

Wider Countryside Butterfly Survey 2011 – year 3 sightings

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Red Admiral
– Tim Melling



A THIRD SUCCESSFUL YEAR!

Welcome to the third Newsletter of the **Wider Countryside Butterfly Survey** (WCBS), describing the 2011 results. It was another year of impressive recording effort. In total, **523 recorders** made **1,467 visits** to **723 squares**, walking almost 3,000 km of survey line and counting 67,570 butterflies of 45 species. Once again coverage stretched the length and breadth of the UK, with 44 new 10 km square records generated for 19 butterfly species. There was a welcome increase in the number of squares sampled from 693 in 2010 to 723 in 2011.

SURVEY BACKGROUND

The WCBS represents the first UK-wide survey of butterfly abundance using a random sampling framework and is important both in assessing the changing status of widespread butterfly species and in providing an indicator of the health of the wider countryside. The WCBS is run as a partnership between Butterfly Conservation (BC), the British Trust for Ornithology (BTO) and the Centre for Ecology & Hydrology (CEH). The scheme was resourced at similar levels to 2009 and 2010 in England, Wales and Northern Ireland, though coverage was substantially boosted in Scotland thanks to additional funding from Scottish Natural Heritage.

PARTICIPATION

As in previous years participants included recorders from the BTO/JNCC/RSPB Breeding Bird Survey (BBS) and BC's volunteer network. National coordination was undertaken by Zoë Randle for BC with support for BBS recorders provided by Kate Risely at BTO HQ.

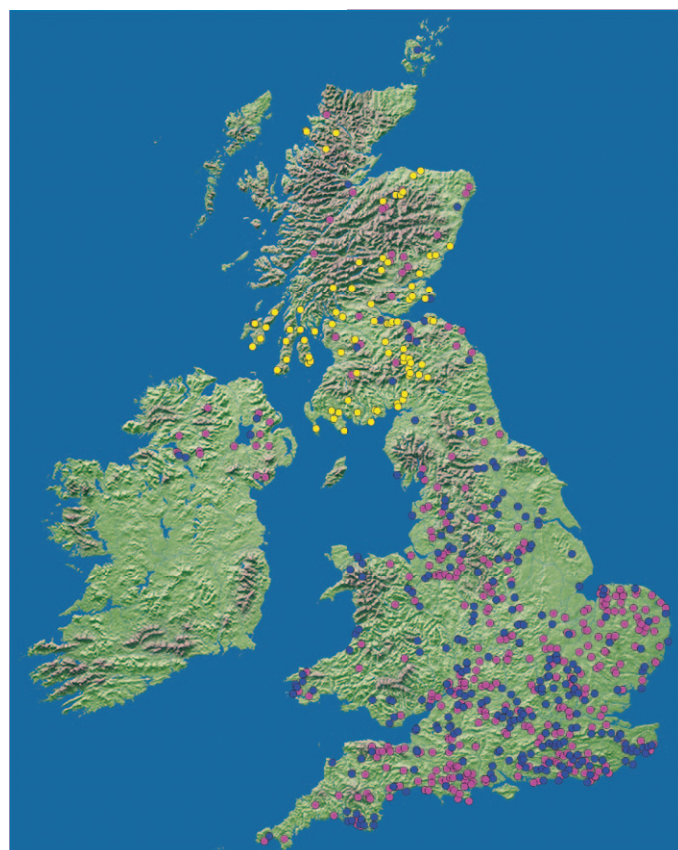
BTO recorders covered 276 squares (38% of the total), BC volunteers covered 362 squares (50%), whilst contractors in Scotland sampled a further 85 squares (12%). BC coverage increased by 2% over the previous year, whereas BTO fell by 16%. Lack of promotion and uncertainty over the future of the scheme contributed to this reduction. The weather may also have been a factor: the Met Office reported that summer 2011 was the coolest since 1993 and that summer rainfall was 18% above the norm, leading to many days that were unsuitable for butterfly activity and recording.

Dorset and Norfolk were jointly top for BC coverage with each Branch covering 32 squares; Sussex came in second with 26 squares and Gloucestershire third covering 22 squares. BTO coverage was highest in

Sussex and Yorkshire (21 squares each).

The biggest loss of BTO squares was in the West Midlands (five fewer squares), with further reductions of a similar magnitude across much of northern Britain. Not surprisingly, the biggest increase in coverage was in Scotland with 73 more squares being surveyed than in 2010. Sussex was also much improved, with eight more squares sampled than in 2010. However, 11 fewer squares were surveyed in Bedfordshire and Northamptonshire and nine fewer in Hampshire and the Isle of Wight.

There were 559 squares (77%) which received the required two visits in July and August. Optional spring surveys provided a further 135 visits, with Orange-tip detected in 32 squares. A further 188 visits were undertaken during the core period. Due to poor weather conditions in late August, a number of recorders missed the deadline, with 26 visits carried out after 31st August. We now have five years of data (including the pilot years of 2007 and 2008) meaning that the time series of repeat samples squares is developing well, with 404 squares sampled in each of



Location of the WCBS squares covered by BC (pink circles), BTO (blue) and contract (yellow) recorders in 2011

TABLE 1: OCCURRENCE AND ABUNDANCE DATA FOR BUTTERFLIES RECORDED DURING REPEAT SUMMER VISITS. DATA FOR 2010 IN BRACKETS.

Species	Occupancy				Abundance					
	No. Squares	2011 % (2010)		2011 Rank (2010)		2011 total counted	2011 % of all counted (2010)		2011 Rank (2010)	
Meadow Brown	454	81.2	(81.3)	1	(1)	9736	18.4	(17.0)	1	(1)
Small White	426	76.2	(80.6)	2	(2)	8113	15.4	(16.2)	2	(2)
Green-veined White	409	73.2	(69.6)	3	(5)	4817	9.1	(9.0)	5	(6)
Large White	408	73.0	(79.6)	4	(3)	4411	8.4	(9.4)	6	(5)
Gatekeeper	386	69.1	(71.9)	5	(4)	6408	12.1	(13.7)	3	(3)
Red Admiral	368	65.8	(46.1)	6	(11)	1488	2.8	(1.2)	9	(11)
Speckled Wood	332	59.4	(63.1)	7	(6)	2736	5.2	(3.7)	7	(8)
Small Tortoiseshell	297	53.1	(56.8)	8	(7)	1884	3.6	(3.0)	8	(9)
Ringlet	275	49.2	(53.7)	9	(9)	5016	9.5	(9.4)	4	(4)
Peacock	266	47.6	(53.6)	10	(10)	1066	2.0	(2.2)	12	(10)
Comma	203	36.3	(45.7)	11	(12)	424	0.8	(1.0)	16	(13)
Common Blue	186	33.3	(56.0)	12	(8)	748	1.4	(5.2)	13	(7)
Small Skipper	140	25.0	(21.6)	13	(15)	1109	2.1	(1.2)	10	(12)
Holly Blue	124	22.2	(28.4)	14	(14)	314	0.6	(0.6)	19	(18)
Small Copper	121	21.6	(33.7)	15	(13)	310	0.6	(0.9)	20	(14)
Small Heath	99	17.7	(15.1)	16	(18)	632	1.2	(0.8)	14	(15)
Large Skipper	96	17.2	(19.2)	17	(16)	325	0.6	(0.7)	18	(17)
Small/Essex Skipper	62	11.1	(12.6)	18	(20)	355	0.7	(0.8)	17	(16)
Essex Skipper	59	10.5	(7.3)	19	(25)	287	0.5	(0.2)	21	(26)
Brimstone	53	9.5	(16.5)	20	(17)	109	0.2	(0.3)	26	(24)
Brown Argus	52	9.3	(13.4)	21	(19)	161	0.3	(0.6)	23	(19)
Marbled White	48	8.6	(11.4)	22	(21)	538	1.0	(0.6)	15	(20)
Wall Brown	41	7.3	(9.0)	23	(23)	158	0.3	(0.4)	24	(23)
Silver-washed Fritillary	40	7.2	(8.0)	24	(24)	142	0.3	(0.5)	25	(21)
Painted Lady	35	6.3	(10.5)	25	(22)	56	0.1	(0.2)	30	(27)
Purple Hairstreak	26	4.7	(3.7)	26	(26)	71	0.1	(0.1)	28	(30)
Scotch Argus	26	4.7	(1.4)	26	(31)	1068	2.0	(0.4)	11	(22)
Dark Green Fritillary	23	4.1	(2.4)	28	(27)	70	0.1	(0.1)	29	(33)
Grayling	13	2.3	(2.0)	29	(29)	164	0.3	(0.2)	22	(25)
Small Pearl-bordered Fritillary	13	2.3	(0.9)	29	(32)	78	0.1	(0.1)	27	(34)
White Admiral	8	1.4	(2.2)	31	(28)	9	0.0	(0.1)	35	(29)
Clouded Yellow	5	0.9	(1.5)	32	(30)	48	0.1	(0.1)	31	(28)
Chalkhill Blue	4	0.7	(0.7)	33	(33)	13	0.0	(0.1)	34	(32)
Green Hairstreak	3	0.5	(0.3)	34	(-)	5	0.0	(-)	36	(-)
Orange-tip	3	0.5	(0.7)	34	(33)	6	0.0	(0.03)	37	(35)
Large Heath	2	0.4	(0.3)	36	(37)	34	0.1	(<0.01)	32	(39)
Lulworth Skipper	2	0.4	(0.2)	36	(38)	29	0.1	(0.02)	33	(36)
Northern Brown Argus	1	0.2	(-)	38	(-)	3	0.0	(-)	38	(-)
Silver-studded Blue	1	0.2	(-)	38	(-)	1	<0.01	(-)	39	(-)
Brown Hairstreak	1	0.2	(0.7)	38	(33)	1	<0.01	(0.01)	40	(37)
White-letter Hairstreak	1	0.2	(0.7)	38	(33)	2	<0.01	0.01	40	(38)
Dingy Skipper	1	0.2	(0.2)	38	(38)	1	<0.01	(<0.01)	40	(42)
Small Blue	1	0.2	(0.2)	38	(38)	1	<0.01	(<0.01)	40	(41)
Pearl-bordered Fritillary	0	-	(-)	-	(-)	-	-	(-)	-	(-)
Purple Emperor	0	-	(-)	-	(-)	-	-	(-)	-	(-)
Adonis Blue	0	-	(0.2)	-	(38)	-	-	0.08	-	(31)
Wood White	0	-	(0.2)	-	(38)	-	-	(<0.01)	-	(39)

the three years of the survey and 78 squares with a five year data run (including pilot surveys). In 2011, 172 new squares were established, 13% by BTO recorders, 38% by BC recorders and 49% by contractors in Scotland.

As in 2010, 82% of recorders surveyed single squares. The most visits to a single square was seven (one more than last year) made by David Warren in Radnorshire, Wales. The busiest survey day was Monday 22nd August when 51 surveys were carried out, whilst the second was Saturday 23rd July with 48 surveys.

Data quality and recording standards were very high again, with less than 0.01% of the records being obvious misidentifications, based on species known flight times and distributions. Efficiency in data collation was at a similar level to last year, with 82% of data being entered online.

BUTTERFLY SIGHTINGS

In 2011, 78% (45) of the UK's regularly occurring butterfly species were recorded, two fewer than in 2010. Species recorded in 2010 but not in 2011 included Grizzled Skipper, Marsh Fritillary, Purple Emperor and Wood White. Two species were recorded for the first time – Swallowtail and Silver-spotted Skipper. As in 2010, 25 species were recorded in the target level of 30 or more squares, with 17 of these species present in more than 100 squares.

In July and August, Meadow Brown was the most abundant species for the third year in a row with 9,736 individuals counted and the most widespread species for the second successive year, being found in over 80% of squares. Once again, a small suite of species accounted for the majority of individuals counted: Meadow Brown, Small White, Green-veined White, Large White and Gatekeeper comprised 63% of all butterflies seen (Table 1). Though hardly vintage, it was an improved year for the Red Admiral, rising five places to become the 6th most frequently encountered butterfly. The butterfly was found in two-thirds of squares compared to less than half in 2010. Given the coverage boost in Scotland, it was no surprise to see Scotch Argus attain an elevated (and likely more representative) UK ranking, rising 11 places to become the eleventh most abundant species. Scotch Argus was twice as abundant as Meadow Brown in squares where both species occurred. It was welcome to note that two of the 'golden skippers' had a better year, with for example, Essex Skipper up six places in rank occupancy and five places in abundance. Two of the biggest losers in 2011 were Small Tortoiseshell and Common Blue, the latter being found in only a third of squares compared to 56% in 2010. Once guaranteed to be seen in almost every garden in the summer a mere decade ago, our survey showed the current scarcity of the Small Tortoiseshell, with on average less than one likely to be seen per kilometre walked in the countryside in 2011.

For a third consecutive year Wall Brown declined in distribution and for the first time was found in less than 10% of squares (7.2% occupancy 2011, versus 11.1% 2009), qualifying it to be about as widespread as Silver-washed Fritillary and less so than Brown Argus.



In 2011, on average recorders saw 47 butterflies of seven species per survey made over July and August; this is a 22% reduction in numbers from 2010 and an alarming 41% from 2009 when recorders saw an average of 80 butterflies of 8 species. These data support anecdotal observations that 2011 was a relatively poor year for common and widespread butterflies.

A word of caution: it should be noted that the differences between years reported in Table 1 reflect a combination of real differences in abundance (whether due to environmental conditions or other causes) as well as differences in observer recording conditions and in the actual squares sampled. They may not always reflect an underlying trend. One of the many benefits of the recently acquired funding for this project (see 'What's happening next') is that new analytical models can be developed that take these factors into account and make the best use of repeated annual sampling on WCBS sites to estimate reliable longer-term trends.

A square on the South Downs in Sussex was the most diverse, with 24 species seen over three visits. In contrast, there were 43 single visits which failed to record butterflies (double last year's tally). Three squares failed to produce butterflies over the two core visits – two in Scotland and one in intensive arable farmland in Northamptonshire.

The most butterflies counted over a two visit summer survey was in Gloucestershire where 831 butterflies were seen, the majority being Ringlets, Meadow Browns and Marbled Whites. The highest species day count was of 300 Ringlets in the same Gloucestershire square on 4th July. The next highest counts were 252 Meadow Browns on 2nd July, again in Gloucestershire; 225 Scotch Argus in Stirling on 15th August and 202 Small Whites in Lincolnshire on 17th August. None of these maximum counts are exactly earth shattering given that they are culled from a large amount of effort all across the UK. They highlight the fact that, away from nature reserves and other special areas, ordinary members of the public are rarely if ever likely to encounter the clouds of butterflies that can be such a wonderful spectacle of the natural world.

MOTH AND DRAGONFLIES

Moth records were generated in 146 squares (83 BC, 54 BTO, 9 contractor), a reduction of 31% compared to 2010. On average five moths per square were seen in 2011 compared to eight in 2010, representing a reduction in mean species richness of 38%. However, there were 40 new 10km records for moths, and altogether 754 day-flying moths of 41 species (three fewer than 2010) were recorded. The migrant Silver-Y was the most widespread species with 63 individuals counted in 40 squares. However, occupancy and abundance of this species declined by 53% and 76% respectively from 2010 levels. The Six-spot Burnet was the most abundant species with 133 individuals counted in 27 squares, though 30% fewer were counted than in 2010. All eight of the other top ten moth species were seen more frequently than in 2010.

Dragonflies and damselflies were recorded in 222 squares (115 BTO, 95 BC, 12 contractor), 11% fewer than in 2010. Only 1,598 individual dragonflies were counted this year compared to 3,239 in 2010, averaging seven individuals per square in 2011 compared to 13 individuals per square in 2010. Twenty five species were recorded, three less than in 2010. The Common Darter was the most widespread and abundant species for the third year running, occurring in 25% of squares where dragonflies were recorded. The abundance of this species was 50% higher than in 2010. It was also a good year for the Migrant Hawker, with abundance up by 165% over 2010.

TABLE 2: TOP TEN MOST WIDESPREAD AND ABUNDANT DAY-FLYING MOTHS AND DRAGONFLIES

Species	Number of squares	Total counted
Silver Y	40	63
Six-spot Burnet	27	133
Yellow Shell	19	34
Common Carpet	16	35
Cinnabar	15	112
Humming-bird Hawk-moth	13	19
Shaded Broad-bar	12	19
Chimney Sweeper	11	92
Silver-ground Carpet	9	23
Narrow-bordered Five-spot Burnet	6	43
Common Darter	56	249
Brown Hawker	52	94
Southern Hawker	41	77
Common Blue Damselfly	38	207
Banded Demoiselle	27	163
Golden-ringed Dragonfly	25	44
Migrant Hawker	22	72
Emperor Dragonfly	21	35
Common Hawker	13	34
Azure Damselfly	10	126

Migrant Hawker Stephen Burch: www.stephenburch.com



WHAT'S HAPPENING NEXT?

The WCBS will run for a fourth year in 2012, and at a welcome higher resource level for training and promotion. Through this we hope to restore the scheme to 2009 coverage levels. It would be an even greater achievement to exceed 800 squares. At Butterfly Conservation, Zoë Randle will continue to coordinate the scheme and is the first point of contact for new recorders and BC volunteers. Kate Risely (BTO BBS National Organiser) will remain the first point of contact for BBS recorders. For further news and results keep an eye on the website www.ukbms.org/wcbs.htm or contact us.

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