

# Wider Countryside Butterfly Survey 2012

Compiled by the WCBS team – Zoë Randle, Tom Brereton (BC), Kate Risely, David Noble (BTO) and David Roy (CEH).

Meadow Brown  
– Henk Bosma



## YEAR FOUR – OUR MOST SUCCESSFUL YET

This is the fourth annual newsletter of the **Wider Countryside Butterfly Survey** (WCBS) presenting the results from the 2012 survey. Despite 2012 being the wettest summer for 100 years, there was a fantastic response by volunteers to the challenge of improving coverage, with more squares sampled than in any other year. Over 3,000km of survey line was walked by **648 recorders** who made **1,548 visits** to **771 squares** counting 64,452 butterflies of 46 species. This is a substantial improvement in volunteer effort, with 114 more squares sampled than in 2011, an increase of 17%. Congratulations and many thanks to everyone who took part in the WCBS and contributed to this achievement. As in previous years, coverage was extensive and for the first time the Isle of Man was surveyed. The WCBS continues to improve our knowledge of butterfly distribution; this year there were 27 new 10km square records generated for 12 butterfly species, including a new Dark Green Fritillary colony found in north Ayrshire.

## SURVEY BACKGROUND

The WCBS runs as a partnership between Butterfly Conservation (BC), the British Trust for Ornithology (BTO) and the Centre for Ecology and Hydrology (CEH). The scheme represents the first UK-wide survey of butterfly abundance using a random sampling framework and is important in both assessing the changing status of widespread butterfly species and in providing an indicator of the health of the wider countryside. In 2012 resources were higher than previous years, enabling us to run successful training workshops in South West Scotland and North Wales and to promote the scheme more widely.

## PARTICIPATION

Once again participants included recorders from the BTO/JNCC/RSPB Breeding Bird Survey (BBS) and BC's volunteer network. National co-ordination was undertaken by Zoë Randle for BC with support for BBS recorders provided by Kate Risely at BTO HQ.

Survey coverage comprised 334 BBS squares (43% of the WCBS total) and a further 437 squares (57%) sampled by BC recorders. Both BBS and BC square coverage increased over the previous year, by 21% and 16% respectively. This is thought to be due to a combination of factors including: increased promotion of the scheme by BTO and BC, running training workshops and the end of fieldwork for the Bird Atlas 2007-11, freeing up some of the field season for BTO recorders to engage in a new activity.

BC coverage was highest in Dorset where 43 squares were sampled, followed by Norfolk (30 squares) and Sussex (29). These three BC Branch areas have ranked within the top three for the past two years. For the second year Sussex had the highest BBS coverage (31 squares) followed by Yorkshire (27 squares) and the West Midlands (20 squares). The biggest improvement in coverage was in the Glasgow & South West Scotland Branch of BC with 23 more squares surveyed by BC volunteers than in 2011. There were also gains of 10 or more squares in Beds & Northants Branch, Dorset, Hampshire and Sussex Branches, whilst coverage doubled in Cambs & Essex.

Coverage was down in several areas including Northern Ireland (by seven squares), Kent (by five squares) and Suffolk (by three squares). As in previous years, the main coverage gap at a country-level was in Scotland. Increased coverage in Scotland for 2013 is one of our priorities; we will be looking to build on our successes in 2012 by further promoting the scheme here and hoping to engage more volunteers.

The time series of repeat sampled squares is developing well, with 350 squares surveyed in each of the four years of the survey and 70 squares with a six-year data run (including the pilot surveys of 2007 and 2008).



Location of WCBS squares covered by BC (pink circles) and BBS (blue) recorders in 2012

TABLE 1: OCCURRENCE AND ABUNDANCE DATA FOR BUTTERFLIES RECORDED DURING REPEAT SUMMER VISITS. DATA FOR 2011 IN BRACKETS.

| Species                         | Occupancy   |               |        |                  |      | Abundance          |                              |         |                  |      |
|---------------------------------|-------------|---------------|--------|------------------|------|--------------------|------------------------------|---------|------------------|------|
|                                 | No. squares | 2012 % (2011) |        | 2012 Rank (2011) |      | 2012 total counted | 2012 % of all counted (2011) |         | 2012 Rank (2011) |      |
| Meadow Brown                    | 533         | 89.1          | (81.2) | 1                | (1)  | 18629              | 35.0                         | (18.4)  | 1                | (1)  |
| Gatekeeper                      | 448         | 74.9          | (69.1) | 2                | (5)  | 6296               | 11.8                         | (12.1)  | 3                | (3)  |
| Small White                     | 424         | 70.9          | (76.2) | 3                | (2)  | 3659               | 6.9                          | (15.4)  | 5                | (2)  |
| Large White                     | 409         | 68.4          | (73.0) | 4                | (4)  | 2900               | 5.4                          | (8.4)   | 6                | (6)  |
| Ringlet                         | 390         | 65.2          | (49.2) | 5                | (9)  | 7572               | 14.2                         | (9.5)   | 2                | (4)  |
| Green-veined White              | 370         | 61.9          | (73.2) | 6                | (3)  | 3789               | 7.1                          | (9.1)   | 4                | (5)  |
| Speckled Wood                   | 312         | 52.2          | (59.4) | 7                | (7)  | 1236               | 2.3                          | (5.2)   | 7                | (7)  |
| Red Admiral                     | 289         | 48.3          | (65.8) | 8                | (6)  | 858                | 1.6                          | (2.8)   | 11               | (9)  |
| Peacock                         | 268         | 44.8          | (47.6) | 9                | (10) | 986                | 1.9                          | (2.0)   | 8                | (12) |
| Small Tortoiseshell             | 244         | 40.8          | (53.1) | 10               | (8)  | 950                | 1.8                          | (3.6)   | 10               | (8)  |
| Comma                           | 190         | 31.8          | (36.3) | 11               | (11) | 385                | 0.7                          | (0.8)   | 16               | (16) |
| Small Skipper                   | 141         | 23.6          | (25.0) | 12               | (13) | 1005               | 1.9                          | (2.1)   | 8                | (10) |
| Large Skipper                   | 139         | 23.2          | (17.2) | 13               | (17) | 524                | 1.0                          | (0.6)   | 15               | (18) |
| Holly Blue                      | 124         | 20.7          | (22.2) | 14               | (14) | 200                | 0.4                          | (0.6)   | 20               | (19) |
| Small/Essex Skipper             | 103         | 17.2          | (11.1) | 15               | (18) | 561                | 1.1                          | (0.7)   | 14               | (17) |
| Small Heath                     | 102         | 17.1          | (17.7) | 16               | (16) | 716                | 1.3                          | (1.2)   | 13               | (14) |
| Common Blue                     | 99          | 16.6          | (33.3) | 17               | (12) | 269                | 0.5                          | (1.4)   | 18               | (13) |
| Small Copper                    | 93          | 15.6          | (21.6) | 18               | (15) | 225                | 0.4                          | (0.6)   | 20               | (20) |
| Marbled White                   | 91          | 15.2          | (8.6)  | 19               | (22) | 837                | 1.6                          | (1.0)   | 11               | (15) |
| Brimstone                       | 70          | 11.7          | (9.5)  | 20               | (20) | 153                | 0.3                          | (0.2)   | 23               | (26) |
| Silver-washed Fritillary        | 44          | 7.4           | (7.2)  | 21               | (24) | 149                | 0.3                          | (0.3)   | 23               | (25) |
| Essex Skipper                   | 43          | 7.2           | (10.5) | 22               | (19) | 187                | 0.4                          | (0.5)   | 20               | (21) |
| Wall Brown                      | 26          | 4.3           | (7.3)  | 23               | (23) | 110                | 0.2                          | (0.3)   | 26               | (24) |
| Painted Lady                    | 18          | 3.0           | (6.3)  | 24               | (25) | 22                 | 0.04                         | (0.1)   | 31               | (30) |
| Dark Green Fritillary           | 17          | 2.8           | (4.1)  | 25               | (28) | 35                 | 0.1                          | (0.1)   | 27               | (29) |
| Grayling                        | 15          | 2.5           | (2.3)  | 26               | (29) | 244                | 0.5                          | (0.3)   | 18               | (22) |
| Scotch Argus                    | 12          | 2.0           | (4.7)  | 27               | (26) | 391                | 0.7                          | (2.0)   | 16               | (11) |
| Brown Argus                     | 12          | 2.0           | (9.3)  | 27               | (21) | 18                 | 0.03                         | (0.3)   | 34               | (23) |
| White Admiral                   | 11          | 1.8           | (1.4)  | 29               | (31) | 19                 | 0.04                         | (0.02)  | 31               | (35) |
| Purple Hairstreak               | 10          | 1.7           | (4.7)  | 30               | (26) | 24                 | 0.05                         | (0.1)   | 20               | (28) |
| Small Pearl-bordered Fritillary | 6           | 1.0           | (2.3)  | 31               | (29) | 19                 | 0.04                         | (0.1)   | 31               | (27) |
| Chalkhill Blue                  | 5           | 0.8           | (0.7)  | 32               | (33) | 156                | 0.3                          | (0.02)  | 23               | (34) |
| Clouded Yellow                  | 5           | 0.8           | (0.9)  | 32               | (32) | 10                 | 0.02                         | (0.1)   | 35               | (31) |
| Purple Emperor                  | 2           | 0.3           | (-)    | 34               | (-)  | 2                  | <0.01                        | (-)     | 37               | (-)  |
| White-letter Hairstreak         | 2           | 0.3           | (0.2)  | 34               | (38) | 2                  | <0.01                        | (<0.01) | 37               | (39) |
| Lulworth Skipper                | 2           | 0.3           | (0.4)  | 34               | (36) | 46                 | 0.1                          | (0.1)   | 27               | (33) |
| Adonis Blue                     | 2           | 0.3           | (-)    | 34               | (-)  | 3                  | 0.01                         | (-)     | 36               | (-)  |
| Green Hairstreak                | 1           | 0.2           | (0.5)  | 38               | (34) | 1                  | <0.01                        | (0.01)  | 37               | (37) |
| Large Heath                     | 1           | 0.2           | (0.4)  | 38               | (36) | 2                  | <0.01                        | (0.1)   | 37               | (32) |
| Northern Brown Argus            | 1           | 0.2           | (0.2)  | 38               | (38) | 2                  | <0.01                        | (0.01)  | 37               | (38) |
| Orange-tip                      | 1           | 0.2           | (0.5)  | 38               | (34) | 2                  | <0.01                        | (0.01)  | 37               | (36) |
| Small Blue                      | 1           | 0.2           | (0.2)  | 38               | (38) | 1                  | <0.01                        | (<0.01) | 37               | (40) |
| Silver-studded Blue             | 1           | 0.2           | (0.2)  | 38               | (38) | 69                 | 0.1                          | (<0.01) | 27               | (40) |
| Silver-spotted Skipper          | 1           | 0.2           | (-)    | 38               | (-)  | 3                  | 0.01                         | (-)     | 36               | (-)  |
| Brown Hairstreak                | 0           | -             | (0.2)  | -                | (38) | -                  | -                            | (<0.01) | -                | (40) |
| Dingy Skipper                   | 0           | -             | (0.2)  | -                | (38) | -                  | -                            | (<0.01) | -                | (40) |
| Pearl-bordered Fritillary*      | 0           | -             | (-)    | -                | (-)  | -                  | -                            | (-)     | -                | (-)  |
| Wood White*                     | 0           | -             | (-)    | -                | (-)  | -                  | -                            | (-)     | -                | (-)  |

\* recorded in other years

An analysis will be carried out in due course to determine whether species trends on WCBS sites mirror those on UKBMS transects.

During the core July to August survey period, 1,233 visits were completed with 598 squares (78%) receiving the required two visits. Additional visits to squares included 121 in the spring (successfully targeted for Orange-tip), 37 in the core period and 31 visits after 31 August.

The majority of recorders (83%) surveyed single squares; this is similar to 2009, 2010 and 2011. Seven squares were recorded by a single surveyor, John Randall in Devon. The busiest survey day was Friday 10 August.

Data quality and recording standards were very high; less than 0.2% of the records being obvious misidentifications based on known distributions and flight times. Data collation efficiency was up by 1% with 83% of data entered online.

## BUTTERFLY SIGHTINGS

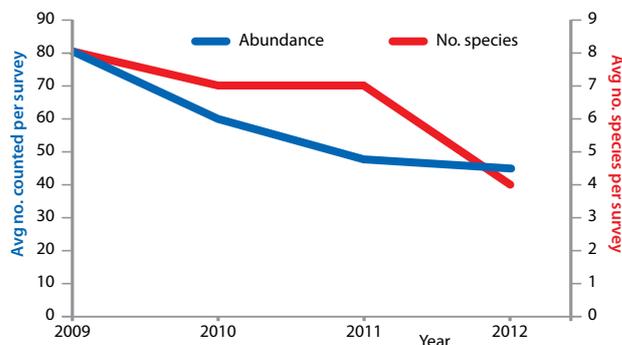
In 2012, 82% of the UK's regularly occurring butterfly species were recorded, with the total of 46 being one more than in 2011. Grizzled Skipper and Marsh Fritillary, which were absent from the WCBS in 2011, were recorded this year, but Swallowtail and Brown Hairstreak eluded recorders. Twenty-two species were recorded in 30 or more squares, enabling a provisional assessment of changes in abundance at a UK scale. In addition, 18 of these species (one more than in 2011) were present in more than 100 squares. Meadow Brown, Gatekeeper, Small White, Ringlet and Green-veined White accounted for over two-thirds of butterflies observed (Table 1).

It was a good year for some (though not all) of the grass-feeding Satyrid (Brown) species. For the fourth year in a row, Meadow Brown was the most abundant species with 18,629 individuals counted, almost twice as many as in 2011! Meadow Browns accounted for over one-third of all butterflies recorded during July and August. This species was also the most widespread butterfly for the third successive year occurring in 89% of squares, compared with 81% in 2010 and 2011. The maximum Meadow Brown count was 508 in a square in Gloucestershire on 27 July. The five highest day counts for individual species in 2012 were all of Meadow Brown, including in Bedfordshire, Dorset and Warwickshire. Substantial annual increases in Meadow Brown numbers within survey squares included from 11 in 2011 to 67 in 2012 in West Yorkshire and from 15 to 67 in Hertfordshire. Ringlet had a good year rising four places in occupancy ranking, being found in almost two-thirds of squares compared to half of squares in 2011.



Marbled White – Martin Warren

## Changes in butterfly diversity on WCBS squares 2009–2012



Ringlet abundance also increased by 49% making it the second most abundant butterfly in 2012 – a ranking five places higher than 2009. Gatekeeper was more widespread than in 2011, although abundance was down slightly. Marbled White also fared well rising four places in abundance, three places in occupancy and being present in twice the number of squares as 2011.

For the majority of other species it was a poor year – the worst in the four-year series. There has been a year-on-year decline in mean butterfly abundance in each year of the WCBS, with diversity approximately half that encountered in 2009 (see chart). On average, recorders counted 44 butterflies of four species per survey made over July and August in 2012, compared with 80 butterflies and eight species in 2009.

The two 'Cabbage Whites', Small White and Large White, were less widespread and abundant than in the three previous years of the survey. It was another dismal year for the Small Tortoiseshell, with less than half the number counted than in 2011. The butterfly was found in a third fewer squares than 2009 and for the first time was present in less than half of squares sampled. Wall Brown is another species which has been found in progressively fewer squares in each year of the survey, with another worrying drop noted in 2012 (found in 4% of squares compared with 11% in 2009). Two further species, Peacock and Speckled Wood have become scarcer in each year of the WCBS, with Peacock found in 44% of squares in 2012 compared with 68% in 2009. It was a terrible year for Common Blue, being found in 50% fewer squares than in 2011. Following a good year in 2011, Red Admiral was much less widely seen (50% of squares in 2012 compared with 66% in 2011).

In total there were 38 single visits to 31 squares in which no butterflies were seen, representing slightly fewer nil returns than 2011. However, no butterflies were seen for either of the core visits in six squares, this is double last year's figure. Two of the squares were upland (Aberdeenshire and North Wales), three were in urban areas (Dudley, Central London and South London) and one was in intensive arable farmland in Northamptonshire – the same square received a nil return in 2011. Butterflies were seen in this square in 2009 and 2010. The recorders of this square are to be congratulated on their persistence and we can only hope that a change in land management here improves the prospects for both butterflies and the recorder! It was not all doom and gloom: the most diverse WCBS square was in Wangford Warren, Suffolk, where 24 butterfly species were seen (including Grayling). This square also had the highest butterfly count over two summer visits, with 798 butterflies counted, mainly comprising Meadow Browns.

## MOTHS AND DRAGONFLIES

Six-spot Burnet – Zoë Randle

Moths were counted in 222 squares (123 BC, 99 BBS squares) an increase of 52% compared over 2011 with the increase chiefly attributable to greater recording effort. In total, 947 individuals of 39 species; (two fewer than last year) were counted, generating 13 new 10km square records. On average, recorders saw four moths per square, one fewer than last year and half as many as in 2010. For the fourth consecutive year, Silver Y was the most widespread species, being recorded in over half (121) of squares. The Silver Y was also the most abundant moth, with a total of 280 individuals were counted. This figure is hardly impressive but is four times as many as in 2011, highlighting how thin on the ground migrant moths have been in recent years. The second most widespread moth for the fourth year in a row was the Six-spot Burnet with 247 individuals counted from 45 squares, with this species being almost twice as widespread and abundant as in 2011. Shaded Broad-bar had a good year, being present in twice as many squares, and was almost two-thirds more abundant than the previous year.

Twenty-eight species of dragonfly were recorded, three more than in 2011, with 3,166 individuals counted from 259 squares (BC 122, BBS 137 squares). Twelve dragonflies were seen per square on average, five more than in 2011 and only one less than in 2010. The most abundant species was the Common Blue Damselfly (890 counted), whilst the second most abundant species was the Common Darter (534 counted). It was a good year for the latter species, with twice as many counted as in 2011 and presence in twice as many squares. The second most widespread species was the Brown Hawker which was counted in 71 squares (27%).

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

| Species                       | Number of squares | Total counted |
|-------------------------------|-------------------|---------------|
| Silver Y                      | 121               | 280           |
| Six-spot Burnet               | 45                | 247           |
| Cinnabar, The                 | 26                | 82            |
| Shaded Broad-bar              | 24                | 60            |
| Common Carpet                 | 22                | 34            |
| Yellow Shell                  | 20                | 23            |
| Silver-ground Carpet          | 8                 | 18            |
| Narrow-bordered 5-spot Burnet | 6                 | 19            |
| Chimney Sweeper               | 5                 | 37            |
| Garden Carpet                 | 5                 | 11            |
| Common Darter                 | 101               | 534           |
| Brown Hawker                  | 71                | 262           |
| Common Blue Damselfly         | 67                | 890           |
| Southern Hawker               | 67                | 130           |
| Emperor Dragonfly             | 36                | 63            |
| Migrant Hawker                | 32                | 76            |
| Golden-ringed Dragonfly       | 29                | 65            |
| Banded Demoiselle             | 27                | 462           |
| Beautiful Demoiselle          | 23                | 67            |
| Blue-tailed Damselfly         | 22                | 129           |



### WHAT'S HAPPENING NEXT?

In 2013 the WCBS will run for a fifth year at a resource level similar to 2012. This will enable us to promote the scheme more widely and provide training for new volunteers. Our aim is to exceed 800 squares, if the weather is on our side this should be achievable. The first point of contact for new recorders and BC volunteers will continue to be Zoë Randle. New and existing BTO volunteers will again be co-ordinated by Kate Risely (BTO BBS National Organiser). To keep up to date with the project visit the website [www.ukbms.org/wcbs.htm](http://www.ukbms.org/wcbs.htm) or contact us.

**Zoë Randle, WCBC Co-ordinator**  
 Butterfly Conservation, Manor Yard,  
 East Lulworth, Wareham, Dorset BH20 5QP  
 01929 406006  
[survey@butterfly-conservation.org](mailto:survey@butterfly-conservation.org)  
[www.butterfly-conservation.org](http://www.butterfly-conservation.org)

**Kate Risely (BBS National Organiser at BTO)**  
 BTO, The Nunnery, Thetford, Norfolk, IP24 2PU  
 01842 750050  
[bbs@bto.org](mailto:bbs@bto.org)  
[www.bto.org](http://www.bto.org)

### ACKNOWLEDGEMENTS

BC, BTO and CEH would like to thank the following people for their help and support. Anna Robinson and Deborah Procter (JNCC), Ian Middlebrook and Martin Warren (BC), Jim Bacon and Marc Botham (CEH), Rob Still (WildGuides). The WCBS was part funded by the Joint Nature Conservation Committee, Countryside Council for Wales, Scottish Natural Heritage, Natural England, Forestry Commission and Defra. The WCBS is indebted to all volunteers and local co-ordinators who contribute data to the scheme – without your help the project would simply not have happened.

