



Glasgow's Buzzing: Pollinator Surveys Year 3

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Summary

In total, 13 parks were surveyed for pollinators during year 3 of the Glasgow Buzzing project. This includes 6 parks from year 1 of the project (Linn Park, Hogganfield Park, Cranhill Park, Trinley Brae, Kelvingrove Park and Glasgow Green) and all of the parks that were surveyed in year 2 of the project (Pollok Country Park, Bellahouston Park and Victoria Park), as well as 4 that have been chosen for meadow habitat creation and enhancement during year 3 (Botanic Gardens, Auchinlea Park, Alexandra Park and Queens Park).

It has been a very good year for many species of invertebrates. Pollinating insects, especially butterflies and moths have had a much better year than 2011 and 2012 due to a warm and dryer summer. This was identified during this year's invertebrate survey.

Of the parks surveyed the highest number of pollinators was recorded at Hogganfield Park which had a total of 60 invertebrate species. The lowest number of species was recorded from Cranhill Park with 14 species. Meadow creation at Glasgow Green has provided important habitat for pollinators with 28 species of invertebrate recorded at the meadow including Small copper butterfly (*Lycaena phlaes*) and Common green grasshopper (*Omocestus viridulus*) and this is higher than year 1 and year 2 when 1 and 14 species were recorded. The increase in species recorded at this park over the project highlights how important wildflower meadows are for invertebrates.

Further meadow creation and enhancement during year 3 of the project will provide further habitat for invertebrates, especially pollinating insects.

Contents page

| | Page number |
|---|--------------------|
| 1. Introduction | 3 |
| 2. Project Background | 3 |
| 3. Method | 4 |
| 3.1. Sweep Net | 5 |
| 3.2. Direct Observations | 5 |
| 3.3. Tussock Survey | 5 |
| 4. Results | 6 |
| 4.1. Grass Tussocks Surveys | 9 |
| 4.2. Total species recorded over entire project | 9 |
| 5. Discussion | 10 |
| 6. Conclusion | 19 |
| Appendix 1 | 20 |
| Appendix 2 | 27 |

1. Introduction

A massive 97% (over 3,000,000 hectares) of flower-rich grassland have been lost in the UK since the 1940's through agricultural intensification to produce more home-grown food, and through wider development of housing, transport infrastructure and industry. These flower-rich areas are vital habitats for many invertebrate species and are particularly important to pollinating insects such as bees, butterflies and hoverflies (Figure 1). The loss of wildflower meadows across Britain has resulted in a massive decline in pollinators as well as other invertebrate species. Over 250 species of pollinating insects in the UK are in danger of extinction and are on the UK Biodiversity Action Plan (UKBAP) priority species list.

Eighty percent of plants need insects for pollination and without these plants we would not have the air we breathe and the food we eat. At least 62% of wildflowers are limited by pollen transmission, i.e. less pollination will mean less seeds and eventually less flowers. Pollination of agricultural crops by insects in Britain is valued at more than £400 million. National reports in the press stress the importance of honeybees in food production but wild bees and other insects are even more important as they are adapted to pollinate a much wider range of plants. With the recent decline in pollinating insects, there is evidence that insect pollinated plants are also declining and at a faster rate than wind and water pollinated plants.



Figure 1. A Buff tailed bumblebee (*Bombus terrestris*) feeding at Common Knapweed (*Centaurea nigra*) at the park Trinley Brae.

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 (Figure 2). These wildflower meadows will benefit a whole range of invertebrate species. This project is funded by the Landfill Communities Fund.



Figure 2. Wildflower meadow created for pollinating insects and other invertebrate species at Trinley Brae.

Invertebrate surveys are to be undertaken by Buglife during each year of the project at parks due to have meadows created and/or enhanced through the project. In year 3, 13 parks have been surveyed for invertebrates, including 6 parks from year 1 and 2 of the project (Hogganfield Park, Cranhill Park, Trinley Brae, Glasgow Green, Kelvingrove Park and Linn Park) plus the additional 3 parks surveyed in year 2 (Pollok Country Park, Bellahouston Park and Victoria Park) and 4 parks that will be additionally managed during year 3 of the project (Botanic Gardens, Auchinlea Park, Alexandra Park and Queen's Park).

Invertebrate surveys concentrated on pollinating insects such as bees and wasps (Order Hymenoptera), hoverflies (Family Syrphidae, Order Diptera) and butterflies and moths (Order 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 direct observations and sweep nets to survey for invertebrates, concentrating on pollinating insects such as bees and wasps, butterflies and moths and hoverflies. The surveys were undertaken during warm and sunny days in August at a similar time to surveys in year 1 and year 2 of the project (Table 1).

Table 1. Date each park was surveyed for pollinators and grid references of meadows surveyed for each of the 13 parks.

| Park Name | Grid Reference | Date Surveyed |
|----------------|----------------|---------------|
| Alexandra Park | NS619657 | 12/08/2013 |

| | | |
|--------------------------------|---|---|
| Auchinlea Park | NS666662 | 20/08/2013 |
| Bellahouston Park | NS545635 | 06/08/2013 |
| Botanic Gardens | NS566676 | 08/08/2013 |
| Cranhill Park | NS644655, NS645654 | 12/08/2013 |
| Glasgow Green | NS602638, NS597642 | 13/08/2013, 20/08/2013 |
| Hogganfield Park | NS6467 (tussock survey: NS645675 NS646672) | 07/02/2013 (tussock survey), 09/07/2013, 12/08/2013 |
| Kelvingrove Park | NS568663, NS569663 | 08/08/2013 |
| Linn Park | NS583589, NS585594 | 06/08/2013,20/08/2013 |
| Pollok Country Park | NS557619, NS548620 | 06/08/2013 |
| Queens Park | NS577619 | 06/08/2013 |
| Trinley Brae | NS533700 | 08/08/2013 |
| Victoria Park | NS539671 | 08/08/2013 |

3.1. Sweep nets

Sweep nets were used to collect invertebrates from vegetation, particularly from flower heads. The net was swept over vegetation in a figure of eight for 1 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

Identification of several species of bees and wasps, butterflies and moths and hoverflies were made through direct observation of specimens visiting wildflowers or in flight during a 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 grasshoppers (Order Orthoptera), and some beetles (Order Coleoptera).

3.3. Grass Tussock Survey

Grass tussocks were collected from wildflower meadow areas that were left uncut in autumn and that surrounded wetland within Hogganfield Park in February 2013 to record invertebrates that were over-wintering in them (Table 1). Several grass tussocks were collected by cutting the tussock at the base of the plant using a small saw. Each grass tussock was put into a separately marked black bin bag to be examined later.

When the survey was complete, black bin bags containing the tussocks were taken to our head office in Scotland to be examined. Once inside and left for an hour at room

temperature to allow invertebrates to warm up and move around, each bag was examined separately. Each tussock from within a black bag was sorted into small sections and shaken over a large white tray and any invertebrates that fell out were collected. After the tussocks from a bin bag had been analysed this way they were left in the white tray and shaken an hour later to collect any other invertebrates that fell out.

Each bin bag was also examined in case any invertebrates that had woken up while the tussock was still in the bag had left the tussock and were crawling on the inside of the bin bag. The bags were examined by turning them inside out over a white tray and shaking them gently. All specimens collected from the tussocks were put into the same pot with 70% ethanol to be identified later.

4. Results

Each of the 13 parks was surveyed once by the surveyor; Glasgow Green was surveyed twice due to a separate site visit made to the park in August, Hogganfield Park was surveyed 3 times one of which included the grass tussock survey and another a separate site visit to the park made in August, Linn Park was also surveyed twice due to an event that was held at the park during August (Meadow in the Making on 6th August 2013) (Table 1).

A total of 103 species of invertebrate were recorded during this year's survey. Hoverflies made up the greatest number of species recorded across the 13 parks as a total of 23 species were identified (Figure 3). There were 12 species of bees, wasps and ants recorded and 16 species of butterfly and moth (Figure 3). Some of the other invertebrate species recorded across the 13 parks included beetles: 15 species, grasshoppers: 1 species and true bugs (Order Hemiptera): 22 species (Figure 3). A complete list of invertebrate species recorded can be found in Appendix 1.

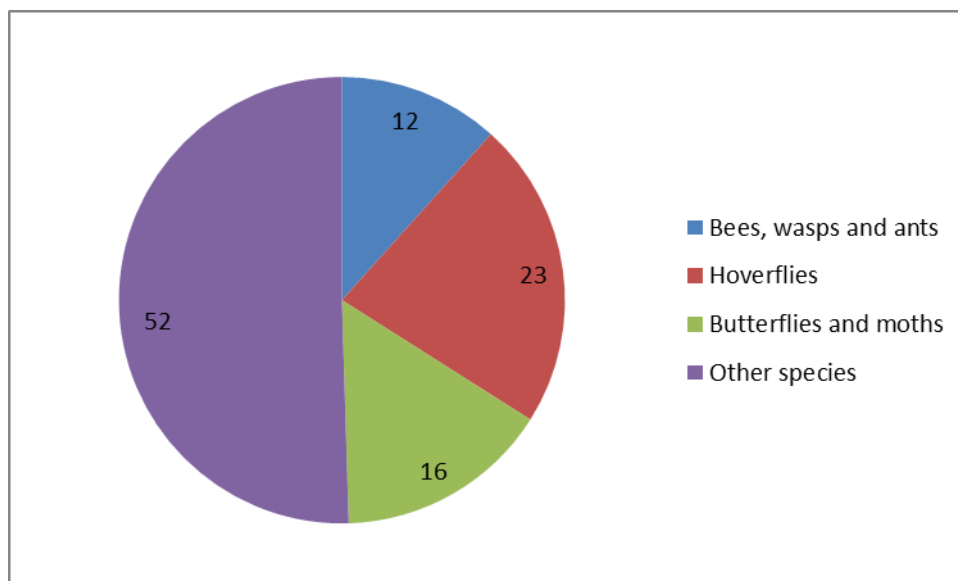


Figure 3. Total number of pollinator species recorded across the thirteen parks in Glasgow including bees, wasps and ants, hoverflies and butterflies and moths; all other species of invertebrates are included within the category other species.

Hogganfield Park had the greatest number of invertebrate species recorded during this year's survey with a total of 60 species. This total includes the highest number of butterfly and moth species recorded with 11 and the highest number of other invertebrate species recorded with 27 (Figure 4). The fewest number of invertebrate species were recorded at Cranhill Park with 14 species and this park had the lowest number of hoverfly species recorded with 2 (Figure 4). The greatest number of hoverfly species was recorded from Linn Park with a total of 16 species (Figure 4). The greatest number of bees, wasps and ant were recorded in the meadows at Kelvingrove Park with 9 and the lowest was recorded at Auchinlea Park with only 2 species (Figure 4). The Botanic Gardens had the lowest number of other species of invertebrate recorded at its park with only 5 species and this includes 3 species of beetle (Appendix 1). No species of butterfly or moth were recorded from Bellahouston Park, Cranhill Park or Pollok Country Park (Figure 4).

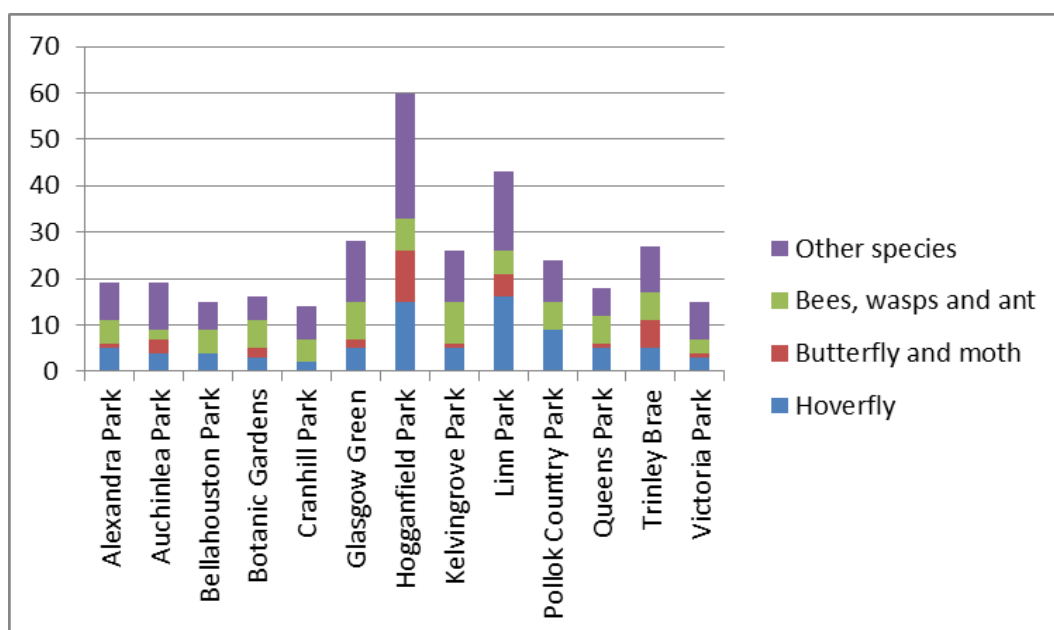


Figure 4. Graph showing the total number of pollinator species (bees, wasps and ant, hoverfly, and butterfly and moth) and all other invertebrate species recorded at each of the 13 parks surveyed in Glasgow.

Several parks have been surveyed for pollinators over all 3 years of the project and a few parks have been surveyed over 2 years, either over year 1 and 3 or year 2 and 3 of the project (Figure 5 and 6).

Of the 5 parks surveyed for pollinators during all 3 years of the project (Trinley Brae, Hogganfield Park, Cranhill Park, Glasgow Green and Linn Park), Hogganfield Park had the total highest number of invertebrate species with 71 (Figure 5). During the 3 surveys at this park 4 species were recorded in year 1 only, 8 were recorded in year 2 only and 30 were recorded in year 3 only, 20 species were recorded during 2 years of the project (year 1 and 3 or years 2 and 3) and 10 species were recorded at the park during all 3 years (Figure 5). Linn Park had a total of 55 species recorded over the 3 years with an additional 22 species recorded only in year 3 of the project. Trinley Brae had a total of 52 species over the 3 years

and Glasgow Green had a total of 32 species recorded over the 3 years. Cranhill Park had the lowest total number of species recorded over the 3 years with 30 species (Figure 5).

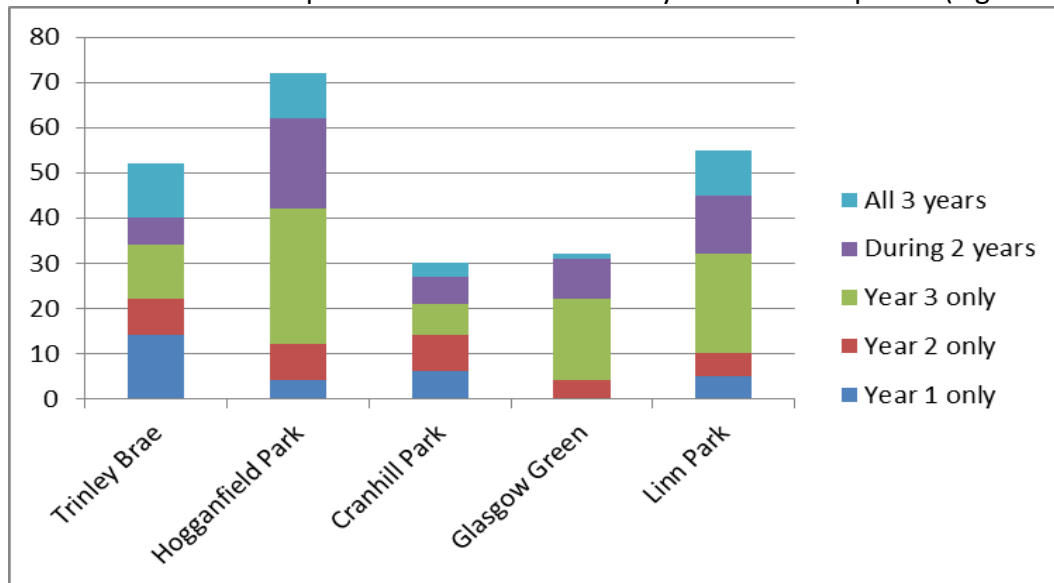


Figure 5. Total number of species recorded at the 5 parks surveyed during each of the 3 years of the project (Trinley Brae, Hogganfield Park, Cranhill Park, Glasgow Green and Linn Park). The graph shows species recorded during year 1 only, year 2 only, year 3 only, during 2 years of the survey (year 1 and 3 and year 2 and 3) and during all 3 years of the survey.

Four parks were surveyed over 2 years of the project; Kelvingrove Park was surveyed during year 1 and 3 of the project and Bellahouston Park, Pollok Country Park and Victoria Park were surveyed over year 2 and 3 of the project (Figure 6). Of these parks, Pollok Country Park had the highest number of invertebrates recorded over 2 years with a total of 31, a total of 7 species were recorded in year 1 only, 17 in year 2 only and another 7 species were recorded during both years of the survey. Kelvingrove Park had a total of 28 species and Bellahouston Park had 25 species. The lowest number of species was recorded at Victoria Park which had a total of 19 species (Figure 6).

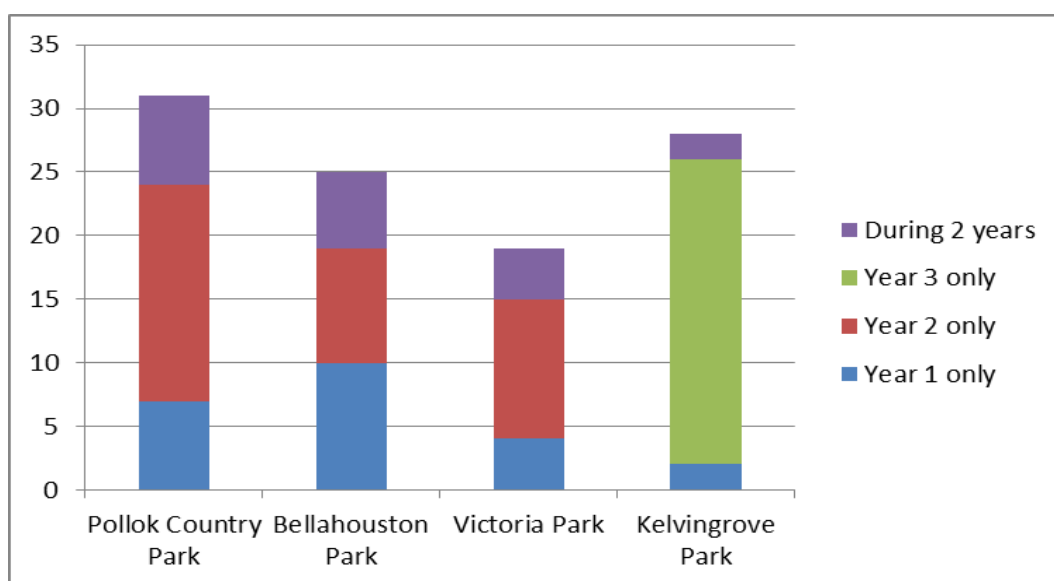


Figure 6. Total number of species recorded at the parks surveyed over 2 years of the project (Pollok Country Park, Bellahouston Park, Victoria Park and Kelvingrove Park). The graph

shows species recorded during year 1 only, year 2 only, year 3 only and during 2 years of the survey.

4.1. Grass Tussock Surveys

A total of 16 invertebrate specimens were collected in grass tussocks from the survey at Hogganfield Park in February 2013 (Table 1 and 2). This includes only 5 individuals that could be identified to species as others were either immature or the surveyor had limited resources and time.

Table 2. Species collected in grass tussocks during the survey at Hogganfield Park.

| Order | Scientific Name/Family | Common Name | Number |
|------------|-----------------------------|----------------|--------|
| Coloeptera | <i>Coccidula rufa</i> | Ladybird | 1 |
| Coloeptera | <i>Stenus cicindeloides</i> | Rove beetle | 3 |
| Coloeptera | <i>Stenus brunnipes</i> | Rove beetle | 1 |
| Aranaea | Lycosidae | Wolf spider | 1 |
| Aranaea | Linyphiidae | Money spider | 2 |
| Diptera | Trichoceridae | Winter gnat | 1 |
| Aranaea | Gnaphosidae | Ground spider | 1 |
| Unknown | Unknown | Unknown larvae | 6 |

4.2. Total species recorded over entire project

Altogether, 125 species of invertebrate were recorded during pollinator surveys in year 1, 2 and 3 of the Glasgow's Buzzing project (Figure 7). The invertebrate order with the highest number of species recorded over the 3 years is flies with 29 species and this includes 27 species of hoverfly. A total of 25 species of true bug were recorded, 20 species of beetle and 19 species of butterfly and moth. Several smaller orders had only 1 species recorded each including harvestman (Order Opiliones), earwig (Order Dermaptera), mayfly (Order Ephemeroptera), lacewing (Order Neuroptera), stonefly (Order Plecoptera) and a snail (Phylum Mollusca); these were included all in 1 group under small orders (Figure 7).

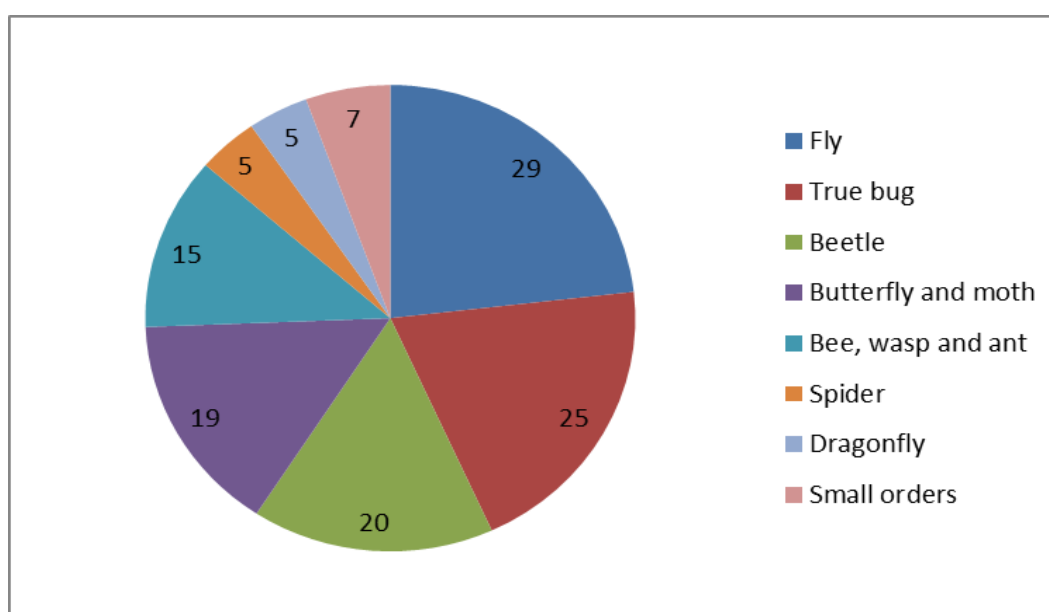


Figure 7. Total number of invertebrate species collected from each different group during the 3 year pollinator survey. Small orders includes harvestman, grasshopper, lacewing, mayfly, snail, stonefly and earwig where 1 species was recorded from each group.

5. Discussion

It is well known that 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.

In Scotland this year, there was a very late spring and a warm and dry summer. This was noticeably different to the cold and wet summer we had in 2012. The long and cold winter delayed spring till late April/early May and this affected the emergence of bumblebees, butterflies and also aphids that are fed on by several species of hoverfly, ladybirds and lacewings. Not only did the late spring affect invertebrate emergence and survival but it also delayed the growth of plants and many flowered later than usual. This year many pollinating insects such as bumblebees and butterflies were seen in far larger numbers than during the pollinator surveys in 2011 and 2012 when the overall summer weather was wetter and cooler (see Glasgow's Buzzing: Pollinator Surveys year 1 and year 2; Figure 8).



Figure 8. Bumblebees were seen in far larger numbers during this year's survey. This image is from Linn Park and several bees can be seen feeding on Devils bit scabious (*Succisa pratensis*).

It was noted by the surveyor that compared with surveys in 2012, hoverflies with larvae associated with aquatic habitats were low in abundance this year, particularly Drone-fly (*Eristalis* species) and Tiger hoverfly (*Helophilus pendulus*). This may have been due to the very little rain during the summer that prevented suitable habitat being available when breeding. Although seen in low numbers, the Tiger hoverfly was recorded at 8 of the 13

parks surveyed. Hoverflies that feed on aphids, including *Melanostoma* species and the Marmalade hoverfly (*Episyrphus balteatus*) were also noted to be in low abundance and this may have been due to the late spring which possibly affected aphid populations. The Marmalade hoverfly was recorded at 9 of the 13 parks surveyed.

Altogether, 23 species of hoverfly were recorded during this year's park surveys including several that have been recorded in previous years (Chequered hoverfly (*Melanostoma scalare*), Large narcissus fly (*Merodon equestris*) and *Platycheirus clypeatus*) as well as others that have previously not been recorded including the Blue banded hoverfly (*Leucozona glauca*), and the hoverflies *Lejogaster metallinus* and *Cheilosia bergenstammi*. Overall, this year's warmer and drier summer provided better conditions for hoverfly as only 21 species and 14 species were recorded during surveys in year 1 and 2 respectively.

It was noted by the surveyor that this year was a very good year for bees, wasps and ants and a total of 12 species were recorded. This is fewer species than recorded in 2012 when 13 species were recorded but it is higher than surveys in 2011 when 8 species were recorded. Meadows with a high species diversity and a high abundance of flowers provided valuable foraging habitat for bumblebees and they were often seen in large numbers (Figure 8). The Common carder bee (*Bombus pascuorum*) and Buff tailed bee (*Bombus terrestris*) were identified as being the most frequently seen species and both were recorded at 12 of the 13 parks surveyed. Red tailed bee (*Bombus lapidarius*) and White tailed bee (*Bombus lucorum*) were recorded at most of the parks surveyed (Appendix 1). Other bees recorded during this year's survey include the solitary mining bee *Colletes daviesanus* that was observed foraging on flowers at Hogganfield Park and the solitary parasitic bee *Sphecodes geoffrellus* that was recorded foraging on Ragwort (*Senecio jacobaea*) at Alexandra Park and Kelvingrove Park (Figure 9), this parasitic species generally parasitises the nest of other solitary bees, most notably species from the genera *Lasioglossum*.



Figure 9. The solitary parasitic bee *Sphecodes geoffrellus* on Ragwort at Alexandra Park.

Surveys last year in 2012 recorded Honeybees (*Apis mellifera*) in relatively large numbers at 3 of the parks; Linn Park, Bellahouston Park and Pollok Country Park. This year they were

seen in very low numbers at Kelvingrove Park and Pollok Country Park. Honeybees are not a native species of bee and are poor pollinators of wildflowers when compared to native pollinating insects such as bumblebees and solitary bees. It has also been suggested that honeybees can outcompete native bee species. By providing a wide range of wildflowers species that flower throughout the year across the parks in Glasgow that is being achieved through this project, both honeybees and native pollinators will benefit.

A greater variety of butterfly and moth species were recorded during this year's pollinator survey with a total of 16 compared with previous year's surveys with 9 in 2011 and 7 in 2012. Hogganfield Park had the greatest number of butterfly species recorded this year with a total of 11. No butterflies were recorded at Bellahouston Park, Cranhill Park or Pollok Country Park. Species of butterfly and moth recorded this year that had previously not been recorded include the Small copper (*Lycaena phlaes*) at Trinley Brae, Hogganfield Park and Glasgow Green as well as Common blue butterfly (*Polyommatus icarus*) and Latticed heath moth (*Chiasmia clathrata*) at Hogganfield Park. Green veined white (*Pieris napi*) was the most commonly recorded species of butterfly and were recorded at 8 of the parks surveyed. Wildflower meadows created at many of the parks through this project provided valuable foraging habitat for adults and larvae of butterflies and moths, especially during the warm and dry summer.

Five species of dragonfly and damselfly (Order Odonata) were recorded at Hogganfield Park during this year's survey including Azure damselfly (*Coenagrion puella*) and 4-spot chaser (*Libellula quadrimaculata*). The lacewing *Micromus variegatus* was recorded at several parks including Glasgow Green, Botanic Gardens, Linn Park and Cranhill Park and this is a small species of lacewing that is common and widespread across Britain. This year has been a much better year for dragonflies, damselflies and lacewings as none were recorded during surveys in 2012.



Figure 10. 7-spot ladybirds (*Coccinella septempunctata*) were recorded in high numbers at several of the parks. This individual was recorded on Yellow rattle (*Rhinanthus minor*) at Glasgow Green.

Altogether 15 species of beetle (Order Coleoptera) were recorded during this year's survey. This is much higher than the previous surveys with 2 species of beetle recorded in 2011 and 8 species in 2012. The higher number of beetles this year includes 3 species recorded during the grass tussock surveys (discussed in more detail below). Four species of ladybird were recorded this year including 2-spot (*Adalia bipunctata*), 10-spot (*Adalia decempunctata*) and 7-spot (Figure 10); the Orange ladybird (*Halyzia sedecimguttata*) was also recorded this year during habitat creation at Linn Park by The Conservation Volunteers (TCV) Natural Communities trainee Paul Gunn. Other beetles recorded included the Dock leaf beetle (*Gastrophysa viridulus*) that feeds on species of dock (*Rumex* species) and the rove beetle *Xantholinus linearis*.

During this year's survey, a greater attempt was made to record true bugs that were collected in the sweep nets to show the importance of wildflower meadows for other species of invertebrate as well as pollinating insects. Twenty two species of true bug were recorded during this year's survey which is higher than 2011 with 1 species and 2012 with 5 species. True bugs collected include the predatory bug *Campyloneura virgula* and the grass bugs *Stenodema calcarata*, *Stenodema holsata* and *Stenodema laevigata*. The Common froghopper (*Philaenus spumarius*) was recorded at 12 of the 13 parks surveyed and was often seen in large numbers.

A total of 103 species of invertebrate were recorded over the 13 parks during this year's pollinator survey. This is higher than the overall total number of species recorded last year which was 57 and in 2011 with 55 species. The higher number of invertebrate species recorded this year is due to the further creation and enhancement of many of the wildflower meadows as well as better weather over the summer months than the previous 2 years.

Hogganfield Park had the highest number of invertebrate species recorded during this year's survey with a total of 60. This is much higher than what was recorded during year 1 (26 species) and year 2 (27 species) of the project at this park. Wildflower meadows at Hogganfield Park include wet and dry areas and also areas of acid grassland (Figure 11). Through this project, the meadow enhancement at this park has provided a greater diversity of wildflower species for pollinating insects and because of this a greater diversity of invertebrate species has been recorded each year of the project.

A total of 72 invertebrate species have been recorded at Hogganfield Park during surveys over the 3 years. Ten species have been recorded each year of the project including the hoverflies *Sericomyia silentis* and *Melanostoma mellinum* and 20 have been recorded during 2 years of the project including 7-spot ladybird and the Peacock butterfly (*Inachis io*) that were both recorded during surveys in 2012 and 2013. This year a total of 30 species were recorded that hadn't been recorded in year 1 or 2 of the project including Common blue damselfly (*Enallagma cyathigerum*) and the Snout moth (*Hypona proboscidalis*). The enhancement to the wildflower meadow during the project and the warm weather provided perfect conditions not only for invertebrates but also for other wildlife including Meadow

pipits (*Anthus pratensis*) which were recorded within the wildflower meadows at the south east slopes of the park.



Figure 11. The wildflower meadow at Hogganfield Park has a mix of dry and wet areas and also acid grassland.

Managing a wildflower meadow involves cutting the meadow and removing the cuttings in autumn, although it is important to leave areas long with some grass tussocks for invertebrates and other wildlife to over-winter in. This year, several grass tussocks were collected at Hogganfield Park in areas of meadow left uncut that surrounded wetland. Species recorded from the tussocks include the ladybird *Coccidula rufa* and the rove beetles *Stenus cicindeloides* and *Stenus brunnipes* as well as immature specimens of wolf spider (Family Lycosidae), ground spider (Family Gnaphosidae) and several unidentifiable larvae. The variety of species recorded within the grass tussocks at this park highlights the importance of leaving areas uncut for over-wintering invertebrate species through this project. A similar survey will take place in winter 2013/2014 to record more species of over-wintering invertebrates in grass tussocks.

At Linn Park this year, surveys focused on the wildflower meadow created by extending the well established meadow at the south west of the park and also at the meadow created adjacent to the golf club to the north of the park. These areas are rich in Autumnal hawkbit (*Leontodon autumnalis*) as well as Oxeye daisy (*Leucanthemum vulgare*) and Common knapweed (*Centarea nigra*) that have been planted into the wildflower meadow as plug plants. The second highest number of invertebrate species recorded during this year's survey was at Linn Park with 43 species. This is greater than the number of species recorded during 2011 with 22 and 2012 with 23 due to further enhancement of the wildflower meadow. The park also had the second highest number of species of invertebrate recorded during all 3 years of the project with a total of 55; 10 of these were recorded during all 3 years (including Common green grasshopper and Red tailed bumblebee) and 13 were

recorded in at least 2 years (including Small tortoiseshell butterfly (*Aglais urtica*) and Common wasp (*Vespula vulgaris*) that were recorded during year 2 and 3). This year, 22 species were recorded that had previously not been recorded at the park compared with 5 species in year 1 and 5 species in year 2.

The highest number of species of hoverfly recorded during surveys this year's was at Linn Park with a total of 16. This includes *Lejogaster metallinus* that was only recorded in this park and only during this year. The Forest bug (*Pentatoma rufipes*), Small white butterfly (*Pieris rapae*) and the rove beetle *Stenus similis* were only recorded from Linn Park this year, although they have been recorded at other parks in previous years.

Surveys at Glasgow Green during year 1 of the project highlighted how poor the park was for pollinators as only 1 invertebrate species was recorded, the Common wasp. During surveys in year 2 of the project 14 species were recorded showing that the addition of a small meadow greatly benefited invertebrates. Further enhancement of the meadows at this park have provided a greater diversity of wildflowers for foraging insects as well as a home for a wider range of invertebrate species and this year 28 species of invertebrate were recorded including Small copper butterfly and Common green grasshopper. A total of 32 species have been recorded at Glasgow Green over the 3 years and only the Common wasp was recorded during each year.

A total of 27 species of invertebrate were recorded at Trinley Brae this year which is higher than year 2 of the project with 24 species but lower than the first year of the project when 30 species were recorded. This year 6 species of butterfly and moth were recorded including Large White (*Pieris brassicae*), Small copper and the grass moth *Agriphila tristella*. Over the 3 years at this park a total of 52 species have been recorded. At least 12 species were recorded in each of the 3 years which is the highest of all the 5 parks surveyed during each year of the project and includes Red soldier beetle (*Rhagonycha fulva*) and Tiger hoverfly.

The lowest number of invertebrate species recorded during this year's survey was at Cranhill Park with a total of 14. There has been a total of 30 species of invertebrate recorded at Cranhill Park over the 3 years of the project and this is the lowest of all the 5 parks surveyed over the 3 years. The meadow at Cranhill Park has been extended and wildflower seed has been planted through Power Harrowing a small strip along the front edge of the meadow. The wildflowers within this area will hopefully be in flower in 2014 to provide habitat for a range of invertebrate species. The wildflower meadow at this park was identified as being important for bees including Red tailed bee and Buff tailed bee which were recorded during each of the 3 years. Species recorded this year at the park that have not been recorded during the previous 2 years include the grass bugs *Stenodema calcarata* and *Stenodema laevigata*. The wildflower meadow at this park has proved to be particularly important for small mammals including Water voles (*Arvicola amphibious*).

Four parks surveyed this year where previously surveyed during the project (See Glasgow Buzzing: pollinator survey's 2011 and 2012). Kelvingrove Park was surveyed during year 1 and 3 of the project and Bellahouston Park, Pollok Country Park and Victoria Park were all surveyed during year 2 and 3 of the project.

Of these parks the highest number of invertebrate species was recorded this year at Kelvingrove Park with 26. In total, 28 species of invertebrate were recorded at Kelvingrove Park during surveys over year 1 and 3 of the project. There are 2 separate wildflower meadows at Kelvingrove Park, one small area opposite Kelvingrove Art Gallery and Museum and another larger area alongside Kelvin Way. The smaller area of meadow has a high diversity of wildflower species including Field scabious (*Knautia arvensis*), Tansy (*Tanacetum vulgare*) and Wild carrot (*Daucus carota*) that were previously seeded with other wildflower species to create the diverse meadow. Further habitat enhancement of this area has been through the planting of wildflower plug plants including Oxeye daisy and Common knapweed. The wildflower meadows at this park are particularly important for pollinators, especially for bees and wasps as the highest number of species was recorded during this year's survey at this park with a total of 9. The meadow was also seen to be important for resting Blue-winged olive mayfly (*Serratella ignita*) and for the stonefly *Nemoura cinerea*. An additional 6 species were recorded at this park this year by TCV Natural Communities trainee Paul Gunn who was promoting the Glasgow Buzzing project through organised habitat creation days and bug walks with school groups and local community groups (Appendix 2).

Of these 4 parks, Pollok Country Park had the second highest number of invertebrate species recorded with a total of 24. This park had a total of 31 species recorded during surveys in year 2 and 3 of the project which is the highest for the 4 parks surveyed over 2 different years. There are 2 meadows that were surveyed at this park and both are completely separate to one another. One of the meadows has a greater diversity of wildflower species than the other (Figure 12). No species of butterfly or moth were recorded at either of the meadows although the meadows are important for bumblebees such as Red tailed and Common carder and hoverflies including *Eristalis intricarius* and *Scaeva pyrastris*.



Figure 12. A greater diversity of wildflowers is present at the meadow close to Pollok House. When the meadow at Bellahouston Park was surveyed for pollinators this year it was obvious that it had been cut at some point in the summer (Figure 13). Although a range of wildflowers were present in the meadow they were all small in size with very little grass growth. The wildflower strip project 'The Ribbon' was not present at the park this year. Altogether, 15 species were recorded this year at this park which was lower than the survey last year when 16 species were recorded. Only 4 species of hoverfly, 5 species of bees and wasps and no butterflies or moths were recorded this year. Last year Large yellow underwing moths (*Noctua pronuba*) were recorded resting in the grass of the meadow.



Figure 13. The wildflower meadow at Bellahouston Park has a rich diversity of wildflower species present although the meadow was noticeably lower in height this year due to being cut accidentally early in the season.

The meadow at Victoria Park has mostly been left uncut over the summer of 2012 and 2013 and has had some wildflower plugs planted throughout it. Surveys this year at this park recorded 15 species which is higher than the number of species recorded last year with 8. Over the 2 years of the survey only 19 species have been recorded. The meadow at Victoria Park is situated under an area with dense trees and has only a few open glades that are important for patrolling male Chequered hoverflies. This may cause shading to some wildflowers and further species to be added to this meadow will be more shade tolerant including Red campion (*Silene dioica*) and Foxglove (*Digitalis purpurea*).

Other parks surveyed this year included Auchinlea Park, Botanic Gardens, Queens Park and Alexandra Park. These parks will have wildflower meadows created or enhanced during year 3 of the project.

A total of 19 species of invertebrate were recorded at Auchinlea Park this year. The wildflower meadow present has had wildflower plugs planted into the meadow by Easterhouse Green Gym run by TCV and further enhancement is due to occur during the third year of the project. Invertebrate species recorded at this park include the flower bug (*Anthocoris nemorum*) and the flea beetle *Longitarsus luridus*. An additional 9 invertebrate species were recorded by the Green Gym during surveys they carried out on 31st of July and 14th of August including the Silver ground carpet (*Xanthorhoe montonata*) and a caterpillar of the Grey dagger moth (*Acronicta psi*) (Appendix 2).

Surveys within the wildflower meadow already present at Alexandra Park recorded 19 species of invertebrates. It was noticed by the surveyor that very few wildflowers were present in the meadow and it was a surprise that so many invertebrate species were recorded. Wildflowers already present include Ragwort and Yarrow (*Achillea millefolium*) and some Common knapweed. Several solitary parasitic bee *Sphecodes Geoffrellus* were observed feeding on Ragwort within the meadow along with adult Thick headed flies (*Conops quadrifasciatus*) and Antler moth (*Cerapteryx graminis*).

Queens Park is a well used park to the south of the City of Glasgow and the wildflower meadow already present at the park covers a large area with open grassland and scrub which is dense in parts. Wildflower species present within the meadow include large areas of Common knapweed but also some Meadow's cranesbill (*Geranium pratense*) and Creeping buttercup (*Ranunculus repens*) which is spread across the site. A total of 18 species of invertebrate were recorded at this park which included the hoverfly *Cheilosia bergenstammi* which was only recorded at this park during all 3 years of the survey and also patrolling male Common banded hoverfly (*Syrphus ribesii*) and Common green grasshoppers.

The wildflower meadow areas at the Botanic Gardens have previously had some meadow enhancement which was evident during the survey as Yellow rattle was present which would have previously been seeded into the area. Yellow rattle is a hemi-parasite feeding on the roots of fine grasses and help to reduce their vigorous growth and this can help promote wildflower species diversity within a meadow. Altogether 16 species of invertebrate were recorded at this park during the survey. Species recorded within the meadow include 5 species of commonly seen bumblebee with Common carder and Red tailed being most frequently recorded. Two spot and 10 spot ladybirds were recorded along with the lacewing *Micromus variegatus*.

Surveys over the 3 years of the project have recorded a total of 125 species of invertebrates (Figure 14). This total includes 29 species of fly and 27 of these are species of hoverfly which are important pollinators of wildflowers. Over the 3 years 19 species of butterfly and moth were recorded and 15 species of bees, wasps and ants. The group with the second highest number of species recorded during the 3 years was the true bugs with 25 species, 19 of which were recorded only in year 3 of the project due to more intensive surveying for this group. A large number of different species of beetle were recorded over the 3 years with a total of 20 species; this includes 3 individuals that could only be identified down to genera. Other groups were found in much smaller numbers including lacewings with 1 species (*Micromus variegatus*) and stonefly with 1 species (*Nemoura cinerea*).



Figure 14. A bank of wildflowers at Hogganfield provide important habitat for pollinators. The highest number of invertebrates over the 3 year survey was recorded at this park.

6. Conclusion

Wildflower meadows created and enhanced at the different parks during this project are important for a number of invertebrate species and also other wildlife including birds, and mammals. The diversity of wildflower species present within several of the meadows has been shown to be especially important for foraging pollinating insects including bumblebees, butterflies and hoverflies. Areas of grassland with fewer flowers are also important for a range of invertebrate's especially true bugs but also nesting bees.

By leaving the grass uncut this is allowing wildflowers already present within grasslands to flourish. Further enhancement of the meadow through the planting of plug plants and seed is providing other wildflower species and a further nectar source for pollinators. Further meadow enhancement and creation in year 3 of the project with the planting of a rich range of wildflower species across the parks will provide further habitat for invertebrates with a vital food source for pollinating insects.

Appendix 1

Complete list of invertebrate species recorded at each park during pollinator surveys in year 3 of the Glasgow Buzzing project.

| Common Name | Scientific Name | Alexandra Park | Auchinlea Park | Bellahouston Park | Botanic Gardens | Cranhill Park | Glasgow Green | Hogganfield Park | Kelvingrove Park | Linn Park | Pollok Park | Queens Park | Trinley Brae | Victoria Park |
|--------------------|----------------------------------|----------------|----------------|-------------------|-----------------|---------------|---------------|------------------|------------------|-----------|-------------|-------------|--------------|---------------|
| Beetles | Order Coleoptera | | | | | | | | | | | | | |
| 2 spot ladybird | <i>Adalia bipunctata</i> | | | | ● | | | ● | | | | | ● | |
| 10 spot ladybird | <i>Adalia decempunctata</i> | | | | ● | | | | | | | | | |
| Ladybird | <i>Coccidula rufa</i> | | | | | | | ● | ● | | | | | |
| 7 spot ladybird | <i>Coccinella septumpunctata</i> | ● | ● | ● | | ● | ● | ● | | ● | ● | ● | ● | ● |
| Dock leaf beetle | <i>Gastrophysa viridulus</i> | | | | | | ● | ● | | | | | | |
| Flea beetle | <i>Longitarsus luridus</i> | | ● | ● | | | ● | | | | | | | |
| Flea beetle | <i>Longitarsus</i> species | | | ● | | | | | | | | | | |
| Pollen beetle | <i>Meligethes aeneus</i> | | | | | | | ● | | | | | | |
| Leaf beetle | <i>Phratora vulgatisimma</i> | | | | | | | ● | | | | | | |
| Red soldier beetle | <i>Rhagonycha fulva</i> | | ● | ● | ● | | | ● | ● | ● | | | ● | |
| Rove beetle | <i>Stenus brunnipes</i> | | | | | | | ● | | | | | | |
| Rove beetle | <i>Stenus cicindeloides</i> | | | | | | | ● | | | | | | |
| Rove beetle | <i>Stenus similis</i> | | | | | | | | | ● | | | | |
| Rove beetle | <i>Tachinus rufipes</i> | | | | | | | | | ● | | | | ● |
| Rove beetle | <i>Xantholinus linearis</i> | | ● | | | | | | | | | | | |
| Earwig | Order Dermaptera | | | | | | | | | | | | | |
| Common earwig | <i>Forficula auricularia</i> | | | | | | | | ● | | | | | |

| Common Name | Scientific Name | Alexandra Park | Auchinlea Park | Bellahouston Park | Botanic Gardens | Cranhill Park | Glasgow Green | Hogganfield Park | Kelvingrove Park | Linn Park | Pollok Park | Queens Park | Trinley Brae | Victoria Park |
|-----------------------|----------------------------------|----------------|----------------|-------------------|-----------------|---------------|---------------|------------------|------------------|-----------|-------------|-------------|--------------|---------------|
| Flies | Order Diptera | | | | | | | | | | | | | |
| Hoverfly | <i>Cheilosia bergenstammi</i> | | | | | | | | | | | ● | | |
| Hoverfly | <i>Chrysogaster solstitialis</i> | | | | | | | | ● | | | | | |
| Thick headed fly | <i>Conopid</i> species | | | | | | | | | ● | | | | |
| Thick headed fly | <i>Conops quadrifasciatus</i> | ● | | | | | | | | | ● | | | |
| Marmalade hoverfly | <i>Episyrphus balteatus</i> | | | ● | ● | ● | ● | ● | ● | ● | ● | | | ● |
| Dwarf drone fly | <i>Eristalis arbustorum</i> | | | | | | | ● | | ● | | ● | | |
| Hoverfly | <i>Eristalis intricarius</i> | | | | | | | ● | | ● | ● | | | |
| Drone fly | <i>Eristalis tenax</i> | | | | | | | ● | | ● | ● | | | |
| Vagrant hoverfly | <i>Eupeodes corollae</i> | | | ● | | | | | | | | | | |
| Tiger hoverfly | <i>Helophilus pendulus</i> | ● | ● | | | | ● | ● | ● | ● | | ● | ● | |
| Hoverfly | <i>Lejogaster metallinus</i> | | | | | | | | | ● | | | | |
| Blue-banded hoverfly | <i>Leucozona glaucia</i> | | | | | | | | ● | | | | | |
| Hoverfly | <i>Melanostoma mellinum</i> | | | | | | | ● | | ● | ● | | ● | |
| Chequered hoverfly | <i>Melanostoma scalare</i> | ● | ● | | ● | | ● | ● | | ● | ● | | | ● |
| Large narcissus fly | <i>Merodon equestris</i> | | | | | | | ● | | | | | | |
| Pale-footed hoverfly | <i>Platycheirus albimanus</i> | | | | | | | ● | | ● | | | | ● |
| Hoverfly | <i>Platycheirus clypeatus</i> | | | ● | | | | | | ● | ● | | | |
| Orange hoverfly | <i>Platycheirus granditarsus</i> | | | | | | | ● | | ● | | | | |
| White-belted hoverfly | <i>Platycheirus rosarum</i> | ● | | | | | | ● | | ● | | | | |
| Hoverfly | <i>Platycheirus</i> species | | | | | | ● | | | | | | | |
| Pied hoverfly | <i>Scaeva pyrastris</i> | | | | | | | ● | | | ● | | ● | |

| Common Name | Scientific Name | Alexandra Park | Auchinlea Park | Bellahouston Park | Botanic Gardens | Cranhill Park | Glasgow Green | Hogganfield Park | Kelvingrove Park | Linn Park | Pollok Park | Queens Park | Trinley Brae | Victoria Park |
|-------------------------|---------------------------------|----------------|----------------|-------------------|-----------------|---------------|---------------|------------------|------------------|-----------|-------------|-------------|--------------|---------------|
| Yellow dung fly | <i>Scathophaga species</i> | | | | | ● | ● | | | | | | | |
| Hoverfly | <i>Sericomyia silentis</i> | | | | | ● | | ● | | ● | ● | ● | ● | |
| Hoverfly | <i>Sphaerophoria interrupta</i> | | | | | | | ● | | ● | | | ● | |
| Hoverfly | <i>Sphaerophoria species</i> | ● | | | | | | | | | | | | |
| Thick-legged hoverfly | <i>Syritta pipiens</i> | ● | | | | | | | | ● | | | | |
| Common banded hoverfly | <i>Syrphus ribesii</i> | | ● | | | | ● | ● | ● | ● | ● | ● | | |
| Banded hoverfly species | <i>Syrphus species</i> | | | ● | ● | | | | | | | | | |
| Lesser banded hoverfly | <i>Syrphus vitripennis</i> | | ● | | | | | | | | | | | |
| Mayfly | Order Ephemeroptera | | | | | | | | | | | | | |
| Blue winged olive | <i>Serratella ignita</i> | | | | | | | | ● | | | | | ● |
| True bugs | Order Hemiptera | | | | | | | | | | | | | |
| Flower bug | <i>Anthocoris nemorum</i> | ● | ● | ● | ● | | ● | | ● | ● | ● | ● | | ● |
| Plant bug | <i>Campyloneura virgula</i> | | | | | | ● | | | | | | | ● |
| Leafhopper | <i>Cicadella viridis</i> | | | | | | | ● | | | ● | | | |
| Plant bug | <i>Deraeocoris flavilinea</i> | | | | | | | ● | | | | | | |
| Planthopper | <i>Dicranotropis species</i> | | | | | | ● | | | | | | | |
| Planthopper | <i>Javesella pellucida</i> | | | | | | | | | ● | | | | |
| Meadow plant bug | <i>Leptopterna dolabrata</i> | | | | | | | ● | | ● | | | | |
| Plant bug | <i>Lopus decolor</i> | | | | | | | | | | | | ● | |
| Common green capsid | <i>Lygocoris pabulinus</i> | ● | | | | | | | | | | | | |
| Tarnished plant bug | <i>Lygus rugulipennis</i> | ● | ● | | | | ● | ● | ● | ● | ● | | ● | |
| Leafhopper | <i>Microsteles laevis</i> | | | | | | | | | ● | | | | |

| Common Name | Scientific Name | Alexandra Park | Auchinlea Park | Bellahouston Park | Botanic Gardens | Cranhill Park | Glasgow Green | Hogganfield Park | Kelvingrove Park | Linn Park | Pollok Park | Queens Park | Trinley Brae | Victoria Park |
|-----------------------------|-----------------------------------|----------------|----------------|-------------------|-----------------|---------------|---------------|------------------|------------------|-----------|-------------|-------------|--------------|---------------|
| Broad damsel bug | <i>Nabis flavomarginatus</i> | | | | | | | | | | | | ● | |
| Marsh damsel bug | <i>Nabis limbatus</i> | | ● | | | | | ● | | ● | | | | |
| Plant bug | <i>Orthops campestris</i> | | | | | | ● | | | | | | | |
| Plant bug | <i>Orthotylus species</i> | | | | | | | ● | | | | | | |
| Forest bug | <i>Pentatoma rufipes</i> | | | | | | | | | ● | | | | |
| Common froghopper | <i>Philaenus spumarius</i> | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Trefoil plant bug | <i>Plagiognathus chrysanthemi</i> | | | | | | | | ● | | ● | ● | ● | |
| Planthopper | <i>Stenocranus minutus</i> | | | | | | | | ● | | | | | |
| Grass bug | <i>Stenodema calcarata</i> | | | | | ● | | ● | | ● | | | | |
| Grass bug | <i>Stenodema holsata</i> | ● | ● | | | | | ● | | ● | ● | | | ● |
| Grass bug | <i>Stenodema laevigata</i> | | ● | | | ● | | ● | | | | | ● | |
| Grass bug | <i>Stenodema species</i> | | | | | | | | ● | | | ● | | |
| Bees, wasps and ants | Order Hymenoptera | | | | | | | | | | | | | |
| Honey bee | <i>Apis mellifera</i> | | | | | | | | ● | | ● | | | |
| Garden bee | <i>Bombus hortorum</i> | | | | | | ● | | | | | | | |
| Red tailed bee | <i>Bombus lapidarius</i> | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| White tailed bee | <i>Bombus lucorum</i> | | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● |
| Common carder bee | <i>Bombus pascuorum</i> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Early bee | <i>Bombus pratorum</i> | | | ● | ● | ● | | | ● | | | | | |
| Buff tailed bee | <i>Bombus terrestris</i> | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Solitary bee | <i>Colletes daviesanus</i> | | | | | | | ● | | | | ● | | |
| Black garden ant | <i>Lasius niger</i> agg. | | | | | | ● | | | | | | | |

| Common Name | Scientific Name | Alexandra Park | Auchinlea Park | Bellahouston Park | Botanic Gardens | Cranhill Park | Glasgow Green | Hogganfield Park | Kelvingrove Park | Linn Park | Pollok Park | Queens Park | Trinley Brae | Victoria Park |
|---------------------------|------------------------------|----------------|----------------|-------------------|-----------------|---------------|---------------|------------------|------------------|-----------|-------------|-------------|--------------|---------------|
| Solitary bee | <i>Sphecodes Geoffrellus</i> | ● | | | | | | | ● | | | | | |
| Sawfly | <i>Tenthredo species</i> | ● | | | | | ● | ● | ● | | | | ● | |
| Common wasp | <i>Vespula vulgaris</i> | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Butterfly and moth | Order Lepidoptera | | | | | | | | | | | | | |
| Small tortoiseshell | <i>Aglaia urticae</i> | | | | | | | ● | | ● | | | | |
| Grass moth | <i>Agriophila tristella</i> | | | | ● | | | ● | | ● | | | ● | |
| Ringlet butterfly | <i>Aphantopus hyperantus</i> | | | | | | | ● | | | | | | |
| Antler moth | <i>Cerapteryx graminis</i> | ● | | | | | | | | | | | | |
| Latticed heath moth | <i>Chiasmia clathrata</i> | | | | | | | ● | | | | | | |
| Snout moth | <i>Hypena proboscidalis</i> | | | | | | | ● | | | | | | |
| Peacock butterfly | <i>Inachis io</i> | | | | | | | ● | | | | | ● | |
| Small copper | <i>Lycaena phlaeas</i> | | | | | | ● | ● | | ● | | | ● | |
| Meadow brown | <i>Maniola jurtina</i> | | | | | | | ● | | | | | ● | |
| Buff tip moth | <i>Phalera bucephala</i> | | | | | | | ● | | | | | | |
| Large white | <i>Pieris brassicae</i> | | | | | | | | | | | | ● | |
| Green veined white | <i>Pieris napi</i> | | ● | | ● | | ● | ● | ● | ● | | ● | ● | |
| Small white | <i>Pieris rapae</i> | | | | | | | | | ● | | | | |
| Butterfly | <i>Pieris species</i> | | ● | | | | | | | | | | | ● |
| Common blue butterfly | <i>Polyommatus icarus</i> | | | | | | | ● | | | | | | |
| Grass moth | <i>Udea lutealis</i> | | ● | | | | | | | | | | | |
| Lacewing | Order Neuroptera | | | | | | | | | | | | | |
| Lacewing | <i>Micromus variegatus</i> | | | | ● | ● | ● | | | ● | | | | |

| Common Name | Scientific Name | Alexandra Park | Auchinlea Park | Bellahouston Park | Botanic Gardens | Cranhill Park | Glasgow Green | Hogganfield Park | Kelvingrove Park | Linn Park | Pollok Park | Queens Park | Trinley Brae | Victoria Park |
|--------------------------------|---------------------------------|----------------|----------------|-------------------|-----------------|---------------|---------------|------------------|------------------|-----------|-------------|-------------|--------------|---------------|
| Dragonfly and damselfly | Order Odonata | | | | | | | | | | | | | |
| Azure damselfly | <i>Coenagrion puella</i> | | | | | | | ● | | | | | | |
| Common blue damselfly | <i>Enallagma cyathigerum</i> | | | | | | | ● | | | | | | |
| Blue tailed damselfly | <i>Ischnura elegans</i> | | | | | | | ● | | | | | | |
| Four spot chaser | <i>Libellula quadrimaculata</i> | | | | | | | ● | | | | | | |
| Common red dater | <i>Sympetrum striolatum</i> | | | | | | | ● | | | | | | |
| Grasshopper | Order Orthoptera | | | | | | | | | | | | | |
| Common green grasshopper | <i>Omocestus viridulus</i> | ● | | | | ● | ● | ● | | ● | | ● | ● | |
| Stonefly | Order Plecoptera | | | | | | | | | | | | | |
| Stonefly | <i>Nemoura cinerea</i> | | | | | | | | ● | | | | | |
| Spiders | Order Aranaea | | | | | | | | | | | | | |
| Garden cross spider | <i>Araneus diadematus</i> | | | | | | ● | ● | | | | | | ● |
| Wolf spider | <i>Pardosa pullata</i> | | | | | | | | | | ● | | | |
| Crab spider | <i>Xysticus species</i> | | | | | | | ● | | | | | | |

Appendix 2.

Other invertebrate records from parks in the Glasgow's Buzzing project; records from TCV Natural Communities trainee Paul Gunn.

| Scientific Name | Common Name | Auchinlea Park | Hogganfield Park | Kelvingrove Park | Linn Park | Pollok Country Park |
|----------------------------------|--------------------------|----------------|------------------|------------------|-----------|---------------------|
| Coleoptera | Beetles | | | | | |
| <i>Coccinella septempunctata</i> | 7 spot ladybird | ● | | ● | | |
| <i>Gastrophysa viridula</i> | Dock leaf beetle | ● | | ● | | |
| <i>Halyzia sedinguttata</i> | Orange ladybird | | | | ● | |
| <i>Rhagonycha fulva</i> | Red soldier beetle | ● | ● | | | |
| Dermaptera | Earwig | □ | □ | | | |
| <i>Forficula auricularia</i> | Common earwig | ● | | | | |
| Diptera | Fly | □ | | | | |
| <i>Episyrphus balteatus</i> | Marmalade hoverfly | | ● | | | |
| <i>Helophilus pendulus</i> | Tiger hoverfly | | ● | ● | ● | |
| <i>Sericomyia silentus</i> | Hoverfly | | | ● | | |
| Hemiptera | True bug | | | □ | | |
| <i>Cicadella viridis</i> | Leafhopper | | ● | | | |
| <i>Pentatoma rufipes</i> | Forest bug | | ● | | | |
| <i>Philaenus spumarius</i> | Common froghopper | ● | ● | | | |
| Hymenoptera | Bee, wasp and ant | □ | □ | | | |
| <i>Bombus lapidarius</i> | Red tailed bee | | ● | ● | ● | ● |
| <i>Bombus lucorum</i> | White tailed bee | | | ● | ● | ● |
| <i>Bombus pascuorum</i> | Common carder bee | ● | ● | ● | ● | ● |

| Scientific Name | Common Name | Auchinlea Park | Hogganfield Park | Kelvingrove Park | Linn Park | Pollok Country Park |
|------------------------------|---------------------------|----------------|------------------|------------------|-----------|---------------------|
| <i>Bombus pratorum</i> | Early bumblebee | | | | | ● |
| <i>Bombus terrestris</i> | Buff tailed bee | ● | ● | ● | ● | ● |
| <i>Vespula vulgaris</i> | Common wasp | | | | | ● |
| Lepidoptera | Butterfly and moth | | | | | □ |
| <i>Acronicta psi</i> | Grey dagger | ● | | | | |
| <i>Aglais urticae</i> | Small tortoiseshell | | ● | | ● | ● |
| <i>Aphantopus hyperantus</i> | Ringlet butterfly | ● | | | | |
| <i>Inachis io</i> | Peacock butterfly | ● | | ● | | |
| <i>Maniola jurtina</i> | Meadow brown | ● | ● | ● | ● | |
| <i>Pieris napi</i> | Green-veined white | ● | ● | ● | ● | ● |
| <i>Pieris rapae</i> | Small white butterfly | | | ● | | |
| <i>Xanthorhoe montanata</i> | Silver ground carpet | ● | | | | |
| Odonata | Damselfly | □ | | | | |
| <i>Enallagma cyathigerum</i> | Common blue damselfly | ● | | | | |
| <i>Ischnura elegans</i> | Blue tailed damselfly | | ● | | | |
| <i>Lestes sponsa</i> | Emerald damselfly | | ● | | | |