KLA B 84, Sub-sample 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.

Layer KLA B 219, Sub-samples 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.

Layer KLA C 1920, Sub-sample 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 orangish (more sand).

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

Layer KLA D 515, Sub-samples 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.

Macro-invertebrates: invertebrates were rare, and there were only single adult individuals of 17 beetles. The assemblage was dominated by 'outdoor' forms (approximately half of the beetles fell in this category), which was probably background fauna, and the sparse fauna of the accumulating layer.

Layer LAL D 1249, Sub-samples 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; Table 83) 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 eight 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 (*Appendix 16*), compatible with the interpretation from the invertebrates, if not actually supporting it.

Fill of hollow LAL D 1268

This hollow, in the north-west of the site, was 1.5 m by at least 0.85 m. Fills: primary 1267.02, dark brown/black silty soil; sealed by 1267.01, yellow-brown sandy silt with much bone. One sample was taken, and since the laboratory description includes the phrase 'amorphous organic sediment', this was probably from the lower fill.

Fill 1267, Sub-samples 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 85) 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 a length of 77.5 µm and a 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

Total length (µm)	'Standard' length (µm)	Width (µm)
Fill 1267, Sample 6		
Not measurable	52.5	27.5
Not measurable	52.5	27.5
56.3	50.0	27.5
Not measurable	50.0	27.5
Not measurable	50.0	25.0
Not measurable	47.5	27.5
Not measurable	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
Not measurable	52.5	26.3
Not measurable	48.8	25.0
Not measurable	51.3	27.5
58.8	50.0	27.5
50.0	45.0	32.5
Not measurable	51.3	27.5
Not measurable	48.8	26.3
57.5	51.3	27.5
Not measurable	48.8	27.5
Not measurable	50.0	30.0
Not measurable	51.3	27.5
Not measurable	50.0	27.5
Not measurable	47.5	27.5
Not measurable	48.8	28.8
Not measurable	51.3	25.0
50.0	47.5	27.5
Not measurable	46.3	28.8
52.5	47.5	27.5
Not measurable	52.5	25.0
Mean		
54.69	49.18	27.38
Standard deviation		
2.97	2.10	1.99

Table 85: Measurements (in microns) of *Trichuris* eggs

in range, but was clearly represented by the *Lathridius minutus* group (11), *Ptinus fur* (ten), *Anobium punctatum* (seven), and *Xylodromus concinnus* (two). Decomposers likely to have occurred together in foul mouldering conditions included the *Carpelimus pusillus* group (seven), *Cercyon analis* (six), 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.

Period 7

Fills of gully/drain KLA A 1030

A gully, aligned east-west, possibly once a timber-lined drain, 0.8-0.9 m wide and 0.6-0.75 m deep, was part of a quite extensive system of potential drainage channels in the central and north-eastern parts of the site (Ch 3, p 55). 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.

Fill 982, Sub-sample 201/T (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 gully and may have been introduced in backfill or natural silting. There were only traces of plant remains.

Fill 1020, Sub-sample 205/T (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 (Appendix 16); other plant remains were rare and did not offer much further information.

Fills of gully/drain KLA A 1070 (same as KLA B 1289; KLA C 1976)

A curving gully, 1.1-1.35 m wide, possibly a timber-lined drain, crossed the central and north-eastern parts of the site, traversing KLA A, KLA B, KLA C, and LAL B. It formed

part of the extensive system of potential drainage channels (Ch 3, p 55). Fills 1064.03 = lowest, brown sand clay; then 1064.02 = grey-black silty loam with some organic material; 1064.01 = mixed sandy clay loam, not sampled.

Fill 1064.02, Sub-samples 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 sub-sample /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 beetles (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 gully, 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 sub-sample produced only 34 individuals of 26 taxa of adult beetles and bugs. This assemblage was broadly similar in character to that from the larger sub-sample, although disproportionately smaller in relation to the amount of sediment processed.

Fill 1064.03, Sub-sample 232/T (1.0 kg)

Laboratory sediment description: wet, mid-dark brown (with pinkish/orange streaks up to 10 mm in scale), 'cheesy', humic, silty clay.

Macro-invertebrates: this assessment-recorded sub-sample 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 (Appendix 16).

Fill of gully/drain KLA B 1289 (same as KLA A 1070; KLA C 1976)

A large gully, aligned east-west, formed part of the same putative timber-lined drain as KLA A 1070 and KLA C 1976 in the eastern part of the site (Ch 3, p 55). It was 1.1 m wide at the lip, 0.5 m at the base, and 0.45 m deep. Its primary fill was a dark grey sandy silt (1285), not sampled, overlaid by 1282, a dark blue-grey organic silt. Upper fill 1281, a mixed grey-pink/brown silty clay, was sampled but not analysed.

Fill 1282, Sub-sample 235/T (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.

Fill of gully KLA C 1325

This was a large gully, aligned east-west, over 5.1 x 1-1.2 m, and up to 0.3 m deep, possibly associated with the extensive system of potential drainage channels in the central and eastern parts of the site (Ch 3, p 56), but spatially detached from the rest of these features. The fill was a dark brown/black organic clay loam.

Fill 1324, Sub-samples 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* eggs (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 nymphs may have been brought in cut vegetation used as fodder, but there were hints that the deposit included a component from an exposed surface, including numerous soil nematode cysts.

Fill of gully KLA C 1921 (same as KLA D 526)

This gully, aligned north-south, was 1.2 m wide and up to 1 m deep, and may have been a drainage feature, immediately adjacent to (and parallel with) the east wall of Building 1995 (Ch 3, p 55), part of an extensive system of potential drainage channels. Its north end extended north into KLAD (there numbered 526). Fills: the lowest, 1858.03, a mixed pink clay and brown soil, was not sampled; over this was 1858.02, a dark grey organic sandy clay loam, and the upper fill was 1858.01, a dark brown sandy loam with some organic content (sampled but not analysed).

Fill 1858.02 [=1871], Sub-samples 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 present, in the size range 2-20 mm.

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 seven 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 fill 1858.02 contained numerous fly puparia and a wider range of seeds, suggesting soil and grassland (perhaps calcareous), so perhaps foul matter such as dung was incorporated.

Fill 1871 [= 1858], Sub-samples 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 sub-sample yielded a fairly substantial assemblage (N=100, S=59), broadly similar in character to that from fill 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 (*Appendix 16*).

Fills of gully KLA C 1976 (same as KLA A 1070; KLA B 1289)

This was part of a possible east/west-aligned drain in the east of the site, part of the same feature as 1070 (*p 698*) and 1289 (*p 699; Ch 3, p 55*). It was 1.2-1.4 m wide, and 0.25 m deep, with various fills, described as dark grey/black silty or sandy loam. Three fills were sampled: 1865; 1870; and 1876, and the last two were analysed.

Fill 1870, Sub-sample 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 *Macrodera 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.

Fill 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 (Table 83), 11 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 (*Appendix 16*).

Fill of pit KLA C 1893

This was a sub-rectangular pit in the central part of the site, 2.7 x 1.2 m, and 0.4 m deep. The fill, 1887, was a dark grey-brown silty loam.

Fill 1887, Sub-samples 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 considerably 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.

Fills of gully KLA D 526 (same as KLA C 1921)

This feature was the northern end of probable drain 1921, adjacent to the east side of Building 1995 (*Ch 3, p 55*). Fills: 524.03-01, earliest to latest, were layers of dark silty soil with much organic material.

Fill 524.01, Sub-samples 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 *Osurinamensis* (27), *Cferrugineus* (26), and *Sgranarius* (three); house fauna by the *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 of 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 denote 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 (Kenward and Hall 1997; Kenward 2009). The smaller sub-sample yielded only 28 adult beetles, representing 25 taxa, and rather few other invertebrates. The fauna was rather mixed, and no ecological group predominated.

Fill 524.03, Sub-samples 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 sub-sample /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 (ten individuals of four species; PNW=14), and were amongst the most abundant beetles (*Helophorus grandis* at rank 2, with four individuals; *Helophorus* sp

at rank 3, with three). The most numerous beetle was a *Carpelimus*, probably *corticinus*, which is found mostly in waterside mud (Lott 2009). It thus seems likely that the gully 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 sub-sample gave an assemblage of similar character, consisting of single individuals of 21 beetle and bug taxa, and a trace of other invertebrates.

Fill of gully LAL B 387

This feature, in the north-east corner of the site, was up to 1.4 m wide and 0.54 m deep. It contained five fills (375.01-05), all primarily of mineral sediment, the only sample, however, being labelled only as 375.

Fill 375, Sub-sample 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' (Table 83)). 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 (Appendix 16).

Period 7-8A

Fills of pit KLA B 396

This rectangular pit, in the east of the site, was 2.7 m by more than 2.8 m, and at least 0.7 m deep (it was probably not bottomed). Fills 358.01-08 were mainly black or grey-brown soils, with lenses of clay in the upper layers. Four fills were sampled, 358.01-04, of which two were analysed.

Fill 358.02, Sub-samples 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 the interpretation.

Fill 358.04, Sub-samples 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 others 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.

Period 8A

Fill of gully KLA C 1196

This gully, aligned east-west, in the central part of the site, was 5.2 m long, 0.6-0.7 m wide, and 0.2 m deep. The fill, 1182, was a dark brown/black organic silty loam.

Fill 1182, Sub-samples 387/P and 387/T (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, and 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 ?pyraister*, 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 (Appendix 16).

Fill of gully KLA C 1203

This gully was also in the central part of the site.

Fill 1202, Sub-samples 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 fill 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 *Xylostromus ?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 gully undoubtedly received stable manure among its fills.

Surface? KLA D 512

Between Buildings 587 and 588 (*Ch 3, p 62*), a small patch of light grey clay was 2.0 x 1.1 m at its greatest extent.

Layer 512, Sub-sample 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. It 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.

Period 8B

Fills of pit KLA A 1073

This was a large circular pit in the north-east of the site, 2.4 m in diameter, 1.2 m deep, and with seven fills: the lowest 1031.07 to latest 1031.01, mainly dark grey-brown or black silty deposits, not all sampled.

Fill 1031.01, Sub-samples 212/P and 212/T (1.0 kg)

Laboratory sediment description: moist, light-mid-brown to dark brown, stiff (working plastic), sandy clay, with 10 mm and 1 mm-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 (Huntley 2012).

Fill 1031.02, Sub-sample 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 remainder was of mixed character, quite possibly being background fauna. Plant remains suggested that the deposit included the remains of hay or flooring (*Appendix 16*).

Fill 1031.03, Sub-samples 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* eggs were present and there were many pollen grains/spores. Further investigation failed to produce sufficient well-preserved, measurable, eggs for specific identification.

Macro-invertebrates: the large sub-sample 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 *Pratzeburgi*). 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 sub-sample contained rather few remains (N=13, S=10), suggesting a random sample from the fauna of the larger sub-sample. Some cladoceran ephippia were noted, perhaps from water drunk by stock?

Fill 1031.04, Sub-sample 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 was present.

Fill of pit KLA A 1074

This had been largely destroyed by later features in the north-east of the site, but was at least 2.5 x 0.4 m and 0.5 m deep. There were three fills, all brown or brown-black clays or silty clays. Only 1052.02, the middle fill, was sampled.

Fill 1052.02, Sub-sample 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 KLA A 1069

This large pit, in the north-east of the site, was 2.6 x 2.6 m, although the depth was not recorded. Fills: 1055.03-1055.01, earliest to latest, all sampled. Fills 1055.02 and 1055.03 were mixed, and with some organic material.

Fill 1055.01, Sub-sample 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-size 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.

Fill 1055.02, Sub-samples 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 sub-sample 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. This may possibly have been a surface soil, bearing some dung or scattered stable manure, dumped into the pit. Plant remains were varied, with indications of taxa from floors and soil surfaces. The assessment sub-sample 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.

Fill 1055.03, Sub-samples 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 sub-sample; 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*, *Gyrophypnus 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 Lanes, 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 sub-sample echoed that from the larger one; there were 37 individuals of 34 beetle and bug taxa reflecting a range of habitats.

Fills of pit KLA A 1066

This pit in the north-east of the site was about 1.4 m in diameter, although the depth was not recorded. The fills were all brown or dark brown-black silty or sandy loams: 1063.04, probably the earliest but not properly recorded; 1063.03, the earliest of those recorded, not sampled; 1063.02, 1063.01, not sampled.

Fill 1063.02, Sub-samples 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 sub-sample 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* (six) 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 (*Appendix 16*).

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

Fill 1063.04, Sub-samples 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-size stones were also present.

Macro-invertebrates: invertebrate remains were very abundant in the flots from the larger sub-sample (for adult beetles and bugs, N=346, S=112; there were also 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 (*pp* 691-2); 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 the *Anotylus sculpturatus* group (11), and smaller numbers of other dung-associated taxa, such as *Aphodius fimetarius* (five) and *Platystethus arenarius* (three).

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), and 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 (*Appendix 16*).

The /T sub-sample was notable for the much lower estimated concentration of remains (29 beetles and bugs per kilogram, as opposed to 74 for the /1 sub-sample). 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 KLA A 1068

This pit in the north-east of the site had been largely destroyed by later features. It was at least 1.2 m in diameter and 1 m deep. The fills were both grey-brown silty loam: 1067.02, the lowest, not sampled; and 1061.01, the upper.

Fill 1067.01, Sub-samples 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 sub-sample 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 sub-sample 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 sub-sample /1.

Fill of gully/drain KLA B 114 (also 93)

This was part of a long, east-west gully in the east of the site, possibly a drainage channel (*Ch 3, p 65*), the north/south arm of which was KLA B 112 (*below*). The section providing the samples was 0.35-0.45 m wide and 0.25 m deep, but had been truncated. Fills: 93.01 in the lower part, dark grey/black silt; sealed by 93.02, a dark brown silty loam.

Fill 93.01, Sub-sample 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.

Fill 93.02, Sub-samples 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 the remains of four beetles in the washover, no other invertebrates being seen. Plant remains were virtually absent.

Fill of gully/drain KLA B 112 (also 99)

This formed the north-south arm of KLA B 114 (*above*). Fills: dark silts 99.01 over 99.02; only the latter was sampled.

Fill 99.02, Sub-sample 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 2-6 mm-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.

Fills of pit KLA D 569

This pit, in the central northern part of the site, was 2 m by over 2.1 m across, and 1.55m deep. Fills: 464.03, primary, dark grey/black silty loam; overlaid by 464.02, dark grey-brown organic silts; sealed by 464.01, the upper fill of dark grey-brown sandy loam, with some organic material, probably represented by Sample 1, not analysed.

Fill 464.02, Sub-samples 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 sub-sample 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 (ten) and a *Cryptophagus* species (six) 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 sub-sample gave few remains (including seven individuals of five beetle taxa).

Fill 464.03, Sub-samples 3/P, 3/1 (2.8 kg) and 3/T (2.65 kg)

Laboratory sediment description: moist, light-mid-orangish brown, slightly soft (working crumbly to plastic), slightly sandy clay, with 2-6 mm-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 sub-samples gave very different quantities of invertebrates, the concentration in sub-sample /T being estimated as about three times that in /1. The assemblage from sub-sample 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 sub-sample /1 doubtless represented another facies of this fauna.

Deposit KLA D 480

This was a patchy layer of grey-buff silty clay, 2 x 1.3 m, seemingly an external deposit, in the central northern part of the site.

Sub-samples 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 11 beetle taxa. This was a mixed group, not out of place at the northern Lanes.

Fill of pit KLA D 541

This large, rectangular pit or trench-like feature in the central northern part of the site was at least 2.6 m long, 1 m wide, and 0.7 m deep. Fill: lower, 531.02, dark grey silty clay loam; upper, 531.01, dark brown sandy loam.

Fill 531.01, Sub-samples 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.

Fill 531.02, Sub-samples 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: there were few remains (N=S=11). The same grain pests were present as in the other sample.

Fill of pit LAL B 300

This pit, in the north-east corner of the site, measured 4.1 m by over 3.8 m, but was only 0.55 m deep. It had four fills, 257.01-04, but it is not clear which was sampled.

Fill 257, Sub-samples 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, in 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 (*Appendix 16*).

Period 7-9

Fill of construction trench KLA B 105

This trench, part of Building 1308 (*Ch 3, p 56*), was 0.8 m wide and 0.8 m deep. Fills: the primary backfill was not sampled; above this was 97, gravel/clay.

Fill 97, Sub-sample 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.

Period 9

Fill of pit KLA B 1220

This pit, in the east of the site, was about 1.3 m in diameter. Fills: primary fill 1220.02, sandy silt; upper fill 1220.01, beige sandy clay loam, not sampled.

Fill 1220.02, Sub-samples 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 orangish 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 no further sample material could be located for systematic measurements to be made.

Macro-invertebrates: the larger sub-sample 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* (eight individuals; see below), *Platystethus arenarius* (five), 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, 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 surface on which there was dung. There may, however, also have been human faeces, which had been disposed of in the pit.

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

Other pit fills

Two other pits from the north-east of the site were examined: pit KLA B 187 was rectangular, 1.2 x 0.7 m, 0.25 m deep, and filled with mixed grey silt; and KLA B 1204 was 0.7 x 0.4 m and over 1 m deep, with a primary fill of grey organic silt, 1204.02, sealed by beige sandy clay loam 1204.01, the former of which was sampled but not analysed.

Fill 187, Sub-sample 48/T (1.0 kg)

Laboratory sediment description: moist, mid-orangish 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.

Fill 1204.02, Sub-sample 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 *Asculpturatus* group. Some other taxa suggested foul matter in the open, and this assemblage would not have been considered out of place in a cesspit. Plant remains from two other samples from this fill included abundant food remains, supporting this interpretation.

Other deposits

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

Layer 1186, Sub-sample 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.

Layer 1234, Sub-samples 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 sub-sample 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 (nine individuals), *Oryzaephilus surinamensis* (six) and *Enicmus* sp (five) may have originated in dryish stable manure, and the fourth most abundant

taxon, *Apion* sp (three), may have originated in hay via stable manure. The plant remains may have represented fodder, supporting the presence of stable manure. The smaller sub-sample repeated the general pattern of the larger.

Layer 1268, Sub-samples 211/1 (3.0 kg) and 211/T (1.0 kg)

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

Macro-invertebrates: sub-sample /1 gave a modest-sized assemblage of invertebrates, with 67 adult beetles and bugs (47 taxa). The fauna was subjectively like that from layer 1234, with *Lathridius minutus* group (nine), *O surinamensis* (six), *Enicmus* sp (five), and *Apion* sp (three) 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.

Layer 1280, Sub-sample 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.

Period 10A

Fill of pit LAL C 323

This was situated immediately west of, and may have been associated with, pit 312 (p 710), in the north of the site. It was a large rectangular pit, 4.8 x 2 m, and 0.47 m deep. Fills: 290/295, grey/black sandy loam, with an obvious organic content.

Fill 290 [=295], Sub-samples 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.

Fill 295 [= 290], Sub-samples 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 sub-sample 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* (four), *Ulopa reticulata*, and *Bradycellus ?ruficollis* (three), *Micrelus ericae* (two), and single *Macrodemum 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 (p 692). There were two human fleas (p 756).

The smaller sub-sample produced an estimated 143 individuals of 49 beetle and bug taxa (recording was semi-quantitative and so the difference in diversity between the two sub-sample 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, sub-sample /1.

Fill of pit LAL C 312

This feature was located immediately east of pit 323 (Ch 3, p 78) in the north of the site, and the two may have been associated. It was at least 1.45 x 1.5 m, and 0.95 m deep, and contained two fills, both dark brown/black organic sandy silts. Both were sampled but only 302.01 analysed.

Fill 302.01, Sub-samples 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 (eight), *Cyphon* sp (five), *Agonum* sp (two), and a 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 fill gave almost no plant remains.

Fill of pit LAL C 329

This pit, which had been largely destroyed by later features, measured 2.7 m by at least 0.85 m. It was located close to pits 312 and 323 (above) in the north of the site, and was filled by a red-brown clay loam, with numerous wood fragments (also numbered 329).

Fill 329, Sub-samples 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 fill 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 LAL D 1021

This comprised an extensive layer of dark brown/black organic sandy silt loam in the north-west of the site.

Layer 1021, Sub-sample 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 (Huntley 2012); this material presumably was fodder or litter.

Period pre-10C

Primary fill of barrel-lined well 1016

This well contained various fills (Ch 3, p 75), several of which were sampled, but only one was analysed.

Fill 1016.07, Sub-samples 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 the *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* (ten), and *Gyrohypnus angustatus* (three), 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* (five), *Apion* spp (three and one), 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.

Period 10B

Deposit LAL C 334

This was one of a series of layers and lenses of dark brown/black sandy clay loam and silty loam that accumulated to the south and west of Building 474, in the northern part of the site (Ch 3, p 81).

Sub-sample 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' (Kenward *et al* 1998, 40). The only plant remains present were a few sedge nutlets (Huntley 2012).

Layer LAL D 1017, Sub-sample 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 (Appendix 16); numerous fungal resting spores suggested deposition in an active soil.

Period 10C

Pit KLA A 880

This was one of four small, intercutting pits in the north-east of the site, 2.4 x 0.35 m, 0.4 m deep, and only partly within the excavated area. Fill: black silt.

Fill 879, Sub-sample 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.

Deposits

Two samples were analysed from a series of dark grey-brown/black sandy loams that overlay much of the remains of Building 1309 (Ch 3, p 80).

Layer KLA B 975 [? = 1065], Sub-sample 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.

Layer KLA B 1065 [? = 975], Sub-sample 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.

Period 11D

Well 226

This was a circular stone-lined well (Ch 4, p 119), 1.1 m in internal diameter, and at least 10 m deep. It had numerous fills, of which 17 were sampled. The following were processed: 232.06, a dark brown/black organic sandy loam near the top; 232.12, a grey-brown clay loam; 232.16, a dark grey/black organic silt; and 232.19 and 232.20, dark grey-brown silty organic soils towards the base of the feature.

Fill 232.20, Sub-sample 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* (ten), and smaller numbers of several other taxa. There were also indications of turf (for example, 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 (Huntley 2012), very much in accord with the invertebrates.

Fill 232.19, Sub-sample 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 (above), 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).

Fill 232.16, Sub-samples 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 were 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 (for instance, 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.

Fill 232.12, Sub-sample 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), and 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 of 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 (Appendix 16).

Fill 232.06, Sub-samples 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 corncockle seeds (Appendix 16), perhaps supporting this hypothesis.

Period 11D-12

Deposit

A spread of dark earth overlay the latest floors of stone Building 2000 (Ch 4, p 127), forming a series of dark grey/black silty clay loams. One was analysed.

Layer KLA B 728, Sub-sample 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.

Catalogue

Species lists are given in rank order for invertebrate macrofossils from samples from Keays (KLA) and Laws (LAL) Lanes. For each sample assemblage, the adult Hemiptera (bugs) and Coleoptera (beetles) are listed first, followed by the remaining invertebrates.

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 six). For translation of ecological codes, see Table 83. 'Null' indicates that there were no identifiable remains of macro-invertebrates, although there may have been decayed scraps unassignable to Class. Samples labelled * were not used in calculating statistics.

1 One dish of flot, a little fine charcoal and some plant debris.

	n	sq	ec
null	0	-	u

Wt: 1.00 kg; E: 0.00; F: 0.00;
KLAA879, Sample: 195/T, CA: ReM: S, Period 10C

2 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
<i>Cercyon</i> sp	1	-	u
?Elateridae sp	1	-	ob
<i>Anobium punctatum</i>	1	-	l-sf
<i>Oryzaeophilus surinamensis</i>	1	-	g-ss
Coleoptera sp	1	-	u

Wt: 1.00 kg; E: 0.00; F: 0.00;
KLA A 982, Sample: 201/T, CA: ReM: R, Period 7

3 Assessment list.

	n	sq	ec
<i>Clivina fossor</i>	3	-	oa
<i>Oryzaeophilus surinamensis</i>	2	-	g-ss
<i>Aphodius</i> sp	1	-	ob-rf
Curculionidae sp	1	-	oa
*Diptera sp (puparium)	2	-	u
*Coleoptera sp (larva)	1	-	u

Wt: 1.00 kg; E: 4.00; F: 3.50;
KLA A 1020, Sample: 205/T CA: ReM: R, Period 7

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

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

Wt: 1.00 kg; E: 0.00; F: 0.00;
KLA A 1031.01, Sample: 212/T, CA: ReM: R, Period 8B

5 Assessment record. One dish flot.

	n	sq	ec
<i>Cryptolestes ferrugineus</i>	6	s	g-ss
<i>Oryzaeophilus surinamensis</i>	6	s	g-ss
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Helophorus</i> sp	1	-	oa-w
<i>Anotylus ? tetracarinated</i>	1	-	rt
<i>Gyrophypnus</i> sp	1	-	rt
<i>Falagria</i> sp	1	-	rt-sf
Pselaphidae sp	1	-	u
<i>Aphodius granarius</i>	1	-	ob-rf
<i>Aphodius</i> sp	1	-	ob-rf
?Elateridae sp	1	-	ob
<i>Atomaria</i> sp	1	-	rd
<i>Corticarina</i> or <i>Cortinicara</i> 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

Wt: 1.00 kg; E: 0.00; F: 0.00
KLA A 1031.02, Sample: 217/T, CA: ReM: RS, Period 8B

6 Small flot, recorded in flot and on filter paper.

	n	sq	ec
<i>Oryzaeophilus surinamensis</i>	29	-	g-ss
<i>Cryptolestes ferrugineus</i>	13	-	g-ss
<i>Cercyon atricapillus</i>	4	-	rf-st
<i>Sitophilus granarius</i>	4	-	g-ss
<i>Cercyon analis</i>	3	-	rt-sf
<i>Ptenidium</i> sp	3	-	rt
<i>Oxytelus sculptus</i>	3	-	rt-st
<i>Philonthus</i> sp A	3	-	u
<i>Lathridius minutus</i> group	3	-	rd-st
<i>Helophorus</i> sp	2	-	oa-w

<i>Xylodromus concinnus</i>	2	-	rt-st					<i>*Siphonaptera</i> sp	1	-	u
<i>Platystethus arenarius</i>	2	-	rf					Wt: 5.00 kg; E: 0.00; F: 0.00			
<i>Gyrophypnus angustatus</i>	2	-	rt-st					KLA A 1031.03, Sample: 213/1, CA: ReM: D,			
<i>Xantholinus linearis</i>	2	-	rt-sf					Period 8B			
<i>Philonthus</i> sp B	2	-	u								
Aleocharinae sp D	2	-	u	7				Small flot sorted and basic record. Completed			
<i>Aphodius prodromus</i>	2	-	ob-rf					recording in flot and on paper.			
<i>Anobium punctatum</i>	2	-	l-sf						n	sq	ec
<i>Ptinus fur</i>	2	-	rd-sf					<i>Oryzaephilus surinamensis</i>	3	-	g-ss
<i>Palorus ratzeburgi</i>	2	-	g-ss					<i>Ptinus</i> sp	2	-	rd-sf
Auchenorrhyncha sp A	1	-	oa-p					<i>Ptenidium</i> sp	1	-	rt
Auchenorrhyncha sp B	1	-	oa-p					Omaliinae sp	1	-	rt
<i>Trechus obtusus</i>	1	-	oa					<i>Carpelimus ?bilineatus</i>	1	-	rt-sf
<i>Calathus</i> sp	1	-	oa					<i>Falagria</i> sp	1	-	rt-sf
<i>Harpalus</i> sp A	1	-	oa					<i>Aphodius</i> sp	1	-	ob-rf
<i>Harpalus</i> sp B	1	-	oa					<i>Cryptolestes ferrugineus</i>	1	-	g-ss
Carabidae sp	1	-	ob					<i>Phyllotreta</i> sp	1	-	oa-p
<i>Cercyon</i> sp	1	-	u					Coleoptera sp	1	-	u
<i>Cryptopleurum minutum</i>	1	-	rf-st					<i>*Acarina</i> sp	6	s	u
<i>Onthophilus striatus</i>	1	-	rt					<i>*Diptera</i> sp (puparium)	3	-	u
Ptiliidae sp	1	-	u					<i>*Daphnia</i> sp (ephippium)	1	-	oa-w
Scydmaenidae sp	1	-	u					<i>*Diptera</i> sp (pupa)	1	-	u
<i>Omalius caesum</i> or <i>italicum</i>	1	-	rt-sf					Wt: 1.00 kg; E: 0.00; F: 0.00			
<i>Carpelimus bilineatus</i>	1	-	rt-sf					KLA A 1031.03, Sample: 213/T, CA: ReM: D,			
<i>Anotylus nitidulus</i>	1	-	rt-d					Period 8B			
<i>Anotylus tetracarinatus</i>	1	-	rt								
<i>Stenus</i> sp	1	-	u	8				Assessment record as rapid scan. One dish flot,			
<i>Cordalia obscura</i>	1	-	rt-sf					many seeds. Recorded in flot and on filter paper.			
<i>Falagria</i> sp	1	-	rt-sf						n	sq	ec
Aleocharinae sp A	1	-	u					Aleocharinae sp A	3	-	u
Aleocharinae sp B	1	-	u					<i>Helophorus</i> sp A	2	-	oa-w
Aleocharinae sp C	1	-	u					<i>Helophorus</i> sp B	2	-	oa-w
Aleocharinae sp E	1	-	u					<i>Anotylus rugosus</i>	2	-	rt
<i>Phyllopertha horticola</i>	1	-	oa-p					Aleocharinae sp B	2	-	u
<i>Tipnus unicolor</i>	1	-	rd-st					Auchenorrhyncha sp	1	-	oa-p
<i>Meligethes</i> sp	1	-	oa-p					Hemiptera sp	1	-	u
<i>Monotoma picipes</i>	1	-	rt-st					<i>Trechus obtusus</i> or			
<i>Monotoma</i> sp	1	-	rt-sf					<i>quadristriatus</i>	1	-	oa
<i>Cryptophagus</i> sp	1	-	rd-sf					<i>Bembidion</i> sp	1	-	oa
<i>Atomaria</i> sp	1	-	rd					<i>Laemostenus terricola</i>	1	-	ss
<i>Corticaria</i> sp	1	-	rt-sf					Carabidae sp	1	-	ob
Corticariinae sp	1	-	rt					<i>Cercyon analis</i>	1	-	rt-sf
<i>Typhaea stercorea</i>	1	-	rd-ss					<i>Cercyon ?unipunctatus</i>	1	-	rf-st
<i>Anthicus floralis</i> or								<i>Megasternum obscurum</i>	1	-	rt
<i>formicarius</i>	1	-	rt-st					<i>Carpelimus ?bilineatus</i>	1	-	rt-sf
<i>?Gastrophysa</i> sp	1	-	oa-p					<i>Anotylus complanatus</i>	1	-	rt-sf
Halticinae sp	1	-	oa-p					<i>Anotylus nitidulus</i>	1	-	rt-d
Ceuthorhynchinae sp	1	-	oa-p					<i>Anotylus tetracarinatus</i>	1	-	rt
<i>*Acarina</i> sp	15	m	u					<i>Lathrobium</i> sp	1	-	u
<i>*Diptera</i> sp (puparium)	15	m	u					<i>Falagria</i> or <i>Cordalia</i> sp	1	-	rt-sf
<i>*Insecta</i> sp pupa	15	m	u					Aleocharinae sp	1	-	u
<i>*Coleoptera</i> sp (larva)	6	s	u					Aleocharinae sp C	1	-	u
<i>*?Heterodera</i> sp (cyst)	6	s	u					Staphylinidae sp	1	-	u
<i>*Diptera</i> sp (larva)	6	s	u					<i>Aphodius granarius</i>	1	-	ob-rf
<i>*Coccoidea</i> sp	3	-	u					<i>Aphodius</i> sp	1	-	ob-rf
<i>*Araneae</i> sp	3	-	u					<i>Anobium punctatum</i>	1	-	l-sf
<i>*Hemiptera</i> sp (nymph)	2	-	u					<i>Brachypterus</i> sp	1	-	oa-p
<i>*Diptera</i> sp (adult)	1	-	u					<i>Cryptolestes ferrugineus</i>	1	-	g-ss

	<i>Oryzaephilus surinamensis</i>	1	-	g-ss	11	Quite large flot, many seeds and much plant debris. Recorded in flot and on filter paper.
	<i>Cryptophagus</i> sp	1	-	rd-sf		
	<i>Corticaria</i> sp	1	-	rt-sf	n	sq ec
	? <i>Palorus ratzeburgi</i>	1	-	g-ss	Aleocharinae sp G	11 - u
	Halticinae sp	1	-	oa-p	<i>Cryptolestes ferrugineus</i>	10 - g-ss
	<i>Sitophilus granarius</i>	1	-	g-ss	<i>Anotylus rugosus</i>	9 - rt
	<i>Ceutorhynchus ?erysimi</i>	1	-	oa-p	<i>Gyrohypnus angustatus</i>	9 - rt-st
	*Coleoptera sp (larva)	15	m	u	<i>Lathridius minutus</i> group	9 - rd-st
	*Diptera sp (puparium)	15	m	u	<i>Anotylus nitidulus</i>	7 - rt-d
	*Insecta sp (pupa)	15	m	u	<i>Aphodius prodromus</i>	6 - ob-rf
	*Auchenorrhyncha sp (nymph)	1	-	oa-p	<i>Sitophilus granarius</i>	6 - g-ss
	*Araneae sp	1	-	u	<i>Trechus obtusus</i>	5 - oa
	*Diptera sp (adult)	1	-	u	<i>Megasternum obscurum</i>	5 - rt
	*Opiliones sp	1	-	u	<i>Brachypterus</i> sp	5 - oa-p
	*Syrphidae sp (larva)	1	-	u	<i>Oryzaephilus surinamensis</i>	5 - g-ss
	Wt: 1.00 kg; E: 2.00; F: 3.00				<i>Cercyon analis</i>	4 - rt-sf
	KLAA 1031.04, Sample: 250/T, CA: ReM: R, Period 8B				<i>Oxytelus sculptus</i>	4 - rt-st
9	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.				<i>Helophorus</i> sp	3 - oa-w
		n	sq	ec	<i>Platystethus nitens</i>	3 - oa-d
	<i>Megasternum obscurum</i>	1	-	rt	<i>Gyrohypnus fracticornis</i>	3 - rt-st
	<i>Aphodius</i> sp A	1	-	ob-rf	<i>Falagria caesa</i> or <i>sulcatula</i>	3 - rt-sf
	<i>Aphodius</i> sp B	1	-	ob-rf	<i>Meligethes</i> sp	3 - oa-p
	*?Heterodera sp (cyst)	15	m	u	<i>Omosita colon</i>	3 - rt-sf
	*Oligochaeta sp (egg capsule)	1	-	u	<i>Corticaria</i> sp	3 - rt-sf
	Wt: 1.00 kg; E: 0.00; F: 0.00				<i>Corticarina</i> sp	3 - rt
	KLA A 1052.02, Sample: 214/T, CA: ReM: R, Period 8B				<i>Gastrophysa viridula</i>	3 - oa-p
10	Assessment record as rapid scan. Flot 10 mm in jar, moss and tissue fragments. Recorded in flot.				<i>Dyschirius ?globosus</i>	2 - oa
		n	sq	ec	<i>Clivina fossor</i>	2 - oa
	<i>Helophorus</i> sp	1	-	oa-w	<i>Helophorus aquaticus</i> or <i>grandis</i>	2 - oa-w
	<i>Megasternum obscurum</i>	1	-	rt	<i>Cercyon atricapillus</i>	2 - rf-st
	<i>Catops</i> sp	1	-	u	<i>Cercyon unipunctatus</i>	2 - rf-st
	<i>Omalium</i> sp	1	-	rt	<i>Ptenidium</i> sp	2 - rt
	Staphylininae sp	1	-	u	<i>Omalium rivulare</i>	2 - rt-sf
	Aleocharinae sp A	1	-	u	<i>Anotylus tetracarınatus</i>	2 - rt
	Aleocharinae sp B	1	-	u	<i>Stenus</i> sp A	2 - u
	Aleocharinae sp C	1	-	u	<i>Neobisnius</i> sp	2 - u
	<i>Anobium punctatum</i>	1	-	l-sf	<i>Tachyporus ?hypnorum</i>	2 - u
	<i>Oryzaephilus surinamensis</i>	1	-	g-ss	Aleocharinae sp B	2 - u
	<i>Cryptophagus</i> sp	1	-	rd-sf	Aleocharinae sp D	2 - u
	<i>Apion</i> sp	1	-	oa-p	<i>Anobium punctatum</i>	2 - l-sf
	Curculionidae sp	1	-	oa	<i>Anthicus formicarius</i>	2 - rt-st
	*Diptera sp (puparium)	6	s	u	Lygaeidae sp	1 - oa-p
	*Coleoptera sp (larva)	1	-	u	Psylloidea sp	1 - oa-p
	*Formicidae sp	1	-	u	<i>Notiophilus</i> sp	1 - oa
	*Oligochaeta sp (egg capsule)	1	-	u	<i>Bembidion</i> sp A	1 - oa
	Wt: 1.00 kg; E: 0.00; F: 0.00				<i>Bembidion</i> sp B	1 - oa
	KLAA 1055.01, Sample: 245/T, CA: ReM: R, Period 8B				<i>Pterostichus melanarius</i>	1 - ob
					<i>Pterostichus</i> sp	1 - ob
					Carabidae sp	1 - ob
					<i>Cercyon haemorrhoidalis</i>	1 - rf-sf
					<i>Acritus nigricornis</i>	1 - rt-st
					<i>Onthophilus striatus</i>	1 - rt
					<i>Ochthebius</i> sp	1 - oa-w
					Ptiliidae sp	1 - u
					Silphidae sp	1 - u
					Scydmaenidae sp	1 - u
					<i>Omalium caesum</i> or <i>italicum</i>	1 - rt-sf

<i>Xylodromus concinnus</i>	1	-	rt-st	12	Assessment record treated as rapid scan. Two-dish flot, with many seeds and some plant debris. Recorded in flot.			
<i>Carpelimus</i> sp	1	-	u					
<i>Stenus</i> sp B	1	-	u			n	sq	ec
<i>Stenus</i> sp C	1	-	u			3	-	rt
<i>Lathrobium</i> sp	1	-	u			2	-	rd
<i>Rugilus</i> sp	1	-	rt			1	-	oa
<i>Paederinae</i> sp	1	-	u					
<i>Othius myrmecophilus</i>	1	-	rt					
<i>Philonthus</i> sp	1	-	u					
<i>Quedius</i> sp	1	-	u					
<i>Tachinus signatus</i>	1	-	u					
<i>Tachinus</i> sp	1	-	u					
<i>Aleocharinae</i> sp A	1	-	u					
<i>Aleocharinae</i> sp C	1	-	u					
<i>Aleocharinae</i> sp E	1	-	u					
<i>Aleocharinae</i> sp F	1	-	u					
<i>Aphodius</i> sp A	1	-	ob-rf					
<i>Aphodius</i> sp B	1	-	ob-rf					
<i>Aphodius</i> sp C	1	-	ob-rf					
<i>Phyllopertha horticola</i>	1	-	oa-p					
<i>Clambus</i> sp	1	-	rt-sf					
<i>Oulimnius</i> sp	1	-	oa-w					
<i>Elateridae</i> sp	1	-	ob					
<i>Cantharis</i> sp	1	-	ob					
<i>Omosita discoidea</i>	1	-	rt-sf					
<i>Monotoma longicollis</i>	1	-	rt-st					
<i>Cryptophagus scutellatus</i>	1	-	rd-st					
<i>Cryptophagus</i> sp A	1	-	rd-sf					
<i>Cryptophagus</i> sp B	1	-	rd-sf					
<i>Atomaria nigripennis</i>	1	-	rd-ss					
<i>Atomaria</i> sp	1	-	rd					
<i>Palorus ratzeburgi</i>	1	-	g-ss					
<i>Anthicus</i> sp	1	-	rt					
<i>Donaciinae</i> sp	1	-	oa-dp					
<i>Phyllotreta nemorum</i> group	1	-	oa-p					
<i>Halticinae</i> sp	1	-	oa-p					
<i>Apion</i> sp	1	-	oa-p					
? <i>Sitona</i> sp	1	-	oa-p					
<i>Notaris acridulus</i>	1	-	oa-dp					
<i>Ceutorhynchus ?melanostictus</i>	1	-	oa-p					
? <i>Baris</i> sp	1	-	oa-p					
<i>Curculionidae</i> sp	1	-	oa					
* <i>Auchenorrhyncha</i> sp (nymph)	28	-	oa-p	13	Three-dish flot. Recorded in flot and on filter paper (latter to tube).			
* <i>Coleoptera</i> sp (larva)	15	m	u					
* <i>Acarina</i> sp	15	m	u			n	sq	ec
* <i>Diptera</i> sp (adult)	6	s	u			5	-	g-ss
* <i>Diptera</i> sp (puparium)	6	s	u			4	-	rt
* <i>Coccoidea</i> sp	4	-	u			4	-	rt-st
* <i>Araneae</i> sp	2	-	u			4	-	u
* <i>Pulex irritans</i>	1	-	ss			3	-	rt-d
*? <i>Damalinia</i> sp	1	-	u			3	-	rt-st
* <i>Bibionidae</i> sp	1	-	u			3	-	u
* <i>Dermaptera</i> sp	1	-	u			3	-	rt
* <i>Formicidae</i> sp	1	-	u			3	-	oa-p
Wt: 4.15 kg; E: 0.00; F: 0.00						3	-	g-ss
KLA A 1055.02, Sample: 243/1, CA: ReM: S, Period 8B						2	-	oa
						2	-	oa-w

<i>Cercyon analis</i>	2	-	rt-sf		<i>Palorus ratzeburgi</i>	1	-	g-ss
<i>Megasternum obscurum</i>	2	-	rt		<i>Anthicus formicarius</i>	1	-	rt-st
<i>Acidota crenata</i>	2	-	oa		<i>Longitarsus</i> sp	1	-	oa-p
<i>Stenus</i> sp A	2	-	u		<i>Apion</i> sp	1	-	oa-p
<i>Falagria caesa</i> or <i>sulcatula</i>	2	-	rt-sf		<i>Sitona</i> sp	1	-	oa-p
<i>Aphodius</i> sp	2	-	ob-rf		<i>Rhinoncus pericarpus</i>	1	-	oa-p
<i>Cryptolestes ferrugineus</i>	2	-	g-ss		<i>Gymnetron ?pascuorum</i>	1	-	oa-p
<i>Lathridius minutus</i> group	2	-	rd-st		Curculionidae sp	1	-	oa
<i>Enicmus</i> sp	2	-	rt-sf		*Auchenorrhyncha sp (nymph)	15	m	oa-p
Pentatomidae sp	1	-	oa-p		*Coleoptera sp (larva)	15	m	u
<i>Ulopa reticulata</i>	1	-	oa-pm		*Acarina sp	15	m	u
<i>Carabus nemoralis</i>	1	-	oa		*Diptera sp (puparium)	15	m	u
<i>Loricera pilicornis</i>	1	-	oa		*Coccoidea sp	6	s	u
<i>Clivina fossor</i>	1	-	oa		*Oligochaeta sp (egg capsule)	6	s	u
<i>Bembidion</i> sp A	1	-	oa		*Insecta sp (larva)	6	s	u
<i>Bembidion</i> sp B	1	-	oa		*Diptera sp (pupa)	6	s	u
<i>Pterostichus ?melanarius</i>	1	-	ob		*Diptera sp (adult)	3	-	u
Carabidae sp	1	-	ob		*Araneae sp	2	-	u
<i>Helophorus aquaticus</i>	1	-	oa-w		*Hymenoptera Parasitica sp	2	-	u
<i>Helophorus grandis</i>	1	-	oa-w		*Cladocera sp F (ephippium)	1	-	oa-w
<i>Helophorus</i> sp B	1	-	oa-w		*Dermaptera sp	1	-	u
<i>Helophorus</i> sp C	1	-	oa-w		*Diptera sp (larva)	1	-	u
<i>Cercyon haemorrhoidalis</i>	1	-	rf-sf		*Heteroptera sp (nymph)	1	-	u
<i>Cryptopleurum minutum</i>	1	-	rf-st		Wt: 5.00 kg; E: 0.00; F: 0.00			
<i>Onthophilus striatus</i>	1	-	rt		KLA A 1055.03, Sample: 246/1, CA: ReM: S,			
<i>Peranus bimaculatus</i>	1	-	rt-sf		Period 8B			
<i>Ochthebius</i> sp	1	-	oa-w					
<i>Ptenidium</i> sp	1	-	rt	14	Assessment record as rapid scan. Flot 5 mm			
<i>Micropeplus</i> sp	1	-	rt		in jar. Many seeds, charcoal. Fungal resting			
<i>Omalium</i> sp	1	-	rt		bodies. Recorded in flot.			
<i>Carpelinus ?bilineatus</i>	1	-	rt-sf			n	sq	ec
<i>Platystethus arenarius</i>	1	-	rf		<i>Trechus obtusus</i> or			
<i>Anotylus tetracarinus</i>	1	-	rt		<i>quadristriatus</i>	2	-	oa
<i>Stenus</i> sp B	1	-	u		<i>Helophorus</i> sp	2	-	oa-w
<i>Othius</i> sp	1	-	rt		<i>Aphodius</i> sp	2	-	ob-rf
<i>Gyrophypnus fracticornis</i>	1	-	rt-st		Auchenorrhyncha sp	1	-	oa-p
<i>Neobisnius</i> sp	1	-	u		Hemiptera sp	1	-	u
Staphylininae sp A	1	-	u		? <i>Loricera pilicornis</i>	1	-	oa
Staphylininae sp C	1	-	u		<i>Dyschirius globosus</i>	1	-	oa
<i>Tachyporus</i> sp	1	-	u		? <i>Clivina</i> sp	1	-	oa
<i>Tachinus laticollis</i> or					Carabidae sp	1	-	ob
<i>marginellus</i>	1	-	u		<i>Cryptopleurum minutum</i>	1	-	rf-st
<i>Cordalia obscura</i>	1	-	rt-sf		Histerinae sp	1	-	rt
Aleocharinae sp A	1	-	u		<i>Acrotrichis</i> sp	1	-	rt
Aleocharinae sp C	1	-	u		Omalinae sp	1	-	rt
Aleocharinae sp D	1	-	u		<i>Platystethus</i> sp	1	-	oa-d
<i>Pselaphaulax dresdensis</i>	1	-	u		<i>Anotylus ?rugosus</i>	1	-	rt
<i>Trox scaber</i>	1	-	rt-sf		<i>Anotylus tetracarinus</i>	1	-	rt
<i>Aphodius</i> sp B	1	-	ob-rf		<i>Oxytelus sculptus</i>	1	-	rt-st
<i>Aphodius</i> sp C	1	-	ob-rf		<i>Stenus</i> sp	1	-	u
<i>Anobium ?punctatum</i>	1	-	l-sf		<i>Lathrobium</i> sp	1	-	u
<i>Ptinus</i> sp	1	-	rd-sf		<i>Gyrophypnus</i> sp	1	-	rt
<i>Monotoma bicolor</i>	1	-	rt-st		Xantholininae sp	1	-	u
<i>Monotoma picipes</i>	1	-	rt-st		<i>Philonthus</i> sp	1	-	u
<i>Cryptophagus</i> sp	1	-	rd-sf		Aleocharinae sp	1	-	u
<i>Atomaria</i> sp	1	-	rd		<i>Phyllopertha horticola</i>	1	-	oa-p
<i>Corticaria</i> sp	1	-	rt-sf		<i>Ptinus fur</i>	1	-	rd-sf
<i>Typhaea stercorea</i>	1	-	rd-ss		? <i>Meligethes</i> sp	1	-	oa-p

<i>Cryptolestes ferrugineus</i>	1	-	g-ss	<i>Hydrobius fuscipes</i>	1	-	oa-w
<i>Oryzaephilus surinamensis</i>	1	-	g-ss	<i>Onthophilus striatus</i>	1	-	rt
<i>Atomaria</i> sp	1	-	rd	Histeridae sp	1	-	u
<i>Lathridius minutus</i> group	1	-	rd-st	Silphidae sp	1	-	u
<i>Corticaria</i> sp	1	-	rt-sf	<i>Omalium caesum</i> or <i>italicum</i>	1	-	rt-sf
<i>Palorus ratzeburgi</i>	1	-	g-ss	<i>Carpelimus pusillus</i> group	1	-	u
Chrysomelinae sp	1	-	oa-p	<i>Carpelimus</i> sp	1	-	u
<i>Sitophilus granarius</i>	1	-	g-ss	<i>Platystethus nitens</i>	1	-	oa-d
*Coleoptera sp (larva)	15	m	u	<i>Stenus</i> sp A	1	-	u
*Diptera sp (puparium)	15	m	u	<i>Gyrophypnus angustatus</i>	1	-	rt-st
*Acarina sp	6	s	u	<i>Gyrophypnus fracticornis</i>	1	-	rt-st
*Araneae sp	2	-	u	<i>Xantholinus linearis</i>	1	-	rt-sf
Wt: 1.00 kg; E: 2.00; F: 2.00				<i>Neobisnius</i> sp	1	-	u
KLA A 1055.03, Sample: 246/T, CA: ReM: R,				<i>Philonthus</i> sp	1	-	u
Period 8B				<i>Philonthus</i> sp B	1	-	u
				<i>Staphylinus</i> sp	1	-	u
15 Medium-sized flot with numerous				<i>Heterothops</i> sp	1	-	u
invertebrates, many seeds, some plant debris.				<i>Quedius</i> sp	1	-	u
Recorded in flot and on paper.				<i>Cordalia obscura</i>	1	-	rt-sf
	n	sq	ec	<i>Aleochara</i> sp	1	-	u
<i>Anotylus nitidulus</i>	16	-	rt-d	Aleocharinae sp A	1	-	u
<i>Aphodius prodromus</i>	6	-	ob-rf	Aleocharinae sp B	1	-	u
<i>Trechus obtusus</i>	5	-	oa	Aleocharinae sp D	1	-	u
<i>Helophorus</i> sp A	5	-	oa-w	Aleocharinae sp F	1	-	u
<i>Cercyon analis</i>	3	-	rt-sf	<i>Trox scaber</i>	1	-	rt-sf
<i>Platystethus arenarius</i>	3	-	rf	<i>Aphodius ?fimetarius</i>	1	-	oa-rf
<i>Anotylus tetracarinated</i>	3	-	rt	<i>Phyllopertha horticola</i>	1	-	oa-p
<i>Stenus</i> sp B	3	-	u	? <i>Byrrhus</i> sp	1	-	oa-p
<i>Falagria caesa</i>	3	-	rt-st	Elateridae sp	1	-	ob
<i>Aphodius contaminatus</i>	3	-	oa-rf	<i>Omosita colon</i>	1	-	rt-sf
<i>Lathridius minutus</i> group	3	-	rd-st	<i>Monotoma longicollis</i>	1	-	rt-st
<i>Corticaria</i> sp	3	-	rt	<i>Cryptolestes ferrugineus</i>	1	-	g-ss
Psylloidea sp	2	-	oa-p	<i>Oryzaephilus surinamensis</i>	1	-	g-ss
<i>Helophorus</i> sp B	2	-	oa-w	<i>Atomaria</i> sp A	1	-	rd
<i>Megasternum obscurum</i>	2	-	rt	<i>Atomaria</i> sp B	1	-	rd
<i>Cryptopleurum minutum</i>	2	-	rf-st	<i>Atomaria</i> sp C	1	-	rd
<i>Anotylus rugosus</i>	2	-	rt	<i>Enicmus</i> sp	1	-	rt-sf
<i>Philonthus</i> sp A	2	-	u	<i>Gastrophysa</i> sp	1	-	oa-p
Aleocharinae sp C	2	-	u	Chrysomelinae sp	1	-	oa-p
Aleocharinae sp E	2	-	u	? <i>Chaetocnema</i> sp	1	-	oa-p
<i>Simplocaria ?semistriata</i>	2	-	oa-p	Halticinae sp	1	-	oa-p
<i>Monotoma</i> sp	2	-	rt-sf	<i>Apion</i> sp	1	-	oa-p
<i>Cryptophagus</i> sp	2	-	rd-sf	<i>Sitona</i> sp	1	-	oa-p
Delphacidae sp	1	-	oa-p	<i>Sitona</i> sp A	1	-	oa-p
Auchenorrhyncha sp A	1	-	oa-p	<i>Sitona</i> sp B	1	-	oa-p
Auchenorrhyncha sp B	1	-	oa-p	<i>Hypera punctata</i>	1	-	oa-p
<i>Trechus micros</i>	1	-	u	<i>Ceutorhynchus erysimi</i>	1	-	oa-p
<i>Bembidion ?saxatile</i>	1	-	oa-d	<i>Ceutorhynchus</i> sp	1	-	oa-p
? <i>Pterostichus</i> sp	1	-	ob	Ceuthorhynchinae sp A	1	-	oa-p
<i>Pterostichus</i> sp	1	-	ob	Ceuthorhynchinae sp B	1	-	oa-p
? <i>Calathus</i> sp	1	-	oa	Curculionidae sp A	1	-	oa
<i>Amara</i> sp	1	-	oa	Curculionidae sp B	1	-	oa
Carabidae sp	1	-	ob	Curculionidae sp C	1	-	oa
Carabidae sp B	1	-	ob	Curculionidae sp D	1	-	oa
<i>Agabus</i> sp	1	-	oa-w	Coleoptera sp	1	-	u
<i>Cercyon</i> sp A	1	-	u	Coleoptera sp A	1	-	u
<i>Cercyon</i> sp B	1	-	u	Coleoptera sp B	1	-	u
<i>Cercyon</i> sp C	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
*Araneae sp	2	-	u
*Coccoidea sp	1	-	u
*Opiliones sp	1	-	u

Wt: 3.00; E: 0.00; F: 0.00
KLA A 1063.02, Sample: 219/1, CA: ReM: S,
Period 8B

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

	n	sq	ec
<i>Anotylus tetracarinatus</i>	4	-	rt
<i>Stenus</i> sp A	4	-	u
<i>Anotylus nitidulus</i>	3	-	rt-d
<i>Bembidion (Philochthus)</i> <i>iricolor</i>	2	-	oa
<i>Helophorus</i> sp	2	-	oa-w
<i>Oxytelus sculptus</i>	2	-	rt-st
Aleocharinae sp A	2	-	u
Aleocharinae sp D	2	-	u
<i>Aphodius contaminatus</i>	2	-	oa-rf
<i>Aphodius ?prodromus</i>	2	-	ob-rf
<i>Clivina ?fossor</i>	1	-	oa
Carabidae sp	1	-	ob
<i>Helophorus ?aquaticus</i>	1	-	oa-w
<i>Cercyon</i> sp	1	-	u
<i>Megasternum obscurum</i>	1	-	rt
Ptiliidae sp	1	-	u
Scydmaenidae sp	1	-	u
<i>Platystethus nitens</i>	1	-	oa-d
<i>Stenus</i> sp B	1	-	u
<i>Leptacinus</i> sp	1	-	rt-st
<i>Gyrophypnus angustatus</i>	1	-	rt-st
<i>Philonthus</i> sp	1	-	u
<i>Cordalia obscura</i>	1	-	rt-sf
Aleocharinae sp B	1	-	u
Aleocharinae sp C	1	-	u
<i>Aphodius</i> sp	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Corticaria</i> sp	1	-	rt-sf
<i>Corticaria</i> or <i>Cortinicara</i> sp	1	-	rt
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st
<i>Gastrophysa polygona</i>	1	-	oa-p
Chrysomelinae sp	1	-	oa-p
<i>Phyllotreta nemorum</i> group	1	-	oa-p
<i>Sitona</i> sp A	1	-	oa-p
<i>Sitona</i> sp B	1	-	oa-p
<i>Sitophilus granarius</i>	1	-	g-ss
? <i>Gymnetron</i> 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

Wt: 1.00 kg; E: 0.00; F: 0.00
KLA A 1063.02, Sample: 219/T, CA: ReM: R,
Period 8B

17 Recorded in flot and on filter paper.

	n	sq	ec
<i>Anotylus nitidulus</i>	73	-	rt-d
<i>Trechus obtusus</i>	18	-	oa
<i>Aphodius contaminatus</i>	18	-	oa-rf
<i>Aphodius prodromus</i>	16	-	ob-rf
<i>Anotylus sculpturatus</i> group	11	-	rt
<i>Corticaria</i> sp	8	-	rt
<i>Lathridius minutus</i> group	7	-	rd-st
<i>Corticaria gibbosa</i>	7	-	rt
<i>Gastrophysa polygona</i>	7	-	oa-p
Aleocharinae sp C	6	-	u
<i>Calathus fuscipes</i>	5	-	oa
<i>Carpelimus pusillus</i>	5	-	rt-sf
<i>Anotylus tetracarinatus</i>	5	-	rt
<i>Gyrophypnus fracticornis</i>	5	-	rt-st
<i>Aphodius fimetarius</i>	5	-	oa-rf
<i>Phyllotreta nemorum</i> group	5	-	oa-p
<i>Longitarsus</i> sp	5	-	oa-p
Auchenorrhyncha sp A	4	-	oa-p
? <i>Gabrieus</i> sp	4	-	rt
<i>Conomelus anceps</i>	3	-	oa-p
<i>Trechus quadristriatus</i>	3	-	oa
<i>Bembidion lampros</i>	3	-	oa
<i>Amara</i> sp B	3	-	oa
<i>Harpalus rufipes</i>	3	-	oa
<i>Platystethus arenarius</i>	3	-	rf
<i>Falagria caesa</i>	3	-	rt-st
<i>Simplocaria ?semistriata</i>	3	-	oa-p
<i>Chaetocnema concinna</i>	3	-	oa-p
<i>Saldula ?saltatoria</i>	2	-	oa-d
Auchenorrhyncha sp B	2	-	oa-p
<i>Calathus ?piceus</i>	2	-	oa
<i>Helophorus aquaticus</i> or <i>grandis</i>	2	-	oa-w
<i>Helophorus</i> sp	2	-	oa-w
<i>Omalium caesum</i> or <i>italicum</i>	2	-	rt-sf
<i>Platystethus nitens</i>	2	-	oa-d
<i>Anotylus rugosus</i>	2	-	rt
<i>Stenus</i> sp A	2	-	u
<i>Xantholinus linearis</i> or <i>longiventris</i>	2	-	rt-sf
<i>Philonthus</i> sp A	2	-	u
<i>Philonthus</i> sp B	2	-	u

<i>Aleocharinae</i> sp D	2	-	u		<i>Corticaria</i> sp	1	-	rt-sf
<i>Aleocharinae</i> sp E	2	-	u		<i>Palorus ratzeburgi</i>	1	-	g-ss
<i>Geotrupes spiniger</i>	2	-	oa-rf		<i>Rabocerus foveolatus</i>	1	-	l
<i>Oryzaephilus surinamensis</i>	2	-	g-ss		<i>Chrysomelinae</i> sp	1	-	oa-p
<i>Cryptophagus</i> sp	2	-	rd-sf		<i>Phyllotreta</i> sp	1	-	oa-p
<i>Atomaria</i> sp	2	-	rd		<i>Psylliodes</i> sp A	1	-	oa-p
<i>Rhizobius litura</i>	2	-	oa-p		<i>Psylliodes</i> sp B	1	-	oa-p
<i>Enicmus</i> sp	2	-	rt-sf		<i>Halticinae</i> sp	1	-	oa-p
<i>Ceutorhynchus erysimi</i>	2	-	oa-p		<i>Apion (Oxystoma)</i> sp	1	-	oa-p
<i>Lygaeidae</i> sp	1	-	oa-p		<i>Ceutorhynchus contractus</i>	1	-	oa-p
<i>Anthocoris</i> sp	1	-	oa-p		<i>Ceutorhynchus</i> sp A	1	-	oa-p
<i>Delphacidae</i> sp	1	-	oa-p		<i>Ceutorhynchus</i> sp B	1	-	oa-p
<i>Auchenorrhyncha</i> sp C	1	-	oa-p		<i>Ceutorhynchus</i> sp C	1	-	oa-p
<i>Nebria brevicollis</i>	1	-	oa		<i>Coleoptera</i> sp	1	-	u
<i>Clivina fossor</i>	1	-	oa		* <i>Coccoidea</i> sp	15	-	u
<i>Bembidion</i> sp A	1	-	oa		* <i>Coleoptera</i> sp (larva)	15	m	u
<i>Bembidion</i> sp B	1	-	oa		* <i>Acarina</i> sp	15	m	u
<i>Pterostichus cupreus</i>	1	-	oa		* <i>Diptera</i> sp (adult)	15	m	u
<i>Pterostichus niger</i>	1	-	oa		* <i>Diptera</i> sp (puparium)	15	m	u
<i>Pterostichus</i> sp	1	-	ob		* <i>Insecta</i> sp pupa	15	m	u
<i>Amara</i> sp A	1	-	oa		* <i>Araneae</i> sp	6	s	u
<i>Hydroporinae</i> sp	1	-	oa-w		* <i>Auchenorrhyncha</i> sp (nymph)	5	-	oa-p
<i>Helophorus nubilus</i>	1	-	oa		* <i>Psyllidae</i> sp (nymph)	4	-	oa-p
<i>Helophorus tuberculatus</i>	1	-	oa		* <i>Hymenoptera</i> sp	2	-	u
<i>Cercyon ?atricapillus</i>	1	-	rf-st		* <i>Aphidoidea</i> sp	1	-	u
<i>Cercyon</i> sp	1	-	u		* <i>Daphnia</i> sp (ephippium)	1	-	oa-w
<i>Hydrobius fuscipes</i>	1	-	oa-w		* <i>Dermaptera</i> sp	1	-	u
<i>Onthophilus striatus</i>	1	-	rt		* <i>Siphonaptera</i> sp	1	-	u
<i>Histeridae</i> sp	1	-	u		Wt: 4.70 kg; E: 0.00; F: 0.00			
<i>Ochthebius</i> sp	1	-	oa-w		KLA A 1063.04, Sample: 220/1, CA: ReM: D,			
<i>Ptenidium</i> sp	1	-	rt		Period 8B			
<i>Catops</i> sp	1	-	u					
<i>Silphidae</i> sp	1	-	u	18	Assessment record; appears to be at rapid scan			
<i>Micropeplus fulvus</i>	1	-	rt		level. One-dish flot, many seeds. Recorded in			
<i>Carpelimum bilineatus</i>	1	-	rt-sf		flot, problems on paper.			
<i>Stenus</i> sp B	1	-	u			n	sq	ec
<i>Gyrophypnus ?angustatus</i>	1	-	rt-st		<i>Anotylus nitidulus</i>	6	s	rt-d
<i>Xantholinus glabratus</i>	1	-	rt		<i>Aphodius</i> sp	6	s	ob-rf
<i>Neobisnius</i> sp	1	-	u		<i>Trechus obtusus</i> or			
<i>Philonthus</i> sp C	1	-	u		<i>quadristriatus</i>	2	-	oa
<i>Quedius boops</i> group	1	-	u		<i>Bembidion lampros</i> or			
<i>Quedius cinctus</i>	1	-	rt		<i>properans</i>	1	-	oa
<i>Tachyporus</i> sp A	1	-	u		? <i>Cercyon</i> sp	1	-	u
<i>Tachyporus</i> sp B	1	-	u		<i>Carpelimum pusillus</i> group	1	-	u
<i>Tachinus ?signatus</i>	1	-	u		<i>Platystethus cornutus</i> group	1	-	oa-d
<i>Cordalia obscura</i>	1	-	rt-sf		<i>Anotylus tetracarinatedus</i>	1	-	rt
<i>Aleochara</i> sp	1	-	u		<i>Philonthus</i> sp	1	-	u
<i>Aleocharinae</i> sp A	1	-	u		<i>Aleocharinae</i> sp A	1	-	u
<i>Aleocharinae</i> sp B	1	-	u		<i>Aleocharinae</i> sp B	1	-	u
<i>Aphodius granarius</i>	1	-	ob-rf		<i>Geotrupes</i> sp	1	-	oa-rf
<i>Aphodius</i> sp	1	-	ob-rf		<i>Aphodius</i> sp B	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p		<i>Cryptolestes ferrugineus</i>	1	-	g-ss
<i>Cleridae</i> sp	1	-	u		<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Brachypterus</i> sp	1	-	oa-p		<i>Atomaria</i> sp	1	-	rd
<i>Meligethes</i> sp	1	-	oa-p		<i>Corticaria</i> sp	1	-	rt-sf
<i>Omosita</i> sp	1	-	rt-sf		<i>Phyllotreta nemorum</i> group	1	-	oa-p
<i>Ephistemus globulus</i>	1	-	rd-sf		* <i>Coleoptera</i> sp (larva)	15	m	u
<i>Olibrus</i> sp	1	-	oa-p		* <i>Diptera</i> 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
 Wt: 1.00 kg; E: 2.00; F: 3.00
 KLA A 1063.04, Sample: 220/T, CA: ReM: RS,
 Period 8B

19 Small flot with high proportion of invertebrate material. Some seeds and plant debris. Recorded in flot and on filter paper.

	n	sq	ec
<i>Oryzaephilus surinamensis</i>	28	-	g-ss
<i>Cryptolestes ferrugineus</i>	10	-	g-ss
<i>Lathridius minutus</i> group	10	-	rd-st
Aleocharinae sp C	7	-	u
<i>Cercyon analis</i>	5	-	rt-sf
<i>Falagria caesa</i>	5	-	rt-st
<i>Aphodius prodromus</i>	5	-	ob-rf
<i>Cryptophagus</i> sp	5	-	rd-sf
<i>Anotylus rugosus</i>	4	-	rt
<i>Carpelimus bilineatus</i>	3	-	rt-sf
<i>Anotylus nitidulus</i>	3	-	rt-d
<i>Anotylus tetracarlinatus</i>	3	-	rt
<i>Oxytelus sculptus</i>	3	-	rt-st
Aleocharinae sp A	3	-	u
Aleocharinae sp D	3	-	u
<i>Ptinus fur</i>	3	-	rd-sf
<i>Trechus ?obtus</i>	2	-	oa
<i>Helophorus</i> sp B	2	-	oa-w
<i>Ptenidium</i> sp	2	-	rt
<i>Platystethus arenarius</i>	2	-	rf
Aleocharinae sp B	2	-	u
Aleocharinae sp G	2	-	u
<i>Aphodius granarius</i>	2	-	ob-rf
<i>Meligethes</i> sp	2	-	oa-p
<i>Atomaria</i> sp A	2	-	rd
<i>Sitophilus granarius</i>	2	-	g-ss
<i>Lycocoris campestris</i>	1	-	rd-st
<i>?Nebria brevicollis</i>	1	-	oa
<i>Notiophilus</i> sp	1	-	oa
<i>Bembidion ?saxatile</i>	1	-	oa-d
<i>Bembidion</i> sp	1	-	oa
<i>Pterostichus diligens</i>	1	-	oa-d
<i>Pterostichus ?melanarius</i>	1	-	ob
<i>?Laemostenus terricola</i>	1	-	ss
<i>Amara</i> sp	1	-	oa
Carabidae sp A	1	-	ob
Carabidae sp B	1	-	ob
Hydroporinae sp	1	-	oa-w
<i>Helophorus</i> sp A	1	-	oa-w
<i>Cercyon atricapillus</i>	1	-	rf-st
<i>Cercyon</i> sp	1	-	u
<i>Hydrobius fuscipes</i>	1	-	oa-w
<i>Acritis nigricornis</i>	1	-	rt-st
Histeridae sp	1	-	u
Ptiliidae sp	1	-	u
Silphidae sp	1	-	u

Scydmaenidae sp	1	-	u
<i>Lesteva ?longoelytrata</i>	1	-	oa-d
<i>Omalium caesum or italicum</i>	1	-	rt-sf
<i>Omalium rivulare</i>	1	-	rt-sf
<i>Xylodromus concinnus</i>	1	-	rt-st
<i>Platystethus nitens</i>	1	-	oa-d
<i>Stenus</i> sp	1	-	u
<i>Lathrobium</i> sp	1	-	u
<i>Gyrohypnus angustatus</i>	1	-	rt-st
<i>Philonthus</i> sp	1	-	u
<i>Gabrius</i> sp	1	-	rt
<i>Tachinus</i> sp	1	-	u
<i>Cilea silphoides</i>	1	-	rt-st
Aleocharinae sp E	1	-	u
Aleocharinae sp F	1	-	u
<i>Aphodius ?fimetarius</i>	1	-	oa-rf
Elateridae sp	1	-	ob
<i>Anobium punctatum</i>	1	-	l-sf
<i>Brachypterus</i> sp	1	-	oa-p
<i>Monotoma</i> sp	1	-	rt-sf
<i>Atomaria</i> sp B	1	-	rd
<i>Enicmus</i> sp	1	-	rt-sf
<i>Corticaria</i> sp	1	-	rt-sf
<i>Corticarina</i> sp	1	-	rt
<i>Palorus ratzeburgi</i>	1	-	g-ss
Chrysomelinae sp	1	-	oa-p
<i>Apion</i> sp	1	-	oa-p
<i>Notaris acridulus</i>	1	-	oa-dp
<i>Ceutorhynchus erysimi</i>	1	-	oa-p
<i>Gymnetron ?pascuorum</i>	1	-	oa-p
*Coleoptera sp (larva)	15	m	u
*Acarina sp	15	m	u
*Auchenorrhyncha sp (nymph)	8	-	oa-p
*Diptera sp (puparium)	6	s	u
*Coccoidea sp	3	-	u
*Araneae sp	3	-	u
*Diptera sp (adult)	2	-	u
* <i>Daphnia</i> sp (ephippium)	1	-	oa-w
Wt: 2.60 kg; E: 0.00; F: 0.00 KLA A 1064.02, Sample: 244/1, CA: ReM: S, Period 7			

20 Assessment record as rapid scan. One-dish flot, many seeds. Recorded in flot.

	n	sq	ec
<i>Oryzaephilus surinamensis</i>	6	s	g-ss
<i>Cryptophagus ?scutellatus</i>	2	-	rd-st
<i>Palorus ratzeburgi</i>	2	-	g-ss
<i>Apion</i> sp	2	-	oa-p
Hemiptera sp	1	-	u
<i>Bembidion</i> sp	1	-	oa
Carabidae sp A	1	-	ob
Carabidae sp B	1	-	ob
<i>?Xylodromus concinnus</i>	1	-	rt-st
<i>Carpelimus ?bilineatus</i>	1	-	rt-sf
<i>Gyrohypnus fracticornis</i>	1	-	rt-st
<i>Falagria</i> sp	1	-	rt-sf
Aleocharinae sp A	1	-	u

	Aleocharinae sp B	1	-	u		<i>Trechus obtusus</i>	1	-	oa	
	Aleocharinae sp C	1	-	u		<i>Bembidion lampros</i>	1	-	oa	
	<i>Aphodius</i> sp	1	-	ob-rf		<i>Pterostichus</i> sp	1	-	ob	
	?Elateridae sp	1	-	ob		<i>Helophorus</i> sp A	1	-	oa-w	
	<i>Anobium punctatum</i>	1	-	l-sf		<i>Onthophilus striatus</i>	1	-	rt	
	<i>Ptinus ?fur</i>	1	-	rd-sf		Silphidae sp	1	-	u	
	? <i>Meligethes</i> sp	1	-	oa-p		<i>Lesteva longoelytrata</i>	1	-	oa-d	
	<i>Cryptolestes ferrugineus</i>	1	-	g-ss		<i>Omalius ?caesum</i>	1	-	rt-sf	
	<i>Lathridius minutus</i> group	1	-	rd-st		<i>Carpelimus corticinus</i>	1	-	oa-d	
	<i>Corticaria</i> sp	1	-	rt-sf		<i>Oxytelus sculptus</i>	1	-	rt-st	
	Chrysomelinae sp	1	-	oa-p		<i>Leptacinus</i> sp	1	-	rt-st	
	<i>Phyllotreta</i> sp	1	-	oa-p		<i>Xantholinus</i> sp	1	-	u	
	Curculionidae sp	1	-	oa		<i>Philonthus</i> sp	1	-	u	
	*Acarina sp	6	s	u		<i>Gabrieus</i> sp	1	-	rt	
	*Diptera sp (puparium)	6	s	u		<i>Tachinus</i> sp	1	-	u	
	* <i>Daphnia</i> sp (ephippium)	1	-	oa-w		<i>Cilea silphoides</i>	1	-	rt-st	
	Wt: 1.00 kg; E: 3.00; F: 3.00					Tachyporinae sp	1	-	u	
	KLA A 1064.02, Sample: 244/T, CA: ReM: R,					<i>Cordalia obscura</i>	1	-	rt-sf	
	Period 7					<i>Falagria</i> sp	1	-	rt-sf	
21	Assessment record treated as rapid scan. One-dish flot, many seeds. Recorded in flot.					<i>Aleochara</i> sp	1	-	u	
		n	sq	ec		Aleocharinae sp A	1	-	u	
	<i>Carabidae</i> sp	1	-	ob		Aleocharinae sp C	1	-	u	
	<i>Helophorus</i> sp	1	-	oa-w		Aleocharinae sp D	1	-	u	
	<i>Anotylus ?nitidulus</i>	1	-	rt-d		Aleocharinae sp E	1	-	u	
	<i>Aphodius</i> sp	1	-	ob-rf		<i>Aphodius</i> sp	1	-	ob-rf	
	<i>Anobium punctatum</i>	1	-	l-sf		<i>Simplocaria ?semistriata</i>	1	-	oa-p	
	<i>Meligethes</i> sp	1	-	oa-p		Elateridae sp	1	-	ob	
	*Diptera sp (puparium)	1	-	u		<i>Anobium punctatum</i>	1	-	l-sf	
	Wt: 1.00 kg; E: 4.00; F: 3.00					<i>Meligethes</i> sp	1	-	oa-p	
	KLA A 1064.03, Sample: 232/T, CA: ReM: R,					<i>Monotoma</i> sp	1	-	rt-sf	
	Period 7					<i>Atomaria</i> sp	1	-	rd	
22	Small flot, mostly invertebrates, some sand and many seeds. Recorded in flot and on filter paper.					<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st	
		n	sq	ec		<i>Plateumaris</i> sp	1	-	oa-dp	
	<i>Oryzaephilus surinamensis</i>	12	-	g-ss		<i>Chaetocnema concinna</i>	1	-	oa-p	
	<i>Lathridius minutus</i> group	6	-	rd-st		Halticinae sp	1	-	oa-p	
	<i>Gyrophypnus angustatus</i>	5	-	rt-st		? <i>Barypeithes</i> sp	1	-	oa-p	
	<i>Cryptolestes ferrugineus</i>	5	-	g-ss		<i>Ceutorhynchus</i> sp	1	-	oa-p	
	<i>Anotylus rugosus</i>	3	-	rt		*Auchenorrhyncha sp (nymph)	16	-	oa-p	
	Aleocharinae sp B	3	-	u		*Coleoptera sp (larva)	15	m	u	
	<i>Aphodius contaminatus</i>	3	-	oa-rf		*Diptera sp (puparium)	15	m	u	
	<i>Helophorus</i> sp B	2	-	oa-w		*Acarina sp	6	s	u	
	<i>Cercyon analis</i>	2	-	rt-sf		*Insecta sp (larva)	6	s	u	
	<i>Acritus nigricornis</i>	2	-	rt-st		*Coccoidea sp	2	-	u	
	<i>Carpelimus bilineatus</i>	2	-	rt-sf		*Araneae sp	2	-	u	
	<i>Platystethus arenarius</i>	2	-	rf		*Bibionidae sp	2	-	u	
	<i>Anotylus nitidulus</i>	2	-	rt-d		*Opiliones sp	1	-	u	
	<i>Anotylus tetracarinated</i>	2	-	rt		Wt: 3.00 kg; E: 0.00; F: 0.00				
	<i>Tachyporus hypnorum</i>	2	-	u		KLA A 1067.01, Sample: 233/1, CA: ReM: D,				
	<i>Cryptophagus</i> sp	2	-	rd-sf		Period 8B				
	<i>Corticaria</i> sp	2	-	rt-sf		23	Assessment record treated as rapid scan. One-dish flot, many seeds and some moss. Recorded in flot and on filter paper.			
	<i>Palorus ratzeburgi</i>	2	-	g-ss				n	sq	ec
	<i>Sitophilus granarius</i>	2	-	g-ss		<i>Anotylus rugosus</i>	3	-	rt	
	Auchenorrhyncha sp	1	-	oa-p		Aleocharinae sp A	2	-	u	
	<i>Clivina fossor</i>	1	-	oa		<i>Oryzaephilus surinamensis</i>	2	-	g-ss	

<i>Lathridius minutus</i> group	2	-	rd-st
<i>Corticaria</i> sp	2	-	rt-sf
Halticinae sp	2	-	oa-p
<i>Sitophilus granarius</i>	2	-	g-ss
Hemiptera sp	1	-	u
<i>Clivina fossor</i>	1	-	oa
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Bembidion</i> sp A	1	-	oa
<i>Bembidion</i> sp B	1	-	oa
Carabidae sp A	1	-	ob
Carabidae sp B	1	-	ob
<i>Cercyon analis</i>	1	-	rt-sf
<i>Cercyon</i> sp A	1	-	u
<i>Cercyon</i> sp B	1	-	u
<i>Megasternum obscurum</i>	1	-	rt
<i>Carpelimus bilineatus</i>	1	-	rt-sf
<i>Oxytelus sculptus</i>	1	-	rt-st
<i>Stenus</i> sp	1	-	u
<i>Gyrophypnus</i> sp	1	-	rt
<i>Xantholinus</i> sp	1	-	u
<i>Cordalia obscura</i>	1	-	rt-sf
Aleocharinae sp B	1	-	u
<i>Aphodius</i> sp A	1	-	ob-rf
<i>Aphodius</i> sp B	1	-	ob-rf
<i>Anobium punctatum</i>	1	-	l-sf
<i>Monotoma</i> sp	1	-	rt-sf
<i>Cryptolestes ferrugineus</i>	1	-	g-ss
? <i>Tenebrio obscurus</i>	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
*Auchenorrhyncha sp (nymph)	1	-	oa-p
Wt: 1.00 kg; E: 2.00; F: 2.00			
KLA A 1067.01, Sample: 233/T, CA: ReM: R, Period 8B			

24 Assessment record treated as rapid scan.
One-dish flot with many seeds. One modern
Dienerella.

	n	sq	ec
Carabidae sp	1	-	ob
<i>Helophorus</i> sp	1	-	oa-w
<i>Cercyon analis</i>	1	-	rt-sf
Aleocharinae sp	1	-	u
<i>Aphodius</i> sp A	1	-	ob-rf
<i>Aphodius</i> sp B	1	-	ob-rf
? <i>Cryptophagus</i> sp	1	-	rd-sf
<i>Atomaria</i> sp	1	-	rd
<i>Lathridius minutus</i> group	1	-	rd-st
<i>Corticaria</i> sp	1	-	rt-sf
<i>Apion</i> sp	1	-	oa-p
Coleoptera sp	1	-	u
*? <i>Heterodera</i> sp (cyst)	15	m	u

* <i>Daphnia</i> 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
Wt: 0.98 kg; E: 4.00; F: 4.00			
KLA A 1096.01, Sample: 239/T, CA: ReM: R, Period 3-5			

25 Two-dish flot. Recorded in flot, problems on
filter paper.

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

	<i>Brachypterus</i> sp	1	-	oa-p					charcoal (to 5 mm). Recorded in flot. Fragments of cuticle and two taxa listed.			
	<i>Meligethes</i> sp	1	-	oa-p								
	<i>Oryzaephilus ?surinamensis</i>	1	-	g-ss			n	sq	ec			
	<i>Atomaria</i> sp	1	-	rd								
	<i>Enicmus</i> sp	1	-	rt-sf					<i>Cercyon</i> sp			
	<i>Corticaria</i> sp	1	-	rt-sf					1	-	u	
	<i>Corticaria</i> sp A	1	-	rt-sf					Xantholininae	1	-	u
	Salpingidae sp	1	-	l					Wt: 1.00 kg; E: 0.00; F: 0.00			
	<i>Gastrophysa ?viridula</i>	1	-	oa-p					KLA B 93.01, Sample: 33/T, CA: ReM: R, Period 8B			
	Chrysomelinae sp	1	-	oa-p	29				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.			
	<i>Phyllotreta</i> sp	1	-	oa-p						n	sq	ec
	<i>Apion</i> sp	1	-	oa-p					<i>Megasternum obscurum</i>	1	-	rt
	<i>Notaris acridulus</i>	1	-	oa-dp					<i>Rugilus</i> sp	1	-	rt
	*Acarina sp	15	m	u					?Elateridae sp	1	-	ob
	* <i>Daphnia</i> sp (ephippium)	15	m	oa-w					?Curculionidae sp	1	-	oa
	*Oligochaeta sp (egg capsule)	6	s	u					Wt: 1.00 kg; E: 0.00; F: 0.00			
	*Diptera sp (pupa)	6	s	u					KLA B 93.02, Sample: 34/T, CA: ReM: R, Period 8B			
	*Diptera sp (puparium)	6	s	u								
	*Auchenorrhyncha sp (nymph)	1	-	oa-p					30			
	*Bibionidae sp	1	-	u					Assessment record as rapid scan. One-dish flot, some sand and plant debris. Recorded in flot.			
	*Chalcidoidea sp	1	-	u						n	sq	ec
	*Hymenoptera sp	1	-	u					Lygaeidae sp	1	-	oa-p
	*Diptera sp (larva)	1	-	u					Carabidae sp	1	-	ob
	Wt: 1.80 kg; E: 0.00; F: 0.00								? <i>Ochthebius</i> sp	1	-	oa-w
	KLA A 1096.02, Sample: 238/1, CA: ReM: D, Period 3-5								<i>Tachyporus</i> sp	1	-	u
26	Assessment record treated as rapid scan. One-dish flot with many seeds. Recorded in flot.								Staphylinidae sp	1	-	u
			n	sq	ec				<i>Geotrupes</i> sp	1	-	oa-rf
									<i>Aphodius</i> sp	1	-	ob-rf
									<i>Aphodius</i> sp B	1	-	ob-rf
									<i>Corticarina</i> or <i>Corticicara</i> sp	1	-	rt
									*Coleoptera sp (larva)	2	-	u
									*Diptera sp (puparium)	2	-	u
									*Auchenorrhyncha sp (nymph)	1	-	oa-p
									*Acarina sp	1	-	u
									Wt: 1.00 kg; E: 3.00; F: 3.00			
									KLA B 97, Sample: 51/T, CA: ReM: R, Period 9			
									31			
									One-dish flot, mainly charcoal (to 5 mm) and some sand. A few pieces of plant debris. No invertebrates seen.			
										n	sq	ec
									null	0	-	u
									Wt: 1.00 kg; E: 0.00; F: 0.00			
									KLA B 99.02, Sample: 29/T, CA: ReM: S, Period 8B			
27	One-dish flot, sand and charcoal (to 5 mm). No invertebrates seen.								32			
									Assessment record as rapid scan. One-dish flot, charcoal to 10 mm and a little plant debris. Recorded in flot.			
										n	sq	ec
									<i>Megasternum obscurum</i>	2	-	rt
									<i>Oryzaephilus surinamensis</i>	1	-	g-ss
									Curculionidae sp	1	-	oa
									Coleoptera sp	1	-	u
28	Washover. Assessment record as rapid scan. Three-dish flot, mostly plant debris and											

	*Oligochaeta sp (egg capsule) 1 - u Wt: 1.00 kg; E: 0.00; F: 0.00 KLAB 187, Sample: 48/T, CA: ReM: R, Period 9		*Diptera sp (puparium) 6 s u Wt: 0.89 kg; E: 0.00; F: 0.00 KLA B 358.02, Sample: 66/T, CA: ReM: R, Period 7-8A	
33	Washover. Rapid scan record from assessment notes. Recorded in spirit, problems on filter paper.		36	Washover. Assessment record as rapid scan. Recorded in spirit, problems on filter paper.
		n sq ec		n sq ec
	<i>Cercyon</i> sp 2 - u			<i>Oryzaeophilus surinamensis</i> 2 - g-ss
	Carabidae sp 1 - ob			<i>Helophorus</i> sp 1 - oa-w
	<i>Aphodius</i> sp 1 - ob-rf			<i>Cercyon</i> sp 1 - u
	<i>Oryzaeophilus surinamensis</i> 1 - g-ss			<i>Anotylus</i> sp 1 - rt
	<i>Apion</i> sp 1 - oa-p			Aleocharinae sp 1 - u
	Curculionidae sp A 1 - oa			<i>Aphodius</i> sp A 1 - ob-rf
	Curculionidae sp B 1 - oa			<i>Aphodius</i> sp B 1 - ob-rf
	?Scolytidae sp 1 - l			<i>Cryptolestes ferrugineus</i> 1 - g-ss
	*?Heterodera sp (cyst) 15 m u			<i>Atomaria</i> sp 1 - rd
	*Diptera sp (puparium) 6 s u			<i>Lathridius minutus</i> group 1 - rd-st
	*Coleoptera sp (larva) 5 - u			Curculionidae sp 1 - oa
	Wt: 1.0 kg; E: 0.00; F: 0.00			*?Heterodera sp (cyst) 6 s u
	KLA B 219, Sample: 54/T1, CA: ReM: R, Period 6			*Coleoptera sp (larva) 3 - u
				*Acarina sp 2 - u
34	Washover. Mostly charcoal and sand, some seeds and plant debris. Recorded in washover.			*Oligochaeta sp (egg capsule) 1 - u
		n sq ec		*Diptera sp (puparium) 1 - u
	Coleoptera sp 1 - u			Wt: 1.00 kg; E: 0.00; F: 0.00
	Wt: 1.00 kg; E: 0.00; F: 0.00			KLA B 358.04, Sample: 71/T, CA: ReM: R, Period 7-8A
	KLA B 224, Sample: 59/T, CA: ReM: S, Period 5A			
			37	Three-dish washover; charcoal.
35	Assessment record as rapid scan. Recorded in flot, problems on filter paper (some to tube).			n sq ec
		n sq ec		null 0 - u
	<i>Cercyon analis</i> 3 - rt-sf			Wt: 1.00 kg; E: 0.00; F: 0.00
	<i>Megasternum obscurum</i> 2 - rt			KLAB 728, Sample: 192/T, CA: ReM: S, Period 11D-12
	<i>Anotylus rugosus</i> 2 - rt			
	<i>Cordalia obscura</i> 2 - rt-sf			38
	<i>Helophorus</i> sp A 1 - oa-w			Two-dish washover; recorded in spirit. Charcoal (to 8 mm) and sand.
	<i>Helophorus</i> sp B 1 - oa-w			n sq ec
	<i>Cercyon atricapillus</i> 1 - rf-st			null 0 - u
	<i>Onthophilus striatus</i> 1 - rt			Wt: 1.00 kg; E: 0.00; F: 0.00
	<i>Platystethus</i> sp 1 - oa-d			KLA B 975, Sample: 197/T, CA: ReM: S, Period 10C
	<i>Stenus</i> sp 1 - u			
	<i>Gyrohypnus fracticornis</i> 1 - rt-st			39
	Xantholininae sp 1 - u			Assessment as rapid scan. One-dish flot, mostly charcoal and sand, trace of plant debris.
	<i>Tachinus</i> sp 1 - u			n sq ec
	Aleocharinae sp 1 - u			<i>Oryzaeophilus surinamensis</i> 2 - g-ss
	Staphylinidae sp 1 - u			?Carabidae sp 1 - ob
	<i>Aphodius</i> sp 1 - ob-rf			<i>Aphodius</i> sp 1 - ob-rf
	<i>Cryptolestes ferrugineus</i> 1 - g-ss			Wt: 1.00 kg; E: 0.00; F: 0.00
	<i>Oryzaeophilus surinamensis</i> 1 - g-ss			KLA B 1065, Sample: 200/T, CA: ReM: R, Period 10C
	<i>Lathridius minutus</i> group 1 - rd-st			
	<i>Corticaria</i> sp 1 - rt-sf			40
	<i>Apion</i> sp 1 - oa-p			Recorded in washover of three dishes; charcoal to 20 mm and plant debris.
	<i>Sitophilus granarius</i> 1 - g-ss			n sq ec
	Curculionidae sp 1 - oa			<i>Oryzaeophilus surinamensis</i> 1 - g-ss
	*Coleoptera sp (larva) 6 s u			Coleoptera sp 1 - u

*?Heterodera sp (cyst) 6 s u
 Wt: 1.00 kg; E: 0.00; F: 0.00
 KLA B 1186, Sample: 203/T, CA: ReM: R,
 Period 9

41 Assessment record as rapid scan. Four-
 dish flot, mainly plant debris. Recorded
 in flot.

	n	sq	ec
<i>Carpelimus</i> sp	15	m	u
<i>Anotylus rugosus</i>	6	s	rt
<i>Anotylus sculpturatus</i> group	6	s	rt
<i>Cryptolestes ferrugineus</i>	6	s	g-ss
<i>Aphodius</i> sp A	3	-	ob-rf
<i>Lathridius minutus</i> group	3	-	rd-st
<i>Sitophilus granarius</i>	3	-	g-ss
<i>Cercyon</i> sp A	2	-	u
<i>Neobisnius</i> sp	2	-	u
<i>Philonthus</i> sp	2	-	u
<i>Ptinus</i> sp	2	-	rd-sf
<i>Oryzaeophilus surinamensis</i>	2	-	g-ss
<i>Orthoperus</i> sp	2	-	rt
Hemiptera sp A	1	-	u
Hemiptera sp B	1	-	u
<i>Trechus micros</i>	1	-	u
Carabidae sp	1	-	ob
<i>Helophorus</i> sp A	1	-	oa-w
<i>Helophorus</i> sp B	1	-	oa-w
<i>Cercyon</i> sp B	1	-	u
<i>Megasternum obscurum</i>	1	-	rt
<i>Onthophilus striatus</i>	1	-	rt
<i>Omalius</i> sp	1	-	rt
<i>Coprophilus striatulus</i>	1	-	rt-st
<i>Carpelimus fuliginosus</i>	1	-	st
<i>Platystethus arenarius</i>	1	-	rf
<i>Platystethus cornutus</i> group	1	-	oa-d
<i>Anotylus nitidulus</i>	1	-	rt-d
<i>Anotylus tetracarinated</i>	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
<i>Aphodius</i> sp B	1	-	ob-rf
Elateridae sp	1	-	ob
<i>Rhizophagus</i> sp	1	-	u
<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Typhaea stercorea</i>	1	-	rd-ss
Halticinae sp	1	-	oa-p
?Curculionidae sp	1	-	oa
*Acarina sp	6	s	u
*Coleoptera sp (larva)	1	-	u
*Araneae sp	1	-	u
*Diptera sp (puparium)	1	-	u
*Insecta sp (pupa)	1	-	u
Wt: 1.00 kg; E: 0.00; F: 0.00 KLA B 1204.02, Sample: 222/T, CA: ReM: RS, Period 9			

42 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
<i>Aphodius</i> sp	12	-	ob-rf
<i>Anotylus nitidulus</i>	8	-	rt-d
<i>Lathridius minutus</i> group	6	-	rd-st
<i>Platystethus arenarius</i>	5	-	rf
<i>Scolopostethus</i> sp	4	-	oa-p
<i>Helophorus</i> sp	4	-	oa-w
<i>Aleochara</i> sp	4	-	u
Aleocharinae sp E	4	-	u
<i>Cercyon ?haemorrhoidalis</i>	3	-	rf-sf
<i>Megasternum obscurum</i>	3	-	rt
<i>Anotylus rugosus</i>	3	-	rt
<i>Anotylus tetracarinated</i>	3	-	rt
<i>Ephistemus globulus</i>	3	-	rd-sf
<i>Cryptopleurum minutum</i>	2	-	rf-st
<i>Ochthebius ?minimus</i>	2	-	oa-w
<i>Ptenidium</i> sp	2	-	rt
Aleocharinae sp B	2	-	u
<i>Atomaria</i> sp	2	-	rd
<i>Corticaria</i> sp A	2	-	rt-sf
<i>Nebria ?brevicollis</i>	1	-	oa
<i>Dyschirius ?globosus</i>	1	-	oa
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Calathus</i> sp	1	-	oa
Carabidae sp	1	-	ob
<i>Helophorus grandis</i>	1	-	oa-w
<i>Sphaeridium</i> sp	1	-	rf
<i>Cercyon ?terminatus</i>	1	-	rf-st
<i>Onthophilus striatus</i>	1	-	rt
Histerinae sp	1	-	rt
<i>Coprophilus striatulus</i>	1	-	rt-st
<i>Carpelimus ?bilineatus</i>	1	-	rt-sf
<i>Othius punctulatus</i>	1	-	rt-st
<i>Leptacinus</i> sp	1	-	rt-st
<i>Gyrophypnus ?angustatus</i>	1	-	rt-st
<i>Philonthus</i> sp	1	-	u
Staphylininae sp	1	-	u
<i>Tachinus laticollis</i> or <i>marginellus</i>	1	-	u
<i>Tachinus</i> sp	1	-	u
<i>Falagria</i> or <i>Cordalia</i> sp	1	-	rt-sf
Aleocharinae sp A	1	-	u
Aleocharinae sp C	1	-	u
Aleocharinae sp D	1	-	u
<i>Ptinus</i> sp	1	-	rd-sf
<i>Cryptophagus ?scutellatus</i>	1	-	rd-st
<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Orthoperus</i> sp	1	-	rt
<i>Corticaria</i> sp B	1	-	rt-sf
<i>Corticaria</i> sp	1	-	rt
? <i>Gastrophysa viridula</i>	1	-	oa-p
<i>Phyllotreta nemorum</i> group	1	-	oa-p

	<i>Longitarsus</i> sp	1	-	oa-p					
	<i>Apion</i> sp	1	-	oa-p					
	<i>Sitophilus granarius</i>	1	-	g-ss					
	Curculionidae sp	1	-	oa					
	*Acarina sp	6	s	u					
	*Diptera sp (puparium)	6	s	u					
	*? <i>Spalangia</i> sp	2	-	oa-w					
	*Auchenorrhyncha sp (nymph)	1	-	oa-p					
	* <i>Daphnia</i> sp (ephippium)	1	-	oa-w					
	*Diptera sp (adult)	1	-	u					
	*Oligochaeta sp (egg capsule)	1	-	u					
	Wt: 3.80 kg; E: 0.00; F: 0.00								
	KLA B 1220.02, Sample: 224/1, CA: ReM: S, Period 9								
43	Assessment record as rapid scan. One-dish flot, mostly plant detritus: a few seeds and a little charcoal. Recorded in flot.								
		n	sq	ec					
	<i>Aphodius</i> sp	3	-	ob-rf					
	Dytiscidae sp	1	-	oa-w					
	<i>Helophorus</i> sp	1	-	oa-w					
	<i>Cercyon ?atricapillus</i>	1	-	rf-st					
	<i>Cercyon</i> sp	1	-	u					
	Hydrophilinae sp	1	-	oa-w					
	<i>Acrotrichis</i> sp	1	-	rt					
	<i>Omalium</i> sp	1	-	rt					
	<i>Aleochara</i> sp	1	-	u					
	<i>Cryptophagus scutellatus</i>	1	-	rd-st					
	<i>Lathridius minutus</i> group	1	-	rd-st					
	Chrysomelinae sp	1	-	oa-p					
	*? <i>Heterodera</i> 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					
	Wt: 1.00 kg; E: 4.00; F: 3.00								
	KLA B 1220.02, Sample: 224/T, CA: ReM: R, Period 9								
44	One-dish, recorded in flot.								
		n	sq	ec					
	null	0	-	u					
	Wt: 1.00 kg; E: 0.00; F: 0.00								
	KLA B 1223, Sample: 215/T; CA: ReM: S, Period 5B								
45	One dish washover; sand and charcoal.								
		n	sq	ec					
	null	0	-	u					
	Wt: 1.00 kg; E: 0.00; F: 0.00								
	KLAB1230, Sample: 218/T, CA: ReM: S, Period 2								
46	One-dish flot; charcoal and plant debris.								
		n	sq	ec					
	null	0	-	u					
	Wt: 1.00 kg; E: 0.00; F: 0.00								
	KLAB1231, Sample: 204/T, CA: ReM: S, Period 2								
47	Holly-leaf fragments abundant. Recorded in flot and on filter paper; remains to tube. Preservation rather good.								
		n	sq	ec					
	<i>Lathridius minutus</i> group	9	-	rd-st					
	<i>Oryzaephilus surinamensis</i>	6	-	g-ss					
	<i>Enicmus</i> sp	5	-	rt-sf					
	<i>Apion</i> sp	3	-	oa-p					
	<i>Cryptophagus</i> sp	2	-	rd-sf					
	<i>Corticarina</i> or <i>Cortinicara</i> sp	2	-	rt					
	<i>Aphrodes</i> sp	1	-	oa-p					
	Auchenorrhyncha sp A	1	-	oa-p					
	Auchenorrhyncha sp B	1	-	oa-p					
	<i>Trechus ?quadristriatus</i>	1	-	oa					
	<i>Pterostichus</i> sp	1	-	ob					
	<i>Calathus fuscipes</i>	1	-	oa					
	? <i>Bradycellus</i> sp	1	-	oa					
	Hydroporinae sp	1	-	oa-w					
	<i>Helophorus</i> sp	1	-	oa-w					
	<i>Cercyon analis</i>	1	-	rt-sf					
	<i>Megasternum obscurum</i>	1	-	rt					
	<i>Acrotrichis</i> sp	1	-	rt					
	<i>Catops</i> sp	1	-	u					
	<i>Omalium ?rivulare</i>	1	-	rt-sf					
	<i>Platystethus arenarius</i>	1	-	rf					
	<i>Anotylus nitidulus</i>	1	-	rt-d					
	<i>Anotylus rugosus</i>	1	-	rt					
	<i>Anotylus tetracaratus</i>	1	-	rt					
	<i>Neobisnius</i> sp	1	-	u					
	<i>Philonthus</i> sp	1	-	u					
	<i>Falagria</i> or <i>Cordalia</i> sp	1	-	rt-sf					
	Aleocharinae sp	1	-	u					
	Pselaphidae sp	1	-	u					
	<i>Aphodius contaminatus</i>	1	-	oa-rf					
	Elateridae sp	1	-	ob					
	<i>Ptinus ?fur</i>	1	-	rd-sf					
	<i>Meligethes</i> sp	1	-	oa-p					
	<i>Cryptolestes ?ferrugineus</i>	1	-	g-ss					
	<i>Atomaria</i> sp	1	-	rd					
	<i>Corticaria</i> sp	1	-	rt-sf					
	<i>Palorus ratzeburgi</i>	1	-	g-ss					
	<i>Galerucella</i> 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					
	*Auchenorrhyncha sp (nymph)	1	-	oa-p					
	* <i>Actenicerus sjaelandicus</i> (larva)	1	-	oa					
	*Formicidae sp	1	s	u					
	*Siphonaptera sp	1	-	u					
	Wt: 2.70 kg; E: 0.00; F: 0.00								
	KLAB1234, Sample: 208/1, CA: ReM: S, Period 9								
48	Assessment record as rapid scan. Recorded in flot, problems on filter paper.								
		n	sq	ec					
	<i>Cryptophagus</i> sp	3	-	rd-sf					

<i>Lathridius minutus</i> group	3	-	rd-st
<i>Corticarina</i> sp	3	-	rt
Aleocharinae sp	2	-	u
<i>Oryzaeophilus surinamensis</i>	2	-	g-ss
<i>Corticaria</i> sp	2	-	rt-sf
Auchenorrhyncha sp A	1	-	oa-p
Auchenorrhyncha sp B	1	-	oa-p
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Helophorus</i> sp	1	-	oa-w
<i>Cercyon ?nalis</i>	1	-	rt-sf
<i>Cercyon</i> sp	1	-	u
<i>Megasternum obscurum</i>	1	-	rt
<i>Omalius</i> sp	1	-	rt
<i>Anotylus nitidulus</i>	1	-	rt-d
<i>Anotylus rugosus</i>	1	-	rt
Staphylinidae sp	1	-	u
<i>Aphodius</i> sp	1	-	ob-rf
Elateridae sp	1	-	ob
<i>Meligethes</i> sp	1	-	oa-p
<i>Cryptolestes ferrugineus</i>	1	-	g-ss
<i>Palorus ratzeburgi</i>	1	-	g-ss
<i>Phyllotreta nemorum</i> group	1	-	oa-p
<i>Apion</i> 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
*Auchenorrhyncha sp (nymph)	1	-	oa-p
*Coccoidea sp	1	-	u
Wt: 1.00 kg; E: 0.00; F: 0.00			
KLA B 1234, Sample: 208/T, CA: ReM: R,			
Period 9			

49 Two-dish flot. Recorded in flot.

	n	sq	ec
<i>Oryzaeophilus surinamensis</i>	9	-	g-ss
<i>Cryptolestes ferrugineus</i>	5	-	g-ss
Aleocharinae sp B	3	-	u
<i>Helophorus</i> sp	2	-	oa-w
<i>Carpelimus ?bilineatus</i>	2	-	rt-sf
<i>Anotylus nitidulus</i>	2	-	rt-d
<i>Anotylus rugosus</i>	2	-	rt
<i>Gyrophypnus angustatus</i>	2	-	rt-st
<i>Phyllopertha horticola</i>	2	-	oa-p
Auchenorrhyncha sp A	1	-	oa-p
Auchenorrhyncha sp B	1	-	oa-p
Hemiptera sp	1	-	u
<i>Bembidion lampros</i> or <i>properans</i>	1	-	oa
<i>Pterostichus</i> sp	1	-	ob
<i>Helophorus grandis</i>	1	-	oa-w
<i>Cercyon analis</i>	1	-	rt-sf
<i>Megasternum obscurum</i>	1	-	rt
<i>Cryptopleurum minutum</i>	1	-	rf-st
Histerinae sp	1	-	rt
<i>Ochthebius</i> sp	1	-	oa-w
<i>Ptenidium</i> sp	1	-	rt

<i>Catops</i> sp	1	-	u
<i>Omalius caesum</i> or <i>italicum</i>	1	-	rt-sf
<i>Xylodromus concinnus</i>	1	-	rt-st
<i>Stenus</i> sp	1	-	u
<i>Rugilus</i> sp	1	-	rt
<i>Xantholinus linearis</i> or <i>longiventris</i>	1	-	rt-sf
<i>Xantholinus</i> sp	1	-	u
<i>Philonthus</i> sp A	1	-	u
<i>Philonthus</i> sp B	1	-	u
Staphylininae sp A	1	-	u
Staphylininae sp B	1	-	u
<i>Tachyporus</i> sp	1	-	u
Aleocharinae sp A	1	-	u
Aleocharinae sp C	1	-	u
<i>Aphodius</i> sp	1	-	ob-rf
<i>Ptinus</i> sp	1	-	rd-sf
<i>Atomaria</i> sp	1	-	rd
<i>Lathridius minutus</i> group	1	-	rd-st
<i>Enicmus</i> sp	1	-	rt-sf
<i>Corticaria</i> sp	1	-	rt-sf
<i>Palorus ratzeburgi</i>	1	-	g-ss
<i>Gastrophysa viridula</i>	1	-	oa-p
<i>Longitarsus</i> sp	1	-	oa-p
<i>Crepidodera</i> sp	1	-	oa-p
<i>Sitophilus granarius</i>	1	-	g-ss
<i>Ceutorhynchus</i> sp	1	-	oa-p
*Acarina sp	6	s	u
*Diptera sp (puparium)	6	s	u
*Insecta sp (larva)	2	-	u
* <i>Daphnia</i> sp (ephippium)	1	-	oa-w
*Hymenoptera sp	1	-	u
*Oligochaeta sp (egg capsule)	1	-	u
Wt: 3.00 kg; E: 0.00; F: 0.00			
KLA B 1268, Sample: 211/1, CA: ReM: S,			
Period 9			

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

	n	sq	ec
<i>Oryzaeophilus surinamensis</i>	6	s	g-ss
<i>Anotylus complanatus</i>	2	-	rt-sf
<i>Xantholinus</i> sp	2	-	u
Aleocharinae sp B	2	-	u
<i>Dyschirius globosus</i>	1	-	oa
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Helophorus</i> sp A	1	-	oa-w
<i>Helophorus</i> sp B	1	-	oa-w
<i>Cercyon analis</i>	1	-	rt-sf
<i>Xylodromus ?concinnus</i>	1	-	rt-st
<i>Carpelimus</i> sp	1	-	u
<i>Platystethus arenarius</i>	1	-	rf
<i>Anotylus nitidulus</i>	1	-	rt-d
<i>Anotylus rugosus</i>	1	-	rt
<i>Anotylus tetracarinated</i>	1	-	rt
<i>Gyrophypnus punctulatus</i>	1	-	rt-st
<i>Philonthus</i> sp	1	-	u

	<i>Tachinus ?signatus</i>	1	-	u			n	sq	ec
	Aleocharinae sp A	1	-	u			25	-	g-ss
	Aleocharinae sp C	1	-	u			14	-	g-ss
	Aleocharinae sp D	1	-	u			7	-	rd-st
	<i>Aphodius</i> sp	1	-	ob-rf			7	-	g-ss
	<i>Cryptophagus</i> sp	1	-	rd-sf			4	-	rd-ss
	<i>Corticaria</i> sp	1	-	rt-sf			4	-	oa-p
	<i>Corticarina</i> sp	1	-	rt			3	-	rt-st
	<i>Sitophilus granarius</i>	1	-	g-ss			3	-	u
	Curculionidae sp	1	-	oa			3	-	u
	*Diptera sp (puparium)	6	s	u			3	-	rt-sf
	*Acarina sp	3	-	u			3	-	rd-sf
	*Coleoptera sp (larva)	2	-	u			3	-	rt-sf
	*Araneae sp	1	-	u			3	-	g-ss
	*Diptera sp (adult)	1	-	u			2	-	rf-st
	Wt: 1.00 kg; E: 0.00; F: 0.00						2	-	rt-st
	KLA B 1268, Sample: 211/T, CA: ReM: RS,						2	-	l-sf
	Period 9						1	-	oa
51	Washover. Assessment record as rapid scan.						1	-	oa-w
	Three-dish, mostly charcoal and plant debris.						1	-	rf-sf
		n	sq	ec			1	-	rt
	<i>Trechus</i> sp	1	-	ob			1	-	rt-st
	<i>Megasternum obscurum</i>	1	-	rt			1	-	rt
	? <i>Xylodromus</i> sp	1	-	rt-st			1	-	rt-sf
	<i>Gyrohypnus</i> sp	1	-	rt			1	-	rt-st
	<i>Aphodius</i> sp A	1	-	ob-rf			1	-	rt-sf
	<i>Aphodius</i> sp B	1	-	ob-rf			1	-	rf
	<i>Cryptolestes ferrugineus</i>	1	-	g-ss			1	-	rt
	<i>Oryzaeophilus surinamensis</i>	1	-	g-ss			1	-	u
	Coleoptera sp	1	-	u			1	-	rt-st
	* <i>Oligochaeta</i> sp (egg capsule)	1	-	u			1	-	u
	Wt: 1.00 kg; E: 4.00; F: 4.00						1	-	u
	KLA B 1280, Sample: 229/T, CA: ReM: R,						1	-	u
	Period 9						1	-	u
52	Assessment record as rapid scan. One-dish flot,						1	-	oa-p
	mostly fine yellow plant debris. Recorded in flot.						1	-	rt-st
		n	sq	ec			1	-	rt-st
	<i>Oryzaeophilus surinamensis</i>	6	s	g-ss			1	-	oa-p
	Staphylininae sp	2	-	u			1	-	oa-p
	Carabidae sp	1	-	ob			1	-	oa-p
	<i>Helophorus</i> sp	1	-	oa-w			15	m	u
	<i>Carpelimus</i> sp	1	-	u			6	s	u
	<i>Anotylus rugosus</i>	1	-	rt			6	s	u
	<i>Aphodius</i> sp	1	-	ob-rf			1	-	u
	<i>Cryptolestes ferrugineus</i>	1	-	g-ss			1	-	u
	<i>Corticaria</i> sp	1	-	rt-sf					
	<i>Palorus ratzeburgi</i>	1	-	g-ss					
	*Diptera sp (puparium)	3	-	u					
	*Coleoptera sp (larva)	1	-	u					
	*Acarina sp	1	-	u					
	*Diptera sp (pupa)	1	-	u					
	Wt: 1.00 kg; E: 3.00; F: 3.00								
	KLA B 1282, Sample: 235/T, CA: ReM: R, Period 7								
53	Recorded in flot and on filter paper. One								
	<i>Apion</i> teneral.						n	sq	ec
							39	-	g-ss
							23	-	g-ss

<i>Oxytelus sculptus</i>	13	-	rt-st	<i>Gymnetron</i> sp	1	-	oa-p
<i>Falagria caesa</i> or <i>sulcatula</i>	8	-	rt-sf	Coleoptera sp A	1	-	u
<i>Platystethus arenarius</i>	6	-	rf	Coleoptera sp B	1	-	u
<i>Lathridius minutus</i> group	5	-	rd-st	*Acarina sp	50	e	u
<i>Palorus ratzeburgi</i>	5	-	g-ss	*Diptera sp (puparium)	15	m	u
<i>Stenus</i> sp	4	-	u	*Coleoptera sp (larva)	6	s	u
<i>Xylodromus ?concinus</i>	3	-	rt-st	*Araneae sp	2	-	u
<i>Carpelimus ?bilineatus</i>	3	-	rt-sf	*Dermaptera sp	1	-	u
<i>Cryptophagus</i> sp	3	-	rd-sf	*Diptera sp (adult)	1	-	u
<i>Anthicus formicarius</i>	3	-	rt-st	*Proctotrupeoidea sp	1	-	u
<i>Sitophilus granarius</i>	3	-	g-ss	*Thysanoptera sp	1	-	oa-w
<i>Cercyon atricapillus</i>	2	-	rf-st	*Heteroptera sp (nymph)	1	-	u
<i>Acrotrichis</i> sp	2	-	rt	*Lepidoptera sp (pupa)	1	-	u
<i>Carpelimus</i> sp B	2	-	u	Wt: 4.25 kg; E: 0.00; F: 0.00			
<i>Anotylus tetracarinated</i>	2	-	rt	KLA C 1203, Sample: 391/T, CA: ReM: S,			
<i>Lithocharis ochracea</i>	2	-	rt-st	Period 8A			
<i>Leptacinus</i> sp	2	-	rt-st				
<i>Neobisnius</i> sp	2	-	u	55			
<i>Philonthus</i> sp A	2	-	u	Two-dish flot, but full of insects, so done as			
Aleocharinae sp A	2	-	u	several. Recorded in flot, problems on paper.			
<i>Monotoma bicolor</i>	2	-	rt-st	Patchy decay to red/yellow, which limited			
<i>Monotoma longicollis</i>	2	-	rt-st	identification.			
<i>Typhaea stercorea</i>	2	-	rd-ss		n	sq	ec
<i>Apion</i> sp	2	-	oa-p	<i>Oryzaephilus surinamensis</i>	134	-	g-ss
<i>Lyctocoris campestris</i>	1	-	rd-st	<i>Cryptolestes ferrugineus</i>	51	-	g-ss
Delphacidae sp	1	-	oa-p	<i>Cercyon analis</i>	8	-	rt-sf
Auchenorrhyncha sp A	1	-	oa-p	<i>Acritus nigricornis</i>	7	-	rt-st
Auchenorrhyncha sp B	1	-	oa-p	<i>Anotylus rugosus</i>	6	-	rt
Auchenorrhyncha sp C	1	-	oa-p	<i>Anobium punctatum</i>	5	-	l-sf
<i>Trechus obtusus</i> or				<i>Lathridius minutus</i> group	5	-	rd-st
<i>quadristriatus</i>	1	-	oa	<i>Platystethus arenarius</i>	4	-	rf
<i>Pterostichus</i> sp	1	-	ob	<i>Gyrophypnus angustatus</i>	4	-	rt-st
Carabidae sp	1	-	ob	Aleocharinae sp B	4	-	u
<i>Cercyon ?haemorrhoidalis</i>	1	-	rf-sf	<i>Longitarsus</i> sp	4	-	oa-p
<i>Cercyon terminatus</i>	1	-	rf-st	<i>Onthophilus striatus</i>	3	-	rt
<i>Megasternum obscurum</i>	1	-	rt	<i>Acrotrichis</i> sp	3	-	rt
<i>Acritus nigricornis</i>	1	-	rt-st	<i>Omalius ?rivulare</i>	3	-	rt-sf
<i>Ptenidium</i> sp	1	-	rt	<i>Xylodromus concinnus</i>	3	-	rt-st
Silphidae sp	1	-	u	<i>Stenus</i> sp A	3	-	u
<i>Omalius ?rivulare</i>	1	-	rt-sf	<i>Falagria caesa</i> or <i>sulcatula</i>	3	-	rt-sf
<i>Carpelimus fuliginosus</i>	1	-	st	Aleocharinae sp A	3	-	u
<i>Carpelimus</i> sp A	1	-	u	<i>Aphodius ?prodromus</i>	3	-	ob-rf
<i>Philonthus</i> sp B	1	-	u	<i>Ptinus ?fur</i>	3	-	rd-sf
Staphylininae sp	1	-	u	<i>Pterostichus ?melanarius</i>	2	-	ob
<i>Sepedophilus</i> sp	1	-	u	<i>Helophorus aquaticus</i> or			
Aleocharinae sp B	1	-	u	<i>grandis</i>	2	-	oa-w
Aleocharinae sp C	1	-	u	<i>Megasternum obscurum</i>	2	-	rt
Aleocharinae sp D	1	-	u	<i>Oxytelus sculptus</i>	2	-	rt-st
<i>Trox scaber</i>	1	-	rt-sf	<i>Gyrophypnus fracticornis</i>	2	-	rt-st
<i>Aphodius</i> sp A	1	-	ob-rf	<i>Cordalia obscura</i>	2	-	rt-sf
<i>Aphodius</i> sp B	1	-	ob-rf	Aleocharinae sp C	2	-	u
<i>Anobium punctatum</i>	1	-	l-sf	<i>Cryptophagus</i> sp A	2	-	rd-sf
<i>Meligethes</i> sp	1	-	oa-p	<i>Atomaria</i> sp	2	-	rd
<i>Corticaria</i> sp	1	-	rt-sf	<i>Corticaria</i> sp	2	-	rt-sf
<i>Corticarina</i> sp	1	-	rt	<i>Typhaea stercorea</i>	2	-	rd-ss
<i>Tenebrio obscurus</i>	1	-	rt-ss	<i>Palorus ratzeburgi</i>	2	-	g-ss
<i>Phyllotreta nemorum</i> group	1	-	oa-p	Lygaeidae sp	1	-	oa-p
Halticinae sp	1	-	oa-p	? <i>Lyctocoris campestris</i>	1	-	rd-st
				Saldidae sp	1	-	oa-d

<i>Ulopa reticulata</i>	1	-	oa-pm		<i>*Pthirus pubis</i>	1	-	ss
<i>Psylloidea</i> sp	1	-	oa-p		<i>*Coccoidea</i> sp	1	-	u
<i>Dyschirius ?globosus</i>	1	-	oa		<i>*Tenebroides mauritanicus</i>			
<i>Trechus obtusus</i> or					(larva)	1	-	rt-ss
<i>quadristriatus</i>	1	-	oa		<i>*Aphidoidea</i> sp	1	-	u
<i>Bembidion</i> sp A	1	-	oa		<i>*Araneae</i> sp	1	-	u
<i>Bembidion</i> sp B	1	-	oa		<i>*Hymenoptera</i> sp	1	-	u
<i>Helophorus</i> sp A	1	-	oa-w		Wt: 4.25 kg; E: 0.00; F: 0.00			
<i>Helophorus</i> sp B	1	-	oa-w		KLA C 1269.02, Sample: 394/1, CA: ReM: S,			
<i>Cercyon ?atricapillus</i>	1	-	rf-st		Period 5A-B			
<i>Cercyon</i> sp	1	-	u					
<i>Cryptopleurum minutum</i>	1	-	rf-st	56	Medium-sized flot, many seeds, some plant			
<i>Ptenidium</i> sp	1	-	rt		debris. Recorded in flot and on filter paper.			
<i>Scydmaenidae</i> sp	1	-	u		<i>Apion teneral.</i>			
<i>Micropeplus fulvus</i>	1	-	rt			n	sq	ec
<i>Acidota crenata</i>	1	-	oa		<i>Oryzaepphilus surinamensis</i>	29	-	g-ss
<i>Omalius</i> sp	1	-	rt		<i>Cryptolestes ferrugineus</i>	17	-	g-ss
<i>Carpelimus ?bilineatus</i>	1	-	rt-sf		<i>Neobisnius</i> sp	7	-	u
<i>Carpelimus</i> sp	1	-	u		<i>Lathridius minutus</i> group	6	-	rd-st
<i>Anotylus tetracarınatus</i>	1	-	rt		<i>Anotylus rugosus</i>	5	-	rt
<i>Stenus</i> sp B	1	-	u		<i>Aleocharinae</i> sp B	4	-	u
<i>Ochtheophilum fracticorne</i>	1	-	oa-d		<i>Trechus obtusus</i>	3	-	oa
<i>Rugilus orbiculatus</i>	1	-	rt-sf		<i>Cercyon</i> sp B	3	-	u
<i>Paederinae</i> sp	1	-	u		<i>Gyrohypnus angustatus</i>	3	-	rt-st
<i>Leptacinus</i> sp	1	-	rt-st		<i>Anobium punctatum</i>	3	-	l-sf
<i>Xantholinus linearis</i> or					<i>Cryptophagus</i> sp	3	-	rd-sf
<i>longiventris</i>	1	-	rt-sf		<i>Sitophilus granarius</i>	3	-	g-ss
<i>Neobisnius</i> sp	1	-	u		<i>Cercyon</i> sp A	2	-	u
<i>Philonthus</i> sp	1	-	u		<i>Megasternum obscurum</i>	2	-	rt
<i>Staphylininae</i> sp A	1	-	u		<i>Carpelimus bilineatus</i>	2	-	rt-sf
<i>Staphylininae</i> sp B	1	-	u		<i>Aphodius prodromus</i>	2	-	ob-rf
<i>Tachyporus</i> sp	1	-	u		<i>Ptinus fur</i>	2	-	rd-sf
<i>Tachinus laticollis</i> or					<i>Halticinae</i> sp	2	-	oa-p
<i>marginellus</i>	1	-	u		<i>Bembidion lampros</i> or			
<i>Aleocharinae</i> sp D	1	-	u		<i>properans</i>	1	-	oa
<i>Aphodius</i> sp	1	-	ob-rf		<i>Pterostichus ?melanarius</i>	1	-	ob
<i>Phyllopertha horticola</i>	1	-	oa-p		<i>Pterostichus</i> sp	1	-	ob
<i>?Simplocaria</i> sp	1	-	d		<i>Laemostenus</i> sp	1	-	ss
<i>?Tipnus unicolor</i>	1	-	rd-st		<i>Amara</i> sp	1	-	oa
<i>Cryptophagus</i> sp B	1	-	rd-sf		<i>Carabidae</i> sp	1	-	ob
<i>Ephistemus globulus</i>	1	-	rd-sf		<i>Helophorus</i> sp	1	-	oa-w
<i>Enicmus</i> sp	1	-	rt-sf		<i>Silphidae</i> sp	1	-	u
<i>Corticaria</i> sp B	1	-	rt-sf		<i>Scydmaenidae</i> sp	1	-	u
<i>Corticarina</i> or <i>Cortinicara</i> sp	1	-	rt		<i>Omalius caesum</i> or <i>italicum</i>	1	-	rt-sf
<i>Anthicus floralis</i> or					<i>Omalius rivulare</i>	1	-	rt-sf
<i>formicarius</i>	1	-	rt-st		<i>Xylodromus concinnus</i>	1	-	rt-st
<i>Phyllotreta nemorum</i> group	1	-	oa-p		<i>Platystethus nitens</i>	1	-	oa-d
<i>Apion</i> sp	1	-	oa-p		<i>Anotylus tetracarınatus</i>	1	-	rt
<i>Otiorrhynchus ligneus</i>	1	-	oa-p		<i>Oxytelus sculptus</i>	1	-	rt-st
<i>Sitophilus granarius</i>	1	-	g-ss		<i>Stenus</i> sp A	1	-	u
<i>Ceutorhynchus</i> sp	1	-	oa-p		<i>Stenus</i> sp B	1	-	u
<i>Rhinoncus</i> sp	1	-	oa-p		<i>Philonthus</i> sp	1	-	u
<i>Coleoptera</i> sp	1	-	u		<i>Tachinus</i> sp	1	-	u
<i>*Auchenorrhyncha</i> sp					<i>Falagria</i> sp	1	-	rt-sf
(nymph)	50	e	oa-p		<i>Aleocharinae</i> sp A	1	-	u
<i>*Coleoptera</i> sp (larva)	6	s	u		<i>Aphodius ?contaminatus</i>	1	-	oa-rf
<i>*Acarina</i> sp	6	s	u		<i>Aphodius granarius</i>	1	-	ob-rf
<i>*Diptera</i> sp (puparium)	6	s	u		<i>Phyllopertha horticola</i>	1	-	oa-p

Elateridae sp	1	-	ob
<i>Cryptophagus scutellatus</i>	1	-	rd-st
<i>Enicmus</i> sp	1	-	rt-sf
<i>Corticaria</i> sp A	1	-	rt-sf
<i>Corticaria</i> sp B	1	-	rt-sf
<i>Alphitobius ?diaperinus</i>	1	-	rt-ss
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st
<i>Gastrophysa</i> sp	1	-	oa-p
Chrysomelinae sp	1	-	oa-p
<i>Apion</i> sp	1	-	oa-p
<i>Phyllobius</i> or <i>Polydrusus</i> sp	1	-	oa-p
<i>Hypera</i> sp	1	-	oa-p
Ceuthorhynchinae sp	1	-	oa-p
Curculionidae sp A	1	-	oa
Curculionidae sp B	1	-	oa
*Auchenorrhyncha 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
Wt: 3.30 kg; E: 0.00; F: 0.00			
KLAC 1324, Sample: 396/1, CA: ReM: S, Period 7			

57 Small flot. Many seeds, some plant debris.
Recorded in flot and on filter paper.

	n	sq	ec
<i>Aphodius prodromus</i>	22	-	ob-rf
<i>Anotylus nitidulus</i>	8	-	rt-d
<i>Anotylus tetracarينات</i>	8	-	rt
<i>Anotylus complanatus</i>	7	-	rt-sf
<i>Aphodius ?fimetarius</i>	7	-	oa-rf
Aleocharinae sp C	6	-	u
<i>Megasternum obscurum</i>	3	-	rt
<i>Cryptophagus</i> sp	3	-	rd-sf
<i>Atomaria</i> sp B	3	-	rd
<i>Trechus obtusus</i> or <i>quadristriatus</i>	2	-	oa
<i>Bembidion lampros</i> or <i>properans</i>	2	-	oa
<i>Bembidion (Philochthus)</i> <i>iricolor</i> sp	2	-	oa
<i>Helophorus</i> sp C	2	-	oa-w
<i>Bledius</i> sp	2	-	oa-d
<i>Gyrophypnus angustatus</i>	2	-	rt-st
<i>Falagria</i> sp	2	-	rt-sf
Aleocharinae sp B	2	-	u
<i>Aphodius ?contaminatus</i>	2	-	oa-rf
<i>Phyllopertha horticola</i>	2	-	oa-p
<i>Simplocaria ?semistriata</i>	2	-	oa-p
<i>Lathridius minutus</i> group	2	-	rd-st
<i>Corticaria</i> sp	2	-	rt-sf
<i>Corticarina</i> sp	2	-	rt
<i>Phyllotreta nemorum</i> group	2	-	oa-p
<i>Chaetocnema concinna</i>	2	-	oa-p
<i>Carabus ?nemoralis</i>	1	-	oa

<i>Nebria brevicollis</i>	1	-	oa
<i>Dyschirius globosus</i>	1	-	oa
<i>Clivina fossor</i>	1	-	oa
<i>Bembidion ?saxatile</i>	1	-	oa-d
<i>Pterostichus</i> sp	1	-	ob
<i>Amara</i> sp	1	-	oa
Carabidae sp A	1	-	ob
Carabidae sp B	1	-	ob
<i>Agabus bipustulatus</i>	1	-	oa-w
<i>Ilybius</i> sp	1	-	oa-w
<i>Helophorus aquaticus</i> or <i>grandis</i>	1	-	oa-w
<i>Helophorus</i> sp B	1	-	oa-w
<i>Cercyon ?haemorrhoidalis</i>	1	-	rf-sf
<i>Cercyon</i> sp	1	-	u
Histerinae sp	1	-	rt
<i>Omalius rivulare</i>	1	-	rt-sf
<i>Platystethus arenarius</i>	1	-	rf
<i>Oxytelus sculptus</i>	1	-	rt-st
<i>Stenus</i> sp B	1	-	u
<i>Rugilus ?orbiculatus</i>	1	-	rt-sf
<i>Philonthus</i> sp	1	-	u
<i>Tachyporus</i> sp	1	-	u
Aleocharinae sp A	1	-	u
<i>Geotrupes</i> sp	1	-	oa-rf
<i>Aphodius</i> sp	1	-	ob-rf
<i>Oulimnius</i> sp	1	-	oa-w
Elateridae sp	1	-	ob
<i>Brachypterus</i> sp	1	-	oa-p
<i>Oryzaephilus surinamensis</i>	1	-	g-ss
<i>Atomaria</i> sp A	1	-	rd
<i>Olibrus</i> sp	1	-	oa-p
Salpingidae sp	1	-	l
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st
<i>Gastrophysa</i> sp	1	-	oa-p
<i>Apion</i> sp	1	-	oa-p
<i>Sitona</i> sp	1	-	oa-p
<i>Notaris ?acridulus</i>	1	-	oa-dp
<i>Rhinoncus</i> 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
*Auchenorrhyncha sp (nymph)	3	-	oa-p
*Bibionidae sp	2	-	u
*Araneae sp	1	-	u
*Dermaptera sp	1	-	u
*Diptera sp (larva)	1	-	u
Wt: 3.60 kg; E: 0.00; F: 0.00			
KLA C 1350, Sample: 399/1, CA: ReM: S, Period 5A-B			

58 Four-dish flot. Recorded in flot and on filter paper;
remains to tube. Preservation moderately good.

	n	sq	ec
<i>Oryzaephilus surinamensis</i>	14	-	g-ss

<i>Helophorus</i> sp A	6	-	oa-w	<i>Rhinoncus ?bruchoides</i>	1	-	oa-p
<i>Falagria caesa</i> or <i>sulcatula</i>	4	-	rt-sf	<i>Rhinoncus pericarpus</i>	1	-	oa-p
Aleocharinae sp A	4	-	u	Curculionidae sp	1	-	oa
Aleocharinae sp C	4	-	u	*Acarina sp	15	m	u
<i>Helophorus aquaticus</i>	3	-	oa-w	*Diptera sp (puparium)	15	m	u
<i>Platystethus arenarius</i>	3	-	rf	*Oligochaeta sp (egg capsule)	3	-	u
<i>Anotylus nitidulus</i>	3	-	rt-d	*Coleoptera sp (larva)	2	-	u
<i>Stenus</i> sp D	3	-	u	*Aphidoidea sp	2	-	u
<i>Gyrophypnus fracticornis</i>	3	-	rt-st	*Auchenorrhyncha sp (nymph)	1	-	oa-p
<i>Aphodius ?prodromus</i>	3	-	ob-rf	*Daphnia sp (ephippium)	1	-	oa-w
<i>Ptenidium</i> sp	2	-	rt	*Hymenoptera Parasitica sp	1	-	u
<i>Carpelimus</i> sp	2	-	u	*Hymenoptera sp	1	-	u
<i>Anotylus tetracarinus</i>	2	-	rt	*Siphonaptera sp	1	-	u
Aleocharinae sp B	2	-	u	Wt: 5.60 kg; E: 0.00; F: 0.00			
<i>Cryptolestes ferrugineus</i>	2	-	g-ss	KLA C 1858.02, Sample: 401/1, CA: ReM: S,			
<i>Corticaria</i> sp A	2	-	rt-sf	Period 7			
<i>Carabus</i> sp	1	-	oa				
<i>Bembidion (Philochthus)</i>				59	Eight-dish flot. Preservation not very good,		
<i>iricolor</i>	1	-	oa		remains reddened. Recorded in flot and on filter		
Carabidae sp	1	-	ob		paper; remains to tube. Appears to be a peatland		
<i>Helophorus</i> sp B	1	-	oa-w		component, much of which is poorly preserved.		
<i>Cercyon analis</i>	1	-	rt-sf			n	sq
<i>Cercyon haemorrhoidalis</i>	1	-	rf-sf			ec	
<i>Megasternum obscurum</i>	1	-	rt			<i>Oryzaephilus surinamensis</i>	26
<i>Acritus nigricornis</i>	1	-	rt-st			<i>Lathridius minutus</i> group	8
<i>Ochthebius</i> sp	1	-	oa-w			<i>Cryptolestes ferrugineus</i>	6
<i>Acrotrichis</i> sp	1	-	rt			<i>Helophorus</i> sp B	5
<i>Omalius</i> sp	1	-	rt			<i>Aphodius prodromus</i>	5
<i>Carpelimus ?bilineatus</i>	1	-	rt-sf			<i>Hydroporus</i> sp A	4
<i>Carpelimus ?fuliginosus</i>	1	-	st			<i>Anotylus nitidulus</i>	4
<i>Platystethus nitens</i>	1	-	oa-d			Pselaphidae sp	4
<i>Oxytelus sculptus</i>	1	-	rt-st			<i>Corticaria</i> sp	4
<i>Stenus</i> sp A	1	-	u			Aleocharinae sp C	3
<i>Stenus</i> sp B	1	-	u			<i>Sitophilus granarius</i>	3
<i>Stenus</i> sp C	1	-	u			<i>Ulopa reticulata</i>	2
<i>Leptacinus ?pusillus</i>	1	-	rt-st			<i>Dyschirius globosus</i>	2
<i>Philonthus</i> sp A	1	-	u			<i>Pterostichus ?diligens</i>	2
<i>Philonthus</i> sp B	1	-	u			<i>Hydroporus</i> sp B	2
Staphylininae sp A	1	-	u			<i>Olophrum ?fuscum</i>	2
Staphylininae sp B	1	-	u			<i>Lesteva longoelytrata</i>	2
<i>Tachyporus</i> sp	1	-	u			<i>Euaesthetus laeviusculus</i>	2
<i>Aleochara</i> sp	1	-	u			<i>Lathrobium</i> sp B	2
Aleocharinae sp D	1	-	u			<i>Falagria</i> or <i>Cordalia</i> sp	2
Aleocharinae sp E	1	-	u			Aleocharinae sp A	2
Pselaphidae sp	1	-	u			<i>Anobium punctatum</i>	2
<i>Geotrupes</i> sp	1	-	oa-rf			<i>Ptinus</i> sp	2
<i>Phyllopertha horticola</i>	1	-	oa-p			<i>Cryptophagus</i> sp	2
<i>Ptinus</i> sp	1	-	rd-sf			<i>Macrodema micropterum</i>	1
<i>Atomaria</i> sp	1	-	rd			<i>Scolopostethus ?decoratus</i>	1
<i>Corticaria</i> sp	1	-	rt-sf			Delphacidae sp	1
<i>Corticaria</i> sp B	1	-	rt-sf			Auchenorrhyncha sp	1
<i>Aglenus brunneus</i>	1	-	rt-ss			Auchenorrhyncha sp B	1
<i>Palorus ratzeburgi</i>	1	-	g-ss			<i>Dyschirius ?globosus</i>	1
<i>Anthicus formicarius</i>	1	-	rt-st			<i>Trechus</i> sp	1
<i>Gastrophysa viridula</i>	1	-	oa-p			<i>Bembidion</i> sp	1
<i>Sitophilus granarius</i>	1	-	g-ss			<i>Pterostichus ?melanarius</i>	1
<i>Cidnorhinus</i>						<i>Amara</i> sp	1
<i>quadrifasciatus</i>	1	-	oa-p			Carabidae sp	1
						Carabidae sp A	1

Carabidae sp B	1	-	ob		*?Coccoidea sp	1	-	u
<i>Hydroporus</i> sp C	1	-	oa-w		*Coleoptera sp (larva)	1	-	u
<i>Agabus</i> sp	1	-	oa-w		*Araneae sp	1	-	u
<i>Helophorus aquaticus</i> or <i>grandis</i>	1	-	oa-w		*Formicidae sp B	1	-	u
<i>Helophorus tuberculatus</i>	1	-	oa		*Hymenoptera Parasitica sp	1	-	u
<i>Helophorus</i> sp A	1	-	oa-w		*Hymenoptera sp	1	-	u
<i>Cercyon</i> sp	1	-	u		*Siphonaptera sp	1	-	u
<i>Megasternum obscurum</i>	1	-	rt		Wt: 5.00 kg; E: 0.00; F: 0.00			
Hydrophilinae sp	1	-	oa-w		KLA C 1870, Sample: 403/1, CA: ReM: S, Period 7			
<i>Acritus nigricornis</i>	1	-	rt-st					
<i>Ochthebius ?minimus</i>	1	-	oa-w	60	Several-dish flot. Preservation varied; some very oxidised. Recorded in flot, problems on filter paper, then to tube.			
<i>Acrotrichis</i> sp	1	-	rt			n	sq	ec
<i>Acidota crenata</i>	1	-	oa		<i>Oryzaephilus surinamensis</i>	8	-	g-ss
<i>Omalius</i> sp	1	-	rt		<i>Lathridius minutus</i> group	7	-	rd-st
<i>Xylodromus concinnus</i>	1	-	rt-st		<i>Cryptolestes ferrugineus</i>	5	-	g-ss
<i>Carpelimus ?bilineatus</i>	1	-	rt-sf		<i>Enicmus</i> sp	4	-	rt-sf
<i>Platystethus arenarius</i>	1	-	rf		<i>Omalius ?rivulare</i>	3	-	rt-sf
<i>Anotylus rugosus</i>	1	-	rt		Aleocharinae sp A	3	-	u
<i>Anotylus tetracariniatus</i>	1	-	rt		Aleocharinae sp C	3	-	u
<i>Stenus</i> sp	1	-	u		<i>Atomaria</i> sp B	3	-	rd
<i>Lathrobium</i> sp A	1	-	u		<i>Corticarina</i> sp	3	-	rt
<i>Lathrobium</i> sp C	1	-	u		<i>Helophorus</i> sp	2	-	oa-w
<i>Leptacinus</i> sp	1	-	rt-st		<i>Cercyon analis</i>	2	-	rt-sf
<i>Xantholinus ?linearis</i>	1	-	rt-sf		<i>Megasternum obscurum</i>	2	-	rt
<i>Xantholinus longiventris</i>	1	-	rt-sf		<i>Anotylus nitidulus</i>	2	-	rt-d
Staphylininae sp	1	-	u		<i>Anotylus rugosus</i>	2	-	rt
<i>Tachyporus</i> sp	1	-	u		<i>Stenus</i> sp	2	-	u
<i>Cypha</i> sp	1	-	rt		<i>Tachyporus</i> sp	2	-	u
Aleocharinae sp B	1	-	u		<i>Cryptophagus</i> sp	2	-	rd-sf
Aleocharinae sp D	1	-	u		<i>Atomaria</i> sp A	2	-	rd
<i>Pselaphus heisei</i>	1	-	u		<i>Gastrophysa viridula</i>	2	-	oa-p
Pselaphidae sp B	1	-	u		<i>Sitophilus granarius</i>	2	-	g-ss
<i>Aphodius</i> sp	1	-	ob-rf		Cimicidae sp	1	-	oa-p
<i>Denticollis linearis</i>	1	-	u		<i>Saldula</i> sp	1	-	oa-d
<i>Omosita</i> sp	1	-	rt-sf		Auchenorrhyncha sp	1	-	oa-p
<i>Atomaria</i> sp A	1	-	rd		Auchenorrhyncha sp A	1	-	oa-p
<i>Atomaria</i> sp B	1	-	rd		Auchenorrhyncha sp B	1	-	oa-p
<i>Enicmus</i> sp	1	-	rt-sf		<i>Clivina ?fossor</i>	1	-	oa
<i>Typhaea stercorea</i>	1	-	rd-ss		<i>Bembidion ?doris</i>	1	-	oa-d
<i>Aglenus brunneus</i>	1	-	rt-ss		<i>Pterostichus diligens</i> or <i>strenuus</i>	1	-	oa
<i>Palorus ratzeburgi</i>	1	-	g-ss		<i>Helophorus aquaticus</i> or <i>grandis</i>	1	-	oa-w
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st		<i>Ochthebius</i> sp	1	-	oa-w
<i>Donacia</i> sp	1	-	oa-dp		<i>Acrotrichis</i> sp	1	-	rt
? <i>Plateumaris</i> sp	1	-	oa-dp		<i>Silpha atrata</i>	1	-	u
<i>Hydrothassa</i> sp	1	-	oa-dp		<i>Omalius caesum</i> or <i>italicum</i>	1	-	rt-sf
Chalcoides sp	1	-	oa-p		<i>Carpelimus ?bilineatus</i>	1	-	rt-sf
<i>Sciaphilus asperatus</i>	1	-	oa-p		<i>Carpelimus</i> sp	1	-	u
<i>Hypera</i> sp	1	-	oa-p		<i>Oxytelus sculptus</i>	1	-	rt-st
<i>Micrelus ericae</i>	1	-	oa-pm		<i>Lathrobium</i> sp	1	-	u
<i>Gymnetron</i> sp	1	-	oa-p		<i>Gyrophypnus fracticornis</i>	1	-	rt-st
*Acarina sp	50	e	u		<i>Neobisnius</i> sp	1	-	u
*Diptera sp (puparium)	6	s	u		<i>Staphylinus olens</i>	1	-	u
* <i>Actenicerus sjaelandicus</i> (larva)	3	-	oa		Aleocharinae sp B	1	-	u
*Aphidoidea sp	2	-	u					
* <i>Myrmica</i> sp	2	-	u					

Aleocharinae sp D	1	-	u
<i>Aphodius ?prodromus</i>	1	-	ob-rf
<i>Aphodius</i> sp	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
<i>Esolus parallelepipedus</i>	1	-	oa-w
Elateridae sp	1	-	ob
<i>Anobium punctatum</i>	1	-	l-sf
<i>Monotoma bicolor</i>	1	-	rt-st
<i>Corticaria</i> sp	1	-	rt-sf
<i>Corticicaria gibbosa</i>	1	-	rt
? <i>Typhaea stercorea</i>	1	-	rd-ss
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st
Chrysomelinae sp	1	-	oa-p
<i>Galerucella</i> sp	1	-	oa-p
<i>Phyllotreta nemorum</i> group	1	-	oa-p
<i>Apion</i> sp	1	-	oa-p
? <i>Sitona</i> sp	1	-	oa-p
Ceuthorhynchinae sp	1	-	oa-p
*Acarina sp	15	m	u
*Auchenorrhyncha sp (nymph)	3	-	oa-p
*? <i>Haematopinus</i> sp	3	-	u
*Diptera sp (puparium)	3	-	u
*Diptera sp (adult)	2	-	u
*Coleoptera sp (larva)	1	-	u
*Araneae sp	1	-	u
* <i>Myrmica</i> sp	1	-	u
*Diptera sp (pupa)	1	-	u

Wt: 3.80 kg; E: 0.00; F: 0.00

KLA C 1871, Sample: 404/1, CA: ReM: S,
Period 7

- 61 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
<i>Cercyon analis</i>	6	-	rt-sf
<i>Oryzaeophilus surinamensis</i>	6	-	g-ss
<i>Helophorus grandis</i>	4	-	oa-w
<i>Helophorus</i> sp B	4	-	oa-w
<i>Lathridius minutus</i> group	4	-	rd-st
<i>Anotylus nitidulus</i>	3	-	rt-d
<i>Anotylus rugosus</i>	3	-	rt
<i>Gyrophypnus fracticornis</i>	3	-	rt-st
Aleocharinae sp D	3	-	u
<i>Trechus obtusus</i> or <i>quadristriatus</i>	2	-	oa
<i>Bembidion</i> sp	2	-	oa
<i>Stenus</i> sp A	2	-	u
<i>Philonthus</i> sp	2	-	u
Aleocharinae sp A	2	-	u
Aleocharinae sp B	2	-	u
<i>Cryptolestes ferrugineus</i>	2	-	g-ss
<i>Atomaria</i> sp	2	-	rd
<i>Enicmus</i> sp	2	-	rt-sf
<i>Sitophilus granarius</i>	2	-	g-ss
<i>Ulopa reticulata</i>	1	-	oa-pm

Auchenorrhyncha sp A	1	-	oa-p
Auchenorrhyncha sp B	1	-	oa-p
<i>Nebria brevicollis</i>	1	-	oa
<i>Clivina fossor</i>	1	-	oa
<i>Bembidion lampros</i> or <i>properans</i>	1	-	oa
? <i>Microlestes</i> sp	1	-	oa
Hydroporinae sp	1	-	oa-w
<i>Colymbetes fuscus</i>	1	-	oa-w
<i>Helophorus</i> sp A	1	-	oa-w
<i>Cercyon unipunctatus</i>	1	-	rf-st
<i>Cryptopleurum minutum</i>	1	-	rf-st
<i>Acritus nigricornis</i>	1	-	rt-st
<i>Ptenidium</i> sp	1	-	rt
<i>Micropeplus fulvus</i>	1	-	rt
? <i>Geodromicus</i> sp	1	-	oa-d
<i>Xylodromus concinnus</i>	1	-	rt-st
<i>Carpelimus ?bilineatus</i>	1	-	rt-sf
<i>Platystethus arenarius</i>	1	-	rf
<i>Stenus</i> sp B	1	-	u
<i>Lathrobium</i> sp	1	-	u
<i>Othius</i> sp	1	-	rt
<i>Leptacinus</i> sp	1	-	rt-st
<i>Tachinus signatus</i>	1	-	u
<i>Falagria</i> sp	1	-	rt-sf
<i>Aphodius</i> sp	1	-	ob-rf
? <i>Phyllopertha horticola</i>	1	-	oa-p
<i>Anobium punctatum</i>	1	-	l-sf
<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Ephistemus globulus</i>	1	-	rd-sf
<i>Corticarina</i> or <i>Corticicaria</i> sp	1	-	rt
<i>Palorus ratzeburgi</i>	1	-	g-ss
<i>Phyllotreta</i> sp	1	-	oa-p
<i>Longitarsus</i> sp	1	-	oa-p
Curculionidae sp	1	-	oa
*Coleoptera sp (larva)	6	s	u
*Acarina sp	6	s	u
* <i>Oligochaeta</i> 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
*Araneae sp	2	-	u
*Auchenorrhyncha sp (nymph)	1	-	oa-p
*Phthiraptera (?louse s l) sp	1	-	u
*Diptera sp (adult)	1	-	u
*Hymenoptera Parasitica sp	1	-	u

Wt: 5.50 kg; E: 0.00; F: 0.00

KLA C 1876, Sample: 405/1, CA: ReM: S,
Period 7

- 62 One-dish flot. Recorded in flot and on filter paper; remains to tube, some left in flot. No mites could be found!

	n	sq	ec
<i>Oryzaeophilus surinamensis</i>	23	-	g-ss
<i>Cryptolestes ferrugineus</i>	16	-	g-ss
<i>Palorus ratzeburgi</i>	4	-	g-ss

	<i>Ptinus ?fur</i>	3	-	rd-sf		<i>Megasternum obscurum</i>	1	-	rt
	Carabidae sp	1	-	ob		<i>Acidota crenata</i>	1	-	oa
	<i>Hydroporus</i> sp	1	-	oa-w		<i>Anotylus rugosus</i>	1	-	rt
	<i>Helophorus aquaticus</i> or					<i>Stenus</i> sp A	1	-	u
	<i>grandis</i>	1	-	oa-w		<i>Stenus</i> sp B	1	-	u
	<i>Anotylus nitidulus</i>	1	-	rt-d		<i>Stenus</i> sp C	1	-	u
	<i>Othius punctulatus</i>	1	-	rt-st		<i>Rugilus</i> sp	1	-	rt
	Aleocharinae sp	1	-	u		<i>Gyrophypnus fracticornis</i>	1	-	rt-st
	<i>Aphodius</i> sp	1	-	ob-rf		? <i>Philonthus</i> sp	1	-	u
	<i>Lathridius minutus</i> group	1	-	rd-st		<i>Mycetoporus</i> sp	1	-	u
	<i>Sitophilus granarius</i>	1	-	g-ss		Aleocharinae sp A	1	-	u
	*Diptera sp (puparium)	2	-	u		Aleocharinae sp B	1	-	u
	*Coleoptera sp (larva)	1	-	u		Aleocharinae sp C	1	-	u
	*?Myrmica sp	1	-	u		Aleocharinae sp D	1	-	u
	Wt: 4.10 kg; E: 0.00; F: 0.00					<i>Geotrupes</i> sp	1	-	oa-rf
	KLA C 1887, Sample: 406/1, CA: ReM: S,					<i>Aphodius</i> sp A	1	-	ob-rf
	Period 7					<i>Aphodius</i> sp B	1	-	ob-rf
63	Trace flot. Recorded in flot and on filter paper. Remains mostly very fragmented; no 'other orders' noted.					? <i>Phyllopertha horticola</i>	1	-	oa-p
		n	sq	ec		Elateridae sp	1	-	ob
	Carabidae sp A	1	-	ob		<i>Meligethes</i> sp	1	-	oa-p
	Carabidae sp B	1	-	ob		<i>Atomaria</i> sp	1	-	rd
	<i>Helophorus aquaticus</i> or					<i>Corticaria</i> sp	1	-	rt-sf
	<i>grandis</i>	1	-	oa-w		<i>Longitarsus</i> sp	1	-	oa-p
	<i>Helophorus</i> sp	1	-	oa-w		<i>Apion</i> sp	1	-	oa-p
	<i>Platystethus ?nitens</i>	1	-	oa-d		Curculionidae sp	1	-	oa
	<i>Anotylus nitidulus</i>	1	-	rt-d		*Acarina sp	100	e	u
	<i>Anotylus rugosus</i>	1	-	rt		*Oligochaeta sp (egg capsule)	6	s	u
	<i>Othius ?myrmecophilus</i>	1	-	rt		*Coleoptera sp (larva)	3	-	u
	Aleocharinae sp	1	-	u		*Bibionidae sp	2	-	u
	<i>Aphodius</i> sp	1	-	ob-rf		*Formicidae sp	2	-	u
	Wt: 5.00 kg; E: 0.00; F: 0.00					*Lepidoptera sp (pupa)	1	-	u
	KLA C 1920, Sample: 412/1, CA: ReM: S,					Wt: 4.70 kg; E: 0.00; F: 0.00			
	Period 6					KLA C 1923, Sample: 413/1, CA: ReM: S,			
						Period 4A			
64	Four-dish flot. Recorded in flot and on filter paper, remains to tube. Many well-decayed, unidentifiable, fragments; plant material seems to have rotted too.				65	Four-dish flot. Recorded in flot and on filter paper, remains to tube. Some teneral <i>Apion</i> .			
		n	sq	ec			n	sq	ec
	<i>Aphodius ?prodromus</i>	5	-	ob-rf		<i>Oryzaephilus surinamensis</i>	22	-	g-ss
	<i>Ochtheophilum fracticorne</i>	3	-	oa-d		<i>Cryptolestes ferrugineus</i>	20	-	g-ss
	<i>Othius</i> sp	2	-	rt		<i>Lathridius minutus</i> group	10	-	rd-st
	<i>Xantholinus linearis</i> or					<i>Cryptophagus</i> sp	6	-	rd-sf
	<i>longiventris</i>	2	-	rt-sf		<i>Corticaria</i> sp A	3	-	rt-sf
	<i>Nebria ?brevicollis</i>	1	-	oa		<i>Palorus ratzeburgi</i>	3	-	g-ss
	<i>Dyschirius ?globosus</i>	1	-	oa		<i>Apion</i> sp A	3	-	oa-p
	<i>Trechus obtusus</i> or					<i>Cercyon analis</i>	2	-	rt-sf
	<i>quadristriatus</i>	1	-	oa		<i>Cercyon unipunctatus</i>	2	-	rf-st
	<i>Bembidion (Philochthus)</i>					<i>Falagria caesa</i> or <i>sulcatula</i>	2	-	rt-sf
	<i>iricolor</i>	1	-	oa		<i>Typhaea stercorea</i>	2	-	rd-ss
	<i>Pterostichus</i> sp	1	-	ob		<i>Anthicus floralis</i> or			
	<i>Calathus</i> sp	1	-	oa		<i>formicarius</i>	2	-	rt-st
	<i>Harpalus</i> sp	1	-	oa		<i>Longitarsus</i> sp	2	-	oa-p
	<i>Helophorus</i> sp A	1	-	oa-w		<i>Auchenorrhyncha</i> sp	1	-	oa-p
	<i>Helophorus</i> sp B	1	-	oa-w		Carabidae sp A	1	-	ob
						Carabidae sp B	1	-	ob
						<i>Helophorus</i> sp	1	-	oa-w
						<i>Cercyon atricapillus</i>	1	-	rf-st
						<i>Omalius ?rioulaire</i>	1	-	rt-sf

	<i>Omalius</i> sp	1	-	rt		<i>Aphodius</i> sp	1	-	ob-rf
	<i>Carpelimus ?bilineatus</i>	1	-	rt-sf		<i>Cryptophagus</i> sp	1	-	rd-sf
	<i>Platystethus arenarius</i>	1	-	rf		<i>Atomaria</i> sp	1	-	rd
	<i>Anotylus tetracarlinatus</i>	1	-	rt		<i>Enicmus</i> sp	1	-	rt-sf
	<i>Philonthus</i> sp	1	-	u		<i>Apion</i> sp	1	-	oa-p
	<i>Tachinus ?signatus</i>	1	-	u		<i>Sitophilus granarius</i>	1	-	g-ss
	<i>Cordalia obscura</i>	1	-	rt-sf		*Acarina sp	6	s	u
	Aleocharinae sp	1	-	u		*Diptera sp (puparium)	6	s	u
	<i>Aphodius</i> sp	1	-	ob-rf		*Diptera sp (pupa)	2	-	u
	<i>Anobium ?punctatum</i>	1	-	l-sf		*Auchenorrhyncha sp (nymph)	1	-	oa-p
	<i>Ptinus</i> sp	1	-	rd-sf		*Coleoptera sp (larva)	1	-	u
	<i>Monotoma spinicollis</i>	1	-	rt-st		*Diptera sp (adult)	1	-	u
	<i>Atomaria</i> sp	1	-	rd		*Formicidae sp	1	-	u
	<i>Enicmus</i> sp	1	-	rt-sf		*Hymenoptera sp	1	-	u
	<i>Corticaria</i> sp B	1	-	rt-sf		*Syrphidae sp (larva)	1	-	u
	<i>Hydrothassa</i> sp	1	-	oa-dp		Wt: 2.80 kg; E: 0.00; F: 0.00			
	<i>Phyllotreta nemorum</i> group	1	-	oa-p		KLA D 464.03, Sample: 3/1, CA: ReM: S,			
	<i>Apion</i> sp B	1	-	oa-p		Period 8B			
	<i>Hypera</i> sp	1	-	oa-p					
	<i>Sitophilus granarius</i>	1	-	g-ss	68	Assessment record, but appears to be at semi-			
	*Diptera sp (puparium)	50	e	u		quantitative scan level. Flot 10 mm in jar, fine			
	*Acarina sp	6	s	u		plant debris, many seeds. Recorded in flot,			
	*Coleoptera sp (larva)	1	-	u		problems on filter paper.			
	* <i>Forficula auricularia</i>	1	-	rt			n	sq	ec
	*Hymenoptera Parasitica sp	1	-	u		<i>Oryzaeophilus surinamensis</i>	6	s	g-ss
	* <i>Siphonaptera</i> sp	1	-	u		<i>Lathridius minutus</i> group	6	s	rd-st
	Wt: 3.25 kg; E: 0.00; F: 0.00					<i>Platystethus nitens</i>	4	-	oa-d
	KLA D 464.02, Sample: 2/1, CA: ReM: S,					Aleocharinae sp A	3	-	u
	Period 8B					<i>Cercyon analis</i>	2	-	rt-sf
66	Assessment record as rapid scan. Recorded in					<i>Cryptopleurum minutum</i>	2	-	rf-st
	flot. Flot 15 mm in jar, plant debris.					<i>Anotylus nitidulus</i>	2	-	rt-d
		n	sq	ec		<i>Oxytelus sculptus</i>	2	-	rt-st
	<i>Oryzaeophilus surinamensis</i>	3	-	g-ss		<i>Tachyporus</i> sp	2	-	u
	<i>Anobium punctatum</i>	1	-	l-sf		Aleocharinae sp C	2	-	u
	<i>Cryptolestes ferrugineus</i>	1	-	g-ss		<i>Cryptolestes ferrugineus</i>	2	-	g-ss
	<i>Lathridius minutus</i> group	1	-	rd-st		<i>Cryptophagus</i> sp	2	-	rd-sf
	Donaciinae sp	1	-	oa-dp		<i>Atomaria</i> sp	2	-	rd
	*Diptera sp (puparium)	15	m	u		<i>Trechus obtusus</i> or			
	Wt: 0.82 kg; E: 0.00; F: 0.00					<i>quadristriatus</i>	1	-	oa
	KLA D 464.02, Sample: 2/T, CA: ReM: R,					Carabidae sp A	1	-	ob
	Period 8B					Carabidae sp B	1	-	ob
67	Two-dish flot. Recorded in flot and on filter					Carabidae sp C	1	-	ob
	paper; remains to tube. Preservation good.					Carabidae sp D	1	-	ob
		n	sq	ec		<i>Helophorus</i> sp A	1	-	oa-w
	<i>Cercyon analis</i>	2	-	rt-sf		<i>Helophorus</i> sp B	1	-	oa-w
	<i>Cryptolestes ferrugineus</i>	2	-	g-ss		<i>Cercyon</i> sp	1	-	u
	Delphacidae sp	1	-	oa-p		<i>Megasternum obscurum</i>	1	-	rt
	<i>Pterostichus</i> sp	1	-	ob		<i>Ochthebius</i> sp	1	-	oa-w
	<i>Megasternum obscurum</i>	1	-	rt		<i>Catops</i> sp	1	-	u
	<i>Xylodromus concinnus</i>	1	-	rt-st		<i>Omalius caesum</i> or <i>italicum</i>	1	-	rt-sf
	<i>Platystethus arenarius</i>	1	-	rf		<i>Xylodromus concinnus</i>	1	-	rt-st
	<i>Anotylus nitidulus</i>	1	-	rt-d		Omaliinae sp	1	-	rt
	<i>Anotylus ?rugosus</i>	1	-	rt		<i>Carpelimus bilineatus</i>	1	-	rt-sf
	<i>Philonthus</i> sp	1	-	u		<i>Anotylus complanatus</i>	1	-	rt-sf
	Aleocharinae sp A	1	-	u		<i>Anotylus tetracarlinatus</i>	1	-	rt
	Aleocharinae sp B	1	-	u		<i>Leptacinus</i> sp	1	-	rt-st
						<i>Gyrophypnus angustatus</i>	1	-	rt-st
						<i>Xantholinus</i> sp	1	-	u

	<i>Philonthus</i> sp A	1	-	u		<i>Anotylus rugosus</i>	1	-	rt
	<i>Philonthus</i> sp B	1	-	u		<i>Cryptolestes ferrugineus</i>	1	-	g-ss
	<i>Falagria</i> or <i>Cordalia</i> sp	1	-	rt-sf		? <i>Gastrophysa</i> sp	1	-	oa-p
	? <i>Crataraea suturalis</i>	1	-	rt-st		? <i>Chaetocnema concinna</i>	1	-	oa-p
	<i>Aleochara</i> sp	1	-	u		*Diptera sp (puparium)	6	s	u
	Aleocharinae sp B	1	-	u		*Oligochaeta sp (egg capsule)	3	-	u
	Aleocharinae sp D	1	-	u		*Coleoptera sp (larva)	1	-	u
	<i>Aphodius</i> sp A	1	-	ob-rf		*Hymenoptera Parasitica sp	1	-	u
	<i>Aphodius</i> sp B	1	-	ob-rf		Wt: 2.84 kg; E: 0.00; F: 0.00			
	<i>Anobium punctatum</i>	1	-	l-sf		KLA D 512, Sample: 6/T, CA: ReM: R,			
	<i>Ptinus</i> sp	1	-	rd-sf		Period 8A			
	<i>Corticaria</i> sp	1	-	rt-sf					
	? <i>Corticaria gibbosa</i>	1	-	rt	71	Assessment record as rapid scan. One-dish			
	<i>Palorus ratzeburgi</i>	1	-	g-ss		flot; recorded in flot, problems on filter paper.			
	? <i>Chrysomela aenea</i>	1	-	oa-p			n	sq	ec
	Chrysomelinae sp	1	-	oa-p		Carabidae sp A	1	-	ob
	Chrysomelinae sp A	1	-	oa-p		Carabidae sp B	1	-	ob
	Chrysomelinae sp B	1	-	oa-p		<i>Helophorus</i> sp	1	-	oa-w
	Halticinae sp	1	-	oa-p		<i>Cercyon</i> sp	1	-	u
	<i>Sitophilus granarius</i>	1	-	g-ss		<i>Megasternum obscurum</i>	1	-	rt
	Coleoptera sp	1	-	u		<i>Stenus</i> sp	1	-	u
	*Coleoptera sp (larva)	15	m	u		<i>Gyrophypnus</i> sp	1	-	rt
	*Acarina sp	15	m	u		Aleocharinae sp	1	-	u
	*Diptera sp (puparium)	15	m	u		Aleocharinae sp A	1	-	u
	*Insecta sp (pupa)	15	m	u		Aleocharinae sp B	1	-	u
	*Diptera sp (adult)	6	s	u		<i>Aphodius</i> sp	1	-	ob-rf
	*Syrphidae sp (larva)	2	-	u		<i>Phyllopertha horticola</i>	1	-	oa-p
	Wt: 2.65 kg; E: 0.00; F: 0.00					? <i>Orthoperus</i> sp	1	-	rt
	KLA D 464.03, Sample: 3/T, CA: ReM: SS,					<i>Lathridius minutus</i> group	1	-	rd-st
	Period 8B					Chrysomelinae sp	1	-	oa-p
69	Assessment record as rapid scan. One-dish flot;					<i>Phyllotreta ?nemororum</i> group	1	-	oa-p
	recorded in flot, problems on filter paper.					Curculionidae sp	1	-	oa
		n	sq	ec		*Coleoptera sp (larva)	6	s	u
	Carabidae sp	1	-	ob		*Acarina sp	6	s	u
	<i>Cercyon</i> sp A	1	-	u		*Auchenorrhyncha sp			
	<i>Cercyon</i> sp B	1	-	u		(nymph)	3	-	oa-p
	<i>Carpelimus</i> sp	1	-	u		*Diptera sp (puparium)	1	-	u
	<i>Anotylus</i> sp	1	-	rt		Wt: 2.37 kg; E: 0.00; F: 0.00			
	Aleocharinae sp	1	-	u		KLAD515, Sample: 10/T, CA: ReM: R, Period 6			
	?Elateridae sp	1	-	ob	72	Recorded in flot and on filter paper; remains to			
	<i>Ptinus</i> sp	1	-	rd-sf		tube. Some fossils very pale. Sixteen of 23 <i>Apions</i>			
	<i>Cryptolestes ferrugineus</i>	1	-	g-ss		teneral (these very hard to see and some probably			
	<i>Mycetaea hirta</i>	1	-	rd-ss		overlooked). <i>Hypera</i> and <i>Gymnetron</i> teneral.			
	<i>Sitophilus granarius</i>	1	-	g-ss			n	sq	ec
	*Acarina sp	6	s	u		<i>Oryzaephilus surinamensis</i>	27	-	g-ss
	*Diptera sp (pupa)	6	s	u		<i>Cryptolestes ferrugineus</i>	26	-	g-ss
	*Auchenorrhyncha sp (nymph)	1	-	oa-p		<i>Apion</i> sp	23	-	oa-p
	Wt: 2.22 kg; E: 0.00; F: 0.00					<i>Lathridius minutus</i> group	11	-	rd-st
	KLAD480, Sample: 4/T, CA: ReM: R, Period 8B					<i>Helophorus grandis</i>	6	-	oa-w
70	Assessment record as rapid scan. One-dish flot,					<i>Anotylus nitidulus</i>	5	-	rt-d
	many seeds. Recorded in flot. Very few insects.					<i>Atomaria</i> sp D	5	-	rd
	Perhaps a weedy external area?					<i>Enicmus</i> sp	5	-	rt-sf
		n	sq	ec		<i>Anotylus rugosus</i>	4	-	rt
	Auchenorrhyncha sp	1	-	oa-p		<i>Atomaria</i> sp B	4	-	rd
	<i>Helophorus</i> sp	1	-	oa-w		<i>Carpelimus ?bilineatus</i>	3	-	rt-sf
	<i>Onthophilus striatus</i>	1	-	rt		<i>Falagria</i> sp	3	-	rt-sf
						<i>Aphodius prodromus</i>	3	-	ob-rf

<i>Meligethes</i> sp	3	-	oa-p
<i>Atomaria</i> sp C	3	-	rd
<i>Corticaria gibbosa</i>	3	-	rt
<i>Sitophilus granarius</i>	3	-	g-ss
<i>Bembidion lampros</i>	2	-	oa
<i>Helophorus</i> sp	2	-	oa-w
<i>Ochthebius</i> sp	2	-	oa-w
<i>Carpelimus ?gracilis</i>	2	-	u
<i>Stenus</i> sp B	2	-	u
<i>Gyrophypnus angustatus</i>	2	-	rt-st
<i>Gyrophypnus fracticornis</i>	2	-	rt-st
Aleocharinae sp B	2	-	u
<i>Cryptophagus</i> sp A	2	-	rd-sf
<i>Ephistemus globulus</i>	2	-	rd-sf
<i>Galerucella</i> sp	2	-	oa-p
<i>Macrodema micropterum</i>	1	-	oa-pm
<i>Scolopostethus</i> sp	1	-	oa-p
Auchenorrhyncha sp	1	-	oa-p
<i>Carabus</i> sp	1	-	oa
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Pterostichus</i> sp	1	-	ob
Carabidae sp	1	-	ob
<i>Agabus bipustulatus</i>	1	-	oa-w
<i>Cercyon analis</i>	1	-	rt-sf
<i>Hydrobius fuscipes</i>	1	-	oa-w
<i>Ptenidium</i> sp	1	-	rt
<i>Catops</i> sp	1	-	u
<i>Proteinus</i> sp	1	-	rt
<i>Omalium</i> sp	1	-	rt
? <i>Xylodromus concinnus</i>	1	-	rt-st
<i>Anotylus tetracarinus</i>	1	-	rt
<i>Stenus</i> sp A	1	-	u
<i>Lathrobium</i> sp	1	-	u
<i>Othius myrmecophilus</i>	1	-	rt
<i>Leptacinus</i> sp	1	-	rt-st
<i>Neobisnius</i> sp	1	-	u
<i>Philonthus</i> sp A	1	-	u
<i>Philonthus</i> sp B	1	-	u
<i>Tachyporus</i> 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
<i>Aphodius</i> sp A	1	-	ob-rf
<i>Aphodius</i> sp B	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
<i>Anobium punctatum</i>	1	-	l-sf
<i>Ptinus ?fur</i>	1	-	rd-sf
<i>Cryptophagus ?scutellatus</i>	1	-	rd-st
<i>Cryptophagus</i> sp B	1	-	rd-sf
<i>Atomaria</i> sp A	1	-	rd
<i>Corticaria</i> sp	1	-	rt-sf
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st

Donaciinae sp	1	-	oa-dp
<i>Phyllotreta nemorum</i> group	1	-	oa-p
<i>Longitarsus</i> sp	1	-	oa-p
<i>Chaetocnema concinna</i>	1	-	oa-p
<i>Phyllobius</i> or <i>Polydrusus</i> sp	1	-	oa-p
<i>Hypera</i> sp	1	-	oa-p
<i>Gymnetron</i> 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
*Auchenorrhyncha sp (nymph)	3	-	oa-p
*Aphidoidea sp	2	-	u
* <i>Pulex irritans</i>	1	-	ss
*Araneae sp	1	-	u
*Dermaptera sp	1	-	u
*Diptera sp (adult)	1	-	u
*Proctotrupeoidea sp	1	-	u

Wt: 5.00 kg; E: 0.00; F: 0.00

KLAD 524.01, Sample: 11/1, CA: ReM: D, Period 7

73

Assessment record as rapid scan. Flot 10 mm in jar, assorted plant debris. Recorded in flot.

	n	sq	ec
<i>Anotylus rugosus</i>	3	-	rt
<i>Carpelimus pusillus</i> group	2	-	u
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Pterostichus</i> sp	1	-	ob
Carabidae sp	1	-	ob
<i>Helophorus aquaticus</i> or <i>grandis</i>	1	-	oa-w
<i>Helophorus</i> sp	1	-	oa-w
<i>Cercyon analis</i>	1	-	rt-sf
<i>Cercyon</i> sp	1	-	u
<i>Hydrobius fuscipes</i>	1	-	oa-w
Omalinae sp	1	-	rt
<i>Neobisnius</i> sp	1	-	u
<i>Philonthus</i> sp	1	-	u
<i>Tachyporus</i> sp	1	-	u
<i>Falagria</i> or <i>Cordalia</i> sp	1	-	rt-sf
Aleocharinae sp	1	-	u
<i>Aphodius</i> sp	1	-	ob-rf
? <i>Anobium punctatum</i>	1	-	l-sf
<i>Cryptolestes ferrugineus</i>	1	-	g-ss
<i>Oryzaephilus surinamensis</i>	1	-	g-ss
<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Atomaria</i> sp	1	-	rd
<i>Lathridius minutus</i> group	1	-	rd-st
<i>Apion</i> sp	1	-	oa-p
<i>Sitophilus granarius</i>	1	-	g-ss
*Diptera sp (puparium)	15	m	u
*Acarina sp	6	s	u
*Oligochaeta sp (egg capsule)	2	-	u

Wt: 1.85 kg; E: 3.00; F: 3.00

KLA D 524.01, Sample: 11/T, CA: ReM: R, Period 7

One-dish flot. Recorded in flot and on filter paper; remains to tube. Preservation normal chemically but some fossils (especially outdoor taxa) very fragmentary.

	n	sq	ec
<i>Carpelimus ?corticinus</i>	5	-	oa-d
<i>Helophorus grandis</i>	4	-	oa-w
<i>Helophorus</i> sp A	3	-	oa-w
<i>Falagria</i> sp	3	-	rt-sf
Aleocharinae sp E	3	-	u
<i>Helophorus</i> sp B	2	-	oa-w
<i>Megasternum obscurum</i>	2	-	rt
<i>Anotylus rugosus</i>	2	-	rt
Aleocharinae sp A	2	-	u
Aleocharinae sp D	2	-	u
<i>Oryzaephilus surinamensis</i>	2	-	g-ss
<i>Atomaria</i> sp	2	-	rd
<i>Lathridius minutus</i> group	2	-	rd-st
<i>Enicmus</i> sp	2	-	rt-sf
<i>Stignocoris rusticus</i>	1	-	oa
Lygaeidae sp	1	-	oa-p
<i>Anthocoris</i> sp	1	-	oa-p
Delphacidae sp	1	-	oa-p
Auchenorrhyncha sp A	1	-	oa-p
Auchenorrhyncha sp B	1	-	oa-p
<i>Carabus nemoralis</i>	1	-	oa
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Pterostichus</i> sp A	1	-	ob
<i>Pterostichus</i> sp B	1	-	ob
Carabidae sp A	1	-	ob
Carabidae sp B	1	-	ob
Hydroporinae sp	1	-	oa-w
<i>Cercyon analis</i>	1	-	rt-sf
Histerinae sp	1	-	rt
<i>Olophrum</i> sp	1	-	oa
<i>Carpelimus ?bilineatus</i>	1	-	rt-sf
<i>Carpelimus</i> sp	1	-	u
<i>Anotylus nitidulus</i>	1	-	rt-d
<i>Stenus</i> sp	1	-	u
<i>Tachyporus</i> sp	1	-	u
<i>Cordalia obscura</i>	1	-	rt-sf
Aleocharinae sp B	1	-	u
Aleocharinae sp C	1	-	u
<i>Aphodius</i> sp A	1	-	ob-rf
<i>Aphodius</i> sp B	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
<i>Anobium ?punctatum</i>	1	-	l-sf
<i>Meligethes</i> sp	1	-	oa-p
<i>Cryptolestes ?ferrugineus</i>	1	-	g-ss
<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Corticaria</i> sp	1	-	rt-sf
<i>Palorus ratzeburgi</i>	1	-	g-ss
<i>Gastrophysa viridula</i>	1	-	oa-p
Halticinae sp	1	-	oa-p
<i>Sitophilus granarius</i>	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

Wt: 4.40 kg; E: 0.00; F: 0.00

KLA D 524.03, Sample: 13/1, CA: ReM: S, Period 7

75

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
<i>Clivina ?fossor</i>	1	-	oa
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Colymbetes fuscus</i>	1	-	oa-w
<i>Helophorus</i> sp	1	-	oa-w
<i>Megasternum obscurum</i>	1	-	rt
<i>Anotylus rugosus</i>	1	-	rt
<i>Stenus</i> sp	1	-	u
<i>Gyrophypnus</i> sp	1	-	rt
Staphylininae sp	1	-	u
<i>Tachyporus</i> sp	1	-	u
Aleocharinae sp	1	-	u
<i>Aphodius</i> sp	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
Elateridae sp	1	-	ob
<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Lathridius minutus</i> group	1	-	rd-st
<i>Corticaria gibbosa</i>	1	-	rt
<i>?Gastrophysa viridula</i>	1	-	oa-p
Chrysomelinae sp	1	-	oa-p
<i>Apion</i> sp	1	-	oa-p
*Diptera sp (puparium)	2	-	u
*Auchenorrhyncha sp (nymph)	1	-	oa-p
*Aphidoidea sp	1	-	u
*Oligochaeta sp (egg capsule)	1	-	u
*Diptera sp (pupa)	1	-	u

Wt: 2.03 kg; E: 3.00; F: 4.00

KLA D 524.03, Sample: 13/T, CA: ReM: R, Period 7

76

Assessment record as rapid scan. One-dish flot; recorded in flot. Many seeds. Preservation poor.

	n	sq	ec
Carabidae sp	1	-	ob
<i>Helophorus</i> sp	1	-	oa-w
<i>Anotylus ?complanatus</i>	1	-	rt-sf

	<i>Aphodius</i> sp	1	-	ob-rf		<i>Phyllopertha horticola</i>	1	-	oa-p
	<i>Cryptolestes ferrugineus</i>	1	-	g-ss		Cetoniinae sp	1	-	oa
	<i>Oryzaeophilus surinamensis</i>	1	-	g-ss		Elateridae sp	1	-	ob
	*Diptera sp (puparium)	1	-	u		<i>Oryzaeophilus surinamensis</i>	1	-	g-ss
	Wt: 1.84 kg; E: 0.00; F: 0.00					Chrysomelinae sp	1	-	oa-p
	KLA D 531.01, Sample: 14/T, CA: ReM: S,					<i>Tropiphorus</i> sp	1	-	oa
	Period 8B					*Acarina sp	100	e	u
77	Assessment record as rapid scan. One-dish flot,					*Diptera sp (puparium)	6	s	u
	mostly seeds. Recorded in flot. Few insects.					*Elateridae sp A (larva)	3	-	ob
		n	sq	ec		*Auchenorrhyncha sp (nymph)	2	-	oa-p
	<i>Trechus obtusus</i> or					*Elateridae sp B (larva)	1	-	ob
	<i>quadristriatus</i>	1	-	oa		*Coleoptera sp (larva)	1	-	u
	<i>Agabus bipustulatus</i>	1	-	oa-w		*Bibionidae sp	1	-	u
	<i>Helophorus</i> sp	1	-	oa-w		*Formicidae sp	1	-	u
	<i>Cercyon</i> sp	1	-	u		Wt: 4.40 kg; E: 0.00; F: 0.00			
	<i>Megasternum obscurum</i>	1	-	rt		KLAD 540.02, Sample: 17/1, CA: ReM: S, Period 3			
	<i>Stenus</i> sp	1	-	u	79	Assessment record as rapid scan. One-dish			
	<i>Leptacinus</i> sp	1	-	rt-st		flot; recorded in flot, problems on filter paper.			
	? <i>Philonthus</i> sp	1	-	u			n	sq	ec
	<i>Aphodius</i> sp	1	-	ob-rf		<i>Philonthus</i> sp	2	-	u
	<i>Cryptolestes ferrugineus</i>	1	-	g-ss		<i>Bembidion</i> sp	1	-	oa
	<i>Oryzaeophilus surinamensis</i>	1	-	g-ss		Carabidae sp A	1	-	ob
	*Acarina sp	1	-	u		Carabidae sp B	1	-	ob
	* <i>Daphnia</i> sp (ephippium)	1	-	oa-w		Carabidae sp C	1	-	ob
	Wt: 1.69 kg; E: 2.00; F: 3.00					<i>Helophorus</i> sp	1	-	oa-w
	KLA D 531.02, Sample: 15/T, CA: ReM: R,					<i>Omalium</i> sp	1	-	rt
	Period 8B					<i>Anotylus</i> sp	1	-	rt
78	Two-dish flot. Recorded in flot and on filter					Aleocharinae sp	1	-	u
	paper. Most remains pale, tending to yellow.					<i>Aphodius</i> sp	1	-	ob-rf
		n	sq	ec		Elateridae sp	1	-	ob
	<i>Lathrobium</i> sp	3	-	u		Halticinae sp	1	-	oa-p
	<i>Gyrohypnus fracticornis</i>	2	-	rt-st		Coleoptera sp	1	-	u
	<i>Xantholinus linearis</i> or					*Acarina sp	15	m	u
	<i>longiventris</i>	2	-	rt-sf		*Auchenorrhyncha sp (nymph)	10	e	oa-p
	<i>Aphodius ?contaminatus</i>	2	-	oa-rf		*Diptera sp (puparium)	6	s	u
	<i>Trechus obtusus</i> or					*Coccoidea sp	1	-	u
	<i>quadristriatus</i>	1	-	oa		*Dermaptera sp	1	-	u
	<i>Bembidion lampros</i> or					Wt: 1.81 kg; E: 4.00; F: 3.00			
	<i>properans</i>	1	-	oa		KLA D 540.02, Sample: 17/T, CA: ReM: R,			
	Carabidae sp	1	-	ob		Period 3			
	<i>Cercyon</i> sp	1	-	u	80	Recorded in flot and on filter paper, remains			
	<i>Platystethus arenarius</i>	1	-	rf		to tube. <i>Aphodius</i> often rotted, rolled, and			
	<i>Stenus</i> sp A	1	-	u		folded - drying? (less probably birds).			
	<i>Stenus</i> sp B	1	-	u			n	sq	ec
	<i>Othius ?myrmecophilus</i>	1	-	rt		<i>Aphodius contaminatus</i>	12	-	oa-rf
	<i>Philonthus</i> sp A	1	-	u		<i>Lathridius minutus</i> group	9	-	rd-st
	<i>Philonthus</i> sp B	1	-	u		<i>Corticarina</i> or <i>Cortinicara</i> sp	3	-	rt
	<i>Philonthus</i> sp C	1	-	u		<i>Aphodius ?prodromus</i>	2	-	ob-rf
	<i>Quedius</i> sp	1	-	u		<i>Aphodius</i> sp	2	-	ob-rf
	<i>Falagria</i> or <i>Cordalia</i> sp	1	-	rt-sf		<i>Oryzaeophilus surinamensis</i>	2	-	g-ss
	Aleocharinae sp A	1	-	u		Auchenorrhyncha sp	1	-	oa-p
	Aleocharinae sp B	1	-	u		<i>Carabus nemoralis</i>	1	-	oa
	Aleocharinae sp C	1	-	u		<i>Clivina fossor</i>	1	-	oa
	<i>Aphodius</i> sp	1	-	ob-rf		? <i>Pterostichus</i> sp	1	-	ob
	<i>Aphodius</i> sp A	1	-	ob-rf		<i>Calathus</i> sp	1	-	oa
	<i>Aphodius</i> sp B	1	-	ob-rf		<i>Amara</i> sp	1	-	oa

<i>Harpalus</i> sp	1	-	oa
Carabidae sp	1	-	ob
<i>Helophorus</i> sp	1	-	oa-w
<i>Sphaeridium</i> sp	1	-	rf
<i>Cercyon haemorrhoidalis</i>	1	-	rf-sf
<i>Megasternum obscurum</i>	1	-	rt
<i>Catops</i> sp	1	-	u
<i>Anotylus tetracarinatus</i>	1	-	rt
<i>Oxytelus sculptus</i>	1	-	rt-st
<i>Stenus</i> sp	1	-	u
<i>Othius</i> sp	1	-	rt
<i>Gyrophypnus fracticornis</i>	1	-	rt-st
? <i>Xantholinus</i> sp	1	-	u
<i>Philonthus</i> sp	1	-	u
Staphylininae sp	1	-	u
<i>Tachyporus</i> sp	1	-	u
Byrrhidae sp	1	-	oa-p
<i>Cryptolestes ?ferrugineus</i>	1	-	g-ss
<i>Atomaria</i> sp	1	-	rd
<i>Stephostethus lardarius</i>	1	-	rt-st
<i>Anthicus formicarius</i>	1	-	rt-st
<i>Longitarsus</i> sp	1	-	oa-p
<i>Chaetocnema arida</i> group	1	-	oa-p
<i>Apion</i> sp	1	-	oa-p
<i>Sitophilus granarius</i>	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
*Araneae sp	1	-	u
* <i>Forficula</i> sp	1	-	u
*Formicidae sp A	1	-	u
*Formicidae sp B	1	-	u
*Hymenoptera Parasitica sp 1	1	-	u
Wt: 4.50 kg; E: 0.00; F: 0.00			
KLA D 540.05, Sample: 18/1, CA: ReM: S, Period 3			

81 Assessment record as rapid scan. One-dish flot, seeds, moss, twig fragments. Recorded in flot.

	n	sq	ec
<i>Aphodius</i> sp	6	s	ob-rf
<i>Lathridius minutus</i> group	2	-	rd-st
<i>Carabus</i> sp	1	-	oa
<i>Helophorus</i> sp	1	-	oa-w
<i>Cercyon</i> sp	1	-	u
<i>Oxytelus sculptus</i>	1	-	rt-st
<i>Stenus</i> sp	1	-	u
<i>Philonthus</i> sp	1	-	u
<i>Philonthus</i> or <i>Quedius</i> sp	1	-	u
Aleocharinae sp	1	-	u
Staphylinidae sp	1	-	u
<i>Cryptophagus</i> 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
Wt: 1.98 kg; E: 3.00; F: 3.00			
KLA D 540.05, Sample: 18/T, CA: ReM: R, Period 3			

82 Recorded in flot, problems on filter paper; remains to tube. One teneral *Apion*.

	n	sq	ec
<i>Anotylus tetracarinatus</i>	6	-	rt
<i>Cercyon analis</i>	5	-	rt-sf
<i>Megasternum obscurum</i>	5	-	rt
Aleocharinae sp A	5	-	u
<i>Aphodius prodromus</i>	5	-	ob-rf
<i>Helophorus</i> sp	4	-	oa-w
<i>Oryzaephilus surinamensis</i>	4	-	g-ss
<i>Cryptophagus</i> sp	4	-	rd-sf
<i>Atomaria</i> sp	4	-	rd
<i>Lathridius minutus</i> group	4	-	rd-st
<i>Enicmus</i> sp	4	-	rt-sf
<i>Corticaria</i> sp	4	-	rt-sf
<i>Helophorus aquaticus</i>	3	-	oa-w
<i>Platystethus arenarius</i>	3	-	rf
<i>Anotylus nitidulus</i>	3	-	rt-d
<i>Anotylus rugosus</i>	3	-	rt
<i>Gyrophypnus angustatus</i>	3	-	rt-st
<i>Tachyporus</i> sp	3	-	u
<i>Falagria caesa</i> or <i>sulcatula</i>	3	-	rt-sf
<i>Corticaria gibbosa</i>	3	-	rt
<i>Longitarsus</i> sp B	3	-	oa-p
<i>Bembidion lampros</i> or <i>properans</i>	2	-	oa
<i>Helophorus grandis</i>	2	-	oa-w
<i>Cercyon atricapillus</i>	2	-	rf-st
<i>Cercyon haemorrhoidalis</i>	2	-	rf-sf
<i>Carpelimus</i> sp B	2	-	u
<i>Gyrophypnus fracticornis</i>	2	-	rt-st
<i>Cordalia obscura</i>	2	-	rt-sf
<i>Apion</i> sp	2	-	oa-p
<i>Sitona suturalis</i>	2	-	oa-p
<i>Notaris acridulus</i>	2	-	oa-dp
Saldidae sp	1	-	oa-d
Delphacidae sp	1	-	oa-p
Auchenorrhyncha sp A	1	-	oa-p
Auchenorrhyncha sp B	1	-	oa-p
<i>Carabus ?nemoralis</i>	1	-	oa
<i>Nebria ?brevicollis</i>	1	-	oa
<i>Dyschirius globosus</i>	1	-	oa
<i>Bembidion guttula</i> or <i>mannerheimi</i>	1	-	oa
<i>Bembidion</i> sp	1	-	oa
? <i>Pterostichus</i> sp	1	-	ob
Carabidae sp	1	-	ob
<i>Agabus bipustulatus</i>	1	-	oa-w
<i>Coelostoma orbiculare</i>	1	-	oa-w

<i>Hydrobius fuscipes</i>	1	-	oa-w
<i>Onthophilus striatus</i>	1	-	rt
Histerinae sp	1	-	rt
<i>Ochthebius</i> sp	1	-	oa-w
<i>Ptenidium</i> sp	1	-	rt
Silphidae sp	1	-	u
<i>Micropeplus staphylinoides</i>	1	-	rt
Omalinae sp	1	-	rt
<i>Carpelimus ?bilineatus</i>	1	-	rt-sf
<i>Carpelimus</i> sp A	1	-	u
<i>Stenus</i> sp	1	-	u
<i>Othius ?myrmecophilus</i>	1	-	rt
<i>Leptacinus</i> sp	1	-	rt-st
<i>Philonthus</i> sp A	1	-	u
<i>Philonthus</i> sp B	1	-	u
Staphylininae sp	1	-	u
<i>Tachinus signatus</i>	1	-	u
Aleocharinae sp B	1	-	u
Aleocharinae sp C	1	-	u
<i>Geotrupes</i> sp	1	-	oa-rf
<i>Aphodius</i> sp A	1	-	ob-rf
<i>Aphodius</i> sp B	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
<i>?Anobium punctatum</i>	1	-	l-sf
<i>Omosita colon</i>	1	-	rt-sf
<i>Cryptolestes ?ferrugineus</i>	1	-	g-ss
<i>Orthoperus</i> sp	1	-	rt
<i>Typhaea stercorea</i>	1	-	rd-ss
<i>Palorus ratzeburgi</i>	1	-	g-ss
<i>Hydrothassa</i> sp	1	-	oa-dp
Chrysomelinae sp	1	-	oa-p
<i>Longitarsus</i> sp	1	-	oa-p
<i>Longitarsus</i> sp A	1	-	oa-p
<i>Sitona lepidus</i>	1	-	oa-p
*Coleoptera sp (larva)	15	m	u
*Acarina sp	15	m	u
* <i>Daphnia</i> 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
*Auchenorrhyncha sp (nymph)	3	-	oa-p
*Aphidoidea sp	2	-	u
*Coccoidea sp	1	-	u
*Araneae sp	1	-	u
*Cladocera sp F (ephippium)	1	-	oa-w
*Diptera sp (adult)	1	-	u
*Hymenoptera Parasitica sp	1	-	u
* <i>Siphonaptera</i> sp	1	-	u
*Insecta sp (larva)	1	-	u
*Lepidoptera sp (pupa)	1	-	u
Wt: 3.70 kg; E: 0.00; F: 0.00			
KLAD 546.01, Sample: 19/1, CA: ReM: S, Period 3-5			

83 Assessment record as rapid scan. Flot 5 mm in jar; recorded in flot.

	n	sq	ec
<i>Cercyon analis</i>	2	-	rt-sf

Auchenorrhyncha sp	1	-	oa-p
<i>Dyschirius ?globosus</i>	1	-	oa
Carabidae sp A	1	-	ob
Carabidae sp B	1	-	ob
<i>Helophorus grandis</i>	1	-	oa-w
<i>Helophorus</i> sp	1	-	oa-w
<i>Sphaeridium</i> sp	1	-	rf
<i>Cercyon ?haemorrhoidalis</i>	1	-	rf-sf
Hydrophilinae sp	1	-	oa-w
<i>Acritus nigricornis</i>	1	-	rt-st
<i>Onthophilus striatus</i>	1	-	rt
Histerinae sp	1	-	rt
Omalinae sp	1	-	rt
<i>Carpelimus pusillus</i> group	1	-	u
<i>Anotylus rugosus</i>	1	-	rt
<i>Stenus</i> sp	1	-	u
<i>Gyrohypnus</i> sp	1	-	rt
Aleocharinae sp A	1	-	u
Aleocharinae sp B	1	-	u
<i>Geotrupes</i> sp	1	-	oa-rf
<i>Aphodius ?granarius</i>	1	-	ob-rf
<i>Ptinus</i> sp	1	-	rd-sf
<i>?Omosita</i> sp	1	-	rt-sf
<i>Cryptolestes ferrugineus</i>	1	-	g-ss
<i>Cryptophagus ?scutellatus</i>	1	-	rd-st
<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Lathridius minutus</i> group	1	-	rd-st
<i>Apion</i> sp	1	-	oa-p
<i>Sitona</i> sp	1	-	oa-p
<i>Hypera punctata</i>	1	-	oa-p
<i>Sitophilus granarius</i>	1	-	g-ss
Ceuthorhynchinae sp	1	-	oa-p
<i>Gymnetron</i> sp	1	-	oa-p
Coleoptera sp	1	-	u
*Diptera sp (puparium)	15	m	u
*Auchenorrhyncha sp (nymph)	2	-	oa-p
*Aphidoidea sp	1	-	u
*Bibionidae sp	1	-	u
*Cladocera sp (ephippium)	1	-	oa
* <i>Daphnia</i> sp (ephippium)	1	-	oa-w
*Insecta sp (larva)	1	-	u

Wt: 2.13 kg; E: 3.00; F: 3.00

KLA D 546.01, Sample 19/T, CA: ReM: R, Period 3-5

84 Recorded in flot and on filter paper; remains to tube.

	n	sq	ec
<i>Oryzaephilus surinamensis</i>	7	-	g-ss
<i>Lathridius minutus</i> group	5	-	rd-st
<i>Anotylus rugosus</i>	4	-	rt
<i>Neobisnius</i> sp	4	-	u
<i>Falagria</i> sp	4	-	rt-sf
<i>Platystethus arenarius</i>	3	-	rf
<i>Oxytelus sculptus</i>	3	-	rt-st
<i>Gyrohypnus angustatus</i>	3	-	rt-st
<i>Cryptolestes ferrugineus</i>	3	-	g-ss
<i>Helophorus</i> sp	2	-	oa-w

<i>Cercyon analis</i>	2	-	rt-sf
<i>Carpelimus ?bilineatus</i>	2	-	rt-sf
<i>Ulopa reticulata</i>	1	-	oa-pm
<i>Dyschirius ?globosus</i>	1	-	oa
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Bembidion ?doris</i>	1	-	oa-d
<i>Pterostichus ?melanarius</i>	1	-	ob
Hydroporinae sp	1	-	oa-w
Dytiscidae sp	1	-	oa-w
<i>Helophorus ?aquaticus</i>	1	-	oa-w
<i>Cercyon atricapillus</i>	1	-	rf-st
<i>Cercyon ?unipunctatus</i>	1	-	rf-st
<i>Hydrobius fuscipes</i>	1	-	oa-w
? <i>Laccobius</i> sp	1	-	oa-w
<i>Acritus nigricornis</i>	1	-	rt-st
<i>Silpha</i> sp	1	-	u
<i>Lesteva longoelytrata</i>	1	-	oa-d
<i>Omalius</i> sp	1	-	rt
<i>Xylodromus ?concinus</i>	1	-	rt-st
<i>Carpelimus</i> sp	1	-	u
<i>Anotylus nitidulus</i>	1	-	rt-d
<i>Stenus</i> sp	1	-	u
<i>Othius</i> sp	1	-	rt
<i>Gyrophypnus fracticornis</i>	1	-	rt-st
<i>Philonthus</i> sp A	1	-	u
<i>Philonthus</i> sp B	1	-	u
Aleocharinae sp A	1	-	u
Aleocharinae sp B	1	-	u
<i>Aphodius ?granarius</i>	1	-	ob-rf
<i>Aphodius ?prodromus</i>	1	-	ob-rf
<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Enicmus</i> sp	1	-	rt-sf
<i>Corticaria</i> sp	1	-	rt-sf
<i>Corticarina</i> or <i>Cortinicara</i> sp	1	-	rt
<i>Palorus ratzeburgi</i>	1	-	g-ss
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st
<i>Longitarsus</i> sp	1	-	oa-p
<i>Sitophilus granarius</i>	1	-	g-ss
* <i>Auchenorrhyncha</i> sp (nymph)	6	s	oa-p
* <i>Acarina</i> sp	6	s	u
* <i>Oligochaeta</i> sp (egg capsule)	6	s	u
* <i>Diptera</i> sp (puparium)	6	s	u
* <i>Coleoptera</i> sp (larva)	1	-	u
* <i>Cladocera</i> sp F (ephippium)	1	-	oa-w
* <i>Siphonaptera</i> sp	1	-	u
* <i>Diptera</i> sp (larva)	1	-	u
Wt: 3.20 kg; E: 0.00; F: 0.00			
LAL B 257, Sample: 23/T, CA: ReM: D, Period 8B			

85 Recorded in flot; problems on filter paper and to tube. Remains pale. Teneral *Apion*.

	n	sq	ec
<i>Oryzaephilus surinamensis</i>	27	-	g-ss
<i>Oxytelus sculptus</i>	10	-	rt-st

<i>Cryptolestes ferrugineus</i>	7	-	g-ss
<i>Lathridius minutus</i> group	3	-	rd-st
<i>Cercyon analis</i>	2	-	rt-sf
<i>Cercyon</i> sp	2	-	u
Staphylininae sp	2	-	u
<i>Cryptophagus</i> sp	2	-	rd-sf
<i>Palorus ratzeburgi</i>	2	-	g-ss
Lygaeidae sp	1	-	oa-p
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Bradycellus</i> sp	1	-	oa
Hydroporinae sp	1	-	oa-w
<i>Helophorus aquaticus</i> or <i>grandis</i>	1	-	oa-w
Hydrophilinae sp	1	-	oa-w
<i>Olophrum</i> sp	1	-	oa
<i>Omalius ?rivulare</i>	1	-	rt-sf
<i>Omalius</i> sp	1	-	rt
<i>Xylodromus concinnus</i>	1	-	rt-st
<i>Carpelimus ?bilineatus</i>	1	-	rt-sf
<i>Carpelimus fuliginosus</i>	1	-	st
<i>Anotylus nitidulus</i>	1	-	rt-d
<i>Stenus</i> sp A	1	-	u
<i>Stenus</i> sp B	1	-	u
<i>Gyrophypnus angustatus</i>	1	-	rt-st
<i>Falagria caesa</i> or <i>sulcatula</i>	1	-	rt-sf
Aleocharinae sp	1	-	u
<i>Trox scaber</i>	1	-	rt-sf
<i>Aphodius</i> sp A	1	-	ob-rf
<i>Anobium ?punctatum</i>	1	-	l-sf
<i>Ptinus</i> sp	1	-	rd-sf
<i>Tenebroides mauritanicus</i>	1	-	rt-ss
<i>Brachypterus</i> sp	1	-	oa-p
<i>Monotoma picipes</i>	1	-	rt-st
<i>Typhaea stercorea</i>	1	-	rd-ss
<i>Anthicus formicarius</i>	1	-	rt-st
<i>Gastrophysa</i> sp	1	-	oa-p
<i>Apion</i> sp	1	-	oa-p
* <i>Acarina</i> sp	15	m	u
* <i>Diptera</i> sp (puparium)	15	m	u
* <i>Coleoptera</i> sp (larva)	6	s	u
* <i>Auchenorrhyncha</i> sp (nymph)	2	-	oa-p
* <i>Coccoidea</i> sp	1	-	u
* <i>Aphidoidea</i> sp	1	-	u
* <i>Araneae</i> sp	1	-	u
* <i>Diptera</i> sp (adult)	1	-	u
* <i>Opiliones</i> sp	1	-	u

Wt: 3.00 kg; E: 0.00; F: 0.00
LAL C 290, Sample: 15/T, CA: ReM: S,
Period 10A

86 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
<i>Oryzaephilus surinamensis</i>	84	-	g-ss
<i>Cryptolestes ferrugineus</i>	41	-	g-ss

<i>Oxytelus sculptus</i>	19	-	rt-st	Ptiliidae sp	1	-	u
<i>Cercyon atricapillus</i>	9	-	rf-st	Scydmaenidae sp	1	-	u
<i>Lathridius minutus</i> group	8	-	rd-st	<i>Olophrum ?piceum</i>	1	-	oa
<i>Alphitobius diaperinus</i>	8	-	rt-ss	<i>Eusphalerum ?sorbi</i>	1	-	u
<i>Cercyon analis</i>	4	-	rt-sf	<i>Omalius ?rivulare</i>	1	-	rt-sf
<i>Carpelimus bilineatus</i>	4	-	rt-sf	<i>Platystethus arenarius</i>	1	-	rf
<i>Falagria caesa</i> or <i>sulcatula</i>	4	-	rt-sf	<i>Stenus</i> sp B	1	-	u
<i>Ulopa reticulata</i>	3	-	oa-pm	<i>Stenus</i> sp C	1	-	u
<i>Bradycellus ?ruficollis</i>	3	-	oa-m	<i>Euaesthetus bipunctatus</i>	1	-	oa
<i>Anotylus nitidulus</i>	3	-	rt-d	<i>Lathrobium</i> sp B	1	-	u
<i>Stenus</i> sp A	3	-	u	<i>Gyrohypnus ?angustatus</i>	1	-	rt-st
<i>Lathrobium</i> sp A	3	-	u	<i>Gyrohypnus fracticornis</i>	1	-	rt-st
<i>Lithocharis ochracea</i>	3	-	rt-st	<i>Xantholinus linearis</i> or			
<i>Leptacinus</i> sp	3	-	rt-st	<i>longiventris</i>	1	-	rt-sf
Aleocharinae sp E	3	-	u	<i>Philonthus</i> sp B	1	-	u
<i>Pselaphus heisei</i>	3	-	u	Staphylininae sp	1	-	u
<i>Ptinus fur</i>	3	-	rd-sf	<i>Tachyporus</i> sp A	1	-	u
<i>Atomaria</i> sp	3	-	rd	<i>Tachyporus</i> sp B	1	-	u
<i>Sitophilus granarius</i>	3	-	g-ss	<i>Tachinus laticollis</i> or			
<i>Auchenorrhyncha</i> sp A	2	-	oa-p	<i>marginellus</i>	1	-	u
<i>Bembidion</i> sp A	2	-	oa	<i>Cordalia obscura</i>	1	-	rt-sf
<i>Hydroporus</i> sp B	2	-	oa-w	Aleocharinae sp A	1	-	u
<i>Cercyon unipunctatus</i>	2	-	rf-st	Aleocharinae sp B	1	-	u
<i>Megasternum obscurum</i>	2	-	rt	Aleocharinae sp C	1	-	u
<i>Acritus nigricornis</i>	2	-	rt-st	Aleocharinae sp D	1	-	u
<i>Ptenidium</i> sp	2	-	rt	Aleocharinae sp F	1	-	u
<i>Acrotrichis</i> sp	2	-	rt	Aleocharinae sp G	1	-	u
<i>Xylodromus concinnus</i>	2	-	rt-st	<i>Trox scaber</i>	1	-	rt-sf
<i>Carpelimus ?pusillus</i> group	2	-	u	<i>Aphodius</i> sp	1	-	ob-rf
<i>Carpelimus</i> sp A	2	-	u	<i>?Phyllopertha horticola</i>	1	-	oa-p
<i>Anotylus tetracarinated</i>	2	-	rt	<i>Anobium punctatum</i>	1	-	l-sf
<i>Othius myrmecophilus</i>	2	-	rt	<i>?Tipnus unicolor</i>	1	-	rd-st
<i>Neobisnius</i> sp	2	-	u	<i>Omosita colon</i>	1	-	rt-sf
<i>Philonthus</i> sp A	2	-	u	<i>Cryptophagus scutellatus</i>	1	-	rd-st
<i>Philonthus</i> sp C	2	-	u	<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Monotoma longicollis</i>	2	-	rt-st	<i>Orthoperus</i> sp	1	-	rt
<i>Dienerella</i> sp	2	-	rd-sf	<i>Typhaea stercorea</i>	1	-	rd-ss
<i>Palorus ratzeburgi</i>	2	-	g-ss	<i>Anthicus floralis</i> or			
<i>Micrelus ericae</i>	2	-	oa-pm	<i>formicarius</i>	1	-	rt-st
<i>Macrodema micropterum</i>	1	-	oa-pm	Chrysomelinae sp	1	-	oa-p
<i>Stignocoris pedestris</i>	1	-	oa	<i>Phyllotreta nemorum</i> group	1	-	oa-p
Cimicidae sp	1	-	oa-p	<i>Chaetocnema ?concinna</i>	1	-	oa-p
<i>Auchenorrhyncha</i> sp B	1	-	oa-p	Cassida sp	1	-	oa-p
<i>Auchenorrhyncha</i> sp C	1	-	oa-p	<i>Ceutorhynchus</i> sp	1	-	oa-p
<i>Bembidion</i> sp B	1	-	oa	Curculionidae sp	1	-	oa
<i>?Pterostichus</i> sp A	1	-	ob	*Acarina sp	100	e	u
<i>?Pterostichus</i> sp B	1	-	ob	*Diptera sp (puparium)	50	e	u
<i>?Amara</i> sp	1	-	oa	* <i>Auchenorrhyncha</i> sp			
<i>Hydroporus</i> sp A	1	-	oa-w	(nymph)	6	s	oa-p
<i>Helophorus ?aquaticus</i>	1	-	oa-w	* <i>Actenicerus sjaelandicus</i>			
<i>Helophorus</i> sp	1	-	oa-w	(larva)	4	-	oa
<i>Sphaeridium</i> sp	1	-	rf	*Coleoptera sp (larva)	3	-	u
<i>Cercyon haemorrhoidalis</i>	1	-	rf-sf	* <i>Pulex irritans</i>	2	-	ss
<i>?Anacaena</i> sp	1	-	oa-w	*Araneae sp	2	-	u
<i>Onthophilus striatus</i>	1	-	rt	*Formicidae sp	2	-	u
<i>Peranus bimaculatus</i>	1	-	rt-sf	* <i>?Spalangia</i> sp	1	-	oa-w
Histeridae sp	1	-	u	*Dermaptera sp	1	-	u
<i>Ochthebius</i> sp	1	-	oa-w	*Hymenoptera sp	1	-	u

<i>Cercyon atricapillus</i>	15	m	rf-st		*Phthiraptera (?louse s l) sp	1	-	u
<i>Oxytelus sculptus</i>	15	m	rt-st		*Siphonaptera sp	1	-	u
<i>Cryptolestes ferrugineus</i>	15	m	g-ss		Wt: 2.30 kg; E: 0.00 F: 0.00			
<i>Oryzaephilus surinamensis</i>	15	m	g-ss		LAL C 295, Sample: 16/1, CA: ReM: D,			
<i>Cercyon analis</i>	6	s	rt-sf		Period 10A			
<i>Xylodromus concinnus</i>	6	s	rt-st					
Aleocharinae sp B	6	s	u	87	Flot 10 mm in jar. Recorded in flot and on filter			
<i>Anobium punctatum</i>	6	s	l-sf		paper; remains to tube. Fossils often very pale.			
<i>Cercyon unipunctatus</i>	4	-	rf-st			n	sq	ec
<i>Platystethus arenarius</i>	3	-	rf		<i>Oryzaephilus surinamensis</i>	123	-	g-ss
<i>Platystethus nitens</i>	3	-	oa-d		<i>Cryptolestes ferrugineus</i>	18	-	g-ss
<i>Lathridius minutus</i> group	3	-	rd-st		<i>Lathrobium</i> sp	8	-	u
<i>Omalius</i> sp	2	-	rt		<i>Cyphon</i> sp	5	-	oa-d
<i>Carpelimus bilineatus</i>	2	-	rt-sf		<i>Palorus ratzeburgi</i>	4	-	g-ss
<i>Xantholinus</i> sp	2	-	u		<i>Cercyon ?analis</i>	3	-	rt-sf
<i>Falagria</i> sp	2	-	rt-sf		<i>Gyrophypnus angustatus</i>	3	-	rt-st
Aleocharinae sp A	2	-	u		Auchenorrhyncha sp A	2	-	oa-p
Aleocharinae sp C	2	-	u		<i>Agonum</i> sp	2	-	oa
<i>Cryptophagus</i> sp	2	-	rd-sf		Scydmaenidae sp A	2	-	u
<i>Palorus ratzeburgi</i>	2	-	g-ss		<i>Carpelimus bilineatus</i>	2	-	rt-sf
<i>Anthicus floralis</i> or					<i>Platystethus arenarius</i>	2	-	rf
<i>formicarius</i>	2	-	rt-st		<i>Oxytelus sculptus</i>	2	-	rt-st
<i>Macrodema micropterum</i>	1	-	oa-pm		<i>Stenus</i> sp A	2	-	u
<i>Trechus</i> sp	1	-	ob		<i>Xantholinus linearis</i> or			
Carabidae sp A	1	-	ob		<i>longiventris</i>	2	-	rt-sf
Carabidae sp B	1	-	ob		Staphylininae sp A	2	-	u
?Dytiscidae sp	1	-	oa-w		Pselaphidae sp B	2	-	u
<i>Helophorus</i> sp	1	-	oa-w		<i>Aphodius ?prodromus</i>	2	-	ob-rf
<i>Megasternum obscurum</i>	1	-	rt		<i>Anobium punctatum</i>	2	-	l-sf
<i>Cryptopleurum minutum</i>	1	-	rf-st		<i>Ptinus</i> sp	2	-	rd-sf
<i>Coprophilus striatulus</i>	1	-	rt-st		<i>Pachybrachius fracticollis</i>	1	-	oa-p
<i>Anotylus rugosus</i>	1	-	rt		<i>Macrodema micropterum</i>	1	-	oa-pm
<i>Gyrophypnus fracticornis</i>	1	-	rt-st		Heteroptera sp	1	-	u
<i>Neobisnius</i> sp	1	-	u		<i>Ulopa reticulata</i>	1	-	oa-pm
<i>Philonthus</i> sp	1	-	u		Auchenorrhyncha sp B	1	-	oa-p
Staphylininae sp A	1	-	u		<i>Dyschirius ?globosus</i>	1	-	oa
Staphylininae sp B	1	-	u		<i>Patrobus</i> sp	1	-	oa
<i>Cordalia obscura</i>	1	-	rt-sf		<i>Pterostichus</i> sp	1	-	ob
<i>Aphodius</i> sp	1	-	ob-rf		<i>Hydroporus</i> sp	1	-	oa-w
<i>Aphodius</i> sp B	1	-	ob-rf		<i>Helophorus</i> sp	1	-	oa-w
Melolonthinae/Rutelinae/					<i>Helophorus</i> sp B	1	-	oa-w
Cetoninae sp	1	-	oa-p		<i>Cercyon ?haemorrhoidalis</i>	1	-	rf-sf
<i>Ptinus fur</i>	1	-	rd-sf		<i>Enochrus</i> sp	1	-	oa-w
?Nitidulidae sp	1	-	u		Histerinae sp	1	-	rt
<i>Cryptophagus scutellatus</i>	1	-	rd-st		<i>Acrotichis</i> sp	1	-	rt
Chrysomelinae sp	1	-	oa-p		Scydmaenidae sp B	1	-	u
<i>Sitophilus granarius</i>	1	-	g-ss		<i>Olophrum piceum</i>	1	-	oa
<i>Ceutorhynchus</i> sp	1	-	oa-p		<i>Anthophagus caraboides</i>	1	-	oa
Coleoptera sp A	1	-	u		<i>Xylodromus ?concinnus</i>	1	-	rt-st
Coleoptera sp B	1	-	u		Omaliinae sp	1	-	rt
Coleoptera sp C	1	-	u		<i>Anotylus nitidulus</i>	1	-	rt-d
*Coleoptera sp (larva)	15	m	u		<i>Anotylus rugosus</i>	1	-	rt
*Acarina sp	15	m	u		<i>Stenus</i> sp B	1	-	u
*Diptera sp (pupa)	15	m	u		<i>Leptacinus</i> sp	1	-	rt-st
*Diptera sp (puparium)	15	m	u		<i>Quedius</i> sp	1	-	u
*?Heterodera sp (cyst)	6	s	u		Staphylininae sp B	1	-	u
*Diptera sp (adult)	6	s	u		<i>Falagria</i> sp	1	-	rt-sf
*Coccoidea sp	1	-	u		Aleocharinae sp A	1	-	u

Aleocharinae sp B	1	-	u
Aleocharinae sp C	1	-	u
Pselaphidae sp A	1	-	u
<i>Phyllopertha horticola</i>	1	-	oa-p
<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Lathridius minutus</i> group	1	-	rd-st
<i>Corticarina</i> sp	1	-	rt
<i>Typhaea stercorea</i>	1	-	rd-ss
<i>Alphitobius diaperinus</i>	1	-	rt-ss
<i>Plateumaris</i> sp	1	-	oa-dp
<i>Phyllotreta nemorum</i> 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
* <i>Actenicerus sjaelandicus</i> (larva)	3	-	oa
*Oligochaeta sp (egg capsule)	2	-	u
* <i>Strophingia ?ericae</i> (nymph)	1	-	oa-pm
*Coccoidea sp	1	-	u
*Araneae sp	1	-	u
*Formicidae sp	1	-	u

Wt: 3.40 kg; E: 0.00; F: 0.00
LAL C 302.01, Sample: 17/1, CA: ReM: S,
Period 10A

88 Flot 6 mm in jar. Recorded in flot and on filter paper; remains to tube. Preservation generally very poor, some fossils very decayed.

	n	sq	ec
<i>Oryzaeophilus surinamensis</i>	44	-	g-ss
<i>Cryptolestes ferrugineus</i>	13	-	g-ss
Auchenorrhyncha sp	2	-	oa-p
Hydroporinae sp	2	-	oa-w
<i>Cercyon analis</i>	2	-	rt-sf
<i>Cyphon</i> sp	2	-	oa-d
<i>Palorus ratzeburgi</i>	2	-	g-ss
Lygaeidae sp	1	-	oa-p
<i>Ulopa reticulata</i>	1	-	oa-pm
<i>Trechus ?micros</i>	1	-	u
Carabidae sp	1	-	ob
<i>Agabus</i> or <i>Ilybius</i> sp	1	-	oa-w
<i>Helophorus</i> sp	1	-	oa-w
Hydrophilinae sp	1	-	oa-w
<i>Ochthebius</i> sp	1	-	oa-w
<i>Silpha atrata</i>	1	-	u
<i>Xylodromus concinnus</i>	1	-	rt-st
<i>Stenus</i> sp	1	-	u
<i>Lathrobium</i> sp	1	-	u
<i>Falagria</i> sp	1	-	rt-sf
Aleocharinae sp	1	-	u
<i>Aphodius</i> sp	1	-	ob-rf
<i>Anobium ?punctatum</i>	1	-	l-sf
<i>Alphitobius diaperinus</i>	1	-	rt-ss
<i>Plateumaris</i> sp	1	-	oa-dp
Chrysomelinae sp	1	-	oa-p
<i>Apion</i> 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

Wt: 1.25 kg; E: 0.00; F: 0.00
LAL C 329, Sample: 19/1, CA: ReM: S,
Period 10A

89 Four-dish flot. Recorded in flot and on filter paper, fossils to tube. Preservation poor, remains pale.

	n	sq	ec
<i>Cercyon haemorrhoidalis</i>	13	-	rf-sf
<i>Oryzaeophilus surinamensis</i>	9	-	g-ss
<i>Aphodius granarius</i>	5	-	ob-rf
<i>Megasternum obscurum</i>	4	-	rt
<i>Aphodius</i> sp B	4	-	ob-rf
<i>Helophorus</i> sp A	3	-	oa-w
<i>Anotylus rugosus</i>	3	-	rt
Aleocharinae sp D	3	-	u
<i>Palorus ratzeburgi</i>	3	-	g-ss
<i>Bembidion lampros</i>	2	-	oa
<i>Helophorus ?aquaticus</i>	2	-	oa-w
<i>Platystethus arenarius</i>	2	-	rf
<i>Stenus</i> sp	2	-	u
<i>Aleochara</i> sp	2	-	u
Aleocharinae sp A	2	-	u
Aleocharinae sp C	2	-	u
<i>Cryptolestes ferrugineus</i>	2	-	g-ss
<i>Lathridius minutus</i> group	2	-	rd-st
<i>Loricera pilicornis</i>	1	-	oa
<i>Patrobis ?atorrufus</i>	1	-	oa
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Bembidion</i> sp	1	-	oa
<i>Pterostichus melanarius</i>	1	-	ob
<i>Pterostichus ?nigrita</i>	1	-	oa-d
Carabidae sp	1	-	ob
<i>Helophorus</i> sp B	1	-	oa-w
<i>Cercyon analis</i>	1	-	rt-sf
<i>Hydrobius fuscipes</i>	1	-	oa-w
Histerinae sp	1	-	rt
<i>Ochthebius</i> sp	1	-	oa-w
<i>Nicrophorus</i> sp	1	-	u
<i>Megarthus</i> sp	1	-	rt
<i>Omalius</i> sp	1	-	rt
<i>Anotylus nitidulus</i>	1	-	rt-d
<i>Anotylus tetracaratus</i>	1	-	rt
<i>Rugilus ?orbiculatus</i>	1	-	rt-sf
<i>Othius</i> sp	1	-	rt
<i>Gyrohypnus ?angustatus</i>	1	-	rt-st
<i>Gyrohypnus fracticornis</i>	1	-	rt-st
<i>Staphylinus</i> sp	1	-	u
Staphylininae sp	1	-	u
Staphylininae sp B	1	-	u
<i>Tachyporus</i> sp	1	-	u

<i>Tachinus laticollis</i> or <i>marginellus</i>	1	-	u
<i>Tachinus ?signatus</i>	1	-	u
Aleocharinae sp B	1	-	u
<i>Aphodius</i> sp A	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
<i>Anobium ?punctatum</i>	1	-	l-sf
<i>Kateretes</i> sp	1	-	oa-pd
<i>Meligethes</i> sp	1	-	oa-p
<i>Omosita</i> sp	1	-	rt-sf
<i>Rhizophagus</i> sp	1	-	u
<i>Cryptophagus</i> sp A	1	-	rd-sf
<i>Cryptophagus</i> sp B	1	-	rd-sf
<i>Atomaria</i> sp	1	-	rd
<i>Enicmus</i> sp	1	-	rt-sf
<i>Corticaria</i> sp	1	-	rt-sf
<i>Typhaea stercorea</i>	1	-	rd-ss
<i>Gastrophysa</i> sp	1	-	oa-p
<i>Chrysomela</i> sp	1	-	oa-p
<i>Apion</i> sp	1	-	oa-p
<i>Notaris acridulus</i>	1	-	oa-dp
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
*Araneae sp	1	-	u
*Daphnia sp (ephippium)	1	-	oa-w
Wt: 2.75 kg; E: 0.00; F: 0.00			
LALC 375, Sample: 26/1, CA: ReM: S, Period 7			

90 One-dish flot. Recorded in flot and on filter paper.

	n	sq	ec
<i>Cryptolestes ferrugineus</i>	25	-	g-ss
<i>Oryzaephilus surinamensis</i>	25	-	g-ss
<i>Palorus ratzeburgi</i>	11	-	g-ss
<i>Sitophilus granarius</i>	10	-	g-ss
<i>Anotylus nitidulus</i>	4	-	rt-d
<i>Tribolium castaneum</i>	3	-	ss
<i>Helophorus</i> sp	2	-	oa-w
<i>Falagria</i> sp	2	-	rt-sf
<i>Clivina ?fossor</i>	1	-	oa
? <i>Bradycellus</i> sp	1	-	oa
<i>Cercyon</i> sp	1	-	u
<i>Acritus nigricornis</i>	1	-	rt-st
<i>Xylodromus ?concinus</i>	1	-	rt-st
<i>Platystethus arenarius</i>	1	-	rf
<i>Anotylus rugosus</i>	1	-	rt
<i>Anotylus tetracarinus</i>	1	-	rt
<i>Stenus</i> sp	1	-	u
<i>Leptacinus</i> sp	1	-	rt-st
<i>Xantholinus linearis</i> or <i>longiventris</i>	1	-	rt-sf
Staphylininae sp	1	-	u
<i>Aphodius</i> sp	1	-	ob-rf
<i>Anobium ?punctatum</i>	1	-	l-sf

? <i>Tipnus unicolor</i>	1	-	rd-st
<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Atomaria</i> sp A	1	-	rd
<i>Atomaria</i> sp B	1	-	rd
<i>Lathridius minutus</i> group	1	-	rd-st
<i>Enicmus</i> sp	1	-	rt-sf
<i>Corticaria</i> sp	1	-	rt-sf
<i>Typhaea stercorea</i>	1	-	rd-ss
<i>Aglenus brunneus</i>	1	-	rt-ss
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st
Halticinae sp	1	-	oa-p
* <i>Tenebroides mauritanicus</i> (larva)	3	-	rt-ss
*Acarina sp	2	-	u
*Diptera sp (puparium)	2	-	u
*Hymenoptera Parasitica sp	1	-	u
*Diptera sp (pupa)	1	-	u
Wt: 3.25 kg; E: 0.00; F: 0.00			
LAL D 232.06, Sample: 32/1, CA: ReM: S, Period 11D			

91 Listed in flot and on filter paper; remains to tube. One charred beetle, indeterminate.

	n	sq	ec
<i>Oryzaephilus surinamensis</i>	64	-	g-ss
<i>Cryptolestes ferrugineus</i>	46	-	g-ss
<i>Palorus ratzeburgi</i>	25	-	g-ss
<i>Sitophilus granarius</i>	24	-	g-ss
<i>Anobium punctatum</i>	5	-	l-sf
<i>Tipnus unicolor</i>	5	-	rd-st
<i>Neobisnius</i> sp	3	-	u
<i>Typhaea stercorea</i>	3	-	rd-ss
<i>Xylodromus concinns</i>	2	-	rt-st
<i>Platystethus arenarius</i>	2	-	rf
Aleocharinae sp B	2	-	u
Aleocharinae sp D	2	-	u
<i>Ptinus</i> sp	2	-	rd-sf
<i>Cryptophagus</i> sp A	2	-	rd-sf
<i>Aglenus brunneus</i>	2	-	rt-ss
<i>Conomelus anceps</i>	1	-	oa-p
<i>Auchenorrhyncha</i> sp	1	-	oa-p
? <i>Loricera pilicornis</i>	1	-	oa
<i>Laemostenus ?terricola</i>	1	-	ss
<i>Bradycellus</i> sp	1	-	oa
Carabidae sp	1	-	ob
<i>Porhydrus lineatus</i>	1	-	oa-w
<i>Helophorus aquaticus</i> or <i>grandis</i>	1	-	oa-w
<i>Helophorus</i> sp	1	-	oa-w
<i>Cercyon analis</i>	1	-	rt-sf
<i>Cercyon haemorrhoidalis</i>	1	-	rf-sf
<i>Cercyon terminatus</i>	1	-	rf-st
<i>Platystethus nitens</i>	1	-	oa-d
<i>Anotylus nitidulus</i>	1	-	rt-d
<i>Anotylus tetracarinus</i>	1	-	rt
<i>Leptacinus</i> sp	1	-	rt-st
<i>Gyrophypnus fracticornis</i>	1	-	rt-st

<i>Xantholinus longiventris</i>	1	-	rt-sf
<i>Philonthus</i> sp	1	-	u
<i>Cordalia obscura</i>	1	-	rt-sf
Aleocharinae sp A	1	-	u
Aleocharinae sp C	1	-	u
<i>Trox scaber</i>	1	-	rt-sf
<i>Aphodius ?granarius</i>	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
<i>Tenebroides mauritanicus</i>	1	-	rt-ss
<i>Cryptophagus</i> sp B	1	-	rd-sf
<i>Atomaria</i> sp	1	-	rd
<i>Ephistemus globulus</i>	1	-	rd-sf
<i>Lathridius minutus</i> group	1	-	rd-st
<i>Corticaria</i> sp	1	-	rt-sf
<i>Blaps</i> sp	1	-	rt-ss
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st
Chrysomelinae sp	1	-	oa-p
<i>Apion</i> sp	1	-	oa-p
Coleoptera sp	1	-	u
*Acarina sp	6	s	u
*Oligochaeta sp (egg capsule)	6	s	u
* <i>Tenebroides mauritanicus</i> (larva)	3	-	rt-ss
*Aphidoidea sp	1	-	u
*Araneae sp	1	-	u
*Hymenoptera Parasitica sp	1	-	u
*Pseudoscorpiones sp	1	-	u
*Siphonaptera sp	1	-	u
Wt: 2.25 kg; E: 0.00; F: 0.00			
LAL D 232.12, Sample: 37/1, CA: ReM: S, Period 11D			

92 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
<i>Cryptolestes ferrugineus</i>	194	-	g-ss
<i>Oryzaephilus surinamensis</i>	178	-	g-ss
<i>Palorus ratzeburgi</i>	37	-	g-ss
<i>Sitophilus granarius</i>	18	-	g-ss
Aleocharinae sp A	16	-	u
<i>Cercyon analis</i>	12	-	rt-sf
<i>Anobium punctatum</i>	10	-	l-sf
<i>Lathridius minutus</i> group	7	-	rd-st
<i>Typhaea stercorea</i>	7	-	rd-ss
<i>Stenus</i> sp A	6	-	u
<i>Tipnus unicolor</i>	6	-	rd-st
<i>Cryptophagus scutellatus</i>	6	-	rd-st
<i>Cryptophagus</i> sp	6	-	rd-sf
<i>Ptenidium</i> sp	5	-	rt
<i>Anotylus rugosus</i>	5	-	rt
<i>Philonthus</i> sp	5	-	u
<i>Carpelimus bilineatus</i>	4	-	rt-sf
<i>Neobisnius</i> sp	4	-	u
<i>Monotoma bicolor</i>	4	-	rt-st
<i>Atomaria</i> sp	4	-	rd

<i>Acritus nigricornis</i>	3	-	rt-st
<i>Xylodromus concinnus</i>	3	-	rt-st
<i>Oxytelus sculptus</i>	3	-	rt-st
<i>Leptacinus</i> sp	3	-	rt-st
<i>Gyrohypnus fracticornis</i>	3	-	rt-st
Aleocharinae sp B	3	-	u
<i>Acrotrichis</i> sp A	2	-	rt
<i>Acrotrichis</i> sp B	2	-	rt
<i>Carpelimus fuliginosus</i>	2	-	st
<i>Falagria caesa</i> or <i>sulcatula</i>	2	-	rt-sf
<i>Crataraea suturalis</i>	2	-	rt-st
Aleocharinae sp C	2	-	u
<i>Aphodius contaminatus</i>	2	-	oa-rf
<i>Ptinus ?fur</i>	2	-	rd-sf
Lygaeidae sp	1	-	oa-p
Saldidae sp	1	-	oa-d
<i>Aphrodes</i> sp	1	-	oa-p
<i>Conomelus anceps</i>	1	-	oa-p
Delphacidae sp	1	-	oa-p
Psylloidea sp	1	-	oa-p
<i>Dyschirius ?globosus</i>	1	-	oa
<i>Clivina ?fossor</i>	1	-	oa
<i>Pterostichus ?melanarius</i>	1	-	ob
? <i>Pterostichus</i> sp	1	-	ob
<i>Helophorus aquaticus</i> or <i>grandis</i>	1	-	oa-w
<i>Helophorus</i> sp	1	-	oa-w
<i>Cercyon ?quisquilius</i>	1	-	rf-st
<i>Cercyon</i> sp	1	-	u
Ptiliidae sp	1	-	u
<i>Catops</i> sp	1	-	u
<i>Lesteva longolytrata</i>	1	-	oa-d
<i>Phyllodrepa ?floralis</i>	1	-	rt-sf
<i>Omalium ?rivulare</i>	1	-	rt-sf
<i>Omalium</i> sp	1	-	rt
<i>Anotylus nitidulus</i>	1	-	rt-d
<i>Anotylus sculpturatus</i> group	1	-	rt
<i>Stenus</i> sp B	1	-	u
<i>Gyrohypnus angustatus</i>	1	-	rt-st
<i>Quedius cinctus</i>	1	-	rt
Staphylininae sp	1	-	u
<i>Tachinus signatus</i>	1	-	u
<i>Tachinus subterraneus</i>	1	-	u
<i>Trox scaber</i>	1	-	rt-sf
<i>Aphodius</i> sp A	1	-	ob-rf
<i>Aphodius</i> sp B	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
<i>Ctenicera ?cuprea</i>	1	-	oa-p
Elateridae sp	1	-	ob
Coccinellidae sp	1	-	oa-p
<i>Dienerella</i> sp	1	-	rd-sf
<i>Cortinicara gibbosa</i>	1	-	rt
<i>Aglenus brunneus</i>	1	-	rt-ss
<i>Blaps</i> sp	1	-	rt-ss
<i>Tenebrio obscurus</i>	1	-	rt-ss
Salpingidae sp	1	-	l
<i>Anthicus floralis</i> or <i>formicarius</i>	1	-	rt-st

*Acarina sp	50	e	u
*Araneae 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

Wt: 2.25 kg; E: 0.00; F: 0.00
LAL D 232.16, Sample: 12/T; CA: ReM: S, Period 11D

93 Recorded in flot and on filter paper, remains to tube. Three teneral *Apion*.

	n	sq	ec
<i>Cryptolestes ferrugineus</i>	186	-	g-ss
<i>Oryzaephilus surinamensis</i>	130	-	g-ss
<i>Carpelimus fuliginosus</i>	32	-	st
<i>Palorus ratzeburgi</i>	32	-	g-ss
<i>Lathridius minutus</i> group	17	-	rd-st
<i>Sitophilus granarius</i>	11	-	g-ss
<i>Cercyon analis</i>	7	-	rt-sf
<i>Typhaea stercorea</i>	7	-	rd-ss
<i>Carpelimus bilineatus</i>	6	-	rt-sf
<i>Cryptophagus</i> sp C	6	-	rd-sf
<i>Apion</i> sp	5	-	oa-p
<i>Oxytelus sculptus</i>	4	-	rt-st
<i>Anobium punctatum</i>	4	-	l-sf
<i>Xylodromus concinnus</i>	3	-	rt-st
<i>Neobisnius</i> sp	3	-	u
Aleocharinae sp A	3	-	u
<i>Tipnus unicolor</i>	3	-	rd-st
<i>Cercyon atricapillus</i>	2	-	rf-st
<i>Acritus nigricornis</i>	2	-	rt-st
<i>Carpelimus</i> sp	2	-	u
<i>Anotylus rugosus</i>	2	-	rt
Aleocharinae sp B	2	-	u
Aleocharinae sp D	2	-	u
<i>Ptinus ?fur</i>	2	-	rd-sf
<i>Tenebroides mauritanicus</i>	2	-	rt-ss
<i>Cryptophagus</i> sp B	2	-	rd-sf
<i>Atomaria</i> sp A	2	-	rd
<i>Corticaria</i> sp	2	-	rt-sf
<i>Nebria brevicollis</i>	1	-	oa
<i>Cercyon ?unipunctatus</i>	1	-	rf-st
<i>Megasternum obscurum</i>	1	-	rt
<i>Anacaena ?globulus</i>	1	-	oa-w
<i>Acrotrichis</i> sp	1	-	rt
<i>Acidota crenata</i>	1	-	oa

<i>Omalius</i> sp	1	-	rt
<i>Anotylus nitidulus</i>	1	-	rt-d
<i>Anotylus tetracarinatus</i>	1	-	rt
<i>Stenus</i> sp	1	-	u
<i>Lathrobium</i> sp	1	-	u
<i>Othius</i> sp	1	-	rt
<i>Leptacinus</i> sp	1	-	rt-st
<i>Gyrophypnus fracticornis</i>	1	-	rt-st
<i>Philonthus</i> sp	1	-	u
<i>Falagria</i> or <i>Cordalia</i> sp	1	-	rt-sf
Aleocharinae sp C	1	-	u
<i>Aphodius</i> sp A	1	-	ob-rf
<i>Aphodius</i> sp B	1	-	ob-rf
<i>Aphodius</i> sp C	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
Elateridae sp	1	-	ob
<i>Lyctus linearis</i>	1	-	l-sf
<i>Omosita</i> sp	1	-	rt-sf
<i>Cryptophagus scutellatus</i>	1	-	rd-st
<i>Cryptophagus</i> sp A	1	-	rd-sf
<i>Atomaria</i> sp B	1	-	rd
<i>Enicmus</i> sp	1	-	rt-sf
<i>Aglenus brunneus</i>	1	-	rt-ss
<i>Blaps</i> sp	1	-	rt-ss
<i>Tenebrio obscurus</i>	1	-	rt-ss
<i>Galerucella</i> sp	1	-	oa-p
<i>Longitarsus</i> sp A	1	-	oa-p
<i>Longitarsus</i> 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

Wt: 2.20 kg; E: 0.00; F: 0.00
LAL D 232.19, Sample: 15/1, CA: ReM: S, Period 11D

94 Recorded in flot and on filter paper; problems to tube. Preservation moderately good, though some fossils appear oxidised.

	n	sq	ec
<i>Oryzaephilus surinamensis</i>	54	-	g-ss
<i>Cryptolestes ferrugineus</i>	34	-	g-ss
<i>Carpelimus fuliginosus</i>	21	-	st
<i>Palorus ratzeburgi</i>	14	-	g-ss
<i>Cercyon analis</i>	13	-	rt-sf
<i>Oxytelus sculptus</i>	10	-	rt-st
<i>Carpelimus bilineatus</i>	6	-	rt-sf
<i>Lathridius minutus</i> group	6	-	rd-st

<i>Aleocharinae</i> sp B	3	-	u	* <i>Tenebroides mauritanicus</i> (larva)	15	m	rt-ss
<i>Sitophilus granarius</i>	3	-	g-ss	*Acarina sp	15	m	u
Delphacidae sp	2	-	oa-p	*Diptera sp (puparium)	15	m	u
<i>Hydroporus</i> sp	2	-	oa-w	*Coccoidea sp	6	s	u
<i>Helophorus</i> sp	2	-	oa-w	*?Psocoptera sp	6	s	oa-w
<i>Cercyon atricapillus</i>	2	-	rf-st	*Pseudoscorpiones sp	6	s	u
<i>Carpelimus</i> sp A	2	-	u	*Oligochaeta sp (egg capsule)	3	-	u
<i>Carpelimus</i> sp B	2	-	u	*Auchenorrhyncha sp (nymph)	2	-	oa-p
<i>Anotylus nitidulus</i>	2	-	rt-d	*Araneae sp	2	-	u
<i>Xantholinus linearis</i> or				*Insecta sp (larva)	2	-	u
<i>longiventris</i>	2	-	rt-sf	*? <i>Denticollis linearis</i> (larva)	1	-	u
<i>Philonthus</i> sp A	2	-	u	*Coleoptera sp (larva)	1	-	u
<i>Anobium punctatum</i>	2	-	l-sf	*Aphidoidea sp	1	-	u
<i>Cryptophagus</i> sp	2	-	rd-sf	*Hymenoptera Parasitica sp	1	-	u
<i>Stignocoris pedestris</i>	1	-	oa	* <i>Myrmica</i> sp	1	-	u
Auchenorrhyncha sp	1	-	oa-p	*Syrphidae sp (larva)	1	-	u
Auchenorrhyncha sp C	1	-	oa-p	Wt: 2.00 kg; E: 0.00; F: 0.00			
Auchenorrhyncha sp D	1	-	oa-p	LAL D 232.20, Sample: 16/1, CA: ReM: S,			
<i>Dyschirius ?globosus</i>	1	-	oa	Period 11D			
<i>Pterostichus</i> sp	1	-	ob				
<i>Calathus fuscipes</i>	1	-	oa	95 Stained meths yellow-orange. Recorded in			
<i>Bradycellus ruficollis</i>	1	-	oa-m	flot and on filter paper. Most <i>Apion</i> remains			
<i>Sphaeridium ?bipustulatum</i>	1	-	rf	pale. Some dwarfed <i>Sitophilus granarius</i> .			
<i>Cercyon haemorrhoidalis</i>	1	-	rf-sf		n	sq	ec
<i>Anacaena ?globulus</i>	1	-	oa-w	<i>Cryptolestes ferrugineus</i>	23	-	g-ss
<i>Dendrophilus punctatus</i>	1	-	rt-sf	<i>Oryzaephilus surinamensis</i>	22	-	g-ss
<i>Acrotichis</i> sp	1	-	rt	<i>Lathridius minutus</i> group	22	-	rd-st
<i>Xylodromus concinnus</i>	1	-	rt-st	<i>Cercyon analis</i>	15	-	rt-sf
<i>Platystethus arenarius</i>	1	-	rf	<i>Ptenidium ?pusillum</i>	10	-	rt-sf
<i>Anotylus rugosus</i>	1	-	rt	<i>Enicmus</i> sp	10	-	rt-sf
<i>Anotylus tetracarinus</i>	1	-	rt	<i>Cryptophagus</i> sp	9	-	rd-sf
<i>Stenus</i> sp	1	-	u	<i>Atomaria</i> sp A	9	-	rd
<i>Gyrohypnus fracticornis</i>	1	-	rt-st	<i>Corticaria</i> sp	8	-	rt-sf
<i>Neobisnius</i> sp	1	-	u	<i>Conomelus anceps</i>	5	-	oa-p
<i>Philonthus</i> sp B	1	-	u	<i>Palorus ratzeburgi</i>	5	-	g-ss
Staphylininae sp A	1	-	u	<i>Sitophilus granarius</i>	4	-	g-ss
Staphylininae sp B	1	-	u	<i>Gyrohypnus angustatus</i>	3	-	rt-st
<i>Cordalia obscura</i>	1	-	rt-sf	<i>Aleocharinae</i> sp A	3	-	u
<i>Falagria caesa</i> or <i>sulcatula</i>	1	-	rt-sf	<i>Aleocharinae</i> sp B	3	-	u
<i>Aleocharinae</i> sp A	1	-	u	<i>Aleocharinae</i> sp C	3	-	u
<i>Aleocharinae</i> sp C	1	-	u	<i>Anobium punctatum</i>	3	-	l-sf
<i>Trox scaber</i>	1	-	rt-sf	<i>Cryptophagus scutellatus</i>	3	-	rd-st
<i>Geotrupes</i> sp	1	-	oa-rf	<i>Apion</i> sp A	3	-	oa-p
<i>Aphodius contaminatus</i>	1	-	oa-rf	<i>Carpelimus ?bilineatus</i>	2	-	rt-sf
<i>Aphodius</i> sp	1	-	ob-rf	<i>Philonthus</i> sp A	2	-	u
<i>Phyllopertha horticola</i>	1	-	oa-p	<i>Philonthus</i> sp B	2	-	u
<i>Tenebroides mauritanicus</i>	1	-	rt-ss	<i>Aleocharinae</i> sp F	2	-	u
<i>Monotoma</i> sp	1	-	rt-sf	<i>Aleocharinae</i> sp G	2	-	u
<i>Atomaria</i> sp	1	-	rd	<i>Atomaria ?nigripennis</i>	2	-	rd-ss
<i>Ephistemus globulus</i>	1	-	rd-sf	<i>Anthicus formicarius</i>	2	-	rt-st
<i>Tenebrio obscurus</i>	1	-	rt-ss	<i>Scolopostethus</i> sp	1	-	oa-p
<i>Phyllotreta nemorum</i> group	1	-	oa-p	<i>Berytinus</i> sp	1	-	oa-p
Halticinae sp	1	-	oa-p	Delphacidae sp A	1	-	oa-p
<i>Apion</i> sp A	1	-	oa-p	Delphacidae sp B	1	-	oa-p
<i>Apion</i> sp B	1	-	oa-p	Auchenorrhyncha sp A	1	-	oa-p
<i>Sitona cambricus</i>	1	-	oa-p	Auchenorrhyncha sp B	1	-	oa-p
<i>Ceuthorhynchidius</i> sp	1	-	oa-p	Psyloidea sp	1	-	oa-p
<i>Phytobius</i> sp	1	-	oa-d	<i>Pterostichus diligens</i>	1	-	oa-d

<i>Pterostichus melanarius</i>	1	-	ob		<i>*Pulex irritans</i>	1	-	ss
<i>Calathus fuscipes</i>	1	-	oa		<i>*Mallophaga</i> sp	1	-	u
<i>Metabletus foveatus</i>	1	-	oa		<i>*Oligochaeta</i> sp (egg capsule)	1	-	u
Carabidae sp	1	-	ob		<i>*Pseudoscorpiones</i> sp	1	-	u
<i>Hydroporus</i> sp A	1	-	oa-w		<i>*Aphidoidea</i> sp A	1	-	u
<i>Hydroporus</i> sp B	1	-	oa-w		<i>*Aphidoidea</i> sp B	1	-	u
<i>Hydroporus</i> sp C	1	-	oa-w		<i>*Heteroptera</i> sp (nymph)	1	-	u
<i>Helophorus</i> sp A	1	-	oa-w		Wt: 2.20 kg; E: 0.00; F: 0.00			
<i>Anacaena ?globulus</i>	1	-	oa-w		LAL D 1016.07, Sample: 45/1, CA: ReM: S,			
Silphidae sp	1	-	u		Period Pre-10C			
<i>Olophrum ?piceum</i>	1	-	oa					
<i>Omalius ?rivulare</i>	1	-	rt-sf	96	Trace flot; recorded in flot.			
<i>Xylodromus concinnus</i>	1	-	rt-st			n	sq	ec
<i>Oxytelus sculptus</i>	1	-	rt-st		<i>Helophorus</i> sp	1	-	oa-w
<i>Stenus</i> sp A	1	-	u		<i>Carpelimus</i> sp	1	-	u
<i>Lathrobium</i> sp A	1	-	u		<i>Stenus</i> sp	1	-	u
<i>Lathrobium</i> sp B	1	-	u		<i>Aphodius</i> sp	1	-	ob-rf
<i>Rugilus</i> sp	1	-	rt		<i>Cryptolestes ?ferrugineus</i>	1	-	g-ss
<i>Leptacinus</i> sp	1	-	rt-st		<i>Corticaria</i> sp	1	-	rt-sf
<i>Quedius</i> sp	1	-	u		<i>*Oligochaeta</i> sp (egg capsule)	6	s	u
Staphylininae sp	1	-	u		<i>*Diptera</i> sp (puparium)	1	-	u
<i>Tachyporus</i> sp	1	-	u		Wt: 3.00 kg; E: 0.00 F: 0.00			
<i>Cordalia obscura</i>	1	-	rt-sf		LAL D 1017, Sample: 29/1, CA: ReM: S,			
<i>Falagria</i> sp	1	-	rt-sf		Period 10B			
<i>?Crataraea suturalis</i>	1	-	rt-st					
Aleocharinae sp D	1	-	u	97	Very small flot, mostly invertebrates, some			
Aleocharinae sp E	1	-	u		plant debris and seeds. Recorded in flot and			
<i>Geotrupes</i> sp	1	-	oa-rf		on filter paper.			
<i>Aphodius ?contaminatus</i>	1	-	oa-rf			n	sq	ec
<i>Aphodius ?prodromus</i>	1	-	ob-rf		<i>Oryzaephilus surinamensis</i>	9	-	g-ss
<i>Phyllopertha horticola</i>	1	-	oa-p		<i>Cryptolestes ferrugineus</i>	6	-	g-ss
<i>?Cantharidae</i> sp	1	-	ob		<i>Lathridius minutus</i> group	6	-	rd-st
<i>Atomaria</i> sp B	1	-	rd		<i>Platystethus arenarius</i>	5	-	rf
<i>Ephistemus globulus</i>	1	-	rd-sf		Aleocharinae sp	4	-	u
<i>Dienerella</i> sp	1	-	rd-sf		<i>Cercyon atricapillus</i>	2	-	rf-st
<i>Typhaea stercorea</i>	1	-	rd-ss		<i>Oxytelus sculptus</i>	2	-	rt-st
<i>Tenebrio obscurus</i>	1	-	rt-ss		<i>Anthicus formicarius</i>	2	-	rt-st
<i>Plateumaris</i> sp	1	-	oa-dp		<i>Scolopostethus</i> sp	1	-	oa-p
<i>?Chrysolina</i> sp	1	-	oa-p		Heteroptera sp	1	-	u
Chrysomelinae sp	1	-	oa-p		<i>Pterostichus</i> sp	1	-	ob
<i>Galerucella</i> sp	1	-	oa-p		Carabidae sp	1	-	ob
<i>Longitarsus</i> sp	1	-	oa-p		Hydrophorinae sp	1	-	oa-w
<i>?Chaetocnema</i> sp	1	-	oa-p		<i>Helophorus</i> sp	1	-	oa-w
<i>?Sphaeroderma</i> sp	1	-	oa-p		<i>Cercyon analis</i>	1	-	rt-sf
<i>Apion</i> sp B	1	-	oa-p		<i>Omalius</i> sp	1	-	rt
<i>Otiorhynchus</i> sp	1	-	oa-p		<i>Carpelimus bilineatus</i>	1	-	rt-sf
<i>Sitona</i> sp	1	-	oa-p		<i>Carpelimus pusillus</i> group	1	-	u
<i>Gymnetron labile</i>	1	-	oa-p		<i>Anotylus tetracarlinatus</i>	1	-	rt
Curculionidae sp	1	-	oa		<i>Stenus</i> sp	1	-	u
<i>*Diptera</i> sp (pupa)	100	e	u		<i>Gyrophypnus fracticornis</i>	1	-	rt-st
<i>*Diptera</i> sp (puparium)	100	e	u		<i>Falagria</i> sp	1	-	rt-sf
<i>*Acarina</i> sp	50	e	u		Staphylinidae sp	1	-	u
<i>*Auchenorrhyncha</i> sp					<i>Aphodius</i> sp A	1	-	ob-rf
(nymph)	15	m	oa-p		<i>Aphodius</i> sp B	1	-	ob-rf
<i>*Coleoptera</i> sp (larva)	6	s	u		<i>Phyllopertha horticola</i>	1	-	oa-p
<i>*Araneae</i> sp	6	s	u		Elateridae sp	1	-	ob
<i>*Diptera</i> sp (adult)	6	s	u		<i>Anobium punctatum</i>	1	-	l-sf
<i>*Formicidae</i> sp	2	-	u		<i>Ptinus ?fur</i>	1	-	rd-sf

<i>Cryptophagus</i> sp	1	-	rd-sf
<i>Atomaria</i> sp	1	-	rd
<i>Enicmus</i> sp	1	-	rt-sf
<i>Corticaria</i> sp	1	-	rt-sf
<i>Typhaea stercorea</i>	1	-	rd-ss
<i>Aglenus brunneus</i>	1	-	rt-ss
<i>Palorus ratzeburgi</i>	1	-	g-ss
<i>Phyllotreta nemorum</i> group	1	-	oa-p
Halticinae sp	1	-	oa-p
<i>Sitophilus granarius</i>	1	-	g-ss
Curculionidae sp A	1	-	oa
Curculionidae sp B	1	-	oa
*? <i>Heterodera</i> sp (cyst)	15	m	u
*Acarina sp	15	m	u
*Diptera sp (larva)	15	m	u
*Insecta sp (pupa)	15	m	u
* <i>Daphnia</i> sp (ephippium)	6	s	oa-w
*? <i>Damalinia</i> sp	2	-	u
*Elateridae sp (larva)	1	-	ob
*Bibionidae sp	1	-	u

Wt: 3.25 kg; E: 0.00; F: 0.00
LAL D 1021, Sample: 30/1, CA: ReM: S,
Period 10A

98 Recorded in flot and on filter paper.
Preservation rather good.

	n	sq	ec
<i>Cryptolestes ferrugineus</i>	40	-	g-ss
<i>Sitophilus granarius</i>	37	-	g-ss
<i>Oryzaephilus surinamensis</i>	27	-	g-ss
<i>Palorus ratzeburgi</i>	19	-	g-ss
<i>Platystethus arenarius</i>	18	-	rf
<i>Cercyon haemorrhoidalis</i>	13	-	rf-sf
<i>Cryptophagus</i> sp	9	-	rd-sf
<i>Stenus</i> sp A	8	-	u
<i>Lathridius minutus</i> group	8	-	rd-st
<i>Helophorus aquaticus</i>	5	-	oa-w
<i>Cercyon analis</i>	5	-	rt-sf
<i>Anotylus tetracarinus</i>	5	-	rt
<i>Falagria caesa</i> or <i>sulcatula</i>	5	-	rt-sf
<i>Aphodius ?prodromus</i>	5	-	ob-rf
<i>Carpelimus ?bilineatus</i>	4	-	rt-sf
<i>Gyrohypnus fracticornis</i>	4	-	rt-st
Aleocharinae sp C	4	-	u
<i>Helophorus</i> sp A	3	-	oa-w
<i>Helophorus</i> sp B	3	-	oa-w
<i>Cercyon atricapillus</i>	3	-	rf-st
<i>Philonthus</i> sp B	3	-	u
Aleocharinae sp D	3	-	u
<i>Aphodius granarius</i>	3	-	ob-rf
<i>Corticaria</i> sp	3	-	rt
<i>Anthicus formicarius</i>	3	-	rt-st
<i>Megasternum obscurum</i>	2	-	rt
<i>Onthophilus striatus</i>	2	-	rt
<i>Xylodromus concinnus</i>	2	-	rt-st
<i>Anotylus nitidulus</i>	2	-	rt-d
<i>Oxytelus sculptus</i>	2	-	rt-st
<i>Xantholinus linearis</i>	2	-	rt-sf

Staphylininae sp A	2	-	u
<i>Monotoma picipes</i>	2	-	rt-st
<i>Cryptophagus scutellatus</i>	2	-	rd-st
Lygaeidae sp	1	-	oa-p
Delphacidae sp	1	-	oa-p
<i>Trechus ?quadristriatus</i>	1	-	oa
<i>Trechus micros</i>	1	-	u
<i>Pterostichus ?melanarius</i>	1	-	ob
<i>Pterostichus diligens</i> or <i>strenuus</i>	1	-	oa
<i>Calathus</i> sp	1	-	oa
Carabidae sp	1	-	ob
<i>Helophorus grandis</i>	1	-	oa-w
<i>Cercyon unipunctatus</i>	1	-	rf-st
<i>Cryptopleurum minutum</i>	1	-	rf-st
<i>Hydrobius fuscipes</i>	1	-	oa-w
Histerinae sp	1	-	rt
<i>Ochthebius</i> sp	1	-	oa-w
<i>Limnebius</i> sp	1	-	oa-w
<i>Ptenidium</i> sp	1	-	rt
<i>Megarthus</i> sp	1	-	rt
<i>Omalium</i> sp	1	-	rt
<i>Anotylus sculpturatus</i> group	1	-	rt
<i>Stenus</i> sp B	1	-	u
<i>Leptacinus</i> sp	1	-	rt-st
<i>Gyrohypnus ?angustatus</i>	1	-	rt-st
<i>Neobisnius</i> sp	1	-	u
<i>Philonthus</i> sp A	1	-	u
<i>Philonthus</i> sp C	1	-	u
<i>Philonthus</i> sp D	1	-	u
<i>Tachyporus</i> sp	1	-	u
<i>Tachinus signatus</i>	1	-	u
<i>Aleochara</i> sp	1	-	u
Aleocharinae sp A	1	-	u
Aleocharinae sp B	1	-	u
Aleocharinae sp E	1	-	u
<i>Geotrupes</i> sp	1	-	oa-rf
<i>Aphodius</i> sp A	1	-	ob-rf
<i>Aphodius</i> sp B	1	-	ob-rf
<i>Simplocaria ?semistriata</i>	1	-	oa-p
<i>Oulimnius</i> sp	1	-	oa-w
Elateridae sp	1	-	ob
<i>Anobium punctatum</i>	1	-	l-sf
<i>Ptinus</i> sp	1	-	rd-sf
<i>Omosita ?colon</i>	1	-	rt-sf
Cryptophagidae sp	1	-	u
<i>Ephistemus globulus</i>	1	-	rd-sf
<i>Orthoperus</i> sp	1	-	rt
<i>Enicmus</i> sp	1	-	rt-sf
<i>Typhaea stercorea</i>	1	-	rd-ss
<i>Gastrophysa ?polygona</i>	1	-	oa-p
? <i>Hydrothassa</i> sp	1	-	oa-dp
Galerucinea sp	1	-	oa-p
<i>Phyllotreta nemorum</i> group	1	-	oa-p
<i>Longitarsus</i> sp	1	-	oa-p
? <i>Crepidodera</i> sp	1	-	oa-p
<i>Apion</i> sp	1	-	oa-p
<i>Apion</i> sp A	1	-	oa-p

<i>Apion</i> sp B	1	-	oa-p
<i>Sitona ?lepidus</i>	1	-	oa-p
*Diptera sp (pupa)	100	e	u
*Diptera sp (puparium)	50	e	u
*Auchenorrhyncha 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
* <i>Myrmica</i> sp	2	-	u
*Oligochaeta sp (egg capsule)	2	-	u
*Coccoidea sp	1	-	u
*Araneae sp	1	-	u
*Pseudoscorpiones sp	1	-	u
*Siphonaptera sp	1	-	u
Wt: 4.00 kg; E: 0.00; F: 0.00			
LALD 1249, Sample: 3/1, CA: ReM: S, Period 6			

99 Recorded in flot and on filter paper.

	n	sq	ec
<i>Oryzaephilus surinamensis</i>	158	-	g-ss
<i>Cryptolestes ferrugineus</i>	41	-	g-ss
<i>Lathridius minutus</i> group	11	-	rd-st
<i>Ptinus fur</i>	10	-	rd-sf
<i>Carpelimus pusillus</i> group	7	-	u
<i>Anobium punctatum</i>	7	-	l-sf
<i>Cercyon analis</i>	6	-	rt-sf
<i>Palorus ratzeburgi</i>	5	-	g-ss
<i>Sitophilus granarius</i>	5	-	g-ss
Aleocharinae sp A	3	-	u
<i>Anthocoris</i> sp	2	-	oa-p
<i>Helophorus</i> sp	2	-	oa-w
<i>Cercyon atricapillus</i>	2	-	rf-st
<i>Xylodromus concinnus</i>	2	-	rt-st
<i>Platystethus arenarius</i>	2	-	rf
<i>Anotylus tetracarinated</i>	2	-	rt
<i>Oxytelus sculptus</i>	2	-	rt-st
<i>Stenus</i> sp B	2	-	u
<i>Falagria</i> sp	2	-	rt-sf
Aleocharinae sp C	2	-	u
Aleocharinae sp D	2	-	u
Aleocharinae sp G	2	-	u
<i>Cryptophagus</i> sp A	2	-	rd-sf
<i>Cryptophagus</i> sp B	2	-	rd-sf
<i>Aglenus brunneus</i>	2	-	rt-ss
<i>Dyschirius ?globosus</i>	1	-	oa
<i>Trechus obtusus</i> or <i>quadristriatus</i>	1	-	oa
<i>Pterostichus</i> sp	1	-	ob
<i>Harpalus</i> sp	1	-	oa
<i>Helophorus aquaticus</i> or <i>grandis</i>	1	-	oa-w
Histeridae sp	1	-	u
<i>Ptenidium</i> sp	1	-	rt
Ptiliidae sp	1	-	u

<i>Lesteva longoelytrata</i>	1	-	oa-d
<i>Omalius rivulare</i>	1	-	rt-sf
<i>Anotylus rugosus</i>	1	-	rt
<i>Anotylus sculpturatus</i> group	1	-	rt
<i>Stenus</i> sp A	1	-	u
<i>Leptacinus</i> sp	1	-	rt-st
<i>Philonthus</i> sp A	1	-	u
<i>Philonthus</i> sp B	1	-	u
<i>Philonthus</i> sp C	1	-	u
<i>Tachinus</i> sp	1	-	u
<i>Cordalia obscura</i>	1	-	rt-sf
Aleocharinae sp B	1	-	u
Aleocharinae sp E	1	-	u
Aleocharinae sp F	1	-	u
<i>Trox scaber</i>	1	-	rt-sf
<i>Aphodius ?prodromus</i>	1	-	ob-rf
<i>Phyllopertha horticola</i>	1	-	oa-p
?Anobiidae sp	1	-	l
<i>Meligethes</i> sp	1	-	oa-p
<i>Monotoma picipes</i>	1	-	rt-st
<i>Atomaria</i> sp	1	-	rd
<i>Corticaria</i> sp A	1	-	rt-sf
<i>Corticaria</i> sp B	1	-	rt-sf
<i>Typhaea stercorea</i>	1	-	rd-ss
<i>Phyllotreta nemorum</i> group	1	-	oa-p
Halticinae sp	1	-	oa-p
<i>Gymnetron</i> 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
*Araneae sp	6	s	u
*Homoptera sp (nymph)	2	-	oa-p
*Coccoidea sp	2	-	u
*Syrphidae sp (larva)	2	-	u
*Strophingia sp (nymph)	1	-	oa-pm
*Coleoptera sp (larva)	1	-	u
*Bibionidae sp	1	-	u
*Formicidae sp	1	-	u
*Oligochaeta sp (egg capsule)	1	-	u
*Opiliones sp	1	-	u
Wt: 2.50 kg; E: 0.00; F: 0.00			
LALD 1267, Sample: 6/1, CA: ReM: S, Period 6			

100 Very small flot, many seeds.

	n	sq	ec
Aleocharinae sp A	2	-	u
Hemiptera sp	1	-	u
Carabidae sp	1	-	ob
<i>Helophorus</i> sp	1	-	oa-w
<i>Cercyon</i> sp	1	-	u
<i>Megasternum obscurum</i>	1	-	rt
<i>Xantholinus linearis</i> or <i>longiventris</i>	1	-	rt-sf
<i>Philonthus</i> sp	1	-	u
Aleocharinae sp B	1	-	u
<i>Aphodius</i> sp	1	-	ob-rf
<i>Cryptolestes ferrugineus</i>	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
 Wt: 3.10 kg; E: 0.00; F: 0.00
 LAL D: 1269, Sample: 5/1, CA: ReM: S,
 Period 5A

101 Flot more than 10 mm in jar. Recorded in flot
 and on filter paper; fossils to tube. Preservation
 good to rather poor.

	n	sq	ec
<i>Oryzaephilus surinamensis</i>	74	-	g-ss
<i>Cryptolestes ferrugineus</i>	36	-	g-ss
<i>Lathridius minutus</i> group	17	-	rd-st
<i>Oxytelus sculptus</i>	14	-	rt-st
<i>Cercyon analis</i>	11	-	rt-sf
<i>Carpelimus ?bilineatus</i>	9	-	rt-sf
<i>Cercyon terminatus</i>	7	-	rf-st
<i>Carpelimus</i> sp B	7	-	u
<i>Anotylus nitidulus</i>	7	-	rt-d
<i>Leptacinus pusillus</i>	6	-	rt-st
Aleocharinae sp C	5	-	u
<i>Anthicus formicarius</i>	5	-	rt-st
<i>Cercyon atricapillus</i>	4	-	rf-st
<i>Anotylus tetracarinated</i>	4	-	rt
Aleocharinae sp A	4	-	u
<i>Corticaria</i> sp A	4	-	rt-sf
<i>Sitophilus granarius</i>	4	-	g-ss
<i>Ptenidium</i> sp	3	-	rt
<i>Carpelimus corticinus</i>	3	-	oa-d
<i>Platystethus arenarius</i>	3	-	rf
<i>Cordalia obscura</i>	3	-	rt-sf
Aleocharinae sp B	3	-	u
<i>Aphodius prodromus</i>	3	-	ob-rf
<i>Atomaria</i> sp A	3	-	rd
<i>Scolopostethus</i> sp	2	-	oa-p
<i>Conomelus anceps</i>	2	-	oa-p
<i>Trechus obtusus</i> or <i>quadristriatus</i>	2	-	oa
<i>Megasternum obscurum</i>	2	-	rt
<i>Acrotrichis</i> sp	2	-	rt
<i>Anotylus rugosus</i>	2	-	rt
<i>Lathrobium</i> sp	2	-	u
<i>Gyrohypnus fracticornis</i>	2	-	rt-st
<i>Philonthus</i> sp B	2	-	u
<i>Falagria</i> sp	2	-	rt-sf
<i>Phyllopertha horticola</i>	2	-	oa-p
<i>Meligethes</i> sp	2	-	oa-p
<i>Monotoma picipes</i>	2	-	rt-st
<i>Chilocorus bipustulatus</i>	2	-	oa-p
<i>Zicrona caerulea</i>	1	-	oa-p

? <i>Stignocoris pedestris</i>	1	-	oa
<i>Lyctocoris campestris</i>	1	-	rd-st
<i>Notiophilus biguttatus</i>	1	-	oa
<i>Dyschirius ?globosus</i>	1	-	oa
<i>Pterostichus (Poecilus)</i> sp	1	-	oa
<i>Pterostichus</i> sp	1	-	ob
<i>Calathus</i> sp	1	-	oa
? <i>Bradycellus</i> sp	1	-	oa
<i>Helophorus</i> sp A	1	-	oa-w
<i>Helophorus</i> sp B	1	-	oa-w
<i>Cercyon</i> sp	1	-	u
Scydmaenidae sp	1	-	u
<i>Micropeplus fulvus</i>	1	-	rt
<i>Olophrum</i> sp	1	-	oa
<i>Omalium</i> sp	1	-	rt
<i>Xylodromus concinnus</i>	1	-	rt-st
<i>Carpelimus</i> sp A	1	-	u
<i>Platystethus nitens</i>	1	-	oa-d
<i>Stenus</i> sp A	1	-	u
<i>Stenus</i> sp B	1	-	u
<i>Stenus</i> sp C	1	-	u
<i>Stenus</i> sp D	1	-	u
<i>Lithocharis ochracea</i>	1	-	rt-st
<i>Xantholinus linearis</i> or <i>longioventris</i>	1	-	rt-sf
<i>Philonthus</i> sp A	1	-	u
<i>Philonthus</i> sp C	1	-	u
<i>Philonthus</i> sp D	1	-	u
<i>Quedius boops</i> group	1	-	u
Staphylininae sp B	1	-	u
<i>Tachinus</i> sp	1	-	u
<i>Aleochara</i> sp	1	-	u
Aleocharinae sp D	1	-	u
Aleocharinae sp E	1	-	u
<i>Aphodius ?granarius</i>	1	-	ob-rf
<i>Aphodius</i> sp	1	-	ob-rf
<i>Clambus</i> sp	1	-	rt-sf
<i>Simplocaria ?semistriata</i>	1	-	oa-p
Elateridae sp	1	-	ob
<i>Rhizophagus</i> sp	1	-	u
<i>Monotoma longicollis</i>	1	-	rt-st
<i>Cryptophagus</i> sp A	1	-	rd-sf
<i>Cryptophagus</i> sp B	1	-	rd-sf
<i>Atomaria</i> sp B	1	-	rd
<i>Atomaria</i> sp C	1	-	rd
<i>Atomaria</i> sp D	1	-	rd
<i>Ephistemus globulus</i>	1	-	rd-sf
<i>Cerylon ferrugineum</i>	1	-	l
<i>Coccidula rufa</i>	1	-	oa-pd
Coccinellidae sp	1	-	oa-p
<i>Enicmus</i> sp	1	-	rt-sf
<i>Corticaria</i> sp B	1	-	rt-sf
<i>Corticaria</i> sp C	1	-	rt-sf
<i>Palorus ratzeburgi</i>	1	-	g-ss
<i>Prasocuris phellandrii</i>	1	-	oa-pd
<i>Galerucinea</i> sp	1	-	oa-p
<i>Longitarsus</i> sp	1	-	oa-p
<i>Altica</i> sp	1	-	oa-p

<i>Chaetocnema arida</i> group	1	-	oa-p
<i>Apion</i> (<i>Oxystoma</i>)	1	-	oa-p
<i>Apion</i> sp	1	-	oa-p
<i>Sitona</i> sp	1	-	oa-p
<i>Notaris acridulus</i>	1	-	oa-dp
<i>Micrelus ericae</i>	1	-	oa-pm
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
Wt: 3.65 kg; E: 0.00; F: 0.00			
LAL D 1357, Sample: 8/1, CA: ReM: S,			
Period 4C			

Discussion

It appears that this part of the Lanes was, in the Roman period, much concerned with livestock, perhaps including horses or other equines. The only parasite of equines recorded was, however, 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 (or similar) 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 material of this kind. 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, though, it was not clear whether the insect assemblages represented stable manure as such. Sometimes it seemed possible 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 (Fig 307). Some were seemingly dominated by a rather random fauna (probably much of it 'background fauna'); such assemblages were recovered from many of the cut features, perhaps representing insects from the adjacent open ground, which had arrived naturally

or in dumped soil. The typical environment 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 deposits, the fill (1267) of a Period 6 ?pit (LALD 1268), and fill 1220.02 of Period 9 posthole 1220 in the east of the site (one of the features cut through surface 318; Ch 3, p 70), were more than traces of *Trichuris* present. In the case of the material from 1267, 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. The deposits have, however, 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 sub-samples of Roman date gave heads of human fleas, or less diagnostic body parts which were probably of that species, which are commonly found in archaeological stable-manure associations (p 656). Human lice (*Pediculus humanus*) were found in two samples. Preservation probably limited recovery of these very delicate lice, since many samples had dried out in storage and there were hints that insects had oxidised after excavation.

The record of pubic lice (*Pithirus pubis*) from the Lanes requires further consideration. The Roman example was from a fill (1269.02) of Period 5A-B pit 1270 in the southern part of the site (KLA C), south of Buildings 1993 and 1994 (Ch 2, pp 43-6). Described as a 'secondary' fill, there can be little doubt from the insect assemblage that the layer incorporated stable manure and possibly other waste. It appeared to be mineralised, and detail was obscured, but 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 sub-species is extremely difficult in fossil material, it is probable that most of the numerous human lice (*Pediculus humanus*) found in archaeological deposits are the sub-species *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 specimen from the Lanes is thus of very great importance, pushing back the presence of the louse into the Roman period.

Busvine (1976), in his compendious but effectively unindexed review of parasitic insects in history,

mentions Roman sources (*op cit*, 188), 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, reproducing an illustration of 1688 which clearly shows *P pubis* (*op cit*, 154). The fossil records serve to support the interpretation of the earlier literary references as truly being to *P pubis*.

Insect parasites of livestock were poorly represented in the northern Lanes: there were four records of undiagnostic remains of the genus *Damalinia*, various species of which are parasitic on particular domestic mammals, and one of the sheep ked *Melophagus ovinus* (Kenward *et al* 1992a). 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 the dung of horses which had 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 the fills of probable drainage channels in Period 7 (KLA C 1921 and KLA D 526; see *Ch 3*, p 55); in a fill of Period 8B pit 300, in the north-east corner of the site (*Ch 3*, p 66); and perhaps in pools on Period 6 deposit 1249, also in the north-west. Otherwise, most of the aquatic insects may have been background fauna.

The heath/moor component may have originated in material used for a variety of purposes, including, for example, animal bedding and/or fodder, or for use in construction (turf or heather). It is also possible that some components were deposited on the site in animal dung, having previously been eaten by livestock in the field.

Comparison with other sites in Carlisle

An overt component of the project to investigate the insect and other invertebrate remains from the northern Lanes was to consider zonation in the Roman town and its immediate surroundings. Together, the previously investigated sites in Roman Carlisle which had extensive waterlogged preservation represent a range from intensive military use, as within the fort at Annetwell Street (Kenward 1998), via a rather dirty service area (perhaps a military annexe on the south side of the fort; McCarthy 1991a) of broadly urban character at Castle Street (Kenward *et al* 1991), to an almost rural site on the fringes of the extramural settlement at the southern Lanes (Kenward *et al* 2010). This mapping of land-use is complemented by the material from the northern Lanes. These insect assemblages suggest characteristics somewhere between those of Castle Street and Old Grapes Lane at the southern Lanes. 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.

Feature type	Pre-Roman	Early Roman	Later Second Century	Late Roman	Total
Construction trench		12	1		13
Demolition			4		4
Deposit/layer		5	21	4	30
Ditch		9			9
Gully		1	20		21
Hypocaust				3	3
Internal surface		3			3
Old ground surface	4				4
Pit		6	30	6	42
Posthole	1	1	7		9
Unknown			1		1
Well				17	17
Total	5	37 (4 sacks wood)	84	30	156

Table 86: Context type by site period and number of palaeoenvironmental samples analysed

	% occurrence				median score			
	Pre-Roman	Early Roman	Later Second Century	Late Roman	Pre-Roman	Early Roman	Later Second Century	Late Roman
Total samples analysed	5	33	84	30	5	33	84	30
Coarse sand/gravel	80	<1	80	93	5	4	4	4
Wood fragments	20	5	61	67	5	2	3	2
Charcoal fragments	80	5	86	83	2	2	3	2
Earthworm egg-cases	20	<1	29	7	2	2	2	2
Bryophyte fragments	20	<1	17	40	1	1	2	1.5
Peat/coarse organic	20	<1	40	60	1	1	3	3
Mammal bone	20	5	32	57	1	1	1	1
Insect fragments	20	5	29	43	1	1	1	2
Silt and clay		<1	5	3	-	4	2.5	1
Amorphous organic material		13	25	20	-	2	2	2.5
Bran fragments		5	4	10	-	2	1	3
Clinker/cinder		3	21	50	-	2	2	3
Coal		<1	5	10	-	1	2	1
Industrial waste		3	30	43	-	1	1	1
Calcined mammal bone		<1	17	27	-	1	1	1
Small mammal bone		<1	1	17	-	1	1	1
Fly puparia		<1	26	33	-	1.5	1	1
Legume flower		<1	2	23	-	1	1.5	1
Monocotyledonous fragments		3	29	37	-	1	2	2
<i>Ceonococcus geophilus</i>			4	3	-	-	2	1
Fish bone			2	7	-	-	1.5	1
Brick and/or tile			8	7	-	-	1	1
Leather				7	-	-	-	1
Shell (marine)				3	-	-	-	1

Table 87: Matrix components