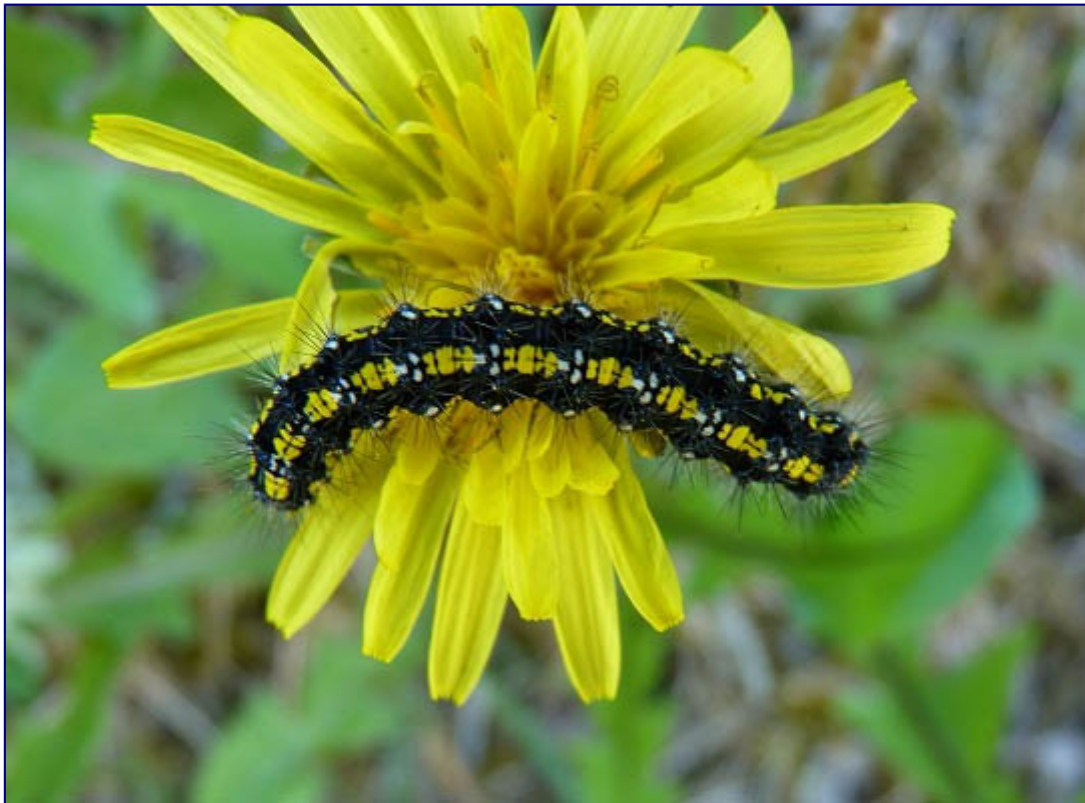


Invertebrates 2013

An invertebrate survey of St Georges Flower Banks, North Somerset

David J. Gibbs

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This report was produced for Robert Buck

david.usia@blueyonder.co.uk

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1 Summary

- The four half-days of survey identified 374 species of invertebrate.
- Of these, 11 (2.9%) are considered here as Key Species, a rather low proportion for dry grassland habitat.
- Two (0.5%) of the species found have RDB or equivalent status, a low proportion.
- The ISIS analysis identified five Broad Assemblage Types (BATs) that were well represented by the invertebrates included.
- Compartment E, was the most diverse area with 135 species but only two nationally scarce (1.5%) so is of relatively low conservation concern.
- Compartment H proved to have the best quality with three nationally scarce species (3.5%).
- Although the invertebrates associated with trees and shrubs were the most diverse, quality was low.
- Open grassland and grassland-scrub interface produced the rarest species of greatest conservation concern, especially the two weevils *Zacladus exiguus* on cranesbills and *Glocianus punctiger* on dandelions.

2 Introduction

St Georges flower banks is a strip of grassy and planted embankments and roadside verges along the A369 at Easton-in-Gordano. The site is well known for its show of orchids and has several other scarce plants such as field garlic. The invertebrates received some limited attention in 2006 when 76 species were identified, including two with Nationally Scarce status, the spider *Zilla diodea* (also found on this survey) and the weevil *Apion stolidum*. So this is the first survey for about seven years.

3 Survey Methodology

3.1 Sampling Techniques

Surveying involved searching flowers for larger species, notably hoverflies, bees and wasps and examining plants for signs of larvae. Most specimens were taken by sweeping with a 14 inch diameter white-bag net through the grass, herbage, under-storey vegetation, along the boles of trees and from overhanging branches. Specimens were extracted from the net with a pooter or, in the case of larger specimens, individually potted in 30ml soda glass tubes. When sampling was completed or the pooter became too full the contents were killed with ethyl acetate then transferred to 30ml soda glass tubes together with a data label. Samples were preserved in a deep freeze until time was available to identify them. The whole site was walked on the each visit but because only about 4 hours was available for each visit, time in each compartment was limited to half an hour. Over the three visits all areas were covered equally. For the purposes of invertebrate sampling the site was

divided into six areas either side of the A369 (see map Figure 1).



Figure 1 Map showing sample compartments

3.2 Sample Timing

The site was visited on four dates from spring to late-summer so covering a substantial part of the period of invertebrate activity, and all the most important months for grassland habitat. Each visit was half a day, so about four hours in the field. The first visit on 6 May 2013 was timed to catch spring species, the subsequent visits on 6 June, 8 July and 22 August cover all the summer active species.

3.3 Constraints

Every attempt was made to visit in sunny, dry conditions, and despite the unsettled weather in the first part of the 2013 field season, all visits were made in good weather conditions. Because only half a day was available for each visit two compartments were not included in the survey. Compartments G and D both contain very little habitat that could be surveyed without being too close to the fast moving traffic.

3.4 Identification

Where practical, invertebrates were identified in the field but wherever the slightest doubt existed, one or more specimens were collected for more detailed scrutiny. To achieve rigorously accurate identifications, specimens were identified using the author's own library and entomological collection. Where these proved insufficient, specimens were submitted to relevant experts. Selected specimens have been retained in the author's personal collection as vouchers.

3.5 Taxonomic Coverage

It is desirable that as wide a taxonomic range as possible is identified, in order to sample numerous ecological types, i.e. invertebrates with widely differing natural histories. As there was only a limited amount of time available for identification, it was important to name the more readily identified groups which do not require very time consuming techniques or are out with the experience of the worker.

The following orders and families of invertebrates were named to species.

Coleoptera – Beetles (all except Meligethes, small Aleocharine rove beetles and other very small obscure families)

Diptera – True Flies (except, Cecidomyiidae, Chironomidae, Ceratopogonidae, Simuliidae, Phoridae, Sphaeroceridae, and females of some groups which are not identifiable).

Hemiptera, Auchenorrhyncha – Froghoppers, Leafhoppers and Planthoppers (excluding females of difficult genera)

Hemiptera, Heteroptera – True Bugs (excluding smaller Miridae)

Hymenoptera, Aculeata – Ants, wasps and bees

Hymenoptera, Symphyta – Sawflies (excluding Nematinae)

Lepidoptera – Butterflies and Moths

Odonata – Dragonflies and Damselflies

Mecoptera – Scorpionflies

Neuroptera – Lacewings

Orthoptera – Grasshoppers and crickets

3.6 Analysis

A system of British conservation statuses has been in use since the Red Data Book for insects (Shirt 1987), amended and supplemented by a series of JNCC Nature Conservation reviews (e.g. Falk 1991a; Falk 1991b). By this system, the rarest and most threatened species are given one of the Red Data Book (RDB) statuses. Species which do not qualify as RDB but are nonetheless uncommon are given one of the Nationally Scarce statuses. The status categories and criteria relevant to this report are defined in Appendix 1.

‘Key Species’ are here defined by the following categories:

British Red Data Book (RDB) and Nationally Scarce species (including statuses from JNCC texts which are published, ‘in press’ or ‘in prep.’); and

species formerly regarded as either RDB or Nationally Scarce but recently downgraded.

For site assessment, the percentage of Key Species is a useful guide to the overall quality of the site for invertebrates, in comparison to other sites surveyed by the authors using similar techniques. Higher quality sites support higher percentages of Key Species. To enable a fair comparison to

survey data accumulated by the authors over many years, species formerly regarded as either RDB or Nationally Scarce but recently downgraded are still treated as Key Species.

There are numerous examples of invertebrates which have been listed as either RDB or Nationally Scarce and have subsequently been found to be more widespread and abundant, either as a result of actual increase in range size or population size, or as a result of improved understanding by entomologists of how to find or identify them. Where the authors regard the official conservation status to be out of date, this will be indicated in the Key Species accounts ([section 5](#)).

3.7 ISIS

Natural England's ISIS application was used to assess the invertebrate assemblages (Broad Assemblage Types (BATs)) present overall and from each trap and to calculate a comparative measure of the conservation importance of the assemblage (the "ISIS Rarity Score").

The ISIS system still needs further development in several areas and some of its output requires specialist interpretation.

4 Results

4.1 Overall Results

The survey identified 374 species of invertebrate ([Appendix 2](#)). A broad range of invertebrate groups was covered to a greater or lesser extent and the species list includes representatives of the following groups: snails, harvestmen, spiders, dragonflies, scorpion flies, lacewings, grasshoppers & crickets, earwigs, plant lice, true bugs, froghoppers, leafhoppers, planthoppers, moths, butterflies, beetles, true flies, sawflies, gall wasps, ants, wasps and bees. The sampling techniques were most efficient at catching Diptera, and the greatest identification effort was concentrated on flies (185 species, 49%). The second largest group found was Coleoptera (64 species 17%), the majority of them phytophagous and flower-frequenting species most readily found with a sweep-net. Lepidoptera come next (40 species, 11%), followed by Hymenoptera (32 species, 8.6%) with a disappointingly low showing for such habitat.

Of the 374 species identified by this survey, 11 (2.9%) are considered here as Key Species (defined in [section 3.6](#)). 2.9% is a low percentage of Key Species for such habitat when compared to equivalent surveys from grassland habitat in the region, but is very similar to the result from the 2006 survey (2.6%). It suggests that the site overall has some conservation value, but no more than likely to be found on similarly sized areas of scrubby grassland in the area. Only two (0.5%) of the species found have RDB or equivalent status, also a rather low result for a sunny grassland habitat.

4.2 ISIS Results

ISIS covers 278 of the 374 species identified from this survey, 62 species being returned as "errors", i.e. not included in the ISIS table. Within that subset, five Broad Assemblage Types (BATs) were well represented with a further three poorly represented (Table 1).

**Table 1 The broad assemblage types represented at
St Georges flower banks.**

BAT code	BAT name	Representation (1-100)	Rarity score	Condition	BAT species richness
F2	grassland & scrub matrix	42	126		131
F1	unshaded early successional mosaic	9	126		27
F3	shaded field & ground layer	6	167	fav	20
A1	arboreal canopy	5	141		17
A2	wood decay	6	153		18
W3	permanent wet mire	4			12
W2	mineral marsh & open water	3			9
W1	flowing water	2		fav	7

The assemblage of “grassland & scrub matrix” species was the best represented at the flower banks as a whole, with 131 associated species. This is as one would expect given the nature of the survey site with extensive areas of grassland, adjacent hedgerow, planted areas, developing scrub and woodland fringes. The rarity score for this BAT is not particularly high indicating that this invertebrate community, while very diverse, is of recent origin and yet to include many scarce species that are specific to this BAT, However, the RDB fly *Cnemacantha muscaria*, which should be included in this assemblage, has not been assigned to a BAP. If it had this BAT would certainly have come out rather better. “Unshaded early successional mosaic”, (i.e. open habitats with an element of disturbance) is less well represented, with only 27 associated species, and with the same rarity score as last. The third BAT reaching the threshold value is “shaded field & ground layer” (i.e. woodland understorey), with 20 associated species, a rather good rarity score and rated as being in favourable condition. This is a rather surprising result given the paucity of woodland present and its very recent origin, but with two exceptions all associated species are very frequent woodland species. The two species that probably boost the rarity score of this BAT are *Forficula lesnei* and *Homoneura interstincta*. In my experience both of these are more associated sallow scrub and tall herbage or poplar foliage so would be better categorised as F2 or even A1. The fourth community “arboreal canopy” (i.e. invertebrates associated with tree foliage) has 17 associated species and a relatively high rarity score, as with the last suggesting that the more specialist species have colonised from adjacent hedgerows and woodland. The final BAT well represented is “wood decay”, with 18 species and a rather high rarity score again indicating the importance the trees at this site.

ISIs brings out a further three BAT’s that are too poorly represented by the data from this survey for any conclusions to be drawn. They are all wetland BAT’s presumably here because of the small seepages found along the base of the north facing banks in one compartment, or possibly due to

wandering insects (especially Odonata) from adjacent habitats. These three BAT's might be important at St Georges flower banks, particularly "flowing water" which is rated as favourable, but more data needed to confirm this.

4.3 Comparison of Compartments

The six sampling compartments differed in size but not so much that this is likely to be important to the results, about the same amount of time being spent in each every visit. The habitat present is much more significant, the compartments varying in aspect, topography (notably slope) and proportion of grassland to plantation/scrub.

Figure 2 Results by Compartment

Given the great variability normally found in such samples, diversity proved to be rather consistent across the compartments. Those sites that have higher diversity are the ones with greater tree cover. This is not surprising as grassland is a relatively depauperate habitat compared to woodland, the much more three-dimensional structure of woodland allowing many more species to coexist in a small area. Quality is much more variable with compartment A producing no key species while compartment H produced three (3.5%). The other four compartments are all very similar in quality with 2 or 3 key species, the proportion in compartment E being depressed by the high diversity coming from numerous tree-associated species.

5 Key Species

5.1 Red Data Book

5.1.1 *Homoneura interstincta* (RDB3)

This species was originally placed on the British list on the basis of specimens identified by Collin. However, it has recently been shown that Collin misidentified his specimens and in fact they belong with a newly described species *H. mediospinosa*. The true *interstincta* was only discovered to be British when three specimens were caught in south Somerset in 2003 (Gibbs 2004). Since then the species has been found at four other sites in Somerset and Bristol and there are a couple of records from outside this area. Nothing is known of its habitat requirements or life history but there seems to be an association with poplar and willow. Larvae of this genus are generally believed to develop in decaying vegetable matter including fallen leaves (Falk & Ismay in prep.). Adults recorded from June to August (pers. obs.). A single female swept in compartment C

5.1.2 *Cnemocanthe muscaria* RDB3

This small black Lauxanid fly with smoky wings has a very scattered distribution across the whole of Britain. Ten sites so far from Somerset, and one in Gloucestershire (pers obs). Its habitat requirements are unclear, it has been swept from riverside vegetation, from scrub on limestone, from upland grassland and ancient broad-leaved woodland. Nothing is known of its larval biology but other members of this family are generally believed to develop in decaying vegetable matter, including fallen leaves. Adults are recorded from May to August (Falk & Ismay in prep.). Swept in compartment H.

5.2 Nationally Scarce

5.2.1 *Zilla diodia* Nationally Scarce b

This attractive orb-web spider is confined to southern England and southeast Wales, with by far the majority of the records concentrated in the south-eastern counties. Locally there are just a handful of scattered localities for the species. Frequents scrubby habitat, sea cliffs, woodland rides, old hedgerows etc, in sheltered places. Adults mostly present in May and June with occasional females into the autumn (Harvey et al 2002). One found in the south-facing compartment H.

5.2.2 *Forficula lesnei* Nationally Scarce b

Lesne's Earwig is very similar to its much commoner congener Common Earwig *Forficula auricularia* but lacks functional wings and is a little smaller and paler. In Britain this species is on the northern edge of its range and largely confined to southern counties favouring base-rich soils. In Somerset it has recently been found to be quite frequent but most records are confined to the south of the county ([Haes & Harding 1997](#)) but there are now several records from the Bristol region. Although it is likely to have been under recorded due to its superficial resemblance to the Common Earwig, it appears to be restricted to particularly favourable locations which have not yet been characterised ([Haes & Harding op.cit.](#)). It is frequently found in scrub and amongst common weeds, habitats which are ubiquitous in the country, so its absence from most areas suggests that very subtle habitat and environmental conditions, no doubt readily disturbed, are essential for its survival. Adult insects can be found from May to October. Swept from tall herbage in compartment B.

5.2.3 *Malthinus balteatus* Nationally Scarce b

One of the small fragile soldier beetles, this species is widespread in the southern half of England and South Wales but local ([Hyman 1992](#), [NBN](#)). In the region it is not too infrequent with several recent records ([Atty 1983](#); [Duff 1993](#)). Inhabits damp broad-leaved woodland and carr, the larvae probably develop in dead twigs and branches. Adults have been recorded from willow, hazel and lime in June and July and seem to be short lived ([Hyman op.cit.](#)). Swept in the most wooded compartment F.

5.2.4 *Dasytes plumbeus* Nationally Scarce b

This small, black, false soldier beetle is widespread in England and South Wales. Not infrequent in Somerset with about eleven locality records in the last 20 years ([Duff 1993](#)). Possibly under recorded due to difficulty in identification. Frequents chalk pits, cliff tops grazing levels and other grassland sites. Adults recorded in June and early July ([Hyman 1992](#)). Swept in compartment B.

5.2.5 *Phytoecia cylindrica* Nationally Scarce b

This blackish longhorn beetle is distributed through the southern half of England and South Wales but is infrequently recorded. Found along hedgerows, field margins, roadside verges etc. from March to July, mainly late June to early July. On the Continent it is known to develop in the stems of hogweed, wild carrot, cow parsley and rough chervil. Adults visit the flowers of cow parsley and hawthorn ([Hyman 1992](#)). One swept from compartment C.

5.2.6 *Bruchus atomarius* Nationally Scarce b

This small black seed beetle is widespread in southern and central England and also recorded in Wales. In Somerset it seems to be fairly frequent with a number of recent records (Duff 1993) suggesting that it is increasing or was overlooked in the past. Frequents rough grassland on neutral or calcareous soils, hedgebanks, road verges and woodland margins. It is associated with vetches, recorded from *Vicia sativa*, *V. cracca* and *V. sepium*. The larvae develop in pods, adults recorded in June and from August to October (Hyman 1992). Swept in compartments C and E.

5.2.7 *Zacladus exiguus* Nationally Scarce b

This is the smaller of the two black cranesbill weevils, and by far the rarest. Although it is widespread in England and Wales, it is very local and mainly southern. Locally very rare with no previous records for either Somerset or Gloucestershire (Atty 1983; Duff 1993). Found on roadside verges, coastal cliff tops, less often dunes where the larvae are associated with several of the small-flowered species of cranesbills, the larvae feeding on the roots. Adults recorded from May to July (Hyman 1992). Found on several plants of *Geranium pyrenaicum* at the western end of compartment F.

5.2.8 *Glucianus punctiger* Nationally Scarce b

This small black weevil is widespread in England and Wales but very scattered and local. In Somerset it is very rare with only two records, Mere Heath in 1986 and Long Ashton in 1923 (Duff 1993), almost as uncommon in Gloucestershire with three locality records (Atty 1983). Usually found on coastal grassland, especially on sandy soil, but also on other types of grassland. Phytophagous and associated with dandelions, adults recorded from May to August (Hyman 1992). One swept from compartment H.

5.2.9 *Chorisops nagatomii* Nationally Scarce

This small metallic green and yellow soldier fly is widespread but very local in southern England north to Yorkshire and south Wales. It is probably not too uncommon in the region with six records listed by Alexander (1999b) and there are several records from north Somerset (pers. obs.). Within Bristol it is known from several localities (pers. obs.). Perhaps now known to be too frequent to justify its national status. Its habitat preferences are far from clear, being taken in broadleaved woodland, parkland, wetlands and riparian habitats. The larval requirements are not known but circumstantial evidence suggests that it develops in damp leaf litter, perhaps close to streams. Adults are recorded from July to September; the male sometimes found in numbers around large trees (Falk 1991b). Swept in compartments E and F.

6 Site Evaluation

6.1 Overall Assessment

This long, linear roadside site proved to be very diverse, 374 species is a high count from just four half-day visits. Although woodland habitats can often yield such high diversities in a short time, grassland and other open habitats are usually much less speciose, or at least fewer species can be found in the same time frame. This diversity is likely to be due to the range of habitats present, from short, dry grassland, through tall herbage and scrub to young plantation and a few mature trees. In one compartment there is even a small seepage adding some water-dependant species.

However, key species were few, with a proportion of just 2.9% the site overall is at the lower end of sites of conservation interest. This is not too surprising as much of the habitat is of recent origin and there is no contiguous quality habitat from where scarce and specialist species can readily colonise.

Table 2 Key species summary.

Species	Habitat preference	Local status	Compt
<i>Zilla diodia</i>	Scrub in open sunny place	Rare	H
<i>Forficula lesnei</i>	Tall herbage and sallow scrub	Frequent	B
<i>Malthinus balteatus</i>	trees	Fairly frequent	F
<i>Dasytes plumbeus</i>	Flowery grassland	Uncommon	B
<i>Phytoecia cylindrica</i>	Tall herbage	Fairly frequent	C
<i>Bruchus atomarius</i>	Grassland	Fairly frequent	C & E
<i>Zacladus exiguus</i>	Tall grassland, hedgerows	Very rare	F
<i>Glocianus punctiger</i>	Grassland	Rare	H
<i>Chorisops nagatomii</i>	Scrub, woodland edge	Not uncommon	E & F
<i>Homoneura interstincta</i>	Sallow/Hawthorn scrub	Fairly frequent	C
<i>Cnemacantha muscaria</i>	Dry grassland	Fairly frequent	H

If we take a closer look at the actual key species recorded they can very approximately be categorised as species requiring open, sunny conditions (albeit with some scattered scrub), and those requiring trees or more humid, coarse herbaceous vegetation. In the latter category we have *Forficula lesnei*, *Malthinus balteatus*, *Phytoecia cylindrica*, *Chorisops nagatomii* and *Homoneura interstincta*, all of them relatively frequent locally so of lesser conservation concern. The species of warm, open grassland are *Zilla diodia*, *Dasytes plumbeus*, *Bruchus atomarius*, *Zacladus exiguus*, *Glocianus punctiger* and *Cnemacantha muscaria*. Although *Bruchus atomarius* and *Cnemacantha muscaria* are also relatively frequent locally, at least three of these species, *Zilla diodia*, *Zacladus exiguus* and *Glocianus punctiger* are very rare in the region, particularly *Zacladus exiguus* which is otherwise unrecorded in Somerset. Although this species was recorded in the tree-dominated compartment F, it was actually collected from the open, tall-grass habitat at the western extremity of this compartment. From this analysis we can conclude that, while much of the diversity comes from the tree-dominated habitat, the conservation interest is largely from open, sunny flower-rich grassland with some developing scrub.

6.2 Compartment Assessment

6.2.1 Compartment A

Surprisingly no species of conservation importance were found in this compartment despite it being adjacent to the best compartment (H). Diversity was as expected, very similar to the other compartments with a high grassland component (B and H). Although this compartment does not have quite the varied topography of compartments B and H, being relatively flat or, at the eastern end, gently sloping. However, given the low number of key species found overall, the possibility that this is just a chance finding must be a real likelihood.

6.2.2 Compartment B

Opposite compartment A, so north-facing, and with a significant grassland component and much steeper slopes than compartment A. Diversity almost identical to compartment A but included two key species, *Forficula lesnei* and *Dasytes plumbeus*, one associated with tall herbage and bushes,

the second with flower-rich grassland, both with several other records locally. So while this compartment has some conservation value for open habitats, this appears to be relatively limited.

6.2.3 Compartment C

This compartment is north facing and with a fairly steep slope, including some almost sheer parts with the underlying substrate partly exposed. This compartment even had a small seepage so a few species associated with this feature were recorded. Diversity good, no doubt because of the range of habitats, with three key species so a fairly good proportion within the context of the site as a whole. All three of the key species are relatively well known locally, one each from bushy habitat, tall herbage and flower-rich grassland.

6.2.4 Compartment E

This is a very flat, heavily planted compartment, which proved to be the most diverse but quality was relatively poor with only two key species, one of them a very low concern species associated with trees and the other relatively well known locally associated with flower-rich grassland.

6.2.5 Compartment F

Also largely a wooded compartment but unlike compartment E with recent plantings, compartment F contains several mature trees. A relatively diverse site with three key species, two of them associated with the trees and of relatively low conservation concern, one associated with small Geranium plants in the open grassy areas and a very rare species in region.

6.2.6 Compartment H

A relatively narrow, south-facing compartment with significant areas of open flower-rich grassland and several areas of low cliff where the bedrock is exposed. Although there is much scrub and hedgerow at the top of the embankment, there is little recent planting. Diversity reasonable and quality better than any other compartment with three key species, a proportion of 3.5%. All of these three species are associated with open habitats, grassland or scrub in open warm situations. One is an RDB3 species but has several known sites in the region, but both of the other two are rare locally so of high conservation concern.

[top](#)

7 Recommendations

It can be concluded from the data gathered on this survey that, while the mature trees and recent plantations harbour a diverse range of invertebrates, they are not of great conservation concern. The habitat with greatest interest is tall, dry, flower-rich grassland which is scattered in small pockets across all compartments but is best seen in compartment H. The somewhat similar habitat in compartment A proved relatively unproductive. Compartment A differs from compartment H in lacking the small cliffs which make parts of the latter difficult or impossible to cut mechanically. However, the grassland in compartment A was almost entirely cut before the final visit in 2013, so inhibiting the establishment of any invertebrates that had not completed their life cycle. It cannot be concluded with confidence that mechanical mowing is the reason for the difference in quality between compartments A and H, but it is a clear difference in management, so might be significant.

Given that the open flower-rich grassland is the most important habitat at St Georges flower meadows, it is this habitat that needs to be maintained.

1. No further tree planting
2. At western end of compartment F encourage *Geranium pyrenaicum* (and other smaller species in this genus). Take advice from botanist but they need hedgerow or woodland edge conditions, open and sunny but with some shading to avoid becoming droughted.
3. Look for smaller *Geranium* species elsewhere on St Georges flower banks and ensure they are not too overshadowed or swamped by tall herbaceous vegetation.
4. Limit grass cutting in any block of grassland to no more than 50% in each year where this is possible. A different 30-50% being cut the following season.
5. In compartment H some scrub cutting will be required to prevent overshadowing of the grassland. Some hawthorn could be removed to extent the current extent of the grassland.

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9 Appendix 1:

British conservation status categories – definitions.

These status categories and criteria were introduced for British insects by Shirt (1987) and received some modifications by later authors (e.g. Hyman and Parsons (1992, 1994)).

Red Data Book category EXTINCT

Definition Species which were formerly native to Britain but have not been recorded since 1900.

Red Data Book category 1, Endangered

Definition Species in danger of extinction and whose survival is unlikely if causal factors continue to operate. Endangered species either (a) occur as only a single population within one 10-km square, or (b) only occur in especially vulnerable habitats, or (c) have been declining rapidly or continuously for twenty years or more to the point where they occur in five or fewer 10-km squares, or (d) may already have become extinct.

Red Data Book category 2, Vulnerable

Definition Species which are likely to move into the Endangered category in the near future if causal factors continue to operate. Vulnerable species are declining throughout their range or occupy vulnerable habitats.

Red Data Book category 3, Rare

Definition Species which occur in small populations and although not currently either Endangered or Vulnerable are at risk. Rare species exist in 15 or fewer 10-km squares, or are more widespread than this but dependent on small areas of especially vulnerable habitat.

Red Data Book category I, Indeterminate

Note: Best written as ‘RDBi’ rather than ‘RDBI’ as the latter is easily confused with ‘RDB1’ (Endangered).

Definition Species considered to be either Endangered, Vulnerable or Rare but with insufficient information to say which.

Red Data Book category K, Insufficiently Known

Definition Species suspected to merit either Endangered, Vulnerable, Rare or Indeterminate status but lacking sufficient information. Species included in this category may have only recently been discovered in Britain, or may be very poorly recorded for a variety of reasons.

Nationally Scarce Category A, Na.

Definition Species which do not fall within Red Data Book categories but which are nonetheless uncommon in Great Britain and thought to occur in 30 or fewer (typically between 16 and 30) 10-km squares of the National Grid, or for less well-recorded groups, in seven or fewer vice-counties.

Nationally Scarce Category B, Nb.

Definition Species which do not fall within Red Data Book categories but which are nonetheless uncommon in Great Britain and thought to occur in between 31 and 100 10-km squares of the National Grid, or for less well-recorded groups, between eight and twenty vice-counties.

Nationally Scarce, N.

Definition Species which do not fall within Red Data Book categories but which are nonetheless uncommon in Great Britain. This status category has been used where information has not been sufficient to allocate a species to either Na or Nb. These species are thought to occur in between 16 and 100 10-km squares of the National Grid.

10 Appendix 2:

Species list by compartment.

Order: Family	Species	Vernacular	National Status	A	B	C	E	F	H
Stylommatophora: Helicidae	<i>Cochlicella acuta</i>	Pointed Snail		X		X		X	X
Opiliones: Leiobunidae	<i>Dicranopalpus ramosus</i>				X		X		
Araneae: Theridiidae	<i>Episinus angulatus</i>								X
Araneae: Theridiidae	<i>Enoplognatha ovata</i>								X
Araneae: Linyphiidae	<i>Erigone dentipalpis</i>								X
Araneae: Linyphiidae	<i>Lepthyphantes tenuis</i>			X					
Araneae: Linyphiidae	<i>Linyphia hortensis</i>						X		
Araneae: Araneidae	<i>Araneus diadematus</i>								X
Araneae: Araneidae	<i>Zilla diodia</i>		Nationally Scarce b						X
Araneae: Pisauridae	<i>Pisaura mirabilis</i>								X
Araneae: Salticidae	<i>Heliophanus flavipes</i>			X					
Odonata: Coenagriidae	<i>Pyrrhosoma nymphula</i>	Large Red Damselfly							X
Odonata: Coenagriidae	<i>Ischnura elegans</i>	Blue-tailed Damselfly							X
Odonata: Coenagriidae	<i>Coenagrion puella</i>	Azure Damselfly					X		
Mecoptera: Panorpidae	<i>Panorpa germanica</i>						X		
Neuroptera: Hemerobiidae	<i>Micromus variegatus</i>							X	X
Neuroptera:	<i>Hemerobius nitidulus</i>						X		

Hemerobiidae										
Neuroptera:										
Hemerobiidae	<i>Hemerobius micans</i>							X		
Orthoptera:										
Tettigoniidae	<i>Pholidoptera griseoptera</i>	Dark Bush Cricket						X		X
Orthoptera:										
Phaneropteridae	<i>Leptophyes punctatissima</i>	Speckled Bush Cricket						X	X	X
Orthoptera:										
Acrididae	<i>Chorthippus brunneus</i>	Common Field Grasshopper						X		X
Orthoptera:										
Acrididae	<i>Chorthippus parallelus</i>	Meadow Grasshopper						X	X	X
Dermoptera:										
Forficulidae	<i>Forficula auricularia</i>	Common Earwig						X	X	X
Dermoptera:										
Forficulidae	<i>Forficula lesnei</i>							X		
Hemiptera:										
Psyllidae	<i>Psylla alni</i>	a psyllid						X		
Hemiptera:										
Lygaeidae	<i>Drymus sylvaticus</i>								X	
Hemiptera:										
Lygaeidae	<i>Heterogaster urticae</i>								X	X
Hemiptera: Miridae	<i>Capsus ater</i>								X	
Order: Family	Species	Vernacular								
Hemiptera: Miridae	<i>Dicyphus annulatus</i>							X		
Hemiptera: Miridae	<i>Dicyphus epilobii</i>								X	
Hemiptera: Miridae	<i>Heterotoma planicornis</i>							X		X
Hemiptera: Miridae	<i>Miris striatus</i>								X	
Hemiptera: Miridae	<i>Notostira elongata</i>							X	X	X
Hemiptera: Miridae	<i>Stenodema laevigata</i>							X	X	X
Hemiptera:										
Acanthosomatidae	<i>Acanthosoma haemorrhoidale</i>	Hawthorn Shieldbug								X
Hemiptera:										
Acanthosomatidae	<i>Elasmostethus interstinctus</i>	Birch Shieldbug							X	X
Hemiptera:										
Pentatomidae	<i>Dolycoris baccarum</i>	Hairy Shieldbug							X	X
Hemiptera:										
Pentatomidae	<i>Palomena prasina</i>	Common Green Shieldbug						X	X	X
Hemiptera:										
Pentatomidae	<i>Pentatoma rufipes</i>	Red-legged Shieldbug						X		
Hemiptera:										
Scutelleridae	<i>Eurygaster testudinaria</i>	Tortoise Shieldbug								X
Hemiptera:										
Cercopidae	<i>Cercopis vulnerata</i>							X	X	X
Hemiptera:										
Aphrophoridae	<i>Aphrophora alni</i>								X	
Hemiptera:										
	<i>Philaenus spumarius</i>							X	X	X

Noctuidae									
Lepidoptera: Noctuidae	<i>Panemeria tenebrata</i>	Small Yellow Underwing							X
Lepidoptera: Noctuidae	<i>Autographa gamma</i>	Silver Y							X X
Lepidoptera: Noctuidae	<i>Euclidia glyphica</i>	Burnet Companion							X X
Order: Family	Species	Vernacular	National Status	A	B	C	E	F	H
Lepidoptera: Noctuidae	<i>Rivula sericealis</i>	Straw Dot							X
Coleoptera: Carabidae	<i>Ophonus puncticeps</i>								X
Coleoptera: Carabidae	<i>Paradromius linearis</i>								X
Coleoptera: Staphylinidae	<i>Tachinus laticollis</i>								X
Coleoptera: Staphylinidae	<i>Tachinus rufipes</i>								X
Coleoptera: Staphylinidae	<i>Anotylus rugosus</i>								X
Coleoptera: Staphylinidae	<i>Stenus fulvicornis</i>								X
Coleoptera: Scarabaeidae	<i>Phyllopertha horticola</i>	Bracken Chafer							X
Coleoptera: Elateridae	<i>Athous bicolor</i>								X
Coleoptera: Elateridae	<i>Athous haemorrhoidalis</i>								X X X X
Coleoptera: Cantharidae	<i>Cantharis cryptica</i>								X
Coleoptera: Cantharidae	<i>Rhagonycha limbata</i>								X X X X
Coleoptera: Cantharidae	<i>Rhagonycha fulva</i>								X X X
Coleoptera: Cantharidae	<i>Malthinus balteatus</i>		Nationally Scarce b						X
Coleoptera: Cantharidae	<i>Malthinus seriepunctatus</i>								X
Coleoptera: Cantharidae	<i>Malthodes marginatus</i>								X X
Coleoptera: Dasytidae	<i>Dasytes plumbeus</i>		Nationally Scarce b						X
Coleoptera: Malachiidae	<i>Malachius bipustulatus</i>	Malachite Beetle							X X X
Coleoptera: Kateretidae	<i>Brachypterus urticae</i>	Nettle Pollen Beetle							X

Coleoptera: Nitidulidae	<i>Meligethes aeneus</i>	Common Pollen Beetle		X	X				
Coleoptera: Nitidulidae	<i>Meligethes viridescens</i>					X			
Coleoptera: Byturidae	<i>Byturus tomentosus</i>	Raspberry Beetle		X	X				
Coleoptera: Coccinellidae	<i>Halysia sedecimguttata</i>	Orange Ladybird						X	
Coleoptera: Coccinellidae	<i>Psyllobora vigintiduopunctata</i>	22-spot Ladybird		X	X		X		
Coleoptera: Coccinellidae	<i>Propylea quattuordecimpunctata</i>	14-spot Ladybird			X			X	X
Coleoptera: Coccinellidae	<i>Harmonia axyridis</i>	Harlequin Ladybird							X
Coleoptera: Coccinellidae	<i>Coccinella septempunctata</i>	7-spot Ladybird		X	X	X		X	X
Coleoptera: Coccinellidae	<i>Subcoccinella vigintiquattuorpunctata</i>	24-spot Ladybird			X				
Coleoptera: Oedemeridae	<i>Oedemera nobilis</i>	Swollen-thighed Beetle		X	X	X	X	X	X
Coleoptera: Oedemeridae	<i>Oedemera lurida</i>			X		X		X	X
Coleoptera: Scraptiidae	<i>Anaspis maculata</i>					X	X		
Coleoptera: Scraptiidae	<i>Anaspis pulicaria</i>					X	X		
Order: Family	Species	Vernacular	National Status	A	B	C	E	F	H
Coleoptera: Cerambycidae	<i>Grammoptera ruficornis</i>				X	X	X		
Coleoptera: Cerambycidae	<i>Rutpela maculata</i>						X		
Coleoptera: Cerambycidae	<i>Phytoecia cylindrica</i>		Nationally Scarce b				X		
Coleoptera: Chrysomelidae	<i>Bruchus atomarius</i>		Nationally Scarce b				X	X	
Coleoptera: Chrysomelidae	<i>Bruchus rufimanus</i>	Bean Beetle							X X
Coleoptera: Chrysomelidae	<i>Cassida rubiginosa</i>	Thistle Tortoise Beetle							X
Coleoptera: Chrysomelidae	<i>Cassida sanguinosa</i>			X					
Coleoptera: Chrysomelidae	<i>Cassida vibex</i>								X
Coleoptera: Chrysomelidae	<i>Phaedon tumidulus</i>	Celery Leaf Beetle					X		
Coleoptera:	<i>Pyrrhalta viburni</i>	Guelder-rose Leaf					X		

Chrysomelidae		Beetle					
Coleoptera:							
Chrysomelidae	<i>Phyllotreta nemorum</i>					X	
Coleoptera:							
Chrysomelidae	<i>Phyllotreta nigripes</i>						X
Coleoptera:							
Chrysomelidae	<i>Longitarsus jacobaeae</i>						X
Coleoptera:							
Chrysomelidae	<i>Altica palustris</i>					X	
Coleoptera:							
Chrysomelidae	<i>Neocrepidodera transversa</i>					X	
Coleoptera:							
Chrysomelidae	<i>Cryptocephalus moraei</i>					X	
Coleoptera:							
Rhynchitidae	<i>Tatianaerhynchites aequatus</i>	Apple Fruit Rhynchites				X	
Coleoptera:							
Apionidae	<i>Protapion fulvipes</i>	White Clover Seed Weevil					X
Coleoptera:							
Apionidae	<i>Protapion nigritarse</i>					X	
Coleoptera:							
Apionidae	<i>Oxystoma craccae</i>					X	
Coleoptera:							
Apionidae	<i>Eutrichapion ervi</i>					X	
Coleoptera:							
Curculionidae	<i>Phyllobius roboretanus</i>	Small Green Nettle Weevil				X	X X
Coleoptera:							
Curculionidae	<i>Polydrusus pterygomalis</i>						X
Coleoptera:							
Curculionidae	<i>Liophloeus tessulatus</i>					X	
Coleoptera:							
Curculionidae	<i>Sitona hispidulus</i>						X
Coleoptera:							
Curculionidae	<i>Zacladus exiguus</i>	a cranesbill weevil	Nationally Scarce b				X
Coleoptera:							
Curculionidae	<i>Parethelcus pollinarius</i>						X
Coleoptera:							
Curculionidae	<i>Glocianus punctiger</i>		Nationally Scarce b				X
Coleoptera:							
Curculionidae	<i>Trichosirocalus troglodytes</i>						X X X
Coleoptera:							
Curculionidae	<i>Anthonomus pomorum</i>	Apple Blossom Weevil					X
Coleoptera:							
Curculionidae	<i>Anthonomus rubi</i>	Strawberry Blossom Weevil				X X X	
Coleoptera:							
Curculionidae	<i>Mecinus pyraster</i>					X X	X X
Order: Family	Species	Vernacular	National Status	A	B	C	E F H

Coleoptera:					
Curculionidae	<i>Gymnetron pascuorum</i>	X	X	X	X X
Diptera: Tipulidae	<i>Nephrotoma quadrifaria</i>				X X
Diptera: Tipulidae	<i>Tipula fascipennis</i>				X
Diptera: Tipulidae	<i>Tipula vernalis</i>				X
Diptera: Tipulidae	<i>Tipula oleracea</i>	X	X		X
Diptera: Pediciidae	<i>Tricyphona immaculata</i>		X	X	
Diptera:	<i>Cheilotrichia</i>				X
Limoniidae	<i>cinerascens</i>				
Diptera:	<i>Molophilus griseus</i>				X
Limoniidae					
Diptera:	<i>Ormosia hederæ</i>				X
Limoniidae					
Diptera:	<i>Ormosia lineata</i>		X		
Limoniidae					
Diptera:	<i>Ormosia nodulosa</i>				X
Limoniidae					
Diptera:	<i>Symplecta stictica</i>		X		
Limoniidae					
Diptera:	<i>Dicranomyia chorea</i>				X
Limoniidae					
Diptera:	<i>Dicranomyia morio</i>		X		
Limoniidae					
Diptera:	<i>Limonia nubeculosa</i>				X
Limoniidae					
Diptera:	<i>Limonia phragmitidis</i>				X
Limoniidae					
Diptera: Bibionidae	<i>Bibio johannis</i>				X
Diptera:	<i>Orfelia nemoralis</i>	X		X	
Keroplastidae					
Diptera:	<i>Rondaniola bursaria</i>				X
Cecidomyiidae					
Diptera:	<i>Sylvicola punctatus</i>				X
Anisopodidae					
Diptera:	<i>Chrysopilus asiliformis</i>			X	
Rhagionidae					
Diptera:	<i>Chrysopilus cristatus</i>		X		
Rhagionidae					
Diptera:	<i>Rhagio scolopaceus</i>		X	X	X
Rhagionidae					
Diptera:	<i>Rhagio tringarius</i>			X	
Rhagionidae					
Diptera: Tabanidae	<i>Haematopota pluvialis</i>				X
Diptera: Tabanidae	<i>Tabanus bromius</i>			X	
Diptera:	<i>Beris chalybata</i>				X
Stratiomyidae					
Diptera:	<i>Beris vallata</i>	X	X	X	

Order: Family	Species	Vernacular	National Status	A	B	C	E	F	H
Diptera: Stratiomyidae	<i>Chorisops nagatomii</i>		Nationally Scarce					X	X
Diptera: Stratiomyidae	<i>Chorisops tibialis</i>			X			X	X	X
Diptera: Stratiomyidae	<i>Pachygaster atra</i>			X			X	X	
Diptera: Stratiomyidae	<i>Pachygaster leachii</i>			X				X	
Diptera: Stratiomyidae	<i>Chloromyia formosa</i>			X	X	X			
Diptera: Stratiomyidae	<i>Microchrysa flavicornis</i>								X
Diptera: Stratiomyidae	<i>Microchrysa polita</i>						X		
Diptera: Bombyliidae	<i>Bombylius major</i>			X					
Diptera: Hybotidae	<i>Leptopeza flavipes</i>						X		
Diptera: Hybotidae	<i>Ocydromia glabricula</i>						X		
Diptera: Hybotidae	<i>Oedalea holmgreni</i>						X		
Diptera: Hybotidae	<i>Bicellaria vana</i>			X	X				X
Diptera: Hybotidae	<i>Drapetis ephippiata</i>							X	
Diptera: Hybotidae	<i>Platypalpus annulipes</i>			X			X		X
Diptera: Hybotidae	<i>Platypalpus calceatus</i>							X	
Diptera: Hybotidae	<i>Platypalpus longiseta</i>							X	
Diptera: Hybotidae	<i>Platypalpus notatus</i>							X	
Diptera: Hybotidae	<i>Tachydromia umbrarum</i>						X		
Diptera: Empididae	<i>Empis aestiva</i>							X	
Diptera: Empididae	<i>Empis caudatula</i>			X					X
Diptera: Empididae	<i>Empis chioptera</i>						X		
Diptera: Empididae	<i>Empis tessellata</i>					X			
Diptera: Empididae	<i>Empis lutea</i>			X				X	
Diptera: Empididae	<i>Empis punctata</i>					X		X	X
Diptera: Empididae	<i>Empis scutellata</i>						X	X	
Diptera: Empididae	<i>Empis trigramma</i>						X	X	
Diptera: Empididae	<i>Hilara anglodanica</i>						X		
Diptera: Empididae	<i>Hilara chorica</i>							X	
Diptera: Empididae	<i>Hilara cornicula</i>						X		
Diptera: Empididae	<i>Hilara galactoptera</i>						X		
Diptera: Empididae	<i>Rhamphomyia albohirta</i>					X	X	X	
Diptera: Empididae	<i>Rhamphomyia pilifer</i>			X					
Diptera: Empididae	<i>Rhamphomyia tarsata</i>							X	
Diptera: Empididae	<i>Rhamphomyia sulcata</i>						X		

Diptera: Syrphidae	<i>Cheilosia lasiopa</i>	a hoverfly					X			
Diptera: Syrphidae	<i>Cheilosia pagana</i>	a hoverfly							X	
Diptera: Syrphidae	<i>Rhingia campestris</i>	a hoverfly			X	X	X			
Diptera: Syrphidae	<i>Neoascia podagrica</i>	a hoverfly			X				X	
Diptera: Syrphidae	<i>Eristalis nemorum</i>	a hoverfly						X		
Order: Family	Species	Vernacular	National Status	A	B	C	E	F	H	
Diptera: Syrphidae	<i>Eristalis pertinax</i>	a hoverfly				X	X	X		
Diptera: Syrphidae	<i>Helophilus pendulus</i>	a hoverfly						X	X	X
Diptera: Syrphidae	<i>Myathropa florea</i>	a hoverfly							X	
Diptera: Syrphidae	<i>Pipizella viduata</i>	a hoverfly		X	X	X	X			X
Diptera: Syrphidae	<i>Syritta pipiens</i>	a hoverfly		X	X	X				X
Diptera: Pipunculidae	<i>Verrallia aucta</i>					X				
Diptera: Pipunculidae	<i>Eudorylas subterminalis</i>					X		X		
Diptera: Pipunculidae	<i>Pipunculus campestris</i>					X		X	X	
Diptera: Lonchaeidae	<i>Setisquamalonchaea fumosa</i>									X
Diptera: Pallopteridae	<i>Palloptera quinquemaculata</i>							X		
Diptera: Ulidiidae	<i>Herina nigrina</i>			X	X	X				
Diptera: Ulidiidae	<i>Herina lugubris</i>				X	X				X
Diptera: Ulidiidae	<i>Seioptera vibrans</i>							X		
Diptera: Tephritidae	<i>Urophora jaceana</i>					X				
Diptera: Tephritidae	<i>Tephritis neesii</i>			X						X
Diptera: Tephritidae	<i>Tephritis vespertina</i>						X	X		
Diptera: Tephritidae	<i>Chaetostomella cylindrica</i>				X	X				
Diptera: Tephritidae	<i>Terellia ruficauda</i>						X			
Diptera: Tephritidae	<i>Euleia heraclei</i>				X					
Diptera: Lauxaniidae	<i>Homoneura interstincta</i>		(RDB3)				X			
Diptera: Lauxaniidae	<i>Cnemacantha muscaria</i>		RDB3							X
Diptera: Lauxaniidae	<i>Minettia longipennis</i>									X
Diptera: Lauxaniidae	<i>Minettia tabidiventris</i>						X			
Diptera:	<i>Minettia fasciata</i>			X	X		X			

Lauxaniidae										
Diptera:										
Lauxaniidae	<i>Poecilolycia vittata</i>									X
Diptera:										
Lauxaniidae	<i>Tricholauxania praeusta</i>									X X
Diptera:										
Chamaemyiidae	<i>Chamaemyia herbarum</i>					X				
Diptera:										
Chamaemyiidae	<i>Chamaemyia polystigma</i>					X				X
Diptera:										
Sciomyzidae	<i>Limnia unguicornis</i>					X				
Diptera: Sepsidae	<i>Sepsis cynipsea</i>									X
Diptera: Sepsidae	<i>Sepsis fulgens</i>					X				X
Diptera:										
Agromyzidae	<i>Agromyza idaeiana</i>									X
Order: Family	Species	Vernacular	National Status	A	B	C	E	F	H	
Diptera:										
Agromyzidae	<i>Agromyza pseudoreptans</i>									X
Diptera:										
Agromyzidae	<i>Agromyza reptans</i>									X
Diptera:										
Agromyzidae	<i>Cerodontha fulvipes</i>					X				X
Diptera:										
Agromyzidae	<i>Phytobia errans</i>									X
Diptera:										
Agromyzidae	<i>Phytomyza ilicis</i>					X				
Diptera:										
Agromyzidae	<i>Phytomyza milii</i>									X
Diptera:										
Agromyzidae	<i>Phytomyza plantaginis</i>					X				X
Diptera:										
Agromyzidae	<i>Phytomyza ranunculi</i>									X
Diptera:										
Agromyzidae	<i>Phytomyza wahlgreni</i>									X
Diptera:										
Opomyzidae	<i>Opomyza germinationis</i>									X
Diptera:										
Anthomyzidae	<i>Anthomyza gracilis</i>									X X
Diptera: Asteiidae	<i>Asteia amoena</i>									X
Diptera: Asteiidae	<i>Asteia concinna</i>									X
Diptera:										
Chloropidae	<i>Chlorops hypostigma</i>					X				X
Diptera:										
Chloropidae	<i>Meromyza femorata</i>					X				X
Diptera:										
Chloropidae	<i>Thaumatomyia notata</i>					X				

Anthomyiidae

Diptera: Fanniidae	<i>Fannia coracina</i>								X
Diptera: Fanniidae	<i>Fannia lustrator</i>								X
Diptera: Fanniidae	<i>Fannia subsimilis</i>								X
Diptera: Muscidae	<i>Coenosia mollicula</i>								X X
Diptera: Muscidae	<i>Coenosia testacea</i>								X
Diptera: Muscidae	<i>Potamia littoralis</i>								X
Diptera: Muscidae	<i>Musca autumnalis</i>								X
Diptera: Muscidae	<i>Hebecnema nigricolor</i>								X
Diptera: Muscidae	<i>Hebecnema vespertina</i>								X
Diptera: Muscidae	<i>Helina setiventris</i>								X
Diptera: Calliphoridae	<i>Lucilia ampullacea</i>								X
Diptera: Calliphoridae	<i>Melanomya nana</i>					X			X
Diptera: Rhinophoridae	<i>Rhinophora lepida</i>					X	X		X
Diptera: Sarcophagidae	<i>Sarcophaga nigriventris</i>					X			
Diptera: Tachinidae	<i>Ocytata pallipes</i>						X		
Diptera: Tachinidae	<i>Gymnocheta viridis</i>					X			
Diptera: Tachinidae	<i>Macquartia dispar</i>								X
Diptera: Tachinidae	<i>Macquartia tenebricosa</i>								X
Diptera: Tachinidae	<i>Siphona geniculata</i>						X	X	X
Hymenoptera: Tenthredinidae	<i>Poodolerus sanguinicollis</i>	a sawfly							X
Hymenoptera: Tenthredinidae	<i>Eutomostethus ephippium</i>	a sawfly							X
Hymenoptera: Tenthredinidae	<i>Pristiphora armata</i>	a sawfly							X
Hymenoptera: Cynipidae	<i>Liposthenus glechomae</i>	a gall wasp							X
Hymenoptera: Formicidae	<i>Formica lemani</i>	an ant					X		
Hymenoptera: Formicidae	<i>Lasius niger</i>	an ant					X		
Order: Family	Species	Vernacular	National Status	A	B	C	E	F	H
Hymenoptera: Formicidae	<i>Myrmica sabuleti</i>	an ant					X		
Hymenoptera: Crabronidae	<i>Passaloecus singularis</i>	a digger wasp							X
Hymenoptera: Apidae	<i>Andrena cineraria</i>	Grey Mining Bee							X
Hymenoptera: Apidae	<i>Andrena dorsata</i>	a mining bee					X	X	

Hymenoptera: Apidae	<i>Andrena fulva</i>	a mining bee	X				
Hymenoptera: Apidae	<i>Andrena haemorrhoa</i>	Early Mining Bee		X			
Hymenoptera: Apidae	<i>Andrena helvola</i>	a mining bee				X	
Hymenoptera: Apidae	<i>Andrena nitida</i>	a mining bee		X			
Hymenoptera: Apidae	<i>Andrena scotica</i>	a mining bee	X		X		
Hymenoptera: Apidae	<i>Andrena semilaevis</i>	a mining bee					X
Hymenoptera: Apidae	<i>Andrena subopaca</i>	a mining bee		X			
Hymenoptera: Apidae	<i>Apis mellifera</i>	Honey Bee	X				
Hymenoptera: Apidae	<i>Bombus hortorum</i>	Small Garden Bumble Bee	X	X	X		
Hymenoptera: Apidae	<i>Bombus hypnorum</i>	a bumblebee	X		X	X	X
Hymenoptera: Apidae	<i>Bombus lapidarius</i>	Large Red Tailed Bumble Bee	X	X			
Hymenoptera: Apidae	<i>Bombus pascuorum</i>	Common Carder Bee	X	X	X	X	
Hymenoptera: Apidae	<i>Bombus pratorum</i>	Early Bumble Bee	X		X		X
Hymenoptera: Apidae	<i>Bombus terrestris</i>	Buff-tailed Bumble Bee	X	X	X		X
Hymenoptera: Apidae	<i>Halictus tumulorum</i>	a mining bee			X		X
Hymenoptera: Apidae	<i>Hoplitis spinulosa</i>	a solitary bee					X
Hymenoptera: Apidae	<i>Hylaeus communis</i>	Common Yellow Face Bee		X			
Hymenoptera: Apidae	<i>Hylaeus hyalinatus</i>	a solitary bee					X
Hymenoptera: Apidae	<i>Lasioglossum albipes</i>	a mining bee					X
Hymenoptera: Apidae	<i>Lasioglossum calceatum</i>	Slender Mining Bee	X	X			
Hymenoptera: Apidae	<i>Megachile willughbiella</i>	Willughby's Leaf- cutter Bee	X				
Hymenoptera: Apidae	<i>Nomada flava</i>	a cuckoo bee					

				X	X		
Total	374						
Diversity		84	82	109	135	107	86
Scarce species	11	0	2	3	2	3	3
RDB species	2	0	0	1	0	0	1
% Scarce species	2.9	0	2.4	2.8	1.5	2.8	3.5
% RDB species	0.5	0	0	0.9	0	0	1.2