BBS

The Breeding Bird Survey 2014

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 2014 BBS REPORT

This is the twentieth annual report of the BTO/ JNCC/RSPB Breeding Bird Survey (BBS), containing the population trends of widespread UK bird species during the period 1994–2014.

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 2014 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 in 2014 and Stuart Newson produced 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 the Surveys Team, which runs 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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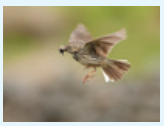
BBS website: www.bto.org/bbs

ACKNOWLEDGEMENTS

We are grateful to the following people for their help in 2014: Stephen Baillie, Neil Calbrade, Iain Downie, Mark Hammond, Andrew Joys, Maria Knight, John Marchant, Kate Risely, Sandra Sparkes, Justin Walker and Karen Wright.

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, 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, 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, and the help of Shane Wolsey, the BTO Ireland Officer, who organised the fieldwork in 2014. 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 Meadow Pipit is by Tony Hawkins 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...

CITATION

Harris, S.J., Massimino, D., Newson, S.E., Eaton, M.A., Balmer, D.E., Noble, D.G., Musgrove, A.J., Gillings, S., Procter, D. & Pearce-Higgins, J.W. 2015. *The Breeding Bird Survey 2014.* BTO Research Report 673. British Trust for Ornithology, Thetford.

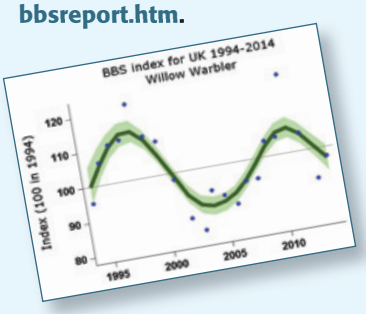
Published by the British Trust for Ornithology, the Joint Nature Conservation Committee and the Royal Society for the Protection of Birds, July 2015.

BTO Research Report 673
ISSN 1368-9932
ISBN 978-1-908581-56-3

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.



CETTI'S WARBLER: MOSS TAYLOR, HONEY BUZZARD: GRAHAM CATLEY, WHINCHAT: EDMUND FELLOWES, MUNTJAC: PAUL NEWTON

Focusing on improving coverage for upland habitats

The latest BBS news, an update on WCBS and increasing coverage in the uplands

By **Sarah Harris**, BBS National Organiser, BTO, and **Mark Eaton**, Principal Conservation Scientist, RSPB

One of the strengths of the BBS is that it covers all habitats. However, coverage of remote upland habitats falls short of what is achieved elsewhere. Here we focus on BBS in these habitats.

INCREASING COVERAGE IN THE UPLANDS

At present, the number of BBS squares surveyed in the uplands means that we are unable to calculate trends for species such as Ring Ouzel and Dunlin, where the sample is just below the required reporting threshold. Increased coverage in the uplands would enable trends for these and similar species to be calculated at UK, and potentially country level. This would also improve the robustness of species trends for those, such as Common Sandpiper, which only just reach the threshold currently.

DRIVERS OF CHANGE

The uplands of the UK have seen much change over the years. Historically, changes in grazing pressure, drainage, upland hunting pursuits and planting of commercial conifer forests have been significant influences.

More recently, we have seen the loss of heather to rough grass and more conifer plantations, and renewable energy generation has become a key economic activity in the uplands. All the while, changes in upland bird populations have not been as well monitored as those in other major UK habitats.

BUILDING ON WHAT WE KNOW

Data from other surveys, such as the Bird Atlas 2007–11 and the Statutory Conservation Agency and RSPB Annual Breeding Bird Scheme (SCARABBS), have revealed declines in a wide range of our upland bird species. For example, the Bird Atlas reported that the number of 10-km squares occupied by Ring Ouzel had fallen by 43% between the 1968–72 and the 2007–11 atlases, and the recent SCARABBS survey revealed a population decline of 29% between 1999 and 2013.

SCARABBS are periodic single-species surveys, usually carried out at intervals of six or twelve years, depending on our conservation concern for a species. The species surveyed are typically those too scarce to be covered by the BBS, but not so rare that they are monitored sufficiently by the Rare Breeding Birds Panel (RBBP). These surveys are mainly run by the RSPB and also other non-governmental organisations such as BTO, often with the assistance of volunteer surveyors and occasionally with collaboration in organisations such as the Raptor Study Groups. They are co-funded by the national government conservation bodies. Recent SCARABBS surveys have covered upland species such as Merlin (2008), Hen Harrier (2010), Dotterel and Snow Bunting (2011), Ring Ouzel (2012), Twite (2013), Peregrine (2014) and Golden Eagle (2015).

UPLAND ADJACENT SQUARES

Increasing BBS coverage in upland and remote areas could see more species monitored by the BBS, which will increase our understanding of the population changes for these scarcer or specialist species, and improve our ability to diagnose the causes of population change.

One approach being used is the coverage of Upland Adjacent squares, next to core existing eligible upland squares. This scheme started in 2010 and 100 Upland Adjacent squares were covered in 2014. This is fantastic progress, but there are 250 eligible upland squares, so we are keen to increase the number of adjacent squares covered in future years. The adjacent square needs to be surveyed on the same day and by the same volunteer as the original and will double the amount of incredibly valuable data collected in remote areas and make the effort of getting to such sites even more worthwhile. Meanwhile, research is taking place to find further methods of increasing coverage in these areas without biasing BBS population trends.

ALL HABITATS – thank you!

We are now in a position where focus can be aimed at areas in need of further coverage, making the survey even stronger, whilst knowing that at the same time all habitat types across the UK are being covered. None of this would be possible without the fantastic efforts of all volunteers, whether covering urban, farmland, woodland or moorland squares, along with everything in between: every single square is invaluable! Thank you.

COMMON SANDPIPER: HOWARD STOCKDALE, GATEKEEPER: JOHN FLOWERDAY

Wider Countryside Butterfly Survey (WCBS)

Once again, BBS volunteers provided a valuable contribution to the survey. In 2014, 1,738 visits to 831 WCBS squares were carried out: 367 (44%) of these were BBS squares.

Forty-three butterfly, 44 moth and 29 dragonfly species were recorded during the 2014 WCBS. Meadow Brown was the most widespread species, being recorded on 90% of squares. Small White, Small Tortoiseshell, Gatekeeper and Large White were all recorded on over 70% of squares. At the other end of the spectrum, Swallowtail, Purple Emperor and Large Heath were recorded on just one square each.

The full 2014 WCBS newsletter is available on the BBS webpages, under BBS Publications. Alternatively, email bbs@bto.org for a paper version or to express an interest in taking part in the WCBS.

Recording non-native species

Data collected by the BBS on non-native species are used to calculate population trends for species of birds and mammals that reach the reporting threshold, such as Ring-necked Parakeet and Grey Squirrel, but are also used for research. This information allows population changes and the distribution of non-native species to be tracked, and helps inform policy and decision making regarding these species and native species they affect.

BBS data contribute to the National Biodiversity Network: the patterns of occurrence are accessible via the GB Non-native Species Information Portal which provides information on their biology, invasion history and impact. Data on these species also contribute to the non-native species indicators which are based on ca. 180 of the 3,000-plus non-native species inhabiting Britain.

BBS Online

Data for 94% of BBS squares were submitted online in 2014 (3,405 squares). Each year the percentage of online data entry grows and the eventual aim is to have all data submitted online. We realise this is not suitable or practical for all volunteers and paper submissions continue to be gratefully received.

For those entering data online, remember that using the 'Tab' button on your keyboard is a far more efficient way of moving around the screen than clicking with the mouse. Tab through the boxes to be completed, using the associated keyboard letters and numbers to select from the drop-down menus.

New 'Help and Guidance' pages have been added to the BBS Online homepage and are also available via the 'Taking Part' BBS webpages. These pages will continue to be developed, and updated videos on how to enter data online and how to draw a route map are being prepared currently.

Opting out of paper reports and newsletters

In a bid to reduce paper use, please get in touch if you wish to receive the BBS report electronically. Paper copies are sent to all BBS volunteers automatically each year unless we are told otherwise. Copies are also available for landowners in BBS squares.

The WCBS Annual Newsletter can be printed and posted on request. If you would like a copy, please email bbs@bto.org.

All paper recording forms for BBS and WCBS are available online, from your Regional Organiser and at bbs@bto.org.

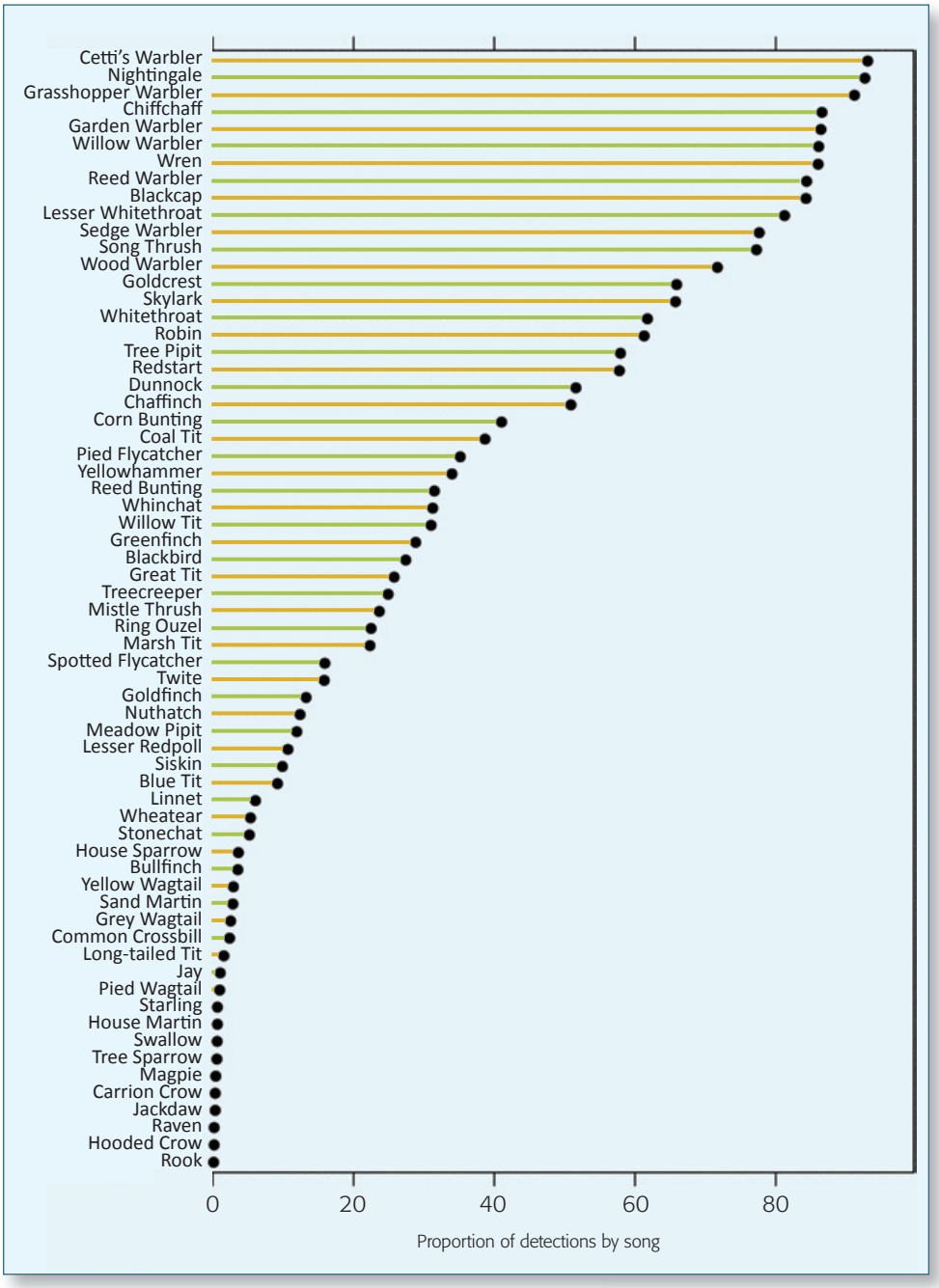
The value of recording how birds are detected

Researchers in the BTO's Population Ecology and Modelling team have been delving into the data identifying if birds were detected by 'song', 'call' or 'visually'

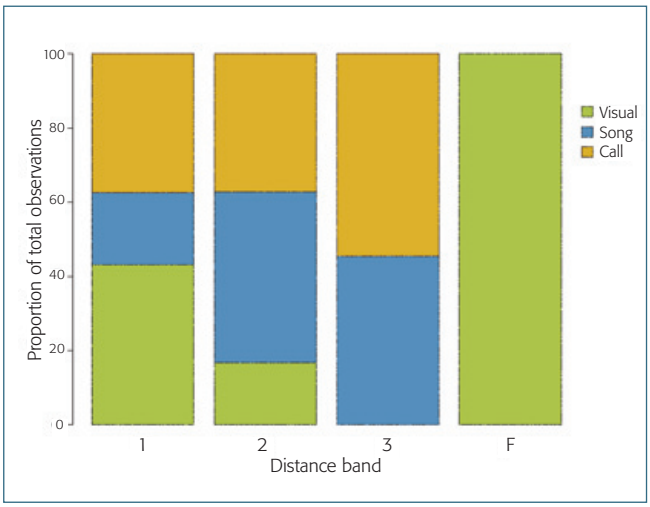
By **Stuart Newson**, Senior Research Ecologist, BTO

The Breeding Bird Survey has the potential to provide much more than the annual population trends that are its main purpose. Increasingly, we are interested in how bird densities vary, whether in relation to landscapes and habitats or climatic gradients.

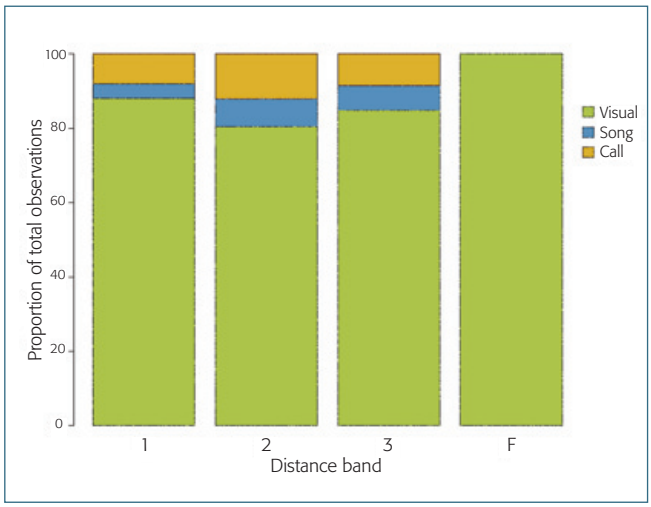
BBS observers will be familiar with the technique known as distance sampling, in which they not only record how many birds they encounter, but also how far from their transect route the birds are. We can use this information to assess how the proportion of observations of individuals of a given species declines with distance. By doing this we can estimate the number of birds that may have been present but were not seen or heard simply because they were further away, and so convert counts from BBS surveys to densities. This approach is used in much of our research, including all our ongoing spatial modelling work, and is important for estimating the population sizes of common and widespread breeding birds.



▲ Passerine detections by song (% of total observations).



▲ Treecreeper – detection by sight, song or call in each distance band and flying.



▲ Wheatear – detection by sight, song or call in each distance band and flying.

THE PROBLEM

For many passerine bird species, singing males are more detectable than females. As a consequence there has been a tendency for density estimates derived from BBS data to be smaller than expected, when compared with previous estimates derived from Common Birds Census (CBC) territory mapping data (Newson *et al.* 2008). This is because we have needed to assume that the detectability of singing males is the same as for females. By doing this, we have overestimated what we think the average detectability of a species is, and hence underestimated the density of these species. Consequently, we still use historic CBC densities in preference to BBS data for estimating population size for a number of passerines, which we adjust to account for long-term population changes using BBS trends (Musgrove *et al.* 2013).

WHY RECORD SIGHT, SONG AND CALL?

From 2014, BBS volunteers were given the option of recording whether individual birds were first detected by sight, song or call. By collecting this information, the aim was to be able to account for some important sex-specific differences in detectability, and in so doing produce density estimates that are a better reflection of true densities. Whilst we anticipate that the greatest benefits will be for the estimation of species for which there is an extreme sex difference in detectability, such as Chiffchaff, of which 85% of detections in 2014 were of singing males, recording how birds are first detected is likely to improve our estimates of density for most passerines to some degree.

AMAZING UPTAKE

An amazing 1,804 observers (67% of participants) recorded how birds were first detected in 2014. It will be of no great surprise that Cetti's Warblers and Nightingales were mainly detected by song (93% of detections for both species), but it is interesting to see how the proportion of detections according to sight, song and call varies across species, and importantly, with distance – for example, a greater proportion of Song Thrushes than Skylarks (77% versus 66% of detections) were detected by song. Examining how birds are detected with distance from the observer, we see that, as we might have expected, proportionally fewer Treecreepers are detected by sight away from the transect line (at 100+ m, no detections are by sight), and that Wheatears, which occur in very open habitats, are mainly detected by sight and over a large distance (85% of detections by sight at 100+ m). It is also encouraging to see that observers appear to be assigning vocalisations to call or song in our standard way, for example the 'cuckoo' of a male Cuckoo (65% of detections) to 'first detected by song'. Exceptions, are the woodpeckers, for example Green Woodpecker, where it looks like a small proportion of 'yaffle' calls have been incorrectly assigned to song rather than to call (9% of calls assigned to song). See www.bto.org/bbs-detection for more information on what constitutes a song or call.

Many of these results are intuitive but, by knowing precisely how detectability changes with distance and habitat in relation to how birds are first detected, we can now account for these and improve our estimates of density (and population size), which form the basis of so much of our work. Thank you to all who contributed to this study in 2014.

FIND OUT MORE...

Newson, S.E., Evans, K.L., Noble, D.G., Greenwood, J.J.D. & Gaston, K.J. 2008. Use of distance sampling to improve estimates of national population sizes for common and widespread breeding birds in the UK. ***Journal of Applied Ecology*** 45: 1330–1338.

Musgrove, A.J., Aebischer, N.J., Eaton, M.A., Hearn, R.D., Newson, S.E., Noble, D.G., Parsons, M., Risely, K. & Stroud, D.A. 2013. Population estimates of birds in Great Britain and the United Kingdom. ***British Birds*** 106: 64–100.

BBS coverage including additional squares

100 Upland Adjacent squares surveyed in 2014

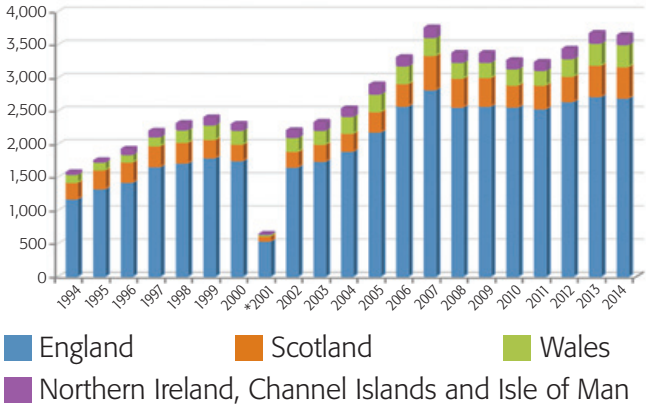
Data for 3,639 BBS squares were submitted in 2014. Thank you to everyone who continues to support the survey. Every contribution is invaluable.

Exactly 100 of the BBS squares covered were Upland Adjacent squares and 29 were Scottish Woodland squares. Volunteers with one of the 250 eligible upland squares currently in the BBS square set are encouraged to take on an additional Upland Adjacent square to increase coverage in remote upland areas, increasing the amount of data collected in this under-represented habitat. See page 4 for more information on this scheme.

The Northern Ireland Environment Agency funded three fieldworkers to survey 52 squares in Northern Ireland; the remaining 3,587 squares were surveyed by 2,687 volunteers. All are included in the totals in Table 1.

▲ Ring Ouzel is a species getting closer to the reporting threshold as coverage increases long-term.

Number of BBS squares surveyed



*2001 – foot-and-mouth disease

Since BBS Online was launched, the number of squares submitted online has risen from 22% in 2004 to 94% in 2014. We hope this figure continues to grow, but we continue to value every submission made to the survey, paper or online.

Percentage of online submissions

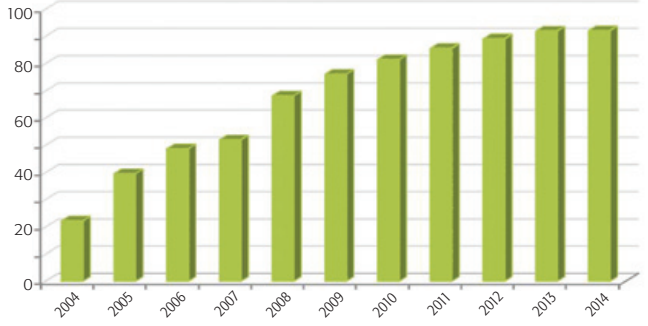


Table 1 Number of BBS squares surveyed

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
England	1,173	1,325	1,420	1,657	1,713	1,792	1,749	533	1,652	1,739	1,886	2,180	2,571	2,821	2,555	2,570	2,557	2,529	2,641	2,718	2,694
Scotland	245	283	308	313	309	275	246	78	231	255	274	305	336	517	436	431	331	359	380	471	474
Northern Ireland	25	17	65	75	85	95	83	0	97	109	102	120	108	131	121	116	115	110	116	127	115
Wales	122	121	116	138	192	223	213	22	215	214	254	271	272	269	242	233	246	223	270	331	331
Channel Islands	1	1	7	6	7	7	7	7	7	7	11	13	19	16	15	17	16	15	20	25	25
Isle of Man	4	4	4	6	6	5	3	0	3	4	6	3	5	4	1	0	0	0	4	0	0
UK Total	**1,570**	**1,751**	**1,920**	**2,195**	**2,312**	**2,397**	**2,301**	**640**	**2,205**	**2,328**	**2,533**	**2,892**	**3,417**	**4,063**	**3,682**	**3,679**	**3,571**	**3,236**	**3,431**	**3,672**	**3,639**

RING OUZEL: TONY HAWKINS

Coverage in 2014

Map includes core BBS, Upland Adjacent and Scottish Woodland squares

Scotland

Second-highest coverage was achieved in Scotland with 474 squares surveyed.

A record 33 Upland Adjacent squares were covered in 2014 which boosts the BBS sample sizes and, over time, creates more robust population trends in these currently under-represented habitats. Twenty-nine Scottish Woodland squares were also covered.

The *'What's Up?'* project ran for its last field season in 2014. It was managed by the BTO and funded by the BTO, Scottish Natural Heritage and the Scottish Ornithologists' Club. The project adopted a number of strategies for engaging with more volunteers, including providing BBS mentors and running a series of training courses. These initiatives contributed to a significant increase in BBS coverage from 380 in 2012 to 474 in 2014.

Northern Ireland

One hundred and fifteen BBS squares were covered in Northern Ireland. A slight drop in recent years, unfortunately caused by a plethora of concurrent volunteer health issues.

Training courses, funded by Northern Ireland Environment Agency and BTO, took place in 2014 with the aim of increasing coverage in Northern Ireland.

England

Forty-seven Upland Adjacent squares were surveyed in 2014 and contributed an overall BBS total of 2,694 squares covered.

With a higher number of volunteers available, England has the highest coverage of any UK country, enabling regional trends to be calculated for many species.

Wales

For the second year running, 331 squares were covered in Wales, the joint highest coverage.

Coverage of the 'bolt-on' Upland Adjacent squares continued to grow in 2014 with a new record 20 Upland Adjacent squares covered.

Training and mentoring by BTO Cymru and Regional Organisers continued to run for existing and new volunteers. Much of this was funded by Natural Resources Wales.

Channel Islands

In joint record coverage with 2013, 2014 saw 25 squares surveyed by volunteers on the Channel Islands (not shown on map).

From Wren to Lesser Scaup, what was seen in 2014?

With 223 bird species recorded on the 3,639 BBS squares covered, a wide suite of species was recorded, from the common and widespread species for which we can calculate population trends through to scarcer breeding birds and vagrants.

No matter how diverse, numerous or rare the species are on a given BBS square, every square is equally important.

In order to calculate robust population trends, species need to have been recorded on 40 squares per year on average, since the start of the survey in 1994. This figure is reduced to 30 squares for national and regional trends.

Data for species below this threshold are still valuable, providing information on distribution and abundance, and can be used in other research projects. For some species, the average number of squares they are recorded on increases over time and the threshold for reporting may eventually be reached. This year, Dipper reached the threshold in England.

Among the rare species recorded, a Lesser Scaup was seen on a BBS square at Frodsham Marsh on the south bank of the River Mersey. Bar-headed and Red-breasted Geese were recorded elsewhere, contributing to our records of non-native species.

With species such as Razorbill and Guillemot reaching total counts of 66 and 117 respectively, it is perhaps surprising Puffin was recorded just once.

A complete list of species recorded and the number of squares per species is available at www.bto.org/volunteer-surveys/bbs/latest-results/species-lists, but a selection of the most and least common species recorded in 2014 can be found below. Once again Woodpigeon remains at the top of the list, as it has done for the last seventeen years!

FIGURES

Total number of species recorded: **223**

Average species count per square: **33**

Number of squares with five or fewer species recorded: **31**

Number of squares with 60 or more species recorded: **8**

Highest species count on one square: **74**, just outside Farindon, nestled between the Cotswolds and North Wessex Downs

Number of dedicated volunteers collecting all these data: **2,687**

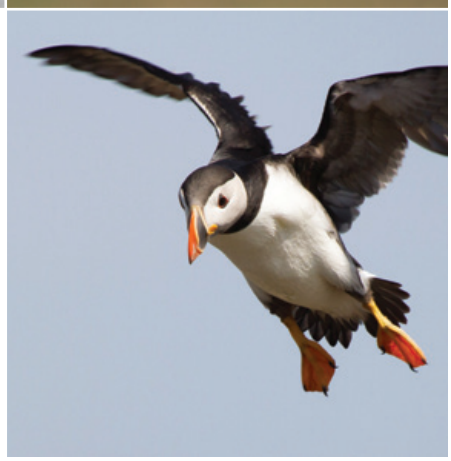
MOST COMMON...

1.	Woodpigeon	129,356
2.	Blackbird	66,610
3.	Rook	60,285
4.	Carrion Crow	55,429
5.	Jackdaw	55,030
6.	Wren	53,485
7.	Chaffinch	52,488
8.	House Sparrow	46,291
9.	Starling	43,779
10.	Blue Tit	38,198

LEAST COMMON...

1.	Little Stint	1
2.	White Stork	1
3.	Lesser Scaup	1
4.	Iceland Gull	1
5.	Black Redstart	1
6.	Puffin	1
7.	Red-breasted Goose	1
8.	Bar-headed Goose	1
9.	White-tailed Eagle	2
10.	Honey-buzzard	2

▲ Total counts of all individuals for each species recorded in 2014.



WREN: ALLAN DREWITT, LITTLE STINT: MOSS TAYLOR, CHAFFINCH: EDMUND FELLOWES, PUFFIN: CHRIS TAYLOR

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 200-m 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, 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. 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.

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.

Recent studies using BBS data

Burgess, M.D., Bellamy, P.E., Gillings, S., Noble, D.G., Grice, P.V. & Conway, G.J. 2015. The impact of changing habitat availability on population trends of woodland birds associated with early successional plantation woodland. ***Bird Study*** 62: 39–55. doi: 10.1080/00063657.2014.998622

Crowe, O., Musgrove, A.J. & O'Halloran, J. 2014. Generating population estimates for common and widespread breeding birds in Ireland. ***Bird Study*** 61: 82–90. doi: 10.1080/00063657.2013.868401

Eglington, S.M., Brereton, T.M., Tayleur, C.M., Noble, D., Risely, K., Roy, D.B. & Pearce-Higgins, J.W. 2015. Patterns and causes of covariation in bird and butterfly community structure. ***Landscape Ecology.*** doi: 10.1007/s10980-015-0199-z

Harrison, P.J., Yuan, Y., Buckland, S.T., Elston, D.A., Brewer, M.J., Johnston, A. & Pearce-Higgins, J.W. (in press) Quantifying turnover in biodiversity of British breeding birds. ***Journal of Applied Ecology.***

Henderson, I., Calladine, J., Massimino, D., Taylor, J.A. & Gillings, S. 2014. Evidence for contrasting causes of population change in two closely related, sympatric breeding species the Whinchat *Saxicola rubetra* and Stonechat *Saxicola torquata* in Britain. ***Bird Study*** 61: 553–565.

Massimino, D., Johnston, A., Noble, D.G. & Pearce-Higgins, J.W. 2015. Multi-species spatially-explicit indicators reveal spatially structured trends in bird communities. ***Ecological Indicators*** 58: 277–285.

Pearce-Higgins, J.W., Eglington, S.M., Martay, B. & Chamberlain, D.E. 2015. Drivers of climate change impacts on bird communities. ***Journal of Animal Ecology*** 84: 943–954. doi: 10.1111/1365-2656.12364

Robinson, R.A., Morrison, C.A. & Baillie, S.R. 2014. Integrating demographic data: towards a framework for monitoring wildlife populations at large spatial scales. ***Methods in Ecology and Evolution*** 5: 1361–1372. doi: 10.1111/2041-210X.12204

Sullivan, M.J.P., Newson, S.E. & Pearce-Higgins, J.W. 2015. Evidence for the buffer effect operating in multiple species at a national scale. ***Biology Letters.*** doi: 10.1098/rsbl.2014.0930

Further reading

Baillie, S.R., Marchant, J.H., Leech, D.I., Massimino, D., Sullivan, M.J.P., Eglington, S.M., Barimore, C., Dadam, D., Downie, I.S., Harris, S.J., Kew, A.J., Newson, S.E., Noble, D.G., Risely, K. & Robinson, R.A. 2014. *BirdTrends 2014: trends in numbers, breeding success and survival for UK breeding birds.* Research Report 662. BTO, Thetford. (www.bto.org/birdtrends)

Eaton, M.A., Brown, A.F., Noble, D.G., Musgrove, A.J., Hearn, R.D., Aebischer, N.J., Gibbons, D.W., Evans, A. & Gregory, R.D. 2009. Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. ***British Birds*** 102: 296–341. (www.bto.org/sites/default/files/u12/bocc3.pdf)

Hayhow, D.B., Conway, G., Eaton, M.A., Grice, P.V., Hall, C., Holt, C.A., Kuepfer, A., Noble, D.G., Oppel, S., Risely, K., Stringer, C., Stroud, D.A., Wilkinson, N. & Wotton, S. 2014. *The state of the UK's birds 2014.* RSPB, BTO, WWT, JNCC, NE, NIEA, NRW & SNH, Sandy, Bedfordshire. (www.bto.org/sites/default/files/u16/downloads/SUKB/state_of_uk_birds_2014.pdf)

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

PECBMS 2014. *Trends of common birds in Europe, 2014 update.* (www.ebcc.info/index.php?ID=557)

United Kingdom – population trends

Wren increased by 34% in the UK between 2013 and 2014

The latest UK population trends for 110 common and widespread birds

Data collected across the UK have been used to calculate population trends for 110 species. To be included in these calculations, each species must have been recorded on an average of at least 40 BBS squares per year since the survey started, with the exception of **Little Egret**, **Gadwall** and **Nightingale**. Their concentrated populations meet the reporting threshold for England, so they are included in this total. At present, **Ring Ouzel**, **Teal** and **Mandarin Duck** lie just below the reporting threshold.

WHINCHAT CHAT

An increasingly 'upland' species, **Whinchat** has contracted in range by 47% since the 1968–72 Bird Atlas and BBS data show a population decline of 54% between 1995 and 2013. Historically, declines have been linked to agricultural intensification, with most now present on higher ground where suitable breeding habitat remains but where climate may prove limiting. Changes in grazing and forest management in the uplands provide both opportunities and limitations for Whinchats and deserve further investigation. With strong population declines across Europe since 1980, **Whinchat** is currently on the UK's amber list of species of conservation concern. It is among a suite of declining humid-zone migrants wintering in West Africa, suggesting factors on wintering grounds and on migration could also be playing a role.

SIGNIFICANT CHANGES

Population trends for 71 species show statistically significant change. Long-term trends show 39 species increased and 32 declined between 1995 and 2013. The greatest increases were **Ring-necked Parakeet** (1,181%), **Red Kite** (874%) and **Barn Owl** (219%). **Turtle Dove** (91%), **Willow Tit** (81%) and **Pied Flycatcher** (60%) account for the greatest long-term declines.

Short-term trends (2013–14) show 42 significant changes. Of these, 31 were increases including **Stonechat** (76%), **Kingfisher** and **Grey Wagtail** (both 50%) and **Lesser Whitethroat** and **Wren** (both 34%).

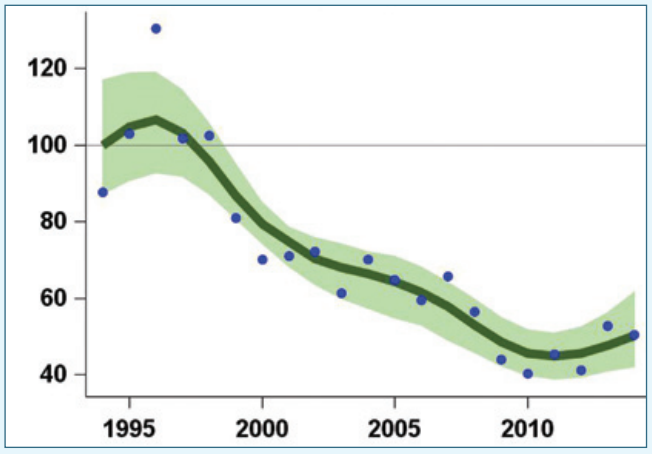
BIRDS OF CONSERVATION CONCERN

Of the 20 red-listed species monitored by the BBS, 14 have statistically significant long-term declines. **House Sparrow**, **Grasshopper Warbler** and **Tree Pipit** have shown no statistically significant change, and **Tree Sparrow** has increased by 122% since 1994 but remains far from its early 1970s numbers. Thirty-eight amber-listed species are monitored by BBS: 13 increased and 10 declined significantly.

'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.

Whinchat in the UK have declined by 54% between 1995 and 2013



▲ BBS index, 1994–2014 showing smoothed trend (dark green), its confidence interval (pale green) and annual index values (dots).

WHINCHAT: EDMUND FELLOWES

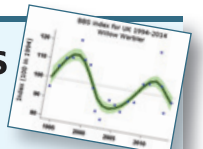
Table 2 UK population trends during 2013–14 and 1995–2013

Species	Sample	13–14	95–13	LCL	UCL
Mute Swan	255	-6	28	-1	66
Greylag Goose	215	34	215*	26	564
Canada Goose	492	25	66*	37	106
Shelduck	147	9	-9	-45	28
Gadwall	39	-26*	99*	20	239
Mallard	1,329	-1	14*	3	27
Tufted Duck	157	-22*	32*	0	76
Goosander	41	-20	-19	-54	45
Red-legged Partridge	561	-1	12*	1	27
Red Grouse	146	29*	10	-8	34
Grey Partridge	225	-9	-59*	-66	-51
Pheasant	1,856	3	31*	23	38
(Cormorant)	243	-24*	16	-12	54
(Little Egret)	37	47	2,006	not estimable	
(Grey Heron)	661	12	-13*	-24	-3
Little Grebe	70	8	16	-17	72
Great Crested Grebe	72	-2	4	-31	43
Red Kite	116	1	874*	489	1,657
Sparrowhawk	349	-6	-15*	-23	-1
Buzzard	1,008	3	75*	62	97
Moorhen	646	4	-15*	-22	-6
Coot	273	-15*	17	-4	48
Oystercatcher	344	-9	-16*	-28	-3
Golden Plover	65	-3	-17	-35	6
Lapwing	684	2	-45*	-52	-37
Curlew	523	5	-46*	-52	-40
Common Sandpiper	69	-1	-15	-35	6
Redshank	86	-5	-45*	-64	-13
Snipe	166	1	5	-14	26
(Common Tern)	67	235	5	-49	169
Feral Pigeon	688	4	-17*	-29	-3
Stock Dove	806	9	15*	1	31
Woodpigeon	2,536	-10*	37*	29	44
Collared Dove	1,372	-7*	11*	4	19
Turtle Dove	141	-35	-91*	-93	-88
Cuckoo	709	27*	-46*	-53	-38
(Barn Owl)	46	-42*	219*	95	419
Little Owl	95	13	-55*	-65	-43
(Tawny Owl)	93	71*	-20	-33	8
Swift	1,037	-17	-42*	-51	-34
Kingfisher	54	50*	-21	-46	13
Green Woodpecker	823	-12*	31*	20	41
Gt Spotted Woodpecker	1,094	0	136*	117	154
Kestrel	663	6	-40*	-45	-33
Hobby	43	-18	-11	-33	25
Peregrine	48	35	-19	-46	19
Ring-necked Parakeet	69	43	1,181*	417	5,253
Magpie	1,923	6*	-1	-6	4
Jay	783	-13*	24*	13	34
Jackdaw	1,757	4	53*	40	67
Rook	1,324	0	-20*	-28	-11
Carrion Crow	2,410	2	18*	10	27
Hooded Crow	136	24*	11	-16	56
Raven	309	-3	42	-4	107
Goldcrest	782	18*	-5	-19	11

Species	Sample	13–14	95–13	LCL	UCL
Blue Tit	2,350	2	4*	1	8
Great Tit	2,230	-4	39*	34	47
Coal Tit	830	13*	6	-6	19
Willow Tit	49	39	-81*	-87	-73
Marsh Tit	147	10	-29*	-43	-12
Skylark	1,758	15*	-24*	-29	-19
Sand Martin	133	10	18	-28	115
Swallow	2,008	4	26*	19	36
House Martin	941	6	-10	-19	3
Long-tailed Tit	966	22*	10*	1	21
Wood Warbler	53	37	-58*	-80	-11
Chiffchaff	1,541	21*	90*	77	104
Willow Warbler	1,407	6*	-4	-12	3
Blackcap	1,635	14*	143*	129	159
Garden Warbler	449	3	-19*	-29	-5
Lesser Whitethroat	275	34*	-1	-17	16
Whitethroat	1,385	18*	38*	29	53
Grasshopper Warbler	84	13	-16	-44	20
Sedge Warbler	301	4	-2	-18	25
Reed Warbler	129	6	15	-5	49
Nuthatch	509	10*	92*	68	113
Treecreeper	357	7	8	-4	25
Wren	2,486	34*	8*	4	13
Starling	1,757	6	-50*	-55	-45
Dipper	62	-11	-22	-47	18
Blackbird	2,513	5*	21*	17	25
Song Thrush	2,015	14*	8*	2	15
Mistle Thrush	1,163	19*	-31*	-37	-23
Spotted Flycatcher	191	25	-47*	-61	-35
Robin	2,409	7*	11*	6	15
Nightingale	33	24	-37	-59	3
Pied Flycatcher	40	-20	-60*	-73	-42
Redstart	174	17*	47*	20	71
Whinchat	77	-5	-54*	-67	-36
Stonechat	151	76*	17	-11	52
Wheatear	351	-4	-6	-26	11
Dunnock	2,096	2	21*	15	27
House Sparrow	1,625	4*	-3	-11	4
Tree Sparrow	184	1	122*	68	184
Yellow Wagtail	159	17	-41*	-51	-29
Grey Wagtail	217	50*	-21*	-35	-4
Pied Wagtail	1,272	21*	-7	-15	2
Tree Pipit	143	31*	13	-16	44
Meadow Pipit	817	14*	-15*	-22	-6
Chaffinch	2,529	-5*	7*	2	11
Bullfinch	619	22*	6	-3	17
Greenfinch	1,796	-14*	-32*	-36	-28
Linnet	1,211	7	-29*	-35	-23
Lesser Redpoll	172	6	40*	10	85
Common Crossbill	58	39	29	-7	120
Goldfinch	1,670	4	111*	96	128
Siskin	188	-16	54*	16	96
Yellowhammer	1,193	6*	-15*	-22	-9
Reed Bunting	507	13*	19*	4	39
Corn Bunting	144	4	-40*	-55	-24

- Trends are percentage changes, 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 pg11).
- The sample is the mean number of squares per year on which the species was recorded during 1994–2014.
- The trend since the start of the survey, covering the years 1994–2014, has been smoothed, and the end years truncated. This trend is labelled as 1995–2013.
- LCL and UCL are the lower and upper 95% confidence limits for the 1995–2013 trend.
- Red-listed and amber-listed species from 'Birds of Conservation Concern 3' are shown in the relevant colour.

TREND GRAPHS ONLINE:



www.bto.org/bbs/graphs

England – population trends

Chiffchaff increased by 90% in England between 1995 and 2013

English trends for 103 species, with the addition of Dipper

Dipper reached the reporting threshold in England for the first time in 2014.

Dipper has reached the reporting threshold for the first time this year, bringing the total number of species to 103. Species recorded on an average of at least 30 BBS squares in England per year since 1994 are presented here. **Mandarin Duck**, **Peregrine**, **Common Crossbill**, **Golden Plover** and **Wood Warbler** are just below the reporting threshold for trends.

NOT SO COMMON...

The long-term population trend, from 1995 to 2013, shows a decline of 36% for **Common Sandpiper** in England which has resulted in the species being listed as an amber species of conservation concern. The reasons behind this decline are largely unknown but are mirrored across Europe.

Research in the Peak District has suggested that periods of low adult survival have been largely responsible for these declines. Although, these trends do not appear to be caused by climate change. Other changes, in their West African wintering grounds or on migration, may be responsible, which may be better understood as their migratory routes become clearer through tracking.

CHIFFCHAFF INCREASE

A 90% increase from 1995 to 2013 has been recorded by the BBS for **Chiffchaff**. During this period both spring arrival and egg laying have become earlier, as well as an increase in local birds wintering in the UK, which are suspected to be influenced in part by climate change. Overwintering birds are also joined by others from the Continent.

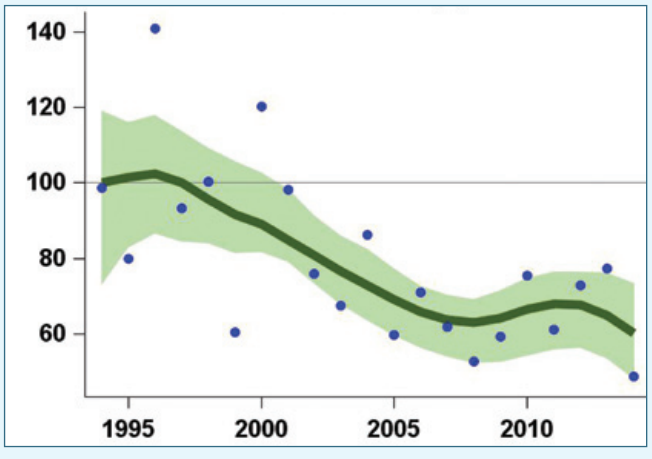
SIGNIFICANT CHANGES

Long-term trends (1995–2013) show that 34 species have undergone statistically significant increases and 33 have declined. Short-term trends were significant for 36 species, 23 of which were increases. **Wheatear** showed a 34% decline and **Siskin** a 45% decline between 2013 and 2014.

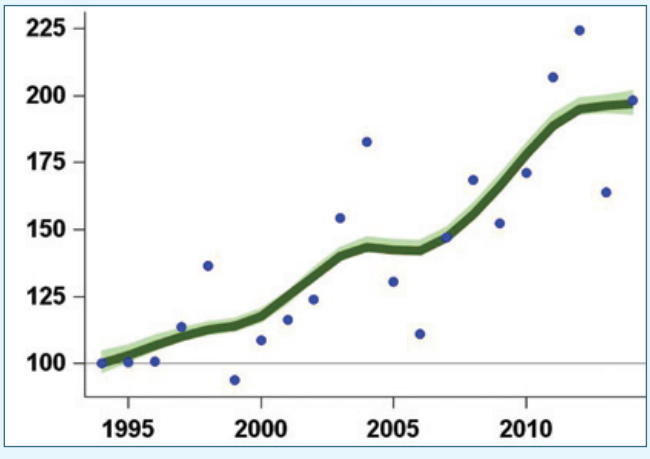
'ADD-ON' SQUARES

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

BBS index for Common Sandpiper



BBS index for Chiffchaff



BBS indices, England, 1994–2014, showing smoothed trend (dark green), its confidence interval (pale green) and annual index values (dots).

DIPPER: EDMUND FELLOWES

Table 3 Trends in England during 2013–14 and 1995–2013

Species	Sample	13–14	95–13	LCL	UCL
Mute Swan	218	4	12	-12	43
Greylag Goose	178	-17	271*	163	542
Canada Goose	455	36*	47*	19	93
Shelduck	120	12	17	-20	50
Gadwall	38	-28*	96*	21	225
Mallard	1,116	-6	24*	12	37
Tufted Duck	137	-23*	23	-6	56
Red-legged Partridge	543	-1	7	-5	19
Red Grouse	86	25	17	-13	52
Grey Partridge	201	-7	-55*	-61	-43
Pheasant	1,561	-1	31*	23	39
(Cormorant)	203	-18	9	-17	43
(Little Egret)	34	48	1,971	not estimable	
(Grey Heron)	543	11	-19*	-31	-9
Little Grebe	55	5	9	-34	75
Great Crested Grebe	66	-1	-11	-27	14
Red Kite	84	9	>10,000*	5,966	15,742
Sparrowhawk	290	-9	-18*	-29	-6
Buzzard	683	-3	172*	129	219
Moorhen	597	0	-15*	-23	-7
Coot	246	-13	16	-6	42
Oystercatcher	191	-5	56*	30	91
Lapwing	573	3	-27*	-35	-16
Curlew	340	-1	-32*	-40	-24
Common Sandpiper	30	-37	-36*	-57	-1
Redshank	61	-22	-31*	-52	-9
Snipe	90	-11	-14	-33	12
(Common Tern)	62	27	18	-27	109
Feral Pigeon	565	-4	-26*	-35	-12
Stock Dove	742	10	11	-2	25
Woodpigeon	2,029	-12*	41*	33	51
Collared Dove	1,197	-9*	9*	0	17
Turtle Dove	139	-36	-91*	-93	-88
Cuckoo	554	29*	-68*	-71	-64
(Barn Owl)	43	-35*	219*	109	379
Little Owl	92	15	-55*	-66	-42
(Tawny Owl)	80	57*	-15	-31	13
Swift	896	-20	-41*	-49	-29
Kingfisher	48	57*	-17	-44	25
Green Woodpecker	770	-13*	41*	29	54
Gt Spotted Woodpecker	956	-2	111*	96	131
Kestrel	584	5	-27*	-32	-18
Hobby	41	-24	-7	-31	51
Ring-necked Parakeet	69	43	1,181*	438	5,580
Magpie	1,609	4*	-1	-6	4
Jay	676	-17*	12*	2	22
Jackdaw	1,410	2	60*	48	72
Rook	1,054	3	-13*	-21	-4
Carrion Crow	1,983	3	24*	13	34
Raven	141	0	112	-15	300
Goldcrest	554	21*	16	0	36
Blue Tit	1,907	-1	2	-2	7

Species	Sample	13–14	95–13	LCL	UCL
Great Tit	1,808	-7*	30*	24	35
Coal Tit	554	18*	18*	4	36
Willow Tit	43	78	-82*	-88	-76
Marsh Tit	133	9	-32*	-46	-14
Skylark	1,405	15*	-23*	-27	-17
Sand Martin	84	-12	5	-30	41
Swallow	1,548	4	27*	17	37
House Martin	733	4	-27*	-35	-16
Long-tailed Tit	855	14*	6	-3	18
Chiffchaff	1,295	21*	90*	79	102
Willow Warbler	941	-7*	-37*	-43	-28
Blackcap	1,394	9*	115*	100	131
Garden Warbler	366	17*	-28*	-37	-17
Lesser Whitethroat	263	30*	-1	-17	14
Whitethroat	1,192	13*	36*	27	45
Grasshopper Warbler	38	31	-40	-59	4
Sedge Warbler	192	-3	-14	-32	10
Reed Warbler	123	10	15	-6	48
Nuthatch	432	6	92*	70	115
Treecreeper	267	10	-1	-14	12
Wren	1,947	29*	5*	1	9
Starling	1,435	8	-60*	-63	-57
Dipper	30	15	-33	-60	6
Blackbird	2,005	5*	18*	14	22
Song Thrush	1,576	8*	10*	4	17
Mistle Thrush	923	5	-41*	-46	-35
Spotted Flycatcher	135	39*	-61*	-70	-50
Robin	1,905	3*	15*	11	20
Nightingale	33	32	-37	-58	26
Redstart	97	13	27*	1	52
Whinchat	34	-4	-38*	-68	-10
Stonechat	68	67*	6	-31	71
Wheatear	200	-34*	16	-15	56
Dunnock	1,710	1	15*	8	20
House Sparrow	1,330	0	-15*	-21	-8
Tree Sparrow	146	15	77*	32	125
Yellow Wagtail	156	18	-40*	-51	-25
Grey Wagtail	146	41*	-5	-24	21
Pied Wagtail	964	21*	-13*	-19	-5
Tree Pipit	74	1	-49*	-69	-17
Meadow Pipit	445	1	-11	-21	3
Chaffinch	1,973	-6*	5*	1	10
Bullfinch	478	12*	5	-7	17
Greenfinch	1,515	-13*	-29*	-34	-23
Linnet	982	1	-27*	-34	-19
Lesser Redpoll	68	-13	11	-27	81
Goldfinch	1,378	3	106*	93	120
Siskin	70	-45*	62	-7	293
Yellowhammer	1,038	3	-25*	-30	-21
Reed Bunting	384	2	28*	13	45
Corn Bunting	137	5	-36*	-52	-20

- Trends are percentage changes, 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).
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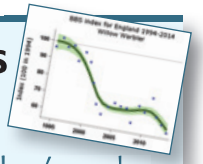
- Red-listed and amber-listed species from 'Birds of Conservation Concern 3' are shown in the relevant colour.

TREND GRAPHS ONLINE:



www.bto.org/bbs/graphs

Scotland – population trends

Siskin increased by 51% in Scotland between 1995 and 2013

Scottish trends for 62 species, including a statistically significant population decline for Golden Plover

Population trends have been calculated for 62 species in Scotland. These species have been recorded on an average of at least 30 BBS squares in Scotland each year since the survey began, thus reaching the reporting threshold for the country.

Greylag Goose, **Tree Sparrow** and **Stock Dove** are just below this threshold, as are **Common Crossbill**, **Spotted Flycatcher** and **Whinchat**. By a combination of increasing coverage and for some species, an increase in population range, some of these could reach the threshold for reporting, in the future.

GOLDEN PLOVERS

This year, the population trend for **Golden Plover** is statistically significant, with a decline of 25% between 1995 and 2013.

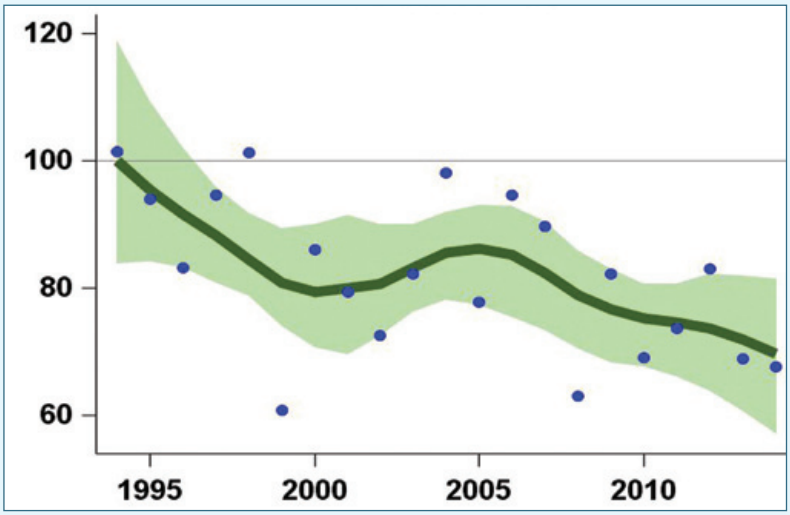
Bird Atlas 2007–11 shows high breeding densities in Scotland, though there have been notable losses in range in the Southern Uplands in the last 40 years.

A number of factors have been connected to **Golden Plover** declines, including afforestation, an increase in generalist predators, changes in grazing levels, resulting in either overgrazing or undergrazing, and drying of peatland soil through a combination of artificial drainage and summer warming.

The drying reduces the abundance of **Golden Plover's** main prey item, craneflies, whose larvae are sensitive to summer drought, and is likely to be a key mechanism by which climate change has led to the **Golden Plover's** northward range contractions.

There has been little long-term change detected in breeding numbers of **Golden Plovers** in Europe since 1981.

Golden Plover in Scotland have declined by 25% between 1995 and 2013



▲ BBS index 1994–2014 showing smoothed trend (dark green), its confidence interval (pale green) and annual index values (dots).

SUCCESSFUL SISKINS

Siskins have increased by 51% in Scotland between 1995 and 2013. This contrasts with the trend seen across Europe, where the population has been in moderate decline since 1980.

Since the 1960s, **Siskins** have become increasingly frequent garden visitors, taking advantage of garden feeders – an increasingly common food supply for birds which may boost survival rates. An increase in afforestation in Scotland may also be an influencing factor in **Siskin** range expansion.

Similarities can be seen between the annual fluctuations in **Siskin** population trends when comparing Scotland and England, possibly due to annual food availability, the 'cone crop'.

SIGNIFICANT CHANGES

Thirty of the 62 population trends produced for Scotland were statistically significant long-term (1995–2013).

All 12 significant short-term (2013–14) trends were increases.

The largest long-term increases were seen in **Chiffchaff** (472%), **Blackcap** (415%) and **Great Spotted Woodpecker** (401%). Large short-term increases included **Long-tailed Tit** (131%), **Whitethroat** (61%), **Mistle Thrush** (58%) and **Wren** (51%).

The greatest long-term declines were for **Kestrel**, which shows a continued decline of 67% and **Swift**, with a long-term decline of 60%.

'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.

GOLDEN PLOVER: TONY HAWKINS

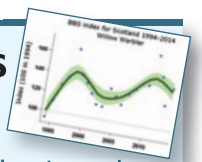
Table 4 Trends in Scotland during 2013–14 and 1995–2013

Species	Sample	13–14	95–13	LCL	UCL
Mallard	108	22	-16	-31	11
Red Grouse	54	46*	-1	-25	30
Pheasant	146	15	20	-1	44
(Grey Heron)	53	24	2	-25	34
Buzzard	149	21	23	-4	53
Oystercatcher	136	-10	-29*	-41	-14
Golden Plover	38	-2	-25*	-44	-3
Lapwing	88	-2	-59*	-68	-46
Curlew	128	11	-55*	-63	-47
Common Sandpiper	34	3	-14	-42	13
Snipe	60	9	12	-16	45
Feral Pigeon	67	8	11	-35	80
Woodpigeon	217	-3	10	-14	38
Collared Dove	56	6	10	-31	75
Cuckoo	75	26	18	-11	52
Swift	53	10	-60*	-71	-42
Gt Spotted Woodpecker	53	4	401*	242	618
Kestrel	41	36	-67*	-78	-52
Magpie	53	-2	22	-13	87
Jackdaw	125	20	20	-7	64
Rook	116	5	-39*	-56	-12
Carrion Crow	203	-6	0	-22	29
Hooded Crow	52	45	-27	-55	14
Raven	49	-8	40	-15	124
Goldcrest	95	22	3	-27	38
Blue Tit	172	10	6	-9	21
Great Tit	160	0	61*	30	95
Coal Tit	136	9	-3	-20	20
Skylark	215	15	-28*	-38	-14
Sand Martin	32	20	38	-43	405
Swallow	186	9	36*	14	60

Species	Sample	13–14	95–13	LCL	UCL
House Martin	70	36*	120*	45	231
Long-tailed Tit	31	131*	25	-23	98
Chiffchaff	57	18	472*	260	1,083
Willow Warbler	221	14	27*	8	47
Blackcap	66	25*	415*	210	862
Whitethroat	86	61*	115*	48	210
Sedge Warbler	57	12	25	-20	89
Treecreeper	38	8	1	-32	48
Wren	232	51*	25*	9	47
Starling	153	3	-30*	-47	-13
Blackbird	206	8	34*	15	61
Song Thrush	182	31*	2	-15	25
Mistle Thrush	79	58*	0	-24	47
Robin	206	14*	17*	2	32
Stonechat	36	73	1	-36	56
Wheatear	83	8	-20	-43	7
Dunnock	146	3	66*	34	99
House Sparrow	101	13	46*	10	93
Grey Wagtail	32	81	-19	-49	27
Pied Wagtail	141	22	-5	-21	21
Tree Pipit	35	49*	111*	33	186
Meadow Pipit	216	14*	-19*	-29	-5
Chaffinch	249	-4	10*	1	23
Bullfinch	43	57	33	-11	80
Greenfinch	107	-9	-44*	-56	-24
Linnet	92	2	-35*	-50	-15
Lesser Redpoll	49	56	42	-5	117
Goldfinch	100	4	160*	85	246
Siskin	79	-6	51*	6	95
Yellowhammer	112	11	40*	16	67
Reed Bunting	62	45*	14	-22	75

- Trends are percentage changes, 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 pg11).
- The sample is the mean number of squares per year on which the species was recorded during 1994–2014.
- The trend since the start of the survey, covering the years 1994–2014, has been smoothed, and the end years truncated. This trend is labelled as 1995–2013.
- LCL and UCL are the lower and upper 95% confidence limits for the 1995–2013 trend.
- Red-listed and amber-listed species from 'Birds of Conservation Concern 3' are shown in the relevant colour.

TREND GRAPHS ONLINE:



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Wales – population trends

Stonechat increased by 73% in Wales between 1995 and 2013

Welsh trends for 54 species, showing an increase in Stonechat

Fifty-four species have been recorded on an average of at least 30 BBS squares in Wales annually since 1994 and have population trends shown in Table 5. **Reed Bunting**, **Siskin** and **Canada Goose** are currently just below the reporting threshold.

STONECHATS BOUNCE BACK

For the resident, non-migratory **Stonechat**, weather can play a large part in its population trends. Reliant on insects throughout the year, a harsh winter can thus be a challenging time for **Stonechats**; as reflected in the year-on-year population changes. Between 2013 and 2014, the population increased by 93%, reflecting the mild winter of 2013/14. Long-term, the population has increased by 73% between 1995 and 2013. The population has expanded over the years, as shown in the Bird Atlas 2007–11, due to milder winters in general and, in part, to increased breeding productivity.

SIGNIFICANT CHANGES

Welsh results reveal 28 statistically significant long-term (1995–2013) and 14 short-term (2013–14) trends. While 11 of these 28 long-term trends were declines, all statistically significant short-term trends were increases.

The largest year-to-year increases were for **Stonechat** (93%), **Linnet** (61%), **Bullfinch** (39%) and **Cuckoo** (37%). The greatest long-term declines were seen in **Starling** (70%), **Curlew** (57%) and **Yellowhammer** (56%).

STONECHAT: PAUL HILLION

Table 5 Trends in Wales during 2013–14 and 1995–2013

Species	Sample	13–14	95–13	LCL	UCL
Mallard	68	**21**	**-15**	-55	49
Pheasant	97	**14**	**40***	8	86
(Grey Heron)	43	**-5**	**-15**	-42	20
Buzzard	145	**1**	**-1**	-20	21
Curlew	35	**25**	**-57***	-73	-39
Feral Pigeon	35	**77**	**47**	-18	124
Stock Dove	32	**15**	**114***	26	283
Woodpigeon	193	**5**	**29***	10	50
Collared Dove	75	**-7**	**26**	-12	79
Cuckoo	59	**37***	**-29***	-44	-7
Swift	66	**-18**	**-49***	-64	-14
Green Woodpecker	46	**-8**	**-35***	-54	-16
Gt Spotted Woodpecker	83	**7**	**179***	115	273
Magpie	165	**26***	**-16***	-26	-4
Jay	76	**-14**	**41***	8	72
Jackdaw	143	**5**	**35**	-8	120
Rook	80	**-50**	**-24**	-52	14
Carrion Crow	208	**5**	**17**	-3	44
Raven	93	**2**	**23**	-19	102
Goldcrest	84	**22**	**-42***	-60	-12
Blue Tit	182	**17**	**17***	3	31
Great Tit	175	**3**	**46***	25	66
Coal Tit	76	**21***	**-16**	-38	17
Skylark	105	**27***	**-4**	-25	27
Swallow	177	**-7**	**30***	11	49
House Martin	89	**-23**	**-2**	-30	32
Long-tailed Tit	61	**37**	**19**	-11	70

Species	Sample	13–14	95–13	LCL	UCL
Chiffchaff	144	**14***	**68***	37	100
Willow Warbler	163	**-3**	**-7**	-22	14
Blackcap	128	**25***	**176***	128	255
Garden Warbler	59	**-5**	**-22**	-41	10
Whitethroat	85	**9**	**-8**	-26	15
Nuthatch	74	**27***	**55***	20	110
Treecreeper	41	**13**	**23**	-26	73
Wren	202	**29***	**12**	-1	23
Starling	80	**-14**	**-70***	-79	-55
Blackbird	203	**5**	**38***	28	48
Song Thrush	171	**7**	**8**	-6	26
Mistle Thrush	101	**21**	**-9**	-26	12
Robin	198	**12***	**-9***	-19	-1
Redstart	63	**26**	**48***	18	88
Stonechat	36	**93***	**73***	11	196
Wheatear	56	**5**	**-9**	-32	17
Dunnock	158	**7**	**28***	10	54
House Sparrow	128	**15***	**92***	56	132
Pied Wagtail	119	**24***	**-1**	-19	20
Tree Pipit	34	**7**	**-3**	-41	51
Meadow Pipit	90	**14**	**-1**	-19	16
Chaffinch	203	**-3**	**-4**	-16	9
Bullfinch	64	**39***	**7**	-16	40
Greenfinch	113	**-11**	**-38***	-51	-19
Linnet	93	**61***	**-26***	-45	-3
Goldfinch	132	**11**	**72***	36	123
Yellowhammer	34	**9**	**-56***	-72	-32

Northern Ireland – population trends

Northern Irish trends for 35 species, with some good news for Meadow Pipit

Sedge Warbler, **Mallard** and **Raven** are currently just below the reporting threshold. Once recorded on 30 squares or more on average since the start of the survey in 1994, these species could join the impressive 35 existing population trends for Northern Ireland.

MEADOW PIPITS GET A BREAK

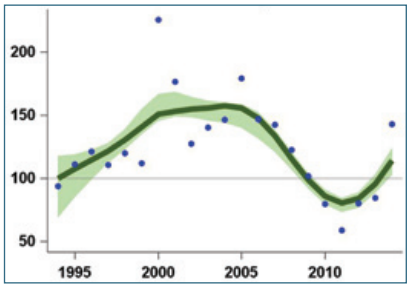
Meadow Pipit declined by 11% during 1995–2013 in Northern Ireland and, although this result is not statistically significant, the UK trend supports this figure, with a decline of 15% in the same period.

Research using BBS data to map the relative densities of **Meadow Pipit** in the UK between 1994–96 and 2007–09 showed decreases in **Meadow Pipit** densities throughout its core range in Northern Ireland. However, between 2013 and 2014 the Northern Ireland population increased significantly, by 69%.

Being partial migrants, mainly moving from high to lower ground in winter months, mild weather conditions in the wet and stormy 2013/14 winter could have been an influencing factor in this positive phase of fluctuation in the population.

SIGNIFICANT CHANGES

Statistically significant declines were shown by **Skylark** which fell by 54% between 1995 and 2013 and **Greenfinch** by 55% between 2013 and 2014. The greatest long-term increases included **Great Tit** (171%) and **Pheasant** (117%). Short-term increases included **Chiffchaff** (51%) and the aforementioned **Meadow Pipit** (69%).



▲ Meadow Pipit BBS index 1994–2014 showing smoothed trend (dark green), its confidence interval (pale green) and annual index values (dots).

Table 6 Trends in Northern Ireland during 2013–14 and 1995–2013

Species	Sample	13–14	95–13	LCL	UCL
Pheasant	41	25	117 *	24	192
Buzzard	30	-14	>10,000	not estimable	
Woodpigeon	83	5	86 *	38	143
Collared Dove	33	16	108 *	7	196
Magpie	82	7	17	-12	48
Jackdaw	75	4	106 *	38	170
Rook	72	6	-11	-42	32
Hooded Crow	81	6	150 *	78	238
Goldcrest	45	-8	25	-24	51
Blue Tit	76	3	2	-31	32
Great Tit	72	25 *	171 *	102	220
Coal Tit	63	6	69 *	12	119
Skylark	32	26	-54 *	-66	-46
Swallow	83	7	-2	-26	50
House Martin	43	-2	88	0	185
Chiffchaff	34	51 *	14	-20	54
Willow Warbler	79	19 *	83 *	31	128
Blackcap	38	36	>10,000	not estimable	

Species	Sample	13–14	95–13	LCL	UCL
Wren	90	40 *	33	-4	72
Starling	78	13	42 *	1	99
Blackbird	85	3	35	-4	60
Song Thrush	76	29 *	28	-9	70
Mistle Thrush	58	33	-9	-61	65
Robin	87	13 *	4	-17	21
Dunnock	69	1	67 *	3	116
House Sparrow	54	4	52	-9	144
Pied Wagtail	44	18	50	not estimable	
Meadow Pipit	62	69 *	-11	-30	29
Chaffinch	89	-6	51 *	14	67
Bullfinch	32	8	13	-38	36
Greenfinch	48	-55 *	-39	-63	15
Linnet	36	3	-4	-46	60
Lesser Redpoll	30	-35	54	not estimable	
Goldfinch	49	14	740	not estimable	
Reed Bunting	32	14	-17	-45	48

- Trends are percentage changes, 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 pg11).
- The sample is the mean number of squares per year on which the species was recorded during 1994–2014.
- The trend since the start of the survey, covering the years 1994–2014, has been smoothed, and the end years truncated. This trend is labelled as 1995–2013.
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- Red-listed and amber-listed species from 'Birds of Conservation Concern 3' are shown in the relevant colour.

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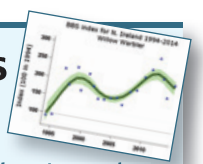


www.bto.org/bbs/graphs

English regions – population trends

Population trends for 79 common and widespread birds in different regions of England

Trends are reported for species found on an average of at least 30 squares per year in a given region since 1994. This now includes the new addition of **Tufted Duck**, reaching the threshold in the South East. English regions now report on 79 species. **Corn Bunting** did not reach the reporting threshold in the South East in 2014.

Here we take a look at the greatest statistically significant long-term (1995–2013) changes in each region. More detailed information is available on the BBS website, including population changes between 2013 and 2014, as well as population trend graphs.

NORTH WEST

Fifty-seven trends calculated, of which 32 were significant. **Nuthatch** increased by 359% and **Starling** declined by 55%.

NORTH EAST

Thirty-five trends calculated, of which 12 were significant. **Chiffchaff** increased by 213% and **Starling** declined by 60%.

YORKSHIRE

Fifty-four trends calculated, of which 25 were significant. **Greylag Goose** increased by 777% and **Grey Partridge** declined by 68%.

EAST MIDLANDS

Fifty-four trends calculated, of which 32 were significant. **Chiffchaff** increased by 394% and **Cuckoo** declined by 84%.

EAST OF ENGLAND

Sixty-six trends calculated, of which 38 were significant. **Green Woodpecker** increased by 132% and **Turtle Dove** declined by 92%.

WEST MIDLANDS

Fifty-one trends calculated, of which 33 were significant. **Buzzard** and **Goldfinch** increased by 194% and **Cuckoo** declined by 73%.

SOUTH EAST

Sixty-seven trends calculated, of which 41 were significant. **Red Kite** increased by 12,975% (shown as '>10,000' in Table 8 as standard for results over 10,000) and **Turtle Dove** declined by 91%.

SOUTH WEST

Sixty trends calculated, of which 32 were significant. **Great Spotted Woodpecker** and **Blackcap** both increased by 136% and **Cuckoo** declined by 77%.

LONDON

Twenty-seven trends calculated, of which 19 were significant. **Goldfinch** increased by 357% and **House Sparrow** declined by 72%.

▼ **Table 7** – Region list with counties within each region and number of squares covered in 2014

Region		Counties	Squares covered in 2014
1	North West	Cheshire, Cumbria, Lancashire, Greater Manchester, Merseyside	268
2	North East	Cleveland, County Durham, Northumberland	113
3	Yorkshire & Humber	East Yorkshire, North Lincolnshire, North Yorkshire, South Yorkshire, West Yorkshire	275
4	East Midlands	Derbyshire, Northamptonshire, Leicestershire & Rutland, Lincolnshire, Nottinghamshire	285
5	East of England	Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk, Suffolk	382
6	West Midlands	Birmingham, Herefordshire, Shropshire, Staffordshire, Warwickshire, Worcestershire	223
7	South East	Berkshire, Buckinghamshire, Hampshire, Isle of Wight, Kent, Oxfordshire, Surrey, Sussex	603
8	South West	Avon, Cornwall, Devon, Dorset, Gloucestershire, Somerset, Wiltshire	438
9	London	Greater London	107

Channel Islands and the Isle of Man

CHANNEL ISLANDS

For the second year running, 25 squares were covered on the Channel Islands, with 76 species recorded. This is a stable level of coverage and one hoped to continue with the assistance of the Alderney Wildlife Trust as well as the Channel Islands Regional Representative. Data collected on the Channel Islands contribute to the UK and English population trends.

ISLE OF MAN

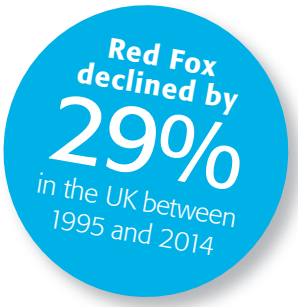
No BBS squares were surveyed in the Isle of Man in 2014 with the single BBS volunteer allocated squares on the island unable to participate. However, things are set to improve, with increased promotional efforts and two BBS volunteers taking part on the island at the time of writing.

Table 8 Trends in English regions during 1995–2013

Species	North West		North East		Yorkshire		East Midlands		East of England		West Midlands		South East		South West		London	
Mute Swan									**31**	42			**8**	56	**27**	34		
Greylag Goose					**777***	34			**99***	43			**102**	33				
Canada Goose	**87***	68			**125***	31	**119***	41	**12**	56	**10**	68	**20**	112	**48***	46		
Shelduck									**20**	36								
Mallard	**18***	158	**54**	31	**25**	100	**19**	103	**-2**	189	**81***	115	**23**	229	**41***	149	**-16**	42
Tufted Duck													**63**	30				
Red-legged Partridge					**14**	50	**-39***	77	**-16**	177	**29**	35	**80***	119	**122***	55		
Red Grouse					**30***	48												
Grey Partridge					**-68***	30	**-37**	32	**-46***	43			**-78***	32				
Pheasant	**121***	141	**45***	68	**67***	142	**20**	149	**-12**	271	**75***	137	**20***	380	**54***	265		
(Cormorant)									**-11**	48			**63**	46	**-41***	32		
(Grey Heron)	**-27***	79			**-26**	35	**-9**	49	**-42***	82	**-5**	58	**-17**	120	**-16**	80		
Red Kite													**>10,000***	56				
Sparrowhawk	**-45***	33							**-27**	46			**-22**	66	**-7**	47		
Buzzard	**119***	73					**>10,000**	45	**>10,000**	51	**194***	94	**1,000***	148	**16**	218		
Moorhen	**-29***	70			**12**	39	**-28**	58	**-19**	125	**-23**	60	**-24***	141	**-3**	65		
Coot	**-3**	31							**-22**	39			**23**	63				
Oystercatcher	**8**	59			**193***	44			**99***	31								
Lapwing	**-32***	115	**-20**	44	**-5**	106	**-7**	62	**-24**	73	**-20**	40	**-50***	103				
Curlew	**-48***	94	**-38***	48	**8**	110												
Snipe					**-17**	36												
Feral Pigeon	**-30**	75			**-40**	59	**-40***	48	**-20**	75	**-49***	42	**-24**	107	**-31***	66	**-24**	70
Stock Dove	**135***	57			**26**	51	**-40***	72	**-5**	138	**46***	82	**17**	191	**20**	121		
Woodpigeon	**73***	217	**21**	80	**81***	163	**32***	186	**46***	317	**29***	179	**23***	472	**43***	337	**54***	80
Collared Dove	**31***	132	**-9**	31	**-15**	78	**13**	108	**63***	208	**-36***	115	**1**	289	**10**	186	**4**	51
Turtle Dove									**-92***	65			**-91***	48				
Cuckoo	**-43***	35			**-61***	43	**-84***	51	**-71***	110	**-73***	54	**-64***	165	**-77***	76		
Swift	**-45***	111	**-59***	31	**-17**	83	**-52***	80	**-26**	150	**-36***	75	**-49***	168	**-58***	140	**-56***	58
Green Woodpecker							**179***	43	**132***	165	**22**	62	**28***	301	**7**	126	**52***	30
Gt Spotted Woodpecker	**109***	89			**85***	46	**182***	59	**73***	145	**138***	103	**99***	297	**136***	155	**71***	36
Kestrel	**-29**	72			**-42***	57	**-6**	61	**-23***	106	**-31***	42	**-36***	132	**-39***	76		
Ring-necked Parakeet																	**>10,000**	38
Magpie	**-8**	184	**-9**	32	**-18**	95	**12**	139	**30***	237	**-13***	159	**10**	403	**-10**	281	**34***	78
Jay	**48**	70							**49***	114	**-8**	61	**-8**	225	**14**	104	**-12**	39
Jackdaw	**59***	140	**6**	58	**52***	113	**95***	114	**124***	215	**66***	136	**72***	356	**39***	261		
Rook	**-34**	91	**-25**	47	**-42***	104	**16**	93	**5**	177	**-9**	85	**7**	243	**-21***	212		
Carrion Crow	**39***	226	**-7**	78	**54***	168	**43***	174	**93***	294	**3**	177	**13**	456	**6**	333	**39***	79
Raven															**95**	65		
Goldcrest	**55**	43							**45***	69	**58***	42	**10**	183	**-14**	124		
Blue Tit	**-9**	204	**-17**	60	**4**	143	**25***	171	**18***	295	**-8**	176	**2**	460	**-2**	321	**16**	78
Great Tit	**30***	189	**44***	54	**44***	125	**46***	159	**18***	279	**16***	171	**15***	447	**48***	310	**115***	73
Coal Tit	**24**	71	**22**	39	**114***	41	**24**	37	**11**	61	**67***	48	**-14**	144	**4**	98		
Marsh Tit													**-37***	50				
Skylark	**-18**	124	**-32***	68	**6**	144	**-28***	152	**-23***	270	**-23***	114	**-29***	308	**-22***	214		
Swallow	**11**	198	**23**	72	**20**	153	**108***	145	**27***	223	**10**	141	**16***	313	**48***	288		
House Martin	**7**	99			**-11**	66	**-22**	56	**-33***	99	**-34***	80	**-59***	145	**-19**	144		
Long-tailed Tit	**8**	83			**44**	48	**65***	74	**23**	146	**-8**	86	**-31***	233	**19**	138	**65***	31
Chiffchaff	**304***	99	**213***	37	**259***	69	**394***	90	**101***	197	**131***	136	**43***	355	**37***	280	**152***	31
Willow Warbler	**9**	149	**-21***	65	**-4**	114	**-44***	92	**-79***	116	**-46***	90	**-76***	152	**-55***	154		
Blackcap	**192***	114	**60***	38	**90***	83	**124***	113	**86***	233	**130***	133	**111***	374	**136***	263	**154***	44
Garden Warbler	**-25**	30					**14**	32	**-43***	59	**-26***	44	**-37***	97	**-12**	62		
Lesser Whitethroat							**10**	33	**3**	71			**-33***	55	**-12**	40		
Whitethroat	**34***	87	**44**	37	**11**	77	**85***	130	**14***	243	**42***	105	**62***	290	**39***	201		
Sedge Warbler									**-22**	45			**1**	34	**-4**	32		
Reed Warbler									**-15**	40			**-2**	32				
Nuthatch	**359***	40									**162***	49	**48***	176	**86***	81		
Treecreeper													**-5**	89	**-9**	48		
Wren	**38***	215	**-2**	74	**2**	167	**16***	176	**7**	291	**1**	172	**-5**	450	**1**	328	**29***	73
Starling	**-55***	175	**-60***	55	**-59***	118	**-55***	128	**-47***	230	**-65***	131	**-64***	328	**-71***	191	**-54***	77
Blackbird	**46***	215	**22**	69	**40***	160	**23***	183	**1**	309	**30***	179	**0**	472	**24***	338	**-27***	80
Song Thrush	**50***	164	**-12**	60	**21***	108	**24***	129	**-12**	230	**74***	149	**-14***	408	**19***	280	**-34***	49
Mistle Thrush	**-10**	123	**-24***	38	**-51***	79	**-36***	82	**-57***	133	**-5**	87	**-59***	224	**-44***	123	**-55***	33
Robin	**28***	206	**25**	67	**25***	140	**19***	171	**16***	289	**26***	176	**3**	455	**10***	325	**79***	77
Wheatear	**-13**	54			**31**	46												
Dunnock	**33***	179	**19**	56	**-6**	122	**21**	161	**17***	265	**37***	162	**-1**	407	**20***	298	**20**	60
House Sparrow	**4**	158	**-29**	40	**-5**	94	**8**	116	**-35***	195	**-5**	140	**-33***	296	**13**	224	**-72***	67
Tree Sparrow	**188***	30			**244***	37	**36**	33										
Yellow Wagtail							**-61***	36	**-40***	48								
Grey Wagtail															**-33***	31		
Pied Wagtail	**-15**	130	**6**	47	**-18**	99	**-36***	93	**-15**	148	**-4**	84	**-24***	195	**-11**	146		
Meadow Pipit	**-9**	93	**-4**	54	**1**	102	**-41***	40	**-49***	42			**-43***	48	**8**	48		
Chaffinch	**16***	215	**12**	78	**31***	165	**33***	181	**22***	308	**-24***	176	**-8***	461	**-7**	334	**118***	55
Bullfinch	**6**	41					**79**	46	**-16**	62	**32**	53	**-37***	129	**-7**	104		
Greenfinch	**-20**	155	**-16**	43	**-28**	101	**-16**	135	**-19***	249	**-18***	140	**-43***	369	**-42***	264	**15**	60
Linnet	**-26**	95	**-23**	46	**-17**	90	**-22**	111	**-19***	167	**-29**	73	**-45***	218	**-29***	173		
Goldfinch	**154***	161	**97***	50	**131***	113	**133***	125	**71***	202	**194***	122	**50***	310	**91***	250	**357***	46
Yellowhammer	**-29***	56	**-47***	41	**-18**	83	**-9**	131	**-19***	215	**-40***	104	**-36***	245	**-16***	160		
Reed Bunting	**17**	64			**32**	43	**90***	58	**26**	79			**-33***	59	**25**	32		
Corn Bunting									**-26**	39								

- This table shows the smoothed trend since the start of the survey (in bold) and sample sizes (regular).
- The sample is the mean number of squares per year on which the species was recorded during 1994–2014.
- Trends are percentage changes, 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).
- Red-listed and amber-listed species from 'Birds of Conservation Concern 3' are shown in the relevant colour.
- Trends for species in brackets are reported with caveats (see pg11).

Mammal monitoring and population trends



Twenty years of mammal population trends from data collected by BBS volunteers on BBS squares

Recording of mammals on BBS squares started in 1995 with the aim of improving our knowledge of the distribution and population trends of some of our commoner mammals, both native and non-native. Sightings and signs are recorded during the core BBS visits when carrying out the bird counts, during additional visits to the square and through local knowledge, for example from landowners.

TWO DECADES OF MAMMAL RECORDING

In 2014, surveyors in an impressive 85% of all BBS squares contributed information on mammals for this optional addition to the BBS. For many surveyors it is an important part of the survey and one that adds additional interest to the square visits.

Part of the success of the mammal monitoring is that it can be carried out during the bird survey visits, without detracting from the bird survey itself, rather than requiring additional trips to the square. Additional visits to the square can however, be made and recorded, as can local knowledge or evidence of presence.

Table 9 Common mammal species in 2014

Species	*Scientific name*	Squares recorded	Squares seen	Individuals
Grey Squirrel	*Sciurus carolinensis*	1,017	990	2,228
Brown Rat	*Rattus norvegicus*	49	20	29
Rabbit	*Oryctolagus cuniculus*	1,849	1,752	12,447
Brown Hare	*Lepus europaeus*	873	860	3,052
Mountain/Irish Hare	*Lepus timidus*	76	71	191
Mole	*Talpa europaea*	462	4	5
Common Shrew	*Sorex araneus*	67	34	41
Domestic Cat	*Felis catus*	334	325	558
Red Fox	*Vulpes vulpes*	546	294	369
Badger	*Meles meles*	273	5	7
Stoat	*Mustela erminea*	44	31	44
Reeves's Muntjac	*Muntiacus reevesi*	165	126	166
Red Deer	*Cervus elaphus*	114	90	1,071
Fallow Deer	*Dama dama*	126	87	836
Roe Deer	*Capreolus capreolus*	674	589	1,257

Tables 9 and 10 ▲ ▶

- **Squares recorded**: number of squares on which the species was recorded, including counts, field signs, dead animals and local knowledge.
- **Squares seen:** number of squares on which the species was seen and counted.
- **Individuals:** total number of individuals counted, taking the higher total from the two visits to each square.

Each year population trends are calculated for nine easily detectable and widespread mammal species, which the BBS mammal recording is best designed to monitor. In general, mammal population trends in the UK are poorly understood: the nine population trends presented by the BBS provide valuable information on the population changes in some of the commoner, more widespread and easily observable mammal species in the UK. As expected, nocturnal mammals are under recorded.

Thank you to everyone who has contributed mammal data in the last 20 years!

Table 10 All other mammal species in 2014

Species	*Scientific name*	Squares Recorded
Red Squirrel	*Sciurus vulgaris*	25
Prairie Dog	*Cynomys gunnisoni*	1
Bank Vole	*Myodes glareolus*	29
Short-tailed Vole	*Microtus agrestis*	32
Orkney Vole	*Microtus arvalis*	1
Water Vole	*Arvicola amphibius*	8
Wood Mouse	*Apodemus sylvaticus*	32
House Mouse	*Mus domesticus*	6
Hedgehog	*Erinaceus europaeus*	35
Pygmy Shrew	*Sorex minutus*	1
Water Shrew	*Neomys fodiens*	2
Daubenton's Bat	*Myotis daubentonii*	1
Bechstein's Bat	*Myotis bechsteinii*	1
Noctule Bat	*Nyctalus noctula*	2
Common Pipistrelle	*Pipistrellus pipistrellus*	1
Pipistrelle Bat sp.	*Pipistrellus* sp.	6
unidentified bat	Chiroptera sp.	1
Domestic dog	*Canis lupus*	6
Otter	*Lutra lutra*	22
Pine Marten	*Martes martes*	10
Weasel	*Mustela nivalis*	21
Polecat	*Mustela putorius*	1
American Mink	*Mustela vison*	10
Common Seal	*Phoca vitulina*	5
Grey Seal	*Halichoerus grypus*	7
Wild Boar	*Sus scrofa*	1
Sika Deer	*Cervus nippon*	17
Chinese Water Deer	*Hydropotes inermis*	8
Feral Goat	*Capra hircus*	7
Park Cattle	*Bos taurus*	5
Sheep	*Ovis aries*	12

▲ The nine mammal species for which BBS produces annual population trends – 2014 being its 20th year of mammal recording.

POPULATION TRENDS

Of the 3,095 squares surveyed for mammals in 2014, counts of live mammals were recorded in 2,736 and indirect evidence of species presence through field signs, recording of dead mammals or from local knowledge in 110. Mammals were looked for but not observed on an additional 249 squares.

Tables 9 and 10 display all the species recorded during the 2014 visits and through local knowledge, whilst Table 11 presents the change in large, easily detectable UK mammal species between 1995 and 2014 for which we routinely produce trends. During this period, **Rabbit** showed the largest decline, of 57%, with the largest increase observed in **Reeves Muntjac**, which increased by 95%. **Roe Deer** have also increased by 73% over the last 20 years. **Red** and **Fallow Deer** are also thought to have increased over the period, but because these are herding species where there is a lot of variation in counts depending on whether a herd is detected or not, the confidence intervals around the estimates of population change are large and currently not statistically significant.

Red Fox declined by 29% between 1995 and 2014. Looking at the annual change in **Red Fox**, the population appears to have declined from 1995 until 2004. From 2004 to 2013 the trend fluctuated but remained sable but, in the last year, **Red Fox** numbers have dropped further to their lowest level since the start of the BBS mammal monitoring. Currently we can only speculate on the reasons for the **Red Fox** decline.

Food availability, disease such as mange, road deaths and methods of control may be playing a role in the population trends of **Red Fox**, but the influence of these factors is currently poorly understood. There would be value in investigating habitat-specific trends for **Red Fox** to help us understand population changes in urban and rural habitats.

Table 11 UK mammal trends 1995–2014

Species	Trend 95–14	Sample
Brown Hare	**-3**	648
Mountain/Irish Hare	**-26**	47
Rabbit	**-57 ***	1,306
Grey Squirrel	**-6**	670
Red Fox	**-29 ***	270
Red Deer	**28**	59
Roe Deer	**73 ***	369
Fallow Deer	**15**	56
Reeves Muntjac	**95 ***	84

◀ Table 11
- **Unsmoothed trends** (in bold) and sample sizes (regular).
- Population changes are shown for mammal species for which the sample size is at least 35 squares.
- Trends are percentage changes, and are marked with an asterisk (*) where significant at the 95% level or more.
- The sample is the mean number of squares on which the species was recorded each year during the survey period 1995–2014.

BROWN HARE, GREY SQUIRREL, RABBIT, RED FOX: JOHN HARDING; ROE DEER: MOSS TAYLOR; REEVES MUNTJAC: PAUL NEWTON; MOUNTAIN HARE: DAWN BALMER; RED DEER: ADAM JONES; FALLOW DEER: JOHN DUNN

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.

BBS Regional Organisers in 2014:

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Yorkshire (Leeds & Wakefield)	Colin Bonnington (now Ken Graham)
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Yorkshire (North-West)	Gerald Light
Yorkshire (Richmond)	John Edwards
Yorkshire (South-East)	Aidan Gill
Yorkshire (South-West)	**VACANT** (now Millie Mockford)
Yorkshire (York)	Rob Chapman

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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: Colin Bonnington, Arthur Brown, James Gloyn, Richard Paul, Jean Roberts, Judith Smith and Roger Warren. Sadly, Antony Wainwright passed away in 2014 and we are grateful for all his assistance in Manchester.

We would like to thank and welcome Jim Baldwin, Mike Bell, John Clarke, Terry Coster, Ken Graham, Nick Hilton, Lesley Mitchell, Millie Mockford, Hugh Pulsford, Phil Tizzard and Claire Young who have taken over as ROs during the past year, Stephen Westerberg and Dave Piercy for their assistance in Cumbria and to James Cassels for his assistance on Arran.

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

BTO Research Report 673
ISSN 1368-9932
ISBN 978-1-908581-56-3

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