Report 2853

ARTHROPOD REMAINS FROM FLAXENGATE, LINCOLN

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Biological remains from pit infills, post holes and road surface debris were recovered during the excavation of 10th - 14th century features at Flaxengate, Lincoln. The animal component of these remains which formed the basis of this report were predominantly arthropod although some molluscs and vertebrate bones were also present. The site is notable for the various ways in which the arthropod remains are preserved. Replacement by calcium carbonate is the major process effecting preservation although arthropods also survive as intact cuticle (normal preservation) and by charring. Flaxengate is the first site at which a detailed study has been made of arthropods preserved by calcification although similar remains have since been described from a number of archaeological sites in limestone and hard water districts (Girling 1979). One feature of $CaCO_3$ replacement common to most sites is the preservation of isopods (woodlice), soft-bodied arthropods which do not appear to survive under normal conditions but which readily calcify, the absence of epicuticular wax in the outer layer of the exoskeleton possibily aiding this process. The presence of coleopterous (beetle) remains in the form of unaltered cuticle argues for local waterlogging. Cuticle survival has on rare occasions been noted from dry sediments but always in association with low pH (Girling in preparation). The final mode of preservation of arthropods, charring, is not commonly encountered in archaeological deposits, here representing the fortuitous incorporation into sediments of the very fragile burnt remains of a beetle elytron and an indeterminate insect abdomen. The beetle, Trox scaber, lives on old bones and hides and might have been thrown on to a fire during the disposal of such rubbish.

Charred grain and flour beetles have been reported from a burnt cereal deposit at Roman Droitwich in which the degree of infestation indicated deliberate burning (Osborne 1977) and a single charred elytron of Aphodius sp., the dung beetle, from an Italian village site could suggest the use of dung as fuel (Girling, unpublished data). Charred larval remains possibly of Anobium, the woodworm, have been observed in charcoal showing signs of previous boring and in common with other finds, such remains are very fragile (Mrs Keepax, personal communication). As with other biological remains, especially wood and cereal grains, the charring permits the survival of insect sclerites without the usual requirement of waterlogging.

Species list

INSECTA

COLEOPTERA

Carabidae
Trechoblemus micros (Herbst)
Dromius sp.

Hydrophilidae
Helophorus sp.

Leiodidae
Choleva or Catops sp.

Trogidae
Trox scaber (L.)

Anobiidae
Anobium punctatum (Deg.)

Ptinidae
*Ptinus or Dipnus sp.

DIPTERA

*Puparia

LEPIDOPTERA

*Pupae

DIPLOPODA

*Polydesmidae

*Diplopoda indet.

which might indicate lack of contemporaneity. No such differences were apparent in the Flaxengate material which is thought not to contain contaminants.

Two fish species, roach and eel, were identified by Mrs A Locker. Both might have been brought to the site for food.

The material submitted to the AM Laboratory also included very small, usually spherical glassy or 'metallic' hollow objects occurring singly or in aggregates. The single spheres rarely exceeded 5mm. in diameter. These were identified by Miss J.Bayley as slag like material probably formed by heating of calcareous sands and occasional carbonised remains, probably around hearths, to produce the glass and 'metalic' spheres.

References

Girling,M.A. (1979) Calcium carbonate-replaced arthropods from archaeological deposits. Journal of Archaeological Science (in press)

Girling,M.A. (In preparation) Low pH in dry sediments a factor in the survival of insect cuticle.

Osborne,P.J.(1977) Stored product beetles from a Roman site at Droitwich, England. Journal of Stored Products Research 13, 203 - 9.

Cloudsley-Thompson, J.L. (1953) Spiders, Scorpions, Centipedes and Mites. Pergamon Press, Oxford. (278 Pp)

ISOPODA

Porcellionidae
*Trachelipus rathkei (Brandt) (?)
*Porcellio scaber Lat.
*Porcellionidae indet. (juveniles)

Armadillidiidae
*Armadillidium vulgare (Lat.)
*Armadillidium sp.

Trichonisidae
*Androniscus dentiger Verh.

MOLLUSCA

Planorbidae
Planorbis sp.

Vertiginidae
Vertigo antivertigo (Drap.)

Endodontidae
Discus (=Goniodiscus) rotundatus (Müll.)

OSTEICHTHYES

Cyprinidae
Rutilus rutilus (L.):Roach

Anguillidae
Anguilla anguilla (L.):Eel

(* indicates preservation as $CaCO_3$ replaced fossils)

Faunal implications

The woodlice are species frequently associated with man. For instance Androniscus dentiger occurs in natural habitats in the south only and is increasingly synanthropic in the north of Britain (Sutton 1972). Armadillidium vulgare, the commonest of the pill-bugs, is strongly tied to calcareous habitats but is has also been recorded from rubble in builders' yards (Cloudsley-Thompson 1958). The most abundant species in the Flaxengate samples is Porcellio scaber also these remains probably also include the morphologically similar species Trachelipus rathkei.

The burrowing life-style of one of the ground beetles, Trechoblemus micros renders the species liable to contaminate earlier deposits and the remains of this species should always be compared with other beetle sclerites in any fauna to check for obvious differences in preservation

Appendix

List of animal remains in each of the samples examined. $CaCO_3$ replacement is indicated by * and charring by +. Numbers represent the minimum based upon totals of any common skeletal element.

F74 fill of pit ASA (10th.C)
Trox scaber, +, 1
Lepidopterous pupa, +, 1
Dipterous puparia, *, 1
Vertigo antivertigo, 1
Planorbis sp., 1
glassy 'slag'

F74 AOB fill of oven AFM (10th.C)
glassy slag

F74 ASE upper fill of pits ASG ASL ASM (10/11th.C)
Dipterous puparia, *, 5
Armadillidium sp., *, 1
indet. bone
?wood,*
glassy 'slag'

F74 ASK fill of pit ASL (10/11th.C)
Dipterous puparia, *, 5
Lepidopterous pupae, *, 1
Diplopoda indet., *, 3
glassy 'slag'

F74 ASJ fill or lining of ASG (10/11th.C)
Dipt. puparia, *, 3
Diplopoda indet., *, 4
Porcellio scaber, *, 1
glassy 'slag'

F74 AWS road surface debris (late 10/early 11th.C)
Discus rotundatus, 2
glassy 'slag'

F74 AIR pit fill or occasional debris (early 11th.C)
Dipt. puparia, *,2
Discus rotundatus, 1

F74 AWP fill of pit AWP (11th.C)
Helophorus sp., 1
Choleva or Catops sp., 2
Dipt. puparia, *, 22
Lepidoptera pupae, *, 1

F74 ATS debris on road (11th.C)
Dipt. puparia, *, 1
glassy 'slag'

F74 AZM hearth debris (11th.C)
charcoal
glassy 'slag'

F74 AWL fill of pit AWP (11th.C)
Dipt. puparium, *, 1
Discus rotundatus, 1

F74 AWV fill of pit AWD (11th.C)
glassy 'slag'

F74 AKN fill of post hole AQC (late 11th.C)
'metallic slag' (probably slag incorporating carbonised material)

F73 ABP fill of pit AWK (late 11th.C)
Dipt. puparia, *, >200 (including e.g.s with partly formed imagoes visible in internal cavity and others with ?hyphae)
Diplopoda indet., *, 1
Armadillidium vulgare, *, 1
Rutilus rutilus, 1 (one pharyngeal)
Anguilla anguilla, 1 (6 vertebral centra)
glassy 'slag'

F73 fill of timber slot beam (late11/early 12th.C)
no animal remains

F74 AWB patch of charcoal from ATV (11/12th.C)
'metallic slag' (see above)

F74 ATN fill of pit ANR (early 12th.C)
Insect larva indet., +, 1
Dipt. puparium, +, 1. * , 2
Vertigo antivertigo, 5

F73 AKD fill of pit AKA (12th.C)
Insect abdomen indet., +, 1
Androniscus dentiger, *, 4
glassy 'slag'

F73 AKB fill of pit AKA (12th.C)
glassy 'slag'

F73 AKC fill of pit AXA (12th.C)
Discus rotundatus, 1
glassy 'slag'

F73 AKC fill of pit AKA (12th.C)
No animal remains

F73 AKE fill of pit AKA (12th.C)
Dipt. puparium, *, 1
Armadillidium vulgare,*. 1
Planorbis sp., 1
glassy 'slag'

F74 APX fill of pit ASB (12th.C)
Discus rotundatus, 1
glassy 'slag'

F74 ATF floor (12th.C)
glassy 'slag'

F74 ATK fill of pit ATQ (early - mid 12th.C)
Dipt. puparia, *, 8
Lepidopterous pupae, *, 2
Diplopoda indet., *, 2
glassy 'slag'

F74 AWZ fill of pit (12th.C)
Diplopoda indet., *, 2
glassy 'slag'

F74 AIZ fill of pit ALM (mid 12th.C)
glassy 'slag'

F74 ALV fill of pit ALW (late 12th.C)
Dipt. puparia, *, 3
Porcellio scaber, *, 1
Planorbis sp., 2
glassy 'slag'

F74 AIQ pit fill (?14th.C)
Dipt. puparium, *, 1

F74 AIU same pit as AIQ (?14th.C)
Diplopoda indet., *, 2 (both specimens almost pure white, ?lacking Fe)
Planorbis sp., 1

F73 [illegible] fill of pit 1H (Medieval)
Dipt. puparia, *, 3
indet. bones
? calcified wood

F73 AJD fill of pit IH (Medieval)
Dipt. puparia, *, 96
Lepidopterous pupae, *, 3

F74 ALR fill of pit ALM (mid 12th.C)
Dipt. puparia, *, 25
glassy 'slag'

undated samples

F73 ACA
Trechoblemus micros, 1
Dromius sp., 1
Anobium punctatum, 1
Polydesmidae indet., 1
Porcellio scaber, 1
Porcellionidae indet. (juveniles) 3
Lepidopterous pupa, 1

F74 AQQ debris on road surface
Dipt. pupapium, *, 1
Planorbis sp., 1
charcaol
glassy 'slag'

F74 ATZ fill of post hole
Dipt. puparium, *, 1
glassy 'slag'

Medieval pit (collected 1974)
Porcellio scaber and ?Trachelipus rathkei, *, 26
Dipt. puparia, *, 54
Lepidoptera pupae, * 6
Ptinus or Tipnus sp. *, 4