

# **Insect Remains from the Annetwell Street Site, Carlisle\***

## **REPORT 7**

### **Miscellaneous Samples from Period Pre-3 to Period 4**

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[NB: This report was scanned and reformatted on 13<sup>th</sup> March 2008. The only changes have been to preserve internal consistency and to correct typographical errors. HK. The original was an archive report deposited at Environmental Archaeology Unit, Carlisle Archaeology Unit and Ancient Monuments Laboratory, and allocated *post hoc* as *Reports from the Environmental Archaeology Unit, York 88/17.*]

\* Carlisle Excavation Unit site code CAR80-84ANN

#### **Summary**

Insect assemblages from a miscellaneous group of 24 samples are described. Most were small and in many cases a wholly random 'background' origin appeared likely. In a few cases there was evidence of a breeding (or aggregated) decomposer community, indicating conditions varying from mouldering and 'compost-like' to rather foul, perhaps dung. A single sample gave evidence for an *in situ* or nearby grain pest community.

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### **1. Introduction**

This is the seventh report on material from the Annetwell Street site, Carlisle, presenting species lists, summary statistics and interpretations.

The samples are discussed in sample number order within their groups, which are in period order.

*Table 1. Annetwell Street. Carlisle. Descriptions of the sample material in sample number order. Water state was moist unless otherwise indicated.*

Sample number	Context number	Description
264	3648	Dark grey/brown crumbly-brittle slightly sandy silt. Patches of pink clay and dark clay. Very small and small stones present. Dry-moist.
276	3695	Mid-dark grey/brown crumbly sandy clay silt. Charcoal, wood fragments and mortar present. Silty clay lumps also present.
277	3800	Dark grey plastic-crumbly slightly sandy clay silt. Clay component variable. Small and medium stones present.
279	3695	Dark grey/brown crumbly-plastic, humic silty clay. Small and very small stones and wood fragments present.
288	3869	Mid-dark grey/brown crumbly, humic, slightly sandy silt with a pink clay component. Small stones present.
297	3893	Grey/brown crumbly humic silt. Small stones common.
306	4160	Mid brown plastic humic, slightly sandy silt with indications of reduction/oxidation common. Very small stones present, small stones common. Plant fragments and lumps of buff clay silt common. Wet.
307	4161	Black plastic-crumbly humic clay silt. Abundant organic fragments - almost peaty.
327	4413	Dark brown crumbly, very sandy silt with many small inclusions - wood, pebbles, plant fibres. Acid smell.
331	4399	Mid-dark brown crumbly slightly sandy clay silt. Wood fragments abundant, bone fragments present.
339	4496	Dark organic clay silt with patches of buff clay. Some small stones and possibly charcoal
340	4557	Sandy silty clay, buff internally, ochre externally. Some patches of fine sand.
344	4621	Mid orange/brown, crumbly, slightly sandy silty clay. 1 cm mottles present. Indications of reduction/oxidation. Abundant very small and small stones; large stones present. Bone fragments present.
346	4660	Mid brown plastic slightly sandy clay silt with darker patches. Very small stones present.
353	4810	Dark grey/brown plastic, humic, slightly sandy, clay silt. Small and very small stones common. Some fly puparia and traces of plant remains.
401	5196	Mid-dark grey/brown plastic-crumbly clay silt. Wood fragments present.

406	5296	Dark grey crumbly slightly sandy, clay silt. Patches of compressed plant remains; patches of cleaner light sandy silt. Wood fragments and plant fragments present.
413	5476	Dark grey/brown plastic-crumbly humic clay silt. Abundant plant fibres and possibly rotted wood. Some component of mid brown sandy silt. Wood fragments present.
418	5534	Dark brown highly organic clay silt with abundant plant fragments, including twigs, Black in middle, brown outside.
441	5698	Black plastic-crumbly, humic, layered and amorphous organic matter. Small-stones present, abundant plant debris.
445	5759	Dark grey/brown crumbly slightly sandy, clay silt. Abundant wood fragments. Pale clay flecks present.
458	6107	Charcoal rich silt containing a slab of trampled clay interleaved with wood, charcoal and organic matter. Some tenacious reddish clay and a piece of tile present.
464	6205	Dark grey/brown plastic, humic clay silt with some pinkish buff clay. Small and medium stones and wood fragments present. Traces of organic matter also present.
474	6205.2	Dark grey/brown silty clay mottled with light pink. Wood fragments present.

Table 2. Annetwell Street, Carlisle. Descriptions of dry-sorted sample residues in sample number order.

Sample number	Context number	Description
264	3648	Abundant stone, charcoal and mammal bone. wood and nutshells common. Small amounts of brick/tile, carbonised grain, eggshell and calcined bone.
276	3695	A large quantity of charred wood, some charcoal and a piece of glass.
277	3800	Mostly stones with some wood, charcoal and small quantities of nutshell, mammal bone and concretions.
279	3695	Mostly stones, sand and fine organic matter with some wood, charcoal, seeds, a small amount of moss, and two fragments of mammal bone.
288	3869	Large quantity of charcoal, moderate amount of wood, some pieces of mammal bone and a few pieces of eggshell.
297	3893	Mostly sand and stones with some wood, charcoal, seeds, nutshell and one piece of mammal bone.
306	4160	Mainly sand and stones with some wood, charcoal, nutshell fragments and a piece of moss.

307	4161	Tiny amounts of wood and mammal bone, a few seeds, one nut shell and large amounts of organic material.
327	4413	Mostly wood and charcoal with quite a lot of sand and mammal bone fragments.
331	4399	Wood, charcoal, seeds and mammal bone present.
339	4496	Wood, charcoal, two pieces of nutshell and quite a few mammal bone scraps.
340	4557	Mostly sand and stones with a nutshell fragment and pieces of mammal bone.
344	4621	A few pieces of wood and mammal bone, two pieces of tile and three fragments of nutshell.
346	4660	A few pieces each of wood, nutshell and mammal bone.
353	4810	A moderate quantity of wood and charcoal, small amounts of mortar plaster and mammal bone and two pieces of nutshell.
401	5196	Mostly stones with wood, charcoal, nutshell, brick/tile and calcined bone.
406	5296	Small amounts of wood and moss and a few pieces each of nutshell and mammal bone.
413	5476	Large quantity of organic matter with a small amount of wood, a large nail and a piece of mammal bone.
418	5534	Mainly organic matter with wood, small pieces of charcoal, some seeds, nutshell and mammal bone.
441	5698	Lots of organic material. Small amounts of wood, charcoal and mammal bone. Two nut shells and a piece of metal.
445	5759	Largely composed of wood with small quantities of stones, charcoal, seeds and moss.
458	6107	Mostly charcoal and brick/tile fragments. Some wood and nutshells.
464	6205	Largely composed of wood and fine plant material with sand. Also present were a piece of brick/tile, stones, charcoal and seeds.
474	6205.2	Mainly organic with wood, charcoal and seeds.

## 2. Practical Methods

For a detailed description of the methodology employed, refer to Report 2 in this series.

## 3. Interpretative Methods

Interpretation is discussed by Kenward (1978), Kenward (1982) and Hall *et al.* (1983). The methods are based on (a) species composition (b) main statistics such as

concentration, 'diversity' and the proportions of certain ecological groups, and (c) population structure. as revealed by rank order and cumulative frequency plots.

#### **4. Results of the Analyses**

[Revised 2008. Data for this project can now be viewed in:

Kenward, H. (1999). Data archive: Insect assemblages from Annetwell Street, Carlisle (revised edition). *Reports from the Environmental Archaeology Unit, York* **99/32**, 126 pp.

The original edition of these reports included a large paper data archive. This has been omitted from the present version.]

#### **5. Discussion of the Sample Assemblages**

With the exception of sample 458, all of these samples were processed by the 1kg scan method. Many of the samples gave small assemblages of typically Roman urban character and are not discussed in any detail.

##### **5.1 Samples from Period Pre-3**

The samples discussed in this section were all taken from various pits of the pre-fort period.

###### **5.1.1 Sample 401, Context 5196**

Taken from the primary fill of pit A5301 - a large circular shaft of great depth. The flot contained some charcoal and mites and 5 *Leptocera* sp.

Only 36 taxa of Coleoptera and Hemiptera were present, but it was estimated that there were 138 individuals. Grain pests accounted for an estimated 65% of these, however, and the assemblage remaining when grain pests were subtracted consisted of only 48 individuals. The whole assemblage may have been background fauna and bore a general similarity to many of the assemblages from the present site.

###### **5.1.2 Sample 406, Context 5296**

This irregular oval pit had sloping sides and was filled with wood and silt. Lots of seeds, some mites, scale insects, eight *Leptocera* sp. puparia and an ant were present in the flot.

There were about 70 beetles and bugs, with 48 taxa. This assemblage had no strong character, although grain pests were relatively rare (%NG = 9).

###### **5.1.3 Sample 418, Context 5534**

The sample was taken from a deposit of woody silt in the flat base of this shallow sub-square pit. Many seeds, several mites, one *Copromyza* sp. puparium, and scale insect were in the flot.

The small assemblage of beetles and bugs (N = 32, S = 24) was rich in outdoor forms (%N OB = 41) including phytophages (%NP = 22). Decomposers were not numerous and

accounted for only 22% of the individuals. This assemblage was probably of background origin.

#### *5.1.4 Sample 464, Context 6205.1*

A large sub-rectangular pit containing highly organic silt was the source of this and the following sample. Several mites and a very small beetle assemblage were recovered, with only 15 individuals of 14 taxa. 60% of the individuals were classified OB. Like the group from sample 418 this was probably all background fauna.

#### *5.1.5 Sample 474, Context 6205.2*

Very few remains came up in the flot from this sample – several mites and a small beetle assemblage. The latter included 11 taxa represented by 13 individuals, and there was nothing special to distinguish the group.

These assemblages may have consisted entirely of background fauna. The abundant grain pests might possibly have entered pit A5301 in dumped material, or have migrated from nearby habitats.

### ***5.2 Samples from Period 3 Construction Levels***

These samples originated from features of the Period 3 construction phase.

#### *5.2.1 Sample 413, Context 5476*

Taken from one of two small pits between the west end of the *ascensus* and the rampart, and sealed by the floors of the building above. Several seeds, mites and ten *Leptocera* sp. puparia were present in the flot.

The moderately large assemblage, 141 individuals of 38 taxa, was dominated by a single Aleocharinae sp., probably a decomposer taxon as (1) such habitats afford opportunity for massive population increases and (2) the only other taxa present in even modest numbers apart from grain pests were decomposers. A rather generalised ‘compost heap’ like habitat is perhaps indicated.

#### *5.2.2 Sample 441, Context 5698*

This sample came from a spread of organic soil containing much straw. A small flot containing several mites and very few beetles of no interpretative value was recovered.

#### *5.2.3 Sample 445, Context 5759*

Taken from the cut of pit A5767. Many well-preserved seeds (mostly weed), an ant and many mites came up in the flot.

Forty-three beetle taxa were noted, but only 49 individuals. Diversity was high (alpha = 165), but the error of the estimate very large (SE = 70). ‘Outdoor’ taxa made up over half of the assemblage (%N OB = 51), and phytophages were relatively important (over half of the OB component and 27% of the whole assemblage). Decomposers and grain beetles

were not numerous. This appears to have been a randomly accumulated group of beetles and bugs.

### ***5.3 Samples from the west Gate Tower (Period 3)***

The west Gate Tower (A3468) belonged to Period 3A/B.

#### *5.3.1 Sample 264, Context 3648*

East of the central wall inside the tower was a layer of soil covered by pink clay, the latter being the source of this sample.

The flot yielded a few mites, some charcoal and a small beetle assemblage, 22 taxa and 30 individuals. This group included taxa typical of Roman urban deposits.

#### *5.3.2 Sample 327, Context 4413*

The sample was taken from a turfy fill of an oak-lined drain (A3400). This flot contained many seeds and mites, some charcoal and puparia: 3 *Leptocera* sp. and 2 *Copromyza* sp. There were 34 beetle taxa, and 71 individuals. Outdoor forms were relatively rare (%N OB = 7), grain pests (again relatively) uncommon (%NG = 18), diversity low (alpha = 26, SE = 5) and diversity of the moderately large decomposer component low (alpha RT = 14, SE = 4). Thus there was probably a small breeding component associated with decaying plant matter near to the deposit.

#### *5.3.3 Sample 331, Context 4399*

A large spread of black peaty soil was the origin of this sample. A small flot with some mites and two *Leptocera* sp. puparia included only 21 beetles and a single bug (20 taxa). 'Outdoor' taxa made up over half of this assemblage, which was probably background fauna.

#### *5.3.4 Sample 339, Context 4496*

Beneath the previous layer was a mixture of soil and clay from which this sample was taken. A well preserved flot containing many mites, seeds and puparia, the latter being represented by 18 *Leptocera* sp. and a single *Nemopoda* sp.

There was a modest assemblage of beetles: 35 taxa and 73 individuals. Decomposers were quite well represented but included *Rhizophagus parallelocollis*, possibly a post-depositional invader of buried organic matter. Otherwise the group was undistinguished in the context of the present study.

#### *5.3.5 Sample 340, Context 4557*

This sample material came from a flaky yellow clay layer situated under both the previous layers. The flot yielded one *Leptocera* sp. and a tiny beetle assemblage of no interpretative significance.

The assemblages from the west Gate Tower were thus all small or very small and there was little evidence of habitats at the point of deposition, although sample 327 (and to a lesser extent 329) gave indications of a breeding decomposer group.

#### **5.4 Samples from Pit fills (Period 3)**

##### **5.4.1 Sample 306, Context 4160**

From Period 3B/1, in A4162. The medium-sized flot contained many seeds, several mites and many puparia. The latter were represented by 17 *Leptocera* sp., two *Spilogona* sp. (which probably indicate the presence of moss) and one *Muscina* sp.

A rather small assemblage of beetles and bugs was present, there being 63 individuals of 50 taxa. No taxa were numerous and the fauna had no special characteristics.

##### **5.4.2. Sample 307, Context 4161**

Also from Period 3B/1, in A4162. This heavy flot contained much cereal bran, many seeds, several mites and puparia: many *Leptocera* sp., two *Sphaerocera* sp., one *Muscina* ?*stabulans* and one indeterminate.

The assemblage of 301 beetles (27 taxa) was dominated by grain pests, *Cryptolestes ferrugineus* and *Oryzaephilus surinamensis*, producing very low diversity ( $\alpha = 7$ ,  $SE = 1$ ) and swamping all other components. The four species of grain pest present accounted for 91% of the assemblage. The residual group left when G taxa were subtracted was small and diverse, probably randomly accumulated. It appears likely that these grain pests bred in or very close to the material forming the deposit.

##### **5.4.3 Sample 353, Context 4810**

From Period 3A/B, in A4779. The medium-large flot contained included many mites and lots of plant fragments. Puparia present included 20 *Leptocera* sp., 41 *Musca domestica* and one *Stomoxys calcitrans*, the proportions of the last two species indicating a mass of moist organic matter with a cracked surface, for example a manure heap.

A very distinctive assemblage of 186 beetles was recorded, there being 32 taxa only. Diversity was low ( $\alpha = 11$ ,  $SE = 1$ ) and 82% of the individuals were of decomposer taxa (with an additional 9% of uncoded taxa probably belonging with them). The only outdoor taxon was *Gymnetron* sp. This assemblage is certainly primarily composed of autochthones which exploited foul but probably fairly open-textured decomposing plant remains. This material was obviously exposed for some time - weeks at least - for the beetles to breed. Whether it was exposed in the pit, or on a surface elsewhere, is uncertain. In view of the low concentration of non-decomposers, it is possible that the material came from within a building such as a stable.

## **5.5 Miscellaneous Samples from Period 3**

### *5.5.1 Sample 277, Context 3800*

From the post demolition silt of Period 3B/2. Quite a few seeds, some mites, one *Sphaerocera* sp. puparium and 33 taxa of Coleoptera (34 individuals) were recovered from the flot. The estimate of beetle diversity was therefore not significant, and other statistics were not unusual. This may have been wholly background fauna.

### *5.5.2 Sample 344, Context 4621*

This and the following sample were taken from animal burrows of Period 2/3. The very small flot yielded one mite and only single individuals of six beetle taxa, with one *Leptocera* sp. puparium.

### *5.5.3 Sample 346, Context 4660*

The flot from this sample contained many seeds and mites.

A rather small assemblage of 41 taxa and 66 individuals of Coleoptera and Hemiptera was recovered. The main statistics were unremarkable for the present site and only *Lathridius minutus* group was at all abundant. This assemblage may have been wholly of background origin, but *L. minutus* group probably bred nearby or even in association with the developing deposit.

### *5.5.4 Sample 458, Context 6107*

From the demolition of oven A6118 during Period 3A/1. This sample was processed as a 3 kg detail subsample. The assemblage of beetles recovered was rather small, however: 66 individuals, 44 taxa. Few taxa were at all abundant and the whole assemblage may have been background fauna. The large proportion of RD taxa, together with the abundance of *Lathridius minutus* group and a *Cryptophagus* sp., suggest that some mouldering plant matter was present.

## **5.6 Samples from Period 4**

### *5.6.1 Sample 276, Context 3695*

Taken from post-demolition silt. The flot was composed chiefly of plant remains with a few seeds, several mites and an aphid.

The beetle and bug assemblage was rather small, 43 taxa represented by 61 individuals. The main statistics were unremarkable and little information can be drawn.

### *5.6.2 Sample 279, Context 3695*

Post demolition silt, possibly belonging to Period 4. Many mites and a few seeds were present in the flot. The beetle and bug assemblage was small and of no special character.

### 5.6.3 Sample 288, Context 3869.1

The sample came from the fill of a flat-bottomed, near vertical pit. The fill was mostly oak timber offcuts with a little silt at the bottom and top. Some seeds, mites, one ant and four *Leptocera* sp. puparia came up in the flot.

There were 39 taxa and 71 individuals of Coleoptera, and a single bug. Diversity was quite low, and decomposers fairly numerous (%N RT = 60), so that some species may have bred in or near to the deposit, decomposing matter being indicated.

### 5.6.4 Sample 297, Context 3893

This soil sample yielded a flot containing many seeds, some mites, a possible *Spilogona* sp. puparium, and one indeterminate puparium which may have been a muscid.

There was a modest-sized assemblage of beetles and bugs, 105 individuals and 65 taxa. Diversity was quite high (alpha = 73, SE = 13) and outdoor taxa rather numerous (%N OB = 255, %S OB = 38), with phytophages important (NP as %N OB = 31). Only 31% of the individuals were coded as decomposers, but the first two ranks of abundance were occupied by aleocharines, uncoded but quite probably breeding in decomposer habitats. The assemblage was generally ecologically bland, however, in the context of Roman Carlisle.

There was a single *Cimex* sp., quite possibly the bedbug of humans (see report 6 in this series for a detailed discussion).

## 6. Acknowledgements

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