ANCIENT MONUMENTS LABORATORY

REPORT

3347

SERIES/No CONTRACTOR

AUTHOR S Colledge March 1981

TITLE A Report on the micro- and macroscopic plant remains from the Crown Car Park site in Nantwich, (including a preliminary species list of the Coleopteran remains

A Report on the micro- and macroscopic plant remains from the Crown Car Park site in Nantwich. (including a preliminary species list of the Coleopteran remains)

S. Colledge

Nantwich - Crown Car Park Excavations.

A report on the plant remains found in the large ditch, DI.

There are many problems involved with the interpretation of plant remains from urban sites, in particular the interpretation of a pollen diagram from an urban context (Greig in press) / The situation is not as simple as for a diagram from a peat deposit in a rural setting, where in most cases, the processes by which the pollen accumulates have continued largely unhindered by human influence. For example within a town there is bound to be a certain amount of dumping of vegetation as rubbish in pits or ditches and these are the places where pollen is likely to be preserved, so the records which are studied may have a superimposed bias. Instead of seeing a picture of the surrounding vegetation changing with time, there is the added confusion caused by the direct human interference. The problem is then one of sorting out the 'natural' from the 'human influenced' accumulation of pollen. There are so many factors affecting the situation, and it becomes virtually impossible to separate these just on the information obtained from a pollen diagram. For the site at Nantwich any interpretation of the vegetational history from the pollen record must be limited and it becomes more important to mention the presence of certain plant species rather than to comment on their relative changes in abundance.

The samples for pollen and macroscopic plant remains were taken from the large ditch DI. This ditch was thought to have formed part of the defences of Nantwich castle, which was built during the 12th century. The details of the stratigraphy of the ditch DI as recorded by the excavator are given below. It has been possible to determine the events which occurred before, during and after the building of the ditch. At the bottom of the ditch the fill was organic mud and clay, representing Period IV Phase II in the development of the ditch and when there was not deep water in the channel. Phase III was represented by finely layered clays which must have accumulated during the silting up and when the ditch was filled with water. Above the laminated clays there was a considerable depth of deposit which marked the final infilling of the ditch. It was a mixed deposit of clay and sand with charcoal and coal inclusions and it represented Period V when there was probably flooding which caused inwashing of sediment. Another important detail which was

recorded by the excavator was that at the top of the organic mud, represented by the boundary between Phases II and III of Period IV, there was domestic debris in the form of leather ware eg. shoes, and also wood, either unworked or worked, eg. wooden bowls. The ditch at this stage must have been a convenient refuse dump and presumably vegetable waste would also have been tipped here. As discussed previously this would produce a bias in the pollen record. The only part of the stratigraphy which implied 'uninterrupted' accumulation of sediment was that represented as Phase III of Period IV, during which the ditch was silting up. However there was no indication as to whether this was a gradual or a uniform infilling.

It would be an extremely dangerous exercise to regard the pollen diagram which has been drawn up for the ditch at Nantwich in the same way as one compiled fr peat deposit in a rural setting. This must apply to similar features on urban sites from which pollen samples may be taken eg. moats, drains and other water courses.

A bulk sample was taken from layer 180 in the organic mud. This layer coincided with the 135cms level on the pollen diagram. In relating the plant species represented by the seeds (as found in the bulk sample), to the pollen from the same horizon (as shown by the pollen spectrum at 135cms), it may be possible to determine the provenance of that pollen, i.e. whether it was part of the 'natural' pollen rain or whether it was deposited as a result of some human activity. Such information could then be used as a guide for interpretation of the rest of the pollen diagram. A comparison between the micro- and macroscopic plant remains from the organic mud will precede the discussion of the pollen diagram.

,) Discussion of the seeds and pollen within layer I80 (level I35 cms)

It was obvious that the deposit which formed layer I80 was rich in remains because the seeds and insects were visible when blocks of the mud were broken apar The sample was washed down and sieved through a 300μ mesh. The flotant was paraffined to separate the insect remains. The seeds and other macroscopic plant remains were sorted and identified using modern reference material. The plant spec represented by the seeds in layer I80 are listed below according to habitat preference.

It is clear that many of the plants represented are not those which would be found growing in and around towns. There are many species which are common in arable or pasture land. There were no cereal grains in the sample, probably due to the fact that the caryopses do not survive well in waterlogged conditions. However the largest habitat group is that of species preferring cultivated and waste land. In particular there are several cornfield weeds eg. Agrostemma githago the corn cockle, Centaurea cyanus, the cornflower, Chrysanthemum segetum, the corn marigold and Spergula arvensis, the corn spurrey. These together with the other arable weeds in the deposit would probably have been growing on the lighter, acid soils of the fields outside the town. This must represent a certain element of the flora which was brought in to the site. The pollen spectrum at I35cms shows high percentages of grasses and cereals. It has been observed that pollen can be carried on the bracts of the flower heads of the cereal crops (Robinson and Hubbard I977). So perhaps in this instance the pollen in the deposit could have come from hay/and straw which was collected (with the weeds from the fiel and used as flooring material or fodder. Subsequently when houses and barns were cleaned out the hay/and straw would have been swept into the ditch along with all the other domestic debris.

The Compositae seeds in layer I80 are dominated by those which represent species of arable weeds and so it is assumed that the Compositae pollen in the spectrum also reflects this habitat group/ie the Tubuliflorae. Some of the species within the cultivated and waste land group do not reliably indicate a definite habitat eg. the Chenopodiaceae and Sonchus spp., they are tolerant of many different

vironments. Urtica dioica, the stinging nettle, probably would have been growing locally because it favours ground which is covered with litter or rubble, often in areas close to buildings.

It is possible that some of the species of the habitat groups of pasture and meadow land and hedgebanks and pathways could have been growing within the town. Thistles are common on grassy banks and Sambucus nigra, the elder and Rubus fruticosus, the bramble, would grow on scrub land near to habitation. The species of Rumex represented in the pollen spectrum would seem to be Rumex cf. obtusifolius, the broad-leaved dock, which grows on disturbed ground. Brassica nigra, black mustard, is usually referred to as an 'escape from cultivat but it has been grown for its seed which is used to make the condiment mustard, o for its oil which can be used in soap making.

The seeds of aquatic species are abundant. Ranunculus sceleratus, the celery-leaved crowfoot, dominates the aquatic flora. Dipsacus (teasel) seeds are an interesting find and Dipsacaceae pollen is also recorded from this level in the mud of the ditch. The excavators discovered that within several layers of the ditch fill there were whole seed heads of teasel.

It is difficult to distinguish between the seeds of the subspecies of teasel. Dipsacus fullonum ssp. sativus is the fuller's teasel and it has the downcurved spines on its seed head which make it suitable for the treatment of fibres and fabrics. Unfortunately it has been impossible to identify the sub species from the macroscopic remains found in the samples. The Dipsacaceae records could represent plants which were growing at the edge of the ditch but there is the possibility that the teasels were being grown for fulling purposes.

Discussion of the pollen diagram.

There are tree species present in all the pollen spectra. Alnus, alder, Corylus, hazel, dominate but Quercus, oak, and Sambucus, elder, have fairly n frequencies. Betula, birch, Salix, willow, Tilia, lime, Fraxinus, ash, us, elm and Ilex, holly are also present. There seem to be no significant nges in the tree pollen frequencies for the duration of the infilling of e ditch. At the levels of 100cms and 110cms the presence of Juglans, walnut ollen is recorded. Godwin (1975) records that the pollen of walnut has been found in zone III deposits at Taw Head, zone VIIb/ VIII deposits at Glatteringshaws Loch and zone VIII deposits at Snibe Bog. It is also recorded in the pollen diagram from old Buckenham Mere and in the diagram from Askham Bog (Greig in Kenward et al. 1978) for which it had a possible Medieval date/ Walnut charcoal was found on the Roman site at Rotherley (Pitt-Rivers) and nut shells were found on a Medieval site in Plymouth (Dennell 1970). Walnut nut shell fragment were also found in Roman contexts in London (Willcox 1977) and Skeldergate, York. (Hall et al However the presence of nut fragments is not conclusive evidence that the walnut was growing in this country and it could merely show that the nuts were being traded from abroad. Munaut (1967) states that the walnut was introduced into the Netherlands by the Romans and Godwin mentions that the British history may well have been similar. The Nantwich find is an important early occurrence, proving that there was a walnut tree growing somewhere near the site.

The non tree pollen in all the spectra is dominated by the Gramineae, grasses and the Cerealia, cereals. The Compositae, Chenopodiaceae and Cruciferae percentages are also high. The Rumex sp. frequencies are high in the basal section of the diagram. Plantago lanceolata, ribwort plantain, pollen is present in all spectra. During Phase III of the silting of the ditch significant changes in the non tree pollen frequencies do occur. The Compositae show a substantial increase at 105cms and the Cerealia also monitor this change.

Some of the non tree pollen records need further mention. For ample the finds of Cannabiaceae pollen and that of Linum usitatissim mon flax. The Cannabiaceae pollen could be that of either hops or p. The pollen of these two species is very similar and because ere were only small numbers of grains in the samples it has been impossible to distinguish between them. The flax pollen is recorded rom the levels at 85cms and 90cms. Linum usitatissimum is the species which is cultivated for its fibres. Mabey (1977) quotes from Bartholomaeus Anglicus who wrote in the mid 13th century and in his work 'De Proprietatibus Rerum' he describes the preparation of the flax; its soaking and drying, its binding in 'praty bundels', and now it was subsequently 'knockyd, beten and brayd and carflyd, rodded and gnodded; ribbyd and hekyld and at last sponne.' Bartholomaeus states that the flax was surely as fine as silk after such treatment and that it was made into fish nets, sails, ropes, sacks, sheets and shirts. He also says; 'none herbe is so needfull to so many dyurnie uses to mankynde as the flexe.'

The aquatic pollen frequencies are low throughout.

iii)Interpretation

Considering the information obtained from the pollen and the seeds it is obvious that there are elements of the 'background' and 'superimposed' flora represented. For the site at Nantwich to some extent it has been possible to distinguish the two. It can be inferr perhaps that some trees were growing locally eg. Alnus, the alder and Salix, the willow, preferring wet ground could have been growing at the edge of the ditch and Sambucus, the elder, which commonly grows on disturbed, base rich soils and often in association with habitati The other woodland species could be present in the spectra becau

ong distance transport of their pollen and it is only possible to say that there may have been a wooded area somewhere in the vicinity from the amount of cereal pollen in the diagram it can be deduced that there was arable farming being practised around the town. However the changes in the frequencies of the cereal pollen do not necessarily reflect the extent of the crop cultivation. As the information from the study of the macroscopic remains indicates, these changes are more likely to represent increasing import and dumping of the crops which have been gathered with the weeds from the species rich fields. Perhaps the gradual build up of rubbish in the ditch led to its drying out.

The presence of the flax and walnut pollen in the record is of great importance. Flax is best suited to fertile, deep, well draine loams and perhaps it was being cultivated outside the town.

r) Discussion

There are two sites which can be compared with Nantwich and these have been studied by James Greig. One is the site of the sixteenth century moat in the centre of Birmingha (Greig in press) / and the other is the medieval moat around the Royal hunting lodge at Cowick, Humberside./ (Greig pers. comm.) For the Birmingham site the pollen samples were taken from the fill of the moat and to a depth of about 60cms. A bulk sample was taken from the middle of the fill and the macroscopic plant remains were examined. Using the seeds as a basis for comparison of the sites at Nantwich and at Birmingham it would appear that the two assemblages show a completely different habitat trend. The plant assemblage from the Birmingham moat lacks the floral element which represents arable cultivation and there are fewer / 'cornfield weed' species but more wayside and woodland plants. The pollen diagram from the moat shows more tree pollen than at Nantwich. At Cowick there is a similar picture and the pollen diagram from the full depth of the moat shows high tree pollen frequencies. It would seem that the surroundings at Birmingham and Cowick were much more rural when the moats were

use.

At the site of Highgate, Beverley (York) there have been investigations carried out to determine the nature of certain deposits using the the information obtained from studying plant macrofossils and insect remains (Hall and Kenward 1980 The situation in York compares well with Nantwich. The deposits at Highgate varied from clay loams to peaty silts and were of an early Medieval date. Archaeological examination of these deposits revealed little to elucidate the history of their formation. The authors state that from field observations it appeared that the organic layers might be a natural peat because they formed extensive uniform horizontal strata, showing little disturbance. But the plant remains were similar to assemblages from terrestrial urban deposits on sites where there is evidence c transport. It was concluded that the bulk of the organic component was transported to the site from human dwellings and that the deposits represented a dump. This would seem to compare with the results obtained from investigation of the organic mud in the ditch at Nantwich.

N.B.
(This study will not be complete without examination of the insect remains in the organic mud, layer 180. Preliminary identifications of the coloopteran remains have been made (with much help from Mr. P.J. Osborne) and a list of species is included. It is hoped that the work will be completed soon.)

Bibliography

Dennell,R.W. 1970 Seeds from a Medieval Sewer in Woolster Street, Plymouth. Economic Botany XXIV 151-154

Godwin,H. 1975 History of the British Flora. Cambridge.

Greig, J.R.A. in press The interpretation of pollen spectra from urban archaeological deposits. In (Hall, R.A. and Kenward, eds.) Environmental archaeology in the urban context Council for British Archaeology Research Reports. Lo

Greig, J.R.A. in press The Birmingham Moat report. In (Watts, L.) The Birmingham Smithfield Market excavation report. Transactions and Proceedings of the Birmingham Archaeological Society.

l, R. and Kenward, H.K. I980 An Interpretation of Biological Remains from Highgate, Beverley. Journal of Archaeological Science. 7 33-5I

ll, A.R., Kenward, H.K. d Williams, D. I980 Environmental Evidence from Roman Deposits in Skeldergate. In (Addyman, P.V. ed.) The Archaeology of York. I4 (3) London: Council for British Architecture.

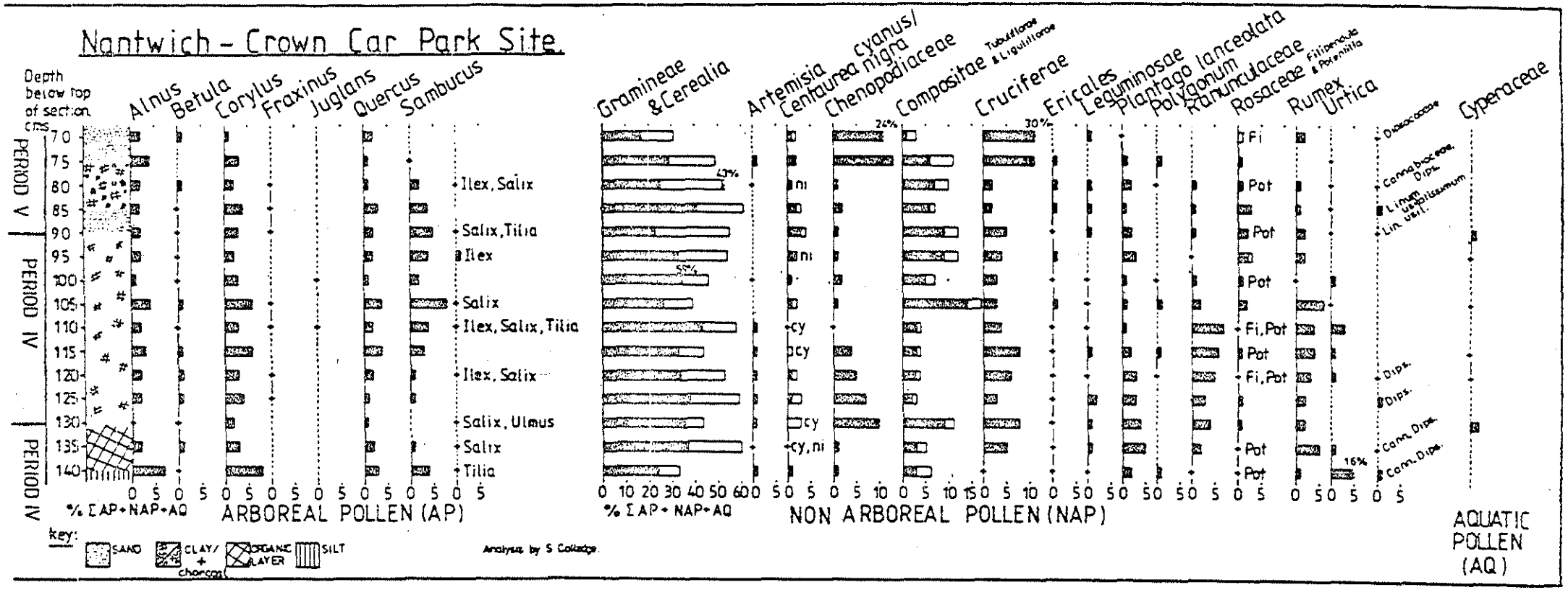
Kenward, H.K. et al. I978 The environment of Anglo-Scandinavian York. In (Hall, R.A. ed.) Viking Age York and the north. Londo Council for British Archaeology Research Report no. 2

labey, R. I977 Plants with a Purpose. London.

lunaut, A.V. I967 Recherches paleo-écologiques en Basse et Moyenne Belgique. Acta geogr. Iovaniensia. 6 I9I

Robinson, M. and Hubbard, R.N.L.B. I977 The Tansport of Pollen in the Bracts of Hulled Cereals. Journal of Archaeological Science. 4 I97-I99

Willcox, G.H. I977 Exotic Plants from Roman Waterlogged Sites in London. Journal of Archaeological Science. 4 269-282



A pollen diagram from the ditch (DI)
on the site at Nantwich.

IPSWICH- Crown Car Park Excavation

Seed list from layer 180

Species of cultivated and waste land.

Agrostemma githago L.	Corn cockle	41	Poisonous seeds.
Anthemis cotula L.	Stinking maywood	15	
Atriplex patula L.	Common orache	57	
Atriplex sp.		20	
Brassica nigra(L.)Koch	Black mustard	199	
Centaurea cyanus L.	Cornflower	21	
Chenopodium album L.	Fat hen	275	
Chenopodium sp.		74	
Chrysanthemum segetum L.	Corn marigold	170	Grows well on acid soil
Galeopsis tetrahit agg.	Common hemp nettle	10	
Geranium cf. dissectum L.	Cut-leaved cranesbill	2	
Papaver argemone L.	Long prickly-headed poppy	2	A weed of light soils.
Papaver cf. rhoeas/dubium		1	
Polygonum aviculare agg.	Knotgrass	34	
Polygonum convolvulus L.	Black bindweed	5	
Ranunculus sardous Crantz	Hairy buttercup	22	A troublesome weed of damp arable land.
Raphanus raphanistrum L.	Wild radish	39	A weed on non calcareous soils.
Sonchus asper (L.)Hill	Prickly sow-thistle	17	
Sonchus oleraceus L.	Smooth sow-thistle	1	
Spergula arvensis var. sativa (Boenn.)Mert. & Koch.	Corn spurrey	16	A troublesome calcifuge weed of arable land.
Urtica dioica L.	Stinging nettle	258	
Urtica urens L.	Small nettle	1	A weed of light soils.
Viola tricolor L.	Wild pansy	2	A weed of acid or neutral soils.

Species of pasture and meadow land.

Carduus cf. acanthoides/nutans	Thistle	45	
Cirsium vulgare (Savi)Ten.	Spear thistle	9	
Hypochoeris glabra L.	Smooth cat's ear	2	Grows on derelict arable land.
Potentilla anserina L.	Silverweed	1	

Pasture and meadow species contd.			
Prunella vulgaris L.	Self heal	11	
Ranunculus cf. acris/ repens/ bulbosus	Buttercup	73	
Species of hedgebanks and pathways			
Arctium lappa L.	Greater burdock	10	
Ballota nigra L.	Black horehound	23	
Lapsana communis L.	Nipplewort	14	
Malva sylvestris L.	Common mallow	9	
Rubus fruticosus agg.	Bramble	1	
Rumex cf. obtusifolius L.	Broad-leaved dock	240	
Sambucus nigra L.	Elder	11	Grows on base rich soils
Torilis japonica (Houtt.)DC.	Upright hedge parsley	1	
Species of wet places; streamsides and marshes.			
Bidens tripartita L.	Tripartite bur-marigold	3	
Carex cf. disticha Huds.	Brown sedge	24	
Carex cf. divulsa Stokes	Grey sedge	2	
Carex cf. 'flava gp.'	Yellow sedge	5	
Carex cf. hirta L.	Hairy sedge	5	
Carex cf. panicea L.	Carnation sedge	2	
Conium maculatum L.	Hemlock	162	
Dipsacus fullonum ssp ?	Teasel	9	
Eleocharis cf. uniglumis/ palustris	Spike rush	10	
Lycopus europaeus L.	Gipsywort	1	
Montia fontana L.	Blinks	3	Grows well where the subs is non calcareous.
Polygonum hydropiper L.	Water-pepper	15	
Polygonum mite Schrank		4	
Polygonum nodusum Pers.		16	
Ranunculus flammula L.	Lesser spearwort	13	
Ranunculus sceleratus L.	Celery-leaved crowfoot	456	
Species of heathland.			
Potentilla erecta (L.) Räusch.	Common tormentil	7	
Stellaria graminea L.	Lesser stitchwort	6	
Total number of seeds from 180=		2475	

NANTWICH - Crown Car Park Excavations

Plant remains from other contexts, as sampled by the excavators.

Corylus avellana L. Hazel nut shell fragments.

from :- I54 (7) (14)

I57 (19) (20) (23) (24) (30) (39) (42) (55) (57)

I68 (51) (73)

I69 (97)

I72 (69) (98)

Dipsacus fullonum ssp? Teasel seed heads

from :- I54 (11) (15)

I72 (110)

I79 (114) (124)

Triticum sp. Charred grain of wheat

from :- I57 (44)

Prunus cf. ssp. institia Bullace stone?

from :- I54 (9)

preliminary list of identified Coleopteran remains from layer 180

Carabidae

Bembidion quadrimaculatum (L.)

Pterostichus nigrita (Pk.) or *anthracinus* (Pz.)

Harpalus subg. *Ophonus* sp.

Chlaenius vestitus (Pk.)

Dromius cf. *agilis* (F.)

Lytiscidae

Hygrotus inaequalis (F.)

Hydroporus spp.

Hydrophilidae

Helophorus nubilis (F.)

Helophorus spp.

Cercyon spp.

Megasternum obscurum (Marsh.)

Cryptopleurum minutum (F.)

Hydrobius fuscipes (L.)

Laccobius spp.

Histeridae

Gnathoncus ? *nanus* (Scriba)

Onthophilus striatus (Forst.)

Hydraenidae

Hydraena sp.

Ptiliidae

Ptenidium sp.

Staphylinidae

Megarthrus ? *denticollis* (Beck)

Acidota crenata (F.)

Dropephylla sp.

Xylodromus concinnus (Marsh.)

Carpelimus sp.

Anotylus complanatus (Er.)

Anotylus rugosus (F.)

Oxytelus sculptus Gr.

Stenus spp.

Rugilus rufipes Germ.

Leptacinus pusillus (Steph.)

Xantholinus linearis (Ol.) or *longiventris* Heer

Gyrohypnus punctulatus (Pk.)

Staphylinidae contd.

Philonthus spp.

Gobrius sp.

Staphylinus sp.

Mycetoporus sp.

Tachinus spp.

Aleocharinae indet.

Scarabaeidae

Aphodius sp

Scirtidae

gen. et sp. indet.

Nitidulidae

Brachypterus ? glaber (Steph.)

Meligethes sp.

Rhizophagidae

Monotoma picipes (Ol.)

Cryptophagidae

Cryptophagus spp.

Atomaria spp.

Endomychidae

Mycetaea hirta (Marsh.)

Lathridiidae

Corticaria group

Chrysomelidae

Gastrophysa viridula (Deg.)

Apionidae

Apion hydrolapathi (Marsh.)

Apion radiolus (Marsh.)

Apion sp.

Curculionidae

Phyllobius pomaceus Gyll.

Phyllobius sp.

Polydrusus sp.

Sitona hispidulus (F.)

Sitona spp.

Ceutorhynchus sp.

Gymnetron ? linariae ? (Pz.)

Gymnetron ? pascuorum (Gyll.)

Rhynchaenus sp.