



A14 CAMBRIDGE TO HUNTINGDON, CAMBRIDGESHIRE

6 ALCONBURY INSECTS



MOLA HEADLAND
INFRASTRUCTURE



with



commissioned by A14 Integrated Delivery Team (IDT)
on behalf of National Highways

March 2024

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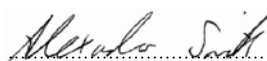
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A14 ALCONBURY INSECT REMAINS

Author: Enid Allison

INTRODUCTION

The following report details analysis of pollen samples from Alconbury landscape block, specifically those from Targeted Excavation Area (TEA) 5. Details of the methodology and a scheme-wide discussion of results are presented in a separate report (West et al 2024)

Four samples from waterlogged deposits associated with Settlements 2 and 3 in TEA5 were examined in detail. Insect remains were abundant but generally highly fragmented with moderate degrees of chemical erosion.

Middle-Late Iron Age (Periods 5.2 and 5.3)

Ditch 5.48 [52210]

Sample <5280> from fill (52211) of middle-late Iron Age Ditch 5.48 in Enclosure 3 of Settlement 2, produced a large insect assemblage consisting of similar numbers of aquatic and terrestrial taxa. *Helophorus* species and *Ochthebius minimus* were the most abundant water beetles. The composition of the rest of the aquatic assemblage indicated that the ditch held still or slowly flowing, well vegetated water; *Graptodytes pictus* and *Hygrotus inaequalis* are particularly typical of such conditions. *Bagous* species live on aquatic plants and *Tanysphyrus lemnae*, a tiny weevil found on duckweed (*Lemna*), was common. Muddy water margins with moss, emergent vegetation, and moist plant litter were indicated by *Dryops*, *Hydraena testacea*, *Limnebius aluta*, *Byrrhus*, and *Orthoperus*, and reed sweet-grass (*Glyceria maxima*) and wetland buttercup by *Notaris acridulus* and *Prasocuris phellandrii*. Beetles of damp ground and waterside habitats comprised 11% of the terrestrial fauna, many of them probably living in damp places within the ditch. There was abundant evidence for nettles (*Urtica*) from *Heterogaster urticae*, numerous shed skins of *Trioza urticae* nymphs, *Brachypterus* and *Nedyus quadrimaculatus*. *T. urticae* nymphs are relatively immobile indicating that nettles were growing very close to or within the ditch. Docks (*Rumex*) were indicated by *Gastrophysa viridula*, and they are also the larval food plant of the dock bug (*Coreus marginatus*).

The rest of the assemblage was mainly indicative of drier, open, disturbed grassy habitats, including the ground beetles *Brachinus crepitans*, *Calathus fuscipes*, *Curtonotus aulicus*, and *Ophonus*. *Ophonus* species and *C. aulicus* are seed feeders, the former often associated with wild carrot (*Daucus carota*), and the latter with Compositae or Apiaceae. *Kissister minimus*, a small clown beetle (Histeridae), is found at plant roots, often of sheep's sorrel (*Rumex acetosella*). Phytophages included *Sphaeroderma*, found on Asteraceae, particularly thistles (*Carduus* and *Cirsium*), and *Craspedolepta nervosa* nymphs found on yarrow (*Achillea*). The hairy shield bug (*Dolycoris baccarum*) can be found in dry grassland feeding on diverse plants, but common hosts include woody Rosaceae. Woody vegetation close to the ditch was suggested by occasional scale insects (Diaspididae, Coccoidea); the stage represented here is immobile and may have entered the ditch on twigs.

Scarabaeoid dung beetles accounted for 5% of the terrestrial beetle fauna (*Onthophagus*, *Aphodius fimetarius*, *Nimbus contaminatus*, *Melinopterus prodromus* or *sphacelatus*, *Calamosternus granarius*). Decomposers other than dung beetles were quite well represented (37%) and included a small house fauna (*Cryptophagus*, *Atomaria*, *Ptinus*; 3%) suggesting the proximity of human activity and the limited entry of occupation waste into the ditch. Poorly preserved remains of at least two western honey bees (*Apis mellifera*) were also recorded.

Ditch 5.43

Aquatic and terrestrial insects were abundant in sample <5260> from fill (51966) of middle-late Iron Age Ditch 5.43 in Enclosure 2 of Settlement 2. The most numerous water beetles were *Helophorus* and *Ochthebius* species, the latter suggesting muddy waterside conditions. Together the aquatic component was indicative of a community that would develop in standing water with some aquatic vegetation. *Hygrotus inaequalis* and *Hydroporus palustris* are usually associated with permanent water bodies, although this would include very shallow water, *Hydraena testacea* occurs among moss and litter in the moist marginal zone of stagnant waters, and a growth of duckweed on the water surface was indicated by *Tanysphyrus lemnae*. A rather open location was suggested by *Helochaeres lividus*, typically found in unshaded waters (Foster et al 2018, 190). *Megasternum concinnum* agg. and *Orthoperus* were both common and may have exploited damp marginal litter. Ground beetles typical of damp habitats probably lived within or very close to the ditch (*Bembidion lunulatum*, *B. biguttatum*, *B. guttula* or *mannerheimi*, *B. ?articulatum*, *Pterostichus anthracinus*). *Chaetocnema arida* group is associated with sedges (*Carex*), rushes (*Juncus*) and grasses. Nettles growing within or alongside the ditch were indicated by *Heterogaster urticae*, shed skins of *Trioza urticae* nymphs, *Brachypterus* and *Nedys quadrimaculatus*. *Scolopostethus affinis* or *thompsoni*, a lygaeid bug represented by four individuals, is frequently also associated with nettles.

Occasional scale insects (Coccoidea: Diaspididae) hint at the presence of woody vegetation close to the ditch, but ground beetles and phytophages are chiefly suggestive of relatively dry and open grassy habitats, with areas of rather bare disturbed ground (eg *Harpalus rufipes*, *Calathus fuscus*, *Ophonus*, *Anchomenus dorsalis*, *Bembidion obtusum*, *Pterostichus melanarius*, *Curtonotus aulicus* and *Drymus sylvaticus*). *Ophonus* species and *C. aulicus* feed on the seeds of Apiaceae and Compositae, *Ceratapion carduorum* on thistles (*Carduus* and *Cirsium*) in grassland and *Craspedolepta nervosa* nymphs on yarrow (*Achillea*). Docks (*Rumex*) were indicated by *Gastrophysa viridula*, and they are also the larval food plant of the dock bug (*Coreus marginatus*). Ruderal vegetation was suggested by *Phyllotreta nemorum* group and *Ceutorhynchus* species, both associated with various wild and cultivated Brassicaceae.

Scarabaeoid dung beetles were not particularly numerous relative to other groups (3% of the terrestrial beetle fauna), but they included *Onthophagus joannae*, which favours sheep or horse dung, especially on rather dry soils (Jessop 1986, 26). *Phyllopertha horticola*, a small chafer associated with grassland, particularly pastureland, was tentatively identified from a few scraps of cuticle.

Waterhole 5.70

Sample <5245> was taken from the basal fill (51834) of middle-late Iron Age Waterhole 5.70 in Enclosure 2 of Settlement 2. Aquatic invertebrates consisted of a few *Helophorus* spp. and *Octthebius dilatatus*, both of which would have been attracted to many types of small water bodies, in addition to small numbers of chironomid larvae and waterflea ephippia (*Daphnia*: resting eggs). Terrestrial insects were much more numerous (165 beetles and bugs of 76 taxa). The ground immediately around the feature was probably wet, muddy, and nutrient-enriched since *Platystethus nitens* and *P. cornutus* group were abundant; these and other oxyteline beetles exploiting similar habitats accounted for 29% of the terrestrial beetle fauna. *Orthoperus*, which feeds on moulds amongst damp decaying litter on moist soil, was also well represented.

Ground beetles (Carabidae) were chiefly indicative of relatively dry and open, grassy or disturbed ground in the immediate vicinity of the waterhole (eg *Bembidion obtusum*, *Anchomenus dorsalis*, *Amara*, *Calathus fuscipes*). Phytophages associated with grassy places included the planthopper *Megophthalmus*, nymphs of *Craspedolepta nervosa*, a jumping plant louse (Homoptera: Psylloidea), found on yarrow (*Achillea*), and *Sitona*, a genus of weevils associated with leguminous plants such as clovers and trefoils (Fabaceae). Any bare or disturbed ground was probably colonised by ruderal vegetation and *Phyllotreta nemorum* group and *Ceutorhynchus* species are both associated with crucifers (Brassicaceae). Although the general indications were for rather open ground, scale insects associated with trees and shrubs (Diaspididae, Coccoidea) were common, hinting at the nearby presence of woody vegetation or a hedgerow.

Scarabaeoid dung beetles were common (Aphodiinae spp. and *Onthophagus*), eight species accounting for 14% of the terrestrial fauna. These beetles are primarily associated with the dung of large herbivores, but some will also exploit other available forms of foul organic matter including occupation waste (Jessop 1986, 19–15). *Calamosternus granarius*, one of the commoner species associated with foul matter on ancient occupation sites, was well-represented.

Decomposers other than dung beetles were quite well represented for a rural site (36% of the terrestrial beetle fauna) and they included a house fauna (*Xyodromus concinnus*, *Atomaria*, *Ptinus*; 4% of terrestrial taxa). Occasional human fleas (*Pulex irritans*) would have been associated with this, and perhaps also woodworm beetle (*Anobium punctatum*) which could have infested either structural timbers or naturally occurring dead wood, although there was no other evidence for the latter. All these, together with a number of typical synanthropes (*Acritus nigricornis*, *Gyrophypnus fracticornis*, *Monotoma spinicollis* and *Osmonadus floralis* or *formicarius*) indicated nearby human occupation or activity, and the disposal of limited amounts of occupation debris into the feature.

Late Roman (Period 6.4)

Waterhole 5.269

Sample <5046> was from dumped layer (51160) within late Roman Waterhole 5.269 in Settlement 3. Aquatics were abundant, especially *Helophorus* species and *Ochthebius minutus*. The range of water beetles was consistent with still water and waterside moss, litter and mud, and duckweed was indicated by *Tanyphyrus lemnae*. *Dryops*, *Cercyon* ?*ustulatus*, and a group of oxyteline rove beetles (12% of the terrestrial beetle fauna) would have lived in damp mud in and around the waterhole. *Bembidion lunulatum* occurs on bare or sparsely vegetated ground near water. Vegetation on wet ground was indicated by *Prasocuris phellandrii* which is primarily associated with waterside Ranunculaceae (buttercups), and *Coccidula* cf *rufa*, usually associated with rushes (*Juncus*), reeds (*Phragmites*) and reed-mace (*Typha*) (Majerus 1994, 144). *Heterogaster urticae*, numerous shed skins of *Trioza urticae* nymphs, *Brachypterus*, *Taenapion urticarium*, *Nedyus quadrimaculatus*, and probably also *Scolopostethus affinis* or *thompsoni*, provided abundant evidence for nettles growing very close to the feature.

Otherwise, various ground beetles and phytophages indicated open, rather dry ground, grassland, and disturbed ground in the general surroundings of the waterhole (eg *Paradromius linearis*, *Ophonus*, *Curtonotus aulicus*, *Harpalus rufipes*, *Pterostichus melanarius*). Among the phytophages, *Craspedolepta nervosa* nymphs are found on yarrow (*Achillea*), *Gastrophysa viridula* on docks (*Rumex*), and *Ceutorhynchus contractus* and the larvae of *Meligethes* are both associated with crucifers (Brassicaceae). Suggestions for the presence of local trees, shrubs, or a hedgerow came from *Aphrophora alni* (a spittle bug), occasional scale insects (Coccoidea: Diaspididae), and perhaps two beetles with wood-boring larvae (poorly preserved remains of *Anobium punctatum* or *inexpectatum*, and another unidentified Anobiinae species). Shaded habitats such as a hedge bank were suggested by *Eysacoris fabricii*, a shield bug that chiefly feeds on hedge woundwort (*Stachys sylvaticae*) and more rarely on white deadnettle (*Lamium album*) and nettles. Nymphs of *Coreus marginatus* feed on docks but the adult bugs can be found feeding on the seeds of other plants later in the year. They are often common on blackberries and other fruits in late summer (personal observations); blackberry/raspberry (*Rubus*) and elderberry (*Sambucus*) seeds were noted in this sample during processing.

Decomposers other than dung beetles were quite common (34% of the terrestrial beetle fauna), some elements within this group providing evidence that the deposit contained dumped occupation waste. A house fauna was quite well represented, for example, suggesting the disposal of occupation litter from within buildings (*Latridius minutus* group, *Typhaea stercorea*, *Atomaria* spp.; 5%), with sheep ked (*Melophagus ovinus*) puparia indicating waste from fleece or wool cleaning. *Oxyomus sylvestris*, represented by four individuals, is chiefly found in vegetable refuse including dung heaps (Jessop 1986, 19).

Scarabaeoid dung beetles accounted for 5% of the terrestrial beetle fauna. The remains included a poorly preserved elytral apex tentatively identified as *Euheptaulacus* ?*sus* which prefers dry pastureland (Jessop 1986, 19). It appears to be dependent on continuity of dung availability and grazing to maintain

open conditions. It is very rare in Britain at the present day and currently threatened with extinction (Hyman and Parsons 1992, 386-391).

DISCUSSION

Middle-Late Iron Age (Periods 5.2 and 5.3)

Assemblages from Waterhole 5.70, and Ditches 5.43 and 5.48 were examined. Terrestrial insects generally indicated a relatively dry, open, human-influenced landscape, with grassy places and disturbed ground locally, and restricted amounts of woody vegetation, or perhaps hedgerows. Ditch 5.43 was wet, well-vegetated and probably held water more or less permanently. Decomposer beetles, especially representatives of a community that would accumulate within buildings, suggest the proximity of human activity and the incorporation of limited amounts of occupation waste into both features. This could have been incidental to domestic or agricultural activities, such as manuring, or in the form of low-level disposal events. Abundant evidence for nettles suggests nutrient-enrichment of ground close to both ditches. Scarabaeoid dung beetles accounted for 5% of the terrestrial beetle fauna in the ditch and 14% in the waterhole. This might perhaps suggest a greater concentration of grazing animals close to the waterhole, but this is not clear since some of the species represented will also exploit other available forms of foul organic matter including occupation waste associated with human settlement.

Roman (Period 6.4)

The assemblage from late Roman Waterhole 5.269 indicated that wetland vegetation was probably confined to the immediate surrounding of the feature, and nettles provided evidence for nutrient-enrichment. There were hints of woody vegetation nearby but various ground beetles and phytophages were chiefly indicative of relatively dry and open grassy habitats, including pastureland, and areas of rather bare disturbed ground with ruderal vegetation, typical of a farmed landscape. Scarabaeoid dung beetles accounted for 3% and 5% of terrestrial beetles in the ditch and waterhole respectively. Decomposer beetles indicated that the deposit contained discarded occupation waste, including litter from within buildings. Sheep ked (*Melophagus ovinus*) puparia, representing waste from fleece or wool cleaning, would have been associated with this material.

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