

## COMMON BIRD POPULATION CHANGES — 1994 TO 2002

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*Mike Raven and David Noble review the findings of the 2002 Breeding Bird Survey and look back at population changes since its beginning in 1994.*

### CAMBIOS POBLACIONALES EN LAS AVES COMUNES – 1994 A 2002

Mike Raven y David Noble evalúan los hallazgos del Conteo de Aves Reproductoras (Breeding Bird Survey) de 2002 y examinan los cambios poblacionales desde su inicio en 1994.

The BTO/JNCC/RSPB Breeding Bird Survey (BBS) is now the main survey aimed at keeping track of changes in the breeding populations of widespread terrestrial bird species across the UK. The BBS involves over 1,700 amateur birdwatchers who survey more than 2,000 sites every year, enabling us to monitor the population changes of more than 100 species. Knowledge of the status of bird populations is fundamental to their conservation and BBS results are already being used by governments and non-governmental organisations to set conservation priorities.

Randomly selected 1-km squares are allocated to participants within each BBS Region by volunteer Regional Organisers (ROs), and recording forms are forwarded through these ROs to BTO headquarters for analysis. The BBS is a line-transect survey, with each observer visiting their square on two occasions between April and June to count all the birds they see and hear along two 1-km routes. Differences in sampling intensity among regions of the UK are accounted for in the generation of population trends. Although many parts of the country have

reached a near optimum level of coverage, other areas are still in need of participants. We are particularly keen to increase the number of squares surveyed in Northern Ireland, Scotland, North East England and the Midlands. Increasing the coverage in these areas would directly result in the BBS being able to monitor the population changes of a greater number of bird species.

### SURVEY COVERAGE

This carefully designed, yet simple survey attracts many participants and in the spring of 2002, BBS observers collected information on bird numbers from 2,136 1-km squares throughout the UK. Of this total, the majority were located in England (1,577 squares), with fewer in Scotland (231), Wales (221), Northern Ireland (97), Channel Islands (7) and the Isle of Man (3). This considerable effort on the part of organisers and observers means that we are able to report on changes in bird populations for England, Northern Ireland, Scotland and Wales and in the nine English government office regions as well as for the UK overall.

## SPECIES AND HABITAT COVERAGE

A total of 213 species was recorded in 2002 and of these, 105 species were noted in at least 40 squares, enabling UK population trends to be generated. No official UK rarities were reported, although the survey's first Hoopoe was seen on a square in Hampshire. Lucky observers managed to record a number of rare breeding species on their squares, such as Black-necked Grebe, White-tailed Eagle, Corncrake and Chough, whilst others noted late winter visitors and migrants, including Great Northern Diver, Green Sandpiper and Brambling.

In total, the habitat details from more than 20,000 200 m transect sections were completed in 2002. Recent work at BTO has shown that habitat data collected by BBS volunteers can be a useful predictor of bird abundance, and the habitat information collected every year can therefore be related to changes in bird populations over time.

## POPULATION TRENDS

Table 1 shows the population changes between the last two full seasons (2000 and 2002) and for the survey period to date (1994 to 2002). Data for 2001 have not been included in the analysis because of sampling bias caused by the access restrictions imposed by the outbreak of Foot and Mouth Disease. However, these data will be valuable in assessing population changes at particular sites and in associated research. Trends are estimated using a log-linear regression model that corrects for differences in coverage among regions. With another year's worth of data added to the BBS dataset, more meaningful medium-term population trends are starting to emerge. Across the UK, 52 species increased and 29 species declined significantly between 1994 and 2002. The following are some of the more interesting ups and downs.

### MIXED FORTUNES FOR OUR WOODLAND BIRDS

#### WILLOW TIT

The largest decline for any species monitored by the BBS in the UK is that of the Willow Tit, whose numbers fell by 72% between 1994 and 2002. For a species that was not even described as a member of the British avifauna until 1900,

this decline is of particular concern. The Willow Tit population, declining since the mid-1970s, was estimated to be in the region of 25,000 territories in the *The New Atlas of Breeding Birds* 1988–91. Compare this to the 3.3 million Blue Tit territories estimated for the same period. Willow Tits excavate their own nest holes in dead and well-rotted tree stumps, and thus rarely use nest boxes. They particularly favour wet woodland habitat, where there is an ample supply of suitable nest sites.

Several possible causes for this decline have been suggested, including the over-grazing of woodlands by deer and competition from other tit species. This recently red-listed species is one of several being studied in a new woodland birds project in which the RSPB and BTO are taking a lead.

#### SPOTTED FLYCATCHER

Another red-listed and predominantly woodland species, the Spotted Flycatcher also continues to decline, with numbers falling by 42% since 1994. Spotted Flycatchers had declined rapidly and consistently since the 1960s on both woodland and farmland Common Birds Census (CBC) plots, a downward trend that has also been revealed by the Constant Effort Sites (CES) ringing and which appears to be occurring across the country. Decreases in the annual survival rates of birds in their first year of life are most likely to have driven the decline (*BTO News* 229: 2–4). Decreasing survival rates may have been caused by woodland habitat degradation or by deteriorating conditions on the wintering grounds south of the Sahara, or along migration routes. Spotted Flycatchers carry very little in the way of fat reserves whilst migrating and therefore, rely heavily on food intake at stopover points along the migration route.

#### WOOD WARBLER

The latest BBS results also highlight the continuing decline of the Wood Warbler, an oakwood specialist whose numbers have fallen by 58% between 1994 and 2002. This downward trend has resulted in this species being amber-listed in *Population Status of Birds in the UK*. Wood Warblers favour closed-canopy woodland with little or no understorey and are found mainly in the upland oakwoods of Devon, Wales and parts of central-western Scotland, with smaller populations in the Welsh

TABLE 1. Population changes of common and widespread species 2000-2002 and 1994-2002.

Species	Sample	Change 00-02	Change 94-02	lcl	ucl
Little Grebe	47	18.6	47.4 *	5	106
Great Crested Grebe	55	-5.4	23.0	-7	63
<i>Cormorant</i>	147	27.1	49.8 *	26	78
Grey Heron	477	10.0	31.5 *	18	46
<i>Mute Swan</i>	170	3.4	21.8 *	3	44
<i>Greylag Goose</i>	86	43.2	131.5 *	78	201
Canada Goose	300	31.5	92.1 *	68	120
<i>Shelduck</i>	114	24.5	-33.5 *	-45	-20
Mallard	926	13.0	38.7 *	30	48
Tufted Duck	122	-25.3	36.0 *	11	67
Sparrowhawk	264	-10.3	-13.2	-26	2
Buzzard	475	7.1	51.4 *	36	68
<i>Kestrel</i>	505	-1.4	-29.9 *	-37	-22
<i>Red Grouse</i>	101	-12.5	4.9	-15	29
Red-legged Partridge	372	-3.2	20.9 *	8	36
<b>Grey Partridge</b>	216	5.1	-18.2 *	-31	-3
Pheasant	1236	4.5	15.9 *	10	22
Moorhen	503	2.5	22.4 *	11	35
Coot	191	-3.8	50.6 *	29	75
<i>Oystercatcher</i>	231	-11.8	-17.7 *	-26	-9
Golden Plover	75	-14.9	-26.4 *	-42	-7
<i>Lapwing</i>	533	-5.8	-17.6 *	-24	-11
<i>Snipe</i>	117	14.3	51.9 *	26	84
<i>Curlew</i>	429	-9.1	-19.8 *	-26	-13
<i>Redshank</i>	68	-30.6	-24.7 *	-40	-5
Common Sandpiper	61	-26.5	-25.1 *	-42	v3
<i>Black-headed Gull</i>	428	-17.3	-33.2 *	-40	-25
<i>Common Gull</i>	122	-30.7 *	-20.7 *	-34	-5
<i>Lesser Black-backed Gull</i>	424	-38.4 *	-15.5 *	-26	-4
<i>Herring Gull</i>	460	13.9	22.6 *	10	37
Great Black-backed Gull	84	-9.3	-1.8	-21	22
Common Tern	45	60.0	-3.7	-30	32
Feral Pigeon	534	-7.8	-6.3	-15	3
<i>Stock Dove</i>	585	6.5	14.9 *	4	27
Wood Pigeon	1826	1.0	5.0 *	1	9
Collared Dove	988	5.0	25.8 *	19	33
<b>Turtle Dove</b>	187	-22.7	-42.1 *	-52	-30
<i>Cuckoo</i>	727	-8.5	-25.3 *	-32	-18
Little Owl	89	12.5	26.0	-3	64
Tawny Owl	77	-27.8	-35.5 *	-52	-13
Swift	847	-12.5	-30.4 *	-36	-24
<i>Kingfisher</i>	41	85.3	76.1 *	21	157
<i>Green Woodpecker</i>	549	-5.6	18.1 *	7	30
Gr Sp Woodpecker	594	11.7	71.5 *	55	89
<b>Skylark</b>	1375	-6.5	-13.6 *	-17	-10
<i>Sand Martin</i>	96	-16.4	17.4	-9	51
<i>Swallow</i>	1419	-8.3	10.1 *	4	16
<i>House Martin</i>	723	-11.9	18.0 *	8	29
<i>Tree Pipit</i>	122	-11.4	1.1	-17	24
<i>Meadow Pipit</i>	619	-8.7	-5.3	-10	0
<i>Yellow Wagtail</i>	155	-9.5	-14.2	-28	2
<i>Grey Wagtail</i>	154	4.1	52.4 *	25	86
Pied Wagtail	959	-3.2	23.4 *	15	33
Dipper	44	-31.8	-24.6	-51	15
Wren	1784	-8.1 *	13.7 *	10	18
<i>Dunmock</i>	1483	3.7	12.5 *	7	18

TABLE 1. (Continued)

Species	Sample	Change 00-02	Change 94-02	lcl	ucl
Robin	1721	-3.3	16.1 *	12	20
<i>Redstart</i>	133	-6.3	34.2 *	12	60
Whinchat	78	13.3	-15.0	-34	9
<i>Stonechat</i>	80	14.5	152.9 *	88	241
Wheatear	237	14.6	10.1	-3	25
Blackbird	1803	1.8	16.1 *	13	19
<b>Song Thrush</b>	1394	0.9	13.4 *	8	19
<i>Mistle Thrush</i>	946	0	0.8	-7	9
<b>Grasshopper Warbler</b>	59	15.4	20.4	-15	70
Sedge Warbler	242	-17.2	29.7 *	14	48
Reed Warbler	87	9.3	28.7 *	6	57
Lesser Whitethroat	204	-6.4	-27.1 *	-38	-14
Whitethroat	978	2.4	29.5 *	22	38
Garden Warbler	369	-8.4	-12.8 *	-23	-1
Blackcap	1046	-1.4	46.2 *	38	55
<i>Wood Warbler</i>	56	-26.3	-57.8 *	-69	-42
Chiffchaff	938	15.2 *	21.0 *	14	29
<i>Willow Warbler</i>	1202	-17.9 *	-8.3 *	-13	-4
<i>Goldcrest</i>	534	-4.6	64.9 *	51	80
<b>Spotted Flycatcher</b>	194	-26.6	-42.2 *	-52	-31
Pied Flycatcher	43	13.4	-7.2	-31	24
Long-tailed Tit	630	-20.5 *	-2.7	-13	9
<b>Marsh Tit</b>	122	-6.3	34.4 *	8	68
<b>Willow Tit</b>	55	-39.1	-72.4 *	-81	-59
Coal Tit	543	20.8 *	28.4 *	18	40
Blue Tit	1681	5.8	8.8 *	5	13
Great Tit	1537	0	18.7 *	13	24
Nuthatch	294	24.1	43.6 *	26	64
Treecreeper	264	8.2	18.7 *	2	39
Jay	513	27.5 *	16.3 *	5	29
Magpie	1401	-8.1	2.4	-2	7
Jackdaw	1178	-5.1	12.0 *	5	19
Rook	1002	-4.8	-0.3	-8	8
Carrion Crow	1712	-1.7	15.1 *	10	21
Hooded Crow	104	-16.9	-30.8 *	-47	-9
Raven	165	-6.0	56.2 *	28	91
<b>Starling</b>	1465	-8.4	-13 *	-18	-7
<b>House Sparrow</b>	1227	-1.1	-7.3 *	-11	-3
<b>Tree Sparrow</b>	133	25	55.1 *	26	91
Chaffinch	1806	-1.9	5.3 *	2	8
Greenfinch	1301	-1.5	30.8 *	24	38
Goldfinch	1031	8.3	18.2 *	10	27
Siskin	113	-29.9	-18	-34	2
<b>Linnet</b>	1009	1.1	-4.1	-11	3
<i>Lesser Redpoll</i>	118	3.5	18	-5	47
<b>Bullfinch</b>	437	-2.6	-26.2 *	-35	-17
<b>Yellowhammer</b>	995	-1.1	-13.4 *	-18	-9
<b>Reed Bunting</b>	329	5.1	3.1	-8	15
<b>Corn Bunting</b>	142	-9.2	-40.6 *	-50	-29

## Key to Table 1

Population changes of widespread species 2000-2002 and 1994-2002. The sample size indicated is the mean number of squares occupied each year over the eight years (excluding squares where the species was recorded in only one year). The figures presented are the percentage changes in population levels for the respective time periods, those marked with an asterisk were significantly different at a 5% level. For the 1994-2002 period, the lower and upper 95% confidence intervals (ucl, lcl) are given. Species in bold are red-listed, and species in italics amber-listed in *Population Status of Birds in the UK in 2002*.

borders, Lake District and New Forest.

Causes of the decline are unclear but under-planting with conifers in these woodlands could have a negative effect on Wood Warbler numbers.

### INCREASING WOODLAND SPECIES

Some other woodland birds, however, have increased significantly since 1994, among them a suite of species that forage on the bark of trees, such as Great Spotted Woodpecker (up 72%), Green Woodpecker (up 18%), Nuthatch (up 44%) and Treecreeper (up 19%). Populations of the three most abundant tit species are also faring well, with Blue Tit up by 9%, Great Tit up by 19% and Coal Tit up by 28%, despite a number of unproductive breeding seasons in recent years. For all three of these resident tit species, the recent run of mild winters, supplementary feeding from bird tables and nut feeders, and the widespread use of nest boxes in the breeding season will have helped to maintain numbers.

### HOUSE AND TREE SPARROWS

The decline of the House Sparrow continues, with a 7% fall in numbers in the UK since 1994. Although this decline is relatively small, it is based on many counts and is statistically significant. The greatest decline was in London, where numbers fell by 71%.

A number of possible causes for the decrease in urban House Sparrow populations have been suggested, including an increase in cat predation, the loss of suitable house roof nesting sites, and the use of toxic additives in unleaded petrol. However, the picture is further complicated by the significant increases recorded in Scotland (up 29%) and Wales (up 63%), in spite of increasing evidence that sparrows in urban areas of Scotland are also declining. In contrast, the House Sparrow's rural cousin, the Tree Sparrow showed a welcome upturn in its previously dismal fortunes, with a 55% increase in numbers between 1994 and 2002.

### FARMLAND BIRD SPECIALISTS CONTINUE TO DECLINE

Worryingly, several red-listed farmland specialists continue to show significant declines

in numbers. These include Grey Partridge (down 18%), Turtle Dove (down 42%), Skylark (down 14%) and Corn Bunting (down 41%). The recently red-listed Yellowhammer also declined by 13% in the UK overall, a downward trend that was recorded in half of the regions for which changes could be monitored. We can only hope that changes in farming practice, encouraged by reforms to the Common Agricultural Policy, will result in the reversal of these declines.

### CUCKOOS AND CATERPILLARS

In common with Spotted Flycatcher, Turtle Dove and Swift, the Cuckoo is a long-distance migrant, wintering south of the Sahara. The CBC showed Cuckoo abundance to have been in decline since the early 1980s, a trend corroborated by the 25% reduction in numbers on BBS squares since 1994. BBS results show a significant downward trend in the majority of the regions for which Cuckoo population changes are reported.

One possible reason for this long-term reduction in numbers is a decline in the availability of their favourite host species. However, numbers of Dunnock and Reed Warbler have shown significant increases in recent years, and the decline in Meadow Pipit is relatively small. Deteriorating conditions on their wintering grounds may be affecting the numbers that return to breed, although the exact location of the wintering range for UK birds remains largely unknown.

It has also been suggested that a reduction in food for adult birds during the breeding season could be a contributing factor towards the decline. Adult Cuckoos are specialist feeders on caterpillars, particularly the larger, hairier species avoided by other birds. The abundance of many moth and butterfly species in the UK are known to be in decline, and moreover, the availability of caterpillars to Cuckoos may be affected by changes in the timing of their emergence as a result of climate change.

### BUZZARD

The latest BBS results illustrate the mixed fortunes of the three species of raptor monitored by the scheme (Buzzard, Kestrel and

Sparrowhawk), two of which are covered here. The success story of the Buzzard continues, with significant increases recorded in five of the six regions where changes are monitored. Of these, South East England recorded the largest increase, with numbers increasing by a massive 404% since 1994. Many parts of southern and eastern England are still being re-colonised, resulting in large increases in these areas. However, even in some of the traditional strongholds, increases continue to be recorded, including in Scotland (up by 73%) and South West England (up by 19%). The recovery of Rabbit populations from myxomatosis, and a release from the disastrous effects of organochlorine pesticides have aided this recovery in the past 30 years, although improved nesting success, helped by reduced persecution is probably driving the population upward now. The 1968–72 *Atlas of Breeding Birds* gave an estimate of only 8,000–10,000 pairs during what was a relatively low point for the species. A more recent estimate suggested a population of 44,000–61,000 pairs in 2001, making the Buzzard rather than Kestrel, the most abundant bird of prey species in the UK.

### KESTREL

BBS results show that the Kestrel declined by 30% in the UK between 1994 and 2002, a downward trend that was recorded in England (down 23%) and Scotland (down 42%). Within England, the greatest declines were recorded in the South West (down 51%) and Eastern regions (down 48%). Kestrel numbers had recovered from the effects of organochlorine pesticides by the mid-1970s, a recovery probably driven by improved nesting success, but have subsequently declined rapidly. This decline has been linked to a reduction in small mammal populations, probably caused by the effects of agricultural intensification on farmland. *The New Atlas of Breeding Birds* 1988–91 gave a British population estimate of 50,000 pairs, but there are probably far fewer now.

### THE FUTURE

A number of previously scarce species have increased dramatically on BBS squares since the start of the scheme in 1994. The widespread re-introduction of Red Kite in England and Scotland has certainly helped to boost the number of sightings for this species on BBS squares, with kites being recorded on 36 squares in 2002, five more than for the Willow Tit! The numbers of Hobby (recorded on 38 squares) and Marsh Harrier (21 squares) have also increased over the past eight years. Recent colonists such as Little Egret (9 squares) and Cetti's Warbler (12 squares) continue to increase, as do the now well established, naturalised populations of Ring-necked Parakeet (29 squares). It must only be a matter of time before some of these species become widespread enough for the BBS to effectively monitor their population changes.

We are again extremely grateful to all the ROs, observers and BTO members who took part in the BBS last year. We would also like to thank the farmers and landowners for their support and co-operation in allowing BBS volunteers onto their land. The BBS continues to be an enormous success and is now the primary source of information on national and regional trends in common breeding birds. The data collected each year are used by government and non-government conservation organisations to identify priorities for research and conservation initiatives, which aim to improve the overall status of declining species. If you would like to take part in the scheme, please contact your local RO or Mike Raven at BTO HQ. BBS observers can now submit their data via the web using BBS Online, for more information about this, and about the scheme in general, please see <http://www.bto.org/bbs>.

### ACKNOWLEDGEMENTS

The BBS is a partnership between the BTO, JNCC and the RSPB.

In 2002, the leading bird conservation organisations in the UK assessed the

population status of 247 species that are regularly found in the UK, assigning them to one of three categories – red, amber or green, in a publication: *Population Status of Birds in the UK: Birds of Conservation Concern: 2002-2007* ([www.bto.org/psob](http://www.bto.org/psob)).

The National Woodland Bird Re-survey Project is a Woodland Bird Group project being undertaken by the BTO and the RSPB. It is funded by the Forestry Commission, Defra, English Nature, RSPB, BTO and the Woodland Trust.

#### FURTHER READING

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