

## Bird population changes over 25 years. A Breeding Bird Survey on Bredon Hill

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01. Skylark. Wendy Carter

The British Trust for Ornithology's Breeding Bird Survey (BTO's BBS) is one of the most successful citizen science projects in the world. It has been running for 25 years and each year approximately 2700 people submit detailed bird census data from over 4000 1 km x 1 km grid squares across the UK.

The aggregated and cumulative data from these bird surveys are used by the BTO to produce annual indices of bird populations across the UK. These have become highly reliable indicators of population trends. Indices are now available for 115 bird species. The body of data is so large that population trends have been determined separately for each of the 4 nations as well as for the United Kingdom (Harris et al 2020).

BBS based data on population trends are of considerable academic interest and have spawned perhaps hundreds of papers concerned with ecological factors that may underlie population change in birds. The BTO data has also had a significant influence in wildlife conservation; identifying species and populations that require conservation plans and actions at national and international scales. The BBS population trends also allow reliable assessments of what are the most widespread (Woodpigeon and Wren) and the rarest (Golden Pheasant, Great Bustard, Stone-curlew and Water Pipit) bird species in the UK during the breeding season. The surveys have also led to recognition of the richest and most depleted parts of the UK for bird species during the breeding season. These range from 72 species recorded in one grid square near Cirencester to several squares with fewer than five species in the Scottish uplands. All these data and trends are reported on annually and are readily available (Harris, et al 2020).

The Grid square SO9837 in the south of Worcestershire has been "my BBS square" since the project began in 1995. It is based upon the village of Grafton. This year I downloaded from the BTO web site the summary of my data spanning the past 25 years. These tabulated data on bird numbers by species recorded each year (Table 1) have given me the opportunity to ponder beyond my anecdotal

observations. Because these data have been built up using the same survey methods, and by following the exact same route (02) twice each breeding season in early May and early June, over 23 surveys, it is possible to look for patterns. However, sample sizes are small so statistical analyses are not possible. The year 2001 was not surveyed because of foot and mouth restrictions and I was unable to do 2013 for personal reasons.

A noteworthy aspect of my square is that the route takes in a range of habitat types and an altitudinal range of about 100 m. The first 1km transect runs up Bredon Hill to a height of about 165 m and the parallel route runs down to about 60 m. The habitats along these survey routes have not changed; it has been a very stable piece of countryside. There have been no upheavals that would be expected to alter significantly the number and composition of birds in the square. Arable crops have changed in the first and last census sections (1 and 10 on the maps) but the rest has remained unchanged: pasture, orchard, small woodland, a small number of dwellings, gardens, and farm yards.

Has this corner of Worcestershire been a haven of stability as regards birds? The overall answer seems to be "no". Table 1 indicates that while some species' numbers have remained relatively stable, some have increased and others have declined. Over the 25 years, 65 species have been recorded in these surveys. This makes the square appear quite rich in bird life and it actually places this grid square quite close to the square with the most birds recorded using the BBS technique in the UK, but of course, not all of the 65 species recorded in this square are likely to have ever bred there. Indeed 60% of the birds recorded in this Bredon Hill square were casual occurrences. Only 16 species were recorded every year (highlighted in Table 1 in yellow) with a further 10 recorded in more than half of the years (highlighted in green). It would be reasonable to suggest therefore, that 26 species are regularly present in the square during the springtime and reliably breed there. The number of species recorded in any one year has ranged between 17 to 26, with an average of just over 20 species.



02. Ordnance Survey map (1:25000) and aerial view showing the 1 km grid square SO 9837 outlined in blue. The routes of the two transects (shown in orange) are surveyed twice annually and all birds detected are recorded as the transects are walked. To facilitate ease of recording, and to aid description of habits passed through, the transects are broken into sections of approximately 200 m. Transects are always walked in the same order from sections 1 to 10. In the aerial view all areas which show green are permanent pasture, some are with orchards in sections 1 and 2. The other sections have mainly scattered trees and there are small woodlands, copses and hedgerows: these habitats have changed little over the period of the survey. The arable fields in sections 1 and 10 are clearly seen - crops have changed over the period of the survey.

By far the most abundant species has been Woodpigeon (03), followed closely by Jackdaw (04) and Wren (Table 1). This is not surprising since Woodpigeon and Wren have recently been declared to be the most widespread, and among the most numerous, birds in the UK. They occur in over 90% of all grid squares surveyed in the BBS (Harris et al 2020). Also highlighted by colour in Table 1 are those species which have a Red-listed or an Amber-listed status as determined by the fourth Birds of Conservation Concern (BoCC 4) assessment for birds in the UK (Eaton et al. 2015). Of the birds that were recorded in every, or in most years, in this survey square, four are Red-listed (Song Thrush, House Sparrow, Linnet, and Yellowhammer) and two are Amber listed (Stock Dove and Dunnock). This indicates that this square should be considered to have some conservation priority and suggests that there could be some worthwhile effort made into looking at how the habitats in this square could be managed for the benefit of these target species.



03. Wood Pigeon was the most abundant species recorded throughout the survey. Wendy Carter.



04. Jackdaw was the second most abundant species recorded throughout the survey. Wendy Carter.

Some of the species recorded over the 25 years of the survey show the same kinds of declines recorded nationally. Table 1 also shows the nationally determined percentage change in populations of the species recorded in this square (blank entries indicate that there is not enough data to determine national population trends). Most obvious of the declining species are Curlew, Turtle Dove, Spotted Flycatcher, and Yellow Wagtail: all have been recorded in this grid square, but they now appear to be gone. However, Yellowhammer, Starling, Song Thrush, Dunnock, Linnet and Skylark (01 & 05) are still holding on. They might be considered to have the potential to increase in numbers following focused conservation action.

The overall conclusion of this summary is that over the past 25 years there have certainly been changes in the bird populations in this corner of Bredon Hill; some species have become more numerous, some fewer in number. However, these changes are not out of line with the national trends as determined by the cumulative analyses of BBS data from across the UK. Those species that have increased in this survey square have done so more or less in line with national trends, and vice-versa. Four red and two amber listed species have been present throughout the 25 years of the survey. This suggests that the square is locally important and could become more so following conservation action targeted at these priority species.



05. Despite declines, Skylarks are still holding on. Wendy Carter

#### Note and Acknowledgement

Only some short stretches of the transects used in the survey are on public rights of way. Please do not try to follow the transects shown in Figure 01, they are on private land. I am very grateful to the landowner for allowing me access to conduct these surveys. The support given to BBS surveyors by the BTO is very much appreciated. The backup and feedback that they provide each year has improved immeasurably. Having started with submission of paper forms collated by the BTO regional Representative (originally Harry Green, now Steve Davies), national results of the surveys took about two years to appear. Now, thanks to direct online submission the BTO can receive data the same day that it is recorded with the consequence that national results summarising national and regional population trends are published within months.

#### References

Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A., and 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.  
Harris, S.J., Massimino, D., Balmer, D.E., Eaton, M.A., Noble, D.G., Pearce-Higgins, J.W., Woodcock, P. and Gillings, S. 2020. *The Breeding Bird Survey 2019. BTO Research Report 726*. British Trust for Ornithology, Thetford.

#### Images

- 01 Skylark. Wendy Carter.
- 02. Ordnance Survey map (1:25000) and aerial view showing the 1km grid square SO 9837 and the routes of the two transects.
- 03. Wood Pigeon was the most abundant species throughout the survey. Wendy Carter.
- 04 Jackdaw was the second most abundant species throughout the survey. Wendy Carter.
- 05. Despite declines, Skylarks are still holding on. Wendy Carter.

#### On the following pages

##### Table 1.

Bird numbers of each species by year that were recorded on the transects in SO 9837. Number of observations of each species are simply summed each year.

Species whose names are highlighted in yellow were recorded in every year of the survey (1995 – 2019).

Species whose names are highlighted in green were recorded in more than half of the years.

The second column shows the percentage population change for each species across the UK over the 23-year period (1995-2018) as given in Harris et al., 2020.

Species which are placed in the red and amber conservation status categories (as given in Eaton et al., 2015) are highlighted accordingly.

The total number of species recorded each year on the survey is shown in the bottom row.

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ENGLISH NAME	BTO 23yr pop. trend %	1995	96	97	98	99	2000	02	03	04	05	06	07	08	09	10	11	12	14	15	16	17	18	2019
Red-legged Partridge	16	0	1	2	2	0	0	0	0	3	0	1	1	13	4	5	4	2	0	2	5	2	1	2
Grey Partridge	-64	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pheasant	35	9	14	16	10	13	12	9	10	5	11	13	15	8	9	7	10	8	7	3	2	2	3	6
Canada Goose	81	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mandarin Duck	457	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Mallard	10	3	0	0	0	2	0	0	0	1	0	5	1	5	6	8	0	0	0	0	0	0	0	0
Cuckoo	-38	0	1	0	1	0	1	2	0	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0
Feral Pigeon	-24	0	0	0	0	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0
Stock Dove	29	0	8	3	3	2	4	3	0	2	1	2	0	2	1	1	2	6	2	1	0	0	0	3
Woodpigeon	34	35	46	39	46	41	39	34	33	27	34	44	41	35	29	21	33	36	29	20	20	23	34	31
Turtle Dove	-95	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Collared Dove	-3	9	10	4	7	5	9	9	8	4	3	2	4	3	3	4	2	2	0	1	2	0	0	0
Moorhen	-18	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Curlew	-48	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Herring Gull		0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	2	1
Lesser Black-backed Gull		0	0	0	0	6	0	0	0	3	0	9	0	0	3	0	0	3	2	0	1	0	1	0
Grey Heron	-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Sparrowhawk	-22	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buzzard	98	0	0	0	1	1	0	0	0	0	1	2	0	2	1	2	1	1	2	1	0	1	0	0
Tawny Owl	-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Little Owl	-62	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Spotted Woodpecker	131	3	1	0	0	0	0	1	1	0	0	2	1	1	4	1	3	1	0	1	2	0	0	0
Green Woodpecker	15	2	3	1	2	1	2	1	4	3	3	4	2	7	1	1	2	3	1	4	1	1	2	1
Kestrel	-35	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0
Jay	20	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
Magpie	-4	2	1	0	1	2	0	0	1	0	0	2	3	0	0	0	0	0	4	5	1	2	1	0
Jackdaw	61	17	16	20	67	41	26	31	20	23	27	17	26	21	27	19	20	20	58	23	31	32	16	22
Rook	-22	0	4	0	0	1	0	0	3	7	10	1	13	4	11	2	0	11	10	10	1	3	10	0
Carrion Crow	17	3	1	2	1	1	0	2	2	3	3	4	3	0	2	4	3	3	1	0	2	4	1	6
Raven	46	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	3	0	0	0	0
Marsh Tit	-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

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Blue Tit	1	14	12	11	12	13	12	9	14	9	11	11	8	14	9	5	6	8	11	5	3	6	5	8
Great Tit	36	1	3	4	3	4	4	2	5	7	4	11	7	10	3	4	5	4	2	3	3	2	5	4
Skylark	-17	0	2	2	1	1	0	1	0	1	1	1	2	0	5	0	0	0	0	0	1	1	0	0
Swallow	-6	4	2	19	7	7	20	6	5	4	2	2	5	4	3	1	0	3	4	0	0	3	0	0
House Martin	-20	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
Long-tailed Tit	20	1	0	1	1	0	4	0	2	3	0	0	0	0	3	0	2	0	6	8	1	1	3	0
Willow Warbler	-11	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
Chiffchaff	109	2	3	0	0	1	0	2	3	3	1	2	4	5	6	3	4	4	5	3	6	5	3	4
Blackcap	175	3	2	1	2	3	1	5	1	5	3	5	2	5	4	6	3	4	4	6	5	5	5	6
Garden Warbler	-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
Lesser Whitethroat	8	0	1	0	0	2	0	1	0	0	0	0	0	0	1	0	1	0	2	0	1	2	0	0
Whitethroat	21	1	3	4	4	1	4	3	1	0	3	1	2	2	5	2	3	0	5	0	3	3	5	5
Goldcrest	7	0	0	0	0	1	0	0	1	2	3	0	1	2	0	0	0	0	0	1	1	2	0	0
Wren	30	13	10	8	11	17	20	20	20	15	17	11	13	13	9	13	11	14	14	10	12	10	7	14
Nuthatch	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Treecreeper	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Starling	-53	4	9	0	29	5	5	4	0	1	1	2	1	0	0	1	0	0	0	1	0	0	0	0
Blackbird	23	15	19	19	12	17	17	19	35	14	15	19	29	15	10	21	15	14	20	16	17	13	9	10
Song Thrush	26	1	2	3	2	2	4	6	3	3	3	3	3	3	4	3	6	5	5	4	5	4	2	1
Mistle Thrush	-28	0	2	1	0	0	0	3	3	3	0	0	4	1	0	0	0	0	3	1	2	0	1	0
Spotted Flycatcher	-51	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Robin	22	5	13	10	10	9	9	11	11	13	7	12	11	9	7	6	7	8	7	12	7	11	3	6
House Sparrow	-1	12	3	5	6	3	8	6	4	6	3	3	2	1	0	3	2	2	0	1	0	2	2	0
Dunnock	17	4	6	2	5	2	4	2	5	5	4	8	6	5	2	1	2	1	1	4	1	5	1	8
Yellow Wagtail	-42	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pied/White Wagtail	-14	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meadow Pipit	-12	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	1	2	0	2
Chaffinch	-18	10	8	8	13	6	7	5	10	12	12	10	15	11	8	10	7	7	6	2	4	4	3	5
Bullfinch	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Greenfinch	-64	8	4	8	9	4	9	7	6	4	11	7	8	6	7	9	3	3	10	5	2	3	1	1
Linnet	-21	0	3	3	0	6	5	6	6	0	4	3	4	4	1	2	3	10	4	4	3	7	5	4
Goldfinch	155	2	3	3	2	2	9	4	4	5	2	7	2	7	5	10	10	2	4	4	3	10	7	7
Yellowhammer	-24	1	2	3	0	4	3	1	2	2	1	0	2	2	1	2	3	1	1	1	1	2	0	1
Total species each year		21	26	20	18	22	19	22	22	20	20	17	21	19	20	19	21	18	21	20	21	23	17	18