BBS

The Breeding Bird Survey 2015

The population trends of the UK's breeding birds

BTO Looking out for birds

JNCC Joint Nature Conservation Committee

rspb giving nature a home

THE 2015 BBS REPORT

This is the twenty-first annual report of the BTO/JNCC/RSPB Breeding Bird Survey (BBS), containing the population trends of widespread UK bird species during the period 1994–2015.

The BBS is the main scheme for monitoring the population changes of the UK's common breeding birds, providing an important indicator of the health of the countryside. BBS trends are produced each year for over 100 species, and the results are used widely to set priorities and inform conservation action.

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THE BBS PARTNERSHIP

The Breeding Bird Survey is run by the British Trust for Ornithology (BTO) and is funded jointly by the BTO, the Joint Nature Conservation Committee (JNCC) (on behalf of the statutory nature conservation bodies: Council for Nature Conservation and the Countryside, Natural England, Natural Resources Wales and Scottish Natural Heritage), and the Royal Society for the Protection of Birds (RSPB).

The members of the BBS Steering Committee in 2015 were James Pearce-Higgins (Chair, BTO), Deborah Procter (JNCC), Mark Eaton (RSPB), David Noble (BTO), Simon Gillings (BTO) and Dawn Balmer (BTO).

THE BBS TEAM AT THE BTO

Sarah Harris is the BBS National Organiser, responsible for the day-to-day running of the BBS, liaising with BTO Regional Organisers and volunteers, maintaining the database, promoting the scheme, and producing the annual report.

Dario Massimino, Research Ecologist in the Population Ecology and Modelling Team, worked on the bird population trends for 2015 and Stuart Newson assisted in the production and development of the mammal population trends. Justin Walker is the Database Developer, responsible for the BBS database, David Noble is the Principal Ecologist for Monitoring, responsible for strategic developments in biodiversity monitoring. Dawn Balmer is Head of Surveys, which includes the BBS and other surveys, Simon Gillings oversees the BBS research programme and James Pearce-Higgins is the Director of Science at the BTO.

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ACKNOWLEDGEMENTS

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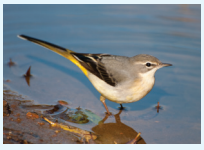
Many people have contributed to the scheme's development and organisation, including Nicholas Aebischer, Mandy Andrews, Mark Avery, Ian Bainbridge, Helen Baker, Richard Bashford, Jessa Battersby, George Boobyer, Andy Brown, Steve Buckland, Nick Carter, Steve Carter, Dan Chamberlain, Rachel Coombes, Humphrey Crick, Sarah Davis, Iain Downie, Sarah Eglington, Steve Freeman, Colin Galbraith, David Gibbons, John Goss-Custard, Rhys Green, Jeremy Greenwood, Richard Gregory, Rob Keen, Ian McLean, Mike Meharg, Richard Minter, Ian Mitchell, David Morris, Dorian Moss, Nancy Ockendon, Will Peach, Ken Perry, Mike Raven, Brenda Read, Warren Read, Angela Rickard, Sandra Sparkes, Ken Smith, David Stroud, Pierre Tellier, Chris Thaxter, Richard Thewlis, Derek Thomas, Mike Toms, Lawrence Way, Richard Weyl and Lucy Wright.

We acknowledge the support of the Northern Ireland Environment Agency who funded professional fieldworkers to cover 52 squares in Northern Ireland until 2015 – something we hope to continue again in the future (see page 11). Natural England, Scottish Natural Heritage and Forestry Commission Scotland have contributed to additional surveys on Upland BBS and Scottish Woodland BBS squares in previous years. We are very grateful to the RSPB for funding the initial development of BBS-Online, and to the BTO Information Systems Team who have continued to develop the system and provide technical support.



The cover photo of a Grey Wagtail is by Neil Calbrade and the BBS logo is by Andy Wilson.

Report production was by Sarah Harris. We are very grateful to John Marchant for proofreading the report. The report was printed by Reflex, Thetford, using paper from responsible sources.

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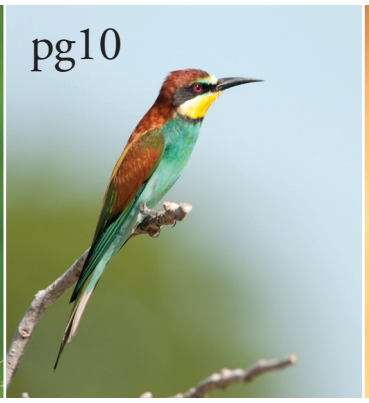
INSIDE...



SILVER-WASHED FRITILLARY: JOHN FLOWERDAY, BEE-EATER & RED DEER: NEIL CALBRADE, RED KITE: JILL PAKENHAM

CITATION

Harris, S.J., Massimino, D., Newson, S.E., Eaton, M.A., Marchant, J.H., Balmer, D.E., Noble, D.G., Gillings, S., Procter, D. & Pearce-Higgins, J.W. 2016. *The Breeding Bird Survey 2015.* BTO Research Report 687. British Trust for Ornithology, Thetford.

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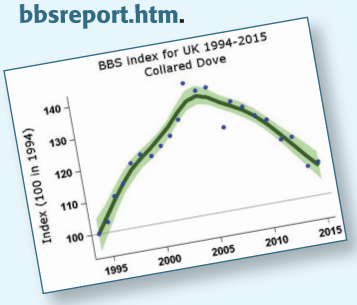
ONLINE RESOURCES

Further information, including population trend graphs, can be found at www.bto.org/bbs, and a full species-by-species discussion of these results, and those from other surveys, can be found on the BirdTrends website at www.bto.org/birdtrends.

This report can be downloaded from www.bto.org/bbs/results/bbsreport.htm.



What's happening in the world of the BBS?

BBS Online videos, news from the Wider Countryside Butterfly Survey, developments in the outputs from mammal recording, the latest published papers using BBS data, and the BBS background and methods

By **Sarah Harris**, BBS National Organiser, BTO

BBS IN 2015

2,784 volunteers took part in the BBS in 2015, recording 215 species on 3,731 randomly allocated 1-km squares. Thank you to all those involved.

BBS ONLINE – VIDEO TUTORIALS

We now have three BBS Online video tutorials on the BBS website (www.bto.org/bbs-online). These are designed to assist with data entry, editing data and mapping a BBS route online. To reduce paper use, we encourage BBS volunteers to let us know if they prefer forms or reports electronically, rather than hard copies. Contact: **bbs@bto.org**

WIDER COUNTRYSIDE BUTTERFLY SURVEY

The 2015 WCBS newsletter is available at www.bto.org/bbs-other-reports. Targeted habitat management at a landscape scale has been shown to improve the fortunes of species such as the Duke of Burgundy. There was a drop in contributions from BBS squares in 2015 with 304 squares surveyed for the WCBS. A new WCBS online data entry system is due to be launched in 2016.

COUNTING COLONIES

Recording of colonies on BBS squares is encouraged. All species seen during BBS surveys should be recorded in the core counts, but colony data should also be collected.

MAMMAL TRENDS

Mammals or mammal presence are now recorded on 90% of BBS squares. As a result, work is under way to increase the outputs from these records. See page 23.

HABITAT RECORDING

This compulsory and valuable element of the BBS has, in recent years, been the focus of two studies: habitat-specific bird trends and changes in land use since 1994.

FIELDWORKER & BBS FORMS: DAVID TIPLING, DUKE OF BURGUNDY: JOHN FLOWERDAY, ROOK & BROWN HARE: JOHN HARDING, HEATHER: DAWN BALMER

BACKGROUND AND METHODS

The BBS was launched, in 1994, to provide more representative habitat and geographical coverage than the main survey running at the time, the Common Birds Census (CBC). The CBC ended in 2000, and the overlap period between 1994 and 2000 allowed the BTO to develop methods for calculating long-term trends (from the 1960s to the present) using information from both schemes.

The BBS is a line-transect survey based on randomly located 1-km squares. Squares are chosen through stratified random sampling, with more squares in areas with more potential volunteers. The difference in sampling densities is taken into account when calculating trends. BBS volunteers make two early-morning visits to their square during the April–June survey period, recording all birds encountered while walking two 1-km transects across their square. Each 1-km transect is divided into five 200m sections for ease of recording. Birds are recorded in three distance categories, or as 'in flight', in order to assess detectability and work out species density. To assess further the detectability of species the option of recording how birds were first detected (by Song, Call or Visually) was introduced in 2014. Observers also record the habitat along the transects, and record any mammals seen during the survey. Surveying a BBS square involves around six hours of fieldwork per year, and the aim is for each volunteer to survey the same square (or squares) every year.

As BBS squares are randomly selected, they can turn up within any kind of habitat. Some squares can never be surveyed, and these truly 'uncoverable' sites are removed from the system. However, squares that are temporarily inaccessible, or which are not taken up due to their remote location, are retained in order to maintain the integrity of the sampling design.

The BBS National Organiser, based at BTO HQ, is responsible for the overall running of the scheme, and is the main point of contact for the network of volunteer Regional Organisers (ROs). ROs are responsible for finding new volunteers and allocating squares to observers in their region. At the end of the season they validate submissions made online, and collect paper submissions and return them to BTO HQ. We are very grateful for the assistance of the ROs.

The BBS provides reliable population trends for a large proportion of our breeding species. Trends can also be produced for specific countries, regions or habitats. For these analyses, we take the higher count from the two visits for each species, summed over all four distance categories and ten transect sections. Only squares that have been surveyed in at least two years are included in the analyses. Population changes are estimated using a log-linear model with Poisson error terms. Counts are modelled as a function of year and site effects, weighted to account for differences in sampling densities across the UK, with standard errors adjusted for overdispersion.

Since 2009, data from additional randomly selected 1-km squares surveyed as part of the Scottish Woodland BBS and the Upland BBS have been included in the BBS sample. These squares were surveyed using the same methodology as standard BBS squares, and results were incorporated into trends accounting for additional sampling effort. Since 2010, the option of adding an Upland Adjacent square to an existing 'Eligible Upland' BBS square has been encouraged, with the aim of increasing coverage in upland areas. These data are treated separately during the analyses.

Work has been carried out to assess the reliability of BBS trends, to ensure that reported trends are based on reliable data and sufficient sample sizes. This work has resulted in the following exclusions and caveats:

- We do not report population trends for five species of gull (Black-headed, Common, Lesser Black-backed, Herring and Great Black-backed), as a large proportion of the records are of non-breeding, wintering or migratory individuals.
- Trends for rare breeding species with substantial wintering populations (e.g. Fieldfare) are excluded.
- Trends for Cormorant, Grey Heron, Little Egret and Common Tern are reported with the caveat that counts may contain a high proportion of birds away from breeding sites.
- Trends for Tawny Owl and Barn Owl are reported with the caveat that the BBS monitors nocturnal species poorly.
- Counts for six wader species (Oystercatcher, Golden Plover, Lapwing, Snipe, Curlew and Redshank) are corrected to exclude counts from non-breeding flocks, and observations of Golden Plover in habitat unsuitable for breeding are also excluded.

PUBLISHED PAPERS...

Jørgensen, P.S., Böhning-Gaese, K., Thorup, K., Tøttrup, A.P., Chylarecki, P., Jiguet, F., Lehikoinen, A., Noble, D.G., Reif, J., Schmid, H., van Turnhout, C., Burfield, I.J., Foppen, R., Voříšek, P., van Strien, A., Gregory, R.D. & Rahbek, C. 2016. Continent-scale global change attribution in European birds – combining annual and decadal time scales. ***Global Change Biology*** 22: 530–543.

Massimino, D., Johnston, A. & Pearce-Higgins, J.W. 2015. The geographical range of British birds expands during 15 years of warming. ***Bird Study*** 62: 523–534.

Morrison, C.A., Robinson, R.A. & Pearce-Higgins, J.W. (in press). Winter wren populations show adaptation to local climate. ***Open Science***.

Stephens, P.A., Mason, L.R., Green, R.E., Gregory, R.D., Sauer, J.R., Alison, J, Aunins, A., Brotons, L., Butchart, S.H.M., Campedelli, T., Chodkiewicz, T., Chylarecki, P., Crowe, O., Elts, J., Escandell, V., Foppen, R.P.B., Heldbjerg, H., Herrando, S., Husby, M., Jiguet, F., Lehikoinen, A., Lindström, Å., Noble, D.G., Paquet, J.-Y., Reif, J., Sattler, T., Szép, T., Teufelbauer, N., Trautmann, S., van Strien, A.J., van Turnhout, C.A.M., Voříšek, P. & Willis, S.G. 2016. Consistent response of bird populations to climate change on two continents. ***Science*** 352: 84–87.

Sullivan, M.J.P., Newson, S.E. & Pearce-Higgins, J.W. 2016. Changing densities of generalist species underlie apparent homogenization of UK bird communities. ***Ibis*** 158: 645–655.

Yuan, Y., Buckland, S.T., Harrison, P.J., Foss, S. & Johnston, A. 2016. Using species proportions to quantify turnover in biodiversity. ***Journal of Agricultural, Biological, and Environmental Statistics*** 21: 363–381.

Further reading

Robinson, R.A., Marchant, J.H., Leech, D.I., Massimino, D., Sullivan, M.J.P., Eglington, S.M., Barimore, C., Dadam, D., Downie, I.S., Hammond, M.J., Harris, S.J., Noble, D.G., Walker, R.H. & Baillie, S.R. 2015. *BirdTrends 2015: trends in numbers, breeding success and survival for UK breeding birds.* Research Report 678. BTO, Thetford. (www.bto.org/birdtrends)

Hayhow, D.B., Bond, A.L., Eaton, M.A., Grice, P.V., Hall, C., Hall, J., Harris, S.J., Hearn, R.D., Holt, C.A., Noble, D.G., Stroud, D.A. & Wotton, S. 2015. *The state of the UK's birds 2015.* RSPB, BTO, WWT, JNCC, NE, NIEA, NRW and SNH, Sandy, Bedfordshire. (www.bto.org/sites/default/files/u16/downloads/SUKB/state-of-uk-birds-2015.pdf)

JNCC 2014. *Seabird Population Trends and Causes of Change: 1986–2013 Report.* Joint Nature Conservation Committee. (www.jncc.defra.gov.uk/page-3201)

Defra 2015. *Wild bird populations in the UK, 1970 to 2014.* (www.gov.uk/government/statistics/wild-bird-populations-in-the-uk)

PECBMS 2015. *Trends of common birds in Europe, 2015 update.* (www.ebcc.info/index.php?ID=587)

Birds of Conservation Concern 4: the Red List for Birds

The latest review of the Birds of Conservation Concern and its relationship with the BBS

By **Mark Eaton**, Principal Conservation Scientist, RSPB

It is an unavoidable fact that resources for conservation effort are limited. This has always been the case, but the economic turmoil of recent years, with an accompanying reduction in Government spending on conservation, means this may never have been more true. As a consequence, we need to ensure the resources that are available are used efficiently, and directed wisely. One well-recognised way to ensure this is to identify the species that most urgently require conservation action.

BOCC4

Birds of Conservation Concern (BoCC) reviews have been conducted at regular intervals since 1996; the fourth was published in 2015. These reviews use a wide range of high-quality data on the status of birds in the UK, the Channel Islands and the Isle of Man to assign them to Red, Amber or Green lists of conservation concern, with Red-listed species being those which most need our help.

Although methods have been tweaked over the years, to adapt to changing circumstances and in particular the gradual improvement in data on birds' status, all four BoCC reviews have followed the same principles.

All species with regularly occurring UK populations are assessed against a set of standardised criteria, each of which measures an important aspect of their population status. Criteria are in two groups, Red and Amber; species are assessed against all of these criteria, and are placed on the highest-priority list for which they qualify. If a species meets none of the criteria, it is placed on the Green list.

THE RESULTS

In a nutshell, the results of BoCC4 were bad news for the UK's birds (see Figure 1). Twenty species moved onto the Red list, which expanded to a highest-ever 67 species, a net increase of 16 since the last review in 2009. In addition, three species – Temminck's Stint, Wryneck and Serin – were considered to have ceased breeding in the UK. Although all three have never been more than very rare breeders in recent years, the Wryneck was once common and widespread – had the BBS been going a hundred years ago, many surveyors would have recorded it on their transects!

As with previous BoCC reviews, farmland and woodland birds remain particular concerns, with three new woodland birds – Woodcock, Nightingale and Pied Flycatcher – joining the Red list. Worries for our seabirds and long-distance migrants, first highlighted by BoCC3,

Red-list criteria

Global conservation status	Listed as Critically Endangered, Endangered or Vulnerable on the IUCN Global Red List
Historical decline	Assessed as having declined severely since 1800, without substantial recovery
Breeding population decline	Severe decline (>50%) over 25 years, or a longer-term period stretching back to 1969
Non-breeding population decline	Threshold and periods as for assessing breeding populations
Breeding range decline	Severe decline (>50% of occupied 10-km squares) in breeding range between the breeding bird atlases in 1988–91 and 2007–11, or 1968–71 and 2007–11
Non-breeding range decline	Severe decline in non-breeding range between the wintering bird atlases in 1981–84 and 2007–11

Amber-list criteria

A longer list including European conservation status, partial recovery from historical decline, moderate decline in population or range, breeding or non-breeding rarity, localisation or international importance. Full details can be found in the BoCC4 paper in *British Birds* (see '*Find out more*' for details).

Table 1 Red-listed species monitored by the BBS

Grey Partridge	Skylark	Tree Sparrow	*Mistle Thrush*
Lapwing	Wood Warbler	Yellow Wagtail	*Nightingale*
Curlew	Grasshopper Warbler	Tree Pipit	*Pied Flycatcher*
Turtle Dove	Starling	Linnet	*Whinchat*
Cuckoo	Song Thrush	Lesser Redpoll	*Grey Wagtail*
Willow Tit	Spotted Flycatcher	Yellowhammer	
Marsh Tit	House Sparrow	Corn Bunting	

▲ All were Red-listed due to declines in the breeding population, measured by BBS trend, in most cases in combination with its predecessor, the Common Birds Census. Some also qualified against other Red-list criteria, such as the globally Red-listed Turtle Dove. Species Red-listed for the first time by BoCC4 are given in *italics*.

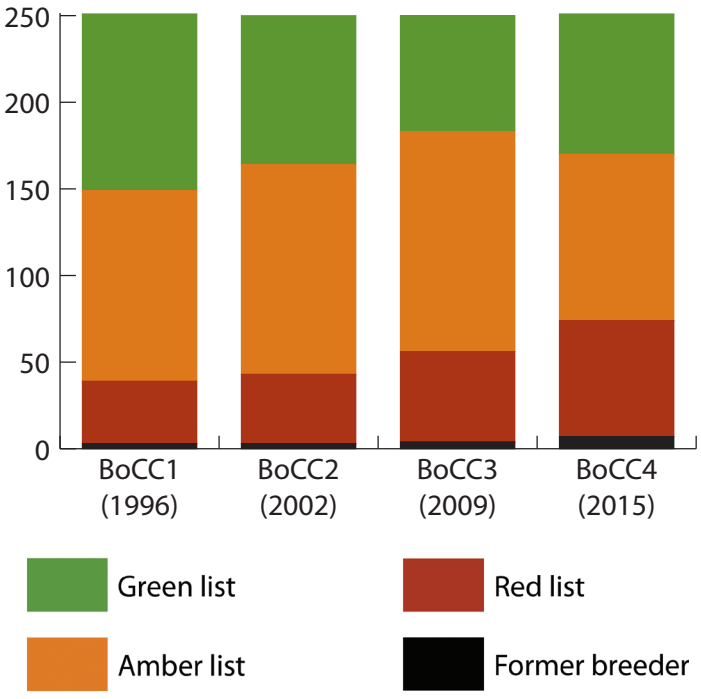
continue to grow. Moreover, the new Red list emphasises new concern for our upland birds, with this report's cover star, the Grey Wagtail, being one of five upland birds moving to the Red list.

The results did, however, give some cause for hope, with a few species moving 'the right way' thanks to conservation action – for example Bittern moved from Red to Amber, and Red Kite, now so widespread it was recorded in 429 BBS squares in 2015, moved to the Green list.

THE IMPORTANCE OF BBS DATA

BBS data are a vital component of BoCC assessments, providing breeding population trends now for 111 species: when combined with those from its predecessor, the Common Birds Census, these data allow us to measure population changes from the 1960s onwards. Of the newly Red-listed species, five were relatively common and widespread breeding species for which BBS data revealed severe population declines. These joined 21 BBS species already on the Red list (Table 1).

Figure 1 Changes in the BoCC lists over the four assessments



▲ Pied Flycatcher now joins the Red list.

Of course, the value of BBS data in directing conservation efforts does not stop with the creation of priority lists. Combined with other data sources, such as the *Bird Atlas 2007–11*, the BBS can help us to target conservation effort for particular species. Maps of density and trends produced from BBS data (see www.bto.org/bbs-maps) can assist in the spatial targeting of action, and habitat-specific trends, as described in the 2013 BBS report, can help us identify whether a species is struggling in any particular habitat. Furthermore, the BBS data can provide an invaluable research resource for determining the causes of declines in conservation priority species; for example, current research is using BBS data to help understand the recent declines that have led to the Red-listing of Curlew.

FIND OUT MORE...

Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A. & Gregory, R.D. 2015. Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. ***British Birds*** 108: 708–746. (www.britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf)

PIED FLYCATCHER: JOHN HARDING

The Waterways Breeding Bird Survey

What is the Waterways Breeding Bird Survey and how does it contribute to the monitoring of breeding birds in the UK?

By **John Marchant**, Projects Coordinator, BTO

Waterways are unique landscape features that provide highly specialised wildlife habitats and join them all up, through the continuity of water flow, into the ultimate wildlife corridors across the countryside. Whereas rivers are confined within catchments, canals can link waterway habitats across the natural watersheds. But these habitats are very vulnerable – especially to waterborne pollutants, to invasions of non-native species and to water abstraction – and their continuity can be broken by destruction and disturbance, for example through bankside development, dredging and straightening, or water sports.

WBS AND WBBS

BTO began annual monitoring for birds along rivers and canals back in 1974, because it was realised that coverage of these linear features fell well short of their importance for birds. Until 2007 there was a mapping census (Waterways Bird Survey – WBS) but since 1998 we have used a transect method modelled closely on that of BBS (Waterways Breeding Bird Survey – WBBS). As with BBS, there is a nominal 1-km square (though WBBS stretches can be up to 5-km long) and birds are recorded in distance bands. WBBS sections follow the bank of a river or canal, however, and are 500m long as opposed to 200m for BBS – its longer units being set to match those of the Environment Agency's (EA) River Habitat Survey.

Though the EA contributed to WBBS development, it has been difficult for BTO to fund the survey and, in particular, to set up an online option. With the agreement of the BBS partners, this aim was achieved in 2014 and 73% of 279 returns were submitted online that year. Observers can access WBBS Online by logging in to BBS, where they see their sites listed alongside any BBS squares they may also be covering. By 2015, 248 of 297 returns (84%) had been submitted online, approaching levels of online take-up achieved by BBS itself.

Table 2 Monitoring results for waders breeding along UK waterways

Species	Years	% change	LCL	UCL
Snipe	1975–2014	**-91 ***	-98	-63
Lapwing	1980–2014	**-49 ***	-66	-22
Common Sandpiper	1975–2014	**-48 ***	-65	-22
Redshank	1975–2014	**-47**	-73	6
Curlew	1980–2014	**-26**	-55	19
Oystercatcher	1975–2014	**42**	-16	139

- Trends are expressed as the percentage change, and are marked with an asterisk (*) where the 95% confidence limits of the change do not overlap zero (indicating that there has been a significant change).
- The trends for the years stated in Table 2 have been smoothed, and the end years truncated.
- LCL and UCL are the lower and upper 95% confidence limits for each trend.
- Red-listed and Amber-listed species from 'Birds of Conservation Concern 4' are shown in the relevant colour.

HOW ARE WBBS DATA USED?

WBBS transects run through consistently rich habitats and are typically about half as long again as BBS ones. Because of this, WBBS sample sizes, though running at only around 8% of BBS's number of squares, allow more than 80 bird species to be monitored. For 25 of these, longer-term indices starting as early as 1974 can be produced in conjunction with data from the mapping WBS. The long-term indices form a major part of BirdTrends, the BTO's annual online compilation of monitoring data for common birds. WBS/WBBS provides the headline index in BirdTrends for 13 species, for which CBC/BBS data are considered less representative. Thus WBBS improves BBS's coverage of species, while also extending its habitat-specific coverage to an additional habitat category. Table 2 highlights the varied fortunes of breeding waders along waterways.

Often, WBBS data can contribute to questions of local conservation or site management, or are part of wider or longer-term projects. They have been used in conjunction with River Habitat Survey data to assess the habitat associations of waterways birds and there is scope for linking them to other environmental data, for example to investigate further how birds respond to water quality.

▲ WBS and WBBS data prompted Grey Wagtail's move last year from the Amber to the Red category of Birds of Conservation Concern.

The most striking trend revealed by WBBS is probably the loss of 97% of Yellow Wagtails since 1975. The rate of loss from waterside habitats has been much faster than from the countryside as a whole, with CBC/BBS recording a 71% loss over a longer period (since 1967). Such differences provide a strong clue to the underlying reasons for decline. Most trends, however, tally well between WBBS and BBS. For some purposes, we combine WBBS counts with those from BBS, especially for scarcer waterways birds and mammals where data are sparse from both schemes.

THE FUTURE FOR WBBS

Going online has reduced running costs for WBBS and thus will help to safeguard the scheme's long-term continuity. Climate change, as manifested already in UK by greater extremes of flood and drought, will undoubtedly bring greater challenges for waterways birds in the future. Several studies have already used WBBS data to explore how changes in river flow affect riverine ecology (see below).

FIND OUT MORE...

www.bto.org/wbbs

www.bto.org/birdtrends

Vaughan, I.P., Noble, D.G. & Ormerod, S.J. 2007. Combining surveys of river habitats and river birds to appraise riverine hydromorphology. ***Freshwater Biology*** 52: 2270–2284.

Royan, A., Hannah, D.M., Reynolds, S.J., Noble, D.G. & Sadler, J.P. 2014. River birds' response to hydrological extremes: new vulnerability index and conservation implications. ***Biological Conservation*** 177: 64–73.

Royan, A., Prudhomme, C., Hannah, D.M., Reynolds, S.J., Noble, D.G. & Sadler, J.P. 2015. Climate-induced changes in river flow regimes will alter future bird distributions. ***Ecosphere*** 6 (4): 50. doi: 10.1890/ES14-00245.1

CAN YOU HELP?

WBBS needs more support to cover the random sites that have already been selected. Many of these are in upland parts of the UK that have few resident observers but often are well suited to someone who could make two survey visits from further afield – though we do not want to distract any BBS observers from their existing commitments!

We are looking into the best way to expand the random sample for WBBS especially in regions where observers are more likely to be available and without impacting on BBS coverage.

As with BBS, contributing is open to anyone who feels competent at bird identification by sight and sound and has the necessary physical fitness.

▲ WBBS sites active in 2015 (circles) and those currently seeking an observer (triangles). Can you offer to cover an unvisited site? If so, please email Sarah Harris at wbbs@bto.org

GREY WAGTAIL: EDMUND FELLOWES

What was seen and where was surveyed?

3,731 squares were surveyed in 2015

In 2015, 3,731 BBS squares were covered; when looking at core BBS squares only, this is just 28 squares short of the all-time high in 2007. An amazing effort! Thank you to all involved.

SIGHTINGS AND COVERAGE

So, what was seen on these squares? The highest species count on a square was 68 and this occurred in two squares; one in Suffolk, the other in Buckinghamshire. These counts are equally as valuable as the 41 squares where five or fewer species were recorded.

Unusual species included Wood Sandpiper, Lapland Bunting, Little Gull, Kentish Plover and Bee-eater. Once again, the most commonly recorded species was Woodpigeon, with 142,778 individuals counted. In total, 215 species were recorded by 2,784 dedicated BBS volunteers.

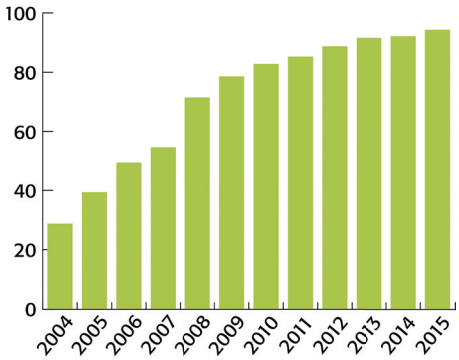
Data on all species recorded during BBS visits are equally valuable: from non-native species, rare breeding birds, colony data, through to those species which pass the reporting thresholds for country or regional BBS population trends. All contribute to various analyses and annual reporting.

Table 3 Number of BBS squares surveyed

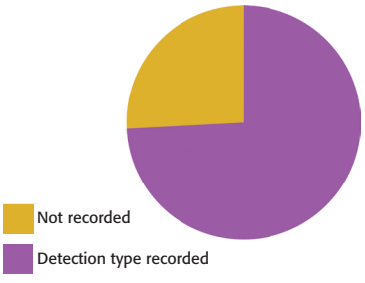
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
England	1,173	1,325	1,420	1,657	1,713	1,792	1,749	533	1,652	1,739	1,886
Scotland	245	283	308	313	309	275	246	78	231	255	274
Wales	122	121	116	138	192	223	213	22	215	214	254
Northern Ireland	25	17	65	75	85	95	83	0	97	109	102
Channel Islands	1	1	7	6	7	7	7	7	7	7	11
Isle of Man	4	4	4	6	6	5	3	0	3	4	6
UK total	**1,570**	**1,751**	**1,920**	**2,195**	**2,312**	**2,397**	**2,301**	***640**	**2,205**	**2,328**	**2,533**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
England	2,181	2,573	2,822	2,556	2,570	2,568	2,539	2,670	2,729	2,732	2,817
Scotland	305	336	517	436	431	331	359	383	473	480	473
Wales	271	272	269	242	235	247	224	274	331	339	338
Northern Ireland	120	108	131	121	116	115	110	117	127	120	78
Channel Islands	13	19	16	15	17	16	15	21	26	27	22
Isle of Man	3	5	4	1	0	0	0	4	0	0	3
UK total	**2,893**	**3,313**	**3,759**	**3,371**	**3,369**	**3,277**	**3,251**	**3,469**	**3,686**	**3,698**	**3,731**

*2001 – foot-and-mouth disease



▲ Percentage of online submissions: In 2015, 94% of submissions were received via the BBS Online system.



▲ 'Detection Type' was recorded on 74% of BBS squares in 2015, an increase from 67% in 2014.

LAPLAND BUNTING: RICHARD BROWN

COVERAGE OVERVIEW

Coverage appears similar to previous years and gaps remain in the more remote areas. Here we see the distribution of the 'core' BBS squares, any 'bolt-on' Upland Adjacent squares and those squares introduced to the survey as Scottish Woodland Squares, and still surveyed today.

Squares from the Upland BBS squares are not shown on this map nor the figures on page 10 but data from these squares are included in the data analysis and trend calculations for the years they were surveyed. Please see '*Backgrounds and Methods*' on page 5 for more information on these surveys.

Scotland

"*It's very pleasing to see high levels of coverage, up near 500, maintained for the third year running. Many thanks to all of the volunteers who tackle the Scottish geography and climate to collect this important information.*"

Ben Darvill, BTO Development and Engagement Manager, Scotland

Northern Ireland

"*Volunteer coverage has increased greatly (by 16%) from 2014, a heartening increase. Unfortunately the overall number of squares surveyed fell considerably (by 42 squares, 35%) because professionally covered squares were not surveyed due to a cut in funding. We believe that this will be a short-term blip and that these squares will be covered in future years.*"

Shane Wolsey, BTO Northern Ireland Officer

Isle of Man

Thanks to the enthusiasm of two BBS volunteers on the Isle of Man, three squares were covered in 2015 after two years without BBS coverage on the island.

Wales

"*BTO Cymru has delivered one of its key objectives and has increased coverage by 37% over the past 5 years. Retention and motivation of both established and new volunteers is excellent and they are to be congratulated for all their efforts.*"

Kelvin Jones, BTO Development Officer, Wales

England

With an increase of three squares between 2013 and 2014, a jump of 85 squares from 2014 to 2015 was unexpected! It has resulted in England being just five squares short of the all-time high of 2,822 in 2007.

Channel Islands

Twenty-two BBS squares were covered on the Channel Islands in 2015, contributing to trends and keeping Short-toed Treecreeper on the BBS species list!

United Kingdom – population trends

Turtle Dove declined by 93% in the UK between 1995 and 2014

UK trends for 111 species, 26 of which are on the Red list of Birds of Conservation Concern 4

Data from BBS squares across the UK have been used to calculate population trends for 111 species. These are mainly the species that have been recorded on an average of 40 squares since the survey began. Due to their primarily English distribution, **Nightingale** and **Mandarin Duck** reach the reporting threshold in England and are therefore included in the UK trends.

BoCC4

The updated lists of Birds of Conservation Concern 4 were released in December 2015. More information on this update and the major changes to the Red, Amber and Green lists can be found on pages 6–7.

Of the 26 Red-listed species monitored by the BBS, 18 are in statistically significant long-term decline, with **Turtle Dove** having declined the most in this group. **Song Thrush** (15%), **Tree Sparrow** (125%) and **Lesser Redpoll** (38%) showed statistically significant increases between 1995 and 2014.

Twenty-three Amber-listed species are monitored by BBS. Long term, four have decreased statistically significantly, **Oystercatcher** (19%), **Swift** (47%), **Kestrel** (36%) and **Willow Warbler** (8%) and seven have increased.

SIGNIFICANT CHANGES

The largest statistically significant long-term (1995–2014) increases included **Ring-necked Parakeet** (1,314%), **Red Kite** (1,026%) and **Barn Owl** (227%) and the largest declines include **Turtle Dove** (93%), **Willow Tit** (77%) and **Grey Partridge** (58%).

Short-term (2014–15) increases included **Barn Owl** (78%) and **Kestrel** (42%) and the largest decreases were for **Whitethroat** (17%) and **Yellow Wagtail** (17%).

TURTLE DOVE

The 93% decline in **Turtle Dove** between 1995 and 2014 is the largest decline of all the species monitored by the BBS.

This trend is mirrored across Europe, with a decline of 78% from 1980 to 2013 (PECBMS, 2015).

Several factors are thought to be behind the **Turtle Dove** decline, including agricultural changes affecting breeding grounds here in the UK, changing conditions in their wintering grounds in West Africa and hunting pressures during migration through Europe.

In addition, trichomonosis, a disease most commonly known as a factor influencing **Greenfinch** declines (by 39% since 1994) and which has become prevalent since 2005, has been recently observed in **Turtle Dove**.

RED KITE

The non-native **Ring-necked Parakeet** (discussed on page 14) has seen the largest statistically significant long-term increase in the UK, followed by **Red Kite**, which has increased by 1,026% between 1995 and 2014 and has therefore been moved to the Green list of BoCC4.

A combination of reintroduction projects in England and Scotland, along with the natural spread from strongholds in Wales, has resulted in this impressive increase.

'ADD-ON' SQUARES

'Add-on' squares surveyed over the lifetime of the BBS, using BBS methodologies, have been included in these trends. These include Upland BBS and Scottish Woodland squares, both originally surveyed by professional fieldworkers. The latter are now surveyed by volunteers. Upland Adjacent squares are also covered by volunteers to increase coverage in remote upland areas.

FIND OUT MORE...

PECBMS 2015. *Trends of common birds in Europe, 2015 update.* (www.ebcc.info/index.php?ID=587)

TURTLE DOVE: MOSS TAYLOR

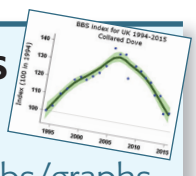
Table 4 UK population trends during 2014–15 and 1995–2014

Species	Sample	14–15	95–14	LCL	UCL
Mute Swan	260	16	29 *	1	77
Greylag Goose	228	-15	211	0	570
Canada Goose	506	2	84 *	49	136
Shelduck	149	5	-6	-50	38
Mandarin Duck	31	2	418	not estimable	
Gadwall	41	19	105 *	17	262
Mallard	1,356	8	15 *	4	29
Tufted Duck	160	38 *	38 *	8	90
Goosander	42	82	-12	-46	64
Red-legged Partridge	570	15 *	13 *	2	28
Red Grouse	147	9	19	-2	46
Grey Partridge	225	30 *	-58 *	-66	-48
Pheasant	1,895	2	32 *	23	39
(Cormorant)	249	11	15	-12	53
(Little Egret)	42	22	2,448	not estimable	
(Grey Heron)	669	4	-13 *	-23	-1
Little Grebe	71	18	33	-14	90
Great Crested Grebe	73	18	13	-28	48
Red Kite	131	30 *	1,026*	593	2,089
Sparrowhawk	354	26 *	-11	-22	4
Buzzard	1,053	6	80 *	62	102
Moorhen	654	8	-12 *	-20	-3
Coot	278	13 *	19	-4	48
Oystercatcher	353	-5	-19 *	-31	-7
Golden Plover	66	18	-16	-35	5
Lapwing	689	8	-43 *	-50	-35
Curlew	527	-13 *	-48 *	-53	-41
Common Sandpiper	70	1	-15	-35	7
Redshank	87	22	-39	-60	3
Snipe	169	19	16	-7	43
(Common Tern)	68	-55	17	-57	171
Feral Pigeon	699	-1	-18 *	-29	-3
Stock Dove	827	13	22 *	4	37
Woodpigeon	2,584	7 *	36 *	29	45
Collared Dove	1,392	1	8 *	0	18
Turtle Dove	136	-12	-93 *	-95	-90
Cuckoo	707	-1	-43 *	-49	-34
(Barn Owl)	48	78 *	227 *	111	417
Little Owl	94	-10	-58 *	-68	-47
(Tawny Owl)	93	-22	-21	-39	0
Swift	1,043	-3	-47 *	-53	-38
Kingfisher	55	-19	-17	-39	32
Green Woodpecker	838	14 *	31 *	22	44
Gt Spotted Woodpecker	1,124	2	136 *	121	155
Kestrel	673	42 *	-36 *	-42	-29
Hobby	43	31	-10	-41	28
Peregrine	49	2	-13	-42	23
Ring-necked Parakeet	74	-6	1,314*	524	6,756
Magpie	1,960	-2	0	-5	5
Jay	804	-1	25 *	14	35
Jackdaw	1,801	9 *	57 *	43	72
Rook	1,345	6	-20 *	-29	-10
Carrion Crow	2,457	-2	19 *	9	29
Hooded Crow	136	5	19	-14	52
Raven	321	1	45 *	1	110
Goldcrest	805	8	3	-12	18

Species	Sample	14–15	95–14	LCL	UCL
Blue Tit	2,395	2	3	-1	7
Great Tit	2,276	10 *	40 *	34	47
Coal Tit	850	-3	3	-7	15
Willow Tit	48	-3	-77 *	-84	-67
Marsh Tit	148	-21	-32 *	-44	-17
Skylark	1,782	-5	-24 *	-28	-18
Sand Martin	136	13	22	-27	120
Swallow	2,046	6	26 *	19	36
House Martin	953	10	-10	-18	0
Long-tailed Tit	993	12 *	12 *	1	22
Wood Warbler	53	-32	-56 *	-75	-23
Chiffchaff	1,593	9 *	96 *	85	111
Willow Warbler	1,418	-3	-8 *	-15	-1
Blackcap	1,682	6 *	151 *	134	169
Garden Warbler	454	3	-19 *	-31	-6
Lesser Whitethroat	280	-2	2	-14	19
Whitethroat	1,414	-17 *	33 *	24	46
Grasshopper Warbler	84	17	-18	-43	21
Sedge Warbler	304	-6	-6	-27	16
Reed Warbler	131	7	13	-10	46
Nuthatch	527	2	94 *	73	119
Treecreeper	366	-7	7	-8	22
Wren	2,533	-1	20 *	14	25
Starling	1,773	-6	-49 *	-53	-44
Dipper	63	-11	-20	-48	28
Blackbird	2,561	0	22 *	18	28
Song Thrush	2,058	7 *	15 *	8	22
Mistle Thrush	1,174	-1	-28 *	-34	-21
Spotted Flycatcher	191	-1	-44 *	-59	-26
Robin	2,456	8 *	17 *	13	21
Nightingale	33	-28	-40	-61	6
Pied Flycatcher	40	89	-48 *	-74	-17
Redstart	179	-5	47 *	26	75
Whinchat	77	-7	-53 *	-68	-38
Stonechat	154	-15	29	-3	74
Wheatear	355	0	-11	-24	10
Dunnock	2,136	3	22 *	16	28
House Sparrow	1,655	0	-5	-11	3
Tree Sparrow	191	3	125 *	72	193
Yellow Wagtail	160	-17 *	-42 *	-54	-26
Grey Wagtail	221	-13	-12	-29	5
Pied Wagtail	1,295	-1	-2	-10	6
Tree Pipit	145	-21	16	-16	55
Meadow Pipit	826	2	-9	-16	1
Chaffinch	2,574	2	4	0	9
Bullfinch	634	9	9	-3	23
Greenfinch	1,807	-5	-39 *	-43	-35
Linnet	1,233	34 *	-25 *	-30	-18
Lesser Redpoll	172	4	38 *	10	72
Crossbill	59	12	16	-24	79
Goldfinch	1,726	18 *	117 *	101	137
Siskin	191	37 *	59 *	17	98
Yellowhammer	1,207	1	-14 *	-21	-7
Reed Bunting	517	9	29 *	11	48
Corn Bunting	144	24 *	-34 *	-48	-19

- Trends are expressed as the percentage change, and marked with an asterisk (*) where the 95% confidence limits of the change do not overlap zero (indicating that there has been a significant change).
- Trends for species in brackets are reported with caveats (see pg5).
- The sample is the mean number of squares per year on which the species was recorded during 1994–2015.
- The trend since the start of the survey, covering the years 1994–2015, has been smoothed, and the end years truncated. This trend is labelled as 1995–2014.
- LCL and UCL are the lower and upper 95% confidence limits for the 1995–2014 trend.
- Red-listed and Amber-listed species from 'Birds of Conservation Concern 4' are shown in the relevant colour.

TREND GRAPHS ONLINE:



www.bto.org/bbs/graphs

England – population trends

Willow Tit declined by 78% in England between 1995 and 2014

The number of species trends for England increases as Peregine and Mandarin Duck join the list, bringing the total to 105

One hundred and five species now reach the English reporting threshold of 30 squares, on average, since the survey began. **Peregrine** and **Mandarin Duck** are new additions and **Crossbill** sits just below the reporting threshold.

SIGNIFICANT CHANGES

Statistically significant changes in England include 69 long-term and 33 short-term trends.

The largest long-term (1995–2014) increases were for **Red Kite** (10,299%) and **Ring-necked Parakeet** (1,314%) and biggest declines were for **Turtle Dove** (93%), **Willow Tit** (78%) and **Cuckoo** (68%).

Short term (2014–15), the largest changes were increases in **Barn Owl** (88%), **Siskin** (81%) and **Snipe** (68%) and declines in **Tawny Owl** (42%) and **Yellow Wagtail** (17%).

▶ Mandarin Duck has now reached the threshold for reporting in England. As the sample size increases, the trend will become more robust. This highlights the importance of recording non-native species during the BBS.

SNIPE SUCCESS?

Snipe showed a short-term increase of 68% between 2014 and 2015. By studying counts from the early visits over the years it is suspected this may be partly due to overwintering birds lingering for longer in the spring. Larger flocks are excluded from the trend calculations for six wader species, including Snipe (see page 5). However, sparsely distributed non-breeding birds would have been included.

BirdTrack (see www.birdtrack.net) reporting rates for England show that complete lists with **Snipe** records were slightly higher later in the spring in 2015 than historically, but had returned to 'normal' levels by the middle of the breeding season.

PEREGRINE POPULATIONS

Peregrine numbers have undergone a remarkable recovery since the ban of organochlorine pesticides and the species has spread eastwards across England, increasingly seen inland and nesting on man-made structures.

RING-NECKED PARAKEET

Ring-necked Parakeet has undergone one of the largest long-term increases of all species reported in England, by 1,314% between 1995 and 2014.

This invasive species, native to Africa and southern Asia, was first recorded breeding in the wild in 1971 and between the 1968–72 and 1988–1991 breeding atlases had spread from Kent and Greater London, but remained largely in southeastern England. Now, **Ring-necked Parakeets** have colonised Liverpool, Manchester, Sheffield and Birmingham.

'ADD-ON' SQUARES

Data from 'add-on' Upland BBS squares, surveyed by professional fieldworkers in previous years, are included in these trends.

PEREGRINE: DENNIS ATHERTON, MANDARIN DUCK: SARAH HARRIS

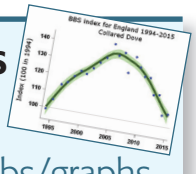
Table 5 Trends in England during 2014–15 and 1995–2014

Species	Sample	14–15	95–14	LCL	UCL
Mute Swan	223	11	13	-13	47
Greylag Goose	188	19	283 *	131	598
Canada Goose	468	6	67 *	39	118
Shelduck	122	10	24	-22	67
Mandarin Duck	30	6	426	not estimable	
Gadwall	39	17	99 *	17	270
Mallard	1,137	10 *	26 *	13	40
Tufted Duck	139	20 *	22	-4	60
Red-legged Partridge	552	11 *	6	-6	21
Red Grouse	87	-12	19	-14	74
Grey Partridge	201	24	-55 *	-64	-45
Pheasant	1,592	3	31 *	20	39
(Cormorant)	208	39 *	14	-6	50
(Little Egret)	38	23	2,375	not estimable	
(Grey Heron)	550	-2	-20 *	-32	-7
Little Grebe	56	-2	15	-27	70
Great Crested Grebe	67	17	-2	-30	30
Red Kite	96	36 *	>10,000*	7,262	16,395
Sparrowhawk	295	25 *	-17 *	-27	-7
Buzzard	719	14 *	182 *	140	244
Moorhen	605	8	-14 *	-22	-5
Coot	251	17 *	19	-4	44
Oystercatcher	197	-2	53 *	26	83
Lapwing	578	2	-26 *	-34	-17
Curlew	344	-8	-33 *	-42	-25
Common Sandpiper	31	-4	-42 *	-60	-18
Redshank	62	0	-32 *	-52	-7
Snipe	91	68 *	5	-22	46
(Common Tern)	63	18	23	-15	116
Feral Pigeon	573	3	-26 *	-36	-12
Stock Dove	763	15 *	18 *	5	35
Woodpigeon	2,065	8 *	39 *	30	48
Collared Dove	1,213	1	4	-4	11
Turtle Dove	134	-10	-93 *	-95	-90
Cuckoo	550	-10	-68 *	-72	-65
(Barn Owl)	46	88 *	242 *	145	416
Little Owl	91	-13	-59 *	-69	-48
(Tawny Owl)	80	-42 *	-23	-38	2
Swift	900	-4	-46 *	-54	-37
Kingfisher	49	-16	-10	-36	28
Green Woodpecker	785	13 *	42 *	31	55
Gt Spotted Woodpecker	980	4	112 *	97	132
Kestrel	593	43 *	-23 *	-29	-12
Hobby	42	34	-7	-40	40
Peregrine	30	-31	44	-14	137
Ring-necked Parakeet	74	-6	1,314*	479	7,383
Magpie	1,639	0	1	-4	5
Jay	693	1	10 *	2	19
Jackdaw	1,447	11 *	65 *	54	80
Rook	1,071	2	-12 *	-22	0
Carrion Crow	2,019	2	26 *	17	35
Raven	149	8	121	-1	322
Goldcrest	573	21 *	26 *	9	47

Species	Sample	14–15	95–14	LCL	UCL
Blue Tit	1,943	2	1	-3	5
Great Tit	1,844	11 *	30 *	24	37
Coal Tit	569	6	22 *	4	40
Willow Tit	43	-6	-78 *	-85	-68
Marsh Tit	134	-8	-35 *	-49	-20
Skylark	1,423	-6 *	-23 *	-27	-18
Sand Martin	86	4	13	-32	54
Swallow	1,576	2	23 *	15	31
House Martin	740	4	-29 *	-38	-18
Long-tailed Tit	879	15 *	8	-1	20
Chiffchaff	1,337	8 *	97 *	87	109
Willow Warbler	945	-1	-41 *	-47	-35
Blackcap	1,432	8 *	120 *	106	136
Garden Warbler	369	-5	-28 *	-37	-18
Lesser Whitethroat	267	-1	2	-14	16
Whitethroat	1,216	-13 *	32 *	23	39
Grasshopper Warbler	39	30	-35	-57	1
Sedge Warbler	194	-7	-21	-42	3
Reed Warbler	124	5	13	-11	43
Nuthatch	449	4	93 *	73	117
Treecreeper	273	1	1	-15	14
Wren	1,983	5 *	15 *	9	19
Starling	1,446	-6	-60 *	-62	-56
Dipper	31	-18	-32	-59	21
Blackbird	2,040	-1	18 *	14	23
Song Thrush	1,609	6 *	13 *	7	21
Mistle Thrush	931	3	-40 *	-45	-35
Spotted Flycatcher	134	-11	-61 *	-70	-50
Robin	1,942	9 *	21 *	15	26
Nightingale	33	-28	-39	-62	17
Redstart	100	-1	31 *	2	58
Whinchat	33	-8	-37 *	-69	-12
Stonechat	68	10	24	-24	102
Wheatear	201	4	0	-27	41
Dunnock	1,741	4 *	15 *	8	22
House Sparrow	1,351	1	-17 *	-23	-9
Tree Sparrow	150	-8	72 *	26	115
Yellow Wagtail	156	-17 *	-42 *	-53	-31
Grey Wagtail	150	-10	2	-20	21
Pied Wagtail	981	10	-8 *	-14	0
Tree Pipit	75	23	-44 *	-61	-16
Meadow Pipit	448	4	-7	-19	5
Chaffinch	2,008	0	1	-3	7
Bullfinch	490	-3	2	-8	13
Greenfinch	1,525	-10 *	-36 *	-40	-31
Linnet	1,000	31 *	-24 *	-31	-14
Lesser Redpoll	67	-8	2	-35	53
Goldfinch	1,423	13 *	111 *	93	128
Siskin	72	81 *	73	-26	308
Yellowhammer	1,048	3	-25 *	-30	-21
Reed Bunting	391	9	34 *	17	53
Corn Bunting	137	14	-34 *	-50	-16

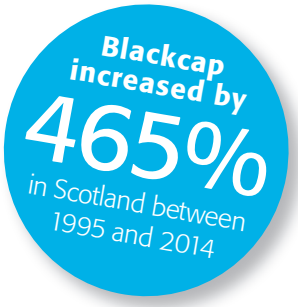
- Trends are expressed as the percentage change, and marked with an asterisk (*) where the 95% confidence limits of the change do not overlap zero (indicating that there has been a significant change).
- Trends for species in brackets are reported with caveats (see pg5).
- The sample is the mean number of squares per year on which the species was recorded during 1994–2015.
- The trend since the start of the survey, covering the years 1994–2015, has been smoothed, and the end years truncated. This trend is labelled as 1995–2014.
- LCL and UCL are the lower and upper 95% confidence limits for the 1995–2014 trend.
- Red-listed and Amber-listed species from 'Birds of Conservation Concern 4' are shown in the relevant colour.

TREND GRAPHS ONLINE:



www.bto.org/bbs/graphs

Scotland – population trends



Scottish trends for 62 species, showing long-term increases of over 100% in three warbler species

Sixty-two species trends have been calculated for Scotland. The species included are those which have been recorded on at least 30 BBS squares, on average, since the survey began, thus reaching the reporting threshold for the country. **Stock Dove**, **Tree Sparrow** and **Greylag Goose** remain just below the reporting threshold and over time, increased coverage will assist in these species reaching the threshold.

SIGNIFICANT CHANGES

Of the 62 population trends calculated for Scotland, 33 long-term (1995–2014) trends and six short-term (2014–15) trends were statistically significant.

Blackcap and **Chiffchaff** had the largest long-term increases. **Kestrel** (62%), **Curlew** (57%) and **Lapwing** (57%) have undergone the largest declines, long-term.

Short-term, **Linnet** increased the most (65%) and both **Whitethroat** and **Tree Pipit** had the largest decline (30%).

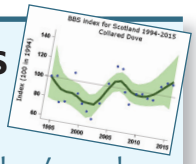
Table 6 Trends in Scotland during 2014–15 and 1995–2014

Species	Sample	14–15	95–14	LCL	UCL
Mallard	111	-7	-17	-31	3
Red Grouse	55	23	12	-9	45
Pheasant	151	-2	25 *	2	54
(Grey Heron)	54	0	0	-29	29
Buzzard	153	-7	23	0	57
Oystercatcher	138	-8	-33 *	-46	-17
Golden Plover	38	20	-25 *	-45	-6
Lapwing	89	14	-57 *	-67	-47
Curlew	128	-18	-57 *	-65	-45
Common Sandpiper	35	1	-13	-35	7
Snipe	61	12	20	-8	58
Feral Pigeon	69	6	13	-36	91
Woodpigeon	224	5	13	-12	39
Collared Dove	57	-1	18	-29	89
Cuckoo	77	1	29 *	3	60
Swift	54	5	-54 *	-70	-35
Gt Spotted Woodpecker	56	-8	414 *	269	574
Kestrel	42	45	-62 *	-74	-43
Magpie	55	25	32	-8	98
Jackdaw	129	9	25	-4	66
Rook	118	16	-37 *	-55	-9
Carrion Crow	208	-9	-2	-22	31
Hooded Crow	53	-1	-26	-58	9
Raven	51	0	41	-12	123
Goldcrest	97	-8	6	-23	49
Blue Tit	178	2	7	-9	20
Great Tit	166	11	70 *	42	107
Coal Tit	139	-13 *	-12	-27	9
Skylark	220	-3	-26 *	-37	-13
Sand Martin	33	23	42	-39	348
Swallow	192	10	42 *	19	74

Species	Sample	14–15	95–14	LCL	UCL
House Martin	73	2	135 *	57	251
Long-tailed Tit	32	-14	18	-37	78
Chiffchaff	61	23 *	550 *	330	1,110
Willow Warbler	226	-3	23 *	5	41
Blackcap	70	10	465 *	262	766
Whitethroat	89	-30 *	113 *	42	226
Sedge Warbler	57	3	28	-27	93
Treecreeper	40	2	4	-32	40
Wren	238	-8	48 *	28	71
Starling	157	2	-23 *	-39	-1
Blackbird	212	4	40 *	13	68
Song Thrush	188	9	17	-1	50
Mistle Thrush	80	-5	14	-23	58
Robin	212	4	27 *	11	46
Stonechat	36	-32	8	-32	65
Wheatear	85	11	-19	-42	9
Dunnock	151	0	68 *	36	99
House Sparrow	105	0	53 *	18	91
Grey Wagtail	32	-41	-18	-44	19
Pied Wagtail	144	-9	-1	-20	15
Tree Pipit	35	-30 *	118 *	58	202
Meadow Pipit	220	1	-14 *	-26	-2
Chaffinch	255	7	9	-4	21
Bullfinch	45	44	49 *	0	121
Greenfinch	108	17	-49 *	-62	-35
Linnet	94	65 *	-26 *	-44	-4
Lesser Redpoll	51	1	48	-2	149
Goldfinch	106	36 *	177 *	112	270
Siskin	80	30	58 *	4	120
Yellowhammer	116	-4	42 *	16	81
Reed Bunting	64	13	37 *	5	94

- Trends are expressed as the percentage change, and marked with an asterisk (*) where the 95% confidence limits of the change do not overlap zero (indicating that there has been a significant change).
- Trends for species in brackets are reported with caveats (see pg5).
- The sample is the mean number of squares per year on which the species was recorded during 1994–2015.
- The trend since the start of the survey, covering the years 1994–2015, has been smoothed, and the end years truncated. This trend is labelled as 1995–2014.
- LCL and UCL are the lower and upper 95% confidence limits for the 1995–2014 trend.
- Red-listed and Amber-listed species from 'Birds of Conservation Concern 4' are shown in the relevant colour.

TREND GRAPHS ONLINE:



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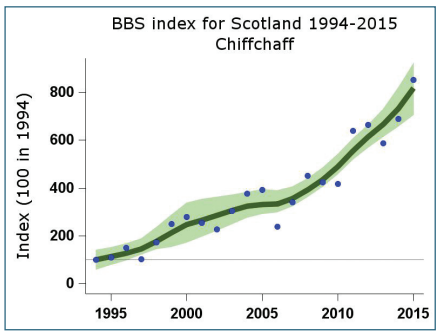
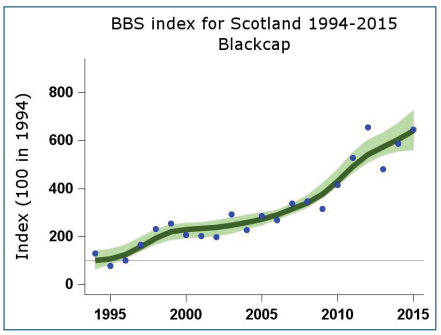
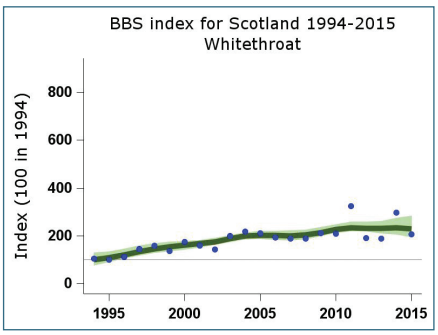






▲ BBS index between 1994–2015 showing smoothed trend (dark green), its confidence interval (pale green) and annual index values (dots).

WINNING WARBLERS

Chiffchaff, **Blackcap** and **Whitethroat** have all increased in Scotland long term, although the reasons behind these increases vary between species.

Chiffchaff are found in the lowlands and on Scottish islands. They have increased in the UK by 96% between 1995 and 2014, but this figure is overshadowed by the 550% increase seen in Scotland during the same period.

Blackcap has also increased greatly, by 465% between 1995 and 2014. Both these partial migrants have spread northwards, taking advantage of milder winters. This change in climate has led to change in migration patterns, positively influenced overwinter survival, and enabled them to move into higher altitudes to breed in the summer. **Blackcap** has also adapted to take advantage of garden feeding stations, which is thought to increase survival.

Whitethroat has shown an increase of 113% since 1994 in Scotland and have increased in the UK as a whole (33%), consequently moving from the Amber to Green list of Conservation Concern. These figures somewhat mask the bigger picture: in the 1968/69 winter, populations crashed after severe droughts on their wintering grounds south of the Sahara. The BBS trend therefore illustrates the recovery from this crash but does not yet compensate for the losses in the late 1960s.

WADERS

Declines in waders in Scotland continue: **Oystercatcher** (33%), **Golden Plover** (25%), **Curlew** (57%) and **Lapwing** (57%) have all undergone statistically significant declines between 1995 and 2014.

The reasons behind the changes in distribution and overall decline of **Oystercatcher** are not fully understood. Declines in abundance have been recorded since the 1988–91 breeding atlas in the inland north-west, along with a fall in tetrad occupancy in eastern and southern Scotland. Could factors affecting other wader species in Scotland be influencing the long-term trend for **Oystercatcher** too?

The core UK **Golden Plover** breeding range is in Scotland, with the highest densities being in the Outer Hebrides, Shetland and the flows of Caithness and Sutherland. **Golden Plover**, **Curlew** and **Lapwing** have all been impacted by changes to agriculture, grazing pressures and increases in generalist predators. For **Golden Plover** and **Curlew**, afforestation and drying soils – whether by artificial drainage of wetlands and peat bogs, or due to climate change – are also contributing.

The highest breeding concentrations for **Curlew** are in eastern Scotland, the Northern Isles and northern England. Declines in the uplands are highest in heather-dominated areas. In lowland areas specifically, drainage of wetlands and intensive managment of lowland grasslands are playing a part.

Breeding **Lapwing** have disappeared from most of the western mainland of Scotland over the last 40 years.

'ADD-ON' SQUARES

Data from additional Scottish Woodland squares were included in trends for all species recorded. 'Add-on' squares were surveyed using the same methodology as standard BBS squares, and the difference in sampling was accounted for in the trend calculations.

CHIFFCHAFF: AMY LEWIS, BLACKCAP: ADRIAN DANCY, WHITETHROAT: PAUL HILLION

Wales – population trends

Redstart increased by 41% in Wales between 1995 and 2014

Trends for 54 species are reported for Wales, with long-term declines in Yellowhammer recorded

Fifty-four species have been recorded on an average of at least 30 BBS squares in Wales since the survey began and can therefore have trends calculated. **Reed Bunting** and **Siskin** are currently at 29 squares on average – increased coverage could see these species reach the reporting threshold.

SIGNIFICANT CHANGES

Of the 28 statistically significant long-term (1995–2014) trends in Wales, the largest increases were for **Great Spotted Woodpecker** (171%) and **Blackcap** (170%).

Species with the largest declines included **Starling** (67%) and **Curlew** (60%).

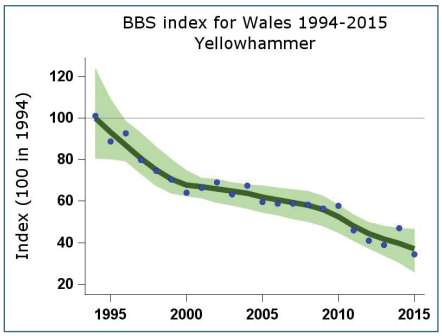
Counter to its long-term trend, **Starling** saw the largest short-term (2014–15) increase of 40%. The largest short-term declines were in **Wheatear** (26%) and, mirroring the UK short-term decline, **Whitethroat** (24%).

YELLOWHAMMER DECLINES

Yellowhammer has declined by 57% in Wales between 1995 and 2014, highlighting that declines are more than an arable farmland issue.

Agricultural specialisation into efficient grass-based livestock rearing, resulting in the loss of potentially seed-rich arable and fodder crops that provided critical winter seed sources, is thought to be the driver behind the decline.

In addition, breeding productivity falls where invertebrate prey densities are reduced by high grazing pressure, and the loss and degradation of farmland margins and hedgerows has reduced nest-site availability.



BBS index between 1994–2015 showing smoothed trend (dark green), its confidence interval (pale green) and annual index values (dots)

Table 7 Trends in Wales during 2014–15 and 1995–2014

Species	Sample	14–15	95–14	LCL	UCL
Mallard	71	**21**	**-9**	-51	67
Pheasant	99	**1**	**48** *	8	100
(Grey Heron)	44	**57**	**-5**	-36	40
Buzzard	148	**-5**	**-2**	-20	25
Curlew	35	**-22**	**-60** *	-72	-39
Feral Pigeon	36	**-18**	**40**	-8	118
Stock Dove	32	**-32**	**103** *	24	249
Woodpigeon	197	**9**	**30** *	10	51
Collared Dove	76	**5**	**24**	-18	66
Cuckoo	60	**1**	**-18**	-39	10
Swift	66	**3**	**-52** *	-66	-23
Green Woodpecker	46	**30**	**-33** *	-52	-3
Gt Spotted Woodpecker	86	**1**	**171** *	116	252
Magpie	169	**-14** *	**-17** *	-28	-4
Jay	78	**5**	**46** *	11	82
Jackdaw	146	**2**	**34**	-7	129
Rook	81	**-10**	**-35**	-59	3
Carrion Crow	213	**-8**	**19**	0	38
Raven	96	**1**	**30**	-15	115
Goldcrest	86	**15**	**-33**	-55	9
Blue Tit	186	**-8**	**17** *	1	33
Great Tit	179	**-5**	**41** *	22	62
Coal Tit	78	**1**	**-18**	-38	15
Skylark	107	**-4**	**3**	-19	36
Swallow	181	**18**	**39** *	13	87
House Martin	90	**50**	**5**	-25	58
Long-tailed Tit	63	**40**	**38** *	0	108

Species	Sample	14–15	95–14	LCL	UCL
Chiffchaff	148	**0**	**65** *	42	106
Willow Warbler	166	**0**	**-9**	-24	8
Blackcap	133	**-11**	**170** *	118	232
Garden Warbler	59	**0**	**-18**	-44	15
Whitethroat	87	**-24** *	**-14**	-34	9
Nuthatch	76	**-17**	**54** *	15	108
Treecreeper	42	**-9**	**18**	-19	76
Wren	207	**-6**	**23** *	8	37
Starling	81	**40** *	**-67** *	-79	-55
Blackbird	207	**0**	**40** *	30	51
Song Thrush	175	**11**	**16** *	2	33
Mistle Thrush	103	**0**	**-6**	-28	20
Robin	202	**13** *	**1**	-8	13
Redstart	65	**-13**	**41** *	11	78
Stonechat	38	**-6**	**93** *	15	238
Wheatear	57	**-26** *	**-16**	-36	9
Dunnock	161	**1**	**31** *	10	55
House Sparrow	131	**-11**	**87** *	51	129
Pied Wagtail	122	**-4**	**4**	-17	27
Tree Pipit	35	**-20**	**-4**	-37	37
Meadow Pipit	92	**-1**	**5**	-15	35
Chaffinch	207	**-4**	**-5**	-18	7
Bullfinch	66	**-18**	**6**	-16	35
Greenfinch	113	**-14**	**-44** *	-59	-23
Linnet	95	**1**	**-16**	-32	12
Goldfinch	137	**15**	**79** *	47	117
Yellowhammer	34	**-27**	**-57** *	-75	-38

Northern Ireland – population trends

Northern Ireland trends for 35 species, with Willow Warblers bucking the UK trend

Population trends for 35 species have been calculated for Northern Ireland, having reached the reporting threshold of 30 squares per year, on average, since the survey began. **Lesser Redpoll** and **Sedge Warbler** sit just below the reporting threshold.

SIGNIFICANT CHANGES

There are 16 statistically significant long-term (1995–2014) trends; amongst which the largest increases were for **Great Tit** (195%) and **Hooded Crow** (188%) and the largest and only statistically significant decline was for **Skylark** (50%). Short-term (2014–15), statistically significant trends included an 82% increase in **Greenfinch** and a 28% decline in **Starling**.

WILLOW WARBLER INCREASES

Changes in climatic conditions, distribution once on wintering grounds and breeding habitat in Northern Ireland compared to areas in Britain are thought to be influencing regional population changes.

BBS trends show statistically significant long-term declines in the UK (8%) and England (41%), but an increase of 23% in Scotland and a far larger increase of 73% in Northern Ireland where **Willow Warbler** is expanding in range and exploiting more upland habitats, possibly as climatic warming makes such habitats more suitable as breeding sites.

- Tables 7 and 8 show trends expressed as the percentage change, and marked with an asterisk (*) where the 95% confidence limits of the change do not overlap zero (indicating that there has been a significant change).
- Trends for species in brackets are reported with caveats (see pg5).
- The sample is the mean number of squares per year on which the species was recorded during 1994–2015.
- The trend since the start of the survey, covering the years 1994–2015, has been smoothed, and the end years truncated. This trend is labelled as 1995–2014.
- LCL and UCL are the lower and upper 95% confidence limits for the 1995–2014 trend.
- Red-listed and Amber-listed species from 'Birds of Conservation Concern 4' are shown in the relevant colour.

Table 8 Trends in Northern Ireland during 2014–15 and 1995–2014

Species	Sample	14–15	95–14	LCL	UCL
Pheasant	41	-13	100 *	7	203
Buzzard	31	38	>10,000	not estimable	
Woodpigeon	83	-1	88 *	36	148
Collared Dove	33	3	102 *	21	181
Magpie	82	-14	15	-14	59
Jackdaw	75	6	108 *	40	174
Rook	72	19	-10	-37	36
Hooded Crow	80	17	188 *	94	313
Goldcrest	44	-11	34	-24	65
Blue Tit	76	26 *	11	-23	48
Great Tit	72	12	195 *	111	256
Coal Tit	63	8	63 *	1	134
Skylark	31	10	-50 *	-61	-40
Swallow	83	6	-2	-29	45
House Martin	43	42 *	109 *	29	257
Chiffchaff	34	24	21	-17	63
Willow Warbler	78	-9	73 *	30	106
Blackcap	38	12	>10,000	not estimable	
Wren	90	-7	54 *	15	107
Starling	78	-28 *	45 *	9	117
Blackbird	85	5	42 *	3	73
Song Thrush	76	8	45 *	6	90
Mistle Thrush	58	-7	-5	-60	69
Robin	87	1	13	-11	35
Dunnock	69	7	79 *	1	134
House Sparrow	54	17 *	57	-3	159
Pied Wagtail	45	-23	60	not estimable	
Meadow Pipit	62	13	14	-13	69
Chaffinch	89	5	55 *	16	72
Bullfinch	32	81	33	-29	67
Greenfinch	47	82 *	-45	-67	7
Linnet	35	75	-9	-49	35
Lesser Redpoll	29	24	38	not estimable	
Goldfinch	50	84	748	not estimable	
Reed Bunting	32	7	-8	-37	77

CHANNEL ISLANDS

Twenty-two squares were covered on the Channel Islands in 2015. These data feed into the UK trends. An impressive 91 species were recorded, from singles of Bee-eater, Short-toed Treecreeper and Turtle Dove through to Blackbird as the most numerous species recorded.

ISLE OF MAN

As with the Channel Islands, data collected on the Isle of Man feed into the UK trends. Thanks to the efforts of the Manx Regional Representative and one other volunteer, it was great to have three squares surveyed after sporadic coverage in recent years from the Island.

English regions – population trends

476 trends calculated in English Regions

English regional trends for 79 species, showing how trends vary across England

Population trends for 79 species have been calculated for nine English regions, in instances where the sample size is adequate to report trends. The threshold for reporting trends for a region is 30 squares per year, on average, since the survey began.

Here we look through the regional trends and the largest statistically significant long-term trends (1995–2014). Variation between regions can be great. For example, **Chiffchaff** has increased in the South West by 35% and in the East Midlands by 351%! In contrast, **Starling** trends are more consistent across the regions, with declines from 50% in East of England through to 71% in the South West.

NORTH WEST

Fifty-seven trends calculated, of which 29 were significant: 19 increases and 10 declines. **Nuthatch** increased by 363% and **Swift** declined by 52%.

NORTH EAST

Thirty-five trends calculated, of which 16 were significant: 7 increases and 9 declines. **Chiffchaff** increased by 239% and **Swift** declined by 58%.

YORKSHIRE

Fifty-five trends calculated, of which 25 were significant: 18 increases and 7 declines. **Greylag Goose** increased by 718% and **Grey Partridge** declined by 70%.

EAST MIDLANDS

Fifty-five trends calculated, of which 27 were significant: 17 increases and 10 declines. **Chiffchaff** increased by 351% and **Cuckoo** declined by 85%.

EAST OF ENGLAND

Sixty-seven trends calculated, of which 39 were significant: 22 increases and 17 declines. **Green Woodpecker** increased by 137% and **Turtle Dove** declined by 92%.

WEST MIDLANDS

Fifty-two trends calculated, of which 33 were significant: 20 increases and 13 declines. **Goldfinch** increased by 204% and **Cuckoo** declined by 73%.

SOUTH EAST

Sixty-eight trends calculated, of which 47 were significant: 20 increases and 27 declines. **Red Kite** increased by 8,613% and **Turtle Dove** declined by 94%.

SOUTH WEST

Sixty trends calculated, of which 29 were significant: 17 increases and 12 declines. **Red-legged Partridge** increased by 138% and **Cuckoo** declined by 77%.

LONDON

Twenty-seven trends calculated, of which 21 were significant: 14 increases and 7 declines. **Goldfinch** increased by 387% and **House Sparrow** declined by 73%.

Table 9 Counties in each region and squares covered in 2015

Region		Counties	Squares covered in 2015
1	North West	Cheshire, Cumbria, Lancashire, Greater Manchester, Merseyside	291
2	North East	Cleveland, County Durham, Northumberland	117
3	Yorkshire & Humber	East Yorkshire, North Lincolnshire, North Yorkshire, South Yorkshire, West Yorkshire	287
4	East Midlands	Derbyshire, Northamptonshire, Leicestershire & Rutland, Lincolnshire, Nottinghamshire	296
5	East of England	Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk, Suffolk	369
6	West Midlands	Birmingham, Herefordshire, Shropshire, Staffordshire, Warwickshire, Worcestershire	231
7	South East	Berkshire, Buckinghamshire, Hampshire, Isle of Wight, Kent, Oxfordshire, Surrey, Sussex	640
8	South West	Avon, Cornwall, Devon, Dorset, Gloucestershire, Somerset, Wiltshire	480
9	London	Greater London	106

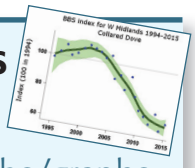
FIND OUT MORE...

English regions:

More detailed information is available on the BBS webpages under '*Latest Results*', including short-term trends (2014–15) and trend graphs.

(www.bto.org/bbs)

TREND GRAPHS ONLINE:



www.bto.org/bbs/graphs

- Table 10 shows the smoothed trend since the start of the survey (in bold) and sample sizes (regular). The trend has been smoothed, and the end years truncated.
- The sample is the mean number of squares per year on which the species was recorded during 1994–2015.
- Trends are expressed as the percentage change, and are marked with an asterisk (*) where the 95% confidence limits of the change do not overlap zero (indicating that there has been a significant change).
- Trends for species in brackets are reported with caveats (see pg5).
- Red-listed and Amber-listed species from 'Birds of Conservation Concern 4' are shown in the relevant colour.

Table 10 Trends in English Regions during 1995–2014

Species	North West		North East		Yorkshire		East Midlands		East of England		West Midlands		South East		South West		London	
Mute Swan									**36**	42			**7**	56	**27**	35		
Greylag Goose					**718** *	36			**117** *	44			**109** *	35				
Canada Goose	**87** *	70			**125** *	32	**106** *	42	**33** *	58	**9**	69	**31**	115	**132** *	48		
Shelduck									**13**	36								
Mallard	**19**	160	**74** *	33	**32**	103	**20**	105	**-4**	191	**69** *	117	**27**	233	**49** *	152	**-20**	43
Tufted Duck													**56**	30				
Red-legged Partridge					**29**	51	**-45** *	77	**-17**	178	**22**	36	**84** *	121	**138** *	58		
Red Grouse					**26**	50												
Grey Partridge					**-70** *	30	**-34**	32	**-51** *	42			**-80** *	31				
Pheasant	**124** *	144	**39** *	71	**65** *	146	**15**	152	**-12**	274	**74** *	140	**21** *	386	**57** *	271		
(Cormorant)									**-16**	48			**64**	48	**-24**	32		
(Grey Heron)	**-28** *	80			**-20**	37	**-12**	51	**-43** *	82	**-5**	58	**-19**	122	**-13**	81		
Red Kite													**8,613***	62				
Sparrowhawk	**-39** *	34							**-21**	47			**-20** *	67	**-2**	48		
Buzzard	**104** *	75			**>10,000**	32	**>10,000**	50	**>10,000**	58	**203** *	97	**1,050***	157	**14**	223		
Moorhen	**-26** *	70			**14**	39	**-25**	59	**-16** *	125	**-19**	61	**-24** *	143	**-5**	66		
Coot	**-15**	31							**-10**	39	**77**	30	**32**	64				
Oystercatcher	**4**	60			**206** *	46			**88** *	32								
Lapwing	**-28** *	115	**-23**	46	**2**	108	**-19**	62	**-26**	74	**-18**	40	**-53** *	103				
Curlew	**-46** *	94	**-41** *	50	**8**	112												
Snipe					**17**	37												
Feral Pigeon	**-31**	76			**-41**	60	**-39**	49	**-29**	75	**-47** *	43	**-18**	108	**-34** *	67	**-23** *	72
Stock Dove	**143** *	58			**30**	52	**-36**	73	**-5**	141	**63** *	84	**33** *	198	**27** *	125		
Woodpigeon	**76** *	219	**16**	83	**87** *	167	**25**	190	**42** *	320	**27** *	181	**22** *	481	**44** *	343	**55** *	81
Collared Dove	**23**	134	**-8**	32	**-21**	79	**5**	110	**56** *	209	**-36** *	116	**-1**	293	**5**	189	**-4**	52
Turtle Dove									**-92** *	63			**-94** *	46				
Cuckoo	**-43** *	34			**-59** *	43	**-85** *	50	**-71** *	108	**-73** *	54	**-67** *	164	**-77** *	75		
Swift	**-52** *	110	**-58** *	32	**-33**	84	**-48** *	81	**-28**	151	**-44** *	76	**-55** *	169	**-62** *	140	**-56** *	58
Green Woodpecker							**173** *	45	**137** *	168	**33**	64	**26** *	306	**3**	128	**49** *	31
Gt Spotted Woodpecker	**112** *	90			**93** *	48	**123** *	61	**73** *	147	**150** *	106	**93** *	303	**134** *	160	**59** *	37
Kestrel	**-25**	72			**-38** *	59	**-12**	63	**-17**	107	**-28** *	42	**-34** *	134	**-39** *	77		
Ring-necked Parakeet													**713** *	30			**>10,000**	40
Magpie	**-8**	187	**-10**	34	**-18**	98	**11**	142	**32** *	241	**-9**	161	**10**	411	**-8**	286	**36** *	80
Jay	**39**	70					**7**	30	**41** *	116	**-7**	62	**-7**	230	**6**	107	**-13**	39
Jackdaw	**70** *	143	**4**	61	**65** *	116	**112** *	117	**126** *	219	**77** *	138	**75** *	365	**41** *	268		
Rook	**-20**	92	**-28** *	48	**-40** *	107	**8**	95	**0**	178	**-12**	86	**9**	247	**-20**	215		
Carrion Crow	**44** *	228	**-9**	81	**49** *	172	**46** *	178	**90** *	297	**5**	180	**18** *	464	**9**	339	**37** *	81
Raven															**119**	69		
Goldcrest	**64**	45							**60** *	72	**83** *	44	**19** *	189	**-14**	127		
Blue Tit	**-9**	206	**-14**	63	**4**	147	**32** *	174	**21** *	298	**-9**	179	**-2**	468	**-6**	327	**18**	80
Great Tit	**34** *	192	**53** *	56	**58** *	129	**52** *	163	**18** *	283	**14** *	174	**12** *	456	**44** *	316	**112** *	75
Coal Tit	**32**	72	**29**	41	**107** *	43	**-3**	38	**15**	63	**62** *	49	**-11**	147	**5**	100		
Marsh Tit													**-39** *	51				
Skylark	**-19**	124	**-31** *	70	**8**	147	**-29** *	154	**-26** *	273	**-24** *	115	**-30** *	312	**-26** *	218		
Swallow	**10**	200	**22** *	75	**11**	157	**89** *	148	**21**	225	**8**	144	**14**	318	**44** *	293		
House Martin	**10**	100			**-10**	66	**-17**	57	**-40** *	99	**-36** *	81	**-61** *	145	**-23** *	147		
Long-tailed Tit	**12**	85			**48**	50	**39** *	76	**26**	149	**-15**	87	**-30** *	239	**29**	143	**84** *	32
Chiffchaff	**338** *	103	**239** *	41	**274** *	73	**351** *	95	**112** *	203	**138** *	140	**47** *	364	**35** *	286	**147** *	32
Willow Warbler	**2**	150	**-30** *	67	**-6**	117	**-56** *	92	**-80** *	115	**-49** *	90	**-77** *	152	**-57** *	153		
Blackcap	**209** *	117	**61** *	41	**100** *	87	**106** *	117	**95** *	237	**138** *	137	**113** *	382	**134** *	270	**160** *	45
Garden Warbler	**-28**	30					**-33**	33	**-37** *	59	**-27** *	45	**-37** *	98	**-13**	63		
Lesser Whitethroat							**2**	33	**12**	72			**-33** *	55	**-17**	40		
Whitethroat	**28**	88	**41** *	39	**12**	80	**87** *	133	**12**	246	**35** *	107	**55** *	294	**30** *	205		
Sedge Warbler									**-27**	45			**-6**	34	**-18**	32		
Reed Warbler									**-9**	40			**-12**	32				
Nuthatch	**363** *	42							**112** *	30	**159** *	51	**47** *	182	**79** *	84		
Treecreeper													**-6**	91	**-5**	49		
Wren	**51** *	218	**17**	77	**13**	171	**15**	180	**16** *	294	**15** *	175	**2**	458	**8**	335	**32** *	75
Starling	**-51** *	176	**-56** *	58	**-60** *	120	**-53** *	130	**-50** *	230	**-66** *	132	**-65** *	330	**-71** *	192	**-55** *	79
Blackbird	**46** *	217	**23**	72	**41** *	164	**23** *	187	**2**	312	**31** *	182	**0**	480	**21** *	345	**-29** *	81
Song Thrush	**56** *	167	**-6**	62	**39** *	111	**25** *	133	**-10**	233	**81** *	152	**-12** *	416	**17**	286	**-36** *	50
Mistle Thrush	**-18**	122	**-16**	40	**-45** *	80	**-39** *	83	**-57** *	133	**0**	88	**-57** *	226	**-48** *	124	**-57** *	34
Robin	**31** *	208	**36** *	70	**40** *	144	**12**	175	**19** *	292	**33** *	179	**7** *	464	**13** *	331	**78** *	78
Wheatear	**-29**	53			**22**	47												
Dunnock	**33** *	182	**20**	58	**-4**	124	**11**	165	**20** *	268	**34** *	165	**2**	414	**18**	305	**26** *	61
House Sparrow	**0**	160	**-26**	43	**-9**	95	**2**	118	**-35** *	196	**-6**	142	**-33** *	300	**7**	228	**-73** *	68
Tree Sparrow	**173** *	31			**224** *	39	**14**	33										
Yellow Wagtail							**-56** *	36	**-42** *	48								
Grey Wagtail															**-31**	31		
Pied Wagtail	**-16**	131	**10**	48	**-3**	102	**-29**	94	**-9**	149	**5**	86	**-20** *	199	**-7**	149		
Meadow Pipit	**-1**	93	**-6**	55	**15**	104	**-41** *	41	**-56** *	42			**-42** *	48	**1**	48		
Chaffinch	**11**	217	**11**	81	**32** *	170	**30** *	185	**18** *	312	**-27** *	178	**-13** *	469	**-11** *	340	**106** *	56
Bullfinch	**-6**	41					**13**	48	**-9**	63	**27**	54	**-36** *	131	**-8**	106		
Greenfinch	**-28** *	155	**-28**	44	**-34** *	102	**-32** *	136	**-26** *	250	**-23** *	141	**-48** *	371	**-48** *	266	**-12**	61
Linnet	**-25**	95	**-26**	48	**-18**	93	**-26**	114	**-15**	170	**-33**	74	**-39** *	220	**-24**	177		
Goldfinch	**150** *	164	**109** *	52	**141** *	118	**139** *	130	**77** *	208	**204** *	126	**54** *	319	**93** *	258	**387** *	48
Yellowhammer	**-29** *	56	**-47** *	42	**-19**	85	**-10**	133	**-19** *	216	**-44** *	104	**-39** *	246	**-17** *	162		
Reed Bunting	**22**	65			**42**	44	**79** *	60	**26**	80			**-31** *	60	**20**	33		
Corn Bunting									**-32** *	39								

Mammal monitoring and population trends

Mammal trends for nine mammal species – now including trends for countries as well as for the UK as a whole

Mammal data collected during BBS visits allows mammal trends to be calculated for nine of the UK's easily detectable and widespread mammal species. This is an optional extra to the core bird count visits made by BBS volunteers.

Coverage increased to 3,340 squares in 2015, up from 3,102 in the previous year; observers on 90% took part, either by counting live mammals, recording signs and using local knowledge, or submitting 'nil returns' where no mammals or evidence of presence was found.

INCREASED REPORTING

This year trends have been calculated at a country and English Region level, where sample size allows, in addition to a UK scale. This provides an insight into how populations are changing in different areas of the UK (Tables 12–17).

BROWN HARE

Figure 2 illustrates how change in **Brown Hare** populations has varied across the UK, with two English Regions showing very different trends: an increase of 54% in the East Midlands and decline by 39% in the North West between 1996 and 2014. Currently, the reasons why the **Brown Hare** trends vary so much in different parts of the country are not well understood.

RABBIT

Declines in the **Rabbit** population have been seen at all scales, with an overall UK decline of 59% between 1996 and 2014. The Game & Wildlife Conservation Trust's *National Gamebag Census* shows that, pre-BBS, **Rabbit** populations were increasing – recovering from myxomatosis. However, since then, and throughout BBS monitoring, population declines are maybe due to a new viral haemorrhagic disease.

DEER

All four deer species for which we report trends are increasing, and two have shown a statistically significant increase. The UK-wide 95% increase in **Reeves' Muntjac** since the survey began is the largest population change seen among the mammal trends.

▲ Rabbit populations show declines throughout the UK; with a UK-wide decline of 59% between 1996 and 2014.

RABBIT: SARAH HARRIS

Table 11 All mammal species recorded in 2015

Species	Squares recorded
Red Squirrel	29
Grey Squirrel	1,086
Common Dormouse	1
Bank Vole	28
Short-tailed Vole	31
Water Vole	9
Wood Mouse	25
Yellow-necked Mouse	2
House Mouse	2
Common Rat	61
Rabbit	1,889
Brown Hare	969
Mountain/Irish Hare	61
Hedgehog	36
Mole	600
Common Shrew	43
Pygmy Shrew	1
Water Shrew	2
Lesser White-toothed Shrew	1
Lesser Horseshoe Bat	1
Whiskered Bat	1
Daubenton's Bat	1
Noctule Bat	1
Common Pipistrelle	1
Pipistrelle Bat sp	8
Red Fox	571
Badger	274
Otter	25
Pine Marten	12
Stoat	48
Weasel	26
Polecat	1
Ferret	1
American Mink	7
Common Seal	2
Grey Seal	8
Wild Boar	5
Reeves' Muntjac	182
Red Deer	106
Sika Deer	23
Fallow Deer	103
Roe Deer	753
Chinese Water Deer	10
Feral Goat	7
Park Cattle	2

▲ **Squares recorded**: number of squares on which the species was recorded, including counts, field signs, dead animals and local knowledge.

BROWN HARE: NEIL CALBRADE

Figure 2 Brown Hare trends vary across the UK

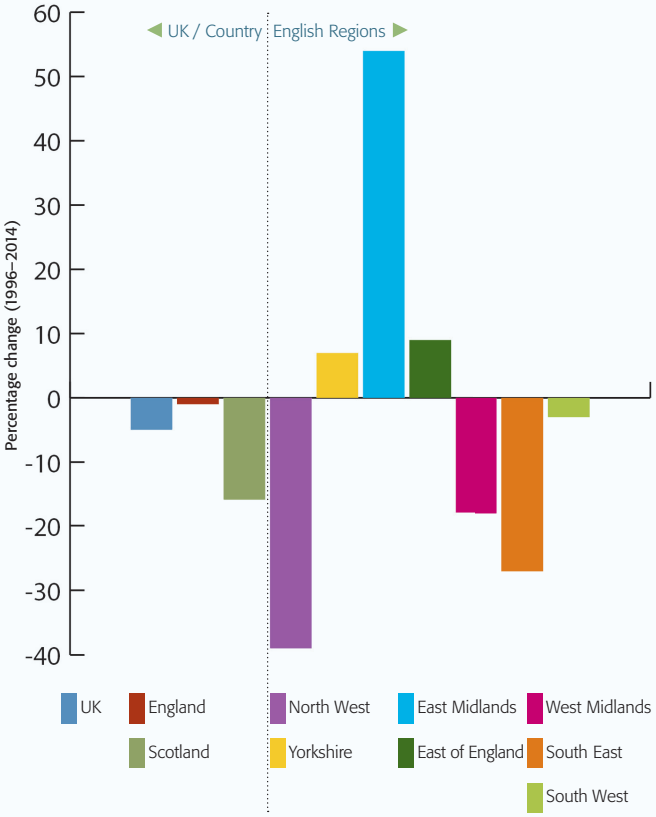


Table 12 Mammal trends in **UK** during 1996–2014

Species	*Scientific name*	Sample	96–14	LCL	UCL
Brown Hare	*Lepus europaeus*	696	**-5**	-16	7
Mountain/Irish Hare	*Lepus timidus*	50	**-32**	-58	21
Rabbit	*Oryctolagus cuniculus*	1,396	**-59** *	-66	-51
Grey Squirrel	*Sciurus carolinensis*	722	**-5**	-19	3
Red Fox	*Vulpes vulpes*	285	**-34** *	-44	-23
Red Deer	*Cervus elaphus*	63	**18**	-2	48
Roe Deer	*Capreolus capreolus*	403	**53** *	31	79
Fallow Deer	*Dama dama*	60	**11**	-7	38
Reeves' Muntjac	*Muntiacus reevesi*	92	**95** *	25	212

Table 13 Mammal trends in **England** during 1996–2014

Species	*Scientific name*	Sample	96–14	LCL	UCL
Brown Hare	*Lepus europaeus*	596	**-1**	-12	12
Rabbit	*Oryctolagus cuniculus*	1,143	**-43** *	-49	-36
Grey Squirrel	*Sciurus carolinensis*	644	**-7**	-17	2
Red Fox	*Vulpes vulpes*	230	**-37** *	-48	-23
Roe Deer	*Capreolus capreolus*	312	**57** *	34	97
Fallow Deer	*Dama dama*	57	**10**	-7	34
Reeves' Muntjac	*Muntiacus reevesi*	92	**95** *	23	207

Table 14 Mammal trends in **Scotland** during 1996–2014

Species	*Scientific name*	Sample	96–14	LCL	UCL
Brown Hare	*Lepus europaeus*	74	**-16**	-46	20
Rabbit	*Oryctolagus cuniculus*	113	**-82** *	-90	-69
Red Deer	*Cervus elaphus*	42	**6**	-15	143
Roe Deer	*Capreolus capreolus*	91	**52** *	21	91

Table 15 Mammal trends in **Wales** during 1996–2014

Species	*Scientific name*	Sample	96–14	LCL	UCL
Rabbit	*Oryctolagus cuniculus*	91	**-40**	-57	10
Grey Squirrel	*Sciurus carolinensis*	55	**15**	-35	72

Table 16 Mammal trends in **Northern Ireland** during 1996–2014

Species	*Scientific name*	Sample	96–14	LCL	UCL
Rabbit	*Oryctolagus cuniculus*	43	**-35**	-62	1

NEW – MAMMAL TREND GRAPHS ONLINE:
www.bto.org/bbs-mammals

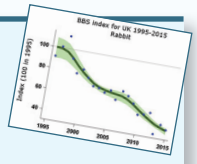


Table 17 Mammal trends in **English Regions** during 1996–2014

Species	North West		North East		Yorkshire		East Midlands		East of England		West Midlands		South East		South West		London	
Brown Hare	**-39** *	62			**7**	69	**54***	88	**9**	144	**-18**	40	**-27** *	99	**-3**	68		
Rabbit	**-51** *	109	**-70** *	40	**-18**	109	**-82***	107	**-35** *	201	**-43** *	109	**-57** *	284	**-21**	175		
Grey Squirrel	**68** *	58			**-22**	31	**33**	43	**-15**	96	**-33** *	74	**-22** *	192	**14**	95	**27**	49
Red Fox									**-25**	31			**-33** *	64	**-15**	47		
Roe Deer													**52** *	112	**40** *	96		
Reeves' Muntjac									**91**	43			**40**	31				

- Trends are expressed as the percentage change, and marked with an asterisk (*) where the 95% confidence limits of the change do not overlap zero (indicating that there has been a significant change).
- Trends for Red and Fallow Deer are reported with caveats. These are herding species and trends should be interpreted with caution, the presence or absence of a herd in a given BBS visit could influence the overall trend.
- The sample is the mean number of squares per year on which the species was recorded during 1995–2015.
- The trend since the start of the survey, covering the years 1995–2015, has been smoothed, and the end years truncated (figure in bold).
- LCL and UCL are the lower and upper 95% confidence limits for the 1996–2014 trend (displayed in Tables 12–16).

SPECIAL THANKS

We would like to thank all surveyors and ROs for making the BBS the success it is today. Space does not permit all observers to be acknowledged individually here, but we would especially like to thank the ROs for their efforts.

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Buckinghamshire	Phil Tizzard
Cambridgeshire	Mark Welch (now Rob Pople)
Cheshire (Mid)	Paul Miller
Cheshire (North-East and South)	Hugh Pulsford
Cleveland	Vic Fairbrother
Cornwall	Peter Kent
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Yorkshire (East, Hull)	Geoff Dobbs
Yorkshire (Leeds & Wakefield)	Ken Graham (now **VACANT**)
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Yorkshire (North-West)	Gerald Light
Yorkshire (Richmond)	John Edwards (now **VACANT**)
Yorkshire (South-East)	Aidan Gill
Yorkshire (South-West)	Millie Mockford (now Grant Bigg)
Yorkshire (York)	Rob Chapman

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Argyll (mainland & Gigha) & Bute	Nigel Scriven with James Cassels (Arran)
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Benbecula & The Uists	Yvonne Benting
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Jersey	Tony Paintin

ISLE OF MAN

Isle of Man	Pat Cullen

We would be grateful for help organising the BBS in regions currently without a Regional Organiser (marked **VACANT**). If you live in one of these regions and would be interested in taking on the role, please let us know.

Many thanks are due to the following ROs who retired during the past year, having supported the BBS in their regions: Phil Alexander, John Armitage, Stephen Bentall, Allan Dawes, Chris Dee, John Edwards, Edmund Fellowes, Ken Graham, John Lloyd, Millie Mockford, Stuart Piner, Graham Pyatt, Mark Welch. Sadly, Mick Carroll passed away in 2015 and we are grateful for all his assistance in Yorkshire (North-East).

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Finally, we would like to thank all the landowners who kindly allow volunteers to walk BBS transects on their land.

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