

The Breeding Bird Survey 2000

Report Number 6



by

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The sixth BBS Annual Report for the Breeding Bird Survey (BBS) allows us to look at the progress of the scheme over a six-year period (1994-2000). We have also detailed the changes from the most recent years 1999-2000. Data have been collected from 2,248 squares representing a massive effort from our volunteer fieldworkers and Regional Organisers. We would like to take this opportunity to thank everyone who has contributed to the success of the BBS so far.

The BBS is organised by the British Trust for Ornithology (BTO), and funded jointly by BTO, the Joint Nature Conservation Committee (JNCC, on behalf of English Nature, Scottish Natural Heritage, Countryside Council for Wales and the Environment and Heritage Service in Northern Ireland) and the Royal Society for the Protection of Birds (RSPB). The BBS Steering Group comprises David Stroud (JNCC), Dr Richard Gregory (RSPB), Dr Stephen Baillie (BTO) and Dr David Noble (BTO).

We are grateful to the following people who have provided assistance to the scheme since its inception: Dr Mark Avery (RSPB), Dr Ian Bainbridge (then RSPB), Richard Bashford (RSPB), George Boobyer (then JNCC), the late Dr Steve Carter (BTO), Jackie Coker (BTO), Anita Donaghy (then RSPB), Dr Colin Galbraith (then JNCC), Dr David Gibbons (RSPB), Viv Hiom (BTO), John Marchant (BTO), Mike Meharg (EHS), Ken Perry (BTO Honorary), Samantha Rider (BTO), Dr Derek Thomas (BTO Honorary), Susan Waghorn (BTO), and Richard Weyl (EHS).

The Pilot Census Project, which was a forerunner of the BBS, was supported under a contract from the JNCC. The project to evaluate sampling strategies was funded by the RSPB. Members of the BTO's Integrated Population Monitoring Working Group, Dr Rhys Green, Prof. Steve Buckland, Dr Nicholas Aebischer, Dr John Goss-Custard, Dr Dorian Moss, David Stroud, Dr Ken Smith, Dr Jeremy Greenwood, Dr Will Peach and Dr Humphrey Crick, provided invaluable advice on the survey design.

Maps of coverage and distribution were produced using DMAP which was written by Dr Alan Morton. The cover illustration is by Simon Gillings and the BBS logo is by Andy Wilson. Other illustrations in this report are by Rick Simpson, Ernest Leahy and Alan Harris. Report production and design are by Angela Rickard.

This report is provided free to all BBS fieldworkers. Further copies are available from BTO HQ at a cost of £5 incl. p&p.

Profiles

Dr David Noble is the Head of the Census Unit and oversees the running of bird surveys such as the WBS, WBBS and the BBS, as well as associated research on bird populations. Before joining the BTO he worked at Cambridge University on the relationships between cuckoos and their hosts, in the UK and in Africa.

Mike Raven is the new National Organiser for the BBS and is responsible for the day-to-day running of the scheme, which involves liaison with BTO Regional Organisers and volunteers, promotion of the scheme and providing feedback by giving presentations around the country. Mike was previously responsible for the running of the BTO's Nest Record Scheme.

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The Breeding Bird Survey 2000

Summary

- This is the sixth annual report of the BTO/JNCC/RSPB Breeding Bird Survey (BBS), covering the years 1994 to 2000. The primary aim of the survey is to provide population trends for a range of common and widespread birds in the UK.
- Survey plots are based on 1 x 1 km squares of the National Grid. Squares are chosen on the basis of a stratified, random sampling design, with larger numbers of squares selected in regions with more potential volunteers. The same squares are surveyed year after year.
- Volunteer observers visit their squares three times a year. The first visit is used to establish a transect route and to record details of land use and habitat type. The second and third are early morning counts to survey breeding birds. A line transect method is used, with birds recorded in distance bands. Each survey requires about five hours' fieldwork per year, enabling a large number of people to become involved across the UK.
- The scheme is administered centrally by BTO Headquarters staff and organised by voluntary BTO Regional Organisers (ROs), who in most cases are BTO Regional Representatives, with help from the BTO Scottish, Welsh and Northern Irish Officers. ROs play a vital role in co-ordinating and fostering local fieldwork effort.
- The number of BBS squares covered each year has increased steadily from 1,569 in 1994 to 2,379 in 1999, but fell slightly to 2,248 in 2000. The long-term aim is to survey 2,000-3,000 squares on an annual basis and to increase the number of squares in areas that are poorly covered.
- A total of 215 species (including subspecies) was recorded in 2000. Population indices are calculated using methods that take regional differences in sampling effort into account. Across the UK, we were able to measure population changes with a medium to high degree of precision for about 100 species (Table 4).
- At a national level, 18 species declined and 45 species increased significantly between 1994 and 2000 with only Willow Tit decreasing by more than 50%. Shelduck, Kestrel, Wood Warbler, Bullfinch and Corn Bunting all recorded moderate declines (25-50%). On a more positive note, Greylag and Canada Geese, Tufted Duck, Coot, Great Spotted Woodpecker, Stonechat, Sedge Warbler, Goldcrest and Raven all recorded increases in excess of 50%.
- Ten widespread species (Grey Partridge, Turtle Dove, Skylark, Song Thrush, Spotted Flycatcher, Tree Sparrow, Linnet, Bullfinch, Reed Bunting and Corn Bunting) have been listed in high Birds of Conservation Concern/Importance categories on the basis of long-term population trends. Six of these species have declined significantly on BBS squares between 1994 and 2000, while Song Thrush and Tree Sparrow have increased significantly.
- Summaries of population trends are provided for all four constituent parts of the UK – Scotland, England, Wales and Northern Ireland (Tables 5 - 8). Population trends for species monitored in each of the Government Office Region/Regional Development Agency (RDA) regions of England are also provided (Table 9).
- In England, 23 species declined and 35 species increased significantly between 1994 and 2000. Great Black-backed Gull and Wood Warbler declined by more than 50%, and Grey Partridge, Cuckoo, Willow Tit, Redpoll and Corn Bunting showed moderate declines (25-50%). Increases greater than 50% were recorded for Coot, Sand Martin, Redstart, Goldcrest and Raven (Table 5).
- In Scotland, six species declined and 18 species increased significantly between 1994 and 2000. Kestrel and Swift declined by over 50% and Lapwing and Black-headed Gull showed moderate declines (25-50%). Increases greater than 50% were recorded for Grey Heron, Buzzard, Lesser Black-backed Gull, Great Black-backed Gull, House Martin, Wren, Sedge Warbler, Goldcrest, Rook and Raven (Table 6).
- In Wales, four species declined and 19 species increased significantly between 1994 and 2000. No species were recorded as declining by over 50%, but Mallard, Starling and Yellowhammer all showed moderate declines (25-50%). Increases greater than 50% were recorded for Pheasant, Lesser Black-backed Gull, Herring Gull, House Martin, Blackcap, Treecreeper, House Sparrow, Goldfinch and Linnet (Table 7).
- In Northern Ireland, no species were recorded as declining significantly whilst 14 species increased between 1994 and 2000. Increases greater than 50% were recorded for Swallow, Meadow Pipit, Wren, Dunnock, Robin, Blackbird, Willow Warbler, Great Tit, Magpie, Rook, Starling and Chaffinch (Table 8).
- A number of resident passerines, mainly woodland species such as Green and Great Spotted Woodpeckers, Wren, Dunnock, Robin, Blackbird, Song Thrush, Goldcrest, Great Tit, Long-tailed Tit and Magpie show increases throughout their range. Other species showing widespread increases include Swallow, House Martin, Pied Wagtail, Carrion Crow, Raven and Greenfinch.
- Widespread species whose populations appear to be stable (i.e. not significantly or consistently increasing or decreasing) include Feral Pigeon, Stock Dove, Tree Pipit, Wheatear, Reed Warbler, Garden Warbler, Chiffchaff, Coal Tit, Blue Tit and Nuthatch.
- A number of farmland and upland species appear to be declining in all regions. These include Curlew, Yellowhammer and Swift across the whole of the UK, and Cuckoo, Mistle Thrush and Bullfinch in all areas apart from Scotland. Species that have become too rare to monitor reliably in more than one or two regions include Grey Partridge, Tree Sparrow and Corn Bunting.
- Species that show marked regional differences in population trends include Mallard, Lesser Black-backed Gull, Great Black-backed Gull, Wood Pigeon, Skylark, Meadow Pipit, Willow Warbler, Treecreeper, Jay, Starling, Chaffinch, Linnet, Lesser Redpoll and Reed Bunting. There are no consistent patterns among these species.
- Overall, 2000 produced a much more positive picture for the population trends of many of Britain's bird species. Only two new species were identified as declining significantly in 2000, whilst 12 species show declines that are not now significant. In addition to these, 13 species produced new significant increases whilst only three species ceased to produce increases this year, compared with the results for the 1994-1999 period reported last year.

Background

The status of wild bird populations is an indicator of the health of the countryside. The importance of monitoring bird populations became evident following the dramatic changes in the post-war landscape and the widespread use of harmful pesticides in the 1960s. The subsequent population changes among many widespread breeding birds have been monitored by the Common Birds Census (CBC) since 1962 using a detailed territory mapping method. Although the information gathered by the CBC is of tremendous value, the scheme was largely based in the south and the east of the UK and monitored only farmland and woodland species. Acknowledging these limitations, a new scheme was devised following a desk-based study and two years of pilot census work. In 1994, the BTO/JNCC/RSPB Breeding Bird Survey (BBS) was launched aiming to improve the geographical scope of UK bird monitoring by including all habitats and therefore, more species of breeding birds.

Methods

The BBS uses a transect method on randomly selected 1x1 km squares. Each surveyor visits their plot twice within the breeding season, undertaking two 1 km transects across their square recording all birds seen or heard. Birds are recorded in one of three distance bands, or in flight, to enable density calculations to be made. A separate visit is required to record the habitat. Through its careful design, the BBS is able to provide precise population trends for a large proportion of our breeding species across all habitats. Data from the BBS can also be summarised for individual countries, counties and habitats.

Population changes were estimated using a log-linear model with Poisson error terms. For these analyses, we use the higher count – from the two visits – for each species, summed over all distance categories and transect sections. Counts are modelled as a function of year and site effects, corrected for over-dispersion, and weighted to account for differences in sampling effort among regions of the UK. Only squares that were counted in at least two years are included in the analyses. Counts for five species of wader have been corrected by excluding flocks and observations in unsuitable breeding habitat. For a more detailed account of the survey design and methodology, please refer to previous BBS reports (available from BTO HQ).

Organisation

The BBS National Organiser based at BTO HQ is responsible for the overall running of the scheme and acts as the main point of contact for the network of voluntary Regional Organisers (ROs). Each RO is responsible for allocating squares to volunteers in their particular region and for finding additional volunteers should existing ones drop out. They also ensure that survey forms are collected for each region and sent to the BTO by September. Since the success of the survey depends on the volunteer surveyors throughout the UK, up-to-date feedback is vital. All forms are acknowledged on receipt, and the Census Unit newsletter *Census News* and a copy of the annual report are sent to all BBS surveyors.

Survey Coverage

To date we have received 2,248 sets of forms for 2000, a small decrease on the 2,379 total received for 1999. Many parts of the country have reached optimum levels of coverage and promotion to expand the scheme will now be focused on specific areas.

England

The excellent coverage in England was maintained, although the overall total fell by 86 squares to 1,696. London and the South East formed a sizable part of the total with over 500 squares, although the percentage of allocated squares covered was quite similar across the nine RDA regions at 60-70%. Worcestershire came top of the counties list with all but one square being covered. Berkshire, Hampshire, Kent and Greater Manchester closely followed this with over 80% of allocated squares being surveyed.

Scotland

Our coverage in Scotland currently stands at 244 squares, down from 267 in 1999 and 307 in 1998. Understandably the coverage in remote parts of northern and western Scotland remains rather poor since the cessation of professional fieldwork covering squares in this area. It is important, however, that this part of the country continues to be covered adequately since it forms a large part of the United Kingdom's land area and holds important populations of upland species. Coverage in the more inhabited areas of central Scotland is good, and generally, over 50% of allocated squares are surveyed. Fife tops the list of Scottish regions with 86% of allocated squares being covered and Central, Kincardine, South Argyll and Ross all did extremely well by exceeding 70%, the latter two regions previously being covered by professional fieldworkers. We would especially like to thank the observers and regional organisers in Scotland for their major efforts in contributing towards the BBS in what is sometimes a difficult area to cover.

Table 1. A breakdown of the BBS coverage for 2000 by country and RDA Regions.

Region	Squares issued	Squares covered	% covered
England	2,567	1,696	66%
Scotland	631	244	39%
Wales	355	216	61%
Northern Ireland	116	82	71%
Isle of Man	11	3	27%
Channel Isles	12	7	58%
North West England	304	196	64%
North East England	83	53	64%
Yorkshire & Humberside	228	137	60%
East Midlands	233	147	63%
East of England	267	152	57%
West Midlands	258	168	65%
South East England	662	488	74%
South West England	446	293	66%
London	86	62	72%

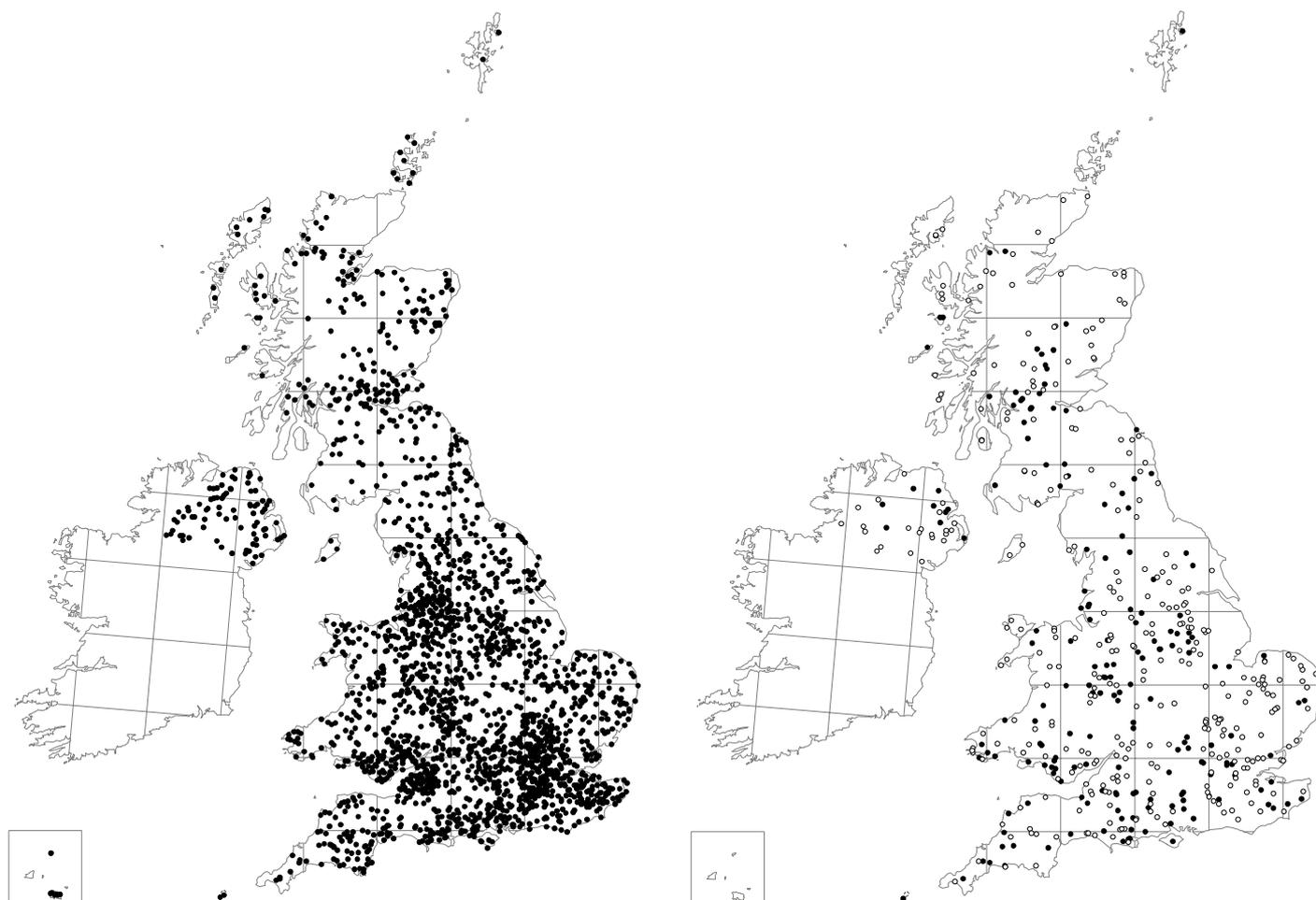


Figure 1. The left-hand map shows the distribution of BBS squares covered in 2000 and the right-hand map shows the distribution of squares covered in 2000 but not in 1999 (closed symbols) and squares covered in 1999 but not 2000 (open symbols).

Wales

Overall coverage in Wales remains extremely good with 216 squares being surveyed, only a slight fall from the previous year's total of 223. This still represents a great improvement on the 137 squares covered in 1997 and this must be put down to the great efforts undertaken by all of the volunteers and regional organisers involved. Coverage in Glamorgan (90%), Gwent (83%) and Cardigan (81%) was particularly impressive. Since a large part of Wales is both sparsely populated and upland in character, this coverage is particularly good, allowing us to monitor an increasing number of Welsh species in this area.

Northern Ireland

The number of squares covered in Northern Ireland fell to 82 this year, down from the total of 95 squares in 1999. This represents 71% of the total squares allocated to the region and would not have been achieved without the generous support of the Environment and Heritage Service of Northern Ireland who funded the coverage of 27 squares by a professional fieldworker. This has enabled us to monitor the population changes of 28 species within the province, an increase on the 25 included in last year's report.

Survey Results

Species recorded

A total of 215 species was recorded in 2000, a little down on the 1999 total of 217 and with no UK rarities being recorded, apart from a rather late Red-breasted Goose. Although the overall number of squares being covered had fallen in 2000, the number of species occurring in more than 100 squares remained close to last year's level of 89, in addition to which a further 13 were recorded in over 50 squares. A further 113 species were recorded in less than 50 squares across the country, including many scarce or very localised breeders, passage migrants and late winter visitors. Some very cryptic but still quite widespread birds such as Lesser Spotted Woodpecker were poorly covered together with the primarily nocturnal owls and thinly spread upland species such as Twite and Ring Ouzel. In addition to these, many waterfowl and predominantly coastal species were poorly covered by the survey, these being more suited to other existing schemes such as the BTO/WWT/RSPB/JNCC Wetland Bird Survey and special single-species surveys.

United Kingdom

Considering only those species that have shown significant population changes within the UK between 1994 and 2000, 45 species had increased and 18 decreased (Table 4). Trends for some of these species are discussed in the country summaries but, here, we concentrate on species for which the country trends were broadly similar, or that were too uncommon to be monitored at the regional level.

Table 2. Species recorded in 50 or more squares for the whole of the UK during the 2000 BBS survey. 'Number' is the number of squares a species was recorded from and '%' the percentage of squares that the species occurred in. 'Species' in parentheses are usually recognised as races or forms rather than full species.

Species	Number	%	Species	Number	%	Species	Number	%
Little Grebe	58	3	Wood Pigeon	2061	92	Garden Warbler	409	18
Great Crested Grebe	60	3	Collared Dove	1136	51	Blackcap	1291	58
Cormorant	203	9	Turtle Dove	200	9	Wood Warbler	53	2
Grey Heron	551	25	Cuckoo	742	33	Chiffchaff	1076	48
Mute Swan	205	9	Little Owl	119	5	Willow Warbler	1284	57
Greylag Goose	104	5	Tawny Owl	79	4	Goldcrest	676	30
Canada Goose	382	17	Swift	953	43	Spotted Flycatcher	223	10
Shelduck	130	6	Green Woodpecker	689	31	Long-tailed Tit	810	36
Mallard	1085	48	Great Spotted Woodpecker	724	32	Marsh Tit	145	6
Tufted Duck	146	7	Skylark	1451	65	Coal Tit	605	27
Sparrowhawk	291	13	Sand Martin	117	5	Blue Tit	1878	84
Buzzard	629	28	Swallow	1642	73	Great Tit	1776	79
Kestrel	518	23	House Martin	880	39	Nuthatch	321	14
Red Grouse	96	4	Tree Pipit	148	7	Treecreeper	272	12
Red-legged Partridge	402	18	Meadow Pipit	653	29	Jay	586	26
Grey Partridge	198	9	Yellow Wagtail	158	7	Magpie	1609	72
Pheasant	1424	63	Grey Wagtail	197	9	Jackdaw	1379	62
Moorhen	583	26	Pied Wagtail	1129	50	Rook	1105	49
Coot	239	11	Dipper	53	2	Carrion Crow	1942	87
Oystercatcher	245	11	Wren	2058	92	(Hooded Crow)	114	5
Golden Plover	75	3	Dunnock	1702	76	Raven	216	10
Lapwing	569	25	Robin	1973	88	Starling	1620	72
Snipe	104	5	Redstart	148	7	House Sparrow	1356	60
Curlew	478	21	Whinchat	67	3	Tree Sparrow	142	6
Redshank	85	4	Stonechat	116	5	Chaffinch	2039	91
Common Sandpiper	64	3	Wheatear	219	10	Greenfinch	1527	68
Black-headed Gull	439	20	Blackbird	2056	92	Goldfinch	1246	56
Common Gull	121	5	Song Thrush	1617	72	Siskin	126	6
Lesser Black-backed Gull	480	21	Mistle Thrush	1066	48	Linnnet	1106	49
Herring Gull	548	24	Grasshopper Warbler	58	3	Lesser Redpoll	115	5
Great Black-backed Gull	84	4	Sedge Warbler	280	12	Bullfinch	454	20
Common Tern	52	2	Reed Warbler	102	5	Yellowhammer	1074	48
(Feral Pigeon)	602	27	Lesser Whitethroat	234	10	Reed Bunting	343	15
Stock Dove	658	29	Whitethroat	1138	51	Corn Bunting	121	5

Table 3. Species recorded in less than 50 squares for the whole of the UK during the 2000 BBS survey. (Species marked with an asterisk are feral or non-native species on Category E of the official British Ornithologists' Union British List). 'Species' in parentheses are usually recognised as races or forms rather than full species.

Species	Number	Species	Number	Species	Number	Species	Number
Red-throated Diver	12	Red-crested Pochard	1	Stone Curlew	4	Kingfisher	39
Black-throated Diver	2	Pochard	16	Little Ringed Plover	8	Lesser Spotted Woodpecker	18
Great Northern Diver	2	Scaup	2	Ringed Plover	21	Woodlark	18
Black-necked Grebe	1	Eider	10	Dotterel	1	Rock Pipit	15
Fulmar	21	Goldeneye	7	Grey Plover	5	Nightingale	33
Gannet	3	Red-breasted Merganser	13	Knot	1	Black Redstart	1
Shag	5	Goosander	32	Sanderling	2	Ring Ouzel	18
Little Egret	2	Ruddy Duck	9	Dunlin	31	Fieldfare	35
Black Swan*	5	Honey Buzzard	1	Ruff	1	Redwing	9
Whooper Swan	1	Red Kite	26	Woodcock	7	Cetti's Warbler	9
Pink-footed Goose	7	White-tailed Eagle	2	Black-tailed Godwit	6	Marsh Warbler	2
White-fronted Goose	1	Marsh Harrier	13	Bar-tailed Godwit	3	Dartford Warbler	5
Bar-headed Goose*	3	Hen Harrier	14	Whimbrel	23	Firecrest	5
(Domestic Goose*)	5	Montagu's Harrier	1	Greenshank	12	Pied Flycatcher	45
Snow Goose	3	Goshawk	9	Green Sandpiper	2	Bearded Tit	1
Barnacle Goose	2	Harris Hawk*	1	Turnstone	3	Willow Tit	48
Red-breasted Goose	1	Golden Eagle	4	Red-necked Phalarope	1	Crested Tit	1
Brent Goose	1	Osprey	5	Arctic Skua	8	Short-toed Treecreeper	3
Egyptian Goose	8	Merlin	17	Great Skua	7	Chough	4
Ruddy Shelduck*	1	Hobby	27	Mediterranean Gull	2	(Hybrid Crow)	1
Muscovy Duck*	2	Peregrine	31	Kittiwake	5	Brambling	5
(Domestic Mallard*)	3	Ptarmigan	2	Sandwich Tern	5	Twite	22
Mandarin	16	Black Grouse	9	Arctic Tern	7	Common Crossbill	28
Wigeon	9	Quail	9	Guillemot	1	Scottish Crossbill	4
Gadwall	34	Golden Pheasant	3	Black Guillemot	3	Hawfinch	5
Teal	21	Peacock*	10	Rock Dove	8	Snow Bunting	1
Pintail	1	Water Rail	1	Ring-necked Parakeet	24		
Garganey	3	Corncrake	2	Barn Owl	21		
Shoveler	14	Avocet	4	Short-eared Owl	10		

England forms a large proportion of the land area in the country and so UK trends are often strongly influenced by those in England. Moreover, some species are now so rare outside England that populations cannot be reliably monitored in these areas. This applies to once familiar species such as Grey Partridge, Turtle Dove, Spotted Flycatcher, Tree Sparrow and Corn Bunting, whose declines in the UK have led to their inclusion in the Biodiversity Action Plan process.

For several widespread, but thinly distributed species, sample sizes were generally too small in Scotland, Wales and Northern Ireland, being only large enough for any proper analysis to be carried out in England and the UK as a whole. Where significant trends were detected, the changes were often very similar in both England and the UK. Of these, Turtle Dove, Lesser Whitethroat, Willow Tit and Corn Bunting continued to decline significantly in both areas, whilst increases were seen in migrant Sand Martin populations and resident Stonechat numbers, the latter benefiting from a series of mild winters in most parts of the UK. The vast majority of water dependent species were also found to be increasing, including Cormorant, Mute Swan, Tufted Duck, Moorhen, Coot and the ever-expanding feral populations of Canada and Greylag Geese.

A number of species showed broadly similar trends across the four countries within the UK. Significant increases in population were detected amongst four migrant species (House Martin, Sedge Warbler, Whitethroat and Blackcap), whilst Swift numbers showed a significant decline. The only wader to show a broadly similar trend in all parts of the UK was the Curlew with an overall significant decline of 13% since 1994. Six 'small-bodied' residents were obviously benefiting from mild winters with populations of Wren, Dunnock, Robin, Goldcrest, Great Tit and Greenfinch all increasing, although Yellowhammer continued to show a decline. The Willow Tit won the dubious title of species 'in most trouble' for 2000, with a significant decline of 54% since 1994 in the UK as a whole. This was closely followed over the six-year period by Shelduck (down 47%) and Wood Warbler (down 43%), although it must be stressed that all three results come from rather small data sets.

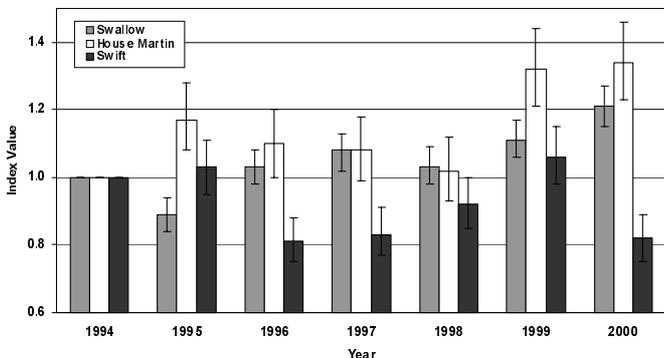


Figure 2. UK trends in aerial feeders

Figure 2 shows the index figures for three of the four aerial feeders covered by the BBS over the survey period, 1994-2000: Swallow, House Martin and Swift. Please note that the vertical lines represent the upper and lower confidence limits for the index values in each of the three bar charts. Overall the trends for House Martin (34%) and Swallow (21%) show moderate increases. The Swift, however, shows a more confusing picture with a sharp fall in numbers occurring in 1996, followed by a gradual increase through to 1999, then another sharp decrease in 2000, resulting in an overall significant decline of 18% over the six-year period. Sand Martin, which has increased, has not been included in the graph because of the large annual variation in index value.

Figure 3 shows the index figures for three of the four *Sylvia* warblers covered by the BBS over the survey period, 1994-2000: Lesser Whitethroat, Whitethroat and Blackcap. Blackcap has produced a consistent increase of 49% throughout the period. The Whitethroat is a species that has shown some marked changes in population over the past forty years with a dramatic decrease occurring

at the end of the 1960s, followed by a long period of relative stability at much lower numbers. During the past six years however, the BBS has shown a moderate but significant increase of 20%.

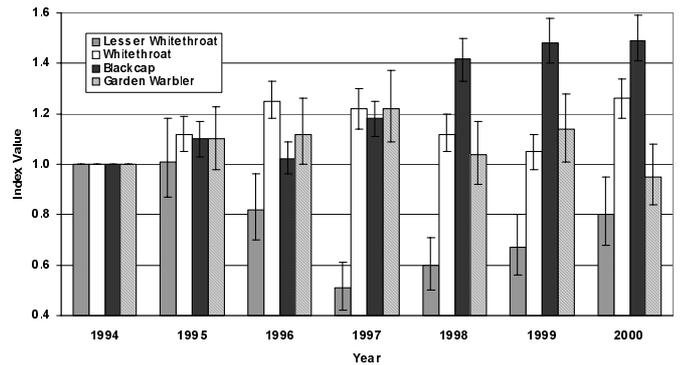


Figure 3. UK trends in *Sylvia* Warblers

The Garden Warbler which is not shown in Figure 3 has remained relatively stable with moderate annual fluctuations near the 1994 level. In contrast, the Lesser Whitethroat has shown some quite marked changes over the period. From 1995, numbers have fallen steadily, with the index value in 1997 being only half the value of that in 1994. A gradual recovery has taken place since, but over the six-year period the species has shown a significant decrease of 20%.

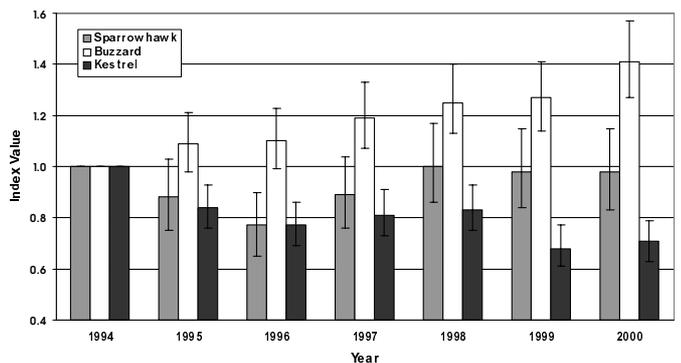


Figure 4. UK trends in Birds of Prey

Figure 4 shows the index figures for all three of the raptor species covered by the BBS over the survey period, 1994-2000: Sparrowhawk, Buzzard and Kestrel. Each shows a quite different trend over the survey period. The Buzzard has increased consistently since 1994, with the index value now over 140% of its original value. The Sparrowhawk population, however, has remained relatively stable over the past six years after a long period of increase since the early 1970s. The Kestrel has shown a worrying and significant decline, with the UK index value now at only 70% of that in 1994. No other species of raptor are present in sufficient numbers to be covered adequately by the BBS and so these are best monitored by species-specific counts.

England

The quantity of records received for the four countries and nine RDA regions across the country varies greatly. Several species covered by the BBS have rather restricted distributions, with some centred in the south and east of the country whilst others become progressively less scarce as you head north. During the 2000 survey usable quantities of records for 24 species were restricted to England, being either absent or scarce elsewhere. Not surprisingly these include southerly distributed species such as Red-legged Partridge, Turtle Dove and Marsh Tit, but also some more widely distributed species, such as Coot and Moorhen.

This is only the second time we have reported on population trends for England, along with a further breakdown of the nine English government regions given later within this report.

Table 4. UK: Population changes of widespread species 1999-2000 and 1994-2000. The sample size indicated is the mean number of squares occupied each year over the six-year interval (excluding squares where the species was recorded in only one year). The figures presented are the percentage changes in population levels for the respective time periods, marked with an asterisk where significant. For the 1994-2000 period, the lower and upper 95% confidence limits are given. Species in bold are red-listed, and species in italics amber-listed in *Birds of Conservation Concern*.

Species	Sample	Change 99-00	Change 94-00	lcl	ucl	Species	Sample	Change 99-00	Change 94-00	lcl	ucl
Great Crested Grebe	55	29	30	-3	73	Wren	1764	6	24 *	20	28
Cormorant	140	38	31 *	9	57	Dunnock	1467	2	8 *	3	13
Grey Heron	462	2	18 *	5	32	Robin	1703	9 *	20 *	16	24
Mute Swan	167	5	20 *	1	41	Redstart	132	7	45 *	21	73
Greylag Goose	82	-3	69 *	25	129	Whinchat	80	-12	-21	-39	2
Canada Goose	289	28	51 *	31	74	Stonechat	74	14	115 *	58	192
Shelduck	114	-16	-47 *	-56	-35	Wheatear	236	-11	-6	-18	7
Mallard	914	2	25 *	17	33	Blackbird	1787	2	13 *	10	16
Tufted Duck	122	46	83 *	50	123	Song Thrush	1371	6	12 *	6	18
Sparrowhawk	264	0	-2	-17	15	Mistle Thrush	939	2	-2	-10	6
Buzzard	448	11	41 *	27	57	Grasshopper Warbler	59	-8	5	-28	52
Kestrel	509	4	-29 *	-37	-21	Sedge Warbler	241	41 *	55 *	37	76
Red Grouse	102	-14	15	-6	42	Reed Warbler	85	0	14	-7	40
Red-legged Partridge	371	10	27 *	13	42	Lesser Whitethroat	202	19	-20 *	-32	-5
Grey Partridge	220	42	-22 *	-34	-8	Whitethroat	969	20 *	26 *	18	34
Pheasant	1223	37 *	41 *	33	49	Garden Warbler	373	-17	-5	-16	8
Moorhen	498	1	18 *	7	30	Blackcap	1026	1	49 *	41	59
Coot	188	10	55 *	34	80	Wood Warbler	58	6	-43 *	-58	-24
Oystercatcher	231	8	-8	-17	2	Chiffchaff	918	11	5	-2	12
Golden Plover	78	13	-12	-32	14	Willow Warbler	1224	-2	13 *	8	18
Lapwing	534	9	-13 *	-20	-5	Goldcrest	522	17	87 *	72	104
Snipe	116	14	35 *	9	65	Spotted Flycatcher	199	-8	-21 *	-34	-6
Curlew	431	2	-13 *	-19	-6	Pied Flycatcher	43	-6	-16	-38	15
Redshank	67	50	8	-15	37	Long-tailed Tit	625	3	22 *	9	35
Common Sandpiper	63	39	-1	-22	27	Marsh Tit	119	24	45 *	16	83
Black-headed Gull	430	31 *	-20 *	-29	-11	Willow Tit	59	-21	-54 *	-67	-35
Common Gull	124	-2	8	-10	30	Coal Tit	528	2	7	-2	17
Lesser Black-backed Gull	414	-6	34 *	18	52	Blue Tit	1666	-3	3	-1	7
Herring Gull	453	5	6	-5	18	Great Tit	1520	4	18 *	12	23
Great Black-backed Gull	85	25	1	-19	27	Nuthatch	282	2	14	-1	31
Feral Pigeon	532	-6	3	-7	13	Treecreeper	264	-21	12	-5	31
Stock Dove	582	1	9	-2	20	Jay	499	7	-7	-16	4
Wood Pigeon	1812	3	3	-1	7	Magpie	1388	4	9 *	5	15
Collared Dove	977	-1	18 *	11	25	Jackdaw	1166	-1	17 *	11	25
Turtle Dove	192	-7	-24 *	-36	-9	Rook	999	-4	6	-3	15
Cuckoo	749	13	-19 *	-26	-12	Carrion Crow	1698	3	17 *	12	23
Little Owl	89	11	8	-17	41	Raven	160	48	64 *	34	101
Tawny Owl	77	-16	-8	-31	22	Starling	1461	-1	-5	-11	0
Swift	848	-23 *	-18 *	-25	-11	House Sparrow	1221	3	-5 *	-9	-1
Green Woodpecker	538	6	22 *	10	35	Tree Sparrow	134	16	25 *	2	54
Great Spotted Woodpecker	576	9	55 *	40	71	Chaffinch	1791	3	6 *	3	10
Skylark	1382	11 *	-8 *	-11	-4	Greenfinch	1280	13 *	34 *	27	41
Sand Martin	96	18	39 *	9	77	Goldfinch	1011	11	11 *	3	20
Swallow	1407	9	21 *	15	27	Siskin	113	18	19	-5	49
House Martin	721	2	34 *	23	46	Linnet	1008	11	-6	-13	1
Tree Pipit	124	-7	12	-8	36	Lesser Redpoll	118	40	8	-14	36
Meadow Pipit	620	11	4	-1	10	Bullfinch	438	7	-25 *	-34	-15
Yellow Wagtail	157	32	-5	-19	13	Yellowhammer	1003	2	-12 *	-16	-7
Grey Wagtail	148	0	41 *	15	74	Reed Bunting	329	-5	-4	-14	8
Pied Wagtail	951	3	25 *	16	34	Corn Bunting	146	-23	-35 *	-46	-23

Of the 96 species detected in at least 30 squares in England, 35 had increased significantly and 23 had declined significantly during 1994 and 2000 (Table 5). Several species showed a significant downward trend for the first time, not seen from last year's analysis of the 1994-1999 period, and included Willow Warbler, Curlew, Swift and Meadow Pipit. The decline of Reed Bunting, Turtle Dove, Corn Bunting and Willow Tit was also shown to be continuing at an increased rate within England. The fall in numbers of several other species continued at a similar pace to last year's results, these including predominantly farmland birds such as Yellowhammer, Cuckoo, Linnet, Skylark, Lesser Whitethroat and Bullfinch, but also the largely urban House Sparrow and Starling and the more woodland dependent Jay and Spotted Flycatcher.

However, it is not all bad news in England. Several migrant species showed a significant increase in populations for the first time, including Sand Martin, Whitethroat, Sedge Warbler and Swallow, whilst others like Blackcap and Redstart continued their increase. Small-bodied residents such as Stonechat, Grey Wagtail, Goldcrest, Wren and Robin also continued to increase following the continued series of mild winters. The two common woodpeckers (Green and Great Spotted) were also shown to be increasingly successful and generally, the water dependent species that are covered by the BBS are doing well. This latter group includes Greylag and Canada Geese, Tufted Duck, Coot, Moorhen, Mallard and Cormorant, although for several of these species the BBS is not the

Table 5. ENGLAND: Population changes for all species that occurred in at least 30 squares in England over the period 1994 to 2000, as well as figures for some species detected in 20 - 29 squares (in parentheses to indicate caution on the basis of small sample sizes). The figures presented are the percentage changes in population levels for 1999 to 2000, and 1994 to 2000, marked with an asterisk where significant at a 5% level. For the six-year period, the lower and upper 95% confidence limits are given. Conventions as in Table 4.

Species	Sample	Change 99-00	Change 94-00	lcl	ucl	Species	Sample	Change 99-00	Change 94-00	lcl	ucl
Little Grebe	38	-33	26	-17	92	Pied Wagtail	721	7	28 *	18	39
Great Crested Grebe	49	9	2	-26	40	Wren	1375	1	11 *	8	14
Cormorant	115	29	25 *	2	53	Dunnoch	1211	2	6 *	1	11
Grey Heron	374	-13	-10	-20	2	Robin	1346	6	18 *	14	22
Mute Swan	144	14	-5	-19	11	Redstart	70	11	71 *	33	121
Greylag Goose	64	3	40 *	9	81	Whinchat	31	-16	-22	-45	11
Canada Goose	274	19	35 *	18	56	(Stonechat)	28	-2	85 *	16	195
Mallard	762	7	26 *	17	35	Wheatear	112	-14	-8	-24	12
Tufted Duck	106	25	47 *	19	82	Blackbird	1438	-2	10 *	7	13
Sparrowhawk	221	-2	-4	-19	14	Song Thrush	1067	6	7 *	1	13
Buzzard	244	13	46 *	28	68	Mistle Thrush	764	-5	-8	-16	0
Kestrel	439	6	-15 *	-24	-4	Sedge Warbler	152	30	30 *	11	52
Red Grouse	39	-5	-4	-26	26	Reed Warbler	83	1	13	-8	39
Red-legged Partridge	366	4	20 *	7	34	Lesser Whitethroat	192	21	-20 *	-33	-5
Grey Partridge	193	35	-26 *	-38	-12	Whitethroat	844	19 *	25 *	18	34
Pheasant	1036	6	15 *	10	21	Garden Warbler	306	-16	-8	-19	6
Moorhen	457	2	18 *	6	30	Blackcap	902	-1	44 *	36	53
Coot	170	8	60 *	37	87	(Wood Warbler)	27	-11	-69 *	-80	-51
Oystercatcher	103	8	11	-8	34	Chiffchaff	783	13	5	-1	12
(Golden Plover)	25	-16	1	-30	45	Willow Warbler	863	-6	-9 *	-13	-4
Lapwing	426	8	5	-5	15	Goldcrest	353	2	65 *	48	83
Snipe	50	27	18	-11	57	Spotted Flycatcher	146	-1	-24 *	-38	-7
Curlew	244	-10	-17 *	-25	-8	Long-tailed Tit	550	5	6	-5	18
Redshank	43	32	37 *	1	86	Marsh Tit	106	8	16	-9	46
(Common Sandpiper)	23	104	4	-33	62	Willow Tit	52	-14	-49 *	-64	-27
Black-headed Gull	324	29	-12	-22	0	Coal Tit	341	0	10	-1	23
Common Gull	51	-39	13	-28	79	Blue Tit	1366	-3	1	-3	5
Lesser Black-backed Gull	301	-35 *	-16 *	-28	-2	Great Tit	1246	6	16 *	10	21
Herring Gull	284	24	-1	-14	14	Nuthatch	232	-3	8	-7	26
Great Black-backed Gull	36	-27	-63 *	-74	-47	Treecreeper	196	-17	-4	-20	15
Common Tern	40	-29	34	-9	97	Jay	436	2	-17 *	-26	-7
Feral Pigeon	449	-6	-3	-12	7	Magpie	1169	-2	0	-5	5
Stock Dove	538	-2	8	-3	20	Jackdaw	924	1	27 *	19	36
Wood Pigeon	1456	4	5 *	1	10	Rook	789	-13	-7	-15	2
Collared Dove	876	-2	19 *	12	26	Carrion Crow	1389	-4	12 *	6	18
Turtle Dove	189	-6	-23 *	-36	-9	Raven	44	46	88 *	31	170
Cuckoo	611	0	-31 *	-37	-24	Starling	1213	-12	-21 *	-25	-15
Little Owl	86	11	11	-16	46	House Sparrow	1027	0	-12 *	-15	-8
Tawny Owl	63	-26	-5	-32	31	Tree Sparrow	114	-1	3	-18	28
Swift	741	-24 *	-19 *	-26	-11	Chaffinch	1388	3	6 *	3	9
Kingfisher	34	39	-4	-38	49	Greenfinch	1088	15 *	34 *	26	41
Green Woodpecker	495	8	31 *	19	46	Goldfinch	844	5	0	-7	8
Great Spotted Woodpecker	515	7	48 *	33	64	Siskin	32	-54	-14	-46	37
Skylark	1075	1	-19 *	-23	-16	Linnet	829	3	-19 *	-25	-12
Sand Martin	65	87 *	113 *	64	177	Lesser Redpoll	46	103	-35 *	-56	-5
Swallow	1089	6	15 *	8	21	Bullfinch	343	6	-24 *	-34	-14
House Martin	577	8	8	-2	18	Yellowhammer	871	1	-13 *	-18	-9
Tree Pipit	66	27	-1	-23	26	Reed Bunting	250	-8	-23 *	-32	-12
Meadow Pipit	304	-5	-12 *	-18	-6	Corn Bunting	139	-21	-38 *	-48	-27
Yellow Wagtail	154	28	-4	-19	14						
Grey Wagtail	93	11	36 *	6	75						

ideal scheme to monitor their populations. The few species of raptor that were covered by the BBS experienced rather mixed fortunes, with Kestrel continuing to decline, the Sparrowhawk now stable after many years of increase and the Buzzard increasing ever more as it expands eastward. The waders produced little in the way of significant trends, although the decline in the Curlew population was contrasted by the increase in Redshank. The gulls were not faring well, with both Great and Lesser Black-backed Gull numbers down, in contrast to the UK trends of stability and increase respectively. These trends must be treated with some caution however, because of the potential for large-scale movement between different colonies. Last but not least, the Raven has appeared on

the list of newly increasing species, with an 88% increase over the past seven years.

Scotland

58 species were recorded in at least 30 squares in Scotland, of which eighteen showed a significant increase in numbers and only six decreased, over the 1994-2000 period (Table 6). A large proportion of these were new results for the BBS, not detected during last year's analysis of the 1994-1999 period. Snipe, Great Black-backed Gull, Lesser Black-backed Gull, Cuckoo, Raven, Carrion Crow, Rook, Mistle Thrush and House Sparrow all showed

Table 6. SCOTLAND: Population changes for all species that occurred in at least 30 squares in Scotland over the period 1994 to 2000, as well as figures for some species detected in 20 - 29 squares (in parentheses to indicate caution on the basis of small sample sizes). The figures presented are the percentage changes in population levels for 1999 to 2000, and 1994 to 2000, marked with an asterisk where significant at a 5% level. For the six-year period, the lower and upper 95% confidence limits are given.

Species	Sample	Change 99-00	Change 94-00	lcl	ucl	Species	Sample	Change 99-00	Change 94-00	lcl	ucl
Grey Heron	41	12	93 *	26	197	Robin	152	10	23 *	6	42
Mallard	85	-16	41 *	10	79	Whinchat	32	-24	-28	-61	34
Buzzard	93	14	51 *	15	98	Wheatear	74	-18	-13	-33	12
Kestrel	40	3	-59 *	-73	-36	Blackbird	144	-3	2	-10	15
Red Grouse	59	-17	23	-9	67	Song Thrush	131	-6	18	-3	44
(Grey Partridge)	25	76	-3	-43	65	Mistle Thrush	59	14	43 *	1	101
Pheasant	99	15	-14	-30	5	Sedge Warbler	48	36	86 *	37	153
Oystercatcher	117	6	-13	-24	1	Whitethroat	54	28	33	-7	91
Golden Plover	44	30	-15	-38	19	(Blackcap)	27	-15	61 *	1	156
Lapwing	85	9	-29 *	-43	-13	(Chiffchaff)	20	-1	114 *	12	306
Snipe	53	11	43 *	2	99	Willow Warbler	176	-3	40 *	22	60
Curlew	125	-1	-19 *	-31	-4	Goldcrest	71	37	154 *	96	230
(Redshank)	21	52	-6	-38	41	(Spotted Flycatcher)	22	-24	-26	-61	37
Common Sandpiper	37	37	-3	-31	37	Coal Tit	96	5	4	-16	29
Black-headed Gull	74	36	-47 *	-60	-30	Blue Tit	119	-5	3	-16	27
Common Gull	69	2	3	-19	33	Great Tit	105	-8	18	-7	50
Lesser Black-backed Gull	59	72	100 *	48	170	(Trecreeper)	27	-57	-26	-59	33
Herring Gull	98	-9	-7	-28	21	Magpie	33	24	41	-3	107
Great Black-backed Gull	34	28	75 *	16	165	Jackdaw	89	-9	0	-21	26
Feral Pigeon	50	-34	-7	-36	36	Rook	99	42	73 *	30	132
Wood Pigeon	158	-10	-16 *	-27	-2	Carrion Crow	150	25	26 *	5	51
Collared Dove	34	0	-21	-47	18	Raven	39	81	101 *	30	213
Cuckoo	67	64	38 *	1	88	Starling	119	9	23	-8	66
Swift	39	-33	-50 *	-66	-26	House Sparrow	72	17	27 *	3	56
Skylark	191	11	0	-10	12	Chaffinch	192	3	9	-2	20
Swallow	131	0	1	-16	20	Greenfinch	80	-17	9	-16	43
House Martin	43	-16	310 *	154	561	Goldfinch	58	34	39	-3	99
(Tree Pipit)	28	-28	31	-17	107	Siskin	58	46	30	-8	86
Meadow Pipit	201	13	-3	-12	8	Linnet	77	10	11	-16	47
(Grey Wagtail)	25	-3	91 *	9	234	Lesser Redpoll	37	38	19	-21	80
Pied Wagtail	116	-1	25	0	56	Bullfinch	30	-11	45	-20	162
Wren	178	14	87 *	62	116	Yellowhammer	88	10	0	-17	20
Dunnock	100	3	10	-13	40	Reed Bunting	39	11	37	-6	101

significant increases for the first time whilst, conversely, declines for Wood Pigeon and Swift were also recorded.

Swift and Kestrel numbers showed the most severe declines, both exceeding 50% over the six-year period, whilst Lapwing, Curlew, Black-headed Gull and Wood Pigeon also showed significant falls. As is often the case, the different bird groups produced an assortment of results with several of the 'water-birds' doing well, such as Grey Heron and Mallard. The populations of several species managed to produce opposite trends to their English counterparts with House Sparrow, Cuckoo, Willow Warbler and the two black-backed gulls all increasing north of the border with only Wood Pigeon decreasing. Other populations, however, did follow trends in England, with Kestrel, Lapwing, Curlew and Swift declining significantly on both sides of the border and Mallard, Buzzard, Wren, Robin, Sedge Warbler, Goldcrest, Carrion Crow and Raven all increasing. Finally an enormous increase of 310% was recorded for House Martin, in line with the increase of 375% recorded last year for the 1994-1999 period.

Wales

53 species were recorded in at least 30 squares in Wales, nineteen of which showed a significant increase in numbers while four decreased over the 1994 to 2000 period (Table 7). In keeping with many parts of the UK, Starling and Yellowhammer numbers

decreased significantly in Wales, whilst Mallard and Chaffinch opposed the UK trend of increase by also declining. Several birds outperformed their English counterparts with Lesser Black-backed Gull, Magpie, House Sparrow and Linnet all increasing against a backdrop of declines in England. Some of the significant results for Wales were not evident last year with Great Spotted Woodpecker, Magpie, Robin, Song Thrush, Greenfinch and Linnet all showing an increase for the first time. The huge increase in Pheasant numbers recorded in 2000 has impacted greatly on the long term population trend, changing the previous year's significant decline into a significant increase. Pheasant numbers are obviously heavily influenced by recent stocking numbers and must be viewed with great caution. Four species have showed a continued decline in Wales with numbers of Mallard, Starling, Chaffinch and Yellowhammer still falling. Several species however, continued to do well with numbers of migrant Swallow, House Martin and Blackcap increasing and small-bodied residents such as Wren, Goldcrest, and Trecreeper boosted by the run of mild winters.

Northern Ireland

Nineteen species were recorded in at least 30 squares in Northern Ireland, none of which were found to be decreasing, whilst fourteen showed a significant increase in numbers over the 1994-2000 period (Table 8). Although the number of species we are able to analyse in Northern Ireland is still relatively small, most seem to be increasing. Some of these increases are surprisingly large with Meadow Pipit, Dunnock, Blackbird and Starling more than doubling

Table 7. WALES: Population changes for species that occurred in at least 30 squares, on average, in Wales over the period 1994 to 2000 as well as figures for some species detected in 20 - 29 squares (in parentheses to indicate caution on the basis of small sample sizes). The figures presented are the percentage changes in population levels for 1999 to 2000, and 1994 to 2000, marked with an asterisk where significant at a 5% level. For the six-year period, the lower and upper 95% confidence limits are given.

Species	Sample	Change 99-00	Change 94-00	lcl	ucl	Species	Sample	Change 99-00	Change 94-00	lcl	ucl
Grey Heron	34	17	24	-19	90	Whitethroat	60	12	19	-7	51
Mallard	49	2	-40 *	-57	-15	Garden Warbler	50	5	-3	-29	33
Buzzard	103	5	3	-17	28	Blackcap	83	7	66 *	32	109
Pheasant	61	776 *	627 *	418	921	(Wood Warbler)	23	11	22	-25	98
Curlew	37	2	-3	-32	38	Chiffchaff	90	5	-10	-26	10
Lesser Black-backed Gull	42	-62	84 *	8	215	Willow Warbler	130	-7	-8	-19	3
Herring Gull	52	11	104 *	50	177	Goldcrest	66	0	29 *	5	59
Wood Pigeon	138	8	10	-4	25	(Spotted Flycatcher)	22	36	13	-30	84
(Feral Pigeon)	23	93	217 *	96	413	(Pied Flycatcher)	24	-15	-29	-55	13
(Stock Dove)	23	45	59	-13	190	Long-tailed Tit	46	-26	4	-35	68
Collared Dove	48	-2	23	-9	67	Coal Tit	53	-13	-12	-34	18
Cuckoo	54	24	-11	-36	24	Blue Tit	128	-4	3	-10	18
Swift	53	-27	-7	-36	33	Great Tit	121	-2	18	-1	40
Green Woodpecker	37	-2	25	-20	94	Nuthatch	49	5	24	-12	77
Great Spotted Woodpecker	42	13	49 *	1	120	Treecreeper	35	22	149 *	63	281
Skylark	85	-6	1	-13	18	Jay	50	18	17	-18	67
Swallow	125	1	41 *	17	69	Magpie	126	6	24 *	5	45
House Martin	72	-7	100 *	50	168	Jackdaw	102	-5	6	-13	30
Tree Pipit	30	8	6	-28	55	Rook	63	-6	3	-30	50
Meadow Pipit	69	-17	19 *	2	38	Carrion Crow	149	0	12	-3	30
(Grey Wagtail)	20	-11	-34	-61	11	Raven	62	13	4	-23	41
Pied Wagtail	87	-13	5	-17	33	Starling	75	9	-38 *	-54	-18
Wren	144	1	13 *	2	24	House Sparrow	85	5	64 *	34	99
Dunnoek	108	-5	5	-13	26	Chaffinch	145	-2	-14 *	-22	-4
Robin	141	10	19 *	7	32	Greenfinch	77	14	36 *	7	72
Redstart	50	20	19	-7	53	Goldfinch	85	10	71 *	32	122
Wheatear	41	12	15	-18	64	Linnet	73	48	76 *	33	132
Blackbird	141	3	19 *	8	32	Bullfinch	46	46	-30	-51	1
Song Thrush	119	14	34 *	15	57	Yellowhammer	37	0	-30 *	-50	-1
Mistle Thrush	77	-16	-3	-27	28						

Table 8. NORTHERN IRELAND: Population changes for all species that occurred in at least 30 squares in Northern Ireland over the period 1994 to 2000, as well as figures for some species detected in 20 - 29 squares (in parentheses to indicate caution on the basis of small sample sizes). The figures presented are the percentage changes in population levels for 1999 to 2000, and 1994 to 2000, marked with an asterisk where significant at a 5% level. For the six-year period, the lower and upper 95% confidence limits are given.

Species	Sample	Change 99-00	Change 94-00	lcl	ucl	Species	Sample	Change 99-00	Change 94-00	lcl	ucl
Wood Pigeon	51	43	49 *	11	99	Willow Warbler	50	23	94 *	43	163
(Skylark)	29	179 *	143 *	75	239	(Goldcrest)	28	26	121 *	21	304
Swallow	53	49	67 *	23	126	Coal Tit	36	5	60	-11	188
(House Martin)	24	38	130 *	28	313	Blue Tit	46	4	47 *	6	103
Meadow Pipit	44	90 *	126 *	76	191	Great Tit	39	23	94 *	27	196
(Pied Wagtail)	24	59	49	-19	176	Magpie	52	39	57 *	21	104
Wren	57	32	96 *	52	151	Jackdaw	46	9	-6	-32	29
Dunnoek	40	4	160 *	57	332	Rook	46	-16	63 *	13	136
Robin	56	21	50 *	19	89	Starling	47	87	182 *	89	321
Blackbird	55	56	125 *	76	188	House Sparrow	30	40	-20	-48	23
Song Thrush	46	28	27	-11	83	Chaffinch	57	13	89 *	43	150
Mistle Thrush	35	51	-35	-61	7	(Greenfinch)	28	123	265 *	94	587
(Sedge Warbler)	21	79	36	-8	102	(Linnet)	23	53	67	-6	196
(Chiffchaff)	20	50	-28	-61	35	(Reed Bunting)	21	-17	12	-24	64

in numbers since 1994. In addition to this, Swallow, Wren, Willow Warbler, Great Tit, Magpie, Rook and Chaffinch have all experienced increases in excess of 50% and most have followed their respective national trends, albeit at a greater rate of increase. Only four species showed any hint of decline in Northern Ireland and none at a significant level. Many of the results were new, not being identified during the analysis of the 1994-1999 period last year, with Wood

Pigeon, Swallow, Starling, Magpie, Robin and Blue Tit all showing new, positive trends. The only significant decrease of last year, the Mistle Thrush, showed a non-significant decrease of 35% this year, over the six-year survey period. A comparison of the population trends in Northern Ireland and England showed that Willow Warbler, Starling and Meadow Pipit were all performing much better in the province.

The nine Regional Development Agency regions are as follows:

- RDA 1** (North West) – Cumbria, Lancashire, Greater Manchester and Cheshire (inc. Wirral)
RDA 2 (North East) – Northumberland, County Durham and Cleveland
RDA 3 (Yorkshire & The Humber) – North Yorkshire, West Yorkshire, East Yorkshire, South Yorkshire and North Lincolnshire
RDA 4 (East Midlands) – Lincolnshire, Nottinghamshire, Derbyshire, Leicestershire, Rutland and Northamptonshire
RDA 5 (East of England) – Norfolk, Suffolk, Cambridgeshire, Essex, Bedfordshire and Hertfordshire
RDA 6 (West Midlands) – Staffordshire, Birmingham, Shropshire, Warwickshire, Hereford and Worcestershire
RDA 7 (South East) – Kent, Sussex, Surrey, Hampshire, Berkshire, Buckinghamshire and Oxfordshire
RDA 8 (South West) – Avon, Cornwall, Devon, Somerset, Dorset, Wiltshire and Gloucestershire
RDA 9 London

Trends in Regional Development Agency regions

This is only the second year in which population trends have been extracted from the nine RDA regions within England (Table 9). The excellent coverage in England again means that we are able to do this for a wide range of species, which we hope will provide a useful source of information for local government. The nine Regional Development Agency regions are made up of the groups of counties listed above. Since climate, agriculture and habitats vary throughout England, major differences in population trends may point us towards reasons for declines.

Of the species listed in Table 9, 46 were recorded in sufficient numbers for indexing in five or more different regions. Again some interesting differences have been made apparent by this analysis. The three raptor species covered by the BBS all show some regional differences with Sparrowhawk numbers now indicating a small decrease across most of England, apart from in the East Midlands where numbers have risen significantly over the past six years. This part of the country is probably the last to experience the reappearance of a species that has spread eastwards over the past thirty years from its original strongholds in the west. In contrast to this, the Kestrel is showing a much larger and more serious decline over most of England, apart from in Yorkshire where a significant increase was recorded.

A number of species that were generally known to be increasing throughout the UK have also shown local declines, with a decrease in numbers of Swallows in East Anglia and Wrens in the South East. In addition to these, the Song Thrush is showing an increase in the West of England, whilst decreasing in the East, and Willow Warbler is declining in the South and East whilst increasing in the North West. Other birds have shown remarkably consistent trends across England, including declines in Cuckoo, Skylark, Linnets and Yellowhammer and increases in Pheasant, Robin, Whitethroat, Blackcap, Goldcrest, Great Tit, Jackdaw and Greenfinch.

Lastly, several significant local declines in excess of 50% were also noted, including Grey Partridge, Rook and Bullfinch in the North West; Black-headed Gull and Swift in the North East, Corn Bunting in the South East and House Sparrow in London.

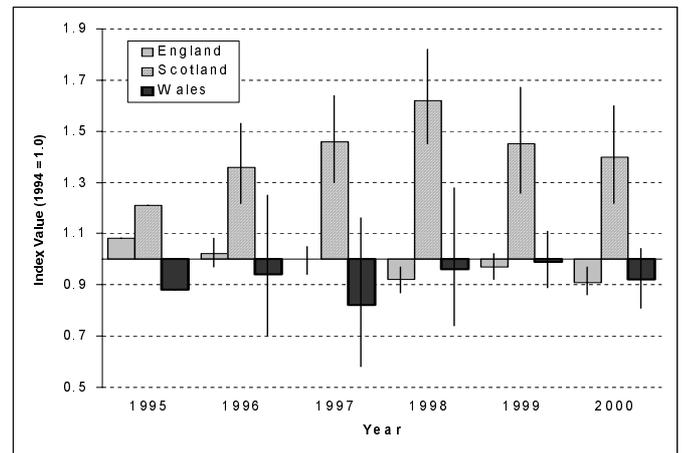
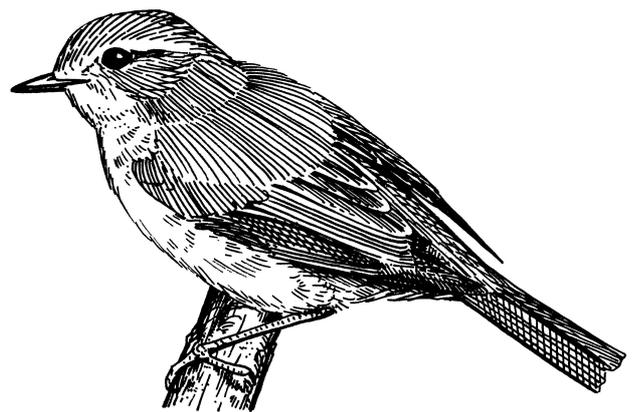


Figure 5. Changes in index values for Willow Warbler in England, Scotland and Wales over the 1994-2000 survey period. The figures for 1994 are not shown because all values for each country were set to zero in that year. The vertical lines represent the upper and lower confidence limits for each year and country.

Regional variation in Willow Warbler trends

The results from the BBS for the 1994-2000 period have shown several distinct regional differences in trends within species. Figure 5 shows such differences for the Willow Warbler. Overall the Willow Warbler has shown a significant increase of 13% over the six-year period. This however, hides distinct differences between three of the constituent countries forming the UK. Numbers in Scotland have increased significantly by 40% over the period, although there has been some decline since the peak experienced in 1998. The situation in England is quite different with the BBS data showing a small, but significant decline of 9%. This English result itself hides differing regional trends with declines being most severe in the south. The situation in Wales is less clear with an 8% decrease that is not significant. In contrast to this, the Northern Ireland data (not shown) has shown a large and significant increase of 94%, albeit from a rather small sample.



The Willow Warbler showed a significant decline in England but increased in Scotland.

Between-year population changes (1999-2000)

The main aim of the BBS is to monitor long-term trends in bird populations, although we do, however, also report on inter-annual population changes. The numbers of eight species were found to have changed significantly between 1999 and 2000. Of these, only the Swift had experienced a decline, while seven species increased significantly: Pheasant, Black-headed Gull, Skylark, Robin, Sedge Warbler, Whitethroat and Greenfinch. For most species, any between-year changes are most likely due to the effects of weather during the breeding season or over the preceding winter.

At a regional level, very few inter-annual changes were detected. In England however, populations of five species had changed significantly since 1999. Lesser Black-backed Gull and Swift had declined, whilst Sand Martin, Whitethroat and Greenfinch increased. No inter-annual changes were detected in Scotland, but a significant increase was shown for Pheasant in Wales. In Northern Ireland, Meadow Pipit and Skylark were both shown to have increased significantly.

Habitat

In total, the habitat details for over 21,000, two hundred metre sections were completed, which allows us to describe the habitat composition of the UK. Inland rock formed a very small proportion of the total and so has been included in miscellaneous. We estimate that nearly 49% of the country is farmland, 10% is human sites and 16% is woodland and scrub (Figure 6). By breaking down the various habitat groupings, some interesting patterns were highlighted. Looking at the various woodland and scrub habitats; deciduous, including orchards and coppice was found to account for 5.7% of the entire total; mature, clear-felled and newly planted plantation 7.3% and mixed woodland 2.6%. Within the farmland category, 21.3% of the entire total was improved grassland, 17.7% tilled arable and 3.4% mixed. The various wetland habitats, including reed-swamp and wet grassland accounted for only 3.3%, whilst grouping moorland, heath and bog together produced a total of 18.3%. Various types of unimproved grassland accounted for 12.7%, whilst all coastal type habitats amounted for a mere 0.3%. A breakdown of the human sites, revealed a majority of 4.1% to be suburban with 3.9% rural and 1.6% urban.

Please note that the percentage values for each habitat type will have changed from previous Breeding Bird Survey reports. The habitat figures have now been adjusted to allow for any regional bias that has occurred. This has been carried out in a similar manner to that in which the index values have also been adjusted to allow for differences in survey coverage across the country.

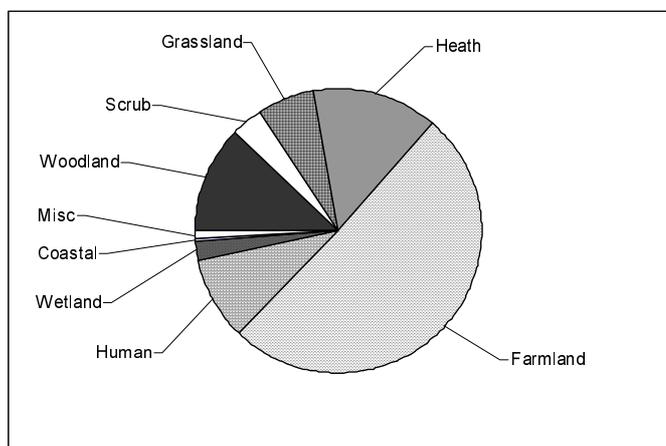
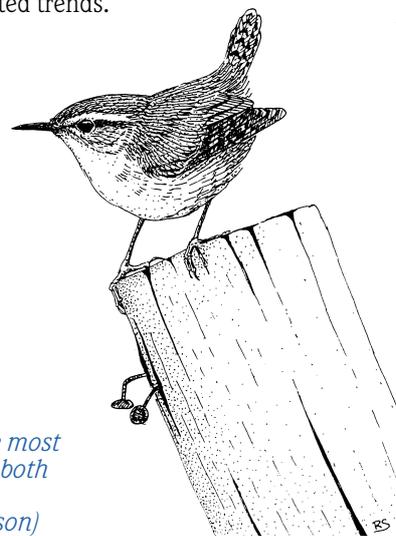


Figure 6. The percentage of sections that included each of the nine main habitat categories as defined by the BTO's habitat coding system.

BBS Research and Development

Linking the BBS and the CBC: Both sets of indices show similar patterns within the same geographic area

An important component of BBS research over the past year has been the development of methods to link the indices derived from the Common Birds Census (CBC) since 1962 to those derived from the BBS since 1994. This is important because in the future, long-term population trends that contribute to conservation initiatives such as Birds of Conservation Concern/Importance, will need to incorporate data from both schemes. The first stage of this work is now complete. We compared annual indices from the BBS and the CBC for 75 species that are covered by both schemes, over the period 1994 to 1999. We corrected for the geographical bias of the CBC by restricting the comparison to plots in an area bounded by northing 500 (km) and easting 300 (km) in the British National Grid. The most important result is that despite the differences in the methods employed in the two schemes and the fact that the CBC estimates the number of territories and the BBS is an index of the number of individuals encountered along a line transect, the vast majority of species exhibited very similar trends. In fact, formal testing revealed statistically significant differences in indices for only five species – Wren, Blackbird, Robin, Chiffchaff and Pheasant – and for most of these species, the differences are unlikely to be biologically important. The differences are only statistically significant because the large amounts of data for species such as Wren enable us to detect very small differences. Although this is very encouraging, the lack of a significant differences for some of the species encountered less frequently (such as Tawny Owl or Yellow Wagtail) must be treated with caution because of the lower precision of the estimated trends.



The Wren is one of the most widespread species in both Ireland and Britain
(Artwork by Rick Simpson)

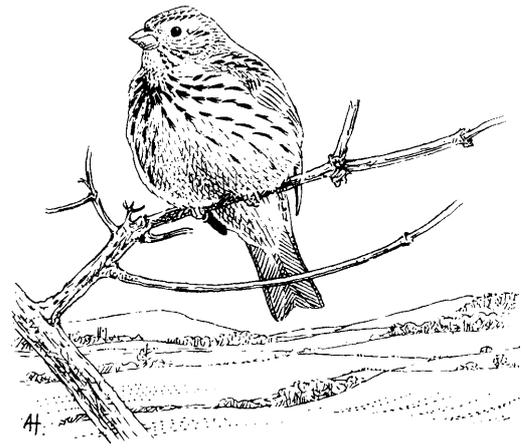
The other important finding from this work is the confirmation that population trends based upon the geographically-biased CBC may not reflect changes in the population at the national level. Of the 75 species tested, 40% exhibited statistically significant differences between BBS population trends within the CBC area (defined above) and those outside the area (essentially the Southwest, Wales, Northern Ireland, northern England and Scotland). One example is Green Woodpecker, which is increasing rapidly in the CBC area, but declining in the more peripheral parts of its range. Although we do not know whether population trends prior to the 1990s would show the same geographic patterns, this work highlights the importance of regional effects on bird population trends. The next step is to analyse the full seven years of data during the overlap period (1994 to 2000) and, in consultation with other conservation organisations, to come up with a way of reporting long-term population trends based on data from both schemes.

News of common bird monitoring in Europe

Bird monitoring of one kind or another has a long history within Europe; however, in recent years more and more countries have followed the UK example by developing national breeding bird monitoring schemes. The Countryside Bird Survey in the Republic of Ireland (from 1998) is one obvious offshoot from the BBS, but other European schemes have followed this example, with financial support from the RSPB. New common bird monitoring schemes have sprung up in Spain (from 1996), Hungary (from 1998), and Poland (from 2000). All these surveys have taken design features from the BBS and applied them to the local conditions. In Spain and Hungary, for example, survey plots, which are bigger than in the UK, are chosen using a semi-random design, and birds are counted using point count transects. In Poland, where the landscape is closer to that in the UK, survey plots are the same size, they are chosen in exactly the same way, and counted using the same line transect method. What is important in each case is that the design principles of BBS have been closely followed. We fully expect other European countries to take up the BBS example in the future and RSPB will be working hard to make this happen.

The new scheme in Poland is particularly exciting both because the survey design is so close to BBS but also because Polish agriculture resembles the British countryside in former times. In the first year, 139 1-km squares were counted across Poland and 153 species recorded. The five most widespread species were Chaffinch, Yellowhammer, Starling, Skylark and Great Tit. Other notable widespread species included Cuckoo, Golden Oriole, Yellow Wagtail, Whinchat, Red-backed Shrike and Corn Bunting; all indicators of less intensive systems of farming. Rarer birds included White-tailed and Lesser-spotted Eagles, Osprey, Little Bittern and Ural Owl! Much work remains to build on this success, particularly in fostering the volunteer and regional organiser networks, but it is a very promising start. Those with a particular interest (and conversational Polish!) should check out the 2000 results on the web at '<http://www.stornit.gda.pl/mppl/>'.

Contributed by Richard Gregory, RSPB



Artwork by Alan Harris. *Less intensive farming still favours the Corn Bunting in Poland.*

The Countryside Bird Survey 2000 – progress report

The Countryside Bird Survey (CBS), which runs parallel with the BBS and covers Ireland's 26 counties, completed its third season in 2000. With the number of squares actually surveyed increasing steadily from 260 in 1998 to 326 in 2000, the priority now is to consolidate coverage of a core 300 or so squares.

Instructional workshops, held in late winter, again proved useful for recruiting survey participants. Some 270 observers took part in this year's survey, including 54 National Parks and Wildlife conservation rangers. It is encouraging to note that the majority of observers have settled in to the routine of survey work and most are now covering the same squares each year. The return rate on allocated squares improved from 79% in 1998 and 1999 to 81% in 2000.

While coverage in the eastern, more populated half of the country was excellent, there were still many gaps in the west, southwest and northwest. With fewer volunteers in these (often remote) areas, many squares had to be surveyed by a contract fieldworker and conservation rangers.

Preliminary analysis of the 2000 data showed that the average number of bird species recorded in a 1 km square was 25.5 (the highest was 43 species and the lowest 4). Wren, Robin and Blackbird were once again the top three most widespread species, with Chaffinch, Swallow, Wood Pigeon, Magpie, Song Thrush, Rook and Hooded Crow completing the top ten ranking. Some of the species thought to be in decline, including Song Thrush, Skylark and Yellowhammer, were recorded in 84%, 51% and 31% of squares respectively.

Based on presence or absence, Chiffchaff showed some fluctuation over the three years, being recorded in 41% of squares in 1998, 29% in 1999, then rising to 44% in 2000. Did this represent a real drop in numbers in 1999? Answers to this and many more questions should become clear when more in-depth analysis on abundance is completed. With the steady increase in the number of squares being covered, more species (at least 40) are now over the 50 square threshold required for monitoring purposes.

To date, only limited analysis of CBS data has been carried out, mainly in relation to species distribution. Now, with three years' data amassed, work is in progress to produce the first full CBS report, which should go to print by end of 2001. With the assistance of the BTO, analysis will produce species indices, which in turn will show population trends for many common and widespread Irish birds for the first time. It is also hoped that BBS results for the six counties of Northern Ireland can be merged with CBS data to produce all-Ireland indices.

Contributed by Dick Coombes (CBS Field Co-ordinator) - BirdWatch Ireland



Artwork by Ernest Leahy. *The Red-backed Shrike remains a very widespread species in Poland.*

Mammal monitoring in the BBS

In the 2000 field season, 84% of observers surveyed their BBS squares for mammals and submitted those records along with their bird data. Table 10 shows the fifteen most frequently recorded mammals and the percentage of squares where they occurred. Rabbit is by far the most frequently observed species, but about 25% of squares also contained Grey Squirrel, Red Fox, Brown Hare and Roe Deer. The disappearance of Common Shrew and the appearance of Feral/Domestic Cat in the top fifteen is probably down to changes in reporting during the 2000 season. Of the more interesting species being recorded, Lesser White-toothed Shrew was new to the survey (populations exist on both the Isles of Scilly and Channel Islands) and Pine Marten and Polecat were again noted from a number of localities.

Records for the more secretive or difficult to identify species are derived from field signs, as well as the observer's prior knowledge of the square. The behaviour of many mammal species means that few are seen during BBS bird visits, which is why we include the 'known to be present' category on the mammal form.

The future of mammal monitoring in the UK is looking more promising this year. The Mammal Surveillance and Monitoring Working Group, a partnership of various conservation organisations (including the BTO and JNCC) that are interested in mammal monitoring in the UK has been working on the development of a national strategy. The first phase of this work has involved the collation of data from existing schemes, and funding some pilot work to test new techniques.

One of the pilot schemes being tested is the first national multi-species winter mammal monitoring survey in the UK. This exciting mammal initiative – a joint project of the BTO and The Mammal Society - will be carried out over the coming winter, thanks to funding from the Department of Environment, Food and Rural Affairs (DEFRA). It is a two part survey, in which volunteers will be asked to survey their allocated one-km squares twice during the winter. The first visit, between October and December, is to record all sightings of mammals along the selected route. The second visit, between January and March, is to search for field signs of mammals along the same route. BBS observers can play a particularly important role in this pilot because any surveys of BBS squares during the winter will help us to assess the value of the data collected during the summer BBS transects. In the meantime, the BTO has obtained funding from the Joint Nature Conservation Committee (JNCC) to carry out more detailed analyses of the summer mammal data collected by BBS observers.

Table 10. Rates of occurrence of common mammal species on BBS squares in 2000.

Mammal	Number of squares	% of squares
Rabbit	1394	74
Grey Squirrel	764	40
Red Fox	715	38
Brown Hare	671	35
Mole	587	31
Roe Deer	395	21
Feral/Domestic Cat	365	19
Badger	288	15
Hedgehog	283	15
Brown Rat	194	10
Stoat	161	9
Muntjac Deer	123	6
Weasel	122	6
Fallow Deer	91	5
Red Deer	74	4

Further Reading

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The Future

Overall, the 2000 season was an excellent one for the BBS, both in terms of coverage and the number species we were able to analyse. At present, this cannot be said for the 2001 season. Although it is difficult at this early stage to assess the full impact of Foot and Mouth Disease, it has clearly had a serious impact on coverage. Despite the rather low number of forms returned to date, we are hoping that we will be able to produce indices for some regions or some habitats, although measures of broad-scale population change will clearly be influenced by the type of sites that could be covered this past summer.

We fully appreciate that circumstances have been extremely difficult this year, and we would like to sincerely thank all those Regional Representatives and observers who took part in the survey during 2001. The Foot and Mouth situation is not over, however, with parts of the country still under access restrictions. Hopefully this access to the countryside will be back to normal next spring, so that BTO volunteers can get out into the field again and really make up for the shortcomings of 2001. The BBS survey is providing more and more detailed information on the population trends of our common breeding birds and so, for 2002, it would be a great achievement if we could reach our target of 2,500 covered squares.

SPECIAL THANKS

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

BBS Regional Organisers for 2000:

 **ENGLAND:** Avon – John Tully; Bedfordshire – Phil Cannings; Berkshire – Chris Robinson; **Birmingham & West Midlands – vacant;** Buckinghamshire – Mick A’Court; Cambridgeshire – John Le Gassick; Cheshire (mid) – Paul Miller; Cheshire (north & east) – David Jones; Cheshire (south) – Charles Hull; Cleveland – Russell McAndrew; Cornwall – Paul Stubbs; Cumbria (north) – John Callion; Cumbria (south) – Stephen Dunstan; Derbyshire – Dave Budworth; Devon – John Woodland; Dorset – Catherine Whitby; Durham – David Sowerbutts; Essex (north-east) – Peter Dwyer; Essex (north-west) – Geoff Gibbs; Essex (south) – Jean Stone; Gloucestershire – Mike Smart; Hampshire – Glynne Evans; Herefordshire – Steve Coney; Hertfordshire – Chris Dee; Huntingdon & Peterborough – Bob Titman; Kent – Geoffrey Munns; Lancashire (east) – Tony Cooper; Lancashire (north-west) – Dave Sharpe; Lancashire (south) – Philip Shearwood; Leicestershire & Rutland – Jim Graham; Lincolnshire (east) – Rob Watson; **Lincolnshire (north) – vacant;** Lincolnshire (south) – Richard and Kay Heath; Lincolnshire (west) – Peter Overton; London & Middlesex – Derek Coleman; Manchester – Judith Smith; Merseyside – Bob Harris; Norfolk (north-east) – Chris Hudson; Norfolk (north-west) – Mike Barrett; Norfolk (south-east) – Graham Coxall; Norfolk (south-west) – Vincent Matthews; Northamptonshire – Phil Richardson; Northumberland – Tom and Muriel Cadwallender; Nottinghamshire – Lynda Milner; Oxfordshire (north) – Roger Evans; Oxfordshire (south) – Peter Abbott; Rugby – Barrington Jackson; Isles of Scilly – Will Wagstaff; Shropshire – Allan Dawes; Somerset – Eve Tigwell; Staffordshire (central & south) – Liz Palmer; **Staffordshire (north) – vacant;** Suffolk – Mick Wright; Surrey – Hugh Evans; Sussex – Barrie Watson; Warwickshire – Joe Hardman; Isle of Wight – James Gloyn; Wiltshire (north) – Mark Lang; Wiltshire (south) – Andrew Carter; Wirral – Kelvin Britton; Worcestershire – Harry Green; Yorkshire (north-west) – Malcolm Priestley; Yorkshire (north) – John Edwards; Yorkshire (Harrogate) – Mike Brown; Yorkshire (East) – Frank Moffatt; Yorkshire (north-east) – Peter Ottaway; Yorkshire (Bradford) – Mike Denton; Yorkshire (York) – Rob Chapman; Yorkshire (Leeds & Wakefield) – Peter Smale; Yorkshire (south-east & south-west) – Chris Falshaw.

 **SCOTLAND:** Aberdeen – Paul Doyle; Angus – Ken Slater; Argyll (south) – David Wood; Argyll (north) – Richard Evans; Arran – David Fowler; Ayrshire – Paul Darnbrough; Benbecula & The Uists – Paul Boyer; Borders – Alex Copland; **Caithness & Sutherland – vacant;** Central Scotland – Neil Bielby; Dumfries – Richard Mearns; Fife & Kinross – Norman Elkins; Inverness – Hugh Inslay; Islay, Jura & Colonsay – Malcolm Ogilvie; Kincardine – Graham Cooper; Kirkcudbright – Brian Smith; **Lanark, Renfrew & Dunbarton – vacant;** Lewis & Harris – Tony Pendle; Lothian – Alan Heavisides; Moray & Nairn – Bob Proctor; Orkney – Colin Corse; Perthshire – Andrew Wight; Ross-shire – Dave Butterfield; Shetland – Dave Okill; Skye – Roger and Pat Cottis; Small Isles (Rum, Eigg, Muck, Canna) – Bob Swann; Wigtown – Geoff Sheppard.

 **WALES:** Anglesey – Jim Clark; Brecon – John Lloyd; Caernarfon – John Barnes; Cardigan – Moira Convery; Carmarthen – David Poulter; Clwyd (east) – Anne Brenchley; Clwyd (west) – Peter Wellington; Glamorgan (west) – Dave Hanford; Glamorgan (mid and south) – Rob Nottage; Gwent – Jerry Lewis; Merioneth – Peter Haveland; Montgomery – Brayton Holt; Pembrokeshire – Rod Hadfield; Radnorshire – Pete Jennings.

 **NORTHERN IRELAND:** Co Antrim – Anita Donaghy; Co Armagh – David Knight; Co Down – Alistair McIlwain; Co Fermanagh – Phil Grosse; Co Londonderry – Charles Stewart; Co Tyrone (north) – Mary Mooney.

CHANNEL ISLANDS: Jamie Hooper.

ISLE OF MAN: Pat Cullen.

Many thanks also to the following ROs who have retired during the last year and contributed significantly in developing BBS in their respective regions: Oly Biddulph, Alan Hancock, Neil Money, Peter Dedicoat and Ian Buxton. We would also like to thank Martin Coath, Peter Walker, Ruth Wilson and Mel Ab Owain for kindly taking over as Regional Representatives since the 2000 season. Coverage in areas without a Regional Organiser (in bold) is co-ordinated from the Census Unit. Please contact Mike Raven in the Census Unit if you would be able to take on the role of Regional Organiser in any of these regions.

The success of the BBS is dependent on volunteer support throughout the UK. The most valuable data are collected from squares covered by the same observer year after year. We greatly appreciate your continued support.

Please spread the word to other birdwatchers you may know, or even consider taking on another square if you have time. Thanks once again for all your hard work.

If you would like to take part in the BBS, we would be pleased to hear from you.

For further information, please contact:

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