

THE BUTTERFLIES & DRAGONFLIES
OF
KNOLL GARDENS
2011

INTRODUCTION

The first full year of monitoring the butterflies and dragonflies at Knoll Gardens was completed in 2010. This report covers the next season's monitoring carried out in 2011. The route established in the previous year was followed in 2011 to enable more reliable comparisons to be made. The format for the Record Sheets and Tables remain very similar for the same reason.

Local members of the British Dragonfly Society recently formed a Dorset Branch and their computer expert produced a database into which nationwide odonata records could be entered. The system is based on a Google Earth format and the locations of sightings can be accurately assigned using Ordnance Survey references. The figures from this year's monitoring of Knoll Gardens have therefore been added into this scheme. The results of the 2010 survey have been also added retrospectively. The results can be reviewed and compared on the website: www.livingrecord.net.

The system has recently been adapted to accept butterfly and other fauna records and therefore the Knoll Gardens' butterfly figures have also been added for both years.

TABLE & 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:

Orange / Green= Seen for the 1st time in 2011

Mid-orange / green = Seen in previous years and 2011

Pale orange / green = Seen in previous years but not 2011

Tables 2. 3. & 4 Compare the performances of the species, listing those that have shown an improvement upon 2010 and those that have fared less well for butterflies, damselflies and dragonflies respectively.

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 - 20). 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 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.

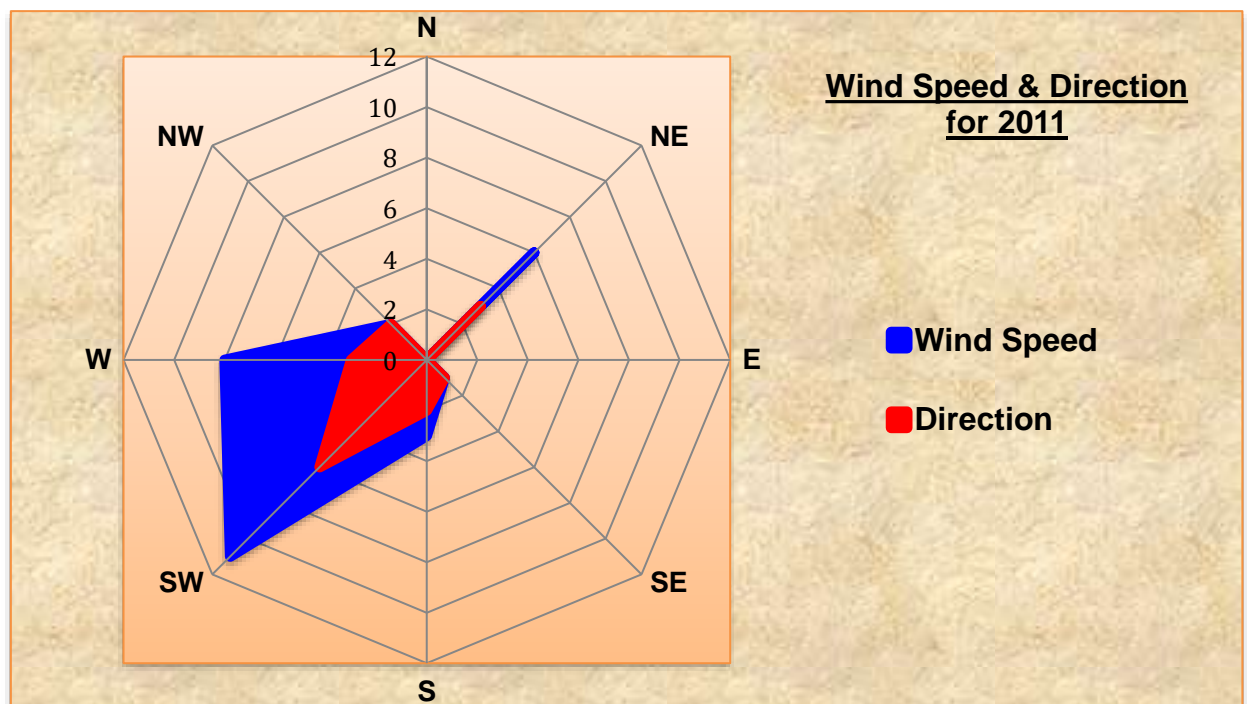
TABLE 1.

BUTTERFLIES			DRAGONFLIES		
		CODE			CODE
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 Dragonfly	<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 tihonus</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 camcellatum</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>Mariola 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			
Peacock	<i>Inachis io</i>	PK	DAMSELFLIES		
Purple Hairstreak	<i>Quercusia quercus</i>	PH	Banded Demoiselle	<i>Calopteryx splendens</i>	C.spl
Red Admiral	<i>Vanessa atalanta</i>	RA	Beautiful Demoiselle	<i>Calopteryx virgo</i>	C.vir
Ringlet	<i>Aphantopus hyperantus</i>	RT	Azure Damselfly	<i>Coenagrion puella</i>	C.pue
Silver-washed Fritillary	<i>Argynnis paphia</i>	SF	Common Blue Damselfly	<i>Enallagma cyathigerum</i>	E.cya
Small Copper	<i>Lycaena phlaeas</i>	SC	Common Bluetail	<i>Ischnura elegans</i>	I.ele
Small Heath	<i>Coenonympha pamphilus</i>	SH	Emerald Damselfly	<i>Lestes sponsa</i>	L.spo
Small Skipper	<i>Thymelicus sylvestris</i>	SS	Large Red Damselfly	<i>Pyrrhosoma nymphula</i>	P.nym

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	

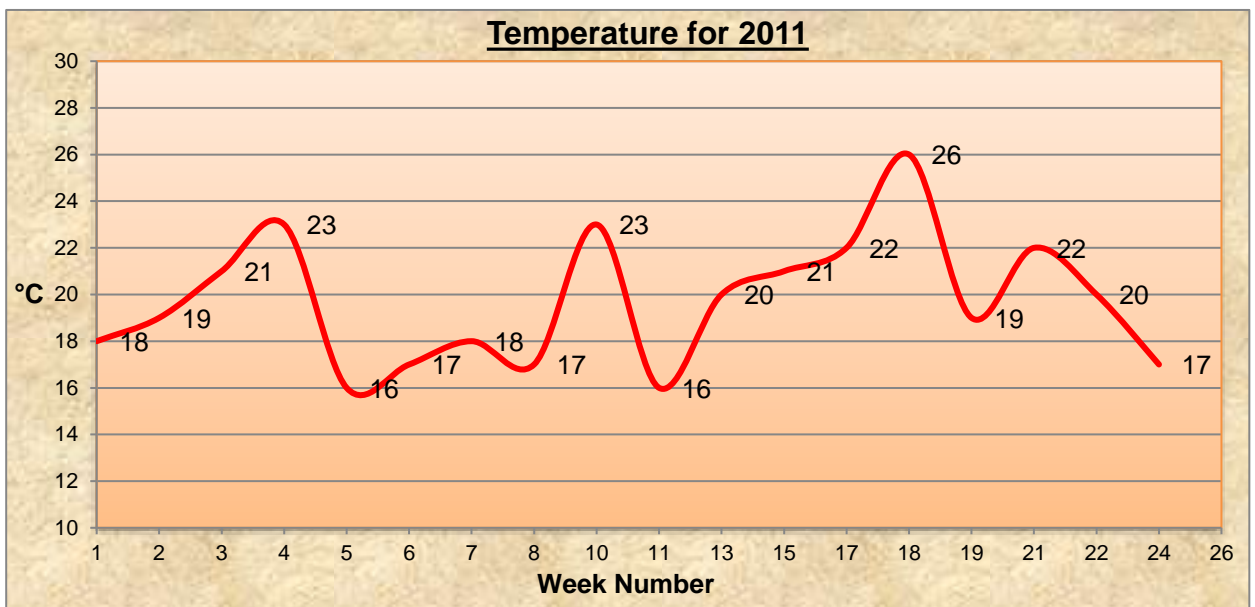
- | | | |
|--|--|---------------------------------------------------------------------|
| | | = Butterfly/Dragonfly species seen for 1 st time in 2011 |
| | | = Butterfly/Dragonfly species seen previously and in 2011. |
| | | = Butterfly/Dragonfly species seen previously but not in 2011. |

WEATHER CONDITIONS

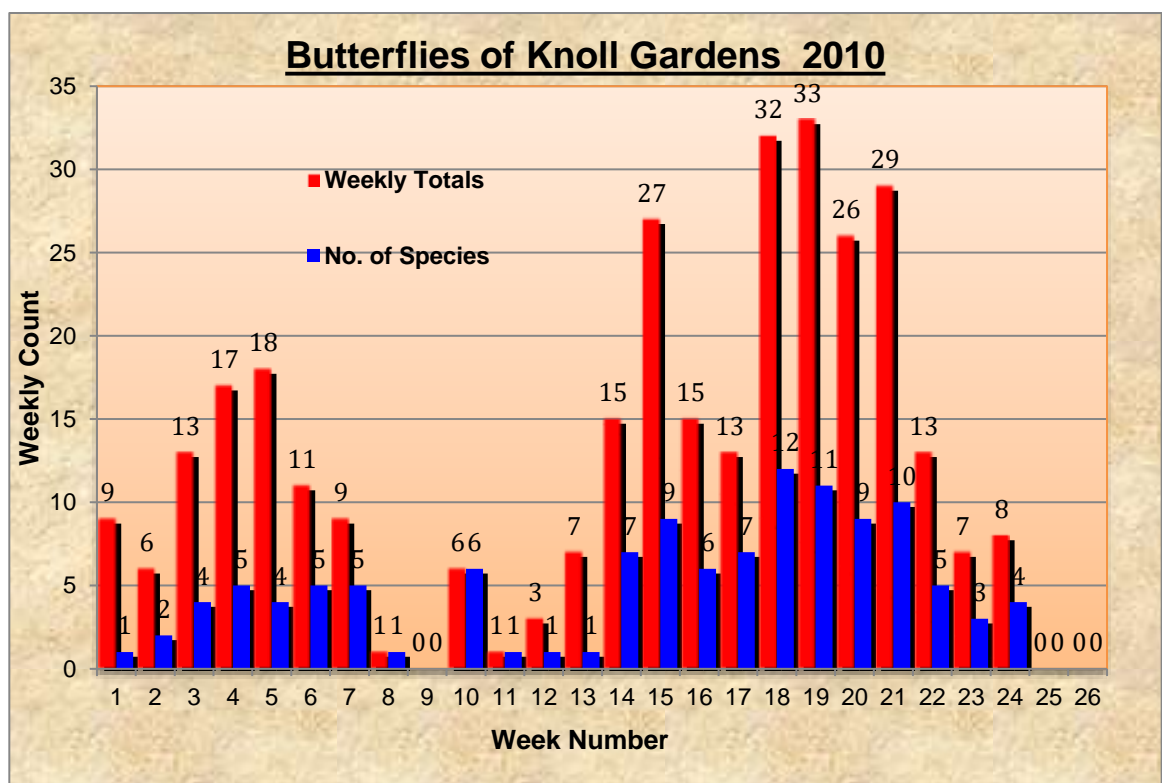


The wind chart shows that there were very few occasions when the wind came from the southeast. When they did, they were too late to bring any migrants from the continent to our shores.

The spring weather at the commencement of the count season was good and allowed monitoring to start on the first week. The warm spell continued for several weeks, becoming warmer as time went on. These conditions enticed the odonata to emerge four weeks earlier than in the previous year. The weeks of unbroken sunshine favoured the early flying butterflies and damselflies. Some summer dragonflies even emerged a few weeks early. This unusually warm spring was followed by the coldest summer since 1988. These contrasting conditions kept the summer butterfly brood numbers low, with some species not appearing at all. The temperature throughout the summer was not always low, which did allow for counts to be carried out but several weeks were missed because of adverse conditions.



BUTTERFLIES



A total of 319 individuals of 20 species of butterfly were counted during the 2011 season. These figures reflect the poor summer compared to last year, when 500 were counted of 21 species. Seven counts were missed this year compared to the 6 in 2010, mostly due to poor weather.

The highest count was 33 during week 19 and the greatest number of species occurred in week 18 with just 12. Last year, the count reached a peak of 64 in week 17 with the greatest number of species appearing the following week with a total of 16. This shows that the

maxima occurred much earlier in 2011 as the weather deteriorated preventing higher figures from being attained.

The highest spring count occurred on week 5 with 18 individuals being recorded. In 2010 the spring peak was reached two weeks later, with a count of 17.

The best performer, with a count of 70, was the Green-veined White with a surprising second brood figure of 48. Next came Red Admiral and Speckled Wood with 46 & 42 respectively.

Two new species were observed:

Green Hairstreak as a pair in a mating flight above the Dragon Pond and Small Heath, also in the Dragon Pond area. The latter emerging early, no doubt encouraged by the warm spring weather.

Three species were not seen this year that appeared in 2010 – Brown Argus, Small Copper and Grayling.

As throughout last year the prevailing winds were not conducive to bringing migrants here, so once again Clouded Yellow and Painted Lady, species that are unable to withstand even the mildest of our winters, were absent.

TABLE 2.

Butterfly Performance

SPECIES UP ON 2010	2011		2010		SPECIES DOWN ON 2010	2011		2010	
	1 st Brood	2 nd Brood	1 st Brood	2 nd Brood		1 st Brood	2 nd Brood	1 st Brood	2 nd Brood
Brimstone	23		16		Brimstone		6		15
Green-veined White	25	48	39	23	Large White	28		53	
Orange Tip	8		6		Small White	2		22	
Holly Blue	11		10		Common Blue	1	0	1	8
Red Admiral	2	44	2	16	Brown Argus	0		6	
Speckled Wood	18	29	7	21	Holly Blue		10		52
Ringlet	4		2		Peacock	0	4	13	13
					Comma	0	10	2	45
					Gatekeeper	24		48	
					Meadow Brown	17		71	

Table 2. lists those species that were up on the 2010 figures and those whose numbers had gone down. The early emerging species fared better than last year. Those that were double brooded, generally had higher spring figures and poorer second broods.

Of course there are always exceptions to the rule, with Green-veined White, Red Admiral, and Speckled Wood being 3 summer species that improved on last year's figures!

Last year's most prolific species, the Meadow Brown, performed very badly with a drop of over 75%. Their numbers were well down at other sites too.

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

Peacocks were down by nearly 85% and Small Whites by over 90%. The latter's numbers are usually enhanced by migrants from the continent. Other migrants making no appearance at all, as last year, were Clouded Yellow and Painted Lady.

Going against the trend of poor summer performances were 2nd brood Green-veined Whites (up by 108%), 2nd brood Red Admirals (up by 175%) and Speckled Wood (157% 1st brood and 38% 2nd brood).

Purple Hairstreaks were late to show, some 3 weeks after last year's appearance date, and down in numbers.

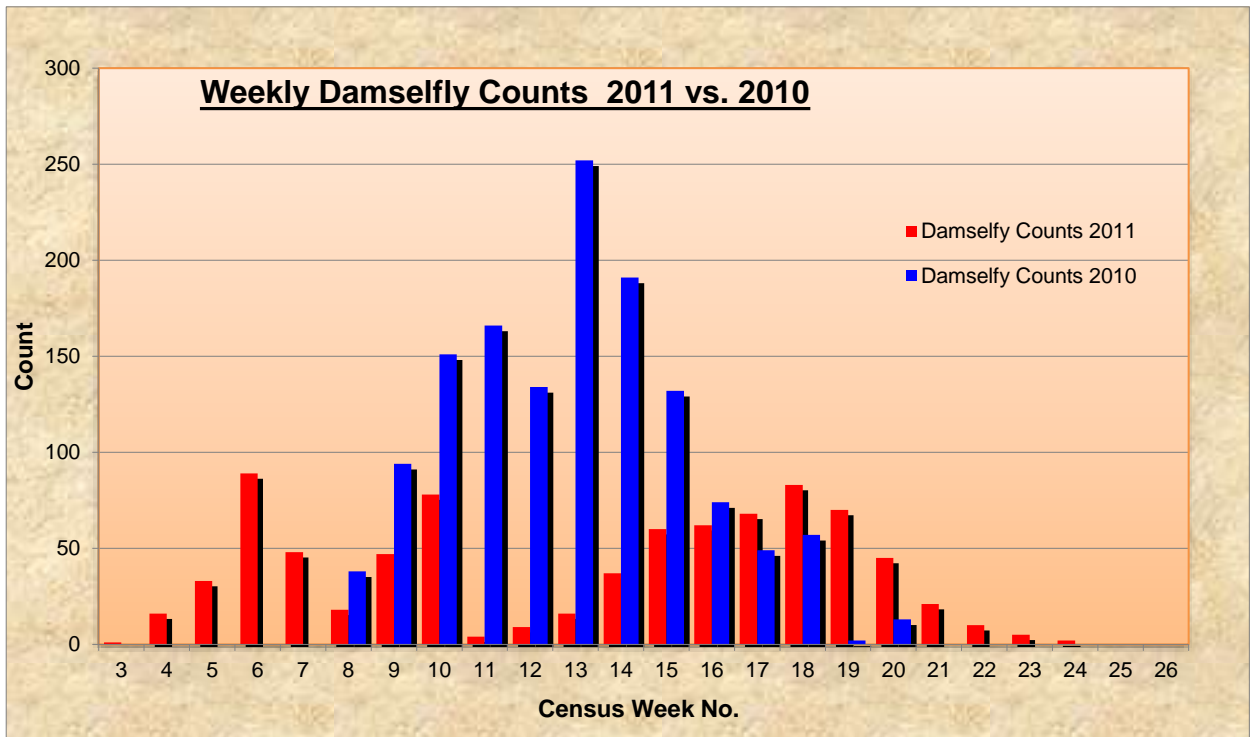
ODONATA

Odonata numbers were down this year by 40% to 870 from last year's count of 1447.

As with the butterflies, some species fared better for the warm spring weather, while other, later emerging species were well down in number or did not appear at all.

The number of species was also down from 16 to 14 despite having recorded 2 new ones for the Gardens.

DAMSELFLIES



All damselfly species seen last year were also recorded during the 2011 season. The most common being the Azure Damselfly – down from 1192 to 600, despite being on the wing for 21 weeks as opposed to 13 in 2010. The warm spring, however, favoured the early emerging Large Red Damselfly, whose numbers were up from 153 in 2010 to 211 this year. Their flight period was also extended from 9 weeks to 14.

Only singles of the Blue-tailed Damselfly had been recorded in the two previous years but 9 were counted in 2011, even though they are summer fliers.

The chart shows that in 2011 the damselflies appeared over a month earlier and continued almost up to the end of the season, nearly a month longer than in the previous year, despite the poor summer weather. This may well be the reason for their weekly numbers being much lower, never reaching above 100.

Both demoiselles only ever put in a single appearance but they are a riverine species and last year’s sighting were probably migrants from any nearby river.

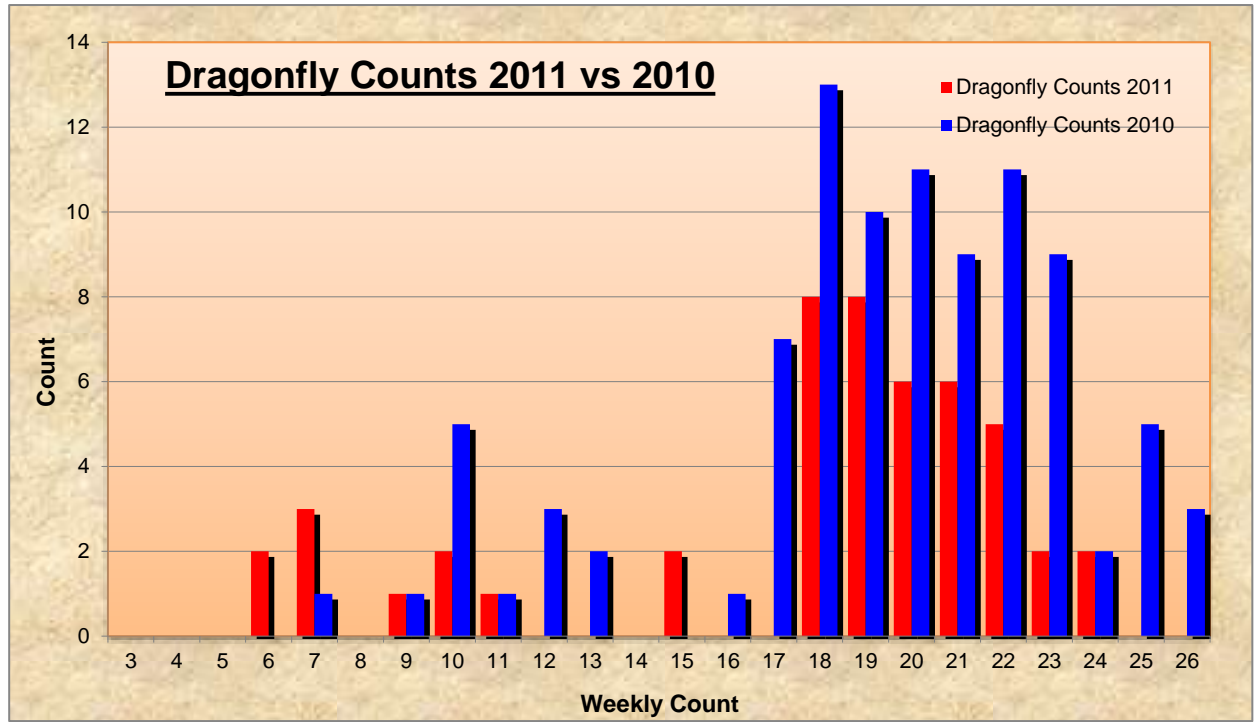
TABLE 3.

Damselfly performance

Species	Up in 2011		2010		Down in 2011		2010	
	Count	Weeks	Count	Weeks	Count	Weeks	Count	Weeks
Banded Demoiselle					1	1	4	4
Beautiful Demoiselle					1	1	3	2
Azure Damselfly					600	21	1192	13

Common Blue-tailed Damselfly	9	6	1	1		
Large Red Damselfly	211	14	153	9		

DRAGONFLIES



As with the damselflies, dragonflies emerged earlier in 2011 albeit only by one week. The early emerging species initially performed better than last year but as the weather deteriorated, so did their performance.

2011 was a good year for Brown Hawkers elsewhere but they did not put in as many appearances as last year.

The usually plentiful Common Darter was down in numbers by 50%.

Golden ringed Dragonflies and the early emerging Broad-bodied Chaser were the only dragonflies to show any improvement upon last year's performance.

Table 4.

Dragonfly Performance

Species	Up in 2011		2010		Down in 2011		2010	
	Count	Weeks	Count	Weeks	Count	Weeks	Count	Weeks
Southern Hawker					7	6	16	9

Brown Hawker				3	2	5	5
Emperor Dragonfly				1	1	3	3
Golden-ringed Dragonfly	2	2	1	1			
Broad-bodied Chaser	6	4	4	4			
Four-spotted Chaser				1	1	6	4
Ruddy Darter				0	0	7	4
Common Darter				23	8	47	10

Two new species were discovered during 2011:

Black-tailed Skimmer – likes to bask on warm, shallow waterside banks.

Scarce Chaser – as its name implies, not a common species but has been expanding its territory in recent years. Likes slow moving water and fond of perching on waterside vegetation.

The females of these species are readily distinguished but the males are very similar and more readily identified by the resting habits.

However, 4 species were not found that occurred last year; Hairy Dragonfly, Downy Emerald and Ruddy Darter – none of which are abundant anywhere, along with Four-spotted Chaser. The last being a surprise as they are a very common, early emerging Dragonfly.

The life-cycle for dragonflies can vary from 1 – 5 years depending upon species and prevailing weather conditions. The nymphs can remain submerged for several years before the conditions are right for them to emerge and metamorphose into adults, that can be on the wing for as little as a few weeks and a few months at the most.

This may well be the reason for the non-appearance of some species this year.

Because of this it is difficult to ascertain the number of resident species within the gardens from just a couple of years monitoring. Those that have been seen egg-laying, just emerging or the identification of exuvia (empty larval cases) can be considered to have colonised the Gardens. Sightings of just the adult on the wing is not considered evidence of breeding as they can migrate quite a distance from their birthplace, some even from the continent on a regular basis, depending upon wind speed and direction. Many exuvia have been observed on the pond vegetation but have not been identified.

So far, the only species that can be confirmed as breeding within Knoll Gardens are:

Azure Damselfly – egg-laying.

Large Red Damselfly – egg-laying.

Southern Hawker – egg-laying and emerging. (see photo)

Common Darter – emerging. (see photo)