

# THE BUTTERFLIES & DRAGONFLIES

OF

KNOLL GARDENS

2012

## INTRODUCTION

2012 saw the completion of the third full season's monitoring at Knoll Gardens. The route established in previous years was followed again to enable more reliable comparisons to be made. The format for the Record Sheets and Tables remained similar for the same reason. The figures for both Butterflies and Dragonflies from this year's monitoring were added into the Living Record scheme as during 2011. The results can be reviewed and compared on the website: [www.livingrecord.net](http://www.livingrecord.net).

## TABLES & RECORD SHEETS

### TABLES

Table 1. is a list of the possible butterfly, damselfly and dragonfly species that could appear within the Gardens, along with their abbreviations used on the Record Sheets. Those that have appeared within the Gardens are highlighted in shades of orange for butterflies and green for odonata as follows:

Mid-orange / green = Seen in previous years and 2012

Pale orange / green = Seen in previous years but not 2012

Tables 2. 3. & 4 compare the performances of the species, listing those that have shown an improvement upon 2011 and those that have fared less well for butterflies, damselflies and dragonflies respectively.

As there are now sufficient records to produce sets of average figures for each species, a table of 'Mean Weekly Counts' has been produced. This enables comparisons to be made of this year's figures against last year's along with the running average.

### RECORD SHEETS

A map of the gardens was used to record the weekly sightings of the butterflies and odonata with their abbreviations positioned where they were seen, with butterflies in black and odonata in red. (Annex (iii) 1 -18). These weekly count results were entered on to a spreadsheet, thus showing the flight period and abundance for each species throughout the season. (Annex (i) - butterflies and Annex (ii) - odonata)

As a result of the extremely poor summer, 8 weeks were not counted as opposed to 7 last year. As before, any the figures for missed weeks were estimated by taking the mean of the count prior to and after the missed week and entering these in red.

Charts were produced from these figures, showing the number of species and their abundance for each week of the season.

**TABLE 1.**

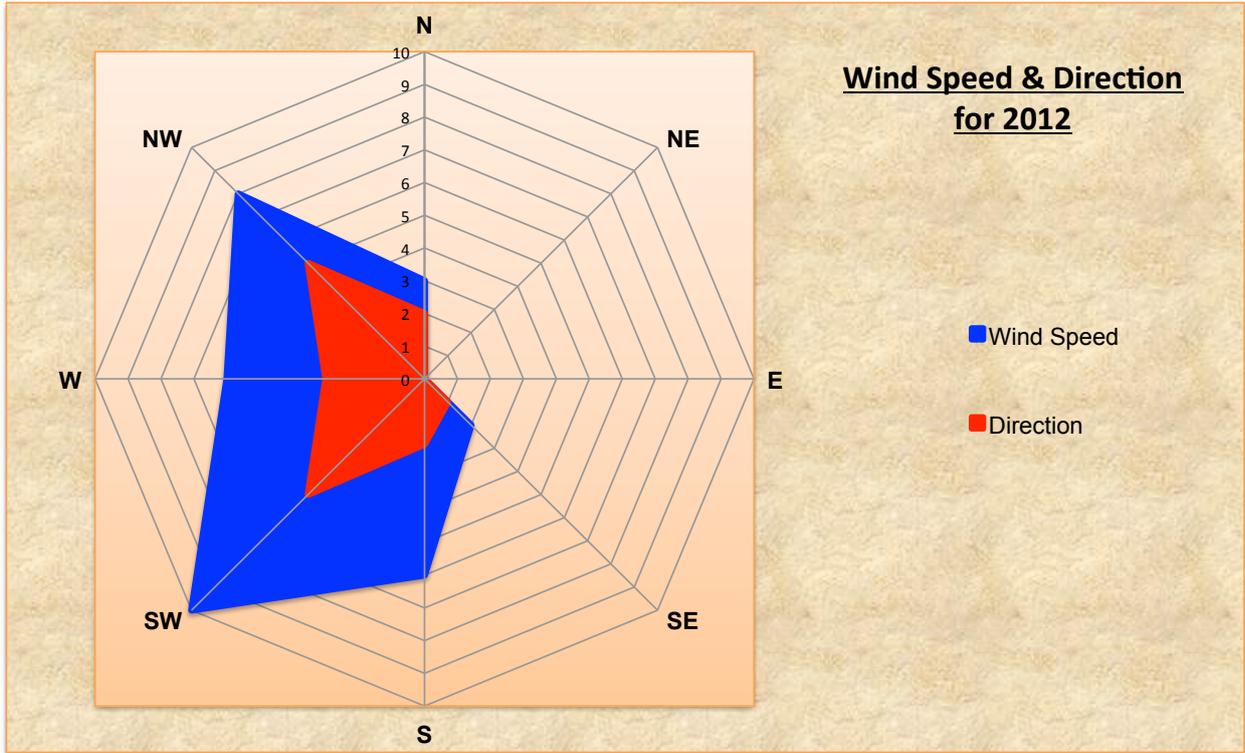
| <b>BUTTERFLIES</b>       |                               | <b>CODE</b> | <b>DRAGONFLIES</b>      |                                 | <b>CODE</b> |
|--------------------------|-------------------------------|-------------|-------------------------|---------------------------------|-------------|
| Brimstone                | <i>Gonopteryx rhamni</i>      | B           | Southern Hawker         | <i>Aeshna cyanea</i>            | A. cya      |
| Brown Argus              | <i>Arcia agestis</i>          | BA          | Brown Hawker            | <i>Aeshna grandis</i>           | A. gra      |
| Clouded Yellow           | <i>Colias crocea</i>          | CY          | Common Hawker           | <i>Aeshna juncea</i>            | A. jun      |
| Comma                    | <i>Polygonia c-album</i>      | CM          | Migrant Hawker          | <i>Aeshna mixta</i>             | A. mix      |
| Common Blue              | <i>Polyommatus icarus</i>     | CB          | Emperor                 | <i>Anax imperator</i>           | A. imp      |
| Dark Green Fritillary    | <i>Mesoacidalia aglaja</i>    | DF          | Hairy Dragonfly         | <i>Brachytron pratense</i>      | B. pra      |
| Gatekeeper               | <i>Pyronia tithonus</i>       | GK          | Downy Emerald           | <i>Cordulia aenea</i>           | C. aen      |
| Grayling                 | <i>Hypparchia semele</i>      | GY          | Golden-ringed Dragonfly | <i>Cordulegaster boltonii</i>   | C. bol      |
| Green Hairstreak         | <i>Callophrys rubi</i>        | GH          | Broad-bodied Chaser     | <i>Libellula depressa</i>       | L. dep      |
| Green-veined White       | <i>Pieris napi</i>            | GV          | Scarce Chaser           | <i>Libellula fulva</i>          | L. ful      |
| Holly Blue               | <i>Celastrina argiolus</i>    | HB          | Four-spotted Chaser     | <i>Libellula quadrimaculata</i> | L. qua      |
| Large Skipper            | <i>Ochlodes venatus</i>       | LS          | Black-tailed Skimmer    | <i>Orthetrum cancellatum</i>    | O. can      |
| Large White              | <i>Pieris brassicae</i>       | LW          | Black Darter            | <i>Sympetrum danae</i>          | S. dan      |
| Marbled White            | <i>Melanargia galathea</i>    | MW          | Ruddy Darter            | <i>Sympetrum sanguineum</i>     | S. san      |
| Meadow Brown             | <i>Maniola jurtina</i>        | MB          | Common Darter           | <i>Sympetrum striolatum</i>     | S. str      |
| Orange Tip               | <i>Anthocharis cardamines</i> | OT          |                         |                                 |             |
| Painted Lady             | <i>Vanessa cardui</i>         | PL          | <b>DAMSELFLIES</b>      |                                 |             |
| Peacock                  | <i>Inachis io</i>             | PK          | Banded Demoiselle       | <i>Calopteryx splendens</i>     | C. spl      |
| Purple Hairstreak        | <i>Quercusia quercus</i>      | PH          | Beautiful Demoiselle    | <i>Calopteryx virgo</i>         | C. vir      |
| Red Admiral              | <i>Vanessa atalanta</i>       | RA          | Azure Damselfly         | <i>Coenagrion puella</i>        | C. pue      |
| Ringlet                  | <i>Aphantopus hyperantus</i>  | RT          | Common Blue Damselfly   | <i>Enallagma cyathigerum</i>    | E. cya      |
| Silver-washed Fritillary | <i>Argynnis paphia</i>        | SF          | Common Bluetail         | <i>Ischnura elegans</i>         | I. ele      |
| Small Copper             | <i>Lycaena phlaeas</i>        | SC          | Emerald Damselfly       | <i>Lestes sponsa</i>            | L. spo      |
| Small Heath              | <i>Coenonympha pamphilus</i>  | SH          | Large Red Damselfly     | <i>Pyrrhosoma nymphula</i>      | P. nym      |
| Small Skipper            | <i>Thymelicus sylvestris</i>  | SS          |                         |                                 |             |
| Small Tortoiseshell      | <i>Aglais urticae</i>         | ST          |                         |                                 |             |
| Small White              | <i>Pieris rapae</i>           | SW          |                         |                                 |             |
| Speckled Wood            | <i>Pararge aegeria</i>        | SP          |                         |                                 |             |
| White Admiral            | <i>Lemenitis camilla</i>      | WA          |                         |                                 |             |

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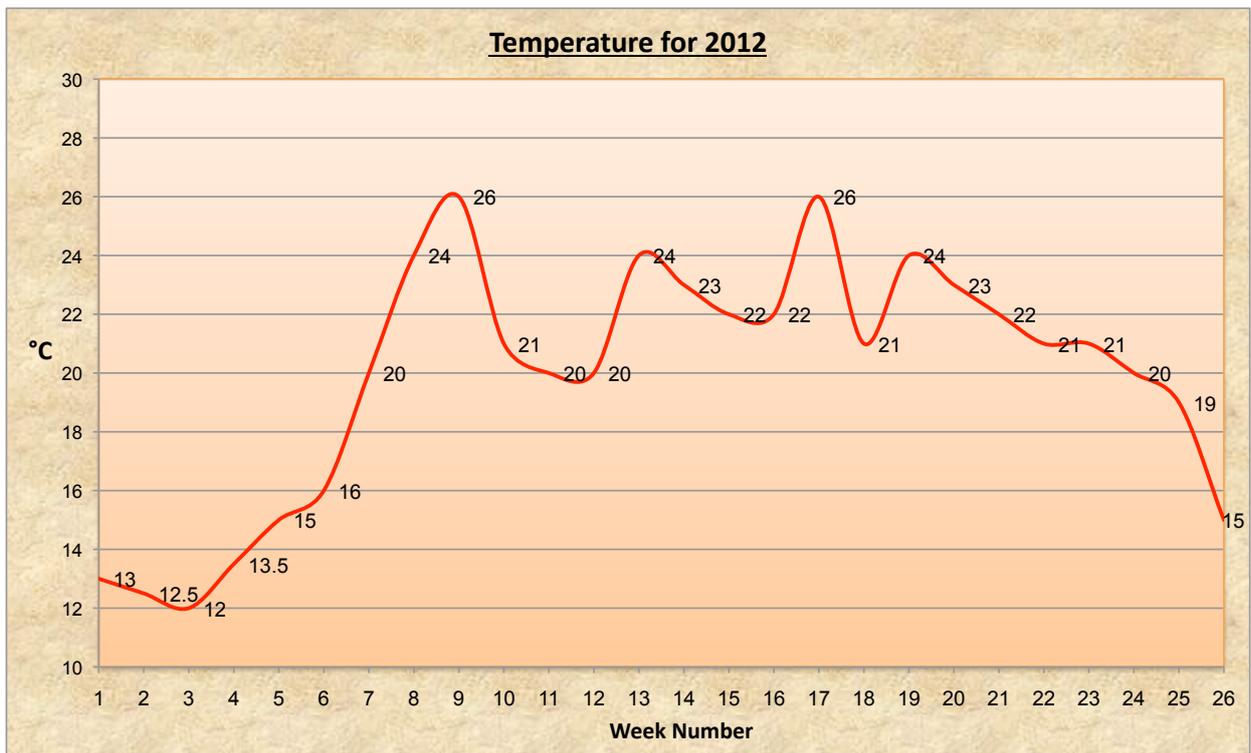
= Butterfly / Dragonfly species seen previously and in 2012.

= Butterfly / Dragonfly species seen previously but not in 2012.

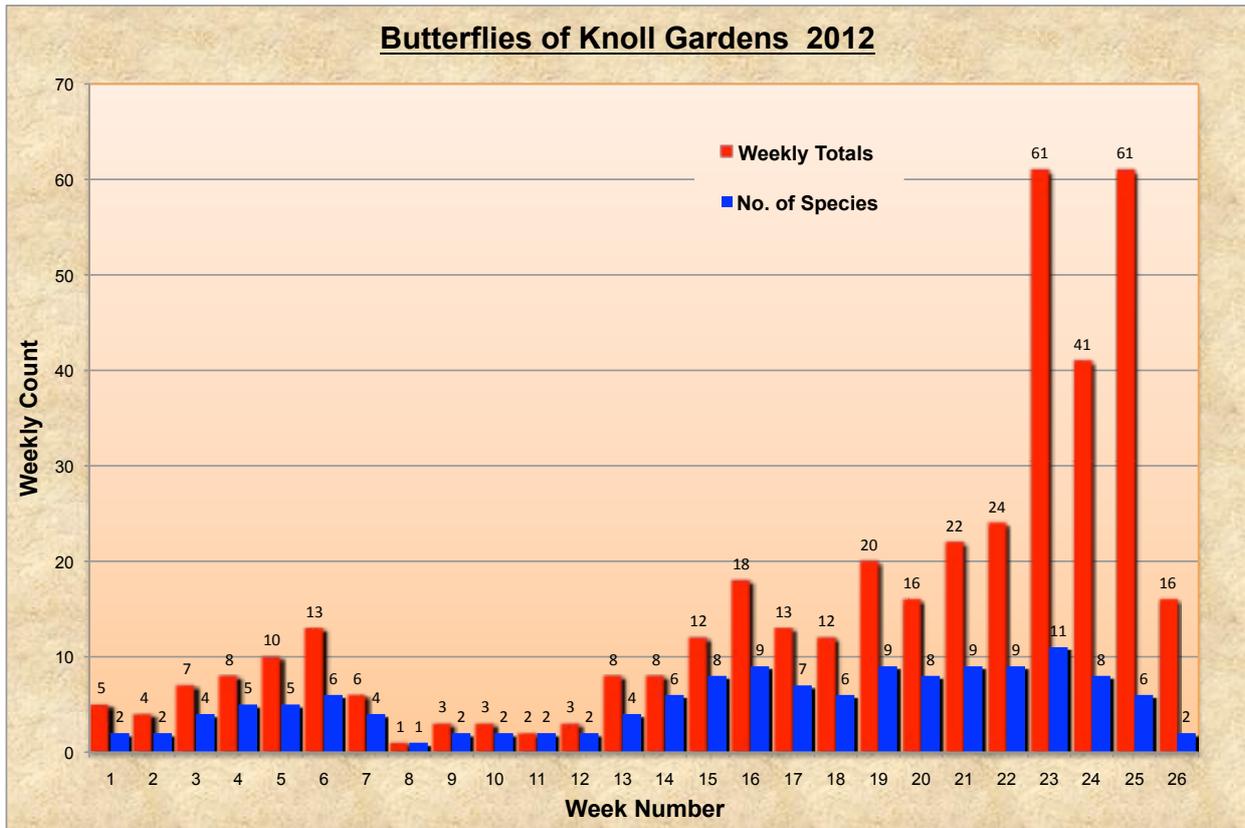
# WEATHER CONDITIONS



The weather prior to the start of monitoring was splendid, enticing a few early species of butterflies to emerge, especially last year's most successful - the Orange Tip. As soon as counting commenced the weather deteriorated steadily throughout the spring and most of the summer producing a very disjointed set of results. Towards the end of summer conditions improved and around the beginning of September the winds became southerly, bringing with them many migrants from the continent - mainly Red Admirals. The cold spring kept the odonata in their larval stage for a few more weeks and the first was not observed until the 6th week of counting compared to week 3 last year. To produce an uninterrupted graph of temperature throughout the year, uncounted weeks were averaged. This gives rise to figures somewhat higher than they actually were.



# BUTTERFLIES



A total of 397 individuals of 18 species of butterfly were counted during the 2012 season. This figure would have been closer to 280 without the influx of over 100 Red Admirals in September. The graph shows the very low spring performance which continued into early summer and then the southerly winds which culminated in the highest numbers of Red Admirals.

As a result of the appalling weather conditions, 8 counts were missed this year compared to the 7 & 6 in 2011 & 2010.

The highest count was 61, which occurred during weeks 23 & 25 and the greatest number of species also occurred in week 23 with just 11. Last year, the count reached a peak of 33 in week 19 with the greatest number of species appearing the previous week with a total of 12.

The highest spring count occurred on week 6 with 13 individuals being recorded, a week later and 5 fewer than in 2011.

For most of the season the winds prevailed from the NW to SW, once again deterring migrants except for the last few weeks in September when the Red Admirals came across in numbers along with the odd Painted Lady, one of which was seen in the Gardens but no Clouded Yellows.

Other species that did not appear, were Green Hairstreak, Brown Argus, Common Blue, Silver-washed Fritillary, Grayling and Small Heath.

Not surprisingly, the best performer, with a count of 146, was the Red Admiral. Next came Speckled Wood with 53. Followed by Meadow Brown, Large White, Comma & Brimstone at 29, 28, 24 and 23 respectively.

Large Skippers had their best year so far. A mating pair were seen around the Mill Pond area.

Surprisingly still no Small Skippers have been seen. These are a grass loving species as are their Large cousins.

**TABLE 2.**

**BUTTERFLY PERFORMANCE**

| Species            | % Change  |         | Species                  | % Change  |         |
|--------------------|-----------|---------|--------------------------|-----------|---------|
|                    | Last Year | Average |                          | Last Year | Average |
| Large Skipper      | 267       | 93      | Red Admiral              | 198       | 106     |
| Clouded Yellow     | 0         | 0       | Painted Lady             | 100       | 233     |
| Brimstone          | -21       | -17     | Small Tortoiseshell      | 200       | 82      |
| Large White        | 0         | -23     | Peacock                  | 75        | -43     |
| Small White        | 50        | -67     | Comma                    | 100       | -13     |
| Green-veined White | -70       | -59     | Silver-washed Fritillary | 0         | -100    |
| Orange Tip         | 25        | 25      | Speckled Wood            | 20        | 27      |
| Green Hairstreak   | -100      | -100    | Grayling                 | 0         | -100    |
| Purple Hairstreak  | 50        | -19     | Gatekeeper               | -67       | -70     |
| Small Copper       | -100      | -100    | Meadow Brown             | 71        | -37     |
| Brown Argus        | 0         | -100    | Ringlet                  | 75        | 63      |
| Common Blue        | 0         | -100    | Small Heath              | 0         | -100    |
| Holly Blue         | -35       | -59     |                          |           |         |

|  |   |
|--|---|
|  | Up by more than 50% on both last year and running average                 |
|  | Up by more than 50% on either last year or running average                |
|  | Down by more than 50% on both last year and running average               |
|  | Down by more than 50% on either last year or running average              |
|  | Up by more than 50% on last year but more than 50%down on running average |

Table 2. lists all the species showing those that were up or down by more than 50% on the 2011 figures and the running averages. The early emerging species fared less well than last year apart from Orange Tip and Speckled Wood. Those that were double brooded, generally performed better with their 2nd brood.

Species that showed improvement over both last year and the running average were:

Red Admiral - as many as 9 were seen on a single bush.

Painted Lady - albeit just the one, and

Small Tortoiseshell - making a second comeback after decimation by parasites.

Ringlet numbers were also up. This along with the steadily increasing Speckled Wood count would indicate a trend to a more wooded habitat within the gardens.

After last year’s success, when many eggs were laid, Orange Tips emerged in good numbers early on and even braved the adverse conditions, appearing for several weeks.

Despite a higher spring count (by 1), the Holly Blue, that did so well last summer was down by 80% on the 2<sup>nd</sup> brood. Probably as a result of the poor weather and not parasitisation.

The poorer performers included Green-veined White and Gatekeeper.



**Large Skipper** - A pair were seen mating in the area approaching Mill Pond. Their numbers increased significantly this year.



**Orange Tip** - After last year's success, enough eggs were laid to provide good numbers in 2012 despite the poor weather conditions. (Photograph courtesy Mike Lockyear.)



**Red Admiral** - The southerly winds in early September brought with them large numbers of this migrant, boosting our "homegrown" ones significantly.



**Speckled Wood** - Their first brood was surprisingly high, considering the adverse weather conditions and rallying again towards the end of the year with brood number two, saw their highest count so far.

## ODONATA

Odonata numbers were only down by 4% this year from 875 to 840, despite the poor summer.

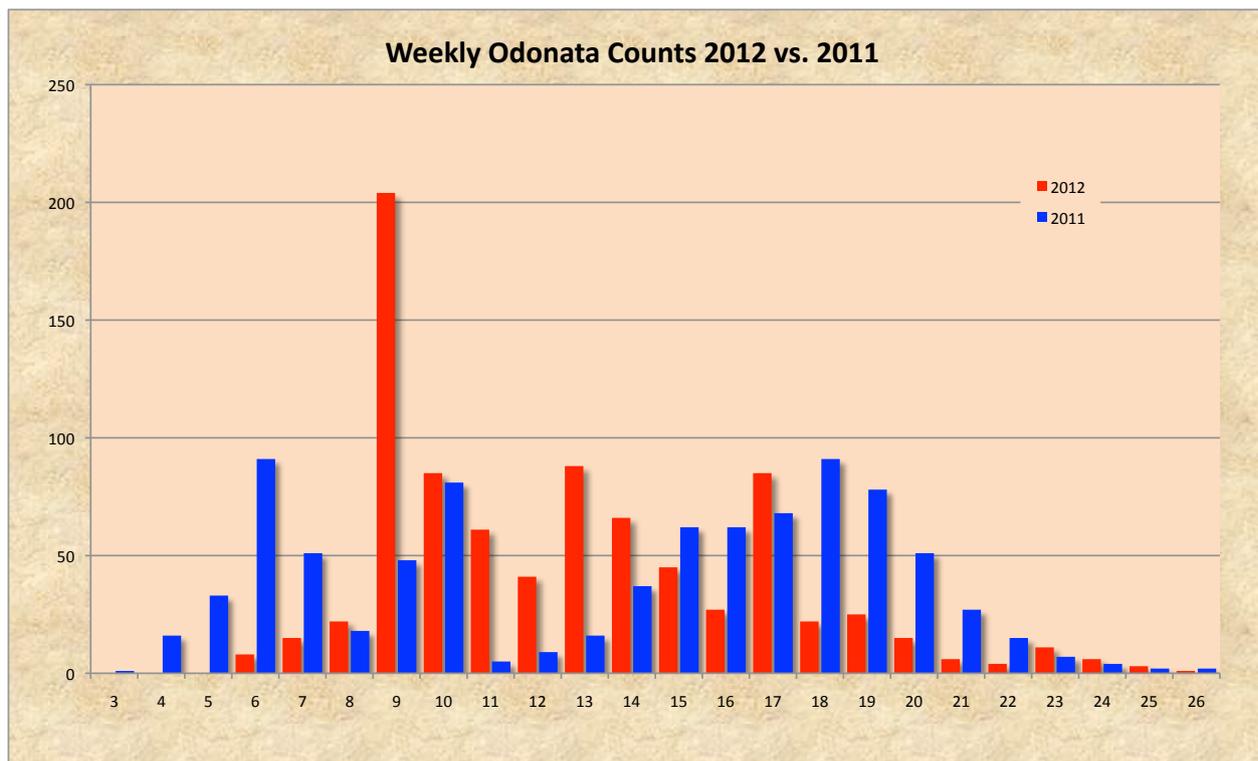
Emergence was 3 weeks later than in 2011.

Damselflies and early emerging dragonflies were most affected by the adverse conditions, apart from the Common Blue-tailed Damselfly which had its best year so far.

The late emerging dragonflies did reasonably well, many showing significant increases, Southern and Brown Hawkers especially.

The number of species were down from 5 to 4 and 10 to 7 in the case of damselflies and dragonflies respectively.

## DAMSELFLIES



The most common damselfly, once again, was the Azure Damselfly – down from 600 to 581, being on the wing for only 16 weeks as opposed to 21 in 2011. They showed a spectacular peak of 130 during week 9.

The Large Red Damselfly, whose numbers were down from 211 in 2011 to 189 this year. Their flight period was also curtailed from 14 weeks to 11.

The Blue-tailed Damselfly put in a brief appearance for a few weeks, disappeared and rallied again later with a better performance which would probably have been better still but for the cold damp conditions. Up from 9 to 22 over 9 weeks as opposed to 6 last year.

Only one of the demoiselles, Banded Demoiselle, put in a single appearance.

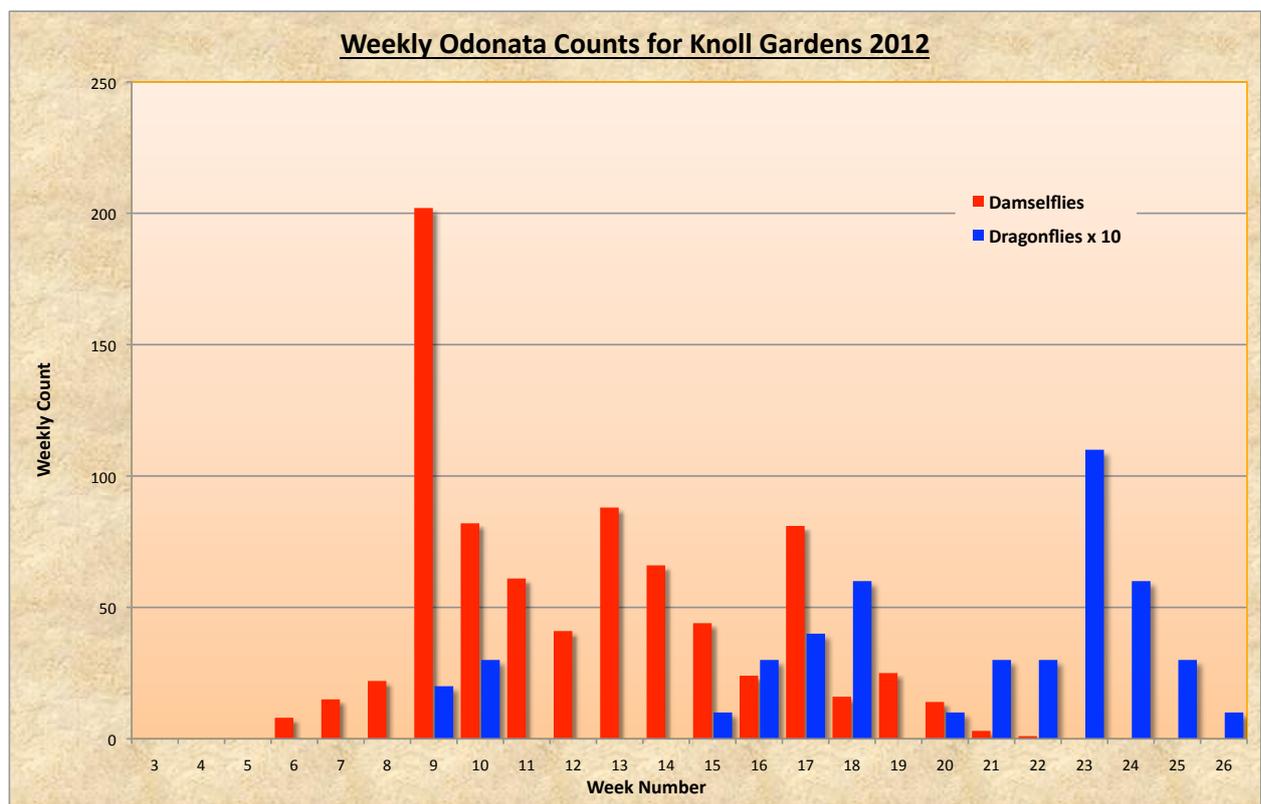
There was still no evidence of Emerald Damselfly.

**TABLE 3.**

**DAMSELFLY PERFORMANCE**

|                       | Species up on 2011 |       |       |       | Species down on 2011 |       |       |       |
|-----------------------|--------------------|-------|-------|-------|----------------------|-------|-------|-------|
|                       | 2012               |       | 2011  |       | 2012                 |       | 2011  |       |
|                       | Count              | Weeks | Count | Weeks | Count                | Weeks | Count | Weeks |
| Banded Demoiselle     | No Change          |       |       |       |                      |       |       |       |
| Beautiful Demoiselle  |                    |       |       |       | 0                    | 0     | 1     | 1     |
| Azure Damselfly       |                    |       |       |       | 581                  | 16    | 600   | 21    |
| Blue-tailed Damselfly | 22                 | 9     | 9     | 6     |                      |       |       |       |
| Large Red Damselfly   |                    |       |       |       | 189                  | 11    | 211   | 14    |

**DRAGONFLIES**



The dragonflies also emerged 3 weeks later than in 2011. The early emerging species suffered from the cold spring but the summer fliers improved upon last year's performance.

There was a peak of 11 individuals seen on week 23.

No new species were discovered during 2011 and surprisingly, the common Four-spotted Chaser was not seen at all.

**Table 4.**

**DRAGONFLY PERFORMANCE**

|                         | Species up on 2011 |       |       |       | Species down on 2011 |       |       |       |
|-------------------------|--------------------|-------|-------|-------|----------------------|-------|-------|-------|
|                         | 2012               |       | 2011  |       | 2012                 |       | 2011  |       |
|                         | Count              | Weeks | Count | Weeks | Count                | Weeks | Count | Weeks |
| Southern Hawker         | 17                 | 9     | 9     | 8     |                      |       |       |       |
| Brown Hawker            | 6                  | 5     | 3     | 2     |                      |       |       |       |
| Migrant Hawker          | No Change          |       |       |       |                      |       |       |       |
| Emperor Dragonfly       | 3                  | 3     | 1     | 1     |                      |       |       |       |
| Golden-ringed Dragonfly |                    |       |       |       | 0                    | 0     | 2     | 2     |
| Broad-bodied Chaser     |                    |       |       |       | 4                    | 4     | 6     | 2     |
| Scarce Chaser           | 3                  | 2     | 2     | 2     |                      |       |       |       |
| Four-spotted Chaser     |                    |       |       |       | 0                    | 0     | 1     | 1     |
| Ruddy Darter            | 4                  | 2     | 0     | 0     |                      |       |       |       |
| Common Darter           |                    |       |       |       | 12                   | 7     | 25    | 10    |

The late emergence of the Hawkers allowed them to benefit from the warmer weather towards the end of summer/early autumn. Southern Hawkers especially, reaching an all time high with many exuvia (larval cases) being found attached to the stems of emergent vegetation.

Brown Hawkers too were plentiful, being seen on many occasions throughout the gardens.

It was interesting to see Scarce Chaser in the garden near the Dragon pond for the second year running.

It was good to see the return of Ruddy Darters. Their absence last year may well have been due to their life-cycle taking 2 years rather than weather conditions.

The usually plentiful Common Darter was down in numbers by 50% for the second year running.

The Four-spotted Chaser, a very common, early emerging Dragonfly, was expected to be affected by the cold weather but it was surprising that it was not seen at all.

Other species that did not put in an appearance were:

Hairy Dragonfly - a scarce, early emerging hawkler, obviously affected by weather conditions.

Downy Emerald - another uncommon, early flier.

Emperor Dragonfly - although an early emergent, they can appear through out the year. It is possible that their breeding cycle may affect annual numbers.

Golden-ringed Dragonfly - a riverine species which may well not have ventured far enough from any nearby streams to have reached the gardens.



**Banded Demoiselle** - the only demoiselle species to appear in the gardens in 2012.



**Large Red Damselfly** - The first damselfly to emerge each year. Their numbers were down because of the terrible spring weather. (Photograph courtesy Mike Lockyear.)



**Southern Hawker** - An exuvia (empty larval case) left behind by one of the many Southern Hawkers to emerge from the Upper Waterfalls Pond this year.



**Ruddy Darter** - A welcome return by this uncommon species, with several being seen around the Dragon Pond area.

# DATA SHEETS

Annex (i)

Butterfly Spreadsheet

Annex (i)a

Butterfly Running Averages

Annex (ii)

Dragonfly Spreadsheet

Annex (iii)

Weekly Record Sheets

Week Nos.

1

3

6

8 - 10

12 - 13

16 - 19

21 - 26