

Invertebrate Survey

of

Troopers Hill LNR

Bristol (ST 6273)

vc 34

a report to

Bristol City Council

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2006

Summary

- The approximately 4 1/2 days of survey yielded 276 species, which is an excellent diversity.
- True Flies (Diptera) are the most diverse making up a little over half of the dataset.
- The diversity of Hymenoptera found is very high even for such an open sunny site, making up about a third of the dataset.
- Of the 276 species found, 23 of them are considered to be of conservation significance.
- This is a proportion of 8.3% which places Troopes Hill amongst the most important reserves in the region.
- Five of the species found (1.8%) have RDB or equivalent status, further confirming the importance of the site.
- The results suggest that the quality of Troopers Hill is still high and not appreciably degraded since the 2000 report.
- However, there is some concern over two missing species, *Andrena labiata* and its very rare cleptoparasitoid *Nomada guttulata*.

Introduction

Troopers Hill is a small area of flower rich grassland developed on the very poor soils left over after metal mining operations. It has been saved from development by its steep topography and from succession to woodland by the thin and probably toxic nature of the substrate. It was formerly known for its colony of Grayling *Hipparchia semele* (not seen for many years and certainly extinct), one of the primary reasons for Troopers Hill's status as a Local Nature Reserve. More recently its great importance for less well known insects, particularly Hymenoptera and the Dotted beefly *Bombylius discolor*, has been recognised. Although there had been some casual recording of these less well known invertebrates, the first systematic survey was in 2000. The present survey builds on that survey, expanding the taxonomic range of recorded invertebrates and assessing their conservation importance in a national and local context.

Survey Methods

The site was visited on five dates 3 May, 1 & 2 June, 17 July & 25 August covering the activity period of most spring and summer invertebrates. Each visit lasted about 4-5 hours and was timed to coincide with warm, sunny weather suitable for recording the sun-loving species for which Troopers Hill is so important. The 1 June visit lasted only about an hour before clouding over so was repeated on 2 June. All of the open part of the site was covered on each visit; the woodland areas were not sampled but the sallow and broom scrub was. Where possible the localities of particular finds are indicated on the map below.

Surveying involved searching flowers for larger species, notably hoverflies, bees and wasps, examining plants for signs of larvae, and searching the ground for terrestrial species. Most specimens were taken by sweeping with a 14-inch diameter white-bag net through the grass, herbage, shrubs and from overhanging branches. Butterflies, some hoverflies and other conspicuous species were identified in the field but specimens were always taken if there was any possibility of an incorrect identification. 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. Selected specimens were pinned and set that evening, the remainder placed a freezer until they could be identified.

The quality of the site for invertebrates has been assessed with reference to the species found which are considered to be of national scarcity by the various "Reviews of Nationally Scarce [Insects]" (see Falk 1991a; Falk 1991b; Hyman, 1992). These reviews place all nationally scarce species into categories according to their degree of rarity and their vulnerability to extinction and are accepted as the "official" JNCC designations; these are as follows:-

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

- Taxa in danger of extinction if causal factors continue unabated. Includes species occurring as a single colony or only in habitats which are much reduced and highly threatened or which have shown a rapid and continuous decline.

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

- Taxa believed likely to move into the endangered category in the near future if the causal factors continue operating. Includes species of which most or all populations are decreasing and those which are confined to vulnerable habitats.

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

- Taxa with small populations that are not at present endangered or vulnerable, but are at risk; usually localised within restricted geographical areas or habitats or are thinly scattered over a wider range. Includes species estimated to exist in only fifteen or less post 1970 10km squares or, if more, then in vulnerable habitat.

Red Data Book Category 4. **RDBK – Data deficient**

- Taxa that are suspected, but not definitely known, to belong to any of the above categories, because of lack of information. Includes taxa recently discovered or recognised in Great Britain which may prove to be more widespread in the future; taxa with very few or perhaps only a single known locality but which belong to poorly recorded or taxonomically difficult groups; species known from very few localities but which occur in inaccessible habitats or habitats which are seldom sampled; species with very few or perhaps only a single known locality and of questionable native status, but not clearly falling into the category of recent colonist, vagrant or introduction.

Nationally Scarce Category a. **Na**

- Taxa which do not fall within the RDB categories but which are uncommon in Great Britain and are known to occur in 30 or fewer 10km squares or, in less well recorded groups, within seven or fewer vice-counties.

Nationally Scarce Category b. **Nb**

- Taxa which do not fall within the RDB categories but which are uncommon in Great Britain and are known to occur in between 31 and 100 10km squares or, in less well recorded groups, between eight and twenty vice-counties.

Many of the reviews from which these categories have been taken are now rather out of date. Various groups have been updated piecemeal and others are in the process of being updated but not all of these works have been published. In order to maintain continuity across taxonomic groups (those that have been updated recently and those that have not) and also to maintain comparability with earlier surveys, the old statuses are still used as the basis of this assessment. However, where new statuses are known,

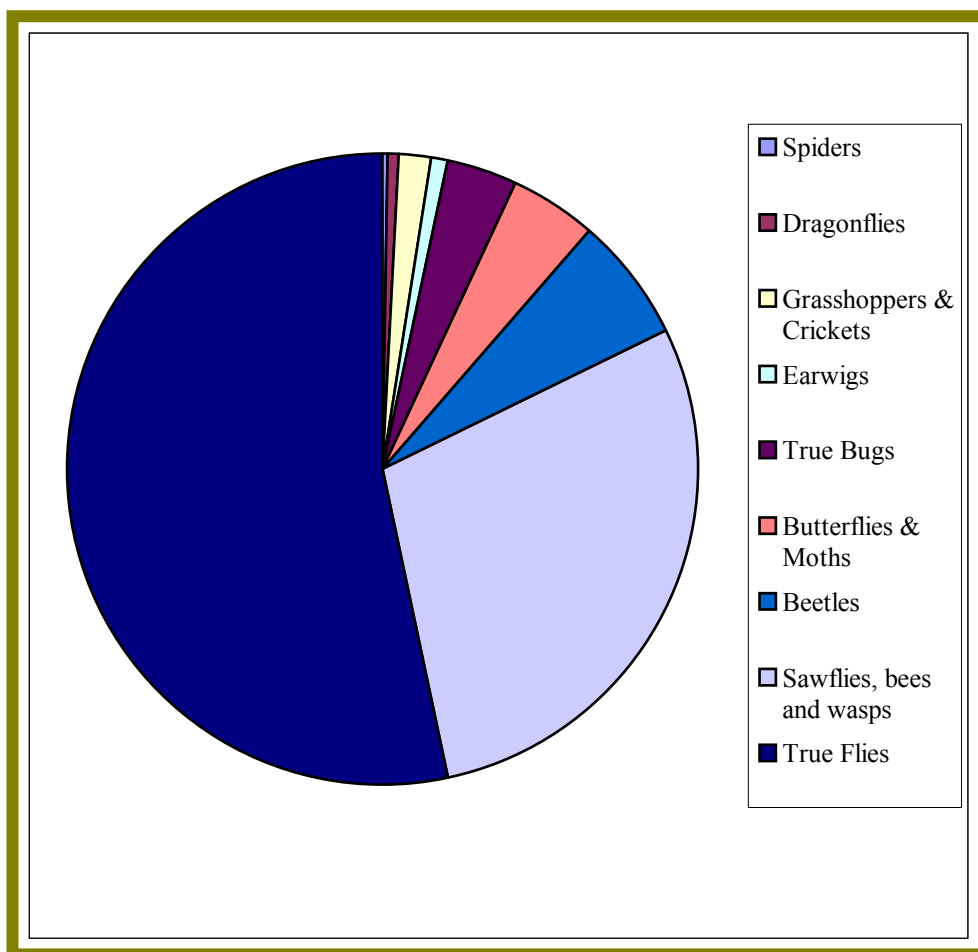
either published and thus now official or still in preparation so not yet official, these are given and discussed in the species accounts. Old statuses which have been superseded by the publication of new reviews and proposed statuses not yet published are given in parenthesis.

Additionally an attempt has been made to gauge the value of the site within a local context. Most of the nationally scarce species are also very uncommon in Gloucestershire and Somerset so the local significance will almost invariably be greater than the national significance of the site. Many species which do not merit inclusion in "The reviews of scarce insects" are none-the-less very rare within the county. Unfortunately the fauna of the region is too poorly documented to assess local scarcity for all groups. Good coverage is available for the beetles, moths and hoverflies only but even these publications are inconsistent in their presentation of the data. Much of the choice of locally scarce species and of the analysis of the health and importance on the invertebrate community as a whole is dependent on personal experience.

Results

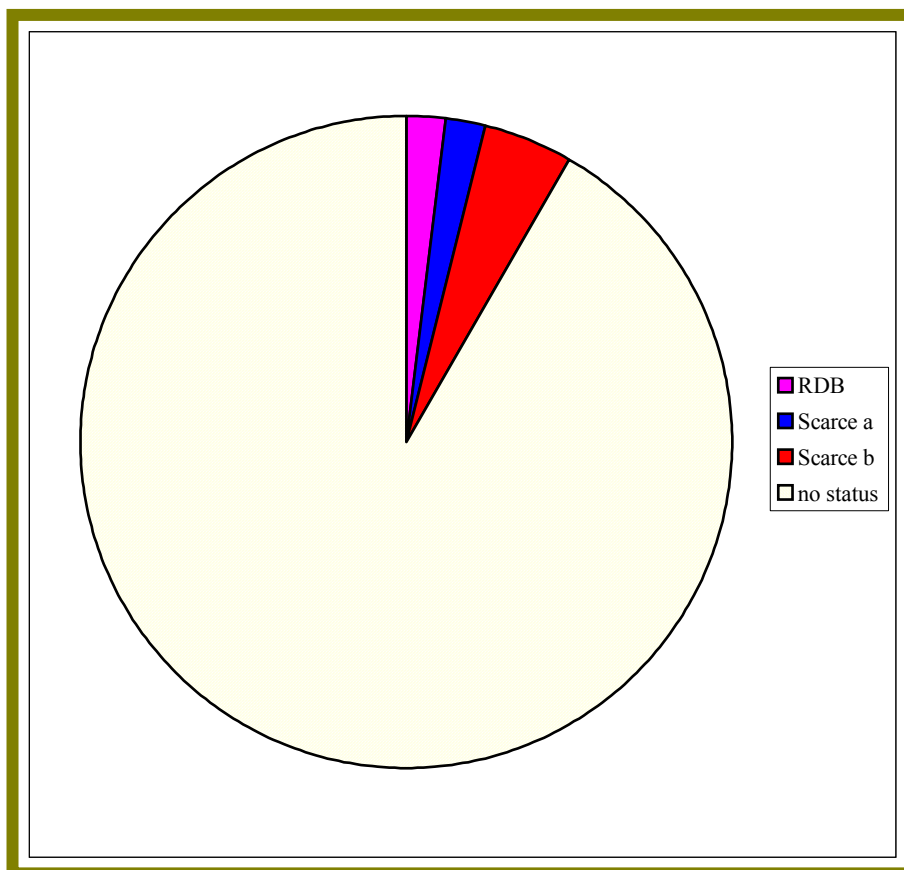
The approximately four half-days of survey yielded 276 species, which for a small, open site, predominated by acid grassland, is an excellent diversity.

Fig 1. Taxonomic coverage of survey



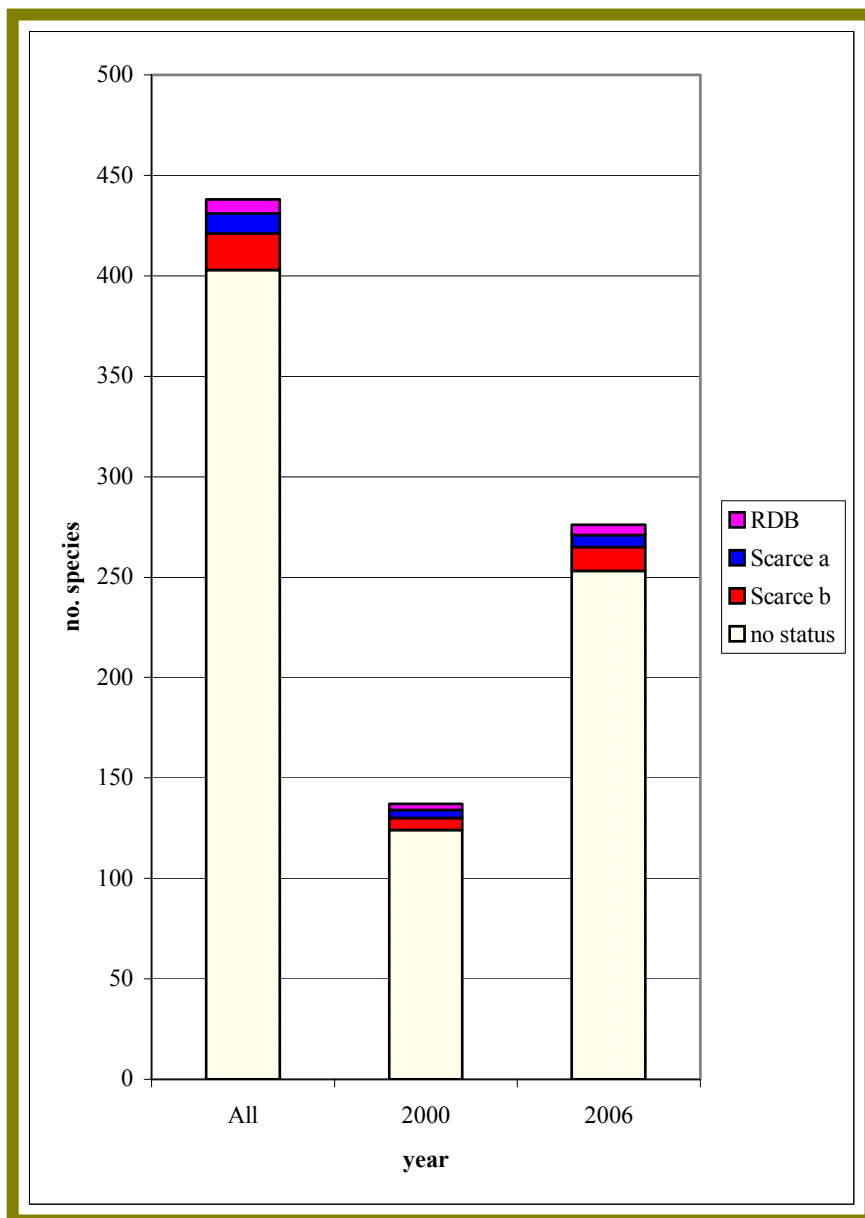
The chart above presents the diversity found of each of the major orders sampled. As can be seen the True Flies (Diptera) are the most diverse making up a little over half of the dataset. The Diptera are the second largest order of invertebrates in Britain, only exceeded by the Bees and Wasps (Hymenoptera) which is predominately parasitica. The parasitica are so poorly known, both taxonomically and ecologically, that very few are included in survey work of this nature. Thus there are more readily identifiable Diptera in Britain than any other order. Further, the Diptera are particularly speciose and often abundant in wetland and woodland habitats and are very readily collected with a sweep-net, the primary survey method used, much more so than are the Beetles (Coleoptera). The Hymenoptera are also readily collected with a sweep-net and were the second most diverse group. The diversity found is very high even for such an open sunny site, it is rare in such surveys for more than a quarter of the dataset to be made up of Hymenoptera. The Coleoptera are certainly under-recorded, this order is second to the Diptera for the number of readily identifiable species but they are not easy to find in numbers on dry grassland. The Coleoptera are not readily collected with a sweep-net and the pit-fall trapping and close ground searching needed to build a good list was not part of the survey techniques used. These comments also apply to the True Bugs (Hemiptera) although the diversity found is quite respectable. Similarly the butterflies and moths (Lepidoptera) are under-recorded because most species are nocturnal and only readily discovered by light trapping which was not part of the survey techniques employed. Spiders are also under-recorded because they were not particularly looked for. The remaining groups are all small orders with diversities much as expected.

Fig 2. Proportion of scarce and RDB species



The chart above shows the proportion of species found which are considered to be of conservation significance due to their scarcity or vulnerability to extinction. Of the 276 species found, 23 of them are considered to be of conservation significance, either because they have official JNCC status, are proposed for such status or have only recently lost this status. Species in the latter category are retained as being of conservation concern in order to permit comparability with other, earlier surveys (see Methods above). This is a proportion of 8.3% which, while a little less than the last survey in 2000, is probably within the normal variability of such data and places Troopes Hill amongst the most important reserves in the region. Five of the species found (1.8%) have RDB or equivalent status, further confirming the importance of the site.

Fig 3. Comparison between survey areas



The chart above compares the diversity and quality of Troopers Hill in 2000 and 2006 together with combined data from these two surveys and all other sampling by the same surveyor. There is probably not any significant difference between these surveys given the considerable variability inherent in such surveys. The highest proportion of scarce species was found in 2000. This survey very much concentrated on the Hymenoptera which made up the greater proportion of the dataset. This group is very speciose at Troopers Hill and rich in scarce species so the good result is unsurprising. The 2006 survey expanded its target groups and recorded mostly Diptera. Some of these Diptera groups have not been reviewed and given national statuses, and anyway the proportion of Diptera with national statuses is fewer than is the case for the Hymenoptera. Thus a lower proportion in 2006 is to be expected and not necessarily indicative of a loss of biodiversity or quality.

A closer analysis just of the Aculeate Hymenoptera (surveyed with equal assiduousness in both 2000 and 2006) does, however, indicate a potential problem. In 2000 58 species of aculeates were recorded of which 15.5% have national status; the respective figures for 2006 are 69 and 13%. Thus, despite finding a greater diversity of aculeate hymenoptera in 2006, no more scarce species were found. However, the percentage drop is just 2.5%, a difference of just two species, and is likely to be within the normal variability of such survey results.

Table 1. Nationally Scarce Aculeate Hymenoptera

Species	Status	pre-2000	2000	2001-2005	2006
<i>Tiphia minuta</i>	Scarce b	X			
<i>Aporus unicolor</i>	Scarce a				X
<i>Arachnospila minutula</i>	Scarce b				X
<i>Nysson trimaculatus</i>	Scarce b	X			
<i>Philanthus triangulum</i>	RDB2		X		X
<i>Andrena bucephala</i>	Scarce a			X	
<i>Andrena fulvago</i>	Scarce a	X			
<i>Andrena humilis</i>	Scarce b	X	X	X	X
<i>Andrena labiata</i>	Scarce a	X	X		
<i>Andrena tibialis</i>	Scarce a	X		X	
<i>Andrena trimmerana</i>	Scarce b	X			X
<i>Bombus rupestris</i>	Scarce b	X			
<i>Nomada fucata</i>	Scarce a	X	X	X	X
<i>Nomada guttulata</i>	RDB1		X		
<i>Nomada integra</i>	Scarce a		X	X	X
<i>Nomada lathburiana</i>	RDB3		X	X	X
<i>Sphecodes crassus</i>	Scarce b	X	X		
<i>Sphecodes reticulatus</i>	Scarce a		X		X
		10	9	6	9

From the above table it can be seen which aculeates found in 2000 are missing from the 2006 results. All but three of the species found in 2000 were shown to persist in 2006 and three other species, not found in 2000, were recorded, two of them new for Troopers Hill. Of the three 2000 species not recorded in 2006, *Sphecodes crassus* is not of great concern as it is known from other sites in Bristol. The other two missing species are *Andrena labiata* and its very rare cleptoparasitoid *Nomada guttulata*. The

latter is likely to have such a small population that failure to find it is not at all surprising. However, the colony of *Andrena labiata* on which it depends should have been findable if still at a level able to support *Nomada guttulata*. In any future survey particular attention should be paid to these two species in an attempt to locate them at Troopers Hill.

Species Accounts

Libellula fulva **RDB3**

The Scarce Chaser is a rare dragonfly found only south and east of a line from the Wash to the Severn. Even here it is local with strongholds in the Broads, the Fens, Sussex, the Poole area and the Avon in north Somerset. In this region it is not infrequent along and close to the Avon from Bristol to south of Bath. They breed on unpolluted rivers and dykes with moderate flow especially with a good emergent flora. The larvae live on the muddy or silty bottom, probably taking about two years to develop. Adults on the wing from May to July (Merritt *et al.* 1996). One noted on 2 June, presumably a teneral individual using Troopers Hill as a hunting ground before returning to the Avon.

Conocephalus discolor **Nationally Scarce a (None)**

The Long-winged cone-head, once such an uncommon species of the south coast west to the New Forest, has shown a remarkable spread in recent years. In Somerset and Bristol its arrival is relatively recent but is now well established. It seems to be doing well with numerous sites located in the last few of years so it is clear that this species is no longer of conservation concern. Occurs in coarse, mainly ungrazed vegetation in warm places such as downland, coastal reedbeds, heath, bogs and disturbed areas. Nymphs emerge in May maturing in August sometimes surviving until November (Haes & Harding 1997). Noted on 25 August and 4 September.

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. Locally it has recently been found to be quite frequent with several records from Bristol including Troopers Hill in 2003. 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. 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 (Haes & Harding 1997). Found on 1 June.

Gargara genistae **(Nationally Scarce b?)**

This characteristic membracid bug is listed as Nationally Scarce in some places but appears to be omitted (without explanation) from the official review of the group. It is possible that this species does not deserve national status but as it has not been found in Bristol before, this is the second time I have taken the species anywhere and it has never been taken in Britain by a national specialist (M. Wilson pers. comm.) it seems worth mentioning. It is confined to south-east England north to Suffolk and west to

Hampshire. This is the first record for Bristol and the region. Associated with broom, greenweed and sainfoin (LeQuesne 1965). One female taken on 25 August.

Agrius sinuatus **Nationally Scarce a**

This attractive metallic red jewel beetle was, until recently, thought to be very scarce indeed although widespread in England north to Herefordshire (Hyman 1992). It has only recently been found in the region but, since it has been discovered how to identify the exit holes, is proving to be widespread in Somerset (pers. obs.) and even more so in Gloucestershire (Alexander *et al.* 1999). It lives in the dying branches of old hawthorn trees, especially in hedgerows. The adult beetle is exceedingly elusive and appears to have a very short period of activity and it seems that this, rather than real rarity, accounts for the lack of records (Hyman *op. cit.*). Exit holes found in the hawthorn trees along the east margin Troopers Hill on 3 May.

Cryptocephalus aureolus **Nationally Scarce b**

This beautiful brilliant metallic green leaf-beetle is widespread but local in Britain north to Scotland. Locally it is quite common and was found at Troopers Hill in 2000 (pers. obs.); it is probably too frequent to merit the scarcity status given to it nationally. It likes open grassy places preferring light soils especially calcareous areas. Often to be found on yellow composites particularly hawkweeds. The larvae are free-living in a case feeding on leaves. Adults recorded from May to July (Hyman 1992). Noted on 15 June.

Aporus unicolor **Nationally Scarce a**

This largely black spider-hunter wasp is very local in southern England north to Cambridgeshire and with recent records from South Wales. Known from about 15 post-1970 localities suggesting a general decline. There are no published records of this wasp from the region, the nearest being in the New Forest (Edwards 1997), but it was taken at Tucking Mill this year (pers. obs.). Frequents sparsely vegetated light soils in sunny localities, particularly chalky and sandy areas, such as south facing cliffs, heathland and well grazed downland. It is known to be a parasitoid of the purse-web spider *Atypus affinis*, itself very scarce in the region. Adults found from June to September (Falk 1991a). A single male taken on 17 July.

Arachnospila minutula **Nationally Scarce b**

A black and red spider-hunter wasp recorded predominantly from southern England but north to Lincolnshire and a record from central Scotland. Although recorded in both Gloucestershire and north Somerset, it is rare locally, not previously recorded in Bristol (Alexander 1999a). Frequents chalk downland, heathland, sandpits, quarries and coastal soft-rock cliffs and landslips. Probably requires sparsely vegetated substrate in sunny situations. Biology little known but has been recorded attacking a *Pardosa* spider on which the larvae developed. Adults recorded from June to September (Falk 1991a). A male taken on 2 June.

Philanthus triangulum **RDB2 (None)**

The Bee-wolf is a large, spectacular black and yellow wasp which not long ago was a great rarity in this country. Once confined to just a couple of sites on the Isle of White (Richards 1980) it is now widespread over southern England and expanding northwards rapidly (Edwards 1997). In the light of this great increase in range its status will have to be downgraded to Nb or probably removed altogether. Locally it

first turned up in Gloucestershire a few years ago (M. Smith pers. comm.) and is now established in the area, first found at Troopers Hill in 2000 (pers. obs.). It frequents warm sunny areas on light, well drained soil where it digs nests up to 1m in length with 3-34 lateral chambers. These are stocked with worker honeybees *Apis mellifera* (Edwards *op. cit.*). Noted on 17 July and 25 August.

Andrena humilis **Nationally Scarce b**

This medium-sized brown mining bee was historically widespread in England north to Yorkshire but has declined considerably. In Gloucestershire there are only three localities all very old (Alexander 1999a); in Somerset there is an old record from Kewstoke Wood (Perkins 1924) and recent ones from Bleadon Quarry, Radstock and Dolebury Warren (pers. obs.). The colony at Troopers Hill was first found in 1998 and is strong in most years. Favours a variety of habitats particularly coastal landslips but also heathland and grassland. Nests in hard sand or stiff soil in sunny situations, including vertical banks. Can form large colonies but aggregations are usually small. It is single brooded flying from May to July the females gathering pollen exclusively from yellow composites (Falk 1991a). Noted on 3 May and 2 June.

Andrena trimmerana **Nationally Scarce b**

The Trimmer's Mining Bee is a large brown bee confined to southern England and south Wales, prefers the coast but also recorded from various habitats inland. It is not too infrequent locally with several recent records from Gloucestershire, including Troopers Hill in 1999 (Alexander 1999a; pers. obs.) and seems to be getting commoner. Possibly no longer merits its national status. Nests in sparsely vegetated grassland in warm, sunny situations; probably collects most of its pollen from *Salix* and *Prunus*. Double brooded flying from mid-March to late April and early July to late September (Falk 1991b). Found on 25 August.

Nomada fucata **Nationally Scarce a**

This nomad bee was historically widespread in southern England but declined considerably, then more recently it has shown a remarkable recovery and became one of the more frequently met with *Nomadas*. Its status as Na may need reviewing, however, since 2003 this bee seems to have returned to its earlier abundance and is much less often seen than it was in the first few years of the 21st century. Locally there are several recent localities in north Somerset, but Troopers Hill is the only colony and one of the most reliable in the region. Favours a wide variety of open sandy and grassy situations which offer a rich flora and bare, sunny cliffs and slopes. It is a cleptoparasitoid of the mining bee *Andrena flavipes* which forms dispersed or concentrated colonies in bare sandy or clayey soils. *N. fucata* is, like its host, double brooded flying from April to May and July to August (Falk 1991a.). Present on 3 May and 2 June.

Nomada integra **Nationally Scarce a**

A largely black and dark red nomad bee without any yellow spots, once widely distributed in southern England north to Yorkshire with a few sites in Wales; it has declined considerably in most areas with about 25 post-1970 sites (Falk 1991a). Locally there are only two very old records in Gloucestershire (Alexander 1999a); in Somerset it is recorded from Kewstoke Woods (Perkins 1924) and recently from Dolebury Warren and Cheddar Gorge (pers. obs.). At Troopers Hill it was first found in 2000 and is perhaps the strongest colony in the region. It is a cleptoparasitoid of

Andrena humilis, itself a scarce Nb species, which favours a variety of habitats particularly coastal landslips but also heathland and grassland. *A. humilis* nests in hard sand or stiff soil in sunny situations, including vertical banks and collects all its pollen from yellow composites (Falk *op. cit.*). Found on 2 June.

Nomada lathburiana **RDB3**

This nomad bee is widely distributed in southern England and Wales north to Yorkshire. It has undergone a considerable decline nationally, especially in lowland sites, but appears to be coming back. Locally there are no old records despite its host being common in a couple of areas in Somerset (Perkins 1924). Recently it has become well established in Gloucestershire and especially north Somerset (Alexander 1999a) and has been well known at Troopers Hill since 2000 (pers. obs.). Favours a variety of habitats including open woodland, chalk grassland, coastal landslips and moorland edge. It is a brood parasitoid of the mining bee *Andrena cineraria* which is also commoner than formerly. *N. lathburiana* is on the wing from April to June (Falk 1991a). Found on 3 May.

Sphecodes reticulatus **Nationally Scarce a**

A black and red cuckoo-bee this species is very scarce with confirmed records confined to southern England from Kent to Devon and north to Norfolk in the east. There are no historic records from Somerset or Gloucestershire (Falk 1991a) but recently it has been found in Bath, at Radstock and was first found at Troopers Hill in 2000 (pers. obs.). It is known from various habitats on light soils including sandy heaths, soft rock cliffs, open woodland, sandpits and occasionally chalk grassland. It is a cleptoparasitoid of mining bees, although the specific host or hosts have not been determined it almost certainly attacks one or more species of *Lasioglossum* and/or *Andrena*. Suggested hosts include *L. prasinum*, *A. argentata*, *A. dorsata* and *A. barbilabris*, one of which was found at the site. Whatever the host is, it will almost certainly have a requirement for areas of bare soil or sparse vegetation in sunny spots where they can dig their nests. Adult females are recorded from May to September, males from July to October; visits flowers such as *Angelica*, *Pastinaca*, *Daucus*, *Achillea*, *Tripleurospermum* and *Cirsium* (Falk *op. cit.*). Found on 2 June.

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 Gloucestershire with six records (Alexander 1999b) and there are several records from north Somerset (pers. obs.). Within Bristol it is known from Hengrove Park, Troopers Hill and Coombe Brook (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 1991a). Taken on 25 August.

Bombylius discolor **BAP; Nationally Scarce b**

The Dotted bee fly is a robust furry insect with conspicuous spots on the wings which has been chosen as a subject for a UK biodiversity action plan. Formerly it was a widespread and frequent fly of the southern half of England and Wales but it has undergone a dramatic decline almost completely disappearing from the eastern part of its range. In the west it has held its own well and there are numerous recent records, these are mostly of singletons but there are several strong colonies known especially in north Somerset (Alexander 1999b; pers. obs.). The colony at Troopers Hill was first found in 1999 and is one of the largest and most consistent in the region. This fly is a parasitoid of mining bees, the primary host in this region is almost certainly *Andrena flavipes*. The host requires areas of bare ground in which to dig its nests and open areas with numerous flowers especially composites. The fly is on the wing very early from late March to mid May so requires sheltered sunny areas in adjacent woodland or scrub in which to forage (Stubbs & Drake 2001). 2006 was perhaps the best season yet observed for this species at Troopers Hill with 32 ovipositing females and one male noted on 3 May.

Cheilosia psilophthalma **(Nationally Scarce)**

This small, black hoverfly is a recent addition to the British List thus it does not have an official National Status, however, it is clearly an uncommon species largely confined to high quality sites so a status of Nationally Scarce is reasonable (S. Falk pers. comm.). It was first recognised in Ireland and has subsequently been found in Berkshire, Suffolk and Warwickshire suggesting that it is widespread at least in southern England. Locally it was recorded in the Avon Gorge in 2003 (pers. obs.). It frequents unimproved grassland where there is plenty of mouse-ear hawkweed, the larval food plant. Many localities are old limestone quarries and tend to be sites of high conservation value. Adults are recorded from April to June (Stubbs & Falk 2002). Two females taken on 3 May.

Micropeza lateralis **Nationally Scarce**

This long, slender stilt-legged fly is recorded from southern England north to Norfolk and Scotland. Apart from Troopers Hill, where it was first found in 2000, there do not appear to be any other localities for this species in either Somerset or Gloucestershire. Mainly on heathland, usually preferring lush damper areas near trees and bushes or beside streams. Occasionally on chalk or fixed dunes. A number of recent records state a close association with bushes of broom (Falk & Ismay in prep.). Swept from broom on 25 August.

Homoneura thalhammeri **(Nationally Scarce)**

This small yellowish fly has a scattered distribution over south England north to Yorkshire and in south Wales. It does not have official national status because it was not known in Britain when the relevant review was published; at the time it was confused with another species which was given Nb status. There are about 20 post-1960 records including three from north Somerset but this is the first record for Bristol and Gloucestershire (pers. obs.). Where recording has been intensive this species has been found more frequently so is no doubt overlooked. Most often found by sweeping scrub, isolated shrubs, trees and adjacent tall herbage or coarse grasses. Its biology is unknown but larvae of this genus are generally believed to develop in decaying vegetable matter including fallen leaves. Adults recorded from June to September (Falk & Ismay in prep.). Swept from willow bushes on 17 July.

Phytomyza sedi **New for GB**

This tiny dull blackish leaf-mining fly is here recorded for the first time in Britain. It is a European species so far known from France, Germany, Spain and Yugoslavia; not known outside Europe (www.faunaeur.org/). Its host plant is stonecrop *Sedum* where it presumably mines the leaves. At Troopers Hill it is most likely to be associated with the extensive patch of reflexed stonecrop *S. rupestre* in the southeast corner of the site. This is, of course, not a native species in Britain. It is impossible to know if *P. sedi* is an introduced species associated with garden stonecrops or a previously undetected native. It is interesting to note that rock stonecrop *S. forsterianum*, the closest relative to *S. rupestre* and native to Britain, is found not far away in the Avon Gorge. However, until the species is reared and its host in Britain confirmed, this is speculative. 18 male specimens swept on the 2 June (only males can be named).

Dicraeus tibialis **Nationally Scarce**

This small blackish frit fly is distributed across southern England north to Cambridgeshire and in south Wales, but very local. In the region there are confirmed records from about 5 localities in north Somerset (pers. obs.) but it is unrecorded in Gloucestershire. Frequents grasslands, particularly calcareous to neutral unimproved meadows, but also waste ground and coastal grassland. The larvae develop in grass seeds, continental records include *Bromus erectus*, *B. inermis* and *Helicotrichon pubescens*. They probably leave the seeds and pupate in the ground beneath. In Britain adults have been swept from *Bromus* species. Adults recorded in May and June (Falk & Ismay in prep.). Taken on 2 June.

Cistogaster globosa **RDB1 (RDB2)**

This attractive little parasitoid fly is known from a few localities in southern England: Wilts; Hants; Surrey; Berks (Falk & Pont in prep.). Just recently it has been found at one site in Wales so it seems to be doing well at the moment (Howe & Woodman 2001) hence the proposal in a forthcoming review to downgrade its status from RDB1 to RDB2. In Gloucestershire it was recorded for the first time in 1999 (Alexander 1999b) and in some Somerset in 2001 where three localities are now known (pers. obs). Frequents calcareous downland and grassland where it parasitises the hemipteran bug *Aelia acuminata* the Bishops Mitre (frequent at this site). Adults recorded from June to September. Frequent on both 17 July and 25 August.

Regional rarities

Numerous species occur at Troopers Hill which are rare, and often unknown, elsewhere in the region. Examples include the lygid bug *Megalonotus emarginatus* which is nationally local and a Gloucestershire county rarity and the heath bug *Alydus calcaratus*, another Gloucestershire county rarity where Troopers Hill is its only known locality. The bagworm *Luffia lapidella* is a local species, with one confirmed site in Gloucestershire and several in Somerset, mostly in the south of the county. The sawfly *Arge berberidis* is an introduced species which has arrived with imported berberry plants, this is the most westerly record so far. Two other scarce sawflies are *Rhogogaster genistae* and *Pachyprotasis simulans* which might merit national status if this group were ever to be honoured with a review, in the region both are only known from Troopers Hill. The gall flies *Tephritis cometa* and *Trupanea stellata* are both only known from 2-3 sites each in the region. Finally the tiny grey fly

Chamaemyia nigripalpis is too poorly known to say much but appears to be rarely met with.

Features of importance for the scarce invertebrates found and Management Recommendations.

The 2000 report listed those general features and characteristics which contribute to make Troopers Hill so valuable for rare invertebrates. Those characteristics and features that are important for the scarce species found during this survey are discussed below. However, they should be read in conjunction with the findings of the 2000 survey.

Broom scrub again yielded interesting species, most notably *Gargara genistae*, *Micropeza lateralis* and *Rhogogaster genistae*. Several other species associated with this plant have been found here in the past. Broom is not a particularly common species in the region and substantial patches which have persisted for a long time are even less frequent. Although this plant can be found in many places across Troopers Hill, most is in three substantial patches (see map). All of these patches are showing a tendency to spread and thus eliminate other valuable habitats. On such a small site it is a difficult balance to maintain both habitats adequately. Because broom is prone to being destroyed by fire, all three main areas should be retained. It is possible that fire has maintained this balance of scrub/grassland to date, and might continue to do so. However, there is evidence that some important grassland areas are now being encroached upon, particularly the western broom patch, and some management is needed here.

Gorse within the main body of Troopers Hill is confined to a small patch south of the Gully with isolated outliers. The main patch is well established and adds to the biodiversity of the site. However, there is some encroachment on to a good patch of heathland south west of the gorse patch. These outlier bushes and any seedling gorse in the heathland are best removed.

Hawthorn boundary hedges provide habitat for the jewel beetle *Agrius sinuatus* and the blossom is important for the spring bee colonies, particularly *Andrena cineraria*, one of the hosts of the beefly *Bombylus discolor*. Hawthorn scrub encroaching on the grassland will not add to this and is likely to be detrimental to the grassland so should be removed. A new hedge along the northeast border of the reserve will provide continuity as the old hedges mature. Any such new hedge should be predominantly hawthorn, but blackthorn and field maple would also be valuable.

Flower-rich grassland dominated by fine-leaved grasses is undoubtedly the most important feature of Troopers Hill. It is almost entirely confined to the thin-soiled, south-facing slopes; where the ground levels off at the top of the hill, the soil is deeper and desiccation less, coarser grasses and herbs predominate. The fine-leaved grasses are drought-tolerant species which often provide a rather sparse canopy leaving some substrate exposed. This not only allows fossorial species access to the soil where they dig their nests but also permits direct warming by the sun essential for larvae of fossorial bees to develop successfully. In the absence of grazing, this fine-leaved grassland survives here because the very thin, probably toxic, soil left by mining activities inhibits the rapid succession to scrub and woodland. Erosion from public use

assists the maintenance of grassland by creating exposures which can then slowly re-vegetate. A very important factor, which might well become more significant in the future, is drought. The fine-leaved grasses and associated herbs are adapted to water stress far better than are most shrubs and trees so the latter will often be killed when still saplings. However, once a tree gets large enough for its roots to reach groundwater it will become immune to most drought conditions in this country. These trees then drop their leaves and seeds, building a humus layer so allowing more saplings to survive. It is possible that even more severe drought in the future might push back scrub encroachment; until then removal of birch, holm oak, pedunculate oak and other trees from the grassland is to be encouraged. All cut scrub, trees, bramble etc. should be burnt or completely removed from the open part of the site.

Rocky outcrops and soil exposures are very important for numerous species and harbour the main colonies of *Andrena flavipes* and *cinerarea*, the hosts for *Bombylius discolor*. They are maintained quite naturally and by public use. The main threat is over-shading from nearby trees. There are a couple of areas where such trees are getting to the size that they are reducing the available sunny exposures. Removing large trees can be problematic in public areas, so it is always best to remove sapling so avoiding the necessity of felling larger trees in the future. However, I think it is time for a couple of larger trees on the grassland to be removed now (see map).

Sallow is always an important plant for insects and sallows on dry areas like Troopers Hill can often be more productive than those in their more typical wet habitat. Not only do the very early flowers provide an important nectar and pollen source for bees and flies, but sallows support a considerable diversity of insects otherwise. At Troopers Hill the rare fly *Homoneura thalhammeri* was found for the first time in 2006. This species seems to prefer large sallows, possibly developing in small rot-holes or accumulations of rotting leaves. When scrub is being cleared it is important to ensure that plenty of large sallows are retained. It is also important to ensure that male sallows are retained as these are most attractive to spring bees.

The small size of Troopers Hill is a topic discussed in the 2000 report which should be referred to. While it remains so limited we will inevitably lose some rare species simply due to the vicissitudes of chance on very small populations. Good management will help but, while Troopers Hill is so small some species, particularly parasitoids, cleproparasitoids and species naturally occurring at low density, will always be vulnerable. It is strongly recommended that the suggestions in the 2000 report to expand the open areas by progressively removing woodland, be put into effect.

The patch of *Sedum* in the southeast corner of Troopers Hill, the most likely locality for *Phytomyza sedi*, should be cleared of overshading or potentially over shading scrub. Burn or remove all cut vegetation.

Sally's Glade is a sheltered spot which is often favoured by insects when it is cool or windy. The 2000 report suggested enlarging it but this has not happened and scrub encroachment continues apace. This should be a priority area for scrub removal while the grassland habitat is still intact and brambles are not yet very robust. Wherever possible scrub, brambles and saplings should be uprooted to reduce re-sprouting. The enlargement of this glade is still recommended. All cut vegetation must be burnt or entirely removed from the open areas. Do not dump cut vegetation in a place in the

woodland which might, at some future date, be cleared, use only those parts of the woodland which will remain woodland.

Bramble clearance; clearing relatively spindly brambles is essential but once they become robust enough to shade out the understorey, removing them is probably not worth while. If they are to be removed then either the roots must also be removed, or herbicides need to be applied or there must be sufficient manpower to cut them 4-5 times throughout the summer, every summer until they disappear. All cut bramble must be burnt or completely removed from the open areas.

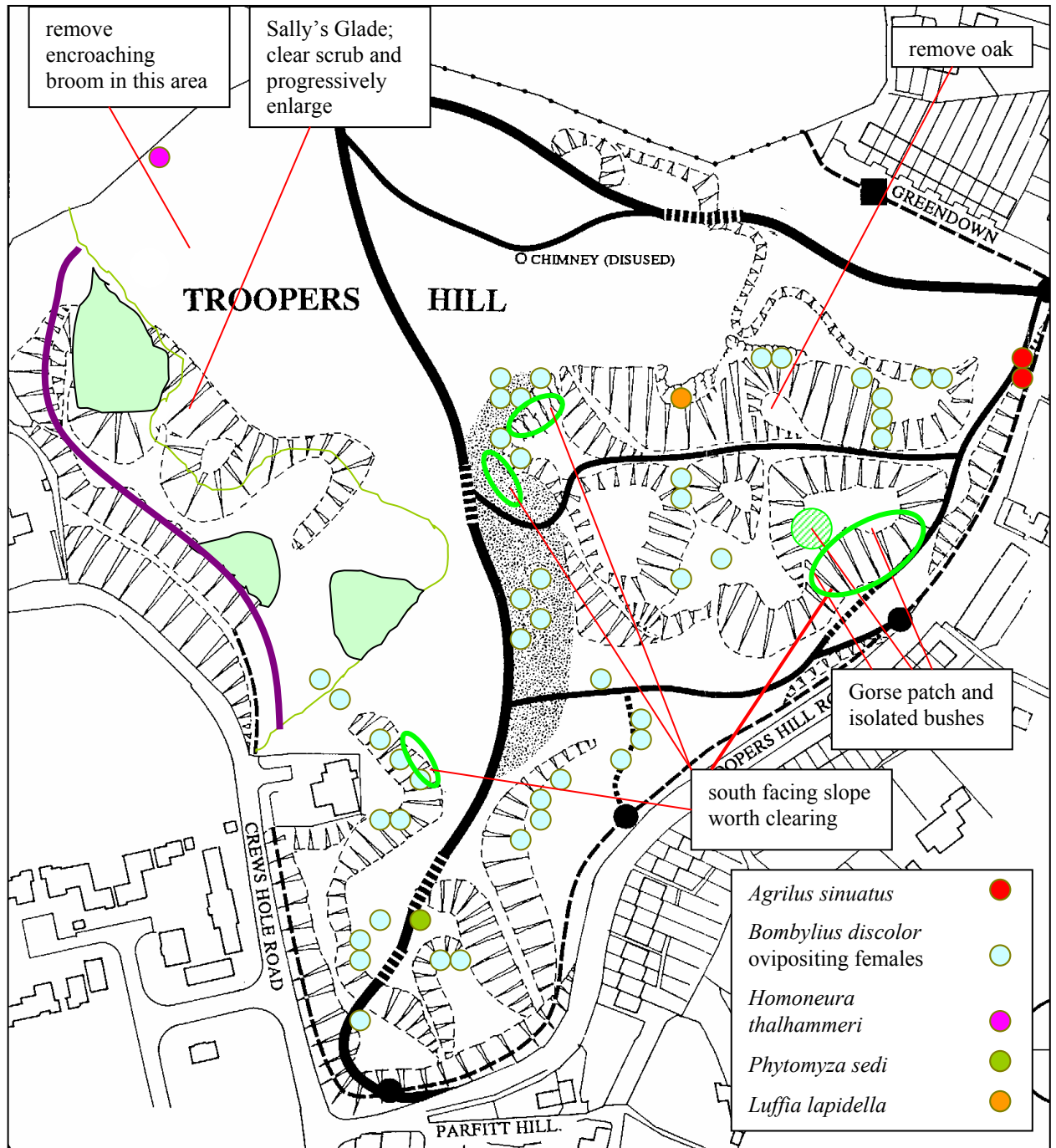
Further Survey


Continue monitoring every few years. Such survey should have as wide a taxonomic cover as possible but with a particular concentration on aculeate hymenoptera. If they are possible, specific annual searches for *Andrena labiata* and its cleptoparasitoid *Nomada guttulata* to discover their nesting localities and assess their population, would be valuable.


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Map of Troopers Hill Local Nature Reserve



Suggested areas for clearance of scrub and trees to create glades and areas for development of ruderal flora and scrub 

Suggested route of new ride 

Boundary of tertiary woodland 

Appendix 1.
Annotated Checklist

Order: Family	Species and Authority	Vernacular	Status
Araneae: Araneidae	Araneus diadematus Clerck, 1757		
Odonata: Libellulidae	Libellula fulva Müller, 1764	Scarce Chaser	RDB3
Orthoptera: Tettigoniidae	Pholidoptera griseoptera (DeGeer, 1773)	Dark Bush Cricket	
Orthoptera: Conocephalidae	Conocephalus discolor (Thunberg, 1815)	Long-winged Conehead	Scarce a
Orthoptera: Acrididae	Chorthippus brunneus (Thunberg, 1815)	Common Field Grasshopper	
Orthoptera: Acrididae	Chorthippus parallelus (Zetterstedt, 1821)	Meadow Grasshopper	
Orthoptera: Acrididae	Myrmeleotettix maculatus (Thunberg, 1815)	Mottled Grasshopper	
Dermaptera: Forficulidae	Forficula auricularia Linnaeus, 1758	Common Earwig	
Dermaptera: Forficulidae	Forficula lesnei Finot, 1887		Scarce b
Hemiptera: Membracidae	Gargara genistae (Fabricius, 1775)		(Scarce b)
Hemiptera: Miridae	Stenodema laevigata (Linnaeus, 1758)		
Hemiptera: Lygaeidae	Macrodema micropterum (Curtis, 1836)		
Hemiptera: Lygaeidae	Megalonotus emarginatus (Rey, 1888)		Local
Hemiptera: Lygaeidae	Peritrechus geniculatus (Hahn, 1832)		
Hemiptera: Coreidae	Coreus marginatus (Linnaeus, 1758)		
Hemiptera: Alydidae	Alydus calcaratus (Linnaeus, 1758)		Local
Hemiptera: Rhopalidae	Rhopalus subrufus (Gmelin, 1788)		
Hemiptera: Pentatomidae	Aelia acuminata (Linnaeus, 1758)		
Hemiptera: Pentatomidae	Piezodorus lituratus (Fabricius, 1794)		
Hemiptera: Acanthosomatidae	Acanthosoma haemorrhoidale (Linnaeus, 1758)		
Lepidoptera: Psychidae	Luffia lapidella (Goeze, 1783)		Local
Lepidoptera: Gelechiidae	Monochroa tenebrella (Hübner, 1817)		
Lepidoptera: Hesperidae	Thymelicus sylvestris (Poda, 1761)	Small Skipper	
Lepidoptera: Hesperidae	Thymelicus lineola (Ochsenheimer, 1808)	Essex Skipper	
Lepidoptera: Lycaenidae	Polyommatus icarus (Rottemburg, 1775)	Common Blue	
Lepidoptera: Lycaenidae	Celastrina argiolus (Linnaeus, 1758)	Holly Blue	

Order: Family	Species and Authority	Vernacular	Status
Lepidoptera: Satyridae	Pararge aegeria (Linnaeus, 1758)	Speckled Wood	
Lepidoptera: Satyridae	Melanargia galathea (Linnaeus, 1758)	Marbled White	
Lepidoptera: Satyridae	Pyronia tithonus (Linnaeus, 1771)	Gatekeeper	
Lepidoptera: Satyridae	Coenonympha pamphilus (Linnaeus, 1758)	Small Heath	
Lepidoptera: Geometridae	Camptogramma bilineata (Linnaeus, 1758)	Yellow Shell	
Lepidoptera: Arctiidae	Tyria jacobaeae (Linnaeus, 1758)	Cinnabar	
Coleoptera: Buprestidae	Agilus sinuatus (Olivier, 1790)	Hawthorn Jewel Beetle	Scarce a
Coleoptera: Elateridae	Prosternon tessellatum (Linnaeus, 1758)	Chequered Click Beetle	
Coleoptera: Cantharidae	Cantharis cryptica Ashe, 1947		
Coleoptera: Cantharidae	Rhagonycha fulva (Scopoli, 1763)		
Coleoptera: Coccinellidae	Halyzia sedecimguttata (Linnaeus, 1758)	Orange Ladybird	
Coleoptera: Coccinellidae	Calvia quattuordecimguttata (Linnaeus, 1758)	Cream-spot Ladybird	
Coleoptera: Coccinellidae	Propylea quattuordecimpunctata (Linnaeus, 1758)	14-spot Ladybird	
Coleoptera: Coccinellidae	Adalia bipunctata (Linnaeus, 1758)	2-spot Ladybird	
Coleoptera: Coccinellidae	Coccinella septempunctata Linnaeus, 1758	7-spot Ladybird	
Coleoptera: Oedemeridae	Oedemera nobilis (Scopoli, 1763)	Swollen-thighed Beetle	
Coleoptera: Oedemeridae	Oedemera lurida (Marsham, 1802)		
Coleoptera: Scraphiidae	Anaspis regimbarti Schilsky, 1895		
Coleoptera: Bruchidae	Bruchidius villosus (Fabricius, 1792)		
Coleoptera: Chrysomelidae	Lochmaea crataegi (Forster, 1771)	Hawthorn Leaf Beetle	
Coleoptera: Chrysomelidae	Cryptocephalus aureolus Suffrian, 1847		Scarce b
Coleoptera: Chrysomelidae	Cryptocephalus fulvus Goeze, 1777		
Coleoptera: Apionidae	Perapion marchicum (Herbst, 1797)		
Coleoptera: Curculionidae	Gymnetron pasuorum (Gyllenhal, 1813)		
Hymenoptera: Arginae	Arge berberidis Schrank	a sawfly	Local
Hymenoptera: Tenthredinidae	Protoemphytus tener (Fallén, 1808)	a sawfly	
Hymenoptera: Tenthredinidae	Rhogogaster genistae (Benson, 1947)	a sawfly	Local
Hymenoptera: Tenthredinidae	Pachyprotasis simulans (Klug, 1817)	a sawfly	Local
Hymenoptera: Tenthredinidae	Gemmura mucronata (Hartig, 1837)	a sawfly	

Order: Family	Species and Authority	Vernacular	Status
Hymenoptera: Tenthredinidae	Phyllocolpa leucosticta (Hartig, 1837)	a sawfly	
Hymenoptera: Tenthredinidae	Nematus lucidus (Panzer, 1801)	a sawfly	
Hymenoptera: Ichneumonidae	Scambus brevicornis (Gravenhorst, 1829)	an ichneumon	
Hymenoptera: Ichneumonidae	Apechthis compunctor (Linnaeus, 1758)	an ichneumon	
Hymenoptera: Ichneumonidae	Pimpla contemplator (Müller, 1776)	an ichneumon	
Hymenoptera: Gasteruptiidae	Gasteruption jaculator (Linnaeus, 1758)	a parasitic wasp	
Hymenoptera: Chrysididae	Hedychridium ardens (Latreille in Coquebert, 1801)	a cuckoo wasp	
Hymenoptera: Chrysididae	Hedychridium roseum (Rossi, 1790)	a cuckoo wasp	
Hymenoptera: Pompilidae	Anoplius nigerrimus (Scopoli, 1763)	a spider-hunter wasp	
Hymenoptera: Pompilidae	Aporus unicolor Spinola, 1808	a spider-hunter wasp	Scarce a
Hymenoptera: Pompilidae	Arachnospila minutula (Dahlbom, 1842)	a spider-hunter wasp	Scarce b
Hymenoptera: Pompilidae	Arachnospila spissa (Schioedte, 1837)	a spider-hunter wasp	
Hymenoptera: Pompilidae	Caliadurgus fasciatellus (Spinola, 1808)	a spider-hunter wasp	
Hymenoptera: Pompilidae	Dipogon variegatus (Linnaeus, 1758)	a spider-hunter wasp	
Hymenoptera: Pompilidae	Evagetes crassicornis (Shuckard, 1837)	a spider-hunter wasp	
Hymenoptera: Pompilidae	Priocnemis parvula Dahlbom, 1845	a spider-hunter wasp	
Hymenoptera: Sphecidae	Ammophila sabulosa (Linnaeus, 1758)	Red Banded Sand Wasp	
Hymenoptera: Sphecidae	Astata boops (Schränk, 1781)	a digger wasp	
Hymenoptera: Sphecidae	Cerceris arenaria (Linnaeus, 1758)	Sand Tailed Digger Wasp	
Hymenoptera: Sphecidae	Cerceris rybyensis (Linnaeus, 1771)	Ornate Tailed Digger Wasp	
Hymenoptera: Sphecidae	Crossocerus elongatulus (Vander Linden, 1829)	Slender Digger Wasp	
Hymenoptera: Sphecidae	Crossocerus podagricus (Vander Linden, 1829)	a digger wasp	
Hymenoptera: Sphecidae	Crossocerus pusillus Lepeletier & Brulle, 1835	a digger wasp	
Hymenoptera: Sphecidae	Gorytes quadrifasciatus (Fabricius, 1804)	4-banded Digger Wasp	
Hymenoptera: Sphecidae	Philanthus triangulum (Fabricius, 1775)	Bee Wolf	RDB2 (None)
Hymenoptera: Sphecidae	Tachysphex pompiliformis (Panzer, 1805)	a digger wasp	
Hymenoptera: Apidae	Andrena bicolor Fabricius, 1775	Gwynne's Mining Bee	
Hymenoptera: Apidae	Andrena chrysoceles (Kirby, 1802)	a mining bee	
Hymenoptera: Apidae	Andrena cineraria (Linnaeus, 1758)	Grey Mining Bee	

Order: Family	Species and Authority	Vernacular	Status
Hymenoptera: Apidae	Andrena dorsata (Kirby, 1802)	a mining bee	
Hymenoptera: Apidae	Andrena flavipes Panzer, 1799	Yellow Legged Mining Bee	
Hymenoptera: Apidae	Andrena haemorrhoa (Fabricius, 1781)	Early Mining Bee	
Hymenoptera: Apidae	Andrena humilis Imhoff, 1832	a mining bee	Scarce b
Hymenoptera: Apidae	Andrena labialis (Kirby, 1802)	a mining bee	
Hymenoptera: Apidae	Andrena nitida (Muller, 1776)	a mining bee	
Hymenoptera: Apidae	Andrena scotica Perkins, R.C.L., 1916	a mining bee	
Hymenoptera: Apidae	Andrena subopaca Nylander, 1848	a mining bee	
Hymenoptera: Apidae	Andrena trimmerana (Kirby, 1802)	Trimmer's Mining Bee	Scarce b
Hymenoptera: Apidae	Andrena wilkella (Kirby, 1802)	a mining bee	
Hymenoptera: Apidae	Anthophora bimaculata (Panzer, 1798)	a solitary bee	
Hymenoptera: Apidae	Bombus hortorum (Linnaeus, 1761)	Small Garden Bumble Bee	
Hymenoptera: Apidae	Bombus lapidarius (Linnaeus, 1758)	Large Red Tailed Bumble Bee	
Hymenoptera: Apidae	Bombus pascuorum (Scopoli, 1763)	Common Carder Bee	
Hymenoptera: Apidae	Bombus pratorum (Linnaeus, 1761)	Early Bumble Bee	
Hymenoptera: Apidae	Bombus terrestris (Linnaeus, 1758)	Buff-tailed Bumble Bee	
Hymenoptera: Apidae	Bombus vestalis (Geoffroy in Fourcroy, 1785)	a bumblebee	
Hymenoptera: Apidae	Colletes succinctus (Linnaeus, 1758)	a mining bee	
Hymenoptera: Apidae	Halictus tumulorum (Linnaeus, 1758)	a mining bee	
Hymenoptera: Apidae	Hoplitis claviventris (Thomson, 1872)	a solitary bee	
Hymenoptera: Apidae	Hylaeus annularis (Kirby, 1802)	a solitary bee	
Hymenoptera: Apidae	Hylaeus communis Nylander, 1852	Common Yellow Face Bee	
Hymenoptera: Apidae	Lasioglossum calceatum (Scopoli, 1763)	Slender Mining Bee	
Hymenoptera: Apidae	Lasioglossum lativentre (Schenck, 1853)	a mining bee	
Hymenoptera: Apidae	Lasioglossum leucopus (Kirby, 1802)	a mining bee	
Hymenoptera: Apidae	Lasioglossum leucozonium (Schrank, 1781)	a mining bee	
Hymenoptera: Apidae	Lasioglossum morio (Fabricius, 1793)	Brassy Mining Bee	
Hymenoptera: Apidae	Lasioglossum parvulum (Schenck, 1853)	a mining bee	
Hymenoptera: Apidae	Lasioglossum punctatissimum (Schenck, 1853)	a mining bee	

Order: Family	Species and Authority	Vernacular	Status
Hymenoptera: Apidae	Lasioglossum rufitarse (Zetterstedt, 1838)	a mining bee	
Hymenoptera: Apidae	Lasioglossum villosulum (Kirby, 1802)	Shaggy Mining Bee	
Hymenoptera: Apidae	Megachile ligniseca (Kirby, 1802)	Wood-carving Leaf-cutter Bee	
Hymenoptera: Apidae	Megachile willughbiella (Kirby, 1802)	Willughby's Leaf-cutter Bee	
Hymenoptera: Apidae	Nomada fabriciana (Linnaeus, 1767)	Fabricius' Nomad Bee	
Hymenoptera: Apidae	Nomada flavoguttata (Kirby, 1802)	a solitary bee	
Hymenoptera: Apidae	Nomada fucata Panzer, 1798	a solitary bee	Scarce a
Hymenoptera: Apidae	Nomada goodeniana (Kirby, 1802)	Gooden's Nomad Bee	
Hymenoptera: Apidae	Nomada integra Brulle, 1832	a solitary bee	Scarce a
Hymenoptera: Apidae	Nomada lathburiana (Kirby, 1802)	a solitary bee	RDB3
Hymenoptera: Apidae	Nomada ruficornis (Linnaeus, 1758)	Red-horned Nomad Bee	
Hymenoptera: Apidae	Nomada rufipes Fabricius, 1793	Golden-rod Nomad Bee	
Hymenoptera: Apidae	Nomada striata Fabricius, 1793	a solitary bee	
Hymenoptera: Apidae	Sphecodes ephippius (Linnaeus, 1767)	a cuckoo bee	
Hymenoptera: Apidae	Sphecodes geoffrellus (Kirby, 1802)	a cuckoo bee	
Hymenoptera: Apidae	Sphecodes monilicornis (Kirby, 1802)	a cuckoo bee	
Hymenoptera: Apidae	Sphecodes reticulatus Thomson, 1870	a cuckoo bee	Scarce a
Diptera: Tipulidae	Tipula vernalis Meigen, 1804		
Diptera: Limoniidae	Limonia dilutior (Edwards, 1921)		
Diptera: Bibionidae	Bibio lanigerus Meigen, 1818		
Diptera: Bibionidae	Bibio marci (Linnaeus, 1758)		
Diptera: Sciaridae	Schwenckfeldina carbonaria (Meigen, 1830)		
Diptera: Stratiomyidae	Beris chalybata (Forster, 1771)		
Diptera: Stratiomyidae	Chorisops nagatomii Rozkošný, 1979		Scarce
Diptera: Stratiomyidae	Chorisops tibialis (Meigen, 1820)		
Diptera: Stratiomyidae	Pachygaster leachii Stephens in Curtis, 1824		
Diptera: Stratiomyidae	Microchrysa polita (Linnaeus, 1758)		
Diptera: Bombyliidae	Bombylius discolor Mikan, 1796		Scarce
Diptera: Bombyliidae	Bombylius major Linnaeus, 1758		

Order: Family	Species and Authority	Vernacular	Status
Diptera: Therevidae	<i>Thereva nobilitata</i> (Fabricius, 1775)		
Diptera: Asilidae	<i>Dysmachus trigonus</i> (Meigen, 1804)		
Diptera: Asilidae	<i>Machimus cingulatus</i> (Fabricius, 1781)		
Diptera: Asilidae	<i>Leptogaster cylindrica</i> (De Geer, 1776)		
Diptera: Hybotidae	<i>Leptopeza flavipes</i> (Meigen, 1820)		
Diptera: Hybotidae	<i>Trichina bilobata</i> Collin, 1926		
Diptera: Hybotidae	<i>Platypalpus agilis</i> (Meigen, 1822)		
Diptera: Hybotidae	<i>Platypalpus annulipes</i> (Meigen, 1822)		
Diptera: Hybotidae	<i>Platypalpus longicornis</i> (Meigen, 1822)		
Diptera: Hybotidae	<i>Platypalpus major</i> (Zetterstedt, 1842)		
Diptera: Hybotidae	<i>Platypalpus pallidiventris</i> (Meigen, 1822)		
Diptera: Empididae	<i>Empis aestiva</i> Loew, 1867		
Diptera: Empididae	<i>Empis nuntia</i> Meigen, 1838		
Diptera: Empididae	<i>Empis tessellata</i> Fabricius, 1794		
Diptera: Empididae	<i>Hilara litorea</i> (Fallén, 1816)		
Diptera: Empididae	<i>Hilara maura</i> (Fabricius, 1776)		
Diptera: Empididae	<i>Hilara thoracica</i> Macquart, 1827		
Diptera: Empididae	<i>Rhamphomyia albohirta</i> Collin, 1926		
Diptera: Empididae	<i>Rhamphomyia tarsata</i> Meigen, 1822		
Diptera: Microphoridae	<i>Microphor holosericeus</i> (Meigen, 1804)		
Diptera: Dolichopodidae	<i>Chrysotus gramineus</i> (Fallén, 1823)		
Diptera: Dolichopodidae	<i>Chrysotus laesus</i> (Wiedemann, 1817)		
Diptera: Dolichopodidae	<i>Dolichopus griseipennis</i> Stannius, 1831		
Diptera: Dolichopodidae	<i>Medetera saxatilis</i> Collin, 1941		
Diptera: Dolichopodidae	<i>Medetera truncorum</i> Meigen, 1824		
Diptera: Lonchopteridae	<i>Lonchoptera lutea</i> Panzer, 1809		
Diptera: Syrphidae	<i>Melanostoma mellinum</i> (Linnaeus, 1758)		
Diptera: Syrphidae	<i>Platycheirus angustatus</i> (Zetterstedt, 1843)		
Diptera: Syrphidae	<i>Paragus haemorrhous</i> Meigen, 1822		

Order: Family	Species and Authority	Vernacular	Status
Diptera: Syrphidae	Chrysotoxum bicinctum (Linnaeus, 1758)		
Diptera: Syrphidae	Epistrophe eligans (Harris, [1780])		
Diptera: Syrphidae	Epistrophe grossulariae (Meigen, 1822)		
Diptera: Syrphidae	Episyrphus balteatus (De Geer, 1776)		
Diptera: Syrphidae	Syrphus ribesii (Linnaeus, 1758)		
Diptera: Syrphidae	Xanthogramma pedissequum (Harris, [1776])		
Diptera: Syrphidae	Cheilosia proxima (Zetterstedt, 1843)		
Diptera: Syrphidae	Cheilosia psilophthalma Becker, 1894		(Scarce)
Diptera: Syrphidae	Cheilosia urbana (Meigen, 1822)		
Diptera: Syrphidae	Myathropa florea (Linnaeus, 1758)		
Diptera: Syrphidae	Eumerus funeralis Meigen, 1822		
Diptera: Syrphidae	Merodon equestris (Fabricius, 1794)		
Diptera: Syrphidae	Pipiza noctiluca (Linnaeus, 1758)		
Diptera: Syrphidae	Pipizella viduata (Linnaeus, 1758)		
Diptera: Syrphidae	Syritta pipiens (Linnaeus, 1758)		
Diptera: Pipunculidae	Tomosvaryella geniculata (Meigen, 1824)		
Diptera: Pipunculidae	Tomosvaryella kuthyi (Aczél, 1944)		
Diptera: Micropezidae	Micropeza lateralis Meigen, 1826		Scarce
Diptera: Conopidae	Conops quadrifasciatus De Geer, 1776		
Diptera: Conopidae	Myopa buccata (Linnaeus, 1758)		
Diptera: Conopidae	Thecophora atra (Fabricius, 1775)		
Diptera: Lonchaeidae	Lonchaea scutellaris Rondani, 1874		
Diptera: Tephritidae	Sphenella marginata (Fallén, 1814)		
Diptera: Tephritidae	Tephritis cometa (Loew, 1840)		Local
Diptera: Tephritidae	Tephritis formosa (Loew, 1844)		
Diptera: Tephritidae	Tephritis neesii (Meigen, 1830)		
Diptera: Tephritidae	Tephritis vespertina (Loew, 1844)		
Diptera: Tephritidae	Trupanea stellata (Fuessly, 1775)		Local
Diptera: Tephritidae	Terellia serratulae (Linnaeus, 1758)		

Order: Family	Species and Authority	Vernacular	Status
Diptera: Tephritidae	Anomoia purmunda (Harris, [1780])		
Diptera: Lauxaniidae	Homoneura thalhammeri Papp, 1978		(Scarce)
Diptera: Lauxaniidae	Minettia longiseta (Loew, 1847)		
Diptera: Lauxaniidae	Minettia fasciata (=rivosa) (Fallén, 1826)		
Diptera: Lauxaniidae	Poecilolycia vittata (Walker, 1849)		
Diptera: Lauxaniidae	Sapromyza quadripunctata (Linnaeus, 1767)		
Diptera: Chamaemyiidae	Chamaemyia aridella (Fallén, 1823)		
Diptera: Chamaemyiidae	Chamaemyia herbarum (Robineau-Desvoidy, 1830)		
Diptera: Chamaemyiidae	Chamaemyia nigripalpis Collin, 1966		Local
Diptera: Chamaemyiidae	Chamaemyia polystigma (Meigen, 1830)		
Diptera: Sciomyzidae	Pherbellia cinerella (Fallén, 1820)		
Diptera: Sciomyzidae	Coremacera marginata (Fabricius, 1775)		
Diptera: Sepsidae	Sepsis cynipsea (Linnaeus, 1758)		
Diptera: Sepsidae	Sepsis orthocnemis Frey, 1908		
Diptera: Sepsidae	Sepsis punctum (Fabricius, 1794)		
Diptera: Sepsidae	Sepsis thoracica (Robineau-Desvoidy, 1830)		
Diptera: Agromyzidae	Agromyza idaeiana (Hardy, 1853)		
Diptera: Agromyzidae	Agromyza vicifoliae Hering, 1932		
Diptera: Agromyzidae	Ophiomyia pulicaria (Meigen, 1830)		
Diptera: Agromyzidae	Cerodontha denticornis (Panzer, [1806])		
Diptera: Agromyzidae	Cerodontha bimaculata (Meigen, 1830)		
Diptera: Agromyzidae	Cerodontha atra (Meigen, 1830)		
Diptera: Agromyzidae	Chromatomyia nigra (Meigen, 1830)		
Diptera: Agromyzidae	Liriomyza sonchi Hendel, 1931		
Diptera: Agromyzidae	Napomyza bellidis Griffiths, 1967		
Diptera: Agromyzidae	Phytomyza plantaginis Robineau-Desvoidy, 1851		
Diptera: Agromyzidae	Phytomyza sedi Kaltenbach		New for GB
Diptera: Agromyzidae	Pseudonapomyza atra (Meigen, 1830)		
Diptera: Opomyzidae	Opomyza germinationis (Linnaeus, 1758)		

Order: Family	Species and Authority	Vernacular	Status
Diptera: Anthomyzidae	<i>Anthomyza gracilis</i> Fallén, 1823		
Diptera: Asteiidae	<i>Asteia concinna</i> Meigen, 1830		
Diptera: Chloropidae	<i>Meromyza variegata</i> Meigen, 1830		
Diptera: Chloropidae	<i>Thaumatomyia glabra</i> (Meigen, 1830)		
Diptera: Chloropidae	<i>Dicraeus ingratus</i> (Loew, 1866)		
Diptera: Chloropidae	<i>Dicraeus tibialis</i> (Macquart, 1835)		Scarce
Diptera: Chloropidae	<i>Dicraeus vagans</i> (Meigen, 1838)		
Diptera: Chloropidae	<i>Oscinella frit</i> (Linnaeus, 1758)		
Diptera: Chloropidae	<i>Oscinella hortensis</i> Collin, 1946		
Diptera: Chloropidae	<i>Oscinella maura</i> (Fallén, 1820)		
Diptera: Chloropidae	<i>Oscinomorpha minutissima</i> (Strobl, 1900)		
Diptera: Chloropidae	<i>Tricimba cincta</i> (Meigen, 1830)		
Diptera: Drosophilidae	<i>Scaptomyza pallida</i> (Zetterstedt, 1847)		
Diptera: Ephydriidae	<i>Psilopa nitidula</i> (Fallén, 1813)		
Diptera: Scathophagidae	<i>Nanna fasciata</i> (Meigen, 1826)		
Diptera: Anthomyiidae	<i>Anthomyia liturata</i> (Robineau-Desvoidy, 1830)		
Diptera: Anthomyiidae	<i>Botanophila dissecta</i> (Meigen, 1826)		
Diptera: Anthomyiidae	<i>Botanophila fugax</i> (Meigen, 1826)		
Diptera: Anthomyiidae	<i>Lasiomma strigilatum</i> (Zetterstedt, [1838])		
Diptera: Anthomyiidae	<i>Heterostylodes nominabilis</i> (Collin, 1947)		
Diptera: Anthomyiidae	<i>Leucophora personata</i> (Collin, 1921)		
Diptera: Anthomyiidae	<i>Pegomya solennis</i> (Meigen, 1826)		
Diptera: Fanniidae	<i>Fannia armata</i> (Meigen, 1826)		
Diptera: Fanniidae	<i>Fannia manicata</i> (Meigen, 1826)		
Diptera: Muscidae	<i>Coenosia infantula</i> Rondani, 1866		
Diptera: Muscidae	<i>Coenosia testacea</i> (Robineau-Desvoidy, 1830)		
Diptera: Muscidae	<i>Schoenomyza litorella</i> (Fallén, 1823)		
Diptera: Muscidae	<i>Helina lasiophthalma</i> (Macquart, 1835)		
Diptera: Muscidae	<i>Helina reversio</i> (Harris, [1780])		

Order: Family	Species and Authority	Vernacular	Status
Diptera: Muscidae	Phaonia palpata (Stein, 1897)		
Diptera: Rhinophoridae	Rhinophora lepida (Meigen, 1824)		
Diptera: Sarcophagidae	Metopia argyrocephala (Meigen, 1824)		
Diptera: Sarcophagidae	Sarcophaga nigriventris Meigen, 1826		
Diptera: Sarcophagidae	Sarcophaga carnaria (Linnaeus, 1758)		
Diptera: Sarcophagidae	Sarcophaga incisilobata Pandellé, 1896		
Diptera: Tachinidae	Dinera grisescens (Fallén, 1817)		
Diptera: Tachinidae	Eriothrix rufomaculata (De Geer, 1776)		
Diptera: Tachinidae	Medina separata (Meigen, 1824)		
Diptera: Tachinidae	Meigenia mutabilis (Fallén, 1810)		
Diptera: Tachinidae	Lydella grisescens Robineau-Desvoidy, 1830		
Diptera: Tachinidae	Exorista rustica (Fallén, 1810)		
Diptera: Tachinidae	Nemorilla floralis (Fallén, 1810)		
Diptera: Tachinidae	Phania funesta (Meigen, 1824)		
Diptera: Tachinidae	Cistogaster globosa (Fabricius, 1775)		RDB1 (RDB2)
Diptera: Tachinidae	Phasia pusilla Meigen, 1824		
Diptera: Tachinidae	Phasia obesa (Fabricius, 1798)		
Diptera: Tachinidae	Lydina aenea (Meigen, 1824)		
		Totals	276
		No. Scarce and RDB species	23(12,6,5)
		% Scarce and RDB species	8.3
		No. RDB species	5
		% RDB species	1.8