

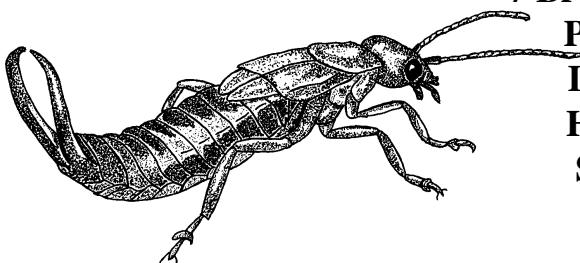
# **Rodden Nature Reserve**

## **Insect Survey**

**Survey and Report by**

**Bryan J Pinchen**

**October 2010**



**Bryan J Pinchen  
7 Brookland Close  
Pennington  
Lymington  
Hampshire  
SO41 8JE**

**Rodden Nature Reserve,  
Frome, Somerset**

**Insect Survey 2010**

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## 1.1 Summary

This report summarises the results of survey work to record the insect species present on the Frome Area Wildlife Group reserve at Rodden, Frome, Somerset.

The naming of survey sections and format of this report follows that for the original survey undertaken in 2008 (see Pinchen 2008).

Six visits were made in favourable weather in April, May, June, July, August and September to record the insects of a number of terrestrial groups. The groups surveyed are highlighted in Section 1.3.

Survey involved direct searching and sweep-netting the vegetation in each survey area.

Tables showing the species recorded are presented in Section 1.4. In total forty-one new species were recorded during the survey.

One Red Data Book and six Nationally Scarce species were recorded. Details of these species are presented in Section 1.5.

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 collection of Hampshire County Council Museums and Archives Service based at Chilcomb House, Winchester.

Additional bird, mammal, amphibian and reptile species were noted and are presented in Section 1.6.

An overview of the results is presented in Section 1.7.

Recommendations for further survey were presented in Section 1.8 of the 2008 report and no changes have been forthcoming so no further recommendations are presented here.

Recommendations for management of the site were provided in Section 1.9 of the 2008 report and no changes have been forthcoming so no further recommendations are presented here.

Maps showing the four survey areas were provided in Section 2.2 of the 2008 report and are not duplicated here.

Appendix 1 presents species lists for each of the three years of survey, 2008, 2009, 2010.

Appendix 2 presents a total species list for the three year survey period 2008 - 2010.

This survey was commissioned and funded by the Frome Area Wildlife Group and ASDA Wal Mart.

## 1.2 Introduction

Rodden Nature Reserve is a mixture of wet and dry grassland habitats with fresh water lakes to the south-east of Frome, Somerset, Grid Reference ST788475. The reserve forms part of the flood plain of the River Frome and the Rodden Brook and was created to mitigate for the loss of floodplain during the construction of the Asda supermarket in 2005. The total area of the reserve is 8.7 hectares (21.5 acres).

The major habitats available are grassland of both wet and dry nature, two large freshwater pools dominate the reserve and areas of existing tree cover and mature hedgerow are also present. Areas of the grassland have been planted with scrub with the ultimate aim of allowing this to mature to woodland. Prior to the creation of the reserve the land was under an intensive agriculture regime.

Since the creation of the reserve a number of noteworthy species have been recorded from a number of wildlife groups but no directed insect or invertebrate survey had taken place until an initial survey in 2008, this was followed by a further insect survey in 2009 in which a number of new species were added to the reserve species list.

During 2010 six further survey visits were made to record the insects present and this data forms the basis of this report. Survey visits were undertaken on 20th April, 19th May, 16th June, 19th July, 19th August and 13th September in favourable conditions for insect activity.

Visits were made between 09.00hrs and 16.00hrs and between one and two hours were spent in each survey area. Visits were timed to be a minimum of three weeks apart to ensure little repetition of species and to cover the period when most insect species are active. Section 1.3 outlines the insect groups surveyed and their particular habitat associations.

Survey involved direct searching for species at flowers as well as extensive sweep-netting of the vegetation.

Weather conditions throughout the survey period were more favourable than in previous summers. The period January to June was reported to have been the driest for 90 years. April, May and June were predominantly warm, dry and sunny, but despite this, the night of May 11th/12th was the coldest recorded since 1996. June was the sunniest recorded since 2006. July was rather cool, damp and unseasonably windy. August was reportedly the coolest since 1993 while September was relatively warm and dry with little wind. This favourable weather is likely to have helped low invertebrate populations increase following two particularly poor summers and two of the coldest consecutive winters for almost twenty years.

## 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 the survey areas. Without thorough searches for their larval stages many species in these groups are 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**

The majority of species are aphid feeders in their larval stage, adults can usually be found resting on vegetation during the day. Despite extensive sweep-netting no lacewings were recorded during survey in 2008, survey in 2009 recorded three species.

### **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**

Many species are specific to wetland habitats and structured grassland with some scrub element, all of those recorded can be considered as generalist species.

### **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.

### **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 and Robberflies)**

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 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**

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. 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: 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.

**Longhorn Beetles**

The majority of this group develop as larvae inside dead and decaying timber, adults are often brightly coloured and can be found feeding at flowers. Despite searches during 2008 none were recorded. Survey in 2009 found two species.

## 1.4. Species Recorded

The following tables show all insects recorded during the survey period, the species lists and nomenclature follow the most recently available checklists for each group. The hoverfly checklist is currently in the process of being reorganised so for ease, species are presented here in alphabetical order. Notes regarding the available habitat of the survey plots are included where appropriate.

Those species highlighted with an asterisk (\*) are Red Data Book, Nationally Scarce or Noteworthy species. Accounts of these species are given in Sections 1.5 and 1.5.1.

All four of the survey sections appear to be roughly equal in size, but the areas surrounding the Eastern Pool and the Lakeside (Western Pool) are the most floristically rich and proved most productive for the survey groups. The vegetation in the Upper Grassland and the Roadside Meadow is currently quite floristically and structurally poor.

### 1.4.1 Eastern Pool

There had been no changes in the flora of this section since the survey in 2009 and as such this account of the flora is repeated from the 2009 survey.

This section is dominated by the Eastern Pool which is surrounded by tall vegetation, while the grassland areas contain a mix of varied vegetation with differing heights and structures, with some areas of Alder (*Alnus glutinosa*) growth. Underfoot the ground is largely level and dry except for a permanently wet flush dominated by rushes *Juncus* spp, and umbellifers at the southern end. Forage resources (nectar and pollen) were available throughout the survey period although in limited supply. In spring and early summer Dandelion (*Taraxacum officinale* agg.), Marsh Marigold (*Caltha palustris*), Cuckoo Flower (*Cardamine pratensis*), Ground Ivy (*Glechoma hederacea*), Comfrey (*Symphytum officinale*) and buttercup sp (*Ranunculus* sp,) provide the primary forage resources. In high and late summer Red Clover (*Trifolium pratense*), Bird's Foot Trefoil (*Lotus corniculatus*), White Dead-nettle (*Lamium album*), vetches (*Vicia* spp,) umbellifers (*Oenanthe* sp.), Bramble (*Rubus fruticosus* agg.), thistles (*Cirsium* spp), ragwort (*Senecio* spp), Purple Loosestrife (*Lythrum salicaria*), Meadowsweet (*Filipendula ulmaria*) and Water Mint (*Mentha aquatica*) were the dominant forage resources. By the time of the final visit in September, forage resources had diminished to stands of Water Mint, a little Red Clover and Purple Loosestrife.

The varied structure of the sward and range of plant species in this section is largely responsible for the variety of species recorded across the range of groups surveyed.

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<b>Mecoptera; Scorpion Flies</b>						
<i>Panorpa communis</i>		*				
<b>Neuroptera; Lacewings</b>						
<i>Chrysopa perla</i>			*			
<i>Chrysoperla carnea</i>				*	*	
<b>Odonata; Damselflies</b>						
<i>Calopteryx splendens</i>			*	*		
<i>Platycnemis pennipes</i>			*			
<i>Coenagrion puella</i>		*	*	*		
<i>Coenagrion pulchellum</i>				*		

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<i>Enallagma cyathigerum</i>			*		*	
<i>Ishnura elegans</i>		*	*	*	*	*
<b>Dragonflies</b>						
<i>Aeshna cyanea</i>				*		
<b>Orthoptera; Bush Crickets</b>						
<i>Conocephalus discolor</i>				*	*	*
<i>Conocephalus dorsalis</i>				*	*	
<i>Leptophyes punctatissima</i>				*	*	
<b>Groundhoppers</b>						
<i>Tetrix subulata</i>	*	*				
<i>Tetris undulata</i>		*				
<b>Grasshoppers</b>						
<i>Chorthippus brunneus</i>			*	*	*	
<i>Chorthippus parallelus</i>		*	*	*	*	*
<b>Earwigs</b>						
<i>Forficula auricularia</i>					*	*
<i>Forficula lesnei*</i>						*
<b>Heteroptera; True Bugs</b>						
<i>Saldula c-album</i>		*				
<i>Dicyphus epilobii</i>				*	*	
<i>Deraeocorus ruber</i>			*	*		
<i>Calocoris norvegicus</i>				*		
<i>Capsus ater</i>			*	*		
<i>Liocoris tripustulatus</i>	*	*	*	*		
<i>Lygocoris pabulinus</i>				*		
<i>Lygocoris spinolae</i>				*		
<i>Lygus rugulipennis</i>		*		*		*
<i>Orthops campestris</i>			*	*		*
<i>Phytocoris varipes</i>					*	
<i>Stenotus binotatus</i>			*			
<i>Leptopterna dolobrata</i>			*	*		
<i>Notostira elongata</i>				*	*	*
<i>Stenodema calcarata</i>		*		*	*	*
<i>Stenodema laevigatum</i>				*		*
<i>Plagiognathus arbustorum</i>				*	*	
<i>Himacerus apterus</i>				*		
<i>Nabis flavomarginatus</i>		*			*	*
<i>Nabis rugosus</i>			*	*	*	*
<i>Anthocoris nemorum</i>	*	*	*	*	*	
<i>Kleidocerys resedae</i>					*	
<i>Cymus melanocephalus</i>				*		
<i>Chilacis typhae</i>		*				
<i>Scolopostethus thomsoni</i>			*	*		
<i>Trapezonotus arenarius</i>			*	*		
<i>Coreus marginatus</i>				*	*	*
<i>Rhopalus subrufus</i>				*		
<i>Eurygaster testudinaria</i>				*		*
<i>Dolycoris baccarum</i>				*	*	*
<i>Eysarcoris fabricii</i>			*	*	*	*
<i>Palomena prasina</i>				*	*	*
<i>Pentatoma rufipes</i>						*

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<i>Picromerus bidens</i>				*		
<i>Troilus luridus</i>						*
<i>Zicrona caerulea</i>		*				
<i>Acanthosoma haemorrhoidale</i>			*			
<b>Lepidoptera; Butterflies</b>						
<i>Thymelicus sylvestris</i>				*		
<i>Thymelicus lineola</i>				*		
<i>Ochlodes venata</i>			*			
<i>Pieris brassicae</i>				*		
<i>Pieris rapae</i>				*	*	
<i>Pieris napi</i>		*				
<i>Anthocharis cardamines</i>	*	*				
<i>Lycaena phlaeus</i>						*
<i>Polyommatus icarus</i>			*		*	
<i>Aglais urticae</i>			*	*	*	*
<i>Inachis io</i>		*		*		
<i>Polygonia c-album</i>				*		
<i>Pararge aegeria</i>		*			*	
<i>Pyronia tithonus</i>				*	*	
<i>Maniola jurtina</i>			*	*		
<i>Aphantopus hyperantus</i>				*		
<b>Diptera; Hoverflies</b>						
<i>Anasimyia transfuga</i>			*			
<i>Cheilosia albitarsus</i>		*	*			
<i>Cheilosia illustrata</i>			*			
<i>Cheilosia pagana</i>						*
<i>Cheilosia variabilis</i>		*				
<i>Episyrphus balteatus</i>				*	*	*
<i>Eristalis arbustorum</i>				*	*	*
<i>Eristalis interrupta</i>				*	*	
<i>Eristalis intricarius</i>				*	*	
<i>Eristalis pertinax</i>			*	*	*	
<i>Eristalis tenax</i>			*	*	*	
<i>Eumerus funeralis</i>				*		
<i>Eupeodes corollae</i>				*	*	*
<i>Eupeodes luniger</i>					*	*
<i>Helophilus pendulus</i>			*		*	
<i>Helophilus trivittatus</i>				*		
<i>Lejogaster metallina</i>					*	
<i>Leucozona lucorum</i>					*	
<i>Melanostoma mellinum</i>		*		*		*
<i>Melanostoma scalare</i>		*		*	*	*
<i>Myathropa florea</i>					*	
<i>Paragus haemorrhous</i>					*	
<i>Platycheirus albimanus</i>		*			*	*
<i>Platycheirus clypeatus</i>		*		*		
<i>Platycheirus granditarsus</i>			*	*	*	
<i>Platycheirus peltatus</i>						*
<i>Platycheirus rosarum</i>		*	*	*	*	
<i>Rhingia campestris</i>		*				*
<i>Ripponensia splendens</i>					*	

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<i>Scaeva pyrastris</i>				*		
<i>Sphaerophoria interrupta</i>				*	*	*
<i>Sphaerophoria scripta</i>				*	*	*
<i>Syrpitta pipiens</i>			*	*	*	*
<i>Syrphus ribesii</i>					*	
<i>Syrphus vitrepennis</i>					*	
<i>Trichopsomyia flavitarsis</i>		*				
<i>Volucella bombylans</i>			*			
<i>Volucella pellucens</i>					*	
<i>Volucella zonaria*</i>					*	
<b>Larger Brachycera</b>						
<i>Chrysopilus asiliformis</i>			*			
<i>Chrysopilus cristatus</i>			*			
<i>Rhagio scolopaceus</i>		*	*			
<i>Rhagio tringarius</i>		*	*			
<i>Haematopota pluvialis</i>			*	*		
<i>Beris chalybata</i>		*	*			
<i>Beris geniculata</i>			*			
<i>Beris vallata</i>			*	*		
<i>Chloromyia formosa</i>			*	*		
<i>Microchrysa polita</i>			*			
<i>Oplodontha viridula</i>			*			
<b>Snail-killing Flies</b>						
<i>Pherbellia cinerella</i>		*	*	*	*	*
<i>Pherbellia griseola*</i>		*				*
<i>Pherbellia schoenherri</i>	*	*		*		*
<i>Pherbellia ventralis</i>	*	*				
<i>Coremacera marginata</i>				*		
<i>Elgivia cucularia</i>	*					
<i>Ilione albiseta</i>			*	*	*	
<i>Limnia unguicornis</i>			*	*	*	
<i>Pherbina coryleti</i>			*	*	*	*
<i>Sepedon spegea</i>	*					*
<i>Tetanocera arrogans</i>		*	*	*	*	*
<i>Tetanocera elata</i>			*	*	*	
<i>Tetanocera punctifrons*</i>				*		
<i>Trypetoptera punctulata</i>		*				
<b>Picture-winged Flies</b>						
<i>Urophora cardui</i>			*			
<i>Urophora stylata</i>			*			
<i>Tephritis bardanae</i>				*		
<i>Tephritis cometa</i>					*	
<i>Terellia ruficauda</i>				*		
<i>Anomoia permunda</i>				*		
<i>Herina frondescentiae</i>			*	*		
<i>Herina lugubris</i>				*	*	
<b>Tachinid Flies</b>						
<i>Eriothrix rufomaculata</i>				*	*	
<i>Phasia obesa</i>			*	*	*	*
<i>Tachina fera</i>					*	*

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<b>Aculeate Hymenoptera</b>						
<b>Ants</b>						
<i>Myrmica ruginodis</i>	*	*				
<i>Myrmica rubra</i>	*	*				
<i>Lasius niger</i>		*				
<b>Spider-hunting Wasps</b>						
<i>Anoplius nigerrimus</i>		*				
<b>Potter Wasps</b>						
<i>Ancistrocerus parietum</i>					*	
<b>Social Wasps</b>						
<i>Dolichovespula sylvestris</i>				*		
<i>Vespula vulgaris</i>				*	*	*
<b>Solitary Wasps</b>						
<i>Trypoxylon figulus</i>			*			
<b>Solitary Bees</b>						
<i>Hylaeus communis</i>					*	
<i>Andrena flavipes</i>			*		*	
<i>Lasioglossum calceatum</i>				*		
<i>Megachile centuncularis</i>					*	
<b>Social Bees</b>						
<i>Bombus hortorum</i>			*			
<i>Bombus lapidarius</i>	*			*	*	
<i>Bombus lucorum</i>					*	
<i>Bombus pascuorum</i>		*	*	*	*	*
<i>Bombus terrestris</i>			*	*	*	*
<i>Bombus vestalis</i>	*					
<i>Apis mellifera</i>			*	*	*	*
<b>Coleoptera; Ladybirds</b>						
<i>Coccidula rufa</i>		*	*			
<i>Propylea 14-punctata</i>		*	*	*	*	*
<i>Harmonia axyridis*</i>			*	*	*	*
<i>Adalia 2-punctata</i>		*	*	*		*
<i>Coccinella 7-punctata</i>	*		*	*	*	*
<i>Psyllobora 22-punctata</i>				*		
<i>Tytthaspis 16-punctata</i>			*	*	*	

## 1.4.2 Upper Grassland

There had been no changes in the flora of this section since the survey in 2009 and as such the account of the flora below is repeated from the 2009 survey. However, a large proportion of this section had been cut with the arisings removed, during late 2009. Short sections of the 'beetle bank' had been cut by the time of the July visit, as had a two metre wide strip along the roadside fence. Neither of these cutting operations had a negative effect on the flora of this section. Selective thistle and dock cutting had taken place by the time of the August visit, this could have long term implications for the species which are host specific on these plants (e.g. picture-winged flies and some true bugs).

This, and the Roadside Meadow are the least floristically rich sections of the whole survey area. The sward contains very few forage resources and is largely even in height throughout. Some planting of herbs has taken place and a limited number of bare ground scrapes have been created to provide nesting areas for solitary bees and wasps. A new bank was created during the summer using material dredged for the creation of a new scrape alongside the Lakeside. Much of this section has also been planted with blocks of scrub to provide variation to the reserve. Underfoot the ground is largely dry due to the north facing aspect of the slope. The grassland itself is in places dominated by pernicious 'weed' species including Creeping Thistle (*Cirsium arvense*), which despite having a number of associated insect species, and providing a seed resource for finches provides little by way of quality to the grassland. The grassland, which in places is dominated by fine-leaved species (*Festuca* and *Agrostis* spp.), has a dense thatch layer which cools the ground and makes it largely unsuitable for many invertebrate species, it is even too dense to be attractive to rodents and shrews. In spring and early summer forage resources were limited to a few species including Dandelion, Ground Ivy, Lesser Celandine (*Ranunculus ficaria*), Daisy (*Bellis perennis*), buttercup (*Ranunculus* sp.) with small amounts of Tufted Vetch (*Vicia cracca*), Red Clover and Cow Parsley (*Anthriscus sylvestris*) providing the primary, albeit limited amounts of forage. By high and late summer forage resources were still limited with largely the above species and some Rose (*Rosa canina*) and Bramble around the scrub blocks, White Clover (*T. repens*), Creeping Thistle, Spear Thistle (*C. vulgare*), Willowherb (*Epilobium* sp.), ragwort (*Senecio* sp.) and Meadowsweet.

The poor structure of the sward and limited range of forage resources in this section is largely responsible for poor the variety of species recorded across the range of groups surveyed.

As an addition to the habitats available in this section holes of differing sizes were drilled in fence posts surrounding the scrub plantations to attract nesting solitary bees and wasps.

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<b>Odonata; Damselflies</b>						
<i>Calopteryx splendens</i>			*			
<i>Platynemis pennipes</i>			*			
<i>Enallagma cyathigerum</i>				*		
<i>Ischnura elegans</i>		*	*	*	*	
<b>Orthoptera; Bush Crickets</b>						
<i>Metrioptera roeselii</i> *			*	*		
<i>Conocephalus discolor</i>				*		
<i>Conocephalus dorsalis</i>			*		*	
<b>Grasshoppers</b>						
<i>Chorthippus brunneus</i>				*	*	
<i>Chorthippus parallelus</i>			*	*	*	*

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<b>Earwigs</b>						
<i>Forficula auricularia</i>						*
<b>Heteroptera; True Bugs</b>						
<i>Tingis cardui</i>			*	*		
<i>Dicyphus epilobii</i>				*		
<i>Calocoris norvegicus</i>				*		
<i>Liocoris tripustulatus</i>				*		
<i>Lygocoris lucorum</i>				*		
<i>Lygocoris spinolae</i>					*	
<i>Lygus rugulipennis</i>				*		
<i>Stenotus binotatus</i>			*			
<i>Leptopterna dolabrata</i>			*	*		
<i>Notostira elongata</i>				*		*
<i>Stenodema calcarata</i>	*	*	*	*	*	*
<i>Stenodema laevigatum</i>			*			
<i>Plagiognathus arbustorum</i>				*		
<i>Plagiognathus chrysanthemi</i>				*		
<i>Himacerus apterus</i>				*		
<i>Nabis rugosus</i>			*	*	*	
<i>Coreus marginatus</i>	*			*	*	*
<i>Eurygaster testudinaria</i>				*		
<i>Dolycoris baccarum</i>					*	*
<i>Eysarcoris fabricii</i>				*		
<i>Elasmotethus interstinctus</i>					*	
<b>Lepidoptera; Butterflies</b>						
<i>Thymelicus sylvestris</i>				*		
<i>Thymelicus lineola</i>				*		
<i>Ochlodes venata</i>			*			
<i>Pieris brassicae</i>				*		
<i>Anthocharis cardamines</i>	*					
<i>Lycaena phlaeus</i>					*	*
<i>Polyommatus icarus</i>			*	*	*	
<i>Aglais urticae</i>		*	*			
<i>Inachis io</i>	*					
<i>Polygonia c-album</i>				*		
<i>Melanargia galathea</i>				*		
<i>Pyronia tithonus</i>				*	*	
<i>Maniola jurtina</i>			*	*	*	
<b>Diptera; Hoverflies</b>						
<i>Anasimyia contracta</i>			*			
<i>Cheilosia albitarsus</i>			*			
<i>Cheilosia illustrata</i>			*			
<i>Episyrphus balteatus</i>				*	*	*
<i>Eristalis arbustorum</i>				*	*	
<i>Eristalis tenax</i>			*	*	*	
<i>Eupeodes corollae</i>					*	
<i>Eupeodes luniger</i>					*	*
<i>Melanogaster hirtella</i>			*			
<i>Melanostoma mellinum</i>		*		*	*	
<i>Melanostoma scalare</i>		*		*	*	*
<i>Myathropa florea</i>					*	

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<i>Pipizia noctiluca</i>			*			
<i>Platycheirus albimanus</i>		*		*	*	
<i>Rhingia campestris</i>		*				
<i>Scaeva pyrastris</i>				*		
<i>Sphaerophoria interrupta</i>						*
<i>Sphaerophoria scripta</i>		*		*	*	*
<i>Syritta pipiens</i>				*	*	
<i>Syrphus ribesii</i>		*	*			
<b>Larger Brachycera</b>						
<i>Chrysopilus cristatus</i>			*			
<i>Rhagio scolopaceus</i>			*			
<i>Rhagio tringarius</i>			*			
<i>Haematopota pluvialis</i>			*			
<i>Beris chalybata</i>		*				
<i>Beris vallata</i>			*			
<i>Nemotelus pantherinus</i>			*			
<i>Pachygaster leachii</i>				*		
<i>Chloromyia formosa</i>			*	*		
<i>Microchrysa polita</i>			*	*		
<i>Oplodontha viridula</i>			*			
<i>Bombylius major</i>	*					
<b>Snail-killing Flies</b>						
<i>Pherbellia cinerella</i>		*	*	*	*	*
<i>Pherbellia griseola*</i>		*				
<i>Pherbellia schoenherri</i>	*	*				
<i>Limnia unguicornis</i>			*		*	
<i>Pherbina coryleti</i>			*			
<i>Sepedon spegea</i>						*
<i>Tetanocera arrogans</i>			*	*		
<b>Picture-winged Flies</b>						
<i>Urophora cardui</i>			*			
<i>Tephritis bardanae</i>		*				
<i>Tephritis cometa</i>				*		
<i>Terellia longicauda</i>				*		
<i>Terellia ruficauda</i>				*		
<i>Anomoia permunda</i>				*		
<i>Herina frondescentiae</i>			*			
<i>Herina lugubris</i>				*	*	
<b>Conopid Flies</b>						
<i>Sicus ferrugineus</i>				*		
<b>Tachinid Flies</b>						
<i>Eriothrix rufomaculata</i>				*	*	
<i>Phasia obesa</i>			*	*	*	*
<b>Aculeate Hymenoptera</b>						
<b>Jewel Wasps</b>						
<i>Trychrysis cyanea</i>			*	*		
<i>Chrysis ignita</i>			*			
<b>Ants</b>						
<i>Myrmica ruginodis</i>		*				
<i>Lasius niger</i>	*	*				*

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<b>Spider-hunting Wasps</b>						
<i>Anoplius nigerrimus</i>			*	*	*	
<b>Potter Wasps</b>						
<i>Gymnomerus laevipes</i>			*			
<i>Ancistrocerus sp**</i>					*	
<b>Social Wasps</b>						
<i>Vespula vulgaris</i>		*		*	*	*
<b>Solitary Wasps</b>						
<i>Crossocerus podagricus</i>						*
<i>Ectemnius cephalotes</i>				*		
<i>Ectemnius continuus</i>			*			
<b>Solitary Bees</b>						
<i>Hylaeus communis</i>			*			
<i>Andrena haemorrhoea</i>	*					
<i>Andrena subopaca</i>		*	*			
<i>Halictus tumulorum</i>				*		
<i>Lasioglossum albipes</i>				*	*	
<i>Lasioglossum calceatum</i>				*		
<i>Lasioglossum morio</i>				*		
<i>Osmia leaiana</i>				*		
<i>Osmia rufa</i>	*	*	*			
<b>Social Bees</b>						
<i>Bombus lapidarius</i>	*		*	*		
<i>Bombus lucorum</i>				*		
<i>Bombus pascuorum</i>	*		*		*	*
<i>Bombus pratorum</i>			*			
<i>Bombus terrestris</i>	*		*	*		
<i>Bombus vestalis</i>	*					
<i>Apis mellifera</i>	*	*	*	*		
<b>Coleoptera; Ladybirds</b>						
<i>Calvia 14-guttata</i>			*			
<i>Propylea 14-punctata</i>				*		
<i>Harmonia axyridis*</i>	*	*	*	*		*
<i>Adalia 2-punctata</i>	*		*	*		
<i>Adalia 10-punctata</i>			*			
<i>Coccinella 7-punctata</i>	*	*	*	*	*	*
<b>Longhorn Beetles</b>						
<i>Grammoptera ruficornis</i>			*			

*Ancistrocerus sp,\*\** A female was observed provisioning one of the drilled holes in a fence post so was not captured/killed for critical identification.

### 1.4.3 Lakeside

There had been no changes in the flora of this section since the survey in 2009 and as such the account of the flora below is repeated from the 2009 survey. However, some small areas of vegetation by the riverbank had been cut by the time of the August visit, this operation would have had no negative impact on the species present.

This section has the most diverse range of habitats available and is largely dominated by the presence of the Western Pool. The sward surrounding the pool is a mixture of short and long herb-rich grassland, the western and northern areas are largely dominated by rank species poor grassland with luxurious growth of nettles and thistles where nutrient rich soil, presumably dredged from the river, has been deposited. Around the northern shore of the lake is a rush *Juncus* sp, dominated area, while to the west of the pool are stands of mature Blackthorn (*Prunus spinosa*), Alder and Willow (*Salix* sp.). An area of the shortest sward on the eastern side of the pool had been sacrificed to create a small scrape for wading birds. The sward in the north western corner of this section is largely Stinging Nettle (*Urtica dioica*) and umbellifer (*Oenanthe* sp,) dominated with Alder scrub. Underfoot the ground is level and largely dry, with the exception of the northern edge of the lake where the ground is dominated by rushes *Juncus* spp, and the western edge which floods at times of high river levels. As a result of the variation in sward heights and structure this section was the most floristically rich and produced the largest species list of the survey with a greater range of species being present. Overall the forage resources in this section were similar to those in the Eastern Pool section, only available in greater abundance. In spring and early summer Dandelion, Marsh Marigold, Cuckoo Flower, Ground Ivy, Comfrey and buttercup sp (*Ranunculus* sp,) provide the primary forage resources. In high and late summer Red Clover, Bird's Foot Trefoil, White Dead-nettle, vetches (*Vicia* spp,) umbellifers (*Oenanthe* sp,), Bramble, thistles (*Cirsium* spp), ragwort (*Senecio* spp), Purple Loosestrife, Meadowsweet and Water Mint were the dominant forage resources. By the time of the final visit in September, forage resources had diminished to stands of Water Mint and a little Red Clover and Purple Loosestrife.

The range of micro-habitats available, the diversity of forage resources and variation in sward structure once again helped make this the most productive of the four survey areas on the reserve.

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<b>Mecoptera; Scorpion Flies</b>						
<i>Panorpa communis</i>		*	*		*	
<b>Odonata; Damselflies</b>						
<i>Calopteryx splendens</i>			*			
<i>Calopteryx virgo</i>			*	*		
<i>Platycnemis pennipes</i>			*	*		
<i>Pyrrhosoma nymphula</i>		*				
<i>Erythromma najas</i>			*	*		
<i>Coenagrion puella</i>		*		*		
<i>Enallagma cyathigerum</i>			*	*	*	
<i>Ishnura elegans</i>		*	*	*	*	
<b>Dragonflies</b>						
<i>Anax imperator</i>			*	*		
<i>Libellula depressa</i>			*			
<b>Orthoptera; Bush Crickets</b>						
<i>Pholidoptera griseoaptera</i>					*	*
<i>Conocephalus discolor</i>				*	*	*

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<i>Conocephalus dorsalis</i>				*	*	
<b>Groundhoppers</b>						
<i>Tetrix subulata</i>	*	*			*	
<i>Tetrix undulata</i>	*			*		
<b>Grasshoppers</b>						
<i>Chorthippus brunneus</i>				*	*	
<i>Chorthippus parallelus</i>			*	*	*	*
<b>Earwigs</b>						
<i>Forficula auricularia</i>						*
<b>Heteroptera; True Bugs</b>						
<i>Dicyphus epilobii</i>				*	*	
<i>Calocoris norvegicus</i>			*	*		
<i>Capsus ater</i>		*	*			
<i>Liocoris tripustulatus</i>				*		
<i>Lygocoris spinolae</i>			*	*		*
<i>Orthops campestris</i>	*					
<i>Pantilius tunicatus</i>						*
<i>Phytocoris varipes</i>				*		
<i>Stenotus binotatus</i>			*	*		
<i>Leptopterna dolobrata</i>			*			
<i>Notostira elongata</i>				*		*
<i>Stenodema calcarata</i>	*	*	*	*		
<i>Stenodema laevigatum</i>		*	*	*		
<i>Trignotylus ruficornis</i>				*		
<i>Plagiognathus arbustorum</i>			*	*		
<i>Himacerus apterus</i>					*	*
<i>Nabis rugosus</i>			*	*		*
<i>Anthocoris nemoralis</i>	*		*			
<i>Anthocoris nemorum</i>	*		*			*
<i>Cymus melanocephalus</i>				*		
<i>Trapezonotus arenarius</i>				*		
<i>Coreus marginatus</i>				*	*	*
<i>Eurygaster testudinaria</i>			*	*	*	*
<i>Dolycoris baccarum</i>				*	*	
<i>Eysarcoris fabricii</i>				*		
<i>Palomena prasina</i>				*	*	*
<i>Piezodorus lituratus</i>						*
<i>Zicrona caerulea</i>				*		
<b>Lepidoptera; Butterflies</b>						
<i>Thymelicus sylvestris</i>				*		
<i>Thymelicus lineola</i>				*		
<i>Ochlodes venata</i>			*			
<i>Pieris brassicae</i>			*			
<i>Pieris rapae</i>				*	*	*
<i>Pieris napi</i>		*				
<i>Anthocharis cardamines</i>	*	*				
<i>Lycaena phlaeus</i>		*		*		*
<i>Polyommatus icarus</i>			*	*	*	
<i>Aglais urticae</i>			*	*		
<i>Inachis io</i>	*	*		*		
<i>Pararge aegeria</i>				*		

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<i>Melanargia galathea</i>				*		
<i>Pyronia tithonus</i>				*	*	
<i>Maniola jurtina</i>			*		*	
<i>Aphantopus hyperantus</i>				*		
<b>Diptera; Hoverflies</b>						
<i>Cheilosia albitarsus</i>		*	*			
<i>Cheilosia illustrata</i>			*	*		
<i>Chrysotoxum bicinctum</i>				*	*	
<i>Chrysotoxum cautum</i>			*			
<i>Episyrphus balteatus</i>				*		
<i>Eristalis arbustorum</i>			*	*	*	*
<i>Eristalis interrupta</i>				*	*	*
<i>Eristalis pertinax</i>	*					
<i>Eristalis tenax</i>	*	*	*	*	*	*
<i>Eupeodes corollae</i>	*	*				*
<i>Eupeodes luniger</i>				*	*	*
<i>Helophilus pendulus</i>		*	*	*		
<i>Helophilus trivittatus</i>				*		
<i>Melanostoma mellinum</i>					*	*
<i>Melanostoma scalare</i>				*	*	*
<i>Myathropa florea</i>			*	*	*	
<i>Neoascia meticulosa</i>		*				
<i>Pipiza noctiluca</i>				*		
<i>Platycheirus albimanus</i>	*	*		*	*	*
<i>Platycheirus clypeatus</i>		*		*		*
<i>Platycheirus granditarsus</i>				*		
<i>Platycheirus manicatus</i>		*				
<i>Platycheirus peltatus</i>						*
<i>Platycheirus rosarum</i>			*		*	
<i>Sphaerophoria interrupta</i>		*	*	*	*	
<i>Sphaerophoria scripta</i>		*			*	*
<i>Syritta pipiens</i>				*	*	*
<i>Syrphus ribesii</i>	*			*	*	
<i>Trichopsomyia flavitarsis</i>		*				
<i>Volucella bombylans</i>			*			
<i>Volucella pellucens</i>			*	*	*	
<b>Larger Brachycera</b>						
<i>Haematopota pluvialis</i>			*	*		
<i>Beris vallata</i>			*	*		
<i>Oxycera rara</i>			*			
<i>Oxycera trilineata</i>			*			
<i>Vanoyia tenuicornis*</i>			*			
<i>Chloromyia formosa</i>			*			
<i>Odonotomyia argentata*</i>		*				
<i>Oplodontha viridula</i>			*			
<b>Snail-killing Flies</b>						
<i>Pherbellia cinerella</i>		*	*		*	*
<i>Pherbellia griseola*</i>		*				
<i>Pherbellia schoenherri</i>	*		*			
<i>Pherbellia ventralis</i>	*					
<i>Elgivia cucularia</i>	*					

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<i>Ilione albiseta</i>		*	*	*		
<i>Limnia unguicornis</i>			*	*	*	
<i>Pherbina coryleti</i>			*		*	*
<i>Sepedon spegea</i>						*
<i>Tetanocera arrogans</i>		*	*		*	*
<i>Tetanocera elata</i>			*		*	*
<b>Picture-winged Flies</b>						
<i>Urophora cardui</i>			*			
<i>Urophora stylata</i>			*			
<i>Tephritis bardanae</i>		*				
<i>Tephritis cometa</i>				*		
<i>Terellia ruficauda</i>				*		
<i>Xyphosia miliaria</i>			*	*		
<i>Herina frondescentiae</i>			*			
<i>Herina lugubris</i>					*	
<b>Tachinid Flies</b>						
<i>Eriothrix rufomaculata</i>				*	*	
<i>Phasia obesa</i>				*		*
<i>Tachina fera</i>				*		
<b>Aculeate Hymenoptera</b>						
<b>Ants</b>						
<i>Myrmica ruginodis</i>			*			
<i>Lasius niger</i>	*			*		
<b>Social Wasps</b>						
<i>Vespula germanica</i>				*	*	
<i>Vespula vulgaris</i>	*	*		*	*	*
<b>Solitary Wasps</b>						
<i>Trypoxylon figulus</i>			*			
<i>Ectemnius cephalotes</i>				*		
<b>Solitary Bees</b>						
<i>Andrena chrysoceles</i>		*		*		
<i>Andrena cineraria</i>	*					
<i>Andrena haemorrhhoa</i>	*			*		
<i>Andrena subopaca</i>				*	*	
<i>Halictus tumulorum</i>				*		
<i>Lasioglossum albipes</i>				*	*	*
<i>Lasioglossum calceatum</i>	*	*		*		
<i>Lasioglossum morio</i>				*		
<b>Social Bees</b>						
<i>Bombus lapidarius</i>	*		*		*	
<i>Bombus lucorum</i>			*		*	
<i>Bombus pascuorum</i>	*	*		*	*	*
<i>Bombus rupestris</i> *					*	
<i>Bombus terrestris</i>			*	*	*	
<i>Bombus vestalis</i>	*	*		*		
<i>Apis mellifera</i>	*		*	*	*	*
<b>Coleoptera; Ladybirds</b>						
<i>Coccidula rufa</i>		*	*	*		
<i>Calvia 14-guttata</i>			*			
<i>Propylea 14-punctata</i>		*			*	*
<i>Harmonia axyridis</i> *			*	*	*	*

<b>Survey Date/ Group and species</b>	<b>20 Apr.</b>	<b>19 May</b>	<b>16 Jun.</b>	<b>19 July</b>	<b>19 Aug.</b>	<b>13 Sept.</b>
<i>Adalia 2-punctata</i>			*			
<i>Coccinella 7-punctata</i>	*	*	*	*	*	*
<i>Psyllobora 22-punctata</i>			*			*
<i>Tytthaspis 16-punctata</i>			*			

### 1.4.4 Roadside Meadow

There had been no changes in the floral composition of this section since the 2009 survey. However, two major changes to the compartment had taken place, the first, the whole compartment was cut and baled in late autumn 2009. This was a very beneficial objective which will aid the reduction of nutrients in the soil to enable a more choice flora to flourish. Unfortunately this work was undone when a horse was put on the meadow by the time of the first visit in April. The animal was grazing the whole compartment throughout the survey period, with the exception of the May and June visits when it was not present.

There are two problems related to this season-long grazing regime; first many grazers are sweet toothed and as a result graze off the flower heads in preference to the vegetative parts, leaving little or no forage resources for insects. After this, the vegetative parts are grazed leaving little by way of structure or sward height variation. Secondly, horses are notorious for dunging in certain areas of a meadow and not grazing the area where they dung. This results in a build up of dung and nutrients in scattered areas and a flush of strong vegetative growth, often of less desirable plant species.

As a result of the grazing pressure on this compartment it remained the most floristically poor of the survey sections. Flowers were at a premium during the course of this survey and the species table and lack of insect numbers reflects this, being lower than during any of the previous surveys.

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<b>Mecoptera; Scorpion Flies</b>						
<i>Panorpa communis</i>			*			
<b>Odonata; Damselflies</b>						
<i>Calopteryx splendens</i>		*		*		
<i>Platynemesis pennipes</i>			*			
<i>Enallagma cyathigerum</i>			*	*		
<i>Ischnura elegans</i>			*		*	
<b>Orthoptera; Bush Crickets</b>						
<i>Pholidoptera griseoaptera</i>				*	*	*
<i>Conocephalus discolor</i>				*		*
<i>Conocephalus dorsalis</i>				*		
<b>Groundhoppers</b>						
<i>Tetrix undulata</i>		*				
<b>Grasshoppers</b>						
<i>Chorthippus brunneus</i>				*	*	
<i>Chorthippus parallelus</i>		*	*	*	*	*
<b>Earwigs</b>						
<i>Forficula auricularia</i>		*				
<b>Heteroptera; True Bugs</b>						
<i>Calocoris norvegicus</i>			*	*		
<i>Capsus ater</i>			*			
<i>Lygocoris spinolae</i>			*			
<i>Stenotus binotatus</i>			*			
<i>Leptopterna dolabrata</i>			*	*		
<i>Notostira elongata</i>				*		*
<i>Stenodema calcarata</i>	*	*		*		
<i>Stenodema laevigatum</i>		*		*		
<i>Nabis rugosus</i>			*			*
<i>Anthocoris nemorum</i>		*				

Survey Date/ Group and species	20 Apr.	19 May	16 Jun.	19 July	19 Aug.	13 Sept.
<i>Trapezonotus arenarius</i>			*			
<i>Coreus marginatus</i>	*			*	*	
<i>Eurygaster testudinaria</i>			*	*	*	*
<i>Dolycoris baccarum</i>						*
<b>Lepidoptera; Butterflies</b>						
<i>Thymelicus sylvestris</i>				*		
<i>Thymelicus lineola</i>				*		
<i>Pieris brassicae</i>			*	*		
<i>Pieris rapae</i>			*		*	
<i>Pieris napi</i>		*				
<i>Anthocharis cardamines</i>	*	*				
<i>Polyommatus incarus</i>				*	*	
<i>Aglais urticae</i>		*	*			
<i>Inachis io</i>	*	*		*		
<i>Pyronia tithonus</i>				*		
<i>Maniola jurtina</i>			*	*		
<b>Diptera; Hoverflies</b>						
<i>Cheilosia albitarsus</i>		*	*			
<i>Cheilosia illustrata</i>			*			
<i>Episyrphus balteatus</i>				*	*	*
<i>Eristalis arbustorum</i>				*	*	
<i>Eristalis interrupta</i>				*		
<i>Eristalis pertinax</i>		*	*			
<i>Eupeodes corollae</i>					*	
<i>Melanostoma mellinum</i>		*				*
<i>Melanostoma scalare</i>		*		*	*	*
<i>Platycheirus albimanus</i>						*
<i>Platycheirus granditarsus</i>			*			
<i>Sphaerophoria scripta</i>				*	*	
<i>Syrirta pipiens</i>			*	*	*	
<b>Larger Brachycera</b>						
<i>Rhagio scolopaceus</i>		*				
<i>Rhagio tringarius</i>		*				
<i>Haematopota pluvialis</i>			*			
<i>Beris chalybata</i>		*				
<i>Chloromyia formosa</i>			*			
<i>Dioctria atricapilla</i>			*			
<b>Snail-killing Flies</b>						
<i>Pherbellia cinerella</i>		*				
<i>Limnia unguicornis</i>				*		
<i>Tetanocera arrogans</i>		*				
<b>Picture-winged Flies</b>						
<i>Urophora jaceana</i>			*			
<i>Urophora stylata</i>			*			
<i>Herina lugubris</i>				*		
<b>Tachinid Flies</b>						
<i>Eriothrix rufomaculata</i>				*		
<b>Aculeate Hymenoptera</b>						
<b>Potter Wasps</b>						
<i>Gymnomerus laevipes</i>			*			

<b>Survey Date/ Group and species</b>	<b>20 Apr.</b>	<b>19 May</b>	<b>16 Jun.</b>	<b>19 July</b>	<b>19 Aug.</b>	<b>13 Sept.</b>
<b>Social Wasps</b>						
<i>Vespula vulgaris</i>				*	*	
<b>Solitary Bees</b>						
<i>Andrena haemorrhoa</i>		*				
<i>Andrena pubescens</i>		*				
<i>Andrena subopaca</i>			*	*		
<i>Lasioglossum albipes</i>			*			
<i>Lasioglossum calceatum</i>			*	*		
<i>Nomada panzeri</i>		*				
<b>Social Bees</b>						
<i>Bombus lapidarius</i>		*	*	*	*	
<i>Bombus pascuorum</i>	*	*		*		
<i>Bombus pratorum</i>			*			
<i>Bombus terrestris</i>	*		*	*		
<i>Bombus vestalis</i>			*	*		
<i>Apis mellifera</i>			*		*	
<b>Coleoptera; Ladybirds</b>						
<i>Propylea 14-punctata</i>				*		
<i>Coccinella 7-punctata</i>	*		*	*	*	*

## 1.5 Notes on the Red Data Book and Nationally Scarce species

One Red Data Book and six Nationally Scarce species were recorded during the survey. Details of their national statuses are taken from the national reviews listed in the references in Section 1.9. In these reviews hymenoptera and dermaptera have been given Nationally Scarce A and B ratings, while diptera have not. A description of these ratings is given at the end of this text in Section 1.5.1.

### Dermaptera, Earwigs

**Lesne's Earwig** *Forficula lesnei* (Nationally Scarce B)

Recorded from scattered localities in southern England and Wales, this species is elusive and almost certainly under-recorded and easily overlooked due to its overall similarity with the more common and widespread Common Earwig (*F. auricularia*). This species appears to have a preference for scrubby habitats and rough vegetation. A single female swept from the grassland around the Eastern Pool on 13th September. This species has been recorded during each of the previous surveys.

### Diptera, Hoverflies

**A Hoverfly** *Volucella zonaria* (Nationally Scarce)

Larvae are scavengers and predators in the nests of social wasps where they probably feed on larvae and pupae. A recent colonist in the UK which has begun spreading rapidly, the majority of records coming from the south coast and the London area. A singleton recorded in the Eastern Pool compartment on 19th August.

This species had previously been recorded on the reserve in 2008.

### Diptera, Soldierflies

**A Soldierfly** *Odontomyia argentata* (Red Data Book 2)

This species is poorly known, the larvae develop in moist rotting wood, flood refuse and shallow pools vulnerable to summer drought. Once widely distributed it is now confined to a few sites in southern England. A single female swept from *Juncus* in the southwest corner of the Lakeside compartment on 19th May. This appears to constitute the first modern for Somerset.

**A Soldierfly** *Vanoyia tenuicornis* (Nationally Scarce)

Recorded widely in southern and central England into south Wales in fens, seepage meadows and occasionally coastal marshes and dune slacks. Adults can often be found by sweep-netting bushes that overhang water, or emergent vegetation. Larvae are thought to develop in damp soil or decaying vegetation but are poorly known. A singleton were recorded from the Lakeside on 16th June.

### Diptera, Snail-killing Flies

**A Snail-killing Fly** *Tetanocera punctifrons* (Nationally Scarce)

Recorded from scattered localities in England and Scotland, typically from wetlands, but may also have a preference for wet woodland habitats. Larval requirements are unclear with the possibility of terrestrial or aquatic slugs and snails providing the host. A pair was swept from the vegetation by the Eastern Pool on 19th July. This species was previously recorded during the 2008 and 2009 surveys.

**A Snail-killing Fly** *Pherbellia griseola* (Nationally Scarce)

Recorded widely in the UK from a range of wetland habitats including fens, bogs, dune slacks and damp woodland. The larvae develop as parasitoids of aquatic snails such as *Lymnaea palustris*. Single males were swept from the around the Eastern Pool on 19th May and 13th September, a pair were swept from the vegetation by the Lakeside on 19th May and a male from the Upper Grassland

on 19th May. This species was previously recorded during the 2008 and 2009 surveys and appears to be thriving on the reserve.

## Hymenoptera, Cuckoo Bees

### **A Cuckoo Bumblebee** *Bombus rupestris* **(Nationally Scarce B)**

Widely recorded in England and Wales in a wide range of flower-rich habitats. This species is a social parasite in the nest of the common bumblebee species *Bombus lapidarius*. Both the host and the cuckoo require areas with a wide variety of flower species in continuity from March to September. Numbers of the parasite fluctuate according to the abundance of the host. This species is currently enjoying a period of population expansion. The host bumblebee was frequently recorded during the survey.

A single queen was recorded in the Lakeside Compartment on 19th August, suggesting successful breeding in the nest of the host had taken place either on the reserve or in the immediate vicinity.

## **1.5.1 Additional Species Notes**

In addition to the Red Data Book and Nationally Scarce species noted above, one noteworthy species, a recent colonist species was also recorded, details of this species are given below.

## Orthoptera: Bush Crickets

### **Roesel's Bush Cricket** *Metrioptera roeselii*

A species which has rapidly spread north and westwards in the past twenty years from a scattering of sites on the south and east coasts. A single nymph was found in the Upper Grassland on 16th June and an adult was recorded here on 19th July, suggesting that a gravid female had perhaps arrived on site in 2009.

## Coleoptera: Ladybirds

### **Harlequin Ladybird** *Harmonia axyridis* **(Vagrant/recent colonist)**

A large and varied species of ladybird in both colouration and markings. The first authenticated records for Britain of this species were in 2004). Since this time the species has spread rapidly throughout much of England and Wales, reaching Scotland and Northern Ireland in 2007 (P. Brown *pers obs*). Adults and larvae feed on aphids and a range of other terrestrial invertebrates and can be beaten/swept from scrub.

Recorded in low numbers in each compartment except the Roadside Meadow during all visits. There was a similar marked decline on the abundance of this species recorded during 2008 and 2009.

## 1.5.2 Explanation of Rarity Ratings

**Red Data Book1**      Endangered; currently known from five or fewer 10km squares in Britain and in danger of extinction.

**Red Data Book2**      Vulnerable; currently known from between six and ten 10km squares in Britain. Populations declining and considered likely to become endangered.

**Red Data Book3**      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. Other Species Recorded

While insects were the main target group for survey, mammals, amphibians and reptiles and noteworthy birds were to be recorded during the survey visits. As a result, noteworthy species from each group were recorded.

### 1.6.1 Birds

#### **Common Sandpiper** *Actitis hypoleucos*

Three birds on the recently created Lakeside scrape during the visit on 20th April.

#### **Greenshank** *Tringa nebularia*

A single bird briefly on the Lakeside scrape during the visit on 19th July.

#### **Barn Owl** *Tyto alba*

A single adult male was disturbed from the Alder trees by the western end of the Lakeside on 13th September. Judging by the amount of whitewash and presence of a number of pellets here, this appeared to have been a regular roost site.

### 1.6.2 Mammals

#### **Bank Vole** *Myodes (Clethrionomys) glareolus*

Two Bank Voles were seen beneath a piece of roofing felt in the Upper Grassland during the visit on 19th July and singletons there on 19th August and 13th September. A singleton was also seen beneath roofing felt in the Lakeside compartment on 19th August.

#### **Woodmouse** *Apodemus sylvaticus*

One under a piece of roofing felt in Eastern Pool section on 16th June

#### **Pygmy Shrew** *Sorex minutus*

A singleton beneath a piece of roofing felt in the Upper Grassland during the visit on 19th July.

#### **Common Shrew** *Sorex araneus*

A singleton found dead on the footpath in the Lakeside compartment on 19th August.

#### **Water Shrew** *Neomys fodiens*

A singleton seen beneath a piece of roofing felt in the Lakeside compartment on 19th August.

#### **Roe Deer** *Capreolus capreolus*

A single doe was disturbed from the Eastern Pool compartment on 19th July.

### 1.6.3 Amphibians

**Toad** *Bufo bufo*

Toads were numerous during this survey with three by the Eastern Pool on 20th April and one on 19th May. Singletons in the Upper Grassland on 19th July, 19th August and 13th September, and the Lakeside on 20th April, 19th August and 13th September.

**Common Frog** *Rana temporaria*

A singleton seen in the Lakeside compartment on 19th August.

### 1.6.4 Reptiles

**Slow worm** *Anguis fragilis*

Two Slow worms were recorded from beneath pieces of roofing felt in the grassland surrounding the Lakeside on 19th July.

## 1.7 Discussion

Following survey during 2008 and 2009, a repeat survey using the same search techniques and visit frequency in 2010 has revealed forty-one new species for the reserve. Similarly, a number of species recorded during the previous two surveys were not recorded during 2010. These two facts should always be expected on any survey site, and are, therefore, not entirely surprising. It was noted in the 2008 report that meaningful conclusions from survey of any site can only be drawn after more thorough survey over a period of years. This will take into account variations in weather conditions, and, more importantly, maturation of the site and changes in management regime. With this in mind, it is pleasing to report an increase not only in the range and number of species recorded, but also the increase in number of Nationally Scarce and Red Data Book species. Even a few species which can be regarded as common and widespread were added to the species list during this survey which would, perhaps have been expected to have been found during the previous surveys (e.g. the hoverfly *Volucella pellucens* and the Spider-hunting Wasp *Anoplius nigerrimus*). Whether these 'new' species were previously present but in low numbers only, or genuinely reflect colonisation is difficult to say, but in the case of the hoverfly it is unlikely to have been overlooked as it is a large black and white species which is easy to find. This fact alone illustrates the importance of regular survey to record species on a reserve as opposed to relying on the results from a single season. All newly created sites have to rely on colonisation of more specialist species from nearby similar habitats, or from low level populations of such species existing fortuitously in restricted micro habitats already present on site.

A secondary consideration when assessing the range and numbers of species recorded is the weather during the survey period and any extremes of weather prior to the whole survey and each survey visit being undertaken. In this instance, inclement weather was a feature of the summers of 2008 and 2009, which followed the wettest summer on record in 2007. The favourable weather experienced during the survey period in 2010, and the knock-on effects of poor weather of recent years undoubtedly would have had a significant effect on the range of species recorded. This, coupled with two consecutive winters with colder than recent average temperatures for prolonged periods would also have had some impact on insect numbers present. However, following two of the coldest winters in recent years, much of the survey period experienced warm and dry conditions with little rain. April, May and June were largely warm and dry, with the January to June period being the driest since 1920, July was rather cool and cloudy. August was the coolest since 1993 but was still largely dry and September was largely dry and sunny. These generally more than ideal weather conditions should have helped invertebrate numbers climb after three poor years, the warm weather enabling species to fly, feed and reproduce with more certainty than in previous summers. The weather conditions during this survey period played an important role in regards to activity conditions for insects. Many are dependant upon dry warm weather to complete their life cycles. However, the weather during the first six months of the year were exceptionally dry and resulted in many species struggling to cope and the reserve becoming very parched by late May and early June. The knock-on effect of this was to hamper plant growth and productivity and this may have played a part in the lower numbers of some groups this year. For example the number of true bugs and hoverflies was lower than in previous years, but despite this, new species for the reserve were still recorded in both groups.

A number of positives can once again be gained from the survey, including the increase in numbers and range of species which are have been shown to be present and in particular populations or the presence of a number of Nationally Scarce species, and the presence of another Red Data Book species bears well for the future importance of this reserve.

The results of this survey, coupled with those of 2008 and 2009 show an expected increase in numbers of species of the now twenty-six survey groups. Table 1 presents the total number of

species recorded from each survey group in each of the three survey years, 2008, 2009 and 2010. The cumulative total for the reserve as a result of survey, and the total number of species currently recognised as resident in Britain in each group is also presented. These figures, and the increase in numbers of species recorded each year highlights the importance of regular/constant effort surveying and not relying on a single sample to give a picture of the importance of a site.

**Table 1**

Numbers of species recorded from each survey group in 2008, 2009 and 2010 in total compared against the total number of currently recognised British species.

<b>Survey Group</b>	<b>No. of sp 2008</b>	<b>No. of sp 2009</b>	<b>No. of sp 2010</b>	<b>Reserve Total</b>	<b>No. of British sp</b>
Mecoptera; Scorpion Flies	3	2	1	3	3
Neuroptera; Lacewings	0	3	2	3	46
Odonata; Damselflies	7	5	9	9	16
Dragonflies	6	7	2	9	23
Orthoptera; Bush Crickets	4	4	5	5	11
Groundhoppers	2	2	2	2	3
Grasshoppers	3	3	2	3	11
Dermaptera; Earwigs	2	2	2	2	4
Heteroptera; True Bugs	39	50	45	62	488*
Lepidoptera; Butterflies	21	18	17	21	59
Diptera; Hoverflies	45	48	46	63	265
Larger Brachycera	10	11	19	20	159
Snail-killing Flies	13	17	14	17	67
Picture-winged Flies	8	8	9	15	73
Conopid Flies	3	2	1	3	24
Tachinid Flies	5	4	3	6	247
Hymenoptera; Ants	3	3	3	3	53
Jewel Wasps	0	1	2	2	33
Spider-hunting Wasps	0	0	1	1	40
Potter Wasps	0	0	2	2	22
Social Wasps	1	4	3	5	9
Solitary Wasps	3	3	4	8	126
Solitary Bees	14	20	14	31	224
Social Bees	8	8	9	9	23
Coleoptera; Ladybirds	8	10	9	13	46
Longhorn Beetles	0	2	1	2	60

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

In keeping with the previous surveys, the majority of species recorded in 2010 can be classified as being common, widespread and generalist in their habitat requirements. Many of the species involved are also highly mobile, enabling them to colonise new habitats quickly. The majority of these will remain once the habitat has stabilised and it is likely that only a very few of these will be lost if the grassland management regimes are adjusted. However, these losses should be countered by the retention of the more specialist species and perhaps, the colonisation of other more specialist species from sites nearby. The changes in totals of some groups recorded over the three years reflects the mobile nature and fluctuations in species numbers that could be expected in the short term.

In many of the groups, the number of species recorded were those that could have been expected, Scorpion Flies and lacewings were again poorly represented despite being relatively easy to identify and survey. Of the three Scorpion fly species recorded in 2008, two in 2009 only the commonest

species was recorded during 2010. Weather may have played a role here as the commonest species *Panorpa communis* was only present in exceedingly low numbers, a phenomenon observed elsewhere in southern England during the year. Lacewings were again searched for in the sweep-net samples but only the two widespread and most common species were recorded. Many species of lacewing are more closely associated with woodland habitats and this may explain their absence on the reserve.

The orthoptera and dermaptera are two examples of groups where there were unlikely to be significantly more species on the reserve than those recorded. The Common Green Grasshopper (*Omocestus viridulus*) was absent during this survey but had previously only been recorded as the odd singleton. Grasshopper numbers in general were lower than in previous years, again something that was noted elsewhere in southern England. This species is probably still present but surviving in low numbers. The arrival of Roesel's Bush Cricket *M. roeselii* was previously intimated, so the presence of a nymphs and adult in the Upper Grassland is evidence of their recent arrival on site. This species is both distinctive in appearance and has a loud far carrying stridulation. Therefore it is unlikely to have been overlooked previously, and it is likely that a gravid female arrived on site during the autumn of 2009. This is a highly mobile species that has spread widely through England during the past fifteen years. There is still scope for the Oak Bush Cricket (*Meconema thalassinum*) to be recorded, this is a largely arboreal species which is often more easily recorded coming to light during moth-trapping as opposed to being found during conventional insect survey.

The number of damselfly species recorded saw an increase on previous years with two new species being added to the species list. All seven species which had been recorded in 2008 were once again present after a dip in numbers in 2009. However, numbers of specimens recorded were again significantly lower than those in 2008. Low numbers of damselflies were again recorded at other southern sites suggesting that this is a national dip in numbers and not unique to Rodden. The run of poor summer weather in the previous three years is probably the main reason for this drop in numbers. Of the two new species recorded, the Red-eyed Damselfly *Erythromma najas* could perhaps have been expected, this is a species which favours emergent vegetation on open pools and the small pool adjacent to the Western Pool provided ideal conditions. This is where a small number were recorded during the June and July visits. This species is quite easy to overlook because it rarely strays from water into surrounding vegetation so is rarely taken in sweep-net samples. A number of adults were recorded and it is likely that this species has been present for some time. The appearance of a single male specimen of the Variable Damselfly *Coenagrion pulchellum* was more of a surprise, and this record appears to constitute a new record for East Somerset. This species is easy to overlook (and miss) amongst the more common Azure and Common Blue Damselflies unless every blue damselfly is checked. At sites where blue damselflies are super-abundant this is not easy, however, the discovery of this specimen was down to luck due to the low number of damselflies present during the survey, enabling a more thorough search being easily made. The presence of a single specimen would suggest that there is a breeding population either on the reserve or in the vicinity.

Dragonfly numbers were again disappointing with only two species being recorded during the survey, this again may be a result of the weather conditions during the whole three year survey period. On the whole, damselfly and dragonfly numbers were low during the survey and at other southern sites so no real conclusion regarding this group on the reserve can really be drawn.

While the number of true bugs recorded showed a decrease on those recorded in 2009, a further seven species were added to the reserve list giving a higher total than that recorded in 2008. Of the new species, three were shieldbugs, including the Gorse Shieldbug *Piezodorus lituratus* which came as a surprise given the small amount of gorse present. However, this species will also utilise other leguminous species. The Birch Shieldbug *Elasmotethus interstinctus* was swept from Birch *Betula pendulus* growing in the scrub blocks. Of the other bug species recorded *Pantilius tunicatus* is usually only found on Alder *Alnus glutinosus* so the continued presence of this species will ensure

the bug remains, while *Scolopostethus thomsoni* lives on Stinging Nettle *U. dioica*, which is abundant on the reserve. *Kleidocerys resedae* is widespread on scrub as is *Pentatoma rufipes*, while *Chilacis typhae* is usually found on Common Reedmace *Typha latifolia*.

The lack of great botanical diversity and poor sward structure probably still plays a major role in the number of true bugs present, but changes in management of the grassland should hopefully see this situation change. However, the summer cutting of areas of Spear and Creeping Thistle (*C. vulgare* and *C. arvense*) will have an adverse affect on two species of lacebug previously recorded; *Tingis ampliata* and *T. cardui* which are specific to these two species as well as a range of other species (e.g. Picture-winged Flies). Similarly the summer cutting of Broad-leaved Dock *Rumex obtusifolius* could, in the long term, affect populations of the Dock Leatherbug *Coreus marginatus* on the reserve.

The number of butterflies recorded declined again on previous years, one missing species was the Brimstone *Gonepteryx rhamni* and the absence of this species cannot be explained. The Painted Lady *Cynthia cardui* was recorded in abundance in 2009 as a result of an influx of the species into the country, there was no influx during 2010 to explain its absence. Similarly the Red Admiral *Vanessa atalanta* often occurs in numbers as a result of continental influxes and was largely absent during 2010. In contrast, two species recorded in 2008 and not in 2009 were again present; the Marbled White *Melanargia galathea* and Ringlet *Aphantopus hyperantus*, both were present in very low numbers during the 2010 survey and appear to have been particularly affected by recent poor summer weather.

The total number of hoverfly species recorded decreased on previous years, but still included seven new species for the reserve. One of the surprise admissions to the species list was the common and widespread *Volucella pellucens*, this species can usually be found in almost any habitat so is unlikely to have been previously overlooked. A number of specimens were recorded suggesting it has enjoyed a productive summer on the reserve. The remaining new species are largely small and secretive and easily overlooked, such as *Eumerus funeralis*, *Pipizia noctiluca* and *Ripponensia splendens*, all three species could easily have been present for some time and simply missed or overlooked during previous surveys. Each was recorded as a single specimen only. Similarly *Platycheirus manicatus* is similar in appearance to a number of other members of this genus can easily be missed amongst a sample. The large and Nationally Scarce *Volucella zonaria*, first recorded during 2008 was again present, this species breeds in wasp nests, of which at least two were present on the reserve during 2008, so hopefully this species will have been able to breed here during 2010.

The Larger Brachycera (snipeflies, soldierflies, horseflies, robberflies and beeﬂies) saw a much more productive year on the reserve. As intimated previously, a wetland site such as this should hold good numbers of species of this group. All species previously recorded were again present with the exception of one species; the soldierfly *Stratiomys potamida*, which can be difficult to find and is prone to sporadic appearance on any site. In addition, a further seven species were added to the reserve list, this included one Red Data Book and one Nationally Scarce species. Two of the new species, *Beris geniculata* and *Pachygaster leachii* are small and easily overlooked, typically they are swept from scrub, both are quite likely to have been present for some time. Amongst the new soldierflies *Oxycera rara* and the Nationally Scarce *Vanoyia tenuicornis* both develop as larvae in wet mud or decaying plant material and could easily have had their development delayed by recent cool wet summers and unusually colder winters than recently experienced. These species, and many other soldierfly species are capable of surviving long periods of flooding or drought in their larval stages before emerging as adults when the climate is more favourable. Similarly *Nemotelus pantherinus* may also have been held back by adverse weather/development conditions. Where present this species is usually encountered in numbers, despite this, only a single specimen was recorded. The Red Data Book soldierfly *Odontomyia argentata* is unusual amongst this group in that it has an early flight period and is typically finished by late May. It is also well camouflaged and rarely (in my experience) sits openly on foliage or flowers. Adults are rarely encountered while sweep-netting

dense stands of rush *Juncus* sp, and typically only found as singletons, rarely is it encountered in numbers. It was in dense *Juncus* that a single female was recorded around the Lakeside in May. This appears to be the first modern record for Somerset and further raises the importance of the reserve.

The final new addition was the beefly *Bombylius major*, a widespread species which lays eggs around the entrances of solitary bee nests in bare soil. A single adult recorded shows promise that hymenoptera numbers may be gradually increasing.

The continued absence of the two common robberflies *Machimus atricapillus* and *M. cingulatus* remains a mystery. Both species are usually to be found in any habitat.

The addition of more species of soldierfly during this survey suggests that further species could still be found on the reserve during future surveys.

The number of Snail-killing flies was slightly down on the previous year, but again included two Nationally Scarce species which have been present throughout the three years of survey; *Tetanocera punctifrons* and *Pherbellia griseola*, further enforcing the evidence that breeding populations of these two species are both present and thriving on the reserve. *Coremacera marginata* which had been first recorded in 2009 was again present, but *Pherbellia nana* and *Dichetophora obliterated* were not recorded. The reserve total for this group remains at 17 species.

The number of Picture-winged Flies increased by four species, two belong to the family Tephritidae, while two (both *Herina* sp) belong to the closely related Ulidiidae. All four new species can be considered to be widespread, the two Tephritids *Tephritis cometa* and *Terellia longicauda* are host plant specific. In the case of these two species they develop as larvae inside the stems and flowers of Creeping and Spear Thistles (*C. vulgare* and *C. arvense*) and the latter in Woolly Thistle *C. eriophorum*. Summer cutting of these species in the grassland could have a detrimental effect on both these, and a number of other Picture-winged Flies (e.g.the *Urophora* sp, and other *Tephritis* sp,) already present on the reserve and should be stopped.

The still relatively low number of hymenoptera recorded can be seen as the major reason why only a single, and the commonest, species of conopid fly was recorded (*Sicus ferrugineus*). All conopid flies rely on their host hymenopterans being present and the reserve still held very few of the hosts. The absence again of the Red Data Book species *Myopa extricata* was not unexpected after the discovery of a singleton during 2008, but it is still possible that this species is still present on the reserve.

The low number of Tachinid flies recorded is again probably due to the age of the reserve. Tachinid flies develop as larvae inside hosts such as moth caterpillars, the nymphal stages of shieldbugs and in beetles. Given the low number of potential host species recorded, and the general paucity of this group on any survey site, the presence of five of the commonest and most widespread species is not unexpected. It can be hoped that as the reserve matures more species will be recorded. However, the relatively common species *Dexiosoma canina* recorded during 2008 was not recorded again, while *Tachina fera* was. The Red Data Book 1 species *Cistogaster globosa* recorded in 2009 was not recorded during this survey but could still be present.

On the whole, hymenoptera numbers could again be considered to be rather disappointing, but when one takes into account the relatively young age of the site, the general lack of abundant forage resources and, for the solitary species, until recently, the overall lack of bare ground or dead wood habitat for nesting, the few species recorded is quite satisfactory. Despite this, twelve new species were recorded for the reserve including members of two groups previously unrecorded; the Potter and Spider-hunting Wasps, as well as a Nationally Scarce cuckoo bumblebee.

Jewel Wasp numbers increased to two species with the addition of *Trychrysis cyanea*, a relatively widespread species which relies on other hymenoptera species to provision their nests, which it then lays an egg in, thus acting like a cuckoo. This species usually looks for nests in standing dead wood, and as such, along with the second species recorded, *Chrysis ignita*, was recorded investigating holes

in the fence posts in the Upper Grassland. Both species would be attracted to the increase in numbers of solitary bees and wasps nesting in these drilled fence-posts.

A single Spider-hunting Wasp, the common *Anoplius nigerrimus* was recorded nesting in the bare ground of the newly created bank in the Upper Grassland.

Two species of Potter Wasp were additions to the species list, both nest in standing dead wood, and in the case of *Ancistrocerus*, a single female was seen provisioning one of the drilled fence posts in the Upper Grassland. For this reason the specimen was not taken for critical identification, elsewhere on the reserve a male *A. parietum* was recorded. The appearance of these new species hints at an improvement in the overall variety of habitats and food resources available.

Ants are generally difficult to survey by sweep netting and usually require time-consuming and more thorough searches to record their presence, however, the three species recorded are the most common and widespread and it is unlikely that many, if any, more species are present. All three species have been ever present during the surveys.

Social Wasp numbers saw an increase to five species with the addition of *Vespula germanica*, this is a relatively widespread species and was a not unexpected addition to the reserve list.

Solitary Wasps were again poorly represented, despite two new species being recorded, two of the species recorded in 2008 and two recorded in 2009 were not recorded. This again probably relates more to the lack of, until recently, bare ground and standing deadwood habitat for nesting, the general lack of forage resources and the isolated nature of the reserve from other similar habitats where species could colonise from. With improvements over time of the grassland and other habitats available this total should show a slow increase.

Solitary Bee numbers saw a decline on the number recorded in 2009, but did include four new species. Two species are hole nesters in dead wood (*Osmia leaiana* and *Megachile centuncularis*) and were both recorded at the drilled fence-posts in the Upper Grassland, along with other species previously recorded including *Osmia rufa*. *Hylaeus communis* is a widespread but easily overlooked species which nests in cut plant stems (e.g. bramble) while *Nomada panzeri* is a cleptoparasite in the nests of ground nesting solitary bees in the genus *Andrena*. Numbers of ground nesting solitary bees were low again, in keeping with previous years and unfortunately none were recorded nesting in the new bank in the Upper Grassland. Over time, as the reserve matures and the grassland becomes more forage-rich through changes in management, the number of solitary bees (and wasps) would be expected to increase. Further provision of drilled fence posts and solitary bee and wasp scrapes in the turf would be beneficial to these groups.

The eight species of social bee which have been present in previous years were again present, their number was increased in this survey by the presence of a single queen of the cuckoo bumblebee *Bombus rupestris*. This species takes over the nests of the common bumblebee *B. lapidarius*, numbers of the cuckoo species fluctuate from year to year for unknown reasons, and as such this species is still afforded Nationally Scarce status.

The number of ladybird species recorded fell by one species over that recorded in 2009, but included one new species, the Ten-spot Ladybird *Adalia 10-punctata*. This is a common species which would have been expected to be present. It is still possible that one or two other ladybird species could still be recorded on the reserve.

Only a single species of longhorn beetle was recorded, the common and widespread *Grammoptera ruficornis*, this species is easily swept from scrub, typically Hawthorn. The continued absence of the most common and widespread species *Rutpela maculata* (formerly *Strangalia maculata*) remains a mystery. It is still possible that this species, and other species of longhorn beetle will be found on the reserve.

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