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Ancient Monuments Laboratory
Report 233/87

THE INSECT REMAINS FROM 5 ROUGIER STREET, YORK.

Harry Kenward & Enid Allison

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Summary

Thirty eight 1kg 'test' samples from 35 contexts dated from the 2nd- mid 13th century at 5 Rougier Street, York, were examined for insects. Seven 'test' samples were also taken from column samples cut into the deepest Roman layers on the site. Sizeable assemblages were only obtained from Roman deposits and no interpretation was possible for post-Roman and medieval samples. The assemblages were generally strikingly similar to those from the nearby Tanner Row site.

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Introduction

Excavations by York Archaeological Trust took place at 5, Rougier Street, York, in 1981, in a long, narrow trench (12m long by 2.5m wide) (Ottaway, 1981 and 1982). The earliest features on the site were a series of 2nd century water-channels and gulleys, overlain by a thick 2nd century burnt deposit containing large quantities of charred cereal grains. Above this was the foundation of a large building, with one elegant classical-type column base. A series of late 2nd to late 3rd century Roman road metallings ran across the north-east end of the trench. Adjacent to the road a substantial building on stone piles was found, which was in use until the 4th century. Above this was evidence of post-Roman activity in the form of a "black" soil, with 12th or early 13th century pits forming the last main phase recorded on the site.

Methods

Thirty eight 1kg 'test' samples from 35 contexts were processed by paraffin flotation to extract insect remains. Sediment descriptions for the samples are given by Tomlinson (1987). Seven 'test' samples were also taken from three stratigraphically related sample columns. Sediment descriptions for the latter group of samples are given below and are taken from an internal report produced by Andrew Jones.

Methods used for analysis of the insect remains are as described by Kenward (1978), with some modifications. Numbers of individuals (N) and numbers of taxa (S) in each sample were recorded. When possible, an index of diversity (alpha) was calculated following Fisher et al. (1943). Assemblages in each sample were divided into broad ecological groups which are given by Kenward et al. (1986).

The data archive

The data from the insect samples have been computer-recorded and processed on the University of York VAX-cluster mainframe computer, using a PASCAL system written by HK. This system produces ordered lists and statistics of value in interpretation, and also creates database files for analysis in the DATATRIEVE data interogation program. All statistics are stored in hard copy at the Environmental Archaeology Unit, University of York, and copies have also been submitted to York Archaeological Trust and the Ancient Monuments Laboratory, HBMC. All lists and main statistics are also stored in the Environmental Archaeology Unit's database system.

THE SAMPLES

Contexts were divided by archaeological criteria into 9 Context Groups (51- 60) which are dealt with chronologically below.

Group 51, EARLIEST (?"NATURAL") WATER-CHANNEL [1380]

Mid-late 2nd century

This channel was cut into the natural clay, which was found at a depth of 7m. The channel may have been a natural water-course. All the samples taken, including those from the lowest fill layers, contained human refuse, so none were from truly natural fills. Six samples were examined for insects.

Context 1381, Sample 124/T

A rather small assemblage was recorded (N = 60, S = 31), dominated by Oryzaephilus surinamensis (saw toothed grain beetle), with 13 individuals. Other grain pests and typical domestics were, in total, well represented, the former group accounting for a third of the assemblage. Aquatics and damp-ground taxa each contributed 10% of the individuals, with four specimens each of an unidentified hydroporine and of Cyphon sp.. A variety of ground beetles, some generalised decomposers (% N RT very small at 13%), and the heathland weevil Micrelus ericae completed the list. Some other taxa (particularly Pterostichus diligens and ?Bradycellus sp.) may belong in the same ecological group as M. ericae; all may have been imported in peat or turf. A single Pulex irritans (human flea) was recorded.

Context 1373, Sample 132/T

The sub-sample gave a moderately large assemblage of 134 individuals of 54 taxa. Diversity was quite low (alpha = 34, SE = 5), depressed greatly by the presence of a dominant group of grain-pest taxa, which occupied the first four ranks of abundance and constituted 49% of the assemblage. If these grain pests were subtracted, 68 individuals of 50 taxa remained, giving an estimate of 85 (SE = 22) for alpha. This residual assemblage was ecologically and mathematically diverse, with a modest aquatic component (% N W = 7) and a strong general resemblance to many groups from the earlier phases of the Tanner Row site. Even after subtraction of grain pests, the decomposer component was modest, with %N RT = 40.

Context 1399, Sample 135/T

The assemblage of 76 individuals from 40 taxa had a very strong underlying resemblance to those from samples 124 and 132. The fauna remaining after subtraction of grain pests was too small to justify separate discussion.

Context 1383, Sample 138/T

With strong similarities to the group discussed above, the assemblage from this sample included a rather higher proportion of decomposer taxa (% N RT = 52 after subtraction of grain pests), these including a substantial number of species associated with relatively dry conditions, especially within wooden structures (N RD as % N RT = 43).

Context 1408, Sample 139/T

The modest assemblage of beetles and bugs (N = 91; S = 37) included abundant grain pests (% N G = 35), while domestics and 'dry' decomposers were both well represented (% N RD after subtraction of grain pests = 25). This group as a whole was distinguished, however, by a high proportion of 'outdoor' individuals (% N OB = 24), brought about largely by the presence of 11 *Gymnetron ? pascuorum*, and 3 individuals of one *Apion* sp. and 2 of another. This component, identified in the Tanner Row assemblages as having probably originated in imported hay, included some freshly emerged individuals, strongly supporting importation.

Context 1404, Sample 145/T

Seventy-five individuals of 44 taxa were recorded. Like the last sample, this gave a group with relatively abundant outdoor insects (% N OB = 32), although in this case the predominant ecological sub-group was the aquatics, which made 54% of the outdoor component. Damp ground taxa contributed a further 17%. Two *Helophorus* spp., with seven and three individuals, contributed much of the aquatic component, which included eurytopic taxa likely to invade a ditch.

Summary of Context Group 51

The most striking feature of the insect assemblages from this channel was the strong similarity to a group of assemblages recorded from samples from the earlier period of excavation at Tanner Row. These were also from early Roman ditches or natural watercourses, and from associated surface layers. Aquatics were sufficiently numerous in the present samples - seen together - to indicate some breeding by eurytopic taxa. There was no evidence

for permanent water, however. Other natural/semi-natural habitats were poorly represented. As in some layers at Tanner Row there was evidence for the importation of cut vegetation, doubtless secondarily dumped into the ditch. Grain pests, domestics, fleas, and a group of 'dry' decomposers (associated with mouldering, open textured plant remains) also seem likely to have been dumped in refuse from structures. There was some evidence of peatland taxa.

Group 52, "FIRST MAN-MADE WATER CHANNEL" [1393]

Mid-late 2nd century

Two samples were examined from the fills of this feature. It was dubbed "man-made" to distinguish it from the earliest channel which was thought during excavation to be a natural water-course. Two samples were examined.

Context 1334, Sample 101/T

A substantial assemblage was recovered (173 individuals of 68 taxa), over half of it made up by grain pests (% N G = 53). If these were subtracted, the residual assemblage was rich in outdoor forms (% N OB = 29), while decomposers were quite numerous (% N RT = 50). Despite this, the only taxa represented by more than three individuals were the four abundant grain pests (Oryzaephilus surinamensis, Cryptolestes ferrugineus, Sitophilus granarius, and Palorus ratzeburgi). All may have been background fauna, but dumping of surface deposits from in or around buildings is possible.

Context 1379, Sample 119/T

The recovered assemblage was not very large (N = 63, S = 41) and was essentially similar to the previous one.

Summary of Context Group 52

The two assemblages were very much like those from the previous context group, although neither of the Group 52 samples included very many aquatics.

Group 53, TIMBER-LINED GULLEY [1294]

Mid-late 2nd century

This timber-lined gulley or water-course overlay the "first man-made water channel". Three samples were examined for insects.

Context 1329, Sample 95/T

A single human flea was recorded from this subsample. Beetles were moderately abundant and there were a few bugs (S = 68, N = 138). Grain beetles constituted 40% of the assemblage. The residual assemblage after the subtraction of these was diverse and rich in outdoor forms (% N OB = 31). Decomposers were modestly represented (% N RT = 48). There was nothing to distinguish this assemblage from those described under the previous two context groups.

Context 1329, Sample 96/T

In total 137 individuals of 69 taxa were recorded. Diversity was moderately high (alpha = 55, SE = 8) as was the proportion of outdoor individuals (%N OB = 20). Aquatic and damp ground taxa were moderately represented (%N W = 4; %N D = 5). There were two moorland/ heathland taxa, Macrodema micropterum and Ulopa ?reticulata. Grain pests accounted for the first four ranks of abundance and made up 36% of the assemblage (with 31 Oryzaephilus surinamensis). A third of the insects were decomposer (RT) species. Removing grain pests left an assemblage of high diversity (alpha = 116, SE = 27) including a large proportion of outdoor forms (%N OB = 32). Aquatics and damp ground species made up a significant part of this outdoor component (25% and 21% respectively). Decomposers accountedfor over half of the residual assemblage (%N RT = 52), and both RD and RF forms were quite well represented (29% and 27% of N RT respectively). It is entirely possible that this assemblage was mostly 'background' fauna, much of the grain and 'dry' decomposer components originating close by.

Context 1329, Sample 97/T

There were 109 individuals of Coleoptera, with 63 taxa noted. The assemblage was broadly very similar to that from sample 96/T and was probably of similar origin. The assemblage included a human flea, perhaps evidence that detritus from within structures was present.

Summary of Context Group 53

These three assemblages were broadly similar. They may have been mostly 'background' fauna, with a large grain pest component and some human fleas, domestics and decomposers originating in nearby structures as strays, or in dumped litter. The structure containing the grain which was burned and contributed Group 55 appears a likely main source. A small peatland component was noted.

Group 54, LAYER ON SURFACE ADJACENT TO THE TIMBER-LINED GULLEY [1362]

Mid-late 2nd century

One sample from this organic layer on the surface adjacent to the timber-lined gulley was examined for insects.

Context 1362, Sample 106/T

A fairly substantial assemblage was recovered - 186 individuals and 89 taxa. Diversity was quite high (alpha = 67, SE = 8) and the fauna dominated by grain pests (%N G = 40). As in samples from the previous context group, there were some 'domestic' and 'dry' decomposer forms and a variety of outdoor taxa: a similar origin for the assemblage appears likely.

Group 55, CHARRED GRAIN LAYER, Contexts 1205, 1271, 1292, 1293, 1320, 1326

Late 2nd century

The composition of the charred cereal grain assemblages indicates that this deposit was a single feature although it was given several context numbers by the excavators. The layer covered the whole of the area of excavation and also infilled the top of the timber-lined gulley [1392] which therefore seems likely to have been in use when the burning and subsequent spreading of the grain occurred. Four samples were examined for insects.

Context 1292, Sample 71/T

The insects were preserved by 'waterlogging' and so seem likely to have entered the layer after the grain was charred. The

assemblage differed from those dealt with above, for Neobisnius sp. (probably villosulus) and Carpelimus pusillus group were abundant. These may have bred in organic-rich mud or decomposing matter and present something of an enigma. The remaining fauna was much like that from previously described samples.

Context 1205, Sample 79/T

Only three individuals of Coleoptera were recovered. They have no interpretative significance.

Context 1320, Sample 82/T

Few insects were recorded (N = 12, S = 10). There was some affinity with the group from subsample 71/T (above).

Context 1326, Sample 85/T

A small group of beetles was recovered (N = 55, S = 33); it was essentially similar to the majority of those described above.

Summary of Context Group 55

At first site it was surprising that this massive layer of 'charred cereal' was in parts at least quite rich in 'waterlogged' insects. However, reference to the original material showed that not all was charred, but some was preserved by waterlogging. The Neobisnius and Carpelimus pusillus group may have bred in the deposit after it formed, exploiting the organic "mud" created.

Group 56, ROMAN STREET BUILD-UP, Contexts 1222, 1246, 1262, 1288, 1301

Late 2nd century

Most of these contexts were associated with the build-up and agger of the 1st Roman street. Five 'test' samples were examined.

Context 1222, Sample 57/T

The modest assemblage of beetles and bugs (N = 97, S = 52) was, again, essentially similar to most described above.

Context 1222, Sample 59/T

Nothing clearly distinguished this group from the majority described above. There were 71 individuals of 46 taxa.

Context 1262, Sample 65/T

There were no records of beetles or bugs from this sample.

Context 1288, Sample 68/T

A single unidentifiable beetle fragment was present.

Context 1301, Sample 74/T

Subjectively this group (of 51 individuals and 29 taxa) appeared a little different from most so far described. It may perhaps have included a larger proportion of 'background fauna' than the other assemblages.

Summary of Context Group 56

Not surprisingly, these assemblages associated with a road surface are not very distinctive. They may represent the secondarily deposited corpses in litter, trample and wind-blow as well as background fauna.

Group 57, "RED" LAYERS, Contexts 1162 and 1163

Early 4th century

These contexts contained red and yellow ochre pigments and painted wall plaster which suggested to the excavator that this was refuse from a Roman painter and decorator's work (Ottaway, 1982). One 'test' sample (27/T) was taken from context 1162 but no beetle or bug taxa or other insects of note were recorded from it.

Group 58, LATE OR POST-ROMAN, PRE ANGLO-SCANDINAVIAN SOIL LAYERS, Contexts 1106, 1116, 1128

4th to mid 9th century

These deposits made up a thick layer of black soil, and contained large quantities of Roman pottery and building materials. The layer was thought by the excavators to have probably accumulated in the post-Roman period, with the pottery being residual. Two samples were examined for insects.

Context 1116, Sample 35/T

Only three beetles, of no interpretative significance, were recorded.

Context 1128, Sample 36/T

There were no records of beetles or bugs from this sample.

Summary of Context Group 58

Too few insects were recorded for any real light to be cast on these deposits. If these layers really date to the Anglian period it is possible that further material should be processed to typify the fauna.

Group 59, ANGLO-SCANDINAVIAN PIT [1140]

?9th- 10th century

Two samples from the fill of this pit were examined for insects. No beetle or bug taxa were present in sample 22/T (context 1143), and only a single individual of Carpelimus pusillus group was recorded in sample 29/T (context 1142).

Group 60, MEDIEVAL PITS, Contexts 1115, 1118, 1076, 1099

Late 12th to mid 13th century

Eleven 'test' samples were taken from four of the six

medieval pits on the site. All four pits were dated to the early to mid 13th century. No 'test' samples were taken from the slightly earlier pit (fill 1104) dated to the late 12th to early 13th century. Preservation of biological remains was generally very poor in all of the pits. Some samples contained mineralized material.

PIT 1099

Of the 5 samples taken from this pit, only one (sample 7/T from context 1112) contained any insect remains. These were a medium sized aleocharine and a medium sized staphylinine, both ecologically uncodable.

PIT 1118

Samples 12/T and 14/T were taken from contexts 1117 and 1121 respectively. No beetle or bug taxa were recorded from either sample.

PIT 1115

A single individual of Stegobium paniceum was present in sample 16/T from fill context 1091. No beetle or bug taxa were present in the other sample taken from this pit (sample 30/T, context 1144).

PIT ?

Context 1126, Sample 19/T

One small aleocharine was represented in this sample.

Context 1134, Sample 20/T

This sample contained only 5 individuals from 4 taxa. The sclerites were reddened and all appeared to be modern contaminants. The species recorded included Euophryum confine, a recent introduction to Britain from Australasia.

Summary of Context Group 60

Preservation was too poor for insect remains to contribute to the interpretation of these pit fills.

THE COLUMN SAMPLES

Three column samples were taken from sections cut in the deepest Roman layers on the site. The layers sampled appear to have been the fills of a large linear feature, possibly a ditch. The interfaces between one layer and the next in this feature were at approximately 45 degrees to the vertical. A small trial pit dug into the base of the trench produced a pinkish-brown sandy silt which was believed to have been the natural subsoil. Samples 143 and 146 were taken from the extreme eastern end of the trench, and sample 147 was taken mid-way along the trench. The sample columns all appear to have been stratigraphically related, sample 147 being equivalent to 143 and 146 layer 3, and the sample assemblages have been amalgamated for discussion.

143 + 146/1/T

This material formed the base of the sample column and consisted of grey-brown sandy silt with an identical particle size to the sediment in the small trial pit. It may represent the natural B horizon of a buried soil profile.

The concentration of insects in this material was low, only 44 individuals of 30 taxa being noted. Grain pests were an important component of the assemblage (%N G = 30) and ten individuals of Oryzaephilus surinamensis were present. The remaining taxa, however, were only represented by one or two individuals. Pulex irritans was also recorded.

143 + 146/2/T

This sample was taken from layers of sandy silts with small and subtle variations of colour and texture.

A substantial insect assemblage (N = 160, S = 61) was present and grain pests were abundant (%N G = 51). The assemblage was essentially similar to the previous one. Pulex irritans was recorded.

143 + 146/3/T and 147/T

The sediment type changed markedly at this level. The layer consisted of heterogenous sandy silts 30cm thick. It varied in colour from light to dark grey and contained pinky-brown clasts of small silty, probably redeposited, natural subsoil. Within the layer was a band of light grey-brown medium fine sand 2-3cm thick, some rounded quartz pebbles and a piece of degrading sandstone.

Sample 143 + 146/3/T gave a rather large assemblage (N = 211, S = 72). Again, grain pests predominated (%N G = 48). When these were subtracted the remaining assemblage was quite rich in decomposers (%N RT = 52). Outdoor forms from various habitats were important in this residual assemblage (%N OB = 24), and diversity

was high (alpha = 76, SE = 13). Seen in a Roman context, all or most of the assemblage might be background fauna, although a proportion might have been introduced by trample or rubbish dumping. The insect assemblage from sample 147 was very similar (it was picked out as nearly identical before the stratigraphic relationship was known to the writers) and also had a high concentration (N = 236, S = 72). It had a distinct "wooden building" fauna.

143 + 146/4/T

The layer from which this sample was taken was a band of grey sandy silt 18-20cm thick.

There were 20 beetle taxa, with 31 individuals, 42% of the assemblage being accounted for by grain pests (including 24 O. surinamensis and 12 Cryptolestes ferrugineus). There were two Carpelimus pusillus group but the remaining taxa were represented only by single individuals. Pulex irritans was also identified.

143 + 146/5/T

This sample was from a loamy band containing wood fragments.

Twenty eight individuals of 18 beetle and bug taxa were noted. There were nine Oryzaephilus surinamensis, but the remaining taxa were represented only by one or two individuals.

143 + 146/6/T

This sample was taken from a layer of grey silt which formed the top of the sample column.

Single individuals of four taxa were recorded. They included Oryzaephilus surinamensis.

Summary of sample columns

Clearly all these deposits formed during human occupation on or near to the site. If the lowest horizon represented part of a natural soil it is possible that grain pests and other insects were carried down into it by natural agencies.

Conclusion

Grain pests were an important component in the assemblages from the deepest Roman layers on the site, and the human flea Pulex irritans was also present in several samples. The deposits clearly formed during human occupation on or near to the site.

Assemblages from the series of water-channels and gulleys and an associated ground surface dated to the mid to late 2nd century showed a strong similarity to those obtained from the same type of deposits at the nearby Tanner Row site. Similar processes may have been operating at both sites. Grain pests were abundant in most samples, and there was evidence for the importation of cut vegetation, which was probably secondarily dumped into the channels. The presence of the heathland weevil Micrelus ericae, the bugs Macrodema micropterum and Ulopa ?reticulata, and some other taxa which may belong to the same ecological group may indicate the importation of peat or turf. Pulex irritans was present in some samples, perhaps indicating that detritus from within buildings was present. Aquatic species were well represented in the earliest 'natural' water-channel. Some eurytopic taxa may have bred there, but there was no evidence of permanent water.

The layer of charred cereal grain (late 2nd century) was in parts quite rich in 'waterlogged' insects, which must have entered the deposits after burning, perhaps from dumped soil. Assemblages obtained from the Roman street build up (late 2nd century) were not very distinctive. They may represent secondarily deposited corpses in litter, trample and wind-blow as well as background fauna. No insect remains were recovered from samples from the early 4th century layers containing red and yellow ochre pigment which were thought to have been a painter and decorator's refuse.

Very few insects, none of which were of any interpretative significance, were recorded from the thick layer of black soil which was believed to have accumulated in the post-Roman period (4th - mid 9th century). Further material from this layer should perhaps be processed in order to typify the fauna during this period on the site.

Preservation of insects was too poor to contribute to the understanding of the nature of the fills of one Anglo-Scandinavian (?9th - 10th century) and four medieval pits (early to mid 13th century). Some modern contaminants were present in one of the medieval pits.

Acknowledgments

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sp. indet. = record may include taxon listed above
sp. = taxon not listed above

Oligochaeta egg capsules

Mallophaga or Siphunculata sp.

Hemiptera:

- Heterogaster urticae (Fabricius)
- Heterogaster sp.
- Macrodema micropterum (Curtis)
- Stygnocoris fuligineus (Geoffroy in Fourcroy)
- Lygaeidae sp.
- Lyctocoris campestris (Fabricius)
- Miridae sp.
- Saldidae sp.
- Corixidae sp.
- Heteroptera sp.
- Ulopa reticulata (Fabricius)
- Auchenorhyncha spp.
- Aphidoidea sp.
- Hemiptera sp.
- Hemiptera sp. nymph

Thysanoptera sp.

Diptera:

- Bibionidae sp.
- Diptera sp. puparia
- Diptera spp. adults

Siphonaptera:

- Pulex irritans Linnaeus
- Siphonaptera sp.

Hymenoptera:

Parasitica spp.
Aculeata sp.
Formicidae sp.
Hymenoptera spp.

Coleoptera:

Clivina fossor (Linnaeus)
?Trechus sp.
Trechus obtusus or quadristriatus
Trechus micros (Herbst)
Bembidion sp.
Pterostichus diligens (Sturm)
Pterostichus melanarius (Illiger)
Pterostichus ?strenuus (Panzer)
Pterostichus spp.
Calathus sp.
Laemostenus terricola (Herbst)
Agonum sp.
Amara sp.
?Bradycellus sp.
Carabidae spp.
Hydroporinae spp.
Agabus sp.
Helophorus aquaticus or grandis
Helophorus spp.
Sphaeridium bipustulatum Fabricius
Sphaeridium sp.
Cercyon analis (Paykull)
Cercyon atricapillus (Marsham)
Cercyon haemorrhoidalis (Fabricius)
Cercyon terminatus (Marsham)
Cercyon unipunctatus (Linnaeus)
Cercyon ustulatus (Preyssler)
Megasternum obscurum (Marsham)
Cryptopleurum minutum (Fabricius)
Hydrobius fuscipes (Linnaeus)
Hydrophilinae sp.
Acritus nigricornis (Hoffman)
Gnathoncus sp.
Hister sp.
Histerinae sp.
Ochthebius minimus (Fabricius)
Ochthebius sp. indet.
Hydraena sp.
Limnebius sp.
Ptenidium sp.
Acrotrichis sp.
Catops sp.
Silpha sp.
Scydmaenidae sp.
Lesteva longoelytrata (Goeze)
Phyllodrepa salicis (Gyllenhal)
Omalium caesum or italicum
Omalium rivulare (Paykull)
Omalium sp.
Xylodromus concinnus (Marsham)
Omaliinae sp.

Coprophilus striatulus (Fabricius)
Carpelimus bilineatus Stephens
Carpelimus corticinus (Gravenhorst)
Carpelimus fuliginosus (Gravenhorst)
Carpelimus pusillus group
Carpelimus sp. indet.
Aploderus caelatus (Gravenhorst)
Platystethus ?alutaceus Thomson
Platystethus arenarius (Fourcroy)
Platystethus cornutus group
Platystethus nitens (Sahlberg)
Anotylus complanatus (Erichson)
Anotylus nitidulus (Gravenhorst)
Anotylus rugosus (Fabricius)
Anotylus sculpturatus group
Anotylus tetracarinatus (Block)
Oxytelus sculptus Gravenhorst
Stenus spp.
Euaesthetus ruficapillus Boisduval and Lacordaire
Lathrobium sp.
Rugilus ?orbiculatus (Paykull)
Rugilus sp.
Paederinae sp.
Leptacinus sp.
Gyrohypnus angustatus Stephens
Gyrohypnus fracticornis (Muller)
Gyrohypnus sp. indet.
Xantholinus sp.
Neobisnius spp.
Philonthus politus (Linnaeus)
Philonthus spp.
Staphylininae spp.
Tachyporus sp.
Tachinus laticollis or marginellus
Tachinus ?signatus Gravenhorst
Cordalia obscura (Gravenhorst)
Falagria sp.
Aleochara sp.
Aleocharinae spp.
Euplectini sp.
Pselaphidae sp.
Trox scaber (Linnaeus)
Geotrupes sp.
Aphodius contaminatus (Herbst)
Aphodius fimetarius (Linnaeus)
Aphodius granarius (Linnaeus)
Aphodius prodromus (Brahm)
Aphodius ?rufipes (Linnaeus)
Aphodius spp.
Aphodius or Colobopterus sp.
Oxyomus sylvestris (Scopoli)
Phyllopertha horticola (Linnaeus)
Cyphon sp.
Byrrhidae sp.
Limnius sp.
Elateridae spp.
Stegobium paniceum (Linnaeus)
Anobium punctatum (Degeer)
Tipnus unicolor (Piller and Mitterpacher)
Ptinus fur (Linnaeus)
Ptinidae sp. indet.
Lyctus linearis (Goeze)

?Lyctus sp.
Brachypterus sp.
Meligethes sp.
Omosita sp.
Rhizophagus parallelocollis Gyllenhal
Rhizophagus sp. indet.
Monotoma ?bicolor Villa
Monotoma longicollis Gyllenhal
Monotoma sp.
Cryptolestes ferrugineus (Stephens)
Oryzaephilus surinamensis (Linnaeus)
Cryptophagus scutellatus Newman
Cryptophagus spp.
Atomaria spp.
Ephistemus globulus (Paykull)
Phalacridae sp.
Orthoperus sp.
Lathridius minutus group
Enicmus sp.
Dienerella sp.
Corticaria spp.
Corticarina sp.
Mycetophagus sp.
Typhaea stercorea (Linnaeus)
Aglenus brunneus (Gyllenhal)
Colydiidae sp.
?Blaps sp.
Palorus ratzeburgi (Wissman)
Alphitobius ?diaperinus (Panzer)
Tenebrio molitor Linnaeus
Tenebrio obscurus Fabricius
Anthicus formicarius (Goeze)
Anthicus floralis/formicarius
Bruchinae sp.
Donacia sp.
Plateumaris sp.
Gastrophysa viridula (Degeer)
Chrysomelinae spp.
Phyllotreta nemorum group
Longitarsus sp.
Chaetocnema concinna (Marsham)
Halticinae sp.
Chrysomelidae sp.
Apion pomonae (Fabricius)
Apion spp.
Barynotus sp.
Sitona lepidus Gyllenhal
Sitona sp.
Hypera sp.
Eremotes ater (Linnaeus)
Sitophilus granarius (Linnaeus)
Notaris acridulus (Linnaeus)
Micrelus ericae (Gyllenhal)
Ceutorhynchus spp.
Rhinoncus perpendicularis (Reich)
Ceuthorhynchinae sp.
Gymnetron ?pascuorum (Gyllenhal)
Curculionidae spp.
Scolytus sp.
Leperisinus ?varius (Fabricius)
Scolytidae sp.
Coleoptera sp.

Coleoptera spp. larvae

Insecta sp. indet. larvae

Arachnida:

Acarina sp.

Mollusca:

Assiminea grayana Fleming
Anisus leucostoma (Millet)
Succineidae sp. indet.
Cochlicopa lubrica (Muller)
Vertigo pygmaea (Draparnaud)
Vertigo genesii (Gredler)
Vallonia excentrica Sterki
Vallonia sp.
Punctum pygmaeum (Draparnaud)
Discus rotundatus (Muller)
Aegopinella nitidula (Muller)