Ballard Meadow

Insect Survey

Survey and Report by
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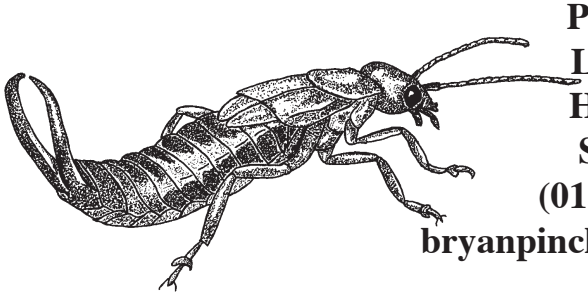
December 2023



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Ballard Meadow,
New Milton, Hampshire

Insect Survey 2022

CONTENTS

1.1 Summary

This report summarises the results of survey work to record the terrestrial insect species present in Ballard Water Meadow and adjacent woodland in New Milton, Hampshire.

Six visits were made, one each in April to September 2022 to record terrestrial insects in a number of orders.

Survey involved sweep-netting the available vegetation and some direct searching for species at flowers across the whole site. Insect groups covered by the survey are presented in Section 1.3.

Tables showing the species recorded are presented in Section 1.4.

Twenty-one species which hadn't previously been recorded here were added to the insect species database during this survey , this included one Nationally Scarce species.

Species were identified in the field wherever possible, but due to identification difficulties with some species, some were retained and identified with the aid of a microscope. Reference material has been retained in the collection of the surveyor, surplus material has been donated to the collections of the National Biodiversity Data Centre, Waterford, Eire and/or Portsmouth City Museum Service.

Two Nationally Scarce species (both woodland- associated beetles)were recorded, information about these species is presented in Section 1.5.

An overview of the results is presented in Section 1.6.

Appendices show all species recorded at Ballard Water Meadow and adjacent woodland over the course of surveys in 2020, 2021 and 2022 as combined lists.

This survey was commissioned and funded by the Friends of Ballard Water Meadow and New Milton Town Council.

1.2 Introduction

Ballard Water Meadow and Woodland is a 2.73 hectare grassland and 1.52 hectare woodland located in New Milton, Hampshire. Grid Reference SZ241956.
Both the meadow and woodland are afforded SINC status and are leased by New Milton Town Council for nature conservation and public recreation. The meadow is an example of relic unimproved New Forest grassland, while the woodland is considered to be ancient semi-natural woodland (Lord, 2020).

The major habitats available are the unimproved grassland of meadow, which in places is dry and others wet at certain times of the year. A seasonal stream runs along the eastern border of the site and seasonal ditches divide the site. The woodland strip on the west of the site comprises mainly Oak (*Quercus rober*) with deciduous and evergreen scrub understory. A limited amount of ground flora is present in the woodland. On the whole, the meadow and woodland are on gently sloping ground running from north-west to south-east.

Survey of the terrestrial insects was first undertaken in 2020 (Pinchen) and repeated in 2021, a regular butterfly transect is also walked. This current survey repeats those two earlier surveys.

Six visits were made to record the terrestrial insects during 2022. The data collected forms the basis of this report. Survey visits were undertaken on 14th April, 13th May, 14th June, 13th July, 15th August and 12th September 2022.

Survey involved sweep-netting the available vegetation and some direct searching at flowers with a standard sweep/insect net.

Two Nationally Scarce species were recorded during this survey.
Twenty-one species which hadn't previously been recorded here were added to the insect database for the site.
Weather conditions throughout the survey period were rather mixed. July saw higher than average temperatures which continued into August and September leading to much of the site becoming dryand parched by late summer this would have impacted insect species and numbers recorded.

1.3 Survey Groups and Methodology

Survey was largely undertaken by means of sweep-netting the vegetation with the aim of dislodging species resting on foliage or feeding at flowers. Occasionally direct searching (where species with known plant hosts may be present) was employed as the main survey technique. Some species, such as the lepidoptera (butterflies) and odonata (dragonflies and damselflies) were primarily recorded flying through/around the survey area. Without thorough searches for their larval stages many species in these groups, it is often difficult to determine which are breeding on site and those which are casual users of the site for feeding, roosting or hibernating.

The following insect groups were surveyed/recorded and their reason for attention in this survey highlighted:

Mecoptera: Scorpion flies
Only three species are recorded in Britain all can be found in most habitats, adults are often recorded in abundance. Larvae feed on decaying matter.

Neuroptera: Lacewings and allies
The majority of species are aphid feeders in their larval stage, adults can usually be found resting on vegetation during the day.

Odonata: Dragonflies and Damselflies
All species develop in watercourses where they are predatory on other invertebrates. Adult males fly long distances, often away from water to feed, females stay close to water courses and pools. While adults are easy to record in any habitat, breeding on a site can only be proven if searches are made for the larval stages or exuviae.

Orthoptera: Bush Crickets and Grasshoppers and allies
Many species are specific to grassland habitatswith some scrub element.

Heteroptera: True Bugs (terrestrial species)
Many species in this group are host plant specific where they feed on plant sap, a number of species are predatory on other insects, they are best surveyed by sweep-netting vegetation.

Trichoptera: Caddisflies
All species are aquatic in their larval stage with adults flying in suitable terrestrial habitat nearby.

Lepidoptera: Butterflies
A number of species are specific to grassland habitat but are usually reliant on established and relatively undisturbed habitats, all species were recorded on a casual basis.

Diptera: Hoverflies
A number of species are specific to wetland, grassland and scrub habitats but the majority are generalist in their habitats.

Diptera: Larger Brachycera (Snipeflies, Horseflies, Soldierflies, Robberflies and Beeflies)
A number of species are specific to wetland habitats. In the larval stages they live either as parasites in and on other insects, within decaying plant matter or in mud.

Diptera: Snail-killing Flies
All of the species feed within the shells of specific snail species and occasionally slugs, usually in

wetland habitats, only a few species live in drier habitats where they develop in terrestrial snails.

Diptera: Picture-winged Flies

All of the species are plant host specific developing as maggots within plant stems, flowerheads or seed heads.

Diptera: Conopid Flies(Beegrabbers)

All of the species in this family parasitise solitary and social bees and wasps, either at their nest sites or by searching for adults foraging at flowers.

Diptera: Tachinid Flies

All of the species are parasites that spend their larval stages feeding within or on other insects e.g. lepidoptera caterpillars and shieldbugs.

Hymenoptera: Aculeates

Many bee, ant and wasp species nest in bare soils in warm sunny locations, each female bee or wasp excavates a series of burrows to provision them with nectar and/or pollen or live prey for their growing larvae to feed on. All species feed at flowers for nectar or pollen, while many species also feed on terrestrial invertebrates which are captured at flowers. Ants often nest in warm, highly thermophilic sites in grassland or bare and sparsely vegetated substrates.

Coleoptera: Only a limited number of coleoptera groups were surveyed for, these were Ladybirds. Soldier Beetles, Malachite Beetles, Click Beetles and Longhorn Beetles, no other beetle groups were encountered during the survey.

Ladybirds

Ladybirds occur in a range of habitats with few species being specific to this habitat. Due to the ease of recording and identifying the group they were recorded on a casual basis.

Soldier Beetles

This group of mainly predatory species contain a number of brightly-coloured adults which can be found often in numbers at flowers and are often encountered in sweep-net samples.

Malachite Beetles

A small group of attractively coloured beetles that are predatory as larvae but feed on pollen as adults, they are often common in sweep-net samples.

Longhorn Beetles

A large group of often brightly coloured beetles that in most species develop as larvae inside dead timber or plant stems. Adults are often encountered nectaring at flowers.

1.4. Species Recorded

The following tables show all insects recorded during the survey. The species lists and nomenclature follow the most recently available checklists for each group. As a prelude to the species lists notes on the habitat and plants flowering in each survey area are provided. The hoverfly checklist is currently in the process of being reorganised so for ease, species are presented here in alphabetical order. Species marked with an asterisk (*) are Red Data Book or Nationally Scarce and details of these can be found in Section 1.5.

The Meadow

Major forage resources (nectar and pollen) available across the meadow as a whole during the first two months of the survey period and comprised Lesser Celandine (*Ranunculus ficaria*), Blackthorn (*Prunus spinosa*), Hawthorn (*Crateagus monogyna*), Dandelion (*Taraxacum officinale* agg.), Hemlock Water-dropwort (*Oenanthe crocata*), Buttercup (*Ranunculus* sp). During the middle two months, Bird's Foot Trefoil (*Lotus* sp), Red Clover (*Trifolium pratense*), Hogweed (*Heracleum sphondylium*), Hemlock Water-dropwort, White Clover (*Trifolium repens*), Creeping Thistle (*Cirsium arvense*) and Meadowsweet (*Filipendula ulmaria*) were dominant. In the final two months of the survey forage resources had diminished markedly, leaving just a few small areas of Greater Bird's Foot Trefoil (*Lotus pedunculatus*), Hogweed, Water Mint (*Mentha aquatica*), Black Knapweed (*Centaurea nigra*) and Meadowsweet. By the time of the August visit much of the grassland was dry and parched except for the south-east corner of the South meadow. Two small sections of the South Meadow were cut in June and a section of the Middle meadow was cut in late August cattle were grazing the whole meadow area at the time of the September visit.

1.4.1 South Meadow

Group/ Visit Date	**14 Apr**	**13 May**	**14 Jun**	**13 Jul**	**15 Aug**	**12 Sept**
Neuroptera: Lacewings						
Chrysoperla carnea				*		
Orthoptera: Bush Crickets						
Metrioptera roeselii				*	*	
Conocephalus discolor			*	*		*
Leptophyes punctatissima				*		
Grasshoppers						
Chorthippus brunneus				*	*	*
Pseudochorthippus parallelus		*	*	*	*	
Heteroptera: True Bugs						
Gerris lacustris (in ditch)	*		*			
Closterotomus norwegicus			*	*		
Capsus ater			*			
Apolygus lucorum			*			
Lygocoris pabulinus			*	*		
Orthops basalis				*		
Orthops campestris		*		*		
Stenotus binotatus			*	*		
Leptopterna dolobrata			*			
Notostira elongata		*	*	*		*

Group/ Visit Date	14 Apr	13 May	14 Jun	13 Jul	15 Aug	12 Sept
Stenodema calcarata		*				
Stenodema laevigata		*		*	*	*
Trignotylus ruficornis				*		
Lopus decolor				*		
Macrotylus solitarius					*	
Plagiognathus arbustorum				*		
Plagiognathus chrysanthemi				*		
Coreus marginatus		*	*		*	*
Eurygaster testudinaria			*		*	
Palomena prasina				*		
Piezodorus lituratus		*				
Lepidoptera: Butterflies						
Thymelicus sylvestris				*		
Thymelicus lineola				*		
Gonepteryx rhamni	*					
Pieris brassicae		*		*		
Pieris napi		*				
Celastrina argiolus	*					
Vanessa atalanta					*	
Pararge aegeria	*			*		
Pyronia tithonus				*		
Maniola jurtina			*	*		
Diptera: Hoverflies						
Cheilosia albitarsus		*				
Cheilosia illustrata			*	*		
Cheilosia pagana		*	*			
Chrysotoxum bicinctum					*	
Episyrphus balteatus			*	*		
Eristalis pertinax	*			*		
Eumerus funeralis					*	
Eumerus strigatus		*				
Helophilus pendulus			*			
Melanostoma mellinum	*					
Melanostoma scalare		*	*			
Pipiza noctiluca			*			
Platycheirus albimanus	*		*	*		
Platycheirus clypeatus	*	*				
Platycheirus rosarum			*			
Scaeva selentica					*	
Sphaerophoria scripta		*	*	*		
Syritta pipiens				*		
Syrphus ribesii	*		*		*	
Larger Brachycera						
Chrysopilus cristatus				*		
Rhagio scolopaceus		*				
Rhagio tringarius			*			
Tabanus sudeticus				*		
Beris vallata		*	*	*		
Chloromyia formosa			*	*		
Leptogaster cylindrica			*	*		
Snail-killing Flies						

Group/ Visit Date	**14 Apr**	**13 May**	**14 Jun**	**13 Jul**	**15 Aug**	**12 Sept**
Hydromya dorsalis			*			
Ilione albiseta						*
Tetanocera arrogans			*			
Picture-winged Flies						
Euleia heraclei		*				
Terellia ruficauda				*		
Conopid Flies						
Conops flavipes					*	
Tachinid Flies						
Eriothrix rufomaculata				*	*	
Thelaira nigripes				*		
Hymenoptera: Aculeates						
Ants						
Lasius flavus				*	*	*
Lasius niger		*	*			
Myrmica rubra		*			*	
Social Wasps						
Vespula vulgaris			*	*	*	*
Solitary Wasps						
Ectemnius continuus		*				
Solitary Bees						
Hylaeus communis				*		
Andrena haemorrhoa		*				
Andrena semilaevis		*				
Andrena subopaca			*		*	
Andrena wilkella		*				
Lasioglossum calceatum					*	
Lasioglossum pauxillum		*				
Lasioglossum morio	*					
Nomada goodeniana	*					
Social Bees						
Bombus hortorum				*		
Bombus pascuorum	*	*	*	*	*	*
Bombus pratorum		*				
Bombus terrestris	*	*	*			
Apis mellifera		*	*	*		
Coleoptera: Soldier Beetles						
Cantharis flavilabris			*			
Cantharis pallida			*			
Cantharis rustica		*				
Rhagonycha fulva				*		
Malachite Beetles						
Malachius bipustulatus		*	*			
Ladybirds						
Propylea 14-punctata			*	*		
Coccinella 7-punctata				*		*
Longhorn Beetles						
Rutpela maculata				*		

1.4.2 Middle Meadow

Group/ Visit Date	**14 Apr**	**13 May**	**14 Jun**	**13 Jul**	**15 Aug**	**12 Sept**
Orthoptera: Grasshoppers						
Chorthippus brunneus				*	*	*
Pseudochorthippus parallelus				*	*	
Dermaptera: Earwigs						
Forficula auricularia					*	
Trichoptera: Caddisflies						
Limnephilus affinis						*
Limnephilus auricula	*					
Limnephilus centralis	*					
Heteroptera: True Bugs						
Closterotomus norwegicus			*	*		
Capsus ater				*		
Apolygus lucorum			*			
Lygocoris pabulinus			*			
Orthops campestris				*		
Stenotus binotatus			*	*		
Leptopterna dolobrata			*			
Notostira elongata			*		*	*
Pithanus maerkelii			*	*		
Stenodema calcarata		*				
Stenodema laevigata		*	*	*	*	*
Trignotylus ruficornis				*		
Macrotylus solitarius					*	
Plagiognathus arbustorum				*		
Drymus sylvaticus			*			
Coreus marginatus		*	*	*		
Eurygaster testudinaria				*	*	
Aelia acuminata					*	*
Dolycoris baccarum				*	*	
Palomena prasina					*	
Trichoptera: Caddisflies						
Limnephilus affinis						*
Lepidoptera: Butterflies						
Thymelicus slyvestris				*		
Thymelicus lineola				*		
Pieris brassicae		*		*		
Pieris rapae				*		
Anthocharis cardamines		*				
Lycaena phlaeus		*				
Polyommatus icarus				*		
Celastrina argiolus		*				
Aglais urticae	*					
Pararge aegeria					*	

Group/ Visit Date	14 Apr	13 May	14 Jun	13 Jul	15 Aug	12 Sept
Maniola jurtina			*	*	*	
Diptera: Hoverflies						
Chrysotoxum bicinctum				*		
Episyrphus balteatus			*			
Eumerus funeralis		*				
Melanostoma scalare			*			
Merodon equestris			*			
Pipiza noctiluca					*	
Platycheirus albimanus	*					
Platycheirus clypeatus	*	*	*			
Sphaerophoria scripta	*	*	*			
Syritta pipiens		*		*		
Syrphus ribesii				*		
Larger Brachycera						
Rhagio tringarius			*			
Pachygaster leachii				*		
Chloromyia formosa			*			
Sargus bipunctatus						*
Leptogaster cylindrica			*			
Snail-killing Flies						
Pherbellia ventralis	*					
Limnia unguicornis		*				
Picture-winged Flies						
Urophora jaceana				*		
Sphenella marginata				*	*	*
Conopid Flies						
Conops quadrifasciatus				*		
Physocephala rufipes					*	
Sicus ferrugineus				*		
Tachinid Flies						
Eriothrix rufomaculata				*		
Hymenoptera: Aculeates						
Ants						
Lasius niger					*	
Myrmica rubra					*	
Social Wasps						
Vespula vulgaris				*		*
Solitary Wasps						
Cerceris rybyensis				*		
Solitary Bees						
Hylaeus communis				*		
Andrena subopaca		*	*		*	
Andrena wilkella		*				
Halictus tumulorum		*			*	
Lasioglossum albipes		*				
Lasioglossum calceatum		*				
Lasioglossum morio	*					
Osmia bicornis		*				
Nomada striata		*				
Nomada fabriciana			*			

Group/ Visit Date	14 Apr	13 May	14 Jun	13 Jul	15 Aug	12 Sept
Social Bees						
*Bombus lucorum/terrestris^*			*	*		
Bombus pascuorum		*		*	*	
Bombus terrestris	*					
Bombus vestalis	*					
Apis mellifera		*	*			
Coleoptera: Soldier Beetles						
Cantharis flavilabris			*	*		
Cantharis rusticus			*			
Rhagonycha fulva				*		
Rhagonycha testacea		*				
Malachite Beetles						
Malachius bipustulatus		*				
Click Beetles						
Agriotes acuminatus		*				
*Ampedus quercicola**		*				
Ladybirds						
Calvia 14-guttata	*					
Propylea 14-punctata				*		
Harmonia axyridis			*			
Coccinella 7-punctata			*	*		
Longhorn Beetles						
Grammoptera ruficornis		*				

1.4.3 North Meadow

Group/ Visit Date	14 Apr	13 May	14 Jun	13 Jul	15 Aug	12 Sept
Mecoptera: Scorpion flies						
Panorpa communis					*	
Neuroptera: Lacewings						
Chrysoperla carnea				*		
Odonata: Dragonflies						
Aeshna mixta						*
Orthoptera: Bush Crickets						
Pholidoptera griseoaptera				*		
Metrioptera roeselii				*		
Conocephalus discolor				*	*	*
Leptophyes punctatissima				*		
Heteroptera: True Bugs						
Closterotomus norwegicus			*	*		
Capsus ater				*		
Lygocoris pabulinus			*	*		
Lygus rugulipennis				*		*
Orthops basalis					*	
Stenotus binotatus			*	*		
Leptopterna dolobrata			*	*		

Group/ Visit Date	**14 Apr**	**13 May**	**14 Jun**	**13 Jul**	**15 Aug**	**12 Sept**
Notostira elongata			*	*	*	*
Stenodema calcarata	*	*				
Stenodema laevigata				*	*	
Heterotoma planicornis				*		
Plagiognathus arbustorum				*	*	
Anthocoris nemorum				*		
Coreus marginatus			*		*	*
Eurygaster testudinaria				*	*	
Tricophtera: Caddisflies						
Limnephilus hirsutus			*			
Lepidoptera: Butterflies						
Thymelicus sylvestris				*		
Thymelicus lineola				*		
Ochlodes sylvanus				*		
Gonepteryx rhamni	*					
Pieris brassicae		*		*		
Pieris napi		*				
Anthocharis cardamines	*					
Polyommatus icarus				*	*	
Celastrina argiolus		*				
Pararge aegeria				*		
Pyronia tithonus				*		
Maniola jurtina			*	*	*	
Diptera: Hoverflies						
Baccha elongata			*			
Cheilosia albitarsus		*				
Cheilosia proxima		*				
Eristalis pertinax		*				
Episyrphus balteatus					*	
Eumerus strigatus			*		*	
Helophilus pendulus					*	
Melanostoma scalare				*	*	
Myathropa florea				*		
Platycheirus albimanus	*		*			*
Platycheirus clypeatus	*					
Platycheirus rosarum			*	*		
Syritta pipiens					*	
Syrphus ribesii			*			
Larger Brachycera						
Chrysopilus cristatus				*		
Rhagio scolopaceus						
Beris vallata				*		
Oxycera rara				*		
Chloromyia formosa				*		
Snail-killing Flies						
Ilione albiseta						*
Picture-winged Flies						
Chaetostomella cylindrica					*	
Conopid Flies						
Conops flavipes				*		
Conops quadrifasciatus					*	

Group/ Visit Date	14 Apr	13 May	14 Jun	13 Jul	15 Aug	12 Sept
Physocephala rufipes				*		
Tachinid Flies *Eriothrix rufomaculata*				*	*	
Hymenoptera: Aculeates Ants *Myrmica ruginodis*					*	
Social Wasps *Vespula vulgaris*	*			*	*	*
Solitary Bees *Hylaeus communis*				*		
Andrena subopaca					*	
Halictus tumulorum						*
Mecoptera: Scorpion flies *Chelostoma florisomne*			*			
Osmia bicornis		*				
Social Bees *Bombus lucorum/terrestris^*				*	*	
Bombus pascuorum	*		*	*	*	*
Bombus pratorum					*	
Bombus terrestris				*		
Bombus vestalis			*	*		
Apis mellifera	*		*	*		
Coleoptera: Soldier Beetles *Cantharis flavilabris*			*			
Cantharis pallida			*			
Rhagonycha fulva				*	*	
Malachite Beetles *Malachius bipustulatus*		*	*			
Malthodes marginatus						
Ladybirds *Propylea 14-punctata*		*	*	*		
Longhorn Beetles *Stictoleptura scutellata**				*		

*Bombus lucorum/terrestris^* = workers only seen, these two species can only be separated when queens or males are seen.

The Woodland

Major forage resources (nectar and pollen) were limited throughout the survey period, during the first two months of the survey period Bluebell (*Endymion non-scriptus*), Green Alkanet (*Pentaglossis sempervirens*) and Foxglove were the dominant sources. Bramble (*Rubus fruticosus* agg.) and Foxglove dominated during the middle two months and by the end of the survey there were no major forage resources available save for a single Buddleia (*Buddleia davidii*).

1.4.4 North Woodland

Group/ Visit Date	14 Apr	13 May	14 Jun	13 Jul	15 Aug	12 Sept
Heteroptera: True Bugs						
Anthocoris nemorum	*					
Kleidocerys resedae		*				
Lepidoptera: Butterflies						
Pieris brassicae		*				
Polygonia c-album				*		
Pararge aegeria			*			*
Diptera: Hoverflies						
Eristalis arbustorum				*		
Eupeodes corollae			*			
Platycheirus albimanus		*	*			
Myathropa florea			*			
Syrphus ribesii	*				*	
Syrphus torvus			*			
Volucella pellucens			*			
Hymenoptera: Aculeates						
Social Wasps						
Vespula vulgaris	*					*
Solitary Wasps						
Rhopalum inornata			*			
Solitary Bees						
Osmia bicornis	*	*				
Social Bees						
Bombus pascuorum				*		
Bombus vestalis			*			
Apis mellifera			*			
Coleoptera: Click Beetles						
Agriotes pallidulus			*			

1.4.5 Middle Woodland

Group/ Visit Date	14 Apr	13 May	14 Jun	13 Jul	15 Aug	12 Sept
Heteroptera: True Bugs						
Liocoris tripustulatus				*		
Apolygus lucorum			*	*	*	
Stenotus binotatus				*		
Stenodema laevigata					*	
Plagiognathus arbustorum				*		
Anthocoris nemorum				*		
Palomena prasina					*	
Pentatoma rufipes		*		*		
Trichoptera: Caddisflies						
Limnephilus centralis				*		
Lepidoptera: Butterflies						
Maniola jurtina				*		
Diptera: Hoverflies						
Eristalis nemorum			*			
Xylota sylvarum			*			
Larger Brachycera						
Chrysopilus cristatus					*	

Group/ Visit Date	14 Apr	13 May	14 Jun	13 Jul	15 Aug	12 Sept
Microchrysa flavicornis		*				
Hymenoptera: Aculeates						
Social Wasps						
Vespula vulgaris						*
Solitary Wasps						
Rhopalum inornata			*			
Solitary Bees						
Halictus tumulorum					*	
Social Bees						
*Bombus lucorum/terrestris^*			*			
Bombus pascuorum			*			
Coleoptera: Soldier Beetles						
Rhagonycha fulva				*		

1.4.6 South Woodland

Group/ Visit Date	14 Apr	13 May	14 Jun	13 Jul	15 Aug	12 Sept
Heteroptera: True Bugs						
Apolygus lucorum				*		
Plagiognathus arbustorum				*		
Lepidoptera: Butterflies						
Pieris brassicae				*		
Vanessa atalanta						*
Aglais io		*				
Argynnis paphia				*		
Parage aegeria						*
Diptera: Hoverflies						
Episyrphus balteatus			*	*		
Myathropa florea			*	*		
Platycheirus albimanus		*	*			
Larger Brachycera						
Chorisops tibialis				*		
Hymenoptera: Aculeates						
Social Wasps						
Vespula vulgaris						*
Social Bees						
Bombus hortorum		*				
*Bombus lucorum/terrestris^*		*		*		
Bombus pascuorum	*	*	*	*		
Bombus pratorum		*				
Bombus vestalis		*				
Apis mellifera		*	*	*		

Note:*Bombus lucorum/terrestris^* = workers only seen, these two species can only be separated when queens or males are seen.

1.5 Nationally Scarce Species Recorded

Two Nationally Scarce species were recorded during the survey period. Details of their national statuses are taken from the national reviews listed in the references in Section 1.8. A description of these ratings is given at the end of this text in Section 1.5.1.

Coleoptera: Longhorn Beetles

Large Black Longhorn *Stictoleptura scutellata* **(Nationally Scarce A)**
Widely distributed in southern England this is typically a species of ancient broad-leaved woodland and wood pasture. Larvae develop in sun-exposed dead wood and there is a strong association with Beech (*Fagus sylvaticus*), but other deciduous species are also used. Adults occasionally visit flowers. A single male was recorded at Creeping Thistle flowers in the North Meadow on 16th July. It is interesting to note that I also recorded this species in the North Meadow during the 2021 survey.

Click Beetles

A Click Beetle *Ampedus quercicola* (**Nationally Scarce B**)
This species is widely distributed in southern and south-eastern England where it is typically found in ancient broad-leaved woodland and occasionally in Birch (*Betula* sp,) woodland or fenland. It is thought to be associated with broad-leaved woodland but has been reared from spruce (*Picea* sp,). Larvae are thought to develop in dead wood. A single specimen flew from the middle woodland area and landed on me when I was in the Middle Meadow on 13th July.

1.5.1 Explanation of rarity ratings

Red Data Book 1 Endangered; currently known from five or fewer 10km squares in Britain and in danger of extinction.

Red Data Book 2 Vulnerable; currently known from between six and ten 10km squares in Britain. Populations declining and considered likely to become endangered.

Red Data Book 3 Rare; currently known from between 11 and 15 10km squares in Britain. Small, thinly scattered local populations, but not at present considered to be vulnerable or endangered.

Nationally Scarce A; Very restricted national distribution, recorded from 16 - 30 10km squares in Britain since 1980.

Nationally Scarce B; Restricted national distribution, recorded from 31 - 100 10km squares in Britain since 1980.

Nationally Scarce; Restricted national distribution, recorded from 16 - 100 10km squares in Britain since 1980.

1.6 Discussion

One consideration that must taken into account when comparing survey data is the weather, both during the survey period and between surveys. The weather experienced during the survey period in 2022 was largely favourable with dry and warm conditions. April had seen above average temperatures while June and July saw temperatures regularly exceed higher than average values with a temperture of 39^{o}C being recorded on one occasion and above 30^{o} C on a number of days in this period which led to an early summer drought leaving most vegetation dry and parched, this would have undoubtedly had an impact on the range of insect species recorded, not just here but elsewhere (*pers obs*). Despite this, twenty-one new species were recorded for the reserve during 2022. This total includes a single Nationally Scarce species the Click Beetle *Ampedus quercicola* a broad-leaved woodland specialist.

The majority of species recorded in this survey can be classified as being common, widespread and generalist in their habitat requirements and most have been recorded here in previous surveys. Many of the species involved are also highly mobile, enabling them to colonise habitats quickly. The majority of these species will remain in stabilised habitats and it is likely that only a very few of these might be lost through natural dispersal unless the current management regimes are radically altered or entirely neglected. However, any such losses should be countered by the retention of the more specialist species and perhaps the colonisation of other more specialist species from sites nearby.

Table 1 below presents the total number of species recorded from each survey group from each of the surveys in 2020, 2021 and 2022 compared against the total number of species currently recognised as resident in Britain and shows that in each survey group ther is still scope for more species to be found/recorded here especially amongt some of the larger insect groups (terrestrial bugs, hoverflies, solitary bees and wasps Further survey may discover new species.

Table 1 All species recorded by habitat in 2020, 2021 and 2022 against the number of British species.

Survey Group	Meadow	Woodland	Total No. combined	No. of British sp
Mecoptera; Scorpion Flies	1	1	1	3
Neuroptera; Lacewings	2	1	2	46
Odonata; Damselflies	1	0	1	20
Odonata; Dragonflies	4	0	4	23
Orthoptera; Bush Crickets	4	1	6	11
Grasshoppers	3	0	3	11
Dermaptera; Earwigs	1	0	1	4
Dictyoptera; Cockroaches	1	0	1	3
Heteroptera; True Bugs	39	9	48	488*
Trichoptera; Caddisflies	4	1	5	199
Lepidoptera; Butterflies	19	8	20	59
Diptera; Hoverflies	35	19	40	265
Larger Brachycera	15	4	16	159
Snail-killing Flies	6	0	6	67
Picture-winged Flies	7	0	7	73
Conopid Flies	7	0	6	24
Tachinid Flies	3	0	3	247
Hymenoptera; Ants	4	0	4	53
Spider Wasps	1	0	1	41
Social Wasps	5	3	5	9
Solitary Wasps	3	2	5	126
Solitary Bees	22	9	31	224
Social Bees	8	10	11	23
Coleoptera; Soldier Beetles	6	0	6	25
Click Beetles	3	2	3	73
Malachite Beetles	2	0	2	2
Ladybirds	6	0	6	46
Longhorn Beetles	6	1	6	67

*Heteroptera; True Bugs, this total is for terrestrial species only.

1.6.1 Notes on the Insect Groups Recorded

Mecoptera and Neuroptera
There was no change in the number, or species in these two groups recorded.

Odonata
There were no new species in this group recorded.

Orthoptera
All bush cricket species previously recorded were still present. All could have been expected to still occur the cutting/grazing regime of the grassland and retention of scrub edge should ensure all these species persist on site. It is interesting to note that the Lesser Marsh Grasshopper (*Chorthippus albomarginatus*), first recorded in 2020 and not since was still absent in 2022, the grassland in the meadow is certainly suitable for the species and I cannot offer a reason for it disappearance, other than the possibility of increasingly dry summers is having a negative impact on it.

Dictyoptera
The absence of the Nationally Scarce Dusky Cockroach(*Ectobius lapponicus*), first recorded in 2021 was perhaps not surprising given scarcity of this species, but the preferred habitat of rough grassland with scrub and bramble still remains and should still support the species.

Trichoptera
Five new species of Caddisfly were recorded during this survey and thes include two species (*Limnephilus centralis* and *L. hirsutus)* that develop in shallow/temporary water bodies (like the on-site ditches), all five new species are relatively common and widespread species which can be found as adults in almost any habitat. The absence of permanent open water on site will probably always limit the number of species likely to be recorded here, some of the species that have been recorded here may have originated from the neary Ballard Lake or any nearby garden ponds.

Heteroptera
The Heteroptera saw an increase of three species, one is an aquatic pond-skater (*Gerris lacustris*)which was recorded in the ditch in the South Meadow before it dried in early summer one new species is the small and easily overlooked sap-feeding mirid/grass bug (*Orthops basalis*) which is remarkably similar in appearance and behaviour to the previously recorded *O. campestris*. *Orthops basalis* was recorded in the North and South Meadows during this survey and may have been overlooked previously due to its similarity to the other mentioned species, the other new species is the groundbug *Drymus sylvaticus* ground bugs are rarely found in sweep-net samples because of their habit of crawling on the ground and not gnerally ascending vegetation. Almost all remaining species have been recorded in both previous surveys.

Lepidoptera
One new butterfly species was recorded, the Silver-washed Fritillary *(Argynnis paphia)* in the Southern Woodland on 13th July this was a perhaps not unexpected addition given that this is a strong-flier which is relatively common and widespread in most Hampshire and east Dorset woodlands, with strong and large populations in the New Forest, it is likely this species has colonised, or at least dispersed here from one such neaby population.

Hoverflies
Another good selection of hoverflies was recorded and included four new species, *Platycheirus clypeatus* is a common and widespread speceis of wet grassland that is not easy to identify in the field so a sample of look-alikes only have been taaken during each successive survey, this year one of the specimens could be confirmed as this species One of the other new species *Scaeva selentica* is a migrant to this country from the continent each year in varying numbers and as a result could turn up anywhere at any time during the smmer, the individual recorded here was in th South Meadow on 15th August at a time when others were being seen in southern England (p*ers obs*). The remaining two new species are also common and widespread and could have been expected to occur here and include two woodland/woodland edge species *Xylota segnis* and *X. sylvarum*, both develop as larvae in decaying timber, highlighting the importance of leaving dead wood (both standing and fallen) on site.

Diptera - Larger Brachycera
The number of larger brachycera recorded increased by two during this survey. Both of the new species can generally be regarded as common and widespread and could have been expected given the habitats present. The Soldierfly *Oxycera rara* was recorded from the ditch-side in the North Meadow on 13th July, this is fairly typical habitat for this species which develops as a maggot in mud. The soldierfly *Sargus bipunctata* recorded in the Middle Meadow on 12th September is a late -summer flying species of wet meadows that breeds in herbivore dung and would be benefitting from the presence of cattlle on the meadow at this time.

Diptera - Snail-killing Flies
No new species of snail-killing fly were added to the list. There is still scope for further species to be recorded on site.

Diptera - Picture-winged Flies

No new picture-winged flies were added to the list, this may be as a result of the flora being established and stable.

Diptera - Conopid Flies

Conopid flies also saw an increase of one species *Conops flavipes*, which is easy to overlook in the field amongst other similar species, it was confirmed from a specimen during this survey The presence of a high number of conopid flies is a good indicator of a strong presence of their host solitary and social bees and wasps and an abundance of forage resources. *Sicus ferrugineus*, which is possibly the commonest and most widespread of the conopid flies in Britain recorded here in 2020 and 2021 was present again during the current survey.

Diptera - Tachinid Flies

One new species of tachinid fly was recorded; *Thelaira nigripes*, this is a common and widespread species that parasitises Tiger moth caterpillars it was recorded in the South Meadow on 13th July all previously recorded species were again present during this survey and require no further comment. This is a large family and there is still scope for many more species to be recorded.

Hymenoptera - Ants, Bees and Wasps

The hymenoptera were again well represented an saw increases amongst the ants, solitary wasps and solitary bees.

Ants

One new species of ant recorded is the Yellow Meadow Ant (*Lasius flavus*) this species is well known for constructing large nest mounds in undisturbed grassland, a small foundation nest mound was found on the southern edge of the east-west running ditch that runs parallel to the southern boundary of the site in the Southern Meadow.

Social Wasps

No new species of social wasp were recorded, In general, social wasp numbers were low at many southern survey sites during 2022 (*pers obs*) and this may be a result of few having been seen during 2021 leading to poor hibernation rates and new nest establishment.

Solitary Wasps

Solitary wasps were again rather poorly represented considering the available habitats present and the relative abundance of nectar, pollen and potential invertebrate prey. Three new species were recorded, two are small, similar-looking and relatively easy to overlook; *Rhopalum inornata* and *Pemphredon lugubris,* both species nest in vacant beetle holes in dead wood and provision their nests with aphids, both were recorded in the woodland where there is presumably suitable prey and certainly ample nest sites, the third species *Nysson spinosus* is a common and widespread cuckoo in the nests of other solitary wasp species in the genus *Argogorytes* none of which have been recorded here. There is still scope for more solitary wasp species to be recorded with further surveys.

Solitary Bees

One new species of solitary bee was recorded; the ‘Large Scissor Bee’ *Chelostoma florisomne* recorded in the North Meadow on 14th June this species forages almost exclusively at buttercup flowers *Ranunculus* sp, which were abundant in the North Meadow at the time it was recorded, so the presence of this species is perhaps not unexpected. It nests holes in deadwood and hollow plant stems. Many of the solitary bees are small and dark-coloured and require microscopic examination for identification. As a result of this, only a sample of those collected in sweep-net samples are retained for identification, meaning that some species will probably be missed/overlooked each year. It is likely, as has been illustrated by the current survey that further species could be recorded. in thefuture.

Social Bees
Unsurprisingly, no new social/bumblebee species were recorded and all previously recorded species were present again, the species recorded here during each survey are those which are currently most common and widespread in Britain, it is unlikely that any new species in this group will be recorded.

Coleoptera - Soldier Beetles
No new species of Soldier beetle were recorded and all previously recorded species were also seen again. All species now recorded are amongst our most common and widespread species and can be found in almost any habitat.

Click Beetles
One new species was recorded, the Nationally Scarce *Ampedus quercicola* and is detailed in Section 1.5.

Ladybirds
One new species of ladybird the Cream-spot (*Calvia 14-guttata*) a scrub species was swept from the lone Hawthorn in the Middle Meadow in April after having presumably hibernated either in it or in the vicinity.

Longhorn Beetles
No new species of longhorn beetle were recorded but the Nationally Scarce *Stictoleptura scutellata* was recorded again in the North Meadow after also having been recorded there in 2021, which is suggestive of a breeding population in the vicinity of the meadow/woodland.

Conclusion
These changes in species numbers and composition illustrates how important regular survey is and that single season surveys will be affected by a range of variables. Previous summer and winter weather, as well as that in the days leading up to the survey, and in some cases, even the weather on the day of the survey will all have an impact. In regards this survey, each visit was conducted using the same survey technique - sweep-netting/general searching as in previous surveys. The best available day for survey was chosen, and, where possible, followed a run of a few fine days to ensure insect numbers would be at their maximum, thus giving the best chance of recording the highest number of species.

Overall, the increase in species numbers, and the discovery of a new Nationally Scarce species illustrates how important this meadow and woodland are in both local and national context. If further survey were undertaken it is highly likely that a greater number of insect species could be recorded as has been illustrated by this survey in recording a range of species that had not been recorded in the previous two surveys.

1.7 Acknowledgements/Apology

I would like to thank the Friends of Ballard Water Meadow and New Milton Town Council for commissioning and funding this survey and Bob Lord for useful discussions regarding the Meadow throughout the duration of the survey. I would also like to apologise for the delay in producing this report. This is down to having suffered a 'substantially disabling stroke' and two cardiac arrests(during one of which my heart stopped) in September 2022 which required a lengthy period in hospital and a further lengthy period of home recuperation. To this end I would like to thank the medical teams at Southampton General Hospital and Lymington (*New Forest*)Hospital for getting me back on my feet and in relatively good health to a position where I could complete this report.

1.8 References

The following references were used for identification of species recorded during the survey and their national statuses. The NBN Atlas website was also accessed at various times during the survey www.nbnatlas.org

BARNARD, P. & ROSS, E. (2012). The adult Trichoptera (caddisflies) of Britain and Ireland. Handbooks for the identification of British Insects. Vol. 1, Part 17. Royal Entomological Society, London.

BELSHAW, R. (1993). Tachinid Flies, Diptera: Tachinidae. Handbooks for the identification of British Insects. Vol. 10, Part 4a(i). Royal Entomological Society. London.

CLEMONS, L. (1996). A Provisional atlas of the Tephritidae (Diptera) of Britain and Ireland. British Tephritidae Newsletter, No. 6. Dipterist's Forum.

DRAKE, C.M. (1991). Provisional atlas of the Larger Brachycera (Diptera) of Britain and Ireland. Biological Records Centre, Huntingdon.

DUFF, A.G. (2016). Beetles of Britain and Ireland. Volume 4: Cerambycidae to Curculionidae. A.G. Duff (publishing), West Runton, Norfolk.

DUFF, A.G. (2020). Beetles of Britain and Ireland. Volume 3: Geotrupidae to Scraptiidae. A.G. Duff (publishing), West Runton, Norfolk.

FALK, S.J. (1991). A review of the scarce and threatened bees, wasps and ants of Great Britain. Research and Survey in Nature Conservation. No. 35. JNCC, Peterborough.

FALK, S.J. (1991). A review of the scarce and threatened flies of Great Britain. Research and Survey in Nature Conservation. No. 39. JNCC, Peterborough.

FALK, S.J. & LEWINGTON, R. (2015). Field Guide to the Bees of Great Britain and Ireland.

Bloomsbury, London.

HYMAN, P. & PARSONS, M. (1992). A review of the scarce and threatened Coleoptera of Great Britain. Research and Survey in Nature Conservation. No 3 (Part 1). JNCC Peterborough.

KIRBY, P. (2015). British Heteroptera. Keys to terrestrial families other than Miridae (2nd draft). Unpublished identification key.

LORD, R.M. (2020). Ballard Meadow and Woodland. 5 Year Management Plan (1 January 2020 - 31 December 2024).

NAU, B. (2004). Draft Keys to Miridae. Unpublished key to the Miridae of Britain and Ireland.

NAU, B. (2004). Checklist of the Heteroptera of the British Isles (Draft). Unpublished checklist.

PINCHEN, B.J. (2020). Ballard Meadow Insect Survey 2020. Unpublished report to The Friends of Ballard Water Meadow and New Milton Town Council.

PLANT, C.W. (1997). A key to the adults of British Lacewings and their allies. AIDGAP. Field Studies Council.

RICHARDS, O.W. (1980). Scolioidea, Vespoidea and Sphecoidea. Hymenoptera, Aculeata. Handbooks for the identification of British Insects. Vol. VI, Part 3(b). Royal Entomological Society, London.

ROSE, F. (1981). The Wildflower Key, British Isles - N.W. Europe. Warne, London.

ROZKOŠNÝ, R. (1984). The Sciomyzidae (Diptera) of Fennoscandia and Denmark. Fauna Entomologica Scandinavica. Volume 14. Copenhagen.

SOUTHWOOD, T.R.E. & LESTON, D. (1959). Land and Water Bugs of the British Isles. Warne & Co. Ltd. London.

STUBBS, A.E. & DRAKE, M. (2014). British Soldierflies and their allies, an illustrated guide to their identification and ecology (second edition). B.E.N.H.S. Dinton Pastures.

STUBBS, A.E. & FALK, S. J. (2002) British Hoverflies, an illustrated identification guide. (second edition) B.E.N.H.S. Dinton Pastures.

WHITE, I.M. (1988). Tephritid Flies, Diptera: Tephritidae. Handbooks for the identification of British Insects. Vol. 10, Part 5a. Royal Entomological Society, London.

Appendices

Appendix 1 All species recorded in the meadow in 2020, 2021 and 2022 combined

The following is a list of all the species recorded in the North, Middle and South Meadows in 2020, 2021 and 2022 combined.

Mecoptera: Scorpion flies
Panorpa communis

Neuroptera: Lacewings
Chrysopa perla
Chrysoperla carnea

Odonata: Damselflies
Enallagma cyathigerum

Dragonflies
Brachytron pratense
Aeshna mixta
Sympetrum striolatum
Libellula quadrimaculata

Orthoptera: Bush Crickets
Pholidoptera griseoaptera
Conocephalus discolor
Conocephalus dorsalis
Leptophyes punctatissima

Grasshoppers
Chorthippus albomarginatus
Chorthippus brunneus
Chorthippus parallelus

Dermaptera; Earwigs
Forficula auricularia

Dictyoptera: Cockroaches
*Ectobius lapponicus**

Heteroptera: True Bugs
Dicyphus epilobii
Deraeocoris ruber
Calocoris roseomaculatus
Closterotomus norwegicus
Capsus ater
Apolygus lucorum
Apolyguss spinolae
Lygcoris pabulinus
Lygus rugulipennis
Orthops baslais
Orthops campestris
Stenotus binotatus
Leptopterna dolobrata
Notostira elongata
Pithanus maerkelii
Stenodema calcarata
Stenodema laevigata
Trignotylus ruficornis
Lopus decolor
Macrotylus solitarius
Heterotoma planicornis
Plagiongnathus arbustorum
Plagiognathus chrysanthemi
Nabis flavommarginatus
Anthocoris nemorum
Scolopostethus decoratus
Stygnocoris rusticus
Drymus sylvaticus
Coreus marginatus
Rhopalus subrufus
Myrmus miriformis
Eurygaster testudinaria
Podops inuncta
Aelia acuminata
Dolycoris baccarum
Palomena prasina
Piezodorus lituratus
Zicrona caerulea
Acanthosoma haemorrhoidale

Lepidoptera: Butterflies
Thymelicus sylvestris
Thymelicus lineola
Ochlodes sylvanus
Pieris brassicae
Pieris rapae
Pieris napi
Anthocharis cardamines
Neozephyrus quercus
Lycaena phlaeas
Polyommatus icarus
Celastrina argiolus
Vanessa atalanta
Vanessa cardui
Aglais io
Aglais urticae
Polygonia c-album
Pararge aegeria
Melanargia galathea
Pyronia tithonus
Maniola jurtina

Trichoptera; Caddisflies
Limnephilus affinis
Limneophilus auricula
Limnephils centralis
Limnephilus lunatus

Diptera: Hoverflies
Baccha elongata
Cheilosia albitarsis
Cheilosia illustrata
Cheilosia pagana
Episyrphus balteatus
Eristalis arbustorum
Eristalis intricarius
Eristalis pertinax
Eristalis tenax
Eumerus funeralis
Eumerus strigatus
Eupeodes corollae
Eupeodes luniger
Helophilus pendulus
Helophilus trivittatus
Melanogaster hirtella
Melanostoma mellinum
Melanostoma scalare
Merodon equestris
Myathropa florea
Paragus haemorrhous
Pipiza noctiluca
Platycheirus albimanus
Platycheirus clypeatus
Platycheirus rosarum
Rhingia campestris
Scaeva pyrastri
Scaeva selentica
Sphaerophoria scripta
Syritta pipiens
Syrphus ribesii
Volucella pellucens
*Volucella zonaria**
Xylota segnis
Xylota sylvarum

Larger Brachycera
Chrysopilus asiliformis
Chrysopilus cristatus
Rhagio lineola
Rhagio scolopaceus

Rhagio tringarius
Beris vallata
Oxycera rara
Chorisops tibialis
Chloromyia formosa
Sargus bipunctata
Sargus flavipes
Machimus atricapillus
Machimus cingulatus
Leptogaster cylindrica
Dioctria linearis

Snail-killing Flies
Pherbellia ventralis
Elgiva cucularia
Hydromya dorsalis
Ilione albiseta
Limnia unguicornis
Tetanocera arrogans

Picture-winged Flies
Urophora jaceana
Tephritis bardanae
Tephritis neesii
Chaetostomella cylindrica
Terellia colon
Xyphosia miliaria
Euleia heraclei

Conopid Flies
Conops ceriaeformis
Conops flavipes
Conops quadrifasciatus
*Leopoldius signatus**
Physocephala rufipes
Sicus ferrugineus

Tachinid Flies
Eriothrix rufomaculata
Thelaria nigriceps
Phasia obesa

Hymenoptera: Aculeates

Ants
Lasius flavus
Lasius niger
Myrmica rubra
Myrmica ruginodis

Spider Wasps
Anoplius nigerrimus

Social Wasps
Vespa crabro
Dolichovespula media
Vespula rufa
Vespula germanica
Vespula vulgaris

Solitary Wasps
Ectemnius cephalotes
Pemphredon lugubris
Nysson spinosus

Solitary Bees
Hylaeus communis
Hylaeus confusus
Andrena scotica
Andrena nigroeanea
Andrena nitida
Andrena haemorrhoa
Andrena flavipes
Andrena semilaevis
Andrena subopaca
Andrena dorsata
Andrena wilkella
Halictus tumulorum
Lasioglossum leucozonium
Lasioglossum albipes
Lasioglossum calceatum
Lasioglossum minutissimum
Lasioglossum punctatissimum
Lasioglossum villosulum
Lasioglossum morio
Sphecodes ephippius
Sphecodes geofrellus
Chelostoma florisomne
Osmia bicornis
Osmia leaiana

Osmia spinulosa
Megachile willughbiella
Nomada fabriciana
Nomada flava
Nomada flavoguttata
Nomada goodeniana

Social Bees
Bombus hortorum
Bombus lapidarius
Bombus lucorum
Bombus pascuorum
Bombus pratorum
Bombus terrestris
Bombus vestalis
Apis mellifera

Coleoptera: Soldier Beetles
Cantharis flavilabris
Cantharus nigricans
Cantharis pallida
Cantharis rusticus
Rhagonycha fulva
Rhagonycha testacea

Malachite Beetles
Malachius bipustulatus
Malthodes marginatus

Click Beetles
Agriotes acuminatus
Agriotes pallidulus
Ampedus quercicola*

Ladybirds
Calvia 14-guttata
Propylea 14-punctata
Harmonia axyridis
Coccinella 7-punctata
Tytthaspis 16-punctata
Subcoccinella 24-punctata

Longhorn Beetles
Grammoptera ruficornis
*Paracorymbia fulva**
*Stictoleptura scutellata**
Rutpela maculata
Stenurella melanura
Clytus arietis

Appendix 2 All species recorded in the woodland in 2020, 2021 and 2022 combined

The following is a list of all the species recorded in the woodland in 2020, 2021 and 2022 combined.

Mecoptera: Scorpion flies
Panorpa communis

Neuroptera: Lacewings
Chrysoperla carnea

Orthoptera: Bush Crickets
Leptophyes punctatissima

Heteroptera: True Bugs
Apolygus lucorum
Liocoris tripustulatus
Stenodema calcarata
Stenodema laevigata
Stenotus binotatus
Psallus quercus
Anthocoris nemorum
Palomena prasina
Pentatoma rufipes

Trichoptera: Caddisflies
Limnephilus centralis

Lepidoptera: Butterflies
Pieris brassicae
Pieris napi
Pieris rapae
Celastrina argiolus
Aglais io
Argynnis paphia
Pararge aegeria
Vanessa atalanta
Maniola jurtina
Pyronia tithonus

Diptera: Hoverflies
Baccha elongata
Dasysyrphus albostriatus
Epistrophe eligans
Episyrphus balteatus
Eristalis nemorum
Eristalis tenax
Eupeodes corollae
Helophilus pendulus
Melanostoma scalare
Merodon equestris
Myathropa florea
Platycheirus albimanus
Sphaerophoria scripta
Syrphus ribesii
Syrphus torvus
Syrphus vitrepennis
Volucella pellucens
*Volucella zonaria**
Xylota sylvarum

Larger Brachycera
Chorisops tibialis
Chrysopilus cristatus
Microchrysa flavicornis
Bombylius major

Hymenoptera: Aculeates
Solitary Wasps
Trypoxylon figulus
Rhopalum inornata
Ectemnius cephalotes

Social Wasps
Vespa crabro
Vespula germanica
Vespula vulgaris

Solitary Bees
Hylaeus communis
Hylaeus confusus
Halictus tumulorum
Andrena haemorrhoa
Andrena flavipes
Andrena subopaca
Andrena dorsata
Osmia bicornis
Nomada flava

Social Bees
Bombus hortorum
Bombus hypnorum
Bombus jonellus
Bombus lapidarius
Bombus pascuorum
Bombus pratorum
Bombus sylvestris
Bombus terrestris
Bombus vestalis
Apis mellifera

Coleoptera:Soldier Beetles
Rhagonycha fulva

Click Beetles
Agriotes pallidulus
Stenagostus rhombeus

Longhorn Beetles
Rutpela maculata

Appendix 3 All species recorded in 2020, 2021 and 2022 combined

The following lists cover all species recorded across the whole site in 2020, 2021 and 2022 combined. Recent name changes amongst some of the species have been incorporated so in some instances names differ from the lists included in the 2020 and 2021 reports.
Species highlighted with an asterisk (*) are Red Data Book or Nationally Scarce species, species highlighted with an 'N' are new species recorded here for the first time in 2022.

Mecoptera:
Scorpion flies 1 species
Panorpa communis

Neuroptera:
Lacewings 2 species
Chrysopa perla
Chrysoperla carnea

Odonata:
Damselflies 1 species
Enallagma cyathigerum

Dragonflies 4 species
Brachytron pratense
Aeshna mixta
Libellula quadrimaculata
Sympetrum striolatum

Orthoptera:
Bush Crickets 6 species
Pholidoptera griseoaptera
*Metrioptera roseli*i
Conocephalus discolor
Conocephalus dorsalis
Leptophyes punctatissima

Grasshoppers 3 species
Chorthippus albomarginatus
Chorthippus brunneus
Pseudochorthippus parallelus

Dermaptera:
Earwigs 1 species
Forficula dentata(=auricularia)

Dictyoptera:
Cockroaches 1 species
*Ectobius lapponicus**

Heteroptera:
True Bugs 40 species
Gerris lacustris N
Dicyphus epilobii
Deraeocoris ruber
Calocoris roseomaculatus
Closterostomus norwegicus
Capsus ater
Apolygus lucorum
Apolygus spinolae
Lygocoris pabulinus
Lygus rugulipennis
Orthops basalis N
Orthops campestris
Stenotus binotatus
Leptopterna dolobrata
Notostira elongata
Pithanus maerkelii
Stenodema calcarata
Stenodema laevigata
Trignotylus ruficornis
Heterotoma planicornis
Macrotylus solitarius
Plagiognathus arbustorum
Plagiognathus chrysanthemi
Psallus quercus
Nabis flavomarginatus
Anthocoris nemorum
Scolopostethus decoratus
Stygnocoris rusticus
Drymus sylvaticus N
Coreus marginatus
Rhopalus subrufus
Myrmus miriformis
Eurygaster testidinaria
Aelia acuminata
Podops inuncta
Dolycoris baccarum
Piezodorus lituratus
Palomena prasina
Zicrona caerulea
Acanthosoma haemorrhoidale

Lepidoptera:
Butterflies 20 species
Thymelicus sylvestris
Thymelicus lineola N
Ochlodes sylvanus
Pieris brassicae
Pieris rapae
P*ieris napi*
Anthocharis cardamines
Lycaena phlaeus
Neozephyrus quercus
Polyommatus icarus
Celastrina argiolus
Vanessa atalanta
Argynnis paphia N
Vanessa cardui
Aglais io
Polygonia c-album
Pararge aegeria
Melanargia galathea
Pyronia tithonus
Maniola jurtina

Trichoptera:
Caddisflies 5 species
Limnephilus auricula N
Limnephilus affinis
Limnephilus centralis N
Limnephilus hirsutus N
Limnephilus lunatus
Diptera:
Hoverflies 40 species
Baccha elongata
Cheilosia albitarsus
Cheilosia illustrata
Cheilosia pagana
Dasysrphus albostriatus
Epistrophe eligans
Episyrphus balteatus
Eristalis arbustorum
Eristalis intricarius
Eristalis pertinx
Eristalis tenax
Eumerus funeralis
Eumerus strigatus
Eupeodes corollae
Eupeodes luniger
Helophilus pendulus
Helophilus trivittatus
Melanogaster hirtella
Melanostoma mellinum
Melanostoma scalare
Merodon equestris
Myathropa florea
Paragus haemorrhous
Pipiza noctiluca
Platycheirus albimanus
Platycheirus clypeatus N
Platycheirus rosarum
Rhingia campestris
Scaeva pyrastri
Scaeva selentica N
Sphaerophoria scripta
Syritta pipiens
Syrphus ribesii
Syrphus torvus
Syrphus vitrepennis
Volucella pellucens
*Volucella zonaria**
Xylota segnis N
Xylota sylvarum N

Larger Brachycera 16 species
Chrysopilus asiliformis
Chrysopilus cristatus

Rhagio lineola
Rhagio scolopaceus
Rhagio tringarius
Beris vallata
Oxycera rara N
Chorisops tibialis
Chloromyia formosa
Sargus bipunctata N
Sargus flavipes
Bombylius major
Machimus atricapillus
Machimus cingulatus
Leptogaster cylindrica
Dioctria linearis N

Snail-killing Flies 6 species
Pherbellia ventralis
Elgiva cucularia
Hydromya dorsalis
Ilione albiseta
Limnia unguicornis
Tetanocera arrogans

Picture-winged Flies 7 species
Urophora jaceana
Tephritis bardanae
Tephritis neesii
Chaetostomella cylindrica
Terellia colon
Xyphosia miliaria
Euleia heraclei

Conopid Flies 6 species
Conops ceriaeformis
Conops flavus N
Conops quadrifasciatus
*Leopoldius signatus**
Physocephala rufipes
Sicus ferrugineus

Tachinid Flies 3 species
Eriothrix rufomaculata
Thelaria nigriceps N
Phasia obesa

Hymenoptera: Aculeates
Ants 4 species
Lasius flavus N
Lasius niger
Myrmica rubra
Myrmica ruginodis

Spider Wasps 1 species
Anoplius nigerrimus

Social Wasps 5 species
Vespa crabro
Dolichovespula media
Vespula rufa
Vespula germanica
Vespula vulgaris

Solitary Wasps 5 species
Trypoxylon figulus
Ectemnius cephalotes
Pemphredon lugubris N
Rhopalum inornata N
Nysson spinosus N

Solitary Bees 31 species
Hylaeus communis
Hylaeus confusus
Andrena scotica N
Andrena nigroeanea
Andrena nitida N
Andrena haemorrhoa
Andrena flavipes
Andrena semilaevis N
Andrena subopaca
Andrena dorsata
Andrena wilkella N
Halictus tumulorum
Lasioglossum leucozonium N
Lasioglossum albipes
Lasioglossum calceatum
Lasioglossum minutissimum
Lasioglossum punctatissimum N
Lasioglossum villosulum N
Lasioglossum morio
Sphecodes ephippius N
Sphecodes geofrellus
Chelostoma florisomne N
Osmia bicornis N
Osmia leaiana
Osmia spinulosa
Megachile willughbiella
Nomada fabriciana N
Nomada goodeniana N
Nomada flava
Nomada flavoguttata
Nomada striata N

Social Bees 11 species
Bombus hortorum
Bombus hypnorum
Bombus jonellus
Bombus lapidarius
Bombus lucorum
Bombus pascuorum
Bombus pratorum
Bombus sylvestris
Bombus terrestris
Bombus vestalis
Apis mellifera

Coleoptera:
Soldier Beetles 6 species
Cantharis flavilabris (=nigra)
Cantharis nigricans
Cantharis pallida
Cantharis rustica
Rhagonycha fulva
Rhagonycha testacea N

Malachite Beetles 2 species
Malachius bipustulatus
Malthodes marginalis N

Click Beetles 3 species
Agriotes pallidulus N
*Ampedus quercicola** N
S tenagostus rhombeus N

Ladybirds 6 species
Calvia 14-guttata N
Propylea 14-punctata
Harmonia axyridis
Coccinella 7-punctata
Tytthaspis 16-punctata
Subcoccinella 24-punctata

Longhorn Beetles 6 species
Grammoptera ruficornis
*Paracorymbia fulva**
*Stictoleptura scutellata**
Rutpela maculata
Stenurella melanura
Clytus arietis