

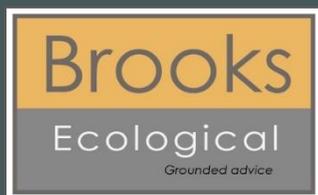
# Land off Darton Lane, Mapplewell



## **Invertebrate Survey**

Report Ref. ER-6517-07

21/11/2023



<b>Report reference</b>	<b>ER-6517-07</b>
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<b>Report duration</b>	In accordance with CIEEM (2019), unless otherwise stated the findings of this report remain valid for a period of 18 months. After this period advice should be sought on the scope of any updating work required.



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## Summary

Brooks Ecology instructed Andy Godfrey (Entomological Consultant) to undertake an invertebrate survey of three linear fields running parallel to and south of Darton Lane (B6131), Mapplewell, Barnsley, South Yorkshire. The site is bordered to the south by a disused railway line which is part wooded on its northern slope. The fields mostly comprise semi-improved grassland bordered by unmanaged species-rich hedgerows invading young woody scrub around the perimeters, sporadic trees and mature woody scrub, ruderals, and damp areas with ponds. This report provides details of survey work undertaken between June and August 2023.

A total of 277 invertebrate taxa were recorded between June and August 2023. These include one Section 41 Priority species, one [Red Data Book 1], one Extinct bug according to Kirby (1992) two pNationally Scarce lauxaniid flies and one [Nb] solitary wasp.

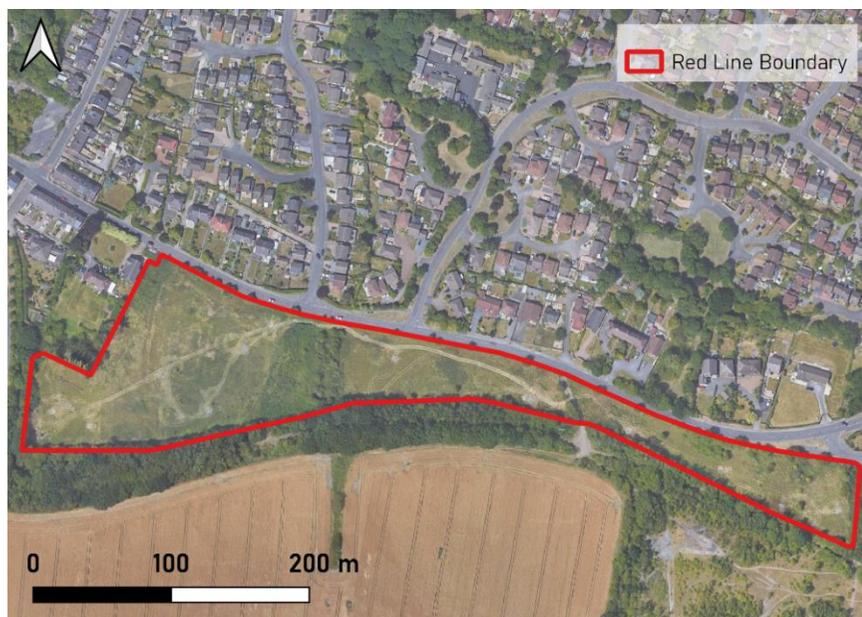
The full species list generated for the site was inputted into Pantheon (where the above rarity definitions are defined) and the data was analysed for significant invertebrate assemblages. The highest scoring Specific Assemblage Type (SAT) was F001 (Scrub edge) with 11 characteristic species, representing 5% of the total species pool. This SAT achieved Favourable status with 11 recorded species with 11 required to achieve Favourable status. Other high scoring assemblages were F002 (Rich flower resource) and, possibly surprisingly, A212 (bark & sapwood decay). Several other assemblages were recorded, and all were found to be in unfavourable condition.

The species of interest suggest that the site is attractive for a wide variety of invertebrates and supports a reasonable number of uncommon species. Some of the significant species recorded were formerly much rarer than they are today and their recent increase in range and abundance is thought to be due to climate change and global warming. It is suggested that the site is worthy of local status.

## Introduction

1. Brooks Ecology instructed Andy Godfrey (Entomological Consultant) to undertake an invertebrate survey of three linear fields running parallel to and south of Darton Lane, Mapplewell, Barnsley, South Yorkshire. The fields mostly comprise semi-improved grassland bordered by unmanaged species-rich hedgerows invading young woody scrub around the perimeters, sporadic trees and mature woody scrub, ruderals, and damp areas with ponds. Photographs of the site are provided at the end of the report.
2. This report provides details of survey work undertaken between June and August 2023.

**Figure 1** Survey boundary



## Methods

### Sampling

3. Sampling methods included the following:
  - Sweep netting of low-growing vegetation and scrub. This is a standard method for aculeate Hymenoptera, Diptera, phytophagous Coleoptera, Hemiptera and several other groups.
  - Direct searching on bare ground, flower-heads, etc and including the field recording of butterflies and other conspicuous invertebrates.

### Weather Conditions

4. The weather on the survey days are detailed in Table 1.

**Table 1:** Weather conditions on the survey dates

Survey date	Weather conditions
4 <sup>th</sup> June 2023	Windspeed 1.2mph maximum, 0.9mph average, temperature 23.3°C, sunny with 20% cloud cover.
12 <sup>th</sup> June 2023	Windspeed 1.5mph maximum, 0.9mph average, 31.6-32.7°C at 12.34, no clouds (100% blue sky). Pond at western end dried-up.
23 <sup>rd</sup> June 2023	Windspeed 0.7mph, 0.6mph average, 22.2°C, 100% thin cloud cover but sunny.
16 <sup>th</sup> August 2023	95% cloud cover, dry but ground damp. Mild, no wind, 25.9°C.
31 <sup>st</sup> August 2023	100% cloud cover. Wet area near gate to 3 <sup>rd</sup> field. Wind 1.3-2mph earlier in day.

### Identification

5. Target groups for terrestrial invertebrates have been identified which are considered by the surveyor to be good habitat indicators. These include Orthoptera (grasshoppers and allies), Odonata (damselflies and dragonflies), shield bugs and grass bugs, selected Coleoptera (beetles), butterflies, day-flying moths, selected Diptera and selected aculeate Hymenoptera (ants, bees and wasps). These have generally been identified to species.
6. As is usually the case with invertebrate surveys, it has not been possible to identify all the material collected. It is relatively easy to collect a large amount of material and because many invertebrates are difficult to identify, it can take many hours to identify the material. Normally, non-target families are left which was the case here. Approximately 60% of the material sampled has been identified and the remaining material will be retained indefinitely.
7. Vouchers of rare and uncommon species have been retained. All material was collected by and identified by Andy Godfrey.

### Pantheon Analysis

8. The species list for the site was downloaded onto the Pantheon website <https://www.brc.ac.uk/pantheon/> for analysis. Pantheon is the latest computer software for analysing invertebrate data to be developed by Natural England. Users import lists of invertebrates (called "samples") into Pantheon, which then matches the species to the preferred name in the UK Species Inventory analysing the sample, attaching associated habitats and resources, assemblage types (adapted from the Invertebrate Species-habitat Information System (ISIS), conservation status, habitat fidelity scores, and other information against them. The analysis then displays many of this data as numerical scores. This information can be used to determine site quality by revealing whether the species list is indicative of good quality habitat, inform on species ecology and assist in management decisions by revealing the key ecological resources. Pantheon will also help to establish a shared terminology for describing invertebrate interest, which will greatly augment invertebrate nature conservation.
9. Not all the macro-invertebrate taxa are included in the database. To date over 13,000 species have been typed, this being about a quarter of the total macro-invertebrate fauna (estimated at 37,000). It remains limited to those taxa and families where there is enough ecological information to give a fair level of coding accuracy. These include species such as beetles, flies, true bugs, moths, bees and many more. A list of groups covered can be found on the Taxon groups' page (under the Data menu). Pantheon focuses on species primarily found in England.

### Rarity Assessment

10. A main aim of the survey was to establish if there are any invertebrate species of high nature conservation interest present on the site. These include UK and local Biodiversity Action Plan species, IUCN, Red Data Book and Nationally Scarce species.
11. A list of UK BAP invertebrates may be viewed on the UK BAP website at [www.ukbap.org.uk](http://www.ukbap.org.uk). A number of species were added to the UK BAP list following a review in 2006/2007 and these species were added for research only. These are generally widespread but rapidly declining moth and butterfly species which were identified as declining by Butterfly Conservation. These species can still be frequent and widespread. In general, the same species are listed with little change in the Countryside and Rights of Way Act (2000) and in the National Environment and Rural Communities (NERC) Act 2006.
12. Rarity statuses such as Red Data Book, Nationally Scarce (previously Notable) and Local have been developed and heavily used by Natural England, the Joint Nature Conservation Committee and associated organisations and are defined in Appendix 3. Since 1995, International Union for Conservation of Nature and Natural Resources (IUCN) categories has been adopted by the Joint Nature Conservation Committee as the new standard for Red Lists in Britain. JNCC aims to work towards assessing the status of all native species against standard criteria based on the internationally accepted guidelines developed by the IUCN (see IUCN, 2001, 2003). Only a few taxonomic groups have been given IUCN codes, but these include the water beetles (Foster 2010) and Diptera belonging to the Empidoidea (Falk and Crossley 2005).

### Limiting Factors

13. Weather on the survey days was good to excellent and consequently this was not a limiting factor.
14. More survey techniques could have been employed which would have sampled a wider range of taxa, but it is felt that the techniques employed are good enough to allow for a baseline assessment of the invertebrate value of the site.

## Results

### Species Richness and Rarity

15. A total of 277 invertebrate taxa were recorded between June and August 2023. These include one Section 41 Priority species, one [Red Data Book 1], one Extinct bug according to Kirby (1992) two pNationally Scarce lauxaniid flies and one [Nb] solitary wasp. These are listed in Appendix 1 and are listed and summarised below. These are listed in Appendix 1.

16. The following significant species were recorded:

#### Section 41 Priority species

*Coenonympha pamphilus* Nymphalidae Lepidoptera

#### [Red Data Book 1]

*Cistogaster globosa* Tachinidae Diptera

#### Extinct in Kirby (1992), no status in Pantheon

*Stictopleurus abutilon* Rhopalidae Hemiptera

#### pNationally Scarce in Falk & Ismay (2016), no status in Pantheon

*Homoneura patelliformis* Lauxaniidae Diptera

*Homoneura thalhammeri* Lauxaniidae Diptera

#### [Nb]

*Tiphia minuta* Tiphidae Hymenoptera

17. The small heath *Coenonympha pamphilus* is widespread and can be relatively frequent on open mosaic and similar pioneer habitats.

18. The parasite fly *Cistogaster globosa* was formerly considered a great rarity but has increased in frequency and spread northwards in recent decades. It parasitises ground living bugs most notably the bishop's mitre *Aelia acuminata* and is typically found in pioneer habitats such as open mosaic habitats, unimproved grassland, calcareous grassland, etc.

19. The ground bug *Stictopleurus abutilon* was recorded in Dorset in 1822, Kent and Hampshire in 1870 and in Ashted, Surrey in 1948. Subsequently, it was considered to be an extinct resident or an occasional migrant. In 1996 the bug was found widely in south-east England having been swept from rough hawk-bit

in three areas in North Hampshire, a mating pair were found in Bedfordshire and there were also records from Essex. The populations persisted and the bug was still present in the Hampshire locality in 1997 and was also found in Middlesex. It was discovered at another site in Middlesex in 1999 and in West Kent in 2000 (Hawkins 2003). The bug is now well established in England with records as far as Yorkshire.

20. This species is not listed as Extinct in Pantheon, but it is in Kirby (1992) and other, more recent literature. It is fairly frequent now and should not be regarded as rare or uncommon in the surveyor's opinion.

21. The lauxaniids *Homoneura patelliformis* & *H. thalhammeri* are widely scattered throughout England as far as the north Midlands and South Yorkshire. They are most commonly found by sweeping scrub, isolated shrubs, trees and adjacent tall herbage or coarse grasses and shows a preference for Sallow (*Salix capreae*) and other *Salix* species on post-industrial sites such as old tips, disused railway lines etc, and may often be found together. The early stages are unknown; larvae of this genus are generally believed to develop in decaying vegetable matter including fallen leaves. The adults recorded from June to September.

22. For reasons it is not clear, neither of these species are listed as pNationally Scarce in Pantheon, but they are in Falk & Ismay (2016).

23. The small black wasp *Tiphia minuta* is widespread throughout Britain. It is local and usually not common. The larvae are parasitic on the larvae of chafers and related beetles (Scarabaeidae).

### Regional Significance

24. No species of Yorkshire significance recorded by Selman et al (1999) were recorded.

### Pantheon Results

25. The full species list generated for the site was inputted into Pantheon. Pantheon recognised a sample size of 271 species of which 233 were analysed giving a return of 86%. Pantheon rejects some species for specific reasons particularly those not identified to species and those not coded into the software. Any misspellings of scientific names or duplicates are dealt with before the data is analysed so these should not be present.

26. The results for the target SATs are summarised in Table 2 and are discussed below. The highest scoring Specific Assemblage Type (SAT) was F001 (Scrub edge) with 11 characteristic species, representing 5% of the total species pool.

This SAT achieved Favourable status with 11 recorded species with 11 required to achieve Favourable status.

27. The next highest scoring SAT was F002 (Rich flower resource) with 9 species corresponding to 4% of the national species pool for this habitat. The SAT achieved unfavourable status because 9 species were recorded and 15 were required, with a couple more survey visits, this SAT could have achieved Favourable condition.
28. The third highest scoring SAT was A212 (bark & sapwood decay) with 4 species, comprising <1% of the national species pool for this habitat. The SAT did not achieve favourable status because only 4 out of the required 19 species were recorded.
29. The fourth highest scoring SAT was F003 (Scrub-heath & moorland) with 3 species forming <1% of the species pool. The SAT did not achieve favourable status with just 3 out of the 9 required species being recorded.
30. Three additional low-scoring SATs were identified by Pantheon as being present. These were F111 (bare sand & chalk), A211 (heartwood decay) and F112 (open short sward). None of the remaining three SATs achieved Favourable status.

**Table 2** Pantheon Assemblage Results for the Invert. Records Recorded In 2023

Code	Sat	No. Spp	% rep	Cons. Status	Site condition
F001	Scrub edge	11	5		Favourable (11 species recorded, 11 required)
F002	Rich flower resource	9	4		Unfavourable (9 species, 15 required)
A212	Bark & sapwood decay	4	<1		Unfavourable (4 species, 19 required)
F003	Scrub-heath & moorland	3	<1		Unfavourable (3 species, 9 required)
F111	Bare sand & chalk	3	<1		Unfavourable (3 species, 19 required)
A211	Heartwood decay	1	<1		Unfavourable (1 species, 6 required)
F112	Open short sward	1	<1	Section 41	Unfavourable (1 species, 13 required)

### Site Assessment

31. Overall, the site appeared botanically and flower-rich and could be favourable to flower-visiting and herbivorous insects.
32. The site supports a variety of grassland types dominated by rank semi-improved grassland with wet grassland and marsh at the western end of the site. Parts of the site are on a slope with the higher ground nearest Darton Lane, so there should be gradations in soil moisture from north to south that may favour different plant and invertebrate species.
33. The species-rich hedgerows will provide food, perching, cover, and a nectar source for a wide range of invertebrates. The fact that the hedgerows are unmanaged and mature will mean that they are likely to be particularly favourable.
34. Sporadic broad-leaved native trees are also useful feature.
35. The species of interest suggest that the site is attractive for a wide variety of invertebrates and supports a reasonable number of uncommon species. Some of the significant species recorded were formerly much rarer than they are today and their recent increase in range and abundance is thought to be due to climate change and global warming. It is suggested that the site is worthy of local status.

## Conclusions

36. A total of 277 invertebrate taxa were recorded between June and August 2023. These include one Section 41 Priority species, one [Red Data Book 1], one Extinct bug according to Kirby (1992) two pNationally Scarce lauxaniid flies and one [Nb] solitary wasp.
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38. The species of interest suggest that the site is attractive for a wide variety of invertebrates and supports a reasonable number of uncommon species. Some of the significant species recorded were formerly much rarer than they are today and their recent increase in range and abundance is thought to be due to climate change and global warming. It is suggested that the site is worthy of local status.

## References

- Falk, S.J. & Crossley, R. (2005) A Review of the Scarce and Threatened Flies of Great Britain. Part 3: Empidoidea. Species Status No. 3. JNCC
- Falk, S. & Ismay, J.W. (2016) A Provisional Assessment of the Status of Acalyptratae Flies in the UK. Natural England Commissioned Report NECR217
- Foster, G. (2010) A Review of the Scarce and Threatened Coleoptera of Great Britain. Part 3: Water beetles of Great Britain. JNCC.
- Hawkins, R.D. (2006) Shieldbugs of Surrey. Surrey Wildlife Trust.
- IUCN (2001) IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, and Cambridge.
- IUCN (2003) Guidelines for the Application of IUCN Red List Criteria at Regional Levels: Version 3.0. IUCN Species Survival Commission. IUCN, Gland, and Cambridge.
- Kirby, P. (1992) A Review of the Scarce and Threatened Hemiptera of Great Britain. UK Nature Conservation No. 2. JNCC.
- National Environment and Rural Communities (NERC) Act 2006.
- Pantheon: <https://www.brc.ac.uk/pantheon/>
- Selman, R. Dodd, F. & Bayes, K. (1999) A Biodiversity Audit of Yorkshire & the Humber. The Yorkshire and Humber Biodiversity Forum.

## Appendix 1: Invertebrates Recorded from Land off Darton Lane, Mapplewell

UK BAP and Nationally Scarce/Notable species have been emboldened in the table below.

### Explanation of Survey Areas

The three fields have been numbered 1, 2 & 3 from east to west in the Appendix.

Column B: Field 1 at the eastern end of the site.

Column C: Fields 2 (middle field) & Field 3 (western end of site)

Column D: Field 1 at the eastern end of the site.

Column E: Fields 2 (middle field) & Field 3 (western end of site)

Column F: Field 1 (at the eastern end of the site and Field 2 (middle field)

Column G: Field 3 at the western end of the site.

SURVEY DATE	04/06/2023	12/06/2023	23/06/2023	23/06/2023	16/08/2023	31/08/2023
SURVEY AREA	Field 1	Fields2+3	Field1	Fields2+3	Fields1+2	Field 3
<i>Arianta arbustorum</i>						1
<i>Monacha cantiana</i>	1			1		
<i>Armadillidium vulgare</i>	1					
<i>Philoscia muscorum</i>						1
<i>Agalenatea redii</i>					1	
<i>Araneus diadematus</i>					1	1
<i>Araniella opisthographa</i>	3			2		
<i>Dictyna arundinacea</i>				1	1	4
<i>Enoplognatha ovata</i>					1	
<i>Larinioides cornutus</i>	1		1	1		5
<i>Pisaura mirabilis</i>						1
<i>Tetragnatha extensa</i>			1			
<i>Xysticus cristatus</i>			1	1	1	2
<i>Dicranopalpus ramosus</i>					1	
<i>Paroligolophus agrestis</i>					1	1
<i>Eriophyes macrorhynchus</i>			10+			
<i>Eriophyes macrochelus</i>			10+		10+	
<i>Phyllocoptes goniothorax</i>			5+	1		5+
<i>Chorthippus brunneus</i>					1	1

SURVEY DATE	04/06/2023	12/06/2023	23/06/2023	23/06/2023	16/08/2023	31/08/2023
SURVEY AREA	Field 1	Fields2+3	Field1	Fields2+3	Fields1+2	Field 3
<i>Chrysopa carnea</i>	1					2
<i>Enallagma cyathigerum</i>	1					
<i>Philaenus spumarius</i>	1	1	1	1	2	1
<i>Pemphigus spyrothecae</i>						5+
<i>Aelia acuminata</i>		1	1		1	
<i>Anthocoris nemorum</i>						1
<i>Anthocoris nemoralis</i>			1			
<i>Closterotomus norwegicus</i>			2	2		
<i>Coreus marginatus</i>	1	1			1	1
<i>Cymus melanocephalus</i>	1	1		1		
<i>Deraeocoris flavilinea</i>			1			
<i>Deraeocoris lutescens</i>	1					1
<i>Dolycoris baccarum</i>						1
<i>Dryophilocoris flavoquadrimaculatus</i>	1					
<i>Elasmotethus interstinctus</i>						1
<i>Elasmucha grisea</i>						3
<i>Kleidocerys resedae</i>	1					2
<i>Leptopterna dolabrata</i>			1	1		
<i>Megaloceraea recticornis</i>				2		
<i>Nabis limbatus</i>						1
<i>Palomena prasina</i>			1			1
<i>Peritrechus geniculatus</i>				1		
<i>Phylus melanocephalus</i>				1		
<i>Pithanus maerkeli</i>		1				
<i>Stenodema calcaratum</i>				1		
<i>Stenodema laevigatum</i>			1		3	3
<i>Stenotus binotatus</i>			12	3		
<b>Stictopleurus abutilon</b>					<b>1</b>	

SURVEY DATE	04/06/2023	12/06/2023	23/06/2023	23/06/2023	16/08/2023	31/08/2023
SURVEY AREA	Field 1	Fields2+3	Field1	Fields2+3	Fields1+2	Field 3
<b>Zicrona caerulea</b>				<b>1</b>		
Limnephilus auricula	1					
Pieris napi/rapae	1				1	
Aglais urticae	1					
Polygonia c-album					1	
Aphantopus hyperantus			1	5+		
<b>Coenonympha pamphilus</b>						<b>1</b>
Maniola jurtina			1	1		1
Pararge aegeria					1	
Pyronia tithonus					1	
Polyommatus icarus	1		1			
Ochlodes venata		1	1			
Plusia gamma				1		
Zygaena sp (larva)				1		
Coptotriche marginea					1	
Grapholita compositella	1					
Lyonetia clerkella						1
Myelois circumvoluta		1				
Phyllonorycter leucographella?						1
Paradromius linearis					2	
Adalia bipunctata			1			
Adalia decempunctata						1
Coccinella septempunctata			1	1		1
Harmonia axyridis			1			
Tytthaspis sedecimpunctata			1		1	
Propylea quattuordecimpunctata				1		
Psyllobora vigintiduopunctata		1				
Rhyzobius litura	1		1			1

SURVEY DATE	04/06/2023	12/06/2023	23/06/2023	23/06/2023	16/08/2023	31/08/2023
SURVEY AREA	Field 1	Fields2+3	Field1	Fields2+3	Fields1+2	Field 3
<i>Malachius bipustulatus</i>	1	1	1	2		
<i>Rhagonycha fulva</i>				1		
<i>Oedemera lurida</i>			1	3	3	1
<i>Oedemera nobilis</i>	1	1	1			
<i>Anthrenus verbasci</i>			15	1		
<i>Strangalia maculata</i>			1	1		
<i>Oulema duftschmidi</i>					1	
<i>Nephrotoma quadrifaria</i>			1	1		
<i>Tipula paludosa</i>			1	1		1
<i>Erioptera trivialis</i>						1
<i>Neolimnomyia adjuncta</i>						2
<i>Molophilus griseus</i>	2					
<i>Ormosia nodulosa</i>				1		
<i>Symplecta stictica</i>	1					
<i>Boreoclytocerus ocellaris</i>						2
<i>Dilophus febrilis</i>					1	
<i>Iteomyia capreae</i>						10+
<i>Ochlerotatus rusticus</i>	1					
<i>Rhegmoclema coxendix</i>		1		1		
<i>Schwenckfeldina carbonaria</i>						2
<i>Beris vallata</i>		1	1	1	1	
<i>Chloromyia formosa</i>				2		
<i>Dioctria linearis</i>				2		
<i>Dioctria rufipes</i>	2					
<i>Dysmachus trigonus</i>	1					
<i>Leptogaster cylindrica</i>		1		1		
<i>Chrysopilus cristatus</i>		1		1		
<i>Rhagio tringarius</i>				1		

SURVEY DATE	04/06/2023	12/06/2023	23/06/2023	23/06/2023	16/08/2023	31/08/2023
SURVEY AREA	Field 1	Fields2+3	Field1	Fields2+3	Fields1+2	Field 3
<i>Drapetis ephippiata</i>			1			
<i>Platypalpus annulatus</i>	2					
<i>Platypalpus calceatus</i>				1		
<i>Platypalpus minutus</i>	5					
<i>Platypalpus optivus</i>	1					
<i>Platypalpus pallidicornis</i>			1			
<i>Platypalpus pallidiventris</i>	1					
<i>Bicellaria vana</i>		2		1	2	5
<i>Hybos culiciformis</i>						1
<i>Oedalea zetterstedti</i>	2					
<i>Rhamphomyia crassirostris</i>	1					
<i>Rhamphomyia tarsata</i>	7					
<i>Empis livida</i>		1	1	2	1	
<i>Empis praevia</i>	1					
<i>Hilara cingulata</i>	5					
<i>Hilara fuscipes</i>	1					
<i>Hilara interstincta</i>	1					
<i>Hilara monedula</i>	3					
<i>Chrysotus gramineus</i>			2	2		
<i>Chrysotus neglectus</i>	4					
<i>Dolichopus festivus</i>			2	1		
<i>Dolichopus griseipennis</i>				1		
<i>Dolichopus trivialis</i>			1	6		
<i>Dolichopus unguatus</i>	3	1				
<i>Dolichopus wahlbergi</i>				1		
<i>Poecilobothrus nobilitatus</i>				1		
<i>Scellus notatus</i>	1					
<i>Sciapus wiedemanni</i>	2					

SURVEY DATE	04/06/2023	12/06/2023	23/06/2023	23/06/2023	16/08/2023	31/08/2023
SURVEY AREA	Field 1	Fields2+3	Field1	Fields2+3	Fields1+2	Field 3
<i>Sympycnus cirripes</i>	1					
<i>Xanthochlorus ornatus</i>	3					
<i>Lonchoptera lutea</i>	1	1				
<i>Cheilosia pagana</i>					1	
<i>Chrysotoxum festivum</i>			1			
<i>Episyrphus balteatus</i>		1				
<i>Eristalis arbustorum</i>						1
<i>Eristalis horticola</i>					1	
<i>Eupeodes luniger</i>	1		4	3		
<i>Leucozona lucorum</i>				1		
<i>Melanogaster hirtella</i>		1				
<i>Melanostoma mellinum</i>		1		1	2	1
<i>Myathropa florea</i>				1		
<i>Neoascia tenur</i>		2				
<i>Platycheirus scutatus</i>					1	
<i>Sphaerophoria scripta</i>			3	1	2	
<i>Syrphus ribesii</i>				1		1
<i>Syrphus vitripennis</i>			1			
<i>Sicus ferrugineus</i>				1		
<i>Cerajocera tussilaginis</i>				1		
<i>Chaetostomella cylindrica</i>		4	1	3		
<i>Chaetorellia jaceae</i>				1		
<i>Tephritis cometa</i>						1
<i>Tephritis formosa</i>	1	1	1	1		
<i>Terellia ruficauda</i>		3		1		
<i>Urophora jaceana</i>		6		5		
<i>Urophora jaceana</i> group			8	11		
<i>Urophora quadrifasciata</i>		4		7		

SURVEY DATE	04/06/2023	12/06/2023	23/06/2023	23/06/2023	16/08/2023	31/08/2023
SURVEY AREA	Field 1	Fields2+3	Field1	Fields2+3	Fields1+2	Field 3
<i>Urophora stylata</i>		1		1		
<i>Palloptera modesta</i>						1
<i>Silba fumosa</i>	1					
<i>Calliopum aeneum</i>	5					
<i>Calliopum elisae</i>					1	
<b><i>Homoneura thalhammeri</i></b>	<b>2</b>					
<b><i>Homoneura patelliformis</i></b>			<b>1</b>			
<i>Meiosimyza rorida</i>						3
<i>Meiosimyza subfasciata</i>						1
<i>Minettia rivosa</i>		2	5	2	2	
<i>Sapromyza sordida</i>		1				
<i>Sapromyza quadripunctata</i>			3	3		2
<i>Tricholauxania praeusta</i>	2					1
<i>Geomyza nartshukae</i>					1	
<i>Geomyza tripunctata</i> s.l.						1
<i>Opomyza florum</i>					4	2
<i>Opomyza germinationis</i>			1	1	3	2
<i>Sepsis cynipsea</i>			1		1	1
<i>Sepsis fulgens</i>			3			
<i>Sepsis orthocnemis</i>			1		1	
<i>Sepsis punctum</i>		1				
<i>Coremacera marginata</i>					1	
<i>Pherbellia cinerella</i>					1	
<i>Tetanocera elata</i>			1			
<i>Tetanocera ferruginea</i>				1		
<i>Agromyza reptans/pseudoreptans</i>			1	1		
<i>Cerodontha denticornis</i>	1					3
<i>Phytomyza cirsii</i>						1

SURVEY DATE	04/06/2023	12/06/2023	23/06/2023	23/06/2023	16/08/2023	31/08/2023
SURVEY AREA	Field 1	Fields2+3	Field1	Fields2+3	Fields1+2	Field 3
<i>Phytomyza horticola/syngenesiae</i>					1	
<i>Phytomyza lappae</i>			1		1	
<i>Phytomyza pastinacae/sphondylii</i>						1
<i>Phytomyza ranunculi</i>					1	1
<i>Anthomyza collini</i>			2			
<i>Anthomyza gracilis</i>				1	1	27
<i>Camarota curvipennis</i>			1			
<i>Conioscinella frontella</i>			1			
<i>Dicraeus vagans</i>	1	3	24	14		
<i>Elachiptera pubescens</i>					2	1
<i>Lasiosina cinctipes</i>						1
<i>Meromyza femorata</i>					1	
<i>Neohaplegis glabra</i>			1			
<i>Oscinella nitidissima</i>			1			
<i>Thaumatomyia glabra</i>	2					
<i>Thaumatomyia notata</i>	1					1
<i>Tricimba cincta</i>			1		1	5
<i>Asteia amoena</i>			1			1
<i>Camilla flavicauda</i>	17					
<i>Suillia bicolor</i>	2					
<i>Suillia humilis</i>	1					
<i>Trixoscelis obscurella</i>	2					
<i>Drosophila phalerata</i>						1
<i>Scaptomyza pallida</i>			7	5	1	1
<i>Hyadina guttata</i>						1
<i>Hydrellia griseola</i>			2			2
<i>Hydrellia maura</i>					1	

SURVEY DATE	04/06/2023	12/06/2023	23/06/2023	23/06/2023	16/08/2023	31/08/2023
SURVEY AREA	Field 1	Fields2+3	Field1	Fields2+3	Fields1+2	Field 3
<i>Limnellia quadrata</i>						1
<i>Psilopa nitidula</i>					1	3
<i>Scatella tenuicosta</i>						1
<i>Lotophila atra</i>					1	1
<i>Scathophaga stercoraria</i>	1	1			1	
<i>Amobia signata</i>				1		
<i>Sarcophaga carnaria</i>		1				
<i>Sarcophaga incisilobata</i>					1	
<i>Sarcophaga subvicina</i>				2		
<i>Sarcophaga vagans</i>					1	
<i>Sarcophaga variegata</i>		1				
<i>Lucilia bufonivora</i>				1		
<i>Melanomya nana</i>			1		1	
<i>Pollenia amentaria</i>				1		
<i>Pollenia angustigena</i>					1	
<i>Pollenia rudis</i>			1	3		
<i>Phyto discrepans</i>			1			
<i>Rhinophora lepida</i>			1			
<i>Anthomyia liturata</i>					16	9
<i>Anthomyia procellaris</i>	1				1	
<i>Botanophila brunneilinea</i>			3	10	7	2
<i>Botanophila fugax</i>			5	12		
<i>Botanophila striolata</i>			1			
<i>Delia florilega</i>	2	2		1		
<i>Delia platura</i>		5	11	5		
<i>Delia radicum</i>					3	1
<i>Hylemya urbica</i>					1	
<i>Hylemya vagans</i>	3					

SURVEY DATE	04/06/2023	12/06/2023	23/06/2023	23/06/2023	16/08/2023	31/08/2023
SURVEY AREA	Field 1	Fields2+3	Field1	Fields2+3	Fields1+2	Field 3
<i>Lasiomma seminitidum</i>	1					
<i>Paregle audacula</i>			2		1	
<b><i>Pegomya meridiana</i></b>				<b>1</b>		
<i>Pegomya solennis</i>	3					
<i>Fannia armata</i>	10					
<i>Fannia lustrator</i>	1					
<i>Helina evecta</i>	4				1	1
<i>Muscina prolapsa</i>		1				
<i>Phaonia errans</i>					1	
<b><i>Cistogaster globosa</i></b>			<b>1</b>			
<i>Eriothrix rufomaculata</i>			1		7	
<i>Meigenia mutabilis</i>					1	
<i>Phasia pusilla</i>					4	
<i>Phasia barbifrons</i>					1	
<i>Eupontania pedunculi</i>						1
<i>Andricus quercuscalicis</i>					5+	5+
<i>Diplolepis rosae</i>					1	
<i>Diplazon laetatorius</i>						1
<i>Lasius niger</i>	1		1		1	
<i>Myrmica rubra</i>			1	1		
<i>Anteon brachycerum</i>	1					
<i>Vespula germanica</i>			1			
<i>Vespula vulgaris</i>				1		1
<i>Tiphia minuta</i>			1			
<i>Crossocerus ovalis</i>	1	1				
<i>Crossocerus podagricus</i>				1		
<i>Bombus jonellus</i>	1					
<i>Bombus lapidarius</i>	1					1

SURVEY DATE	04/06/2023	12/06/2023	23/06/2023	23/06/2023	16/08/2023	31/08/2023
SURVEY AREA	Field 1	Fields2+3	Field1	Fields2+3	Fields1+2	Field 3
<i>Bombus pascuorum</i>					1	1
<i>Bombus terrestris</i>	1		1	1		
<i>Colletes daviesanus</i>			1	5		
<i>Hylaeus communis</i>			2	1		
<i>Hylaeus brevicornis</i>			1	2		
<i>Hylaeus hyalinatus</i>		1	1			
<i>Lasioglossum leucopus</i>				1		

## Appendix 2: Photographs

**Photograph 1:** Photograph taken 4th June 2023 showing eastern end of site.



**Photograph 2:** Photograph Taken 4th June 2023 Showing Eastern End Of Site.



**Photograph 3:** Photograph Taken 4th June 2023 Looking Towards The Western End Of The Site.



## Appendix 3: Invertebrate Status Categories

For the purposes of evaluating invertebrate faunas and priorities for conservation action, invertebrates are attributed various rarity status categories, the meanings of which are given below. Criteria for the selection of species into Red Data Book categories one to five follow Shreeve (1987), with minor modifications derived from Hyman & Parsons (1992) and Hyman & Parsons (1993). Categories RDBI (Indeterminate) and RDBK (Insufficiently Known) are based on the criteria used by Wells, Pyle and Collins (1983). Criteria for the selection of Nationally Scarce species follow Eversham (1983) and Ball (1986).

### Red Data Book Category 1. RDB1 - ENDANGERED

**Definition.** Taxa in danger of extinction in Great Britain and whose survival is unlikely if the causal factors continue operating.

Included are taxa whose numbers have been reduced to a critical level or whose habitats have been so dramatically reduced that they are deemed to be in immediate danger of extinction. Also included are some taxa that are possibly extinct.

**Criteria.** Species, which are known or believed, to occur as only a single population within one 10km square of the National Grid.

Species, which only occur in habitats known to be especially vulnerable.

Species, which have shown a rapid and continuous decline over the last twenty years and are now estimated to exist in five or fewer 10km squares.

Species which are possibly extinct but have been recorded this century but which if rediscovered would need protection.

### Red Data Book Category 2. RDB2 - VULNERABLE

**Definition.** Taxa believed likely to move into the Endangered category in the near future if the causal factors continue operating.

Included are taxa of which most or all of the populations are decreasing because of over-exploitation, extensive destruction of habitat or other environmental disturbance; taxa with populations that have been seriously depleted and whose ultimate security is not yet

assured; and taxa with populations that are still abundant but are under threat from serious adverse factors throughout their range.

**Criteria.** Species declining throughout their range.

Species in vulnerable habitats.

### Red Data Book Category 3. RDB3 - RARE

**Definition.** Taxa with small populations in Great Britain that are not at present Endangered or Vulnerable but are at risk.

These taxa are usually localized within restricted geographical areas or habitats or are thinly scattered over a more extensive range.

**Criteria.** Species, which are estimated to exist in only 15 or fewer 10km squares. This criterion may be relaxed where populations are likely to exist in over 15 10km squares but occupy small areas of especially vulnerable habitat.

### Red Data Book Category 4. RDB4 - OUT OF DANGER

**Definition.** Taxa formerly meeting the criteria of one of the aforementioned categories, but which are now considered relatively secure because effective conservation measures have been taken or the previous threat to their survival in Great Britain has been removed.

### Red Data Book Category 5. RDB5 - ENDEMIC

**Definition.** Taxa, which are not known to occur naturally outside Great Britain. Taxa within this category may also be in any of the other RDB categories or not threatened at all.

There are few truly endemic species in Great Britain. Most that have been identified are in fairly obscure groups, which are relatively poorly known, and the species may well eventually be discovered elsewhere in Europe.

### Red Data Book Appendix. RDBApp. - EXTINCT

**Definition.** Taxa which formerly had breeding populations in Great Britain, but which are now believed to have died out. (Taxa not recorded since 1900)

**Red Data Book Category I. RDB I - INDETERMINATE**

Definition. Taxa considered being Endangered, Vulnerable or Rare, but where there is not enough information to say which of the three categories (RDB1 to 3) is appropriate.

**Red Data Book Category K. RDBK - INSUFFICIENTLY KNOWN**

Definition. Taxa that are suspected, but not definitely known, to belong to any of the aforementioned categories, because of lack of information.

Criteria. Taxa recently discovered or recognized in Great Britain, which may prove to be more widespread in the future (although some recent discoveries may be placed in other categories if the group to which they belong is thought not to be under-recorded).

Taxa with very few or perhaps only a single known locality but which belong to poorly recorded or taxonomically difficult or unstable groups.

Species with very few or perhaps only a single known locality, inhabiting inaccessible or infrequently sampled but widespread habitats, such as some northern moorland species, species associated with some agricultural situations and species which are adult only during the winter.

Species with very few or perhaps only a single known locality and of questionable native status, but not clearly falling into the category of recent colonist, vagrant or introduction.

**Provisional Red Data Book. pRDB**

Definition. The prefix 'p' before any Red Data Book category implies that the grading is provisional. In the majority of cases this means that the species' status has been reconsidered and changed in a Species Group Review produced subsequent to the publication of the relevant Red Data Book.

(continued) The statuses so given are described as provisional, pending the publication of a future edition of that Red Data Book. These statuses are, however, based upon a greater amount of evidence than was available for the original Red Data Book and therefore are more likely to be a true representation of the species' actual status. The prefix 'p' is also used for RDB status categories in groups where

a Red Data Book has not yet been produced but is in preparation or is used for species in groups covered by the original Red Data Book, where it is considered that there is evidence that the original grading was incorrect or that there has been a genuine change in status of the taxon.

**Nationally Scarce (Notable) Species**

The term 'Nationally Scarce' was adopted and replaced the term 'Notable' during the compilation of the Guidelines for the Selection of Biological SSSIs. The two terms are thus interchangeable but 'Nationally Scarce' is preferable.

Ball (1986) discusses the allocation of species to Nationally Scarce categories:

*"The Invertebrate Site Register project includes the preparation of National Species Reviews which seek to identify and document uncommon species. The criteria used have been based directly on those evolved by botanists and two levels of 'National Notability' have been used. These are Notable A, for species known to occur in 30 or less 10km squares of the National Grid and Notable B for those known from 100 or less squares.*

*Although this system can be used directly with well-recorded groups like Dragonflies, Butterflies and Grasshoppers; when dealing with many other groups of insects, the level of recording is not sufficient to apply the criteria rigorously. A combination of three alternative approaches has been employed:*

- 1. The approximate number of squares in which a species may occur can be estimated by looking at the number it has been recorded from as a proportion of the total in which the whole group (e.g., its family) has been recorded.*
- 2. Coarser measurements such as the number of vice-counties in which a species has occurred can be used (7 or less for Notable A, 20 or less for Notable B).*
- 3. Experts can be asked to use their field experience to judge the status of species in their particular specialist group against others with a better-established status. By consulting as many people as possible and getting a consensus of their views, geographical and personal biases can be minimized.*

*In some groups in which widespread interest and recording is a rather recent phenomenon, no attempt has yet been made to separate Notable A and Notable B species, and all Nationally Notable species are simply graded 'Notable'."*

**Nationally Scarce (Notable). N - NOTABLE**

Definition. Species, which are estimated to occur in 16 to 100 10km squares in Great Britain. The subdividing of this category into Nationally Scarce A and Nationally Scarce B has not been attempted for some species because of either the degree of recording that has been carried out in the group to which the species belongs, or because there is some other reason why it is not sensible to be so exact.

**Nationally Scarce (Notable) Category A. Na - NOTABLE A**

Definition. Taxa which do not fall within RDB categories, but which are uncommon in Great Britain and thought to occur in 30 or fewer 10km squares of the National Grid or, for less well recorded groups, within 7 or fewer vice-counties.

**Nationally Scarce (Notable) Category B. Nb - NOTABLE B**

Definition. Taxa which do not fall within RDB categories, but which are uncommon in Great Britain and thought to occur in between 31 and 100 10km squares of the National Grid or, for less well recorded groups, between 8 and 20 vice-counties.

**Regionally Scarce (Notable). Nr - NOTABLE**

Definition. Species which are considered to occur in 5 or less 10km squares in an area equivalent in size to a region of the old Nature Conservancy Council or larger, approximately one eighth the total area of England.

Such statuses were worked out during the compilation of the Invertebrate Site Registers. They cover various groups in Scotland, in northern England as a whole, in northeast and northwest England, in vice-county Yorkshire and in the east Midlands and East Anglia. They were worked out by local entomologists.

**LOCAL**

Definition. The term is not rigidly defined, but loosely means species confined to a particular habitat type (usually associated with better quality examples of that habitat), a particular geographic area, or species that are too widespread to warrant Nationally Scarce (Notable)

status but are nevertheless infrequently encountered.

**COMMON**

Definition. Common or very widespread species frequently recorded.

**SYNANTHROPIC SPECIES**

Definition. Species dependent upon man, his buildings, livestock or crops.

**UNKNOWN**

Definition. Species where no status has been attributed. There may be confusion over the species' taxonomy, it may belong to a poorly recorded group or may occur in an infrequently sampled habitat. As a species is entered into the Invertebrate Site Register or RECORDER, the status automatically defaults to 'Unknown'. Certain common or local species may therefore occasionally appear in this category if there has been no necessity to use the species record.