Retford Circular Economy Project Environmental Statement Addendum – Volume 3 Technical Appendices

Technical Appendix 8.9: Invertebrate Habitat Assessment

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INVERTEBRATE SCOPING SURVEY FOR RETFORD CIRCULAR ECONOMY PROJECT, NOTTINGHAMSHIRE
August & October 2023

Report to Peak Ecology
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INVERTEBRATE SCOPING SURVEY FOR RETFORD CIRCULAR ECONOMY PROJECT: RETFORD, NOTTINGHAMSHIRE
August & October 2023

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INVERTEBRATE SCOPING SURVEY FOR RETFORD CIRCULAR ECONOMY PROJECT: RETFORD, NOTTINGHAMSHIRE
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SUMMARY

ERM requested an invertebrate scoping survey of land that forms Retford Circular Economy Project at Retford, Nottinghamshire. The land lies south-east, south and south-west of Lound and south and east of Sutton Cum Lound and the centre of the site is approximately at SK693844. The land comprises intensively grazed sheep pasture, semi-improved grassland, planted tree belts and plantations along with smaller areas of open mosaic habitat. A walkover scoping survey visit was undertaken on 15th August 2023 and 5th October 2023. The results of the survey are presented in this report.

No active sampling was undertaken on the survey since it took approximately one day to undertake a complete walkover of the site. However, characteristic species were recorded and are presented in the Appendix. A total of 45 invertebrate species were recorded and these possibly include one former extinct species (alder leaf beetle, *Agelastica alni*) which as now recolonised the UK and is now frequent and widespread especially within open mosaic habitats but also on young alder in other habitats. This species was definitely recorded just outside the survey area whilst passing through Idle Valley Nature Reserve in order to get into the southern part of the site.

The main areas and habitats on the site are discussed in connection with their possible value to support native invertebrates. Overall, the site appeared to be of low value to native invertebrates for the reasons given in the report i.e., intensive sheep grazing, lack of hedgerows, young densely planted tree belts, general absence of dead and decaying wood, absence of mature trees/ancient woodland, absence of wetland habitat, etc.

INVERTEBRATE SCOPING SURVEY FOR RETFORD CIRCULAR ECONOMY PROJECT: RETFORD, NOTTINGHAMSHIRE August & October 2023

INTRODUCTION

ERM requested an invertebrate scoping survey of land that forms Retford Circular Economy Project at Retford, Nottinghamshire. The land lies south-east, south and south-west of Lound and south and east of Sutton Cum Lound and the centre of the site is approximately at SK693844. The land comprises intensively grazed sheep pasture, semi-improved grassland, planted tree belts and plantations along with smaller areas of disturbed bare ground, piles of wood chippings, etc. A walkover scoping survey visit of most of the site was undertaken on 15th August 2023. Access to survey the lorry park was not given in August, so this area was initially assessed from photographs taken by ERM. Access to survey the lorry park was given in October 2023 and a survey was undertaken on 5th October 2023. The results of both the surveys are presented in this report. Photographs of some of the features and habitats observed are provided at the end of the report.

SURVEY METHODOLOGY

SAMPLING METHODS

Conspicuous invertebrates that could be identified in the field such as butterflies, day-flying moths, dragonflies, bumblebees, distinctive beetles, true bugs and true-flies, etc were recorded. Flower heads were inspected for pollinators and ground dwelling arthropods were searched for under stones and pieces of wood. Leaf mines and plant galls were also recorded. No active sampling methods were undertaken as the survey was a walkover scoping survey aimed at identifying habitats and other features of potential value to invertebrates.

IDENTIFICATION

The survey concentrated on invertebrates that could be identified in the field and therefore included snails, butterflies, day-flying moths, dragonflies, bumblebees, distinctive beetles and flies. Leaf mines and plant galls were also recorded.

Andy Godfrey has identified all material listed in Appendix 1.

WEATHER

Details of the weather during the survey are provided in Table 1.

SURVEY DATE	WEATHER AND GROUND CONDITIONS
15th August 2023	Cloud cover was 30% and conditions were dry. The temperature was 19.3°C at 10.30am.
5th October 2023	100% cloud with light rain at start of survey (9.30am). Weather improved during the survey and was dry for much of the time.

TABLE 1: WEATHER AND GROUND CONDITIONS ON THE SURVEYS

SURVEYOR DETAILS

The surveyor has 40 plus years' experience as an invertebrate ecologist having worked as an entomologist for the Nature Conservancy Council, in two museums in natural history roles and in ecological consultancy up to 1998 when he went freelance as an invertebrate consultant. He also worked briefly as the ecologist for RJM Mining in the late 1990s and started his career as a geologist. He has worked throughout the UK and occasionally abroad and has wide experience of all habitats and most invertebrate groups.

The surveyor was accompanied by Laurence Marshall (ERM) on both surveys.

SURVEY LIMITATIONS

No active sampling was undertaken since the aim was to undertake a scoping survey in order to assess whether further invertebrate surveys were required. The main scoping survey was undertaken in mid-August 2023 with the lorry park being surveyed in early October 2023. If further surveys were required in 2023, then one or two extra visits would be necessary to get a more complete list for the site.

Weather conditions were generally good during the walkover.

SURVEY RESULTS

SPECIES RICHNESS AND RARITY

The results of the direct searching are presented in the Appendix. A total of 45 invertebrate species were recorded. The only significant species was the alder leaf beetle *Agelastica alni* (Coleoptera, Chrysomelidae). This beetle was given Extinct status by Shirt (1987), Red Data Book K Insufficiently Known status in Hyman, P.S. & Parsons, M.S. (1992) and is described as 'Very rare in Britain' by Cox (2007). Since these publications, this species has recolonised much of England at least and is now frequent on open mosaic habitats and in other habitats with young alder; it's status should be downgraded to Common in the surveyor's opinion. Alder leaf beetle was abundant within the lorry park within the site on 5th October 2023 and leaf damage typical of the beetle was found within the main part of the site on 15th August 2023.

All the other recorded species are either Local or Common.

SITE ASSESSMENT

Intensive sheep pasture

This area comprised the fields divided by fences south and east of Low Farm at the north-eastern part of the site (Photograph 1). Because of the intensive grazing by sheep, the lack of internal hedges and the general homogeneity of the area, their value to invertebrates is considered to be very low. The fields are surrounded by narrow tree belts which appeared to be similar to those on the semi-improved grassland on the landfill mound and are discussed below.

Semi-improved grassland and associated habitats on landfill

The sward included a reasonable variety of forbs as well as flowering plants which could attract herbivorous and pollinating insects. Other areas/fields had extensive cover of barley. No stock was present at the time of the survey, but old cowpats were present and sheep wool was caught in the perimeter fencing indicating that grazing is undertaken in some fields at least whilst others have carried a barley crop in the past. The value of the fields for invertebrates are considered to be low but clearly better than the intensively grazed sheep pasture discussed above. See Photographs 3 & 4.

A small, disturbed area is present either side of the track from Lound Low Road leading up onto the landfill mound (near the Pp or peristaltic pump marked on the Ordnance Survey map). This includes a small area that could be considered open mosaic habitat (OMH) and includes compacted bare ground, piles of wood chips and plants such as spear thistle, weld, mugwort, broom and hare's-foot clover (Photographs 1 & 2). There is also regenerating silver birch behind the OMH on either side. Because this area is small and subject to regular disturbance (farm vehicles, wood chipping) it was not considered significant.
The large field south of Bellmoor Farm was similar to the fields to the northeast which are described above in that they supported as variety of forbs, were not grazed and were surrounded by similar tree-belts.

Tree belts on landfill

The fields were divided by tree belts which were clearly planted after the landfill had been created (Photograph 4). The ground vegetation was often poor in these tree belts, shade was often high and because of the young nature of the trees, dead, damaged, or diseased wood was often absent although a few small dead willows were noted that had presumably succumbed to disease (Photograph 5). A relatively diverse number of tree and shrub species were present included Italian alder, poplars, aspen, goat willow, rowan, hawthorn, field maple, pedunculate oak, etc. Alder was seen with leaf damage that could be caused by alder leaf beetle (*Agelastica alni*) which was considered extinct in Britain between either 1946 or possibly 1958 and 2004 but is now widespread and frequent on OMH and other sites with young alder. (This beetle was recorded on alder whilst walking through Idle Valley Nature Reserve to get to the site).
The tree belts are considered to be of relatively low value because they are young in age, contain little dead or decaying wood either standing or on the ground, are densely shaded in areas as a result of being densely planted, generally lack or support poor ground or herb layers, etc. South or east facing tree belts might be marginally of greater value because of their aspect and in this respect may act as woodland edges.

Regenerating willow/woody scrub

The regenerating woody scrub was most extensive between the fields to the east and south of Bellmoor Farm. This was dominated by willows but also included blackthorn, bramble and other species. Piles of wood were present here – presumably resulting from habitat management. The sandy substrate here presumably represents a drift deposit and may be useful for invertebrates such as bees and solitary wasps. Ragwort was also frequent here and could support significant species such as cinnabar *Tyria jacobaeae* which is a Section 41 Priority Species – Research Only and possibly the Nationally Scarce picture-winged fly *Icterica westermanni* as well as provide for general pollinators.

Plantations

Non-native conifers are generally of low value to native invertebrates so these areas can be ruled out fairly quickly. The main area under consideration here is the plantation south of the field below Bellmoor Farm and north of the lorry park. Plantations with native broad-leaves are much more likely to support a wider variety of native invertebrates. Photographs 6 & 7 show the western margins of the plantations which show heavy disturbance by vehicles along the wayleave.

Lorry park and entrance track

The lorry park was not entered on 15th August 2023, but five photographs of this area have been viewed by the surveyor and the environs of the lorry park was passed by the surveyor

during the walkover. The photographs indicated that OMH was present, but it appears to be limited in extent and subject to frequent disturbance notably by large vehicles but also by localised dumping of aggregate and other materials.
Access permission to enter and survey the lorry park was given in October 2023 and a survey was conducted on 5th October 2023. The bank of mature Leyland Cypress used to screen the lorry park from the arable field to the west was considered to be of low invertebrate value because it is non-native. Mature native broad-leaved trees appear to have been cut down (Photograph 11) to make way for the Leyland Cypress which would have further diminished the site for native invertebrates. Vegetated bunds with ruderals such as teasel, creeping thistle, rosebay, mullein, etc have some value i.e., the micromoth *Endothenia gentianaeana* which has caterpillars that live within teasel heads. Alder leaf beetle was abundant within the lorry park (Photograph 9).
A feature of potential invertebrate interest here are the mature oak trees on the western edge of the lorry park (Photograph 8). These were the most mature trees found on the site and should be retained where possible. The presence of flowering ivy here was also a useful feature, especially for autumnal nectar feeders.
The pine plantation (Photograph 10) to the north of the lorry park was considered to be of low invertebrate value because plant species diversity was low, shade would be high, the density of the trees was high, the soil will be acidic as a result of the conifers, etc. Even so, bark beetle burrows and emergence holes were observed in the pines indicating that the conifers can support a number of insect species. Bracken was also present on the outskirts of the pine plantation and was seen as a negative feature. The wayleave to the north of the lorry park may act as a corridor for insect movement but is getting increasingly scrubbed-up.
Young silver birch scrub and woodland dominated to the east of the lorry park but the young age of the trees, lack of species diversity and lack of an understorey suggest it will be of limited value to invertebrates. Of more value would be to retain the OMH that the birch is encroaching on.
The entrance track to the cement works and lorry park was walked but considered to be of low invertebrate value as was the lorry park.

CONCLUSIONS

The results of the invertebrate scoping survey at Retford Circular Economy Project, Retford, Nottinghamshire on 15th August 2023 and 5th October 2023 are presented. A total of 45 invertebrate species were recorded. The only species of potential interest recorded is the alder leaf beetle which was until relatively recently regarded as Extinct in Britain but is now given Data Deficient status following re-establishment approximately 25 years ago and its subsequent rapid increase in distribution and abundance throughout England at least. All the remaining recorded species are either Local or Common according to Natural England/Joint Nature Conservation Committee.

The main areas and habitats on the site are discussed in connection with their possible value to support native invertebrates. Overall, the site appeared to be of low value to native invertebrates for the reasons given in the report i.e., intensive sheep grazing, lack of hedgerows, young densely planted tree belts, general absence of dead and decaying wood, absence of mature trees/ancient woodland, absence of wetland habitat, presence of non-native conifers, etc.

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TABLE 1: WEATHER AND GROUND CONDITIONS ON THE SURVEYS

APPENDIX: INVERTEBRATES RECORDED FROM RETFORD CIRCULAR ECONOMY PROJECT, RETFORD, NOTTINGHAMSHIRE: AUGUST & OCTOBER 2023

PHOTOGRAPHS

PHOTOGRAPH 1: VIEW FROM LANDFILL LOOKING NORTHEAST TOWARDS LOW FARM ACROSS INTENSIVE SHEEP PASTURE.

PHOTOGRAPH 2: VIEW SOUTHWEST AT SAME POINT AS PHOTOGRAPH 1 SHOWING SMALL AREA OF OPEN MOSAIC HABITAT WITH REGENERATING BIRCH WOODLAND BEHIND.

PHOTOGRAPH 3: ONE OF THE SEMI-IMPROVED FIELDS ON THE LANDFILL BETWEEN LOW FARM AND BELLMOOR FARM SHOWING ONE OF THE TREE BELTS IN THE DISTANCE.

PHOTOGRAPH 4: TYPICAL TREE BELT ON LANDFILL BETWEEN LOW FARM AND BELLMOOR FARM.

PHOTOGRAPH 5: ANOTHER TREE BELT AS ABOVE SHOWING THREE DYING WILLOWS PRESUMABLY AS A RESULT OF DISEASE. LITTLE OTHER DEAD OR DYING WOOD WAS PRESENT IN THESE TREE BELTS.

PHOTOGRAPH 6: WESTERN EDGE OF THE PLANTATION LOOKING NORTHWEST OF THE CEMENT WORKS. HEAVY DISTURBANCE IS APPARENT ALONG THE WAYLEAVE.

PHOTOGRAPH 7: AS ABOVE BUT VIEW IS LOOKING SOUTH. SAME COMMENT ABOUT DISTURBED GROUND ALONG THE WAYLEAVE.

PHOTOGRAPH 8: MATURE OAKS ON THE WESTERN BOUNDARY OF THE LORRY PARK. THESE WERE THE MOST MATURE TREES ENCOUNTERED ON THE SITE.

PHOTOGRAPH 9: ALDER LEAF BEETLE AND LEAF DAMAGE TO ALDER IN THE LORRY PARK ON 5th OCTOBER 2023

PHOTOGRAPH 10: MONOCULTURE PINE PLANTATION SURROUNDING THE LORRY PARK ON 5th OCTOBER 2023. NOTE THE LACK OF BOTANICAL DIVERSITY AND COMPLETE LACK OF AN UNDERSTOREY.

PHOTOGRAPH 11: EDGE OF LORRY PARK WITH LELAND CYPRESS SCREEN BEHIND, VEGETATED BUND WITH RUDERALS BEHIND THE LOG PILE AND CUT LOGS OF BROAD-LEAVED TREES IN THE FOREGROUND. THE LATTER WERE PROBABLY GRUBBED OUT TO MAKE WAY FOR THE FORMER BUT WOULD RESULT IN A LOSS IN INVERTEBRATE BIODIVERSITY.

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