Southampton French Quarter 1382
Specialist Report Download E7: Insects

By Emma Tetlow

The insect remains were recovered from samples recovered from a series of wells and putative cess pits of Anglo-Norman and post medieval age from Southampton's French Quarter.

The insect assemblage suggests that material was being dumped into these features from a number of sources. The dumps included drier material thought to be derived from human housing, spoiled foodstuffs (including granary pests), rotting organic material and possibly human faeces. The largest component of the assemblage forms part of Kenwards' 'House Fauna' and is characteristic of general human habitation and domestic waste. Waste specifically associated with stabling, such as dung or manure is limited.

Introduction

After initial assessment of seven samples, four were selected for full analysis from the following features: (a) two Anglo-Norman wells (samples 969 [feature 3126] and 971 [feature 4823]); (b) an Anglo-Norman pit (sample 204 [feature 7109]); and (c) a post medieval cess pit (sample 203 [feature 3169]). The abundance and diversity of the assemblages, coupled with exceptional preservation, provided the potential to add substantially to knowledge about the environment at the site. It was hoped that the full analysis of the insect remains from the site would provide information on a number levels, to establish the environment surrounding the features, to define the nature of land use and any evidence of human activity, ultimately facilitating further landscape reconstruction and visualisation.

Methods

Soil samples (each of 10 litres apart from sample 204, 7 litres) were washed over a 0.25 mm mesh at Oxford Archaeology and the resulting flots were processed at the University of Birmingham using the standard method of paraffin flotation outlined by Kenward *et al*. (1980). The insect remains were then sorted from the paraffin flot and the sclerites identified under a low power binocular microscope by comparison with specimens in the Gorham and Girling collections housed at the University of Birmingham. The taxonomy used for the Coleoptera (beetles) follows that of Lucht (1987).

Results

To aid interpretation, where applicable, the taxa have been assigned ecological groups (EG) following those of Kenward and Hall (1995). The affiliation of each species to a particular group is listed in the second column (marked 'EG') in Table 1. The meaning of each ecological code is explained in Table 2. The proportions of these groups, expressed as percentages of the total Coleoptera present in the faunas, are shown in Figure 1 and 2. An overview of the ecological preference of each species is presented in Table 4.

Anglo-Norman

The Wells Sample 969 [context 4574 within Feature 3216, tenement 237]:

The assemblages from the upper fill was predominantly composed of taxa associated with foul rotting material such as the Staphylinidae, *Oxytelus sculpturatus* and *Oxytelus tetracarinatus*. These species typically live amongst accumulations of damp, foul, rotting material (Tottenham 1954), whilst the lathridiid, *Enicmus minutus*, is associated with drier material such as mouldy hay and straw (Kenward and Hall 1995). A single specimen of the grain weevil, *Sitophilus granarius*, was also recovered. It is found on lightly spoiled grain and can be a serious pest of grain stores and granaries (Koch 1992).

The sample also contains two species associated with seasoned wood. .The anobiids, *Anobium punctatum* and *Xestobium rufovillosum*, are serious pests of woodwork, furniture and timber structures (Koch 1989b). A further species associated with living trees is the curculionid, *Polydrusus cervinus*, which is usually found on the leaf ofbirch (*Betula* spp.) and oak (*Quercus* spp.) (Koch 1992).

Sample 971 [context 4817 within feature 4823, tenement 238]:

The second of the two Anglo-Norman wells produced a large, well-preserved and readily interpretable assemblage. Several species recorded from this well form part of Kenward's 'house fauna', such as the ptinid, *Ptinus fur*, and the lathridiids *Enicmus minutus*, and *Corticaria* spp. The scarabaeid *Trox scaber*, whilst not strictly part of the house fauna group, is often allied with it (Carrot and Kenward 2001; Kenward and Hall 1995).

A relatively large number of taxa from this wellare associated with fouler, rotting material. Amongst this group are the scarabaeid'dung beetles' *Aphodius sphacelatus* / *A. prodromus*. These species are often encountered in animal dung, though recent work by Kenward (Kenward et al. 2004) suggests that they may well have bread in suitably foul deposits human settlement in the past. The small scarabid *Oxyomus sylvestris*, is also found in decomposing organic material and abundant in dung heaps (Jessop 1996). The histerid *Paralister* spp., the hydrophilid *Cercyon analis*, and the rove beetles *Phyllodrepa florialis*, *Omalium rivulare*, *Oxytelus rugosus* and *Oxytelus sculpturatus* are all associated with accumulations of damp, rotting organic material (Koch 1989a, Tottenham 1954). *C. analis* and all four staphylinids are part of Kenward's 'generalist' decomposer group 'RT' (Kenward and Hall 1995).

Taxa associated with seasoned wood are restricted in this sample to a single specimen of the anobid, *Grynobius planus*. Granary pests were also absent however, although the bruchid, *Bruchus rufimanus* (the 'bean weevil') is a pest of large legumes and particularly broad beans (*Vicia faba*) and has been used in the past to suggest either the disposal of spoilt legumes or the presence of cess and consumption of infested food (Osborne 1983). A further bruchid, *Bruchidius fasciatus* is found on common broom (*Cytisus scoparius*) (Koch 1992). Other monophagous phytophages suggest disturbed and waste ground. *Apion hydrolapathi* is associated with docks (*Rumex* spp.), *Cidnorhinus quadrimaculatus* is found on the common nettle (*Urtica dioica*), whilst *Ceutorhynchus contractus* feeds upon comfrey (*Symphytum officinale*) (Bullock 1993).

Also recovered in large numbers from this sample were fly puparia of the species *Thoracochaeta zosterae*. This taxon, discussed further below, is particularly abundant in organic material in the later, fouler stages of decay, and with cess pits, and was common in pit fills at Coppergate (Kenward and Hall 1995). Belshaw (1988) suggests that *Thoracochaeta zosterae* exploited a niche similar to its usual ecological range which is amongst rotting seaweed. The salts, nutrients and semi-fluid consistency of the cess pit would have been similar to that of its coastal habitat (Belshaw 1988).

Cess Pit sample 204 [Context 7169 within Feature 7109, tenement 168]

The Anglo-Norman cess pit produced an assemblage more akin to that of Sample 969 than that of Sample 971. Once again, species associated with the 'House Fauna' were recovered and included Cryptophagidae, *Ptinus fur*, *Anobium punctatum*, and *Trox scaber*. Several specimens of the granary pests *Oryzaephilus surinamensis* and *Sitophilus granarius*, were recovered. The sample also contained a small number of puparia of *Thoracochaeta zosterae*. Taxa which would suggest large quantities of dung or rotting material are absent.

Post-medieval

Cess Pit sample 203 [context 3168, Feature 3169 in tenement 237]:

The assemblage from this sample was restricted to species of Kenward's 'house fauna' and the 'generalist' decomposer group. The 'house fauna' component was relatively small, but included large numbers of *Ptinus fur*, and several individuals of the cryptophagid, *Cryptophagus sctellatus*, and the anobiid, *Anobium punctatum*.

The remainder of this fauna was species associated with rotting organic material, such as *Oxytelus tetracarinatus*, *Acritus nigiricornis*, *Gnathoncus nanetensis*, and *Paralister puperascens*. *Oxyomus sylvestris* is also often associated with accumulations of dung and foul, rotting organic material (Jessop 1996). A single specimen of *Anthonomus pomorum*, the 'apple blossom weevil' was also recovered.

Discussion

The dominant groups in the assemblages from Southampton French Quarter, are the synanthropic and decomposer taxa, associated with a number of Kenward's 'indicator groups' (Carrot and Kenward 2001; Hall and Kenward 1990, Kenward and Hall 1995, Kenward and Hall 1997). The most apparent are those which belong to the 'house fauna'. Taxa from this group form a substantial component of the assemblages from all four samples. The incorporation of such large numbers of these creatures clearly suggests that a substantial constituent of these deposits is derived from an anthropogenic source.

The 'house fauna' group is commonly associated with unheated earthen-floored dwellings and wooden or wattle and daub structures and is also associated with relatively dry 'hay-like' material in the early stages of decay (Hall and Kenward 1990; Kenward and Hall 1995). Further species from the present site associated with human habitation are *Enicmus minutus* and *Sitophilus granarius*. Both species have been recorded in assemblages from thatched structures at several sites (Robinson 2007, Smith 1996, Smith *et al.* 1999). A further, significant component is the 'generalist' decomposer taxa, which includes families such as the Scarabaeidae, Histeridae and Staphylinidae. Overall, Scarabaeidae are relatively sparse in all four samples, which may suggest that large numbers of animals were not stabled at the site during either the Anglo-Norman or post-medieval periods. In addition it has been recently suggested that several speices of *Aphodius* 'dung beetles' probably were able to bread in various, rather foul, deposits around human settlement and that their occurrence in low numbers should not be taken to indicate the presence of stabled animals by themselves (Kenward *et al.* 2004).

The foul nature of this deposit implies that the well had fallen into disuse and was being used to dump settlement waste and cess. This is clearly indicated by the large numbers of *Thoracochaeta zosterae* which were recovered. Since this species requires foul conditions to breed (Belshaw 1988), it is highly unlikely that the water would have been fit for human consumption by the time this fly colonised the feature. The fill appears to have formed under a variety of conditions and would suggest that formation was a result of the dumping of domestic waste and cess. This may have included spoiled foodstuffs and other detritus associated with human occupation, such as rotting organic material similar to compost, and

the cut may have acted as a natural 'pit-fall trap' for the 'yard' surrounding it. The second Anglo-Norman well (Feature 3216) contained a much smaller fauna, primarily composed of house fauna taxa, which would suggest that domestic waste was being dumped into this well after it fell into disuse. The presence of *Xestobium rufovillosum* ('death watch' beetle) can probably be attributed to accidental incorporation. This species is associated with substantial, structural timbers, generally oak (Koch 1992).

Large numbers of Staphylinidae and Histeridae associated with damp, rotting organic material were also recovered from the Anglo-Norman cess pit (Context 7109). This group probably indicates an accumulation of material more akin to compost or the detritus of food preparation such as a midden, than any substantial manure or dung heap. Various Coleoptera associated with spoiled or infested foodstuffs were also particularly abundant in the Anglo-Norman cess pit (Feature 7109). The pest *Sitophilus granarius*, the granary weevil, is common in granaries, where both the larvae and the adults feed on tainted, whole grain (Coombs and Woodroffe 1963, Hunter *et al.* 1973). When such infestations occur, they can become, if unchecked, extremely destructive. Evidence of catastrophic infestations of granaries have been recorded at a number of Romano-British sites, including granaries at Coney Street in York (Kenward and Williams 1979) and Inveresk Gate (Smith unpublished a). A further granary pest is *Oryzaephilus surinamensis* (saw toothed granarybeetle), a 'secondary' pest of granaries which have often already been infested by *Sitophilus granarius* (Coombs and Woodroffe 1956, Hunter *et al*. 1973, Smith unpublished an assemblage with some similar characteristics was recovered from cess pit deposits from Ramsey Abbey, Cambridgeshire (Tetlow 2007a, 2007b) where the presence of granary pests was interpreted as a by-product of food preparation rather than indicating the proximity of an infested granary nearby or that weevil-infected material was being dumped in large quantities.

Considering the nature of the Southampton deposit, it is quite possible that in this instance the grain pests were transported to the site accidentally, either by man or beast (Kenward and Hall 1997, Osborne 1983). Both species of weevil are commonly found in cess pit deposits; apart from Ramsey Abbey, they have also been identified from Malton (Buckland 1982) and The Magistrates Court, Kingston upon Hull (Hall *et al*. 2000a, 2000b, Kenward and Carrott 2006) and a single *Sitophilus granarius* was identified in a medieval latrine pit from The Brooks, Winchester (Jones *et al.* 1991). The presence of small numbers of *S. granarius* found in deposits at Viking York may have resulted from transportation via an equine gut (Kenward and Hall 1995) although the authors also consider the possibility of contamination. A further taxon associated with infested foodstuffs is *Bruchus rufimanis*, sometimes called the 'broad bean weevil'. The larval stage of this beetle is found in the seeds of large beans. Once again, this species was found in large numbers in Viking York, at Coppergate (Kenward and Hall 1995), Tanner Row (Hall *et al*. 1983) and Ramsey Abbey (Tetlow 2007a, 2007). Robinson (2005) suggests that this beetle is likely to be an indicator of sewage, since it is found in beans used for human consumption but can only infest a bean during its development on the plant, after flowering. Small numbers of 'grain pest' such as these two species are commonly found in archaeological cess pits were they are thought to represent the consumption of mildly spoilt grain which then passes through the human dietary tract (e.g. Osborne 1983).

The insect assemblage from the feature interpreted as a post medieval cess pit (Feature 3169) indicates deposit formation under conditions similar to those recorded in Feature 4817. Once again, it seems likely that this fill represents a mix of domestic waste, and decomposing organic material and dung. This would broadly support the hypothesis that this feature was indeed used as a cess pit, and also subject to the occasional dumping of domestic waste.

Assemblages such as these have been recovered from cess pits excavated in mid-Saxon Southampton (Robinson 2005) and also from a variety of 10th and 11th century sites around the British Isles, including Coppergate and other deposits from Viking York (Kenward and Hall 1995), Kingston upon Hull (Hall *et al*. 2000a, 2000b) and Ramsey Abbey (Tetlow 2007a, 2007b). The archaeo-entomological data-set from the last site has many characteristics in common with the assemblages from The French Quarter and

suggest the dumping of domestic waste and foodstuffs (Tetlow 2007a, 2007b). Further parallels exist between both the Anglo-Norman and the post-medieval assemblage at Southampton and other, contemporary, sites including the multiphase Shrewsbury Abbey site (Smith 2002), St. John's Clerkenwell (Smith and Chandler 2004), Witters Place, Chester (Tetlow and Smith, unpublished, Finsbury Park Avenue (Smith and Tetlow, unpublished).

Conclusions

The well and cess pit deposits from Southampton French Quarter clearly indicate that material from human activity was dumped in all four features. Much of this waste appears to have been generated as a result of domestic activity, probably from a midden or compost heap which was later dumped into both the Anglo-Norman and post medieval wells when they had fallen into disuse. The insect faunas indicate the nature of this waste is commensurate with the type of material which would have accumulated in a midden and as a result of daily use of the tenement yard. There is no direct evidence in the insect assemblage for any industrial activity or prolonged stabling of animals.

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Tables and Figures

Table 1

Period			***Post Med***	***Anglo Norman***		
Context			**3168**	**7169**	**4574**	**4817**
Fill			**3169**	**7109**	**3216**	**4823**
Sample			**203**	**204**	**969**	**971**
COLEOPTERA						
Carabidae						
Carabus violaceus L.	oa-p					1
Hydrophilidae						
Cercyon analis (Payk.)	rt	sf	3			3
Cercyon spp.			2			
Histeridae						
Acritus nigricornis (Hoffm.)			2			
Gnathoncus nanetensis (Mars.)	rt	sf	1			
Paralister puparescens (Hbst.)	rt	sf	1			1
Paralister spp.			1	1		3
Catopidae						

Period			***Post Med***	***Anglo Norman***		
Context			**3168**	**7169**	**4574**	**4817**
Fill			**3169**	**7109**	**3216**	**4823**
Sample			**203**	**204**	**969**	**971**
Catops spp.				2		1
Staphylinidae						
Phylodrepa floralis (Payk.)	rt					1
Omalium rivulare (Payk.)	rt			1		1
Omalium spp.	rt					1
Coprophilus striatulus (F.)	rt			1		
Trogophloeus spp.	u		1	7	2	
Oxytelus rugosus (F.)	rt					1
Oxytelus sculpturatus Grav.	rd		5		2	1
Oxytelus tetracarinatus (Block)	rt				1	
Oxytelus spp.	u			1		
Philonthus spp.	u		2	1		3
Staphylinus spp.	u			1		
Leptacinus spp.	u		1			
Xantholinus spp.	u		2			1
Tachyporus spp.	u					
Aleocharinae gen. & spp. Indet.	u		2	2		1
Cucujidae						
Oryzaephilus surinamensis (L.)	g	ss		1		
Cryptophagidae						
Cryptophagus scutellatus Newm.			2			
Cryptophagus spp.	rd-h	sf		4	1	1
Atomaria spp.	rd-h	sf		2		
Anobiidae						
Grynobius planus (F.)	l	sf				1
Xestobium rufovillosum (Geer)	l	sf			1	
Anobium punctatum (Geer.)	l	sf	3	1	2	
Ptilinius pectinicornis (L.)	l	sf		1		
Ptinidae						
Ptinus fur (L.)	rd-h	sf	9	1		1
Lathridiidae						
Encimus minutus (L.)	rd-h	st			2	3
Corticaria spp.	rt	sf		1		2
Scarabaeidae						
Trox scaber L.	rt	sf	1	1		1
Oxymous silvestris (Scop.)	rt	st	1			
Aphodius rufipes (L.)	oa-rf					1
Aphodius sphacelatus (Panz.) or *Aphodius prodromus* (Brahm.)	oa-rf					1

Period			***Post Med***	***Anglo Norman***		
Context			**3168**	**7169**	**4574**	**4817**
Fill			**3169**	**7109**	**3216**	**4823**
Sample			**203**	**204**	**969**	**971**
Aphodius spp.	oa-rf		1			2
Chrysomelidae						
Chaetocnema spp.	oa			1		
Bruchidae						
Bruchus atomarius (L.)	oa			1		
Bruchus rufimanus Boh.	oa					2
Bruchus spp.	oa					2
Bruchidius fasciatus (Ol.)	oa			1		1
Curculionidae						
Apion hydrolapathi (Marsh.)	oa-p					1
Apion spp.	oa-p					1
Polydrusus cervinus (L.)					1	
Barypeithes spp.	oa-p			1		
Anthonomus pomorum (L.)	oa-p		1			
Sitophilus granarius (L.)	g	ss		3	1	
Cidnorhinus quadriamaculatus (L.)	oa-p					1
Ceutorhynchus contractus Marsh.	oa-p					1
Ceutorhyncus spp.	oa-p					1
Gymnetron spp.	oa-p					1
DIPTERA						
SUBORDER CYCLORRHAPHA						
Sepsidae						
Thoracacochaeta zosterae				6		26

Table 2: Key to species ecological groups.

Ecological coding (Kenward and Hall 1995)
oa (& ob) - Species which will not breed in human housing.
w- aquatic species.
d- species associated with damp watersides and river banks.
rd- specie primarily associated with drier organic matter.
rf - species primarily associated with foul organic matter often dung.
rt - insects associated with decaying organic matter but not belonging to either the rd or rf groups.
l - species associated with timber.
h - members of the 'house fauna' this is a very arbitrary group based on archaeological associations (Hall and Kenward 1990).

Synathropic codeings (Kenward 1997).
sf - faculative synanthropes - common in 'natural' habitats but clearly favoured by artificial ones.
st - typically synanthropes - particularly favoured by artificial habitats but believed to be able to survive in nature in the long term.

ss - strong synanthropes - essentially dependant on human activity for survival.

Table 3: The House fauna with *Minimum number of individuals from this group found at Southampton French Quarter

House fauna species	Present at SFQ	MNI*
Xylodromus concinnus		
Crataraea suturalis		
Anobium punctatum	√	6
Ptinus fur	√	10
Atomaria nigripennis		
Atomaria spp.	√	2
Cryptophagus scutellatus	√	2
Cryptophagus spp.	√	6
Enicmus minutus	√	5
Mycetaea hirta		
Aglenus brunneus		

Figure 1: The insect remains from Southampton French Quarter, species ecological groups.

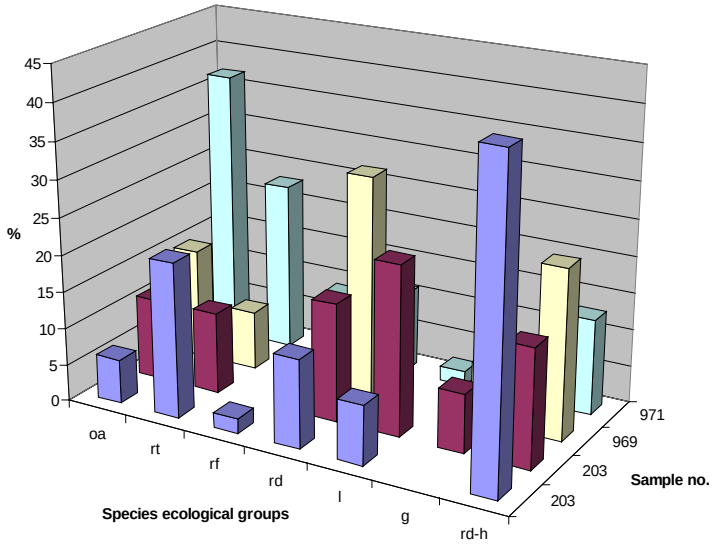

Figure 2: Synanthropic and 'House Fauna' groups from Southampton French Quarter

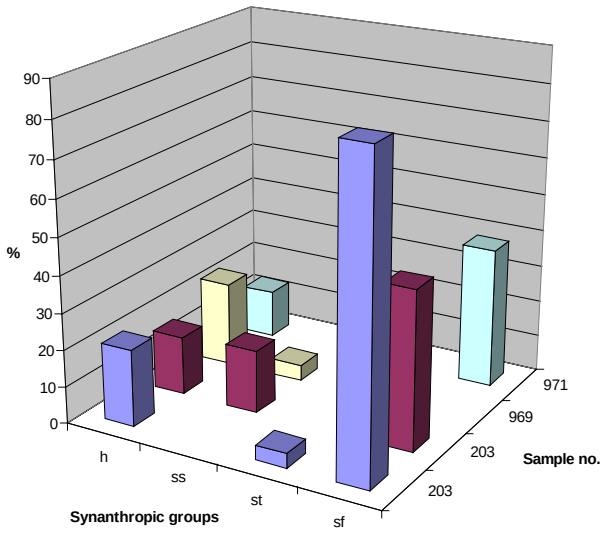

Table 4

COLEOPTERA		
Carabidae		
Carabus violaceus L.	Wet meadows and light woodland	
Hydrophilidae		
Cercyon analis (Payk.)	Dung and decaying organic material	
Histeridae		
Acritus nigricornis (Hoffm.)	Decaying organic material	
Gnathoncus nanetensis (Mars.)		
Paralister puparescens (Hbst.)	Dung and decaying organic material	
Paralister neglectus (Germ.)	Dung and decaying organic material	
Staphylinidae		
Phylodrepa floralis	Decaying organic material	
Omalium rivulare (Payk.)	Dung and decaying organic material	
Coprophilus sriatulus	Decaying organic material	
Oxytelus rugosus (F.)	Dung and decaying organic material	
Oxytelus sculpturatus Grav.	Dung and decaying organic material	
Oxytelus tetracarinatus (Block)	Dung and decaying organic material	
Cucujidae		

Oryzaephilus surinamensis (L.)	Grain Pest	
Cryptophagidae		
Cryptophagus scutellatus Newm.	Mouldy straw, hay and dung heaps.	
Anobiidae		
Grynobius planus (F.)	Dry, seasoned wood	
Xestobium rufovillosum (Geer., 1774)	Dry, seasoned wood	
Anobium punctatum (Geer.)	Dry, seasoned wood	
Ptilinius pectinicornis (L.)	Dry, seasoned wood	
Ptinidae		
Ptinus fur (L.)	Dwellings, mouldy straw, hay and dung heaps.	
Lathridiidae		
Encimus minutus (L.)	Dry, rotting material such as hay and straw	
Scarabaeidae		
Trox scaber L.	Decaying carcasses	
Oxymous silvestris (Scop.)	Dung and decaying organic material	
Aphodius rufipes (L.)	Dung	
Aphodius sphacelatus (Panz.) or *Aphodius prodromus* (Brahm.)	Dung	
Bruchidae		
Bruchus atomarius (L.)	Pest of peas and beans	*Vicia* spp. and *Lathyrus* spp.
Bruchus rufimanus Boh.	Bean weevil	
Bruchidius fasciatus (Ol.)	Rough grassland, with vetches and gorse	*Vicia* spp. and *Cystius* spp.
Curculionidae		
Apion hydrolapathi (Marsh.)	Disturbed ground	*Rumex* spp.
Polydrusus cervinus (L.)		*Betula* spp. and *Quercus* spp.
Anthonomus pomorum (L.)	Apple blossom weevil	
Sitophilus granarius (L.)	Grain pest.	
Cidnorhinus quadriamaculatus (L.)	Disturbed ground	*Urtica dioica*
Ceutorhynchus contractus Marsh.	Disturbed ground	Brassicaceae, *Symphytum* spp.
DIPTERA		
SUBORDER CYCLORRHAPHA		
Sepsidae		
Thoracacochaeta zosterae	Cess pits in the archaeological record	