

**Silverdale Community Country Park**  
**Survey of Bees, Wasps, Ants and Flies**  
**A report for Staffordshire Ecological Services**

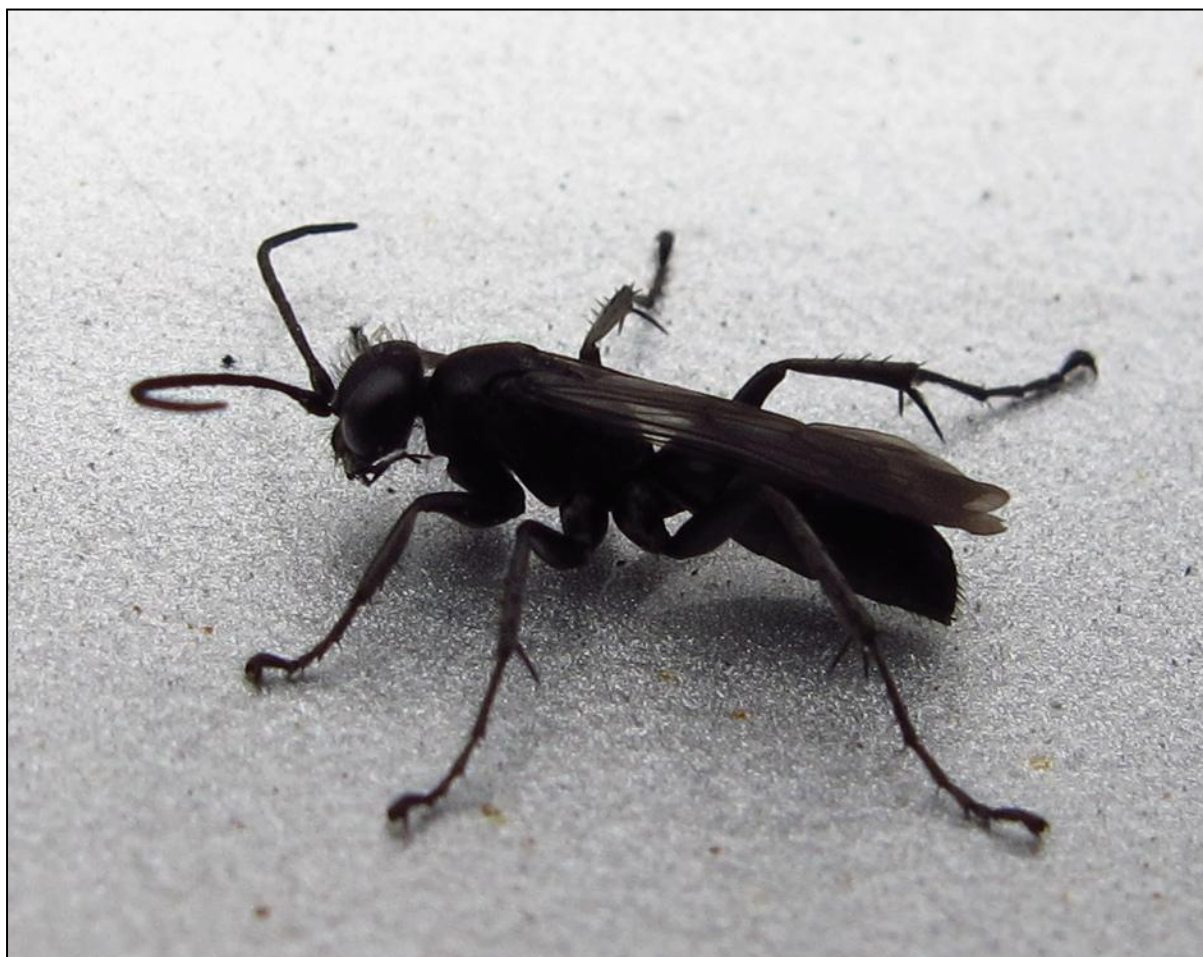


Photo: *Anoplius concinnus* – a spider-hunting wasp.

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**Report title** Silverdale Community Country Park - Survey of Bees, Wasps, Ants and Flies.

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**Cover picture** The scarce spider-hunting wasp *Anoplius concinuus* – a specimen that landed on the survey team's car. There is a substantial population of this wasp at Silverdale Park. Photo by Nigel Jones.

There is a gallery of images of some of the insects recorded at Silverdale Community Country Park at <http://pinterest.com/conopid/silverdale-community-park/>

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## 1. BACKGROUND

### 1.1 Brief

- To carry out an inventory survey of aculeate Hymenoptera (bees, wasps and ants) and Diptera (True-flies) at Silverdale Community Country Park in order to establish the presence of species and or species assemblages of conservation importance.
- To make management recommendations that will help to protect existing important populations of invertebrates and potentially enhance the site for invertebrates in future.

## 2. METHODOLOGY

### 2.1.1 Site boundary and compartments

For survey purposes, the site was divided into eight compartments to help delineate the areas of most interest for invertebrates. The boundaries of the site and compartments are shown in Figure 1.

### 2.1.2 Sampling Methods

The assessment employed a number of techniques to sample the invertebrate assemblages of the site and assess the key features of interest. These methods are described below:

*Sweep netting:* sweeping through vegetation to sample from a wide variety of situations where invertebrates will be found e.g.,

- flowering plants growing at differing heights;
- dense swards of grasses and rushes;
- low growing woody plants such as heather, gorse, broom;
- lower and medium height (up to about 2.5 metres) leaves of various tree species;
- vegetation growing in differing ground conditions such as deep shade, dappled shade, damp, saturated and free-draining.

Invertebrates swept up by the above methods are then sorted within the net-bag and collected for later determination.

*Search and capture sampling:* This is one of the most effective methods of collecting larger, more conspicuous insects plus those insects that alight on surfaces such as fence posts, tree trunks, leaves and flowerheads. This method is complimentary to the more indiscriminate sweep samples.

*Pan trapping:* Pan traps are particularly effective for sampling aculeate Hymenoptera. Traps were placed in the field on site survey days. The traps were placed in situations most likely to attract aculeate Hymenoptera such as bare ground, south and east facing banks and flower rich situations. At the end of each survey day insects that had been captured by the traps were collected for later determination. Where possible, samples were determined on site and released.

Representative material from the survey has been retained, where necessary, i.e., for scarce species and species that are critically difficult to determine. This material is held within the private reference collections of Nigel Jones and Ian Cheeseborough.

### 2.13 Target taxa

As required by the survey contract, the site appraisal focussed on a systematic survey for aculeate Hymenoptera (bees, wasps and ants) and Diptera (true flies). In addition casual records were made of insects from other orders.

Species determination was undertaken by:

Ian Cheeseborough: Aculeate Hymenoptera and other miscellaneous groups.

Nigel Jones: Diptera and other miscellaneous groups.

Caroline Uff kindly determined Coleoptera collected on a casual basis.

#### *2.1.4 Field work*

The site was visited on the following dates during 2012:

30 April

14 May

4 June

26 June

12 July

8 August

Figure 1 Plan showing site compartments.

← North



### 3. RESULTS

#### 3.1 The 2012 season

The spring and summer of 2012 was the wettest on record for 100 years. In particular the peak months for many of the invertebrates surveyed, May, June and July, were exceptionally wet and cool. There was a very significant impact on insect populations. For example some normally ubiquitous species were found in very low numbers and some common species, that one would confidently predict would be present on the site, were not found at all. This alarming lack of species has been a common experience for invertebrate surveyors across England and Wales during 2012. It should be assumed that many other species were probably present, but in such low densities that they eluded capture. Accordingly, the results of this assessment should be considered as an absolute minimum indication of the site's potential value for invertebrates. None-the-less the present survey has provided sufficient data to enable Silverdale Country Park to be considered as a site that has significant invertebrate interest. Further survey will almost certainly discover additional local and scarce species, as well as numerous additional common species.

#### 3.2 Species recorded

Section 5 lists the species recorded at Silverdale between 30 April and 8 August 2012.

A gallery of some of the species recorded at the park is available at:

<http://pinterest.com/conopid/silverdale-community-park/>

#### 3.3 Species of Conservation Interest

Several local and scarce species were recorded as part of the survey. These are discussed below.

See Appendix A for UK conservation status definitions. The UK status is derived from the JNCC Conservation Designations for UK Taxa Spreadsheet (2011).

##### ***Tetanocera punctifrons* - Nationally Scarce**

A snail-killing fly in the family Sciomyzidae. It was listed as “Notable (now termed Nationally Scarce) in Falk, 1991. It appears to have a concentration of records in northern and midland England plus Wales.

The life history of *T punctifrons* is unknown. Rozkošný (1984) states that it has been found in “woods alongside running water”. In Shropshire it has been found in a variety of situations, with three records from quarries. A permanent pool and a flush in grassland. At Silverdale a single specimen was collected from the banks in compartment 6.

##### ***Oxycera morrisii* – Nationally Scarce**

A soldierfly in the family Stratiomyidae. It was listed as “Notable” (now termed Nationally Scarce) in Falk, 1991. Stubbs and Drake (2001) states that records are widely distributed in lowland areas of England, Wales and south-west Scotland. It is regarded as a scarce species with a strong ability to colonise new areas of suitable habitat. It can be locally common at sparsely vegetated open seepages associated with springs.

*O. morrisii* often occurs in man-made habitats such as quarries, or ground where industrial waste has been tipped. Larvae have been found abundantly on moss at the outflow ‘waterfall’ of a pond in Gloucestershire (Stubbs and Drake, 2001). At Silverdale a single specimen was swept from a small ditch on the boundary between compartments 1 and 4.

***Cheilosia nebulosa* - Nationally Scarce**



Female *Cheilosia nebulosa* (photo courtesy Steven Falk <http://www.stevenfalk.co.uk> )

Falk (1991) lists this hoverfly as “Notable” (now termed Nationally Scarce). A later review by Ball and Morris (2007) also consider this a Nationally Scarce species, with records at a low density across England and Wales with a single Scottish record.

The larval host plant of *C. nebulosa* is unknown. Adults are often found at willow *Salix* flowers in early spring. It is usually a species of woodland rides, often near carrs or marshes, on a variety of soil types. At Silverdale a two specimens were swept from the grassland between the main pools.

***Noeeta pupillata***

A beautiful picture-winged fly, the larva of which make galls within the capitula of hawkweeds *Hieracium spp.* Clemons (1996) suggests that this species is “Notable” (now termed Nationally Scarce). *N. pupillata* was particularly abundant in grassland in compartments 6 and 8 during July.



*Chrysis viridula*



*Chrysis viridula* photo: Nigel Jones

Edwards (1998) and Archer (2007) regard this wasp as a scarce species (i.e. recorded in less than 70 ten km squares in Britain).

*C. viridula* is a parasitoid of *Odynerus spinipes* and *O. melanocephalus*. *O. spinipes* was recorded from the park. *C. viridula* was recorded from a steep slope with much exposed soil in compartment 6.

*Anoplius concinnus*

Archer (2007) regards this spider-hunting wasp as a scarce species (i.e. recorded in less than seventy 10km squares in Britain).

Females prey on spiders, in the family Lycosidae, that run over the surface of the very shallow water at the edges of pools. At Silverdale, numerous individuals were recorded from the damp grassland around the main pools and the long bank in compartment 6. There appears to be a strong population of this wasp in the park.

*Ceropales maculata*

Work by BWARS (Edwards, 1998 and Archer, 2007) indicates that *C. maculata* has undergone a dramatic decline many areas, such that it should now be regarded as a scarce species (i.e. recorded in less than seventy 10km squares in Britain).

Davidson (in Edwards, 1998) describes the extraordinary life history of *C. maculata* as follows:

*The spider-hunting wasp genus Ceropales is unique in its approach to providing for its offspring. Females seek out female pompilids of other genera which are transporting their paralysed prey. The host female is driven off and the Ceropales female uses her highly modified abdomen to insert her egg into the lung-book of the paralysed spider. The prey is*

*then abandoned and the host female usually returns to complete the process of dragging it back to its nest site, unaware of the egg hidden in the spider. The Ceropales egg hatches first in the completed brood cell and the larva immediately seeks out and consumes the egg of the host. It then feeds on the spider and develops normally (Day, 1988). Species in the genera Priocnemis, Pompilus, Agenioideus, Arachnospila, Anoplius, Episyrus and Auplopus have all been reported as hosts to C. maculata in Britain and Europe. Other species which use spiders as prey, such as Miscophus (Crabronidae), may also be parasitised.*

Several specimens were recorded from Silverdale, in compartments 4 and 6, indicating that there is a significant population of this scarce wasp on site.

### *3.4 Other interesting species*

#### ***Hydrophorus balticus***

A local fly, with a rather strong bias toward coastal locations in Britain. It is a fly of muddy, shallowly sloping margins of pools. At Silverdale it was swept from the edges of the small seasonal pools in compartment 7.

#### ***Oxycera rara***

A widespread, but rather local soldierfly. Stubbs and Drake (2001) describe it as “very local and never abundant”. The larvae has been found in moss and on mud in open seepages associated with springs, and on wet mud at the margins of ponds and ditches. At Silverdale, a few specimens were recorded from damp grassland and tree foliage in compartment 8.

#### ***Minettia longiseta***

An uncommon species. Mitchell (2012) states that this fly appears to have a preference for coastal habitats, with very few inland records. A single specimen was found in compartment 6.

#### ***Micropeza corrigiolata***

A distinctive “stalk-legged” fly that occurs in damp grassland containing sparse vegetation. It is a rather local species. The damp grassland around the main pools held good numbers of this fly.

#### ***Conisternum decipiens***

Ball (2007) regards this as a scarce southern species of Scathophagid fly. Its habitat preferences are unclear, but it is mostly recorded from damp places, including coastal marsh, vegetation around ponds, fen and carr woodland. At Silverdale a single specimen was collected from damp grassland in compartment 7.

#### ***Sarcophaga sexpunctata***

Falk (undated) regards this flesh-fly as “scarce in the southern half of Britain north to Lincolnshire, where it is mainly recorded in woods and marshes”. Specimens were collected in pan traps from compartments 6 and 7.

#### ***Sarcophaga subulata***

Falk (undated) regards this flesh-fly as uncommon, saying it is “recorded sparingly in southern England north to Warwickshire”. Previous records are from an old limestone quarry, a coniferised

ancient woodland, heaths and calcareous grassland. It has been reared from the larvae of gypsy moth *Lymantria dispar* and the snail *Monacha cantiana*. A specimen was collected in a pan trap from compartments 7.

### ***Cynomya mortuorum***

This large blow-fly is very distinctive, having a yellow head that contrasts strikingly with a shiny metallic blue body. It is widespread but local and rarely found in numbers. At Silverdale it was unusually numerous in damp grassland in compartments 6 and 7 on 30 April and 14 May.

### ***Chrysogaster virescens***

A single specimen of this black hoverfly was collected from compartment 6 in August. It is a very local hoverfly, strongly associated with acidic soils and bog habitat. It is known to wander widely, so may have been an individual on the move from another site. None-the-less with the significant areas of wetland habitat present at Silverdale it is possible that this species may be part of the park's resident fauna. Further records would provide stronger evidence for this.

### ***Bombus jonellus***

This is a widely distributed species in Britain, that is common on heathland. In other habitats it is much less common, particularly in the Midlands and east of England. A single specimen was recorded visiting willow *Salix* flowers on 30 April in compartment 2.

## **3.5 Species assemblages**

### **3.5.1 Ground nesting aculeate Hymenoptera**

The survey recorded 72 (including one indeterminate) species of bee, wasp and ant at Silverdale Park in 2012. This is quite a good range of species, bearing in mind the extremely poor weather experienced over the spring and summer, which seriously reduced opportunities for finding even the most common species.

By way of comparison, the West Midlands Aculeate Database (Jukes, 2011) lists 26 sites across Staffordshire, north Worcestershire and the West Midlands conurbation. The best of these sites e.g., Highgate Common, Staffordshire and Hartlebury Common, Worcestershire boast over a hundred species each. These are sites that have been surveyed extensively over a period of years, and are sites with prime habitat for aculeates. Thus, the list of 71 species at Silverdale Park compares quite favourably with other West Midlands sites, ranking the park eleventh out of 27 sites ( a recent survey at land at Berry Hill, Stoke-on-Trent adds an additional site to those already included in the original list of 26). It can be expected that further species could easily be added to the aculeate inventory for Silverdale Park, which would further improve its rank. Previously recorded additional species will of course swell the list presented here.

Silverdale Park contains significant areas of quality habitat for aculeates, particularly east/south facing banks with exposed soil, sparsely vegetated grassland and plentiful and varied floral resources. These features provide ideal situations for ground nesting solitary bees and wasps. Some 40 of the species recorded can be considered ground nesting species. Four of these can be considered as scarce species, indicating that the site is potentially valuable for its aculeate fauna.

### 3.5.2 Aerial nesting aculeate Hymenoptera

The aerial nesting aculeate species assemblage was reasonably represented. Thirteen aerial nesting bees and wasps were recorded. Most of these species were probably using plant stems, such as dead bramble shoots, as there is little evidence of standing dead wood on the park – the other most important medium utilised by aerial nesting species.

### 3.5.3 Wetland Diptera

The site has a fairly extensive wetland fly assemblage, with some 39 species that can be considered as strictly wetland species. Amongst these are some fairly ubiquitous species that can be found almost anywhere, such as the hoverflies *Eristalis tenax*, *E. arbustorum* and *E. pertinax*, which utilise any putrefying, wet mediums. There are also some uncommon species, strongly associated with wetland habitats. These are the Nationally Scarce *Tetanocera punctifrons* and *Oxycera morrisii*, plus the uncommon *Conisternum decipiens*, *Hydrophorus balticus*, *Oxycera rara*, *Pherbellia schoenherri*, and *Orthonevra nobilis*. Apart from *Oxycera morrisii*, all these flies were found amongst damp grassland in compartments 6, 7 and 8. In addition the rather local fly *Micropeza corrigiolata*, although considered a fly of open mosaic habitats, is most often found in damp situations, as it was at Silverdale, where it was abundant in compartments 7 and 8. The scarce spider-hunting wasp *Ceropales maculata* is also strongly associated with wetland habitat, reinforcing the conclusion that the wetland invertebrate fauna at Silverdale is a key component of the site.

This suite of wetland species indicates that a good quality wetland Diptera fauna is developing at Silverdale. The sparsely vegetated grassland in compartments 6, 7 and 8, plus the margins of the pools were the key areas for this species assemblage. In addition, ditches around the site may harbour interest, suggested by the discovery of a single *Oxycera morrisii* in a ditch.

### 3.5.4 Grassland and scrub Diptera

Diptera of grassland and scrub assemblages were also well represented by some 46 species considered as components of this assemblage. Included in this assemblage are the Nationally Scarce hoverfly *Cheilisia nebulosa* and the uncommon picture wing *Noeeta pupillata*. These results indicate that the park is developing a quality grassland and scrub Diptera fauna.

## 4. MANAGEMENT RECOMMENDATIONS

### 4.1 Creating areas of exposed soil for nesting aculeates

We found little evidence for ground nesting aculeates using the new exposures of bare soil that had been recently created in compartments 2, 3, and 4. Use may have been severely curtailed by the cool and wet weather that prevailed throughout the 2012 season. At times the exposures were sodden, as water could not easily run off them. Wet exposures would very much discourage their use by nesting aculeates. Interestingly though, there were many green tiger beetles *Cicindela campestris* using the new exposures for larval pits.

In compartment 4 we did note good levels of activity, and pit traps placed in this area did capture a good range of species. In this area we noted that the steeper slopes and “mini-cliffs”, forming the sides of the ditch below the created exposures, showed signs of nesting and activity, more so than on the more level new exposures. We thus make the following recommendations:

- New work to create areas of exposed soil should avoid shallowly sloping and level ground.
- Exposures are best dug vertically, or at least steeply sloping, into the ground to create “mini-cliffs”. These can be as short as 0.3 meters in height, but the longer in length an exposure is the better the chance of attracting nesting aculeates.
- Exposures should face south through to east, so that they benefit from direct sunshine. An essential requirement for bees and wasps that need to warm up near nest entrances in spring and cooler weather in summer, before they can fly to gather pollen and drink nectar.
- Lengths of exposed soil should be maintained/created in a variety of situations, e.g., amongst strong floral resources, near scrub boundaries, near dry areas, near wet areas. This will create a useful range of nesting opportunities close to various habitat types that may suit different species.
- In locations where soils are particularly stony or hard it is less worthwhile creating exposures. Crumbly soils – varying from loose sandy exposures to friable clays are best.
- Long lengths of exposed soil will also provide excellent opportunities for monitoring aculeate fauna and populations on site. Simplifying the task of surveying aculeates in the park.
- Timely excavation of new exposures can help to prevent overgrowth by rank grass and scrub, of existing open mosaic situations. Left unmanaged most areas will inevitably become overgrown and lose their value for aculeates.

#### 4.2 Scrub and Floral Resources

The matrix of scrub and flower rich grassland at Silverdale is a valuable resource for invertebrates. It provides a season long source of nectar and pollen, essential for many flying insects. Management should aim to retain these features, particularly in view of the potential for ground nesting aculeates (a Staffordshire LBAP priority) that require the nesting opportunities that the park provides along with a nearby substantial and varied floral resource.

The floral resource could be enhanced by:

- Planting of more goat willow *Salix caprea* around the site which would provide an important early season flower resource utilised by a large number of species that emerge in early spring. Very few *Salix* were noted on site, so this would be a particularly beneficial action.
- Retention of a significant resource of blackthorn *Prunus spinosa* and hawthorn *Crataegus monogyna* which will provide ongoing floral resources to follow on from goat willow.
- Extending areas of flower rich grassland. An extensive area of grassland in compartment 3 was rather species poor. Opportunities to drive down soil nutrients, by removing cut vegetation would help to develop a richer flora here. Also the introduction of yellow rattle *Rhinanthus minor*, a semi-parasitic grassland annual, could decrease the vigour of the grassland and help to open up the area to colonisation by a wider range of less competitive plants.
- Some experimental sowing of wild flower mixes could perhaps be tried on some of the failed shallow scrapes described above.

#### 4.3 Dead wood for aerial nesting aculeates

There is little standing dead wood on the park. This situation is undoubtedly a result of the relatively new restored landscape at Silverdale which has few if any mature trees – the key source of dead wood in landscapes. Obviously it is not possible to create mature trees but a number of actions can be taken to provide nesting opportunities in timber.

- When trees die, if at all possible they should not be felled and cleared away. Where public safety concerns demand that action is taken, then consider felling branches but retaining a bole that can rot down in situ. Over time beetle exit borings will provide new crevices in which aerial nesting aculeates can nest.
- To speed up the process described above, consider drilling cavities that mimic beetle exit burrows, into standing dead wood. These can be in a range of diameters from 2 – 12mm. They should not slope downwards into the timber medium, otherwise rainwater can collect in them and discourage nesting aculeates.
- Timber gate posts and fence posts can also be drilled – the borings do not shorten the life of the timber, as they should be drilled so as not to collect water. In addition, posts with numerous pre-drilled borings can be specifically place around the site in sunny situations. If this is implemented, avoid using treated timber. These features can provide an excellent educational resource, as they permit ready observation of a good range of aerial nesting aculeates, their cleptoparasites and parasites.
- Should the opportunity arise, consider importing substantial sections of deadwood on to the site. Place it in sunny locations. If such timber is installed, then keep it free of overgrowth such as bramble, which can over-shade this valuable nesting medium. There was good evidence that aerial nesting species are flying through the site and utilising the flower resource. Provision of nesting opportunities will almost certainly boost populations of aerial nesting aculeates as well as other insects associated with dry desiccated dead wood.
- An additional resource for aerial nesters is dead plant stems, particularly bramble. Where bramble is routinely cut back, of the sides of paths for example, focus on cutting back south facing slopes more than north facing slopes, so that plenty of cut stem ends are available in favourable situations.

#### *4.4 Wetland*

The best areas of wetland appear to be those around the fringes of the shallow seasonal pools in compartment 7, and the damp, sparsely vegetated grassland across compartments 6, 7 and 8. Water levels should be managed to keep these areas seasonally wet. It will be useful to maintain both lush waterside vegetation and sparsely vegetated pool margins, which support different elements of the wetland fauna. These areas should be kept relatively scrub free, although patches of scrub and trees should be maintained to provide useful structural diversity that will support a wider range of invertebrates than completely clear areas.

Grazing would probably be the only cost effective method of maintaining open wetland in the long term. Grazing may be difficult to achieve in a popular public open space. In which case it would be pragmatic to manage the wetlands towards a predominately alder/willow carr landscape, but aim to regularly clear areas within this, to provide open pool margins and glades.



## 5. Inventory of species recorded at Silverdale Community Country Park during 2012

### DIPTERA - TRUE FLIES

#### **Asilidae - Robber-flies**

Robberflies are predatory insects that catch other insects in flight. The larvae generally live in soil where they are predators of other insect larvae.

##### *Dioctria atricapilla*

A widespread though never abundant fly of grasslands.

##### *Leptogaster cylindrica*

A widespread and often abundant fly of grasslands. A remarkably narrow long bodied predatory-fly.

#### **Family Bibionidae - Bibionid-flies**

##### *Bibio johannis*

A common fly of grasslands.

##### *Bibio lanigerus*

A common fly of grasslands.

##### *Bibio marci*

The familiar “St. Mark’s Fly” that sometimes occurs in vast numbers on warm days in April.

##### *Dilophus febrilis*

A common fly of grasslands.

#### **Calliphoridae - Blow-flies**

The familiar bluebottles and related species. Most are associated with corpses and faeces.

##### *Cynomya mortuorum*

A distinctly local blow-fly. This is a large metallic blue fly, with a golden-yellow face. Good numbers were present on the site in spring and early summer.

##### *Melanomya nana*

A small black fleshfly. Common in most areas.

#### **Conopidae - Thick-headed flies or Conopid-flies**

Internal parasites of bees and wasps. The adults are rarely numerous. They wait on flowers for potential hosts to land nearby, then pounce on the host and rapidly thrust an egg into the body of the host – frequently a worker bumblebee.

##### *Physocephala rufipes*

A widespread, but rarely numerous fly, found in a variety of habitats. A wasp waisted black, brown and yellow marked fly.

##### *Sicus ferrugineus*

The commonest of the Conopid flies. A medium sized, dumpy, brown insect.

#### **Family Dolichopodidae - Long-legged flies**

This is a large family of flies. Most are metallic green, many being remarkable for their extraordinarily embellished legs, male genitalia and silvered palps. These ornamentations are used in courtship rituals. Most species are typical flies of wetland habitats.



*Argyra argyria*

A widespread fly. A silver dusted and metallic green fly of wet habitats, particularly where tree cover occurs.

*Argyra leucocephala*

A widespread fly. A silver dusted and metallic green fly of wet habitats, particularly where tree cover occurs.

*Campsicnemus curvipes*

One of the commonest and most abundant flies of wet situations everywhere.

*Chrysotus gramineus*

A very common, tiny metallic green fly. Most often captured from leaves of trees and bushes.

*Dolichopus brevipennis*

A widespread, though rather local fly of wetlands

*Dolichopus festivus*

A widespread, though rather local fly of wetlands

*Dolichopus griseipennis*

A widespread and common fly of wetlands

*Dolichopus plumipes*

A very common fly of wet situations

*Dolichopus trivialis*

A very common fly of wet situations

*Dolichopus ungulatus*

A very common fly of wet situations

*Medetera saxitilis*

A common small predator, often found on tree trunks

*Medetera truncorum*

A common small predator, often found on tree trunks

*Scellus notatus*

A widespread but rather local fly of damp exposed mud at pool edges and similar situations.

*Sympycnus desoutteri*

A tiny common fly of wet situations

*Syntormon pallipes*

A tiny common fly of wet situations

*Syntormon pumilus*

A tiny common fly of wet situations

**Empididae - Dance-flies**

A large family of flies which includes many predatory species. The males of many species capture prey which they then present to a female. Whilst the female consumes the prey the male copulates with her. In some species the male wraps the prey in a silk-like material. Most species hover in small swarms as part of their courtship ritual, or travel rapidly back and forth over water bodies. Many males have extraordinarily

large and complex genitalia.

*Clinocera stagnalis*

A small fly that frequents pool and stream edges.

*Empis aestiva*

A small dark fly. Widespread and fairly local.

*Empis albinervis*

A small dark fly. Widespread and common.

*Empis livida*

A medium sized, orange and black fly. Very common in many habitats.

*Empis nigripes*

A small dark fly. Widespread and common.

*Empis tessellata*

A large dark fly. Often seen hovering in swarms around hawthorn and over small trees in the spring. A very common species.

*Empis trigramma*

A medium sized, orange and black fly. Very common in many habitats.

*Rhamphomyia albohirta*

A small dark fly. Widespread and common.

*Rhamphomyia crassirostris*

A medium sized dark fly. A common spring species.

*Rhamphomyia subcinerascens*

A medium sized dark fly. A common spring species.

*Rhamphomyia sulcata*

A medium sized dark fly. A common spring species.

**Ephydriidae**

**Shore-flies**

*Parydra coarctata*

A very common tiny fly of damp or wet situations.

**Fanniidae**

Small flies, including the well known lesser house-fly. Many species hover around trees and other landmark features, flying slowly back and forth in small mating swarms.

*Fannia molissima*

A very common fly. Of the earliest species to emerge in the spring. Associated with decaying vegetable matter and rotting wood.

**Hybotidae - Hybotid-flies**

Slender and small – minute – medium sized, mainly dark coloured flies. The larvae (the few that are known) live in various mediums as predators on small invertebrates. The adults are also predatory on small insects, which they catch in flight, or whilst running about on the ground, on leaves or tree trunks/branches.

<i>Bicellaria vana</i>	A small, dark, “hump-backed” fly. Common in many habitats.
<i>Drapetis ephippiata</i>	A very small, but distinctively orange and black marked fly. Widespread and quite common.
<i>Hybos culciformis</i>	A very common dark fly of many habitats.
<i>Hybos culciformis</i>	A very common dark fly of many habitats.

#### **Lauxaniidae - Lauxaniid-flies**

A family of small to medium sized flies of varying colours. Most are associated with decaying vegetable matter, where they live on micro-organisms in fungi, or in birds nests. They are mostly found in shaded spots in moist woodlands, marshes, grasslands etc.

<i>Calliopum aenum</i>	A medium sized black sheened fly. Common.
<i>Meiosimyza c.f. subfasciata</i>	A small pale yellow fly. Likely to be this common species but not certainly.
<i>Minettia c.f. tabidiventris</i>	A small brownish fly. Likely to be this common species , but not certainly.
<i>Minettia longiseta</i>	A small grey-brown fly. This is mainly a coastal species in the UK and is likely to be quite a local species inland.
<i>Minettia rivos</i>	A very common brownish, medium size fly.
<i>Sapromyza quadripunctata</i>	A very common, small, pale yellow fly with dark spots on its abdomen.
<i>Tricholauxania praeusta</i>	A common grey-brown, medium sized fly.

#### **Micropezidae - Stilt-legged flies**

Remarkably long legged flies. Their life-histories are quite poorly understood, but they are invariably encountered in damp to wet situations.

<i>Micropeza corriogolata</i>	A widespread but rather local fly. Yellowish with dark marking and the slender build, plus characteristic stilt-legs of this family. The larvae live in the root nodules of leguminous plants.
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#### **Muscidae – House-flies and their relatives**

A large family of flies which includes the familiar house fly, but also many other species with widely varying life-histories. As larvae most are either found in decaying vegetable matter, including dung and as predators on other larvae within the larval medium. Adults feed on nectar or are predatory on other fly species.

<i>Coenosia testacea</i>	A small, black and pale yellow marked (in the male) predatory fly. Very common.
<i>Coenosia tigrina</i>	An extremely common medium sized, dark and orangey-red marked predatory fly.
<i>Eudasyphora cyanicolor</i>	A very common “greenbottle”.
<i>Graphomya maculata</i>	A common, relatively large and strikingly marked fly. The larva is predatory on larva of the hoverfly <i>Eristalis tenax</i> and related species, whilst the adults are usually seen feeding on umbelliferous flowerheads.

*Mesembrina meridian* A very common, large and striking fly with glossy black body and orange marked wing bases. The larva is particularly associated with horse dung.

*Schoenomyza litorella* A widespread fly of damp habitats. The male is a small but strikingly marked fly, with a bright golden-yellow-orange band on the head.

### **Opomyzidae – Picture-wing flies**

A small family of medium sized flies. Most have simple patterns of spots on the wings. They live as stem-miners in grasses and are thus often abundant in grasslands.

*Geomyza tripunctata* A quite strikingly marked small dark fly with three large dark spots on the wing. Common.

*Opomyza florum* A very common small fly with quite indistinct dark markings on the wing.

*Opomyza germinationis* A common small fly with quite indistinct dark markings on the wing.

### **Pallopteridae – Picture-wing flies**

Small- to medium sized flies, usually with strong wing markings. Their life histories are poorly understood, but they include species that, as larvae, live in plant stems and some species that live as predatory larvae under tree bark. Adults are most often encountered in shaded situations near water or damp situations.

*Palloptera quinquemaculata* A pale orange species with a dark mark around the wing edge, plus further markings on the cross veins. Common in a variety of habitats.

*Palloptera ustulata* Quite a common species. Pale yellow and grey coloured with a small dark mark on the front wing edge.

### **Pipunculidae – Big-headed flies**

Extraordinary looking flies with huge eyes that occupy almost the entire head. These are internal parasites of Homopterans (froghoppers, leafhoppers etc.). The adults are tiny small dark flies, very adept at hovering in confined spaces.

*Eudorylas fuscipes* Is a small species, not uncommon in suitable habitat, mainly woodland and woodland edges.

*Pipunculus c.f. fonsecai* This specimen has provisionally been determined as *P. fonsecai*, but this species is part of a difficult species complex, so requires further investigation.

*Verrallia aucta* is one of our commonest Pipunculid species, often occurring abundantly around bramble scrub and woodland edge.

### **Psilidae - Psilid-flies**

The larvae of most species are phytophagous, living in roots, tubers and stems of non-woody plants.

*Psila merdaria* A common, medium sized orangey coloured fly. Found in a variety of habitats.

### **Rhagionidae - Snipe-flies**

The larvae of most species live in damp soil or mosses and liverworts.

<i>Chrysopilus cristatus</i>	In wetlands, including damp grassland, this is one of the most commonly encountered medium sized flies.
<i>Rhagio scolopaceus</i>	A common fly of wetlands. A large pale coloured species with dark wing markings.

### **Sarcophagidae - Flesh-flies**

These are amongst our most familiar flies. Larger species are frequently encountered basking in sunlight on leaves and fence posts. The biology of the various species is varied, including carrion feeders, excrement feeders, and parasitoids of various insects, earthworms, millipedes and molluscs.

<i>Sarcophaga dissimilis</i>	One of the commonest flesh-flies. Its biology is not known, but snail parasitism is suspected.
<i>Sarcophaga haemorrhoea</i>	A very common species occurring in many habitats. A snail parasite.
<i>Sarcophaga pumila</i>	A widespread and common species over much of southern Britain.
<i>Sarcophaga sexpunctata</i>	A scarce species of southern England. It is known as a parasite of spider cocoons and grasshoppers.
<i>Sarcophaga subulata</i>	Apparently quite a scarce species with records from old woodlands, limestone grassland and heathland. It has been reared from the moth <i>Lymantria dispar</i> and the snail <i>Monacha cantiana</i> .
<i>Sarcophaga subvicina</i>	A very common large species. In its larval stage this fly is a predator of earthworms.

### **Scathophagidae - Dung-flies**

The common name of dung-flies for this family is misleading as only a few species are associated with dung, but one of our most ubiquitous flies, *Scathophaga stercoraria*, known as the dung-fly, is a member of this family. Most other species are phytophagous, or live as predators in decaying organic matter. Adults often hunt other insects.

<i>Chaetosa punctipes</i>	A widespread species of wet grasslands. It's life history is not certainly known.
<i>Conisternum decipiens</i>	A scarce fly of southern Britain. It has mostly been recorded from coastal marsh, pool edge vegetation, long vegetation in fens and carr woodlands.
<i>Scathophaga inquinata</i>	A common dung breeding species.
<i>Scathophaga stercoraria</i>	A ubiquitous fly found in all habitats and associated with dung, particularly cow pats.

### **Sciomyzidae - Snail-killing flies**

All the members of this family are parasitoids of snails. Apart from a few species, they are mostly found in the damp to wet habitats, favoured by their hosts.

<i>Coremacera marginata</i>	A distinctive medium sized fly with heavily patterned wings and a dark body. This is a widespread but seldom frequent fly of relatively dry situations in a variety of habitats. A parasitoid of various snails, particularly <i>Cochlicopa</i> and <i>Discus</i> species.
<i>Euthycera fumigata</i>	A common medium sized fly with indistinctly patterned wings. Life history unknown.

<i>Ilione albiseta</i>	Adults prefer habitats with Phragmites at pool margins. They occur around water bodies with permanent and seasonal standing water. They are predators of pulmonate snails. A widespread species.
<i>Limnia paludicola</i>	A common species. Found at margins of standing water and in damp woods. Larval biology unknown.
<i>Limnia unguicornis</i>	A common species. Found at margins of standing water and in damp woods. Larvae are predatory on snails – <i>Succinea spp.</i>
<i>Pherbellia cinerella</i>	This fly was frequent in the damp grasslands around the pools on site. It is a small dark-winged fly that occurs commonly in a wide variety of freshwater and sometimes dry grassland habitats.
<i>Pherbellia pallidiventris</i>	Quite a common species. A few specimens were collected from around the pool margins on site. Its biology is unknown, but it most frequently occurs at sheltered margins of standing water.
<i>Pherbellia schoenherri</i>	A widespread but rather infrequent species. This is a small, but distinctive fly with spotted wing markings. The larva is a specialised parasitoid of <i>Succinea spp.</i> snails.
<i>Sepedon spegea</i>	A widespread and quite common fly of water margins. The larvae are vigorous predators of water snails. This is a very distinctive glossy blue-black fly with orange legs.
<i>Trypetoptera punctulata</i>	A very distinctive medium sized fly. It has attractively marked wings with a strong reticulate pattern. The body is also ornately patterned. This is quite a widespread species, that is seldom numerous where it occurs. Its life history is virtually unknown. It occurs in a variety of habitats, including both wet and relatively dry situations.
<i>Tetanocera arrogans</i>	Tetanocera species are medium to quite large brown flies with indistinctly marked wings.  <i>T. arrogans</i> is a common species. A single specimen was collected from compartment 1. <i>T. arrogans</i> is terrestrial predator of snails at the edges of water bodies.
<i>Tetanocera elata</i>	A specialist slug feeder. This is a widespread and common species. The larva feed on mucus without killing the slug in their early instars. Later instars kill the host, each killing four to nine slugs.
<i>Tetanocera fuscinervis</i>	Quite a common species. Adults are found in most freshwater situations. The larvae are predators of pulmonate snails.
<i>Tetanocera robusta</i>	A widespread though not particularly common species. It is found in marshes and at the edges of standing water. The larvae are aquatic predators of pulmonate snails.
<i>Tetanocera punctifrons</i>	<i>T. punctifrons</i> is designated as a Nationally Scarce species. It is widespread across England and Wales and probably no longer merits Nationally Scarce status. Adults occur alongside running water and in damp woodland. On site, a specimen was collected from the banks above

the main pools.

### **Sepsidae - Sepsid-flies**

Sepsid flies are small glossy black flies. Many species have a distinct spot on the wing. The wings are waved in courtship rituals. The males often have embellished legs with protuberances, grooves and arrangements of stiff bristles. Most species are associated with dung and decaying organic matter.

<i>Saltella sphondylia</i>	A widespread though rather uncommon species. Quite a distinctive orange marked fly.
<i>Sepsis cynipsea</i>	A very common fly of grasslands. Larvae in cow dung.
<i>Sepsis fulgens</i>	An abundant species that sometimes occurs in vast swarms. Larvae in cow, pig and horse dung.
<i>Themira minor</i>	A common species associated with dung.

### **Family Stratiomyidae – Soldierflies**

Associated with wetlands, woodland and decaying organic matter. Soldierflies are amongst our most attractive flies. Some species are brilliantly shiny whilst other have striking combinations of yellow and black markings.

<i>Beris geniculata</i>	A small dark fly, associated with wet shady areas. Common and widespread.
<i>Beris vallata</i>	A small orange and dark marked fly, associated with herbaceous vegetation in damp situations. Common and widespread.
<i>Chloromyia formosa</i>	Our most frequently encountered soldierfly. This metallic blue-green, and in the female, brass coloured fly is often seen feeding at umbellifer flowers in a wide variety of situations.
<i>Chorisops tibialis</i>	A small dark fly with small orange markings on the abdomen. Common and widespread in damp situations, particularly about trees and shrubs.
<i>Microchrysa cyaneiventris</i>	A small, brilliantly shiny green fly with a black abdomen. A very common species, usually found on tree and shrub leaves. Larvae live in decaying organic matter.
<i>Microchrysa polita</i>	A small, brilliantly shiny green fly. A very common species, usually found on tree and shrub leaves. Larvae live in decaying organic matter.
<i>Oxycera morrisii</i>	A Nationally Scarce fly that in recent years appears to have increased its distribution across England and Wales. A single specimen was collected from a small ditch in compartment 4. This is a small black and cream-white marked fly, particularly associated with seepages in wet soil.
<i>Oxycera rara</i>	A very smart black and bright yellow, medium sized fly. This is a widespread, though sparsely distributed species of open seepages and wet mud at the margins of ponds and standing water bodies. Several specimens were swept and recorded from trees near the main pool.
<i>Sargus iridatus</i>	A slender medium sized and iridescent blue and violet species. A common species that was abundant in parts of the park during July. Larvae are

associated with dung and composting vegetation.

### **Syrphidae – Hoverflies**

A large and very varied family of flies, which includes the familiar black and yellow wasp mimicking species renowned for eating aphids in their larval stages. Other species live as miners within plants, in decaying organic matter and in the nests of bees and wasps in a wide variety of situations, encompassing most habitats. Many species are well known for their habit of hovering in open air, or in shafts of sunlight in dappled shade.

<i>Cheilosia albitarsis</i>	<p><i>Cheilosia</i> species are mostly black, phytophagous flies.</p> <p>A common black fly whose larvae live in creeping buttercup <i>Ranunculus repens</i>. This hoverfly was abundant at Silverdale, during the spring.</p>
<i>Cheilosia bergenstammi</i>	<p>A common species that is rather local. The larvae live in the stem bases of ragwort <i>Senecio spp.</i> It was quite numerous during July and August at Silverdale. This is black species with orange hair and antenna.</p>
<i>Cheilosia griseiventris</i>	<p>An uncommon species, that may be overlooked on account of its close similarity to the commoner <i>C. latifrons</i>. <i>C. griseiventris</i> larvae are unknown but thought to be associated with yellow composites such as hawkbits and cat's-ear. In Britain it is known from fens, neutral grasslands, coastal dunes and woodlands, but avoid acidic soils. A single specimen was taken in compartment 6.</p>
<i>Cheilosia grossa</i>	<p>A widespread but rarely numerous large and orange haired fly. The larvae develop in the stems of thistles of various species. This is one of the earliest species to fly each spring, often being seen on willow flowers.</p>
<i>Cheilosia illustrata</i>	<p>A relatively large, hairy <i>Cheilosia</i>. A common species frequently seen on umbellifer flowers in summer. The larva tunnel in the stems of hogweed and related plants.</p>
<i>Cheilosia lasiopa</i>	<p>A locally common species in the southern half of England. Larvae eat cavities in the base of plantains. This fly was quite numerous at Silverdale during April.</p>
<i>Cheilosia nebulosa</i>	<p>Designated a Nationally Scarce species. This fly is regarded as “very scarce” (Stubbs and Falk, 2002), with woodland rides and wood edges by marshy ground probably providing the favoured habitat. It flies in early spring. At Silverdale, in April, several specimens were found in the grassland surrounding the main pools.</p>
<i>Cheilosia pagana</i>	<p>A common and small <i>Cheilosia</i>. It breeds in the roots of cow parsley <i>Anthriscus sylvestris</i> and probably other umbellifers.</p>
<i>Cheilosia psilophthalma</i>	<p>A species recently discovered in mainland Britain. So far it has been very infrequently recorded. The host plant in Britain is suspected to be mouse-ear hawkweed <i>Pilosella officinarum</i>.</p>
<i>Cheilosia scutellata</i>	<p>A not infrequent <i>Cheilosia</i>. The larvae are found in <i>Boletus</i> fungi.</p>
<i>Cheilosia vernalis</i>	<p>A widespread and locally frequent, spring and late summer <i>Cheilosia</i>. In Britain, larvae have been reared from yarrow <i>Achillea millefolium</i>.</p>



<i>Chrysogaster virescens</i>	A single specimen of this smallish dark fly was collected. It is strongly associated with bogs and wet acid pastures, so may be a stray from another area. It is a decidedly local species.
<i>Chrysotoxum bicinctum</i>	A smart dark fly with two yellow bands on the abdomen and darkly marked wings. It also has long porrect antenna. A widespread though rarely numerous hoverfly. It is thought to be associated with root aphids.
<i>Chrysotoxum festivum</i>	Another smart yellow and black fly with porrect antenna. It is widespread, though never abundant. It has been reared from a larva found in the nest of the ant <i>Lasius niger</i> .
<i>Epistrophe grossulariae</i>	A common late summer, yellow and black hoverfly that frequents many flowers, including knapweed <i>Knautia arvensis</i> and hogweed <i>Heracleum sphondylium</i> . The larvae are aphid feeders on trees.
<i>Episyrphus balteatus</i>	One of our most ubiquitous hoverflies, sometimes known as the “marmalade fly” on account of its narrowly banded orange-yellow markings. An aphid feeder.
<i>Eristalinus sepulchralis</i>	A common hoverfly of wetlands. It is a medium sized dark fly with patterned eyes. Larvae occur in decaying vegetation in still-water bodies.
<i>Eristalis arbustorum</i>	Larvae of the genus <i>Eristalis</i> are the well known rat-tailed maggots. Most species are honeybee mimics and are medium to quite large sized flies. All species breed in organically rich ponds and ditches. The males of all species can often be seen hovering at around 1 – 4 metres height. They are amongst our most abundant flies.  <i>E. arbustorum</i> is a medium sized <i>Eristalis</i> which is often abundant. The males have a distinctive courtship in which they hover up and down above a female resting on a flower.
<i>Eristalis interruptus</i>	A common <i>Eristalis</i> , which during 2012 was rather infrequent.
<i>Eristalis intricarius</i>	A distinctive, handsome and large hairy <i>Eristalis</i> . Males hover and dart away then return to the same spot at lightning speed. It is rarely as numerous as the other common <i>Eristalis</i> species.
<i>Eristalis pertinax</i>	Often one of our most abundant flies.
<i>Eristalis tenax</i>	Another very common fly, particularly early in the season and at seasons end when females either emerge from hibernation in spring, or “fuel up” at flowers such as ivy, in preparation for winter hibernation.
<i>Eupeodes corollae</i>	A typical yellow and black aphid feeding hoverfly. It is a widespread and common species, found in many habitats.
<i>Eupeodes latifasciatus</i>	Very similar to <i>E. corolla</i> , but rarely as numerous.
<i>Helophilus pendulus</i>	Closely related to <i>Eristalis</i> , also having rat tailed maggot larvae. This smart yellow and black hoverfly is a very common species in most habitats.

<i>Helophilus trivittatus</i>	<i>H. trivittatus</i> numbers vary wildly from year to year but it is usually only seen in low numbers. 2012 however, was a good year for the species and numbers were seen on the park. It is a handsome large yellow and black fly.
<i>Lejogaster metallina</i>	A smallish, entirely metallic green-bronze fly. It is mainly found in wetlands of many types. A fairly common species.
<i>Leucozona lucorum</i>	A distinctive white banded and orange haired fly with a dark band across each wing. It is a common fly of woodland margins in spring.
<i>Melanostoma mellinum</i>	An abundant species throughout much of the year. A small, slender black and yellow spotted aphid feeding species.
<i>Melanostoma scalare</i>	Very similar to <i>M. mellinum</i> .
<i>Merodon equestris</i>	The Narcissus-bulb fly, renowned as a pest of horticulture. This handsome, hairy hoverfly as a larva eats bulbs of many plant species. A common fly in many habitats.
<i>Neoascia podagrica</i>	A ubiquitous small hoverfly with a waisted abdomen giving it a distinctive appearance. It occurs in many habitats, the larva having been reported from wet decaying manure.
<i>Orthonevra nobilis</i>	A metallic fly that is widespread but quite local in occurrence. It is typically a wetland species that strays into drier habitats.
<i>Pipiza bimaculata</i>	A widespread but infrequent black hoverfly. A species of woodland margins whose larvae are thought to feed within leafstalk galls on trees.
<i>Pipizella viduata</i>	A common, small dark fly, that is particularly prevalent in dry grasslands. The larvae are associated with root aphids. The males of most species have peculiarly expanded front tarsi and prominent arrangements of long hairs on the legs.
<i>Platycheirus albimanus</i>	<i>Platycheirus</i> are aphid predators. All are slender species, usually with yellow markings on the abdomen.  <i>P. albimanus</i> is a very common, small, slender black and silver spotted fly. The larvae are aphid predators on low growing herbage.
<i>Platycheirus angustatus</i>	A particularly slender <i>Platycheirus</i> . It is a small species, most often encountered in damp grassland. Common across Britain.
<i>Platycheirus clypeatus</i>	A very common, medium sized <i>Platycheirus</i> . Found in a variety of habitats.
<i>Platycheirus granditarsus</i>	An extensively orange marked hoverfly, in which the male has black expanded front tarsi that give the impression of a fly wearing boxing gloves. A common species of damp grasslands, marshes and fens.
<i>Platycheirus manicatus</i>	A very common medium sized hoverfly.
<i>Platycheirus scutatus</i>	A common small hoverfly.

<i>Platycheirus splendidus</i>	A common small hoverfly.
<i>Platycheirus tarsalis</i>	A common medium sized hoverfly
<i>Rhingia campestris</i>	A very common reddish-orange hoverfly with a very distinctive snout, in which is housed a long tongue that can probe into deep nectarines, that would normally be out of reach of flies.
<i>Sphaerophoria interrupta</i>	A relatively common, slender lemon-yellow and black hoverfly. Usually found in damp grasslands, but can also occur in drier situations. An aphid predator.
<i>Sphaerophoria scripta</i>	A common and sometimes abundant slender lemon-yellow and black hoverfly. Often found in grassland or flowery wasteland. An aphid predator.
<i>Syrpita pipiens</i>	A very common small hoverfly with expanded back legs. Larvae live in decaying organic matter of many types.
<i>Syrphus ribesii</i>	A typical yellow and black hoverfly. An aphid predator that is common in many habitats, particularly at woodland edges.
<i>Syrphus vitripennis</i>	A typical yellow and black hoverfly. An aphid predator that is common in many habitats, particularly at woodland edges.
<i>Volucella pellucens</i>	A large black hoverfly with a wide translucent white band on the abdomen. One of our most easily recognisable hoverflies. The larvae live in wasp and bee nests where they feed on detritus and then the larvae of their hosts. A common species.
<i>Xylota segnis</i>	A rather slender orange and black hoverfly. The larvae live in decaying wood, including sawdust piles. A very common species in woodland situations.

### **Tabanidae – Horseflies**

These are the biting flies so reviled by many people! Females take a blood meal to develop their egg batch. Males do not bite, they feed on nectar. Horseflies are medium to very large species, with iridescent eyes. Apart from a few common species, most are rather scarce flies.

<i>Haematopota crassicornis</i>	A common brown coloured horsefly with a northern and western distribution.
<i>Haematopota pluvialis</i>	Our commonest horsefly. A brown medium sized fly.

### **Tachinidae – Parasite-flies**

The larvae are internal parasitoids of other insects, particularly moths, but also beetles, flies and bugs. This is a relatively large family of flies in which most species are rather spiky looking.

<i>Eriothrix rufomaculata</i>	One of our commonest Tachinid flies. This is quite a distinctive medium sized fly with red markings on the abdomen. It is a parasite of Lepidoptera larvae. A late summer species.
<i>Gymnocheta viridis</i>	A common early spring species. A bright, shining metallic green – bronze medium sized fly that is often seen resting on tree trunks or wooden posts.

	A parasite of various Lepidoptera larvae.
<i>Lydella stabulans</i>	A common indistinct looking medium sized fly. Its hosts are usually stem boring Noctuidae larvae in wetland plants such as rushes <i>Juncus spp.</i> reedmace <i>Typha spp.</i> and reed <i>Phragmites</i> .
<i>Lydina aenea</i>	A common medium sized lustrous black fly. Hosts are various moth larvae.
<i>Pales pavida</i>	A common medium sized fly. Its hosts are a very wide range of Lepidoptera species.
<i>Pelatachina tibialis</i>	A common, long legged fly. Hosts are chiefly Nymphalidae larvae, mainly peacock <i>Inachis io</i> and small tortoiseshell <i>Aglais urticae</i> .
<i>Phasia obesa</i>	A fairly common smallish fly in grasslands during late summer. Unlike many other Tachinids, this is a smooth looking insect without the spiky bristles typical of most species. It has silvery-grey markings on the thorax and pale brown tinted wings. Hosts are various Heteropteran bugs.
<i>Phryxe nemea</i>	A common fly of various habitats. Hosts are a very wide range of moth larvae.
<i>Phryxe vulgaris</i>	A common fly of various habitats. Hosts are a very wide range of moth larvae.
<i>Ramonda spathulata</i>	Quite a scarce fly, which appears to have increased in numbers in recent years. It is parasite of Noctuidae larvae.
<i>Siphona geniculata</i>	A very common late small Tachinid with a distinctive long proboscis which is articulated under the head. Hosts are <i>Tipula</i> crane-fly species.
<i>Solieria pacifica</i>	A common medium sized, orange marked Tachinid that was quite abundant at Silverdale Park. Hosts are Nymphalid butterflies.
<i>Tachina fera</i>	One of our most easily recognisable and common Tachinids. A large orange, spiky fly that is often seen feeding at flowers. Hosts are Noctuidae larvae.
<i>Thelaira nigripes</i>	A common, slender looking long legged Tachinid, with orange side markings on the abdomen. It was particularly numerous at Silverdale throughout the summer. Hosts are Lepidoptera larvae, chiefly in the family Arctiidae.

### **Tephritidae - Picture-wing flies**

Tephritids are quite small, but very attractive flies. Most have intricate patterns of dark or golden-yellow markings on the wings. Males can often be seen waving their wings in courtship and territorial rivalry rituals. Larval stages are nearly all phytophagous, developing in plant tissue, including flowers, seeds, fruits, stems and roots of the host plant species.

<i>Chaetostomella cylandrica</i>	A common species with pale golden-yellow wing bands. Larvae live in flower heads of various Asteracea flowerheads.
<i>Euleia heraclei</i>	A common species with a very distinctive pattern of black curved markings on the wing. Larvae live in the fruit of Hawthorn <i>Crataegus monogyna</i> .

<i>Noeeta pupillata</i>	A beautiful Tephritid with a dense black, radial pattern of wing markings, a shiny blue scutellum and marked thorax. A fairly uncommon fly, it was particularly abundant on 12 July in the grassland surrounding the main pools. Larval stages are spent in the tissue of various yellow composites.
<i>Philophylla caesio</i>	A distinctive fly with curved patterns of black marks on the wings. Larval stages are spent in the petioles of nettles <i>Urtica spp.</i> A fairly uncommon fly, considering the prevalence of its host plant.
<i>Tephritis neesii</i>	A common fly with a dark splotch pattern on the wings. <i>Leucanthemum</i> e.g. Ox-eye daisy is the host plant.
<i>Terellia ruficauda</i>	A not uncommon fly. It has distinctively marked wings with a row of squarish spot on the front wing edge. The host plant is marsh thistle <i>Cirsium palustre</i> .
<i>Terellia serratulae</i>	A fairly uncommon fly outside the southern areas of England and Wales. This Tephritid lacks any distinct wing marks. The host plant is spear thistle <i>Cirsium vulgare</i> .
<i>Urophora jaceana</i>	A common Tephritid. The larvae live in the flower heads of Knapweed <i>Knautia arvensis</i> . Markings are four black bands across the wing.
<i>Xyphosia miliaria</i>	Possibly our most often encountered Tephritid. The host plants are various thistles. The wing markings are a series of spots and a dark wing tip.

### Tipulidae – Craneflies

These are the familiar “daddy long-legs. The family includes many species, all with the distinctive long legs and slender bodies associated with craneflies.

<i>Nephrotoma appendiculata</i>	A “tiger-cranefly”, thus named on account of the pattern of yellow and black markings on the body. This is a common species in a wide variety of grasslands.
<i>Tipula lunata</i>	A large orange cranefly that occurs commonly in lush vegetation, typically in woodlands and along ditches.

## HYMENOPTERA: ACULEATA – Bees, Wasps and Ants

### Chrysididae – Jewel Wasps

Cleptoparasites of wasps in the families Eumenidae and Crabronidae. The female enters the hosts nest and lays an egg in each available cell. On hatching the larva usually eats the young larva of the host and then consumes the host’s food store. These are brightly coloured wasps with very shiny bodies and legs in many species.

<i>Chrysis viridula</i>	A parasitoid of <i>Odynerus spinipes</i> and <i>O. melanocephalus</i> . A <b>Nationally Scarce species</b> . A beautiful iridescent green-blue and copper-red wasp.
<i>Chrsis impressa</i>	A parasitoid of several <i>Ancistrocerus</i> species. A widespread iridescent blue-green and red wasp.

*Trichrysis cyanea* A ruby-tailed wasp. A parasite of stem and dead wood nesting solitary wasps, especially *Pemphredon* and *Trypoxylon spp.* A widespread species.

### **Formicidae – Ants**

Ants (apart from a few slave-making species) live in small to large nest colonies of social insects, where queens establish new colonies and lay eggs, workers carry out various tasks and males are produced to mate with new queens.

*Formica fusca* A black ant. Usually associated with open pioneer habitats although it can be found in partially shaded situations. Nests are under stones or in tree stumps. A common ant.

*Formica lemani* A black ant. Usually associated with open pioneer habitats although it can be found in partially shaded situations. Nests are under stones or in tree stumps. A common ant.

*Lasius niger* A brown ant. Found in open, dry sites with nests under stones in sunny situations. Usually forage among flowers and trees. A common ant.

*Myrmica rubra* A red ant. Associated with damp, open situations usually nesting under stones. A common ant.

*Myrmica scabrinodis* A red ant. Common in a variety of habitats. Usually nests under stones or in the soil. A common ant.

### **Pompilidae – Spider-hunting Wasps**

Solitary wasps that in which the females hunt for spiders which they sting, paralyse and provision their nests with. The larva eats the paralysed spiders. They are most frequently seen running rapidly across the ground in search of spider prey.

*Priocnemis parvula* A spider-hunting wasp. Found on a variety of soils, especially sand, where it hunts spiders from various families. A common species.

*Anoplius concinnus* A spider-hunting wasp. Associated with wet areas. Nests are found under stones and stocked with wolf spiders (Lycosidae). A **Nationally Scarce** species.

*Anoplius nigerrimus* A spider-hunting wasp. Associated with dry habitats. Nests are found in a variety of sites - holes in dead wood, cavities in stones etc - and stocked with spiders from various families. A common species.

*Arachnospila anceps* A spider-hunting wasp. Nests are dug in the soil and stocked with spiders from a variety of families. A common species.

*Ceropales maculata* A spider-hunting wasp. A cleptoparasite of various species of spider-hunters. A **Scarce** species.

*Evagetes crassicornis* A spider-hunting wasp. A cleptoparasite of ground nesting spider-wasps. A common species.

### **Vespididae – Mason Wasps, Potter Wasps and Social Wasps**

This family includes the well known “yellowjacket” social wasps as well as numerous solitary species. The solitary species make aerial nests in plant stems, holes in timber, walls and other above ground crevices. The various solitary species are specialist hunters of moth and beetle prey with

which they provision their nests. Most of these wasps are yellow or cream and black.

<i>Ancistrocerus gazella</i>	A solitary wasp. Nests in stems and dead wood. Larvae are fed on caterpillars. A common species.
<i>Odynerus spinipes</i>	A solitary wasp. Nests are dug in the soil and stocked with the larva of weevils ( <i>Hypera</i> ). A common species.
<i>Dolichovespula sylvestris</i>	A social wasp. Nests are usually found above ground but the species is very adaptable. Larvae are fed on a variety of invertebrate prey. A common species.
<i>Vespula germanica</i>	A social wasp. Usually a subterranean nester. Larvae fed as above. A common species.
<i>Vespula vulgaris</i>	A social wasp. Usually a subterranean nester. Larvae fed as above. A common species.

### **Crabronidae – Solitary Wasps**

A very varied family of solitary wasps that includes both aerial and ground nesting species. Many are small black species whilst others exhibit the classic yellow and black wasp patterns. Others have degrees of red markings against a black background.

<i>Trypoxylon attenuatum</i>	A solitary wasp. Aerial nesters in dead wood and plant stems. Prey consists of several spiders per cell. A common species.
<i>Crossocerus elongatulus</i>	A solitary wasp. Nests in a variety of situations stocking each cell with small flies. A common species.
<i>Crossocerus quadrimaculatus</i>	A solitary wasp. Nests are dug in the soil and usually stocked with flies although other prey items are taken. A common species.
<i>Ectemnius continuus</i>	A solitary wasp. A dead wood nesting species taking flies as prey. A common species.
<i>Mimumesa dahlbomi</i>	A solitary wasp. Plant and frog hoppers are prey to this dead wood nesting species. A common species.

### **Apidae – Bees**

A large family of insects that includes all the British species of bee, both social and solitary nesting.

<i>Colletes daviesanus</i>	A solitary bee. A variety of substrates are utilised for nesting. Mainly forages from Yellow flowered composites. A common species.
<i>Hylaeus brevicornis</i>	A solitary bee. A stem nesting species foraging from a variety of plants. A common species.
<i>Hylaeus hyalinatus</i>	A solitary bee. Described as nesting in a variety of situations. Forages from a variety of plants. A common species.
<i>Andrena bicolor</i>	A solitary ground-nesting bee. This species has two broods and can be found in a variety of habitats. Forages at a variety of plants. A common species.
<i>Andrena carantonica</i>	A solitary ground-nesting bee. A spring species associated with

	flowering trees and shrubs. A common species.
<i>Andrena cineraria</i>	A solitary ground nesting bee. A spring species foraging from a variety of plants. A common species.
<i>Andrena clarkella</i>	A solitary ground nesting bee. A spring species especially associated with willow. A common species.
<i>Andrena flavipes</i>	A solitary ground nesting bee. A double brooded species foraging from a variety of plants. A bee that has been spreading from its southern strongholds in recent years. It is now locally common in the Midlands.
<i>Andrena fulva</i>	A solitary ground nesting bee. A spring species foraging from a variety of plants. A common species.
<i>Andrena haemorrhoa</i>	A solitary ground nesting bee. A spring species associated with trees and shrubs although other forage plants are utilised. A common species.
<i>Andrena nigroaenea</i>	A solitary ground nesting bee. A spring species foraging from a variety of plants. A common species.
<i>Andrena nitida</i>	A solitary ground nesting bee. Often found at hawthorn as well as a variety of other plants. A common species.
<i>Andrena subopaca</i>	A solitary ground nesting bee. Associated with woodlands where it forages from a variety of plants. A common species.
<i>Andrena wilkella</i>	A solitary ground nesting bee. Described as oligolectic on Fabaceae, especially vetches and clovers. A common species.
<i>Halictus rubicundus</i>	A mainly social ground nesting bee. Forages at a variety of plants. A common species.
<i>Halictus tumulorum</i>	A solitary ground nesting bee. Found in a wide variety of habitats foraging from a range of plants. A common species.
<i>Lasioglossum calceatum</i>	A ground nesting species of bee foraging from various plants. A common species.
<i>Lasioglossum cupromicans</i>	A ground nesting species of bee foraging from various plants. A common species.
<i>Lasioglossum fratellum</i>	A social species of ground nesting bee foraging from a variety of plants. A common species.
<i>Lasioglossum leucopus</i>	A ground nesting species of bee foraging from various plants. A common species.
<i>Lasioglossum morio</i>	A ground nesting species of bee foraging from various plants. A common species.
<i>Lasioglossum parvulum</i>	A ground nesting species of bee foraging from various plants. A common species.



<i>Lasioglossum villosulum</i>	A ground nesting species of bee foraging from various plants but especially yellow composites. A common species.
<i>Sphecodes geoffrellus</i>	A cleptoparasite in the nests of several species of <i>Lasioglossum</i> bee. A common species.
<i>Sphecodes gibbus</i>	A cleptoparasite of <i>Halictus rubicundus</i> . A common species.
<i>Sphecodes monilicornis</i>	A cleptoparasite of <i>Halictus rubicundus</i> and some of the larger <i>Lasioglossum</i> species. A common species.
<i>Sphecodes c.f. puncticeps</i>	We collected an indeterminate specimen that is either <i>S. puncticeps</i> (a common species) or <i>S. longulus</i> (a Nationally Scarce species). The specimen appears to be an aberrant one that does not match either species descriptions accurately. Further recording might pick up additional specimens and help to confirm the identity of this species at Silverdale.
<i>Osmia bicornis (rufa)</i>	A cavity nesting species of solitary bee foraging from various plants including fruit trees. A common species.
<i>Megachile ligniseca</i>	A cavity nesting species of solitary bee foraging from various plants including thistles. A common species.
<i>Megachile versicolor</i>	A cavity nesting species of solitary bee , aerial or on the ground. A variety of forage plants are visited . A common species.
<i>Megachile willughbiella</i>	A cavity nesting species of solitary bee , aerial or on the ground. A variety of forage plants are visited . A common species.
<i>Coelioxys rufescens</i>	A cleptoparasite of species of <i>Megachile</i> bee and <i>Anthophora bimaculata</i> . A rather local but widespread species.
<i>Nomada fabriciana</i>	A cleptoparasite of <i>Andrena bicolor</i> and probably other species. A common species.
<i>Nomada flava</i>	A cleptoparasite the main host of which is <i>Andrena carantonica</i> . A common species.
<i>Nomada goodeniana</i>	A cleptoparasite of several large <i>Andrena</i> species including <i>A. nigoaenea</i> and <i>A. nitida</i> . A common species.
<i>Nomada leucophthalma</i>	A cleptoparasite of <i>Andrena clarkella</i> and <i>A. apicata</i> . A common species.
<i>Nomada marshamella</i>	A cleptoparasite of <i>Andrena carantonica</i> and probably <i>A. trimmerana</i> during the later flying second brood. A common species.
<i>Anthophora furcata</i>	A solitary aerial nesting species foraging from various plants in the labiate family. A common species.
<i>Bombus hortorum</i>	A social bumblebee. A long tongued species foraging at flowers with long tubular corollas - foxgloves, woundwort, honeysuckle etc. Usually nests on surface. A common species.

<i>Bombus hypnorum</i>	A social bumblebee. Recent colonist , nesting in a variety of situations, ground or aerial. A common species.
<i>Bombus jonellus</i>	A social bumblebee. Usually associated with heathland but found in a variety of habitats. Subterranean nester. A rather local species.
<i>Bombus lapidarius</i>	A social bumblebee. A subterranean nester foraging from a wide range of plants. A common species.
<i>Bombus lucorum</i>	A social bumblebee. A subterranean nester foraging from a wide range of plants. A common species.
<i>Bombus pascuorum</i>	A social bumblebee. A surface nester foraging at a range of plants. A common species.
<i>Bombus pratorum</i>	A social bumblebee. Aerial or subterranean nester foraging at a variety of plants. A common species.
<i>Bombus sylvestris</i>	A social parasite in the nests of <i>B. pratorum</i> although <i>B. hypnorum</i> may be used. A common species.
<i>Bombus terrestris</i>	A social bumblebee. A subterranean nester foraging from a wide range of plants. A common species.
<i>Bombus vestalis</i>	A social parasite in the nests of <i>B. terrestris</i> . A common species.

### **Records of insects from other orders**

Insects from groups other than aculeate Hymenoptera and Diptera were not systematically recorded for the survey, but a number of casual records were made and these are detailed here.

### **Odonata - Damselflies and Dragonflies**

*Anax imperator* Emperor dragonfly  
*Coenagrion puella* Azure blue damselfly  
*Enallagma cyathigerum* Common blue damselfly  
*Ischnura elegans* Blue-tailed Damselfly  
*Libellula quadrimaculata* Four-spotted chaser  
*Pyrrhosoma nymphula* Large red damselfly  
*Sympetrum danae* Black-tailed skimmer

### **Orthoptera – Crickets and Grasshoppers**

*Chorthippus parallelus* Meadow grasshopper  
*Omocestus viridulus* Common green grasshopper  
*Tetrix subulata* Slender groundhopper

### **Hemiptera – True Bugs**

*Acanthosoma haemorrhoidale* Hawthorn shieldbug  
*Cercopis vulnerata* A leafhopper  
*Coriomeris denticulatus* Leatherbug  
*Dolycoris baccarum* Hairy shieldbug  
*Palomena prasina* Green shieldbug  
*Piezodorus lituratus* Gorse shieldbug  
*Troilus luridus* Bronze shieldbug

### **Hymenoptera**

*Periclista pubescens* A sawfly (larva)

### **Coleoptera – Beetles**

*Adalia bipunctata* 2-spot ladybird  
*Agapanthia villosoviridescens* Golden-bloomed longhorn  
*Cantharis livida* A soldier beetle  
*Cantharis nigra* A soldier beetle  
*Cassida rubiginosa* A tortoise beetle  
*Chaetocnema hortensis* A tortoise beetle  
*Chilocorus renipustulatus* Kidney-spot ladybird  
*Clytus arietis* Wasp beetle  
*Coccinella septempunctata* 14-spot ladybird  
*Crepidodera aurata* A leaf beetle  
*Crepidodera aurea* A leaf beetle  
*Deporaus betulae* Birch Leaf Roller  
*Gastrophysa viridula* Dock leaf beetle  
*Gonioctena olivacea* A leaf beetle  
*Gonioctena olivacea v.nigricans* A leaf beetle  
*Harmonia axyridis* Harlequin ladybird  
*Neocrepidodera transversa* A leaf beetle  
*Oedemera lurida* A beetle  
*Poecilus versicolor* A ground beetle  
*Psyllobora vigintiduopunctata* 22-spot ladybird  
*Rhagonycha fulva* Red soldier beetle  
*Scymnus frontalis* A ladybird  
*Cyphon c.f. variabilis* A beetle

### **Lepidoptera – Butterflies and Moths**

*Aglais urticae* Small Tortoiseshell  
*Anthocharis cardamines* Orange Tip  
*Coenonympha pamphilus* Small Heath  
*Erynnis tages* Dingy Skipper (numbers in compartment 6)  
*Inachis io* Peacock  
*Lycaena phlaeas* Small Copper  
*Maniola jurtina* Meadow Brown  
*Pararge aegeria* Speckled Wood  
*Pieris napi* Green-veined White  
*Polygonia c-album* Comma  
*Polyommatus icarus* Common Blue  
*Pyronia tithonus* Gatekeeper  
*Thymelicus sylvestris* Small Skipper  
*Tyria jacobaeae* Cinnabar moth  
*Vanessa cardui* Painted Lady  
*Zygaena trifolii* 5 spot Burnet

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## Appendix A

Conservation status definitions for UK invertebrate species

### Red List Categories

Critically Endangered	A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by any of the criteria A to E.
Endangered	A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by any of the criteria A to E.
Vulnerable	A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.
Rare	Taxa with small populations that are not at present Endangered or Vulnerable, but are at risk. (In GB, this was interpreted as species which exist in fifteen or fewer 10km squares). Category not in 1994 or 2001 criteria, but still applicable to lists that have not been reviewed since 1994.
Lower risk - conservation dependent (Nationally Scarce)	Taxa which are the focus of a continuing taxon-specific or habitat-specific conservation programme targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years. Category not in 1994 or 2001 criteria, but still applicable to lists that have not been reviewed since 1994.