

# Glasgow's Buzzing: Pollinator Surveys Year 1



**Suzanne Bairner**  
**Buglife-The Invertebrate Conservation Trust**

## Summary

In total, seven parks were surveyed for pollinators during year one of the Glasgow's Buzzing project. This included Linn Park, Hogganfield Park, Cranhill Park, Trinley Brae, Kelvingrove Park, Budhill Park and Glasgow Green.

The weather this year in Scotland may have influenced many invertebrate species due to the dry and warm weather in early spring followed by a frost in May and a wet and cold summer. An early peak in aphid numbers boosted the numbers of their predators including the hoverflies *Eupeodes corrolae* and *Scaeva pyrastris* and 7 spot ladybird (*Coccinella septempunctata*) which was observed during this survey.

Of the parks surveyed the highest number of pollinators was recorded at Trinley Brae which had a total of 29 invertebrate species. The lowest number of species was recorded from Glasgow Green with only 1 species.

By providing habitat for pollinating insects including a range of native wildflower species that flower throughout the year as well as leaving areas long over the winter, this will provide vital habitat for a number of invertebrate species.

## Contents

	Page
1. Introduction	3
2. Project Background	3
3. Method	3
3.1. Sweep Net	3
3.2. Direct Observations	3
4. Results	3
5. Discussion	5
Appendix 1	8

## **1. Introduction**

Since World War 2, 97% (3,000,000 hectares) of flower-rich grassland has been lost across Britain. These flower-rich areas are vital habitats for many invertebrate species and are particularly important to pollinators such as bees, butterflies and hoverflies. The loss of wildflower meadows has resulted in a massive decline in UK pollinators as well as other invertebrate species.

## **2. Project Outline**

Buglife has joined forces with Land and Environmental Services, Glasgow City Council to transform mown grassland in urban areas into colourful and wildlife-rich wildflower meadows. These wildflower meadows will benefit a whole range of invertebrate species. This new project is funded by the Landfill Communities Fund.

Glasgow's Buzzing is a three year project that aims to create and improve wildflower meadows in 5 parks each year. During year one of the project, Buglife have undertaken invertebrate surveys at 7 parks across Glasgow; wildflower meadows will be created at two of these parks in year two of the project. Invertebrate surveys concentrated on pollinators such as bees and wasps (Hymenoptera), hoverflies (Diptera) and butterflies and moths (Lepidoptera). Other invertebrate species found during the survey were also recorded.

## **3. Method**

Invertebrates were surveyed during a single visit to each park. The surveyor walked a transect across the park using sweep nets and direct observations to survey for invertebrates, particularly pollinators.

### **3.1. Sweep nets**

Sweep nets were used to collect pollinators from vegetation, mainly from flower heads. The net was swept over vegetation in a figure of eight for one minute in a transect across a site. Specimens collected in this way were either put into a pot with 70% ethanol to be identified later, or if they could be identified by the surveyor at the park the specimen was later released.

### **3.2. Direct observations**

Direct observation of Hymenoptera (principally bumblebees), Lepidoptera and Diptera (principally hoverflies) species visiting wildflowers or in flight was made during each site survey. Sweep nets were sometimes used to aid in identification of a species which could then be released. Other species identified through direct observations included Orthoptera (grasshoppers and crickets), and Odonata (dragonflies).

## **4. Results**

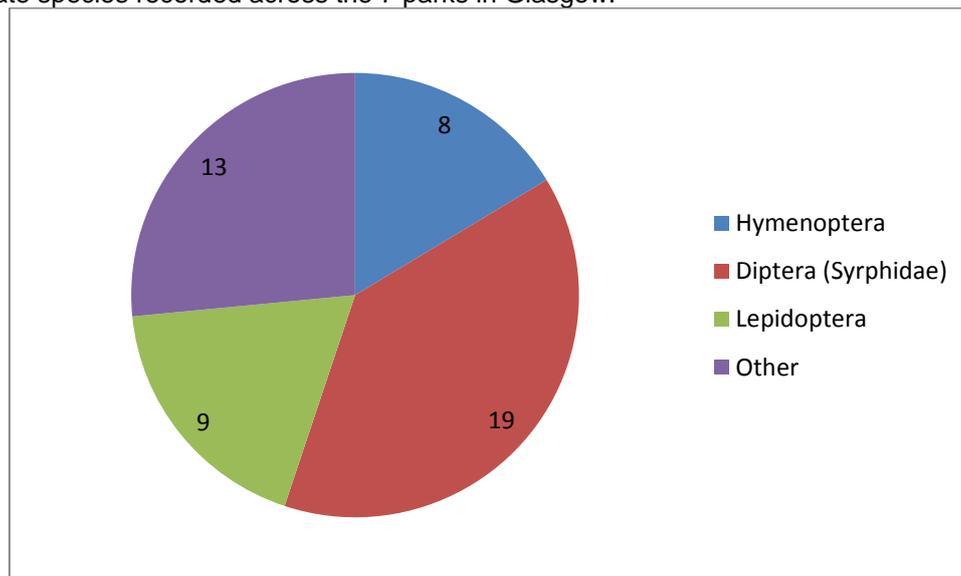
Invertebrates were surveyed at each park once by the surveyor (Table 1); Trinley Brae was visited twice due to bad weather conditions on the first visit.

Park	Grid Reference	Date surveyed
Trinley Brae	NS533700	02/08/2011, 18/08/2011
Cranhill Park	NS644655, NS645654	09/08/2011
Budhill Park	NS65136448	09/08/2011
Hogganfield Park	NS6467	09/08/2011
Kelvingrove park	NS569665, NS574665	02/08/2011
Glasgow Green	NS5964	02/08/2011
Linn Park	NS583589	18/08/2011

**Table 1.** Grid reference of meadows surveyed at each park and the date each park was surveyed.

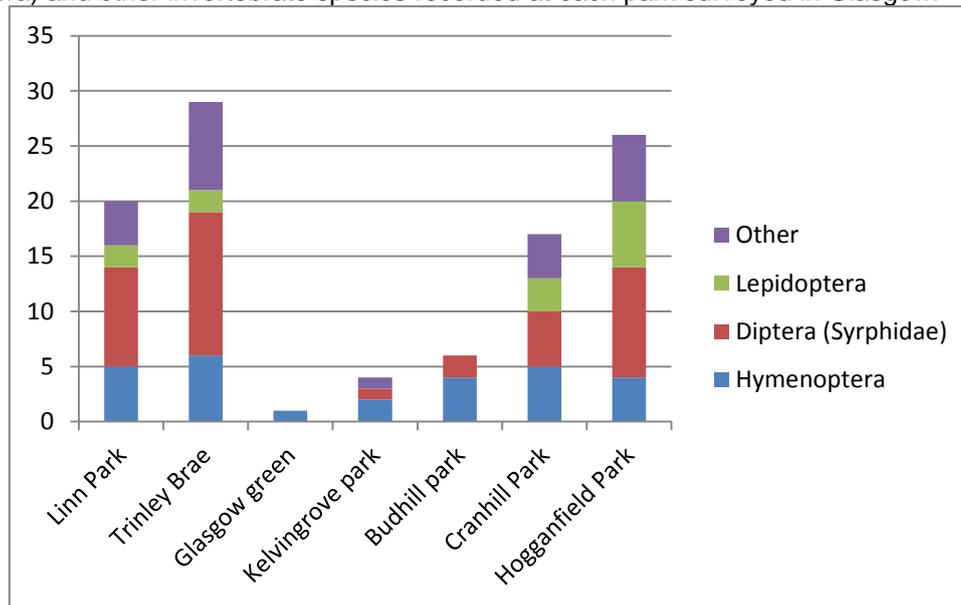
Hoverflies (Diptera) made up the greatest number of species recorded by the surveyor across the 7 parks with a total of 19 species identified (Figure 1). Hymenoptera (bees and wasps) recorded 8 species and Lepidoptera (butterflies and moths) recorded 9 species (Figure 1). Other invertebrate species recorded included Aranaea (spiders: 2 species), Coleoptera (beetles: 2 species), Orthoptera (grasshoppers: 1 species), Neuroptera (lacewing: 1 species), Opiliones (harvestmen: 1 species), Gastropoda (snail: 1 species), Hemiptera (shield bug: 1 species) and Odonata (dragonflies and damselflies: 4 species) (Figure 1). A complete list of invertebrate species recorded can be found in Appendix 1.

**Figure 1.** Total number of pollinator species (Hymenoptera, Diptera, and Lepidoptera) and other invertebrate species recorded across the 7 parks in Glasgow.



Trinley Brae had the greatest number of invertebrate species recorded with a total of 29 species (Figure 2). This park had the most hoverfly species with 13 and Hymenoptera species with 6 recorded. The greatest number of Lepidoptera species was recorded from Hogganfield Park with 6 species (Figure 2). Only 1 invertebrate species was recorded from Glasgow Green and Kelvingrove Park had only 4 species recorded (Figure 2). No species of Lepidoptera were recorded from Glasgow Green, Kelvingrove Park or Budhill Park.

**Figure 2.** Graph showing the total number of pollinator species (Hymenoptera, Diptera and Lepidoptera) and other invertebrate species recorded at each park surveyed in Glasgow.



## 5. Discussion

Summers in Scotland have a mixture of dry and wet weather which varies from year to year across the country. Generally speaking the east coast is cool and dry whereas the west coast is warmer and wetter. This changeable weather is being further influenced by climate change which is causing summer droughts, flooding and other local extreme weather events. The weather this year in Scotland may have influenced many invertebrate species due to the dry and warm weather in early spring followed by a frost in May and a wet and cold summer.

There was an observed early peak in the season of some species of aphid. This may have boosted aphid predator numbers through the summer such as the hoverflies *Eupeodes corrolae*, *Scaeva pyrastris* and the Marmalade hoverfly (*Epysyrphus balteatus*) and the 7 spot ladybird (*Coccinella septempunctata*), all of which were recorded during this survey (Appendix 1). Other invertebrate species appear to have not done as well as it has been observed by many people that numbers of butterfly, bumblebees and some beetles such as the Red soldier beetle (*Rhagonycha fulva*) have been noticeably reduced. This was also observed by the surveyor at parks across Glasgow with few butterfly and bumblebee recordings on warm days.

The highest number of invertebrate species recorded was at Trinley Brae with a total of 29 species (Figure 2). Wildflower meadows at this site have been improved by management from Glasgow City Council and the site is rich in Common knapweed (*Centaurea nigra*), Oxeye daisy (*Leucanthemum vulgare*) and Tufted vetch (*Vicia cracca*). This wildflower richness and the two visits to the site because of bad weather may explain the high numbers of species recorded by the surveyor.

Wildflower meadows being managed at Kelvingrove Park were visited on the 2<sup>nd</sup> of August when the weather was wet, cold and windy. A total of 4 invertebrate species

were recorded at this park. If a second visit had been made by the surveyor during better weather a higher number of invertebrate species may have been recorded for this site.

Only one invertebrate species was recorded at Glasgow Green which is roughly 55 hectares in size. The park is made up mostly of large areas of grass that is cut regularly and kept very short in height. A colony of Common wasps (*Vespula vulgaris*) was recorded at a rotting tree stump (NS59496447). Along the south of Glasgow Green is the River Clyde and the river bank has several wildflower species, including Rosebay willowherb (*Chamerion angustifolium*) and Ragwort (*Senecio jacobaea*). Wildflower meadows created during this project at Glasgow Green will create habitat for pollinators that may already be present along the riverbank.

Surveys at Linn Park, Hogganfield Park and Cranhill Park concentrated on already created and managed wildflower meadows as no pollinators were seen to be attracted to areas of cut grassland that surround these meadows. Surveys by Buglife identified how important the wildflower meadows at these parks are for pollinator species, especially for hoverflies. In total, 19 species of hoverfly were recorded across the 7 parks, 13 of which were recorded at Trinley Brae. The most commonly recorded hoverfly species was the Marmalade hoverfly.

Hymenoptera were recorded at each park surveyed and a total of 8 species were recorded across the seven parks, 6 of which were recorded at Trinley Brae. Common carder bee (*Bombus pascuorum*) was identified as being the most frequently seen species although Buff tailed (*B. terrestris*), Red tailed (*B. lapidarius*) and White tailed (*B. lucorum*) were observed at most parks (Appendix 1).

Butterflies and moths (Lepidoptera) were recorded at four parks (Linn Park, Hogganfield Park, Trinley Brae and Cranhill Park). This may be due to the large meadows already present at these sites and also due to the weather when Kelvingrove Park and Glasgow Green were visited. A total of 9 Lepidoptera species were recorded, 3 of which were moths. The highest number of Lepidoptera species was recorded from Hogganfield Park with a total of 6 species. Green veined white (*Pieris napi*) were identified by the surveyor as being the most commonly observed species of Lepidoptera.

Richard Weddle, secretary of Glasgow Natural History Society (GNHS) and a local recorder in Glasgow looked at the species list compiled by Buglife during these surveys to identify species that hadn't been recorded at the parks or in Glasgow before. Richard also supplied invertebrate species lists for most of the parks surveyed by Buglife except Cranhill Park and Budhill Park. Trinley Brae, Kelvingrove Park, Hogganfield Park and Linn Park have good species lists due to regular checks by the Ranger Service and GNHS field excursions as well as through surveys by Richard Weddle himself.

From species lists provided there were no spider, harvestmen, grasshopper or lacewing records for Trinley Brae and Linn Park and this may be due to under recording of these groups within the area. The lacewing *Micromus variegatus* recorded by Buglife at Trinley Brae is a new record for the area.

Previous wildflower meadow creation and management at parks across Glasgow have significantly improved habitat not only for pollinators but also other wildlife. Wildflower meadows at Cranhill Park have been identified as being particularly important for Water voles (*Arvicola amphibius*). By leaving areas of long grass over the winter this will not only benefit Water vole populations but also overwintering invertebrate species.

The importance of wildflower meadows for pollinators in Glasgow is highlighted by the small area of meadow created at Budhill Park. Budhill Park in Shettleston in Glasgow is a small park with a running track in the central area. Some wildflower meadow creation has already occurred at this park (NS65136448). While surveying this recently created meadow, four species of Hymenoptera, including the solitary bee *Colletes daviesamus* and two hoverfly species were recorded. The solitary bee has recently been recorded from around Glasgow although not at Budhill Park and also Cranhill Park where it was also recorded by Buglife. Further expansion of wildflower meadows at both of these parks will greatly benefit pollinator species.

By creating further wildflower meadows and expanding and improving current meadows in parks across Glasgow this will significantly help improve habitat for pollinators and provide valuable homes for a number of other species.

Appendix 1

<b>Order</b>	<b>Scientific name</b>	<b>Common name</b>	<b>Trinley Brae</b>	<b>Kelvingrove Park</b>	<b>Glasgow Green</b>	<b>Hogganfield</b>	<b>Cranhill Park</b>	<b>Budhill Park</b>	<b>Linn Park</b>
Lepidoptera	<i>Aglais urticae</i>	Small tortoiseshell					•		
Lepidoptera	<i>Agriphila straminella</i>	Micro moth				•			
Lepidoptera	<i>Agriphila tristella</i>	Micro moth				•			
Lepidoptera	<i>Aphantopus hyperantus</i>	Ringlet	•						
Hymenoptera	<i>Bombus hortorum</i>	Garden bumblebee							•
Hymenoptera	<i>Bombus lapidarius</i>	Red tailed bee	•			•	•	•	•
Hymenoptera	<i>Bombus lucorum</i>	White tailed bumblebee	•			•		•	•
Hymenoptera	<i>Bombus pascuorum</i>	Common carder bee	•	•		•	•		•
Hymenoptera	<i>Bombus terrestris</i>	Buff tailed bee	•			•	•	•	•
Helicoidea	<i>Cepaea nemoralis</i>	Brown lipped snail	•						
Coleoptera	<i>Coccinella septumpunctata</i>	7 spot ladybird	•			•			•
Hymenoptera	<i>Colletes daviesanus</i>	Solitary bee					•	•	
Odonata	<i>Enallagma cyathigerum</i>	Common blue damselfly	•						
Diptera	<i>Eoseristalis intricarius</i>	Hoverfly	•						
Diptera	<i>Epistrophe grossulariae</i>	Hoverfly							•
Diptera	<i>Episyrphus balteatus</i>	Marmalade hoverfly	•			•	•	•	•
Diptera	<i>Eristalis arbustorum</i>	Hoverfly	•						
Diptera	<i>Eristalis intricarius</i>	Hoverfly				•			
Diptera	<i>Eristalis pertinax</i>	Hoverfly							
Diptera	<i>Eristalis tenax</i>	Hoverfly	•				•		•

<b>Order</b>	<b>Scientific name</b>	<b>Common name</b>	<b>Trinley Brae</b>	<b>Kelvingrove Park</b>	<b>Glasgow Green</b>	<b>Hogganfield</b>	<b>Cranhill Park</b>	<b>Budhill Park</b>	<b>Linn Park</b>
Diptera	<i>Eupeodes</i>	Hoverfly	•						
Diptera	<i>Eupeodes corollae</i>	Hoverfly				•			•
Diptera	<i>Helophilus pendulus</i>	Tiger hoverfly	•			•			
Lepidoptera	<i>Inachis io</i>	Peacock butterfly				•	•		
Odonata	<i>Ischnura elegans</i>	Blue tailed damselfly				•			
Odonata	<i>Libellula quadrimaculata</i>	4 spot chaser				•			
Lepidoptera	<i>Lycaena phlaeas</i>	Small copper							•
Diptera	<i>Melanostoma mellinum</i>	Hoverfly	•	•		•			•
Diptera	<i>Melanostoma scalare</i>	Hoverfly	•						•
Diptera	<i>Merodon equestris</i>	Hoverfly				•			
Neuroptera	<i>Micromus variegatus</i>	Lacewing	•						
Opiliones	<i>Oligolophus tridens</i>	Harvestman	•						•
Orthoptera	<i>Omnocestus viridulus</i>	Common green grasshopper	•						•
Hemiptera	<i>Pentatoma rufipes</i>	Forest bug		•					
Lepidoptera	<i>Pieris brassicae</i>	Large white				•			
Lepidoptera	<i>Pieris napi</i>	Green veined white	•			•	•		•
Diptera	<i>Platycheirus albimanus</i>	Hoverfly				•	•		
Diptera	<i>Platycheirus clypeatus</i>	Hoverfly	•						•
Diptera	<i>Platycheirus granditarsus</i>	Hoverfly					•		

<b>Order</b>	<b>Scientific name</b>	<b>Common name</b>	<b>Trinley Brae</b>	<b>Kelvingrove Park</b>	<b>Glasgow Green</b>	<b>Hogganfield</b>	<b>Cranhill Park</b>	<b>Budhill Park</b>	<b>Linn Park</b>
Diptera	<i>Platycheirus rosarum</i>	Hoverfly	•						
Coleoptera	<i>Rhagonycha fulva</i>	Red soldier beetle	•			•	•		
Diptera	<i>Scaeva pyrastris</i>	Hoverfly	•						
Diptera	<i>Sericomyia silentis</i>	Hoverfly				•			•
Diptera	<i>Spharophoria</i>	Hoverfly	•						•
Diptera	<i>Spharophoria interrupta</i>	Hoverfly				•			
Odonata	<i>Sympetrum striolatum</i>	Red darter				•			
Diptera	<i>Syrphus ribesii</i>	Hoverfly	•			•	•		•
Diptera	<i>Syrphus vitripennis/rectus</i>	Hoverfly						•	•
Hymenoptera	<i>Tenthredo</i>	Sawfly	•						
Aranaea	<i>Tibellus sp.</i>	Crab spider							•
Lepidoptera	<i>Udea lutealis</i>	Micro moth				•			
Hymenoptera	<i>Vespula vulgaris</i>	Common wasp	•	•	•		•		
Aranaea	<i>Xysticus</i> (Immature)	Crab spider	•			•			
Aranaea	<i>Xysticus cristatus</i>	Crab spider	•						
Diptera	<i>Conops</i> species	Conopid fly	•						