The Breeding Bird Survey 2001

Report Number 7

by

M.J. Raven, D.G. Noble & S.R. Baillie

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BREEDING BIRD SURVEY

The Breeding Bird Survey partnership comprises:

British Trust for Ornithology
The Nunnery
Thetford
Norfolk
IP24 2PU
www.bto.org

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
PE1 1JY
www.jncc.gov.uk

Royal Society for the Protection of Birds
The Lodge
Sandy
Bedfordshire
SG19 2DL
www.rspb.org.uk

BBS National Organiser:
Mike Raven
British Trust for Ornithology
email bbs@bto.org

For further BBS information, visit our web site at www.bto.org/survey/bbs.htm

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

ACKNOWLEDGEMENTS

The seventh Annual Report for the Breeding Bird Survey (BBS) allows us to look at the progress of the scheme over the past seven years (1994-2001). With the devasting outbreak of Foot & Mouth Disease (FMD) in 2001, all national bird monitoring was affected, including BBS. Access to the countryside was severely restricted and the BTO issued its own guidance to volunteers to assist in efforts to reduce the risk of spreading the disease. With the kind co-operation of land owners and managers, and considerable effort from our volunteers and Regional Organisers, 581 squares were visited in that year. We would like to take this opportunity to thank our volunteers for so readily accepting and working within the constraints that FMD placed on us in 2001.

The BBS is organised by the British Trust for Ornithology (BTO), and jointly funded 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 Dr Helen Baker (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), Anita Donaghy (then RSPB), Dr Colin Galbraith (then JNCC), Dr David Gibbons (RSPB), Dr Richard Gregory (RSPB), John Marchant (BTO), Mike Meharg (EHS), Ken Perry (BTO Honorary), Angela Rickard (BTO), Dr Derek Thomas (BTO Honorary), and Richard Weyl (EHS).

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Maps of coverage and distribution were produced using DMAP which was written by Dr Alan Morton. The cover illustration is by Mike Weston and the BBS logo is by Andy Wilson. Other illustrations in this report are by Mike Weston and Tommy Holden. Report production and design are by Angela Rickard and Helen Carrier.

Profiles

Mike Raven is the 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.

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.

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The Breeding Bird Survey 2001

Summary

• This is the seventh annual report of the BTO/JNCC/RSPB Breeding Bird Survey (BBS), covering the years 2000 and 2001. The primary aim of the survey is to provide population trends for a range of common and widespread birds in the UK.

• The number of BBS squares covered each year increased steadily from 1,569 in 1994 to 2,252 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. Access restrictions imposed by the outbreak of Foot and Mouth Disease had a considerable effect on the number of sites that could be surveyed in 2001, with a total of 581 squares being completed.

• Due to the much reduced level of coverage, population change analysis has been restricted to looking at the year-to-year changes between 2000 and 2001. Only those squares that were surveyed in both years are looked at, with bird counts from only the late visits taken into consideration because of the significant number of squares that did not receive an early visit. The 2001 sample is likely to have been non-random due to the coverage problems caused by FMD.

• The population change measures must be interpreted with extreme caution because the reduced coverage is likely to have biased the BBS sample. Therefore the change measures presented here should not be used to extrapolate the trend information that has been published for earlier years.

• Also due to the reduced coverage, population changes have been produced for only two of the four constituent countries of the UK (England and Scotland) and three of the nine English Government Office Regions (the South East, East of England and London).

• Due to the biased sampling caused by FMD in 2001, data from that year will not be used in the long-term trend. However, this is not to say that these data are not valuable, and they will almost certainly be used for other important research purposes in the future.

• 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 each 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 Welsh and Irish Officers and BTO Scotland. ROs play a vital role in coordinating and fostering local fieldwork effort.

• A total of 168 separate species and subspecies were recorded in 2001. 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 for 2000-01 for 67 species. However, results may be biased due to the very uneven sampling in 2001.

• At a national level, the abundance of 22 species declined by 10% or more, and 15 species increased by more than 10% between 2000 and 2001, with none declining by more than 50% *(Table 5)*.

• In England, 17 species declined by 10% or more, 17 species increased by 10% or more between 2000 and 2001, and again no species declined by more than 50% *(Table 7)*.

• In Scotland, three species declined by 10% or more, and three species increased by 10% or more, between 2000 and 2001 *(Table 8)*. In Wales, the sample size was too small to produce any meaningful results and in Northern Ireland the BBS was cancelled across the whole Province.

• BBS data used for research on Starling declines have shown that by far the greatest Starling densities occur in urban and suburban areas, with densities on arable farmland being an order of magnitude lower. In addition, densities on grassland were twice those on arable farmland.

• BBS data used for research on House Sparrow declines have shown that by far the greatest House Sparrow densities occur in suburban and rural garden habitats, densities there being an order of magnitude higher than on farmland. The greatest declines, however, were recorded in urban areas. The BBS data has suggested a UK population of some 13 million birds.

• A comparison between Common Birds Census (CBC) and BBS data in southern Britain showed little difference in the trends between 1994 and 2000 for the majority of species. This has important implications for the reporting of long-term population trends, with combined CBC/BBS indices being feasible, at least for southern Britain.

• Mammal data have been collected from BBS squares since 1995. Preliminary results suggest that the occurrence of nine mammal species on BBS squares over this period was adequate to allow annual indices of abundance to be calculated.

Breeding Bird Survey

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. Since 1962, the subsequent population changes among many widespread breeding birds have been monitored by the Common Birds Census (CBC), 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 mainly farmland and woodland habitats. 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, with the aim of improving 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 and recording all birds seen or heard. Birds are recorded in one of three distance bands, or in flight, to enable species density to be calculated. 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 have taken the count from the late visit – 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 both years (2000 and 2001) were included in the analyses. Tests for significance have not been included because of the biased sampling caused by FMD access restrictions. Counts for five species of wader have been corrected to exclude 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

Survey coverage is 2001 was severely affected by the outbreak of Foot and Mouth Disease in the UK. First detected in February, livestock testing soon revealed the extent of the epidemic particularly in regions such as Devon and Cumbria. As a result, most of the countryside, including public rights of way and all traffic to farms in infected areas, was closed to visitors. This was true not only in areas at the centre of the epidemic, but also in relatively disease-free arable farming regions such as Lincolnshire and Norfolk, where there was considerable concern about spreading the disease.

At the onset of the epidemic, the BTO, in consultation with its funding partners, cancelled all remaining winter fieldwork and a number of surveys planned for the early summer in 2001 (e.g. Breeding Waders in Wet Meadows, Mute Swan Survey, Peregrine Survey). For long-term annual surveys such as the BBS, where some sites in urban areas or disease-free regions might reasonably still be visited, it was decided not to cancel all fieldwork, but to provide guidance to the Regional Organisers and to observers via the BTO website about where and how they could carry out BBS fieldwork. The idea was to help surveyors make their own decisions about the advisability of carrying out their usual survey. To this end, we prepared a set of good practice guidelines for carrying out fieldwork and communicating with farmers and other land-owners, and through links to MAFF websites, regularly updated the information on the extent of infection and closure of public rights of way. This information was mailed to all Regional Organisers so that they could pass on the information to volunteers in their region, and was also posted on our website. Nevertheless, on the advice of Regional Organisers, all BBS fieldwork was cancelled in Devon, Cumbria and Northern Ireland.

Although survey coverage was clearly greatly reduced in 2001 (see Table 1), BBS observers were able to collect some information on bird numbers (presented in this report). We were very pleased that this was achieved with no risk to the health and welfare of livestock in the UK, and that we succeeded overall in maintaining good relations with farmers and other land-owners. Thank you to all BBS participants for acting responsibly during this time!

To date we have received 581 sets of forms for 2001, a large decrease on the 2,252 total received for 2000, with this fall almost solely due to the access restrictions imposed by the outbreak of Foot and Mouth Disease. The level of coverage throughout the UK varied greatly, with some parts of the country being much less affected than others (Figure 1). Coverage in both England and

Scotland fell to less than one third of its 2000 level. Within England, coverage was most concentrated in the south and east; London was the least affected region, with 87% of covered squares from last year being completed. Coverage in the South East remained reasonably good, together with the East Midlands and East of England regions, although in all of these areas the number of squares surveyed was only 30-40% of the 2000 totals. The South West, West Midlands, Yorkshire and North West of England did not fare so well, with very few sites being surveyed in 2001. In the North East the BBS was completely cancelled. Out of 71 squares surveyed in Scotland in 2001, 19 came from Fife and another 14 from Ross-shire. Elsewhere in Scotland, coverage was rather sparse. Wales was also severely affected by Foot and Mouth Disease, with only 20 squares being completed, together with Northern Ireland and the Isle of Man where the survey was completely abandoned for the year. On a brighter note, survey work continued on the Channel Isles as normal.

It must be noted that, within the majority of regions, coverage was also patchy, with some counties being well surveyed and others not at all. In addition to this, 30% of squares surveyed in 2001 received only a late visit. It is clear that this uneven reduction in coverage is likely to have biased the population change estimates that can be calculated from the 2000 and 2001 data. This must be taken into account when considering the change measures in this report.

Table 1. A comparison of BBS coverage in 2000 and 2001, broken down by country and English Government Office Regions.

Region	*2000 covered*	*2001 covered*	*2001 as % of 2000*
England	1,700	483	28%
Scotland	244	71	29%
Wales	216	20	9%
Northern Ireland	82	0	0%
Isle of Man	3	0	0%
Channel Isles	7	7	100%
North West England	196	41	21%
North East England	54	0	0%
Yorkshire & Humberside	137	23	17%
East Midlands	148	49	33%
East of England	257	104	40%
West Midlands	168	25	15%
South East England	385	154	40%
South West England	293	33	11%
London	62	54	87%
Total:	**2,252**	**581**	**26%**

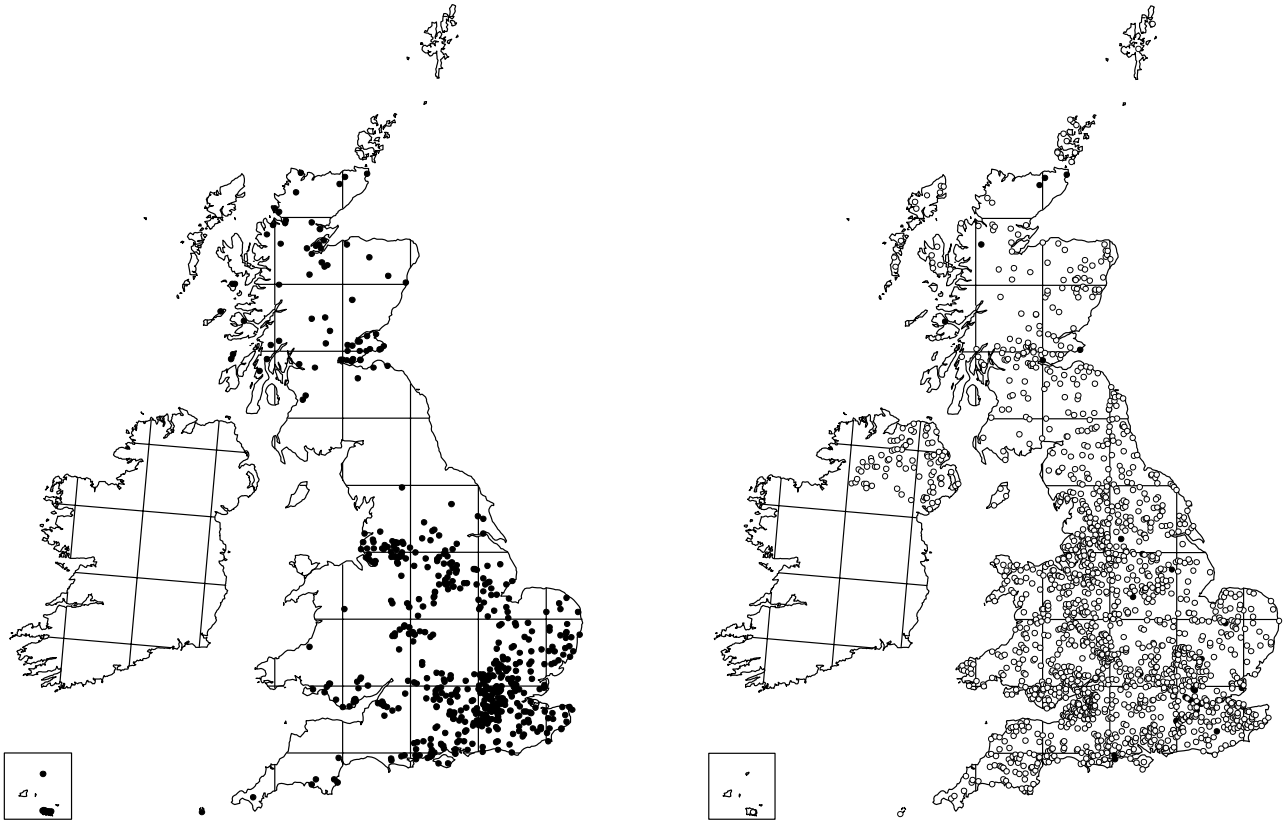

Figure 1. The left-hand map shows the distribution of BBS squares covered in 2001 and the right-hand map shows the distribution of squares covered in 2000 but not in 2001 (open symbols) and squares covered in 2001 but not in 2000 (shaded symbols).

Habitat coverage

In total, the habitat details for 5,511 200m transect sections were completed, although access restrictions imposed by the outbreak of Foot and Mouth Disease affected the type of site that could be surveyed. This resulted in a number of habitat types being either under-recorded or over-represented in the survey.

Table 2 shows a comparison of habitat coverage between 2000 and 2001. For each 1km square surveyed, the habitat details in up to ten 200m sections are recorded. Habitat categories and figures shown in italics are the proportions of more important habitat types within the main habitat category above. A considerable fall in the quantity of all recorded habitat types occurred in 2001, although some categories were more affected than others (Figure 2). Table 2 shows that human sites formed a much greater proportion of the total in 2001 than in 2000, while the proportion of recorded farmland habitat fell sharply. Within these rather broad habitat categories, the proportion of urban and suburban sections increased the greatest, while that for rural sections changed little. Within the farmland habitat category, the proportion of arable farmland increased slightly in 2001 while that for both improved and unimproved grassland fell sharply. The proportion of moorland and lowland semi-natural grassland habitat sections also fell considerably while the proportion of woodland, scrub, and wetland and habitat sections changed little between 2000 and 2001.

Table 2. A comparison of habitat coverage between 2000 and 2001. The percentage of sections containing each habitat category for 2001 and 2000 is shown together with the percentage difference between the two years.

Habitat category	*% of sections*		*2000-01*
	2000	*2001*	*difference*
Woodland	11.9%	12.9%	1.0%
Scrub	2.6%	3.0%	0.4%
Grassland	4.7%	2.1%	-2.6%
- Moorland	*2.9%*	*0.5%*	-2.4%
Heathland	5.8%	4.9%	-0.9%
- Lowland Heath	*5.1%*	*4.3%*	-0.8%
- Moorland & Bog	*0.7%*	*0.6%*	-0.1%
Farmland	54.9%	40.7%	-14.2%
- Improved Grassland	*21.4%*	*8.4%*	-13.0%
- Unimproved Grassland	*6.9%*	*3.2%*	-3.7%
- Arable	*21.0%*	*24.2%*	3.2%
Human Sites	17.2%	32.8%	15.6%
- Urban & Suburban	*11.5%*	*26.7%*	15.2%
- Rural	*5.7%*	*6.2%*	0.5%
Water Bodies	2.0%	2.4%	0.4%
Coastal	0.5%	0.9%	0.4%
Inland Rock	0.4%	0.3%	-0.1%
Total No. Sections	21,603	5,510	

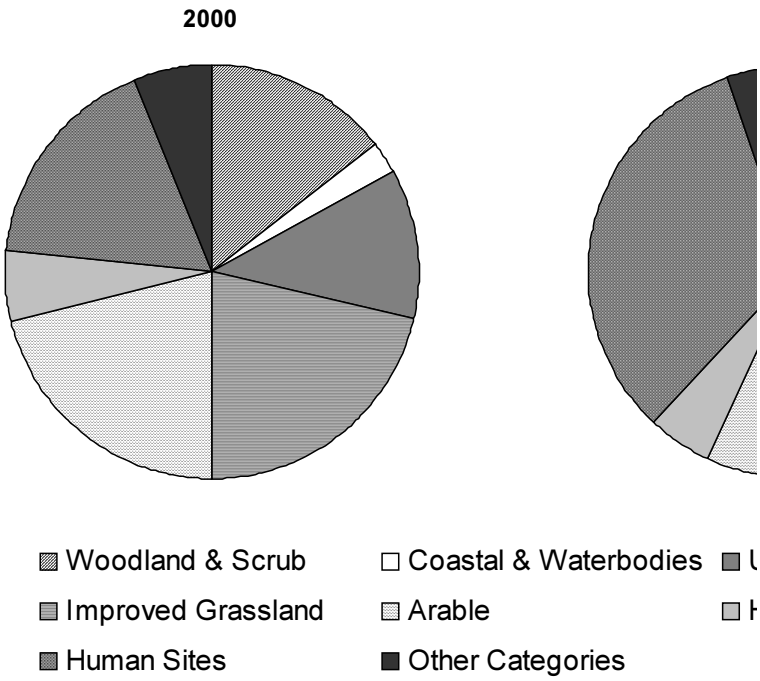

Figure 2. A comparison of habitat coverage between 2000 and 2001. 'Other Categories' represents all those habitat categories not covered in the other pie-chart sectors, including Inland Rock, Miscellaneous and Mixed Farming.

Survey results

Species recorded

Table 3. Species recorded in 50 or more squares across the UK during the 2001 BBS survey.

Species	Number of squares	%	Species	Number of squares	%	Species	Number of squares	%
Cormorant	59	10	Cuckoo	140	24	Willow Warbler	236	41
Grey Heron	155	27	Swift	304	52	Goldcrest	130	22
Mute Swan	56	10	Green Woodpecker	186	32	Long-tailed Tit	174	30
Canada Goose	86	15	Great Spotted Woodpecker	190	33	Coal Tit	131	23
Mallard	244	42	Skylark	325	56	Blue Tit	496	86
Sparrowhawk	73	13	Swallow	328	57	Great Tit	446	77
Buzzard	75	13	House Martin	203	35	Nuthatch	80	14
Kestrel	130	22	Meadow Pipit	99	17	Jay	173	30
Red-legged Partridge	106	18	Pied Wagtail	237	41	Magpie	420	72
Pheasant	298	51	Wren	514	89	Jackdaw	293	51
Moorhen	161	28	Dunnock	434	75	Rook	176	30
Coot	65	11	Robin	496	86	Carrion Crow	511	88
Lapwing	97	17	Blackbird	541	93	Starling	441	76
Black-headed Gull	121	21	Song Thrush	407	70	House Sparrow	375	65
Lesser Black-backed Gull	116	20	Mistle Thrush	245	42	Chaffinch	500	86
Herring Gull	134	23	Sedge Warbler	71	12	Greenfinch	426	73
Feral Pigeon	224	39	Lesser Whitethroat	50	9	Goldfinch	284	49
Stock Dove	158	27	Whitethroat	294	51	Linnet	238	41
Woodpigeon	543	94	Garden Warbler	84	14	Bullfinch	105	18
Collared Dove	344	59	Blackcap	344	59	Yellowhammer	232	40
Turtle Dove	71	12	Chiffchaff	264	46	Reed Bunting	79	14

Table 4. Species recorded on fewer than 50 squares for the whole of the UK during the 2001 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 of squares	Species	Number of squares	Species	Number of squares	Species	Number of squares
Red-throated Diver	5	Hen Harrier	3	Greenshank	2	Ring Ouzel	1
Black-throated Diver	1	Goshawk	2	Common Sandpiper	13	Fieldfare	3
Little Grebe	16	Golden Eagle	1	Arctic Skua	1	Cetti's Warbler	1
Great Crested Grebe	19	Merlin	2	Common Gull	31	Grasshopper Warbler	8
Black-necked Grebe	1	Hobby	10	Great Black-backed Gull	27	Reed Warbler	31
Fulmar	2	Peregrine	2	Sandwich Tern	3	Dartford Warbler	4
Gannet	3	Red Grouse	16	Common Tern	16	Wood Warbler	13
Shag	2	Black Grouse	1	Arctic Tern	2	Firecrest	1
Little Egret	3	Grey Partridge	32	Rock Dove	3	Spotted Flycatcher	39
Black Swan*	2	Quail	3	Ring-necked Parakeet	15	Pied Flycatcher	2
(Domestic Goose*)	2	Peacock*	3	Barn Owl	9	Marsh Tit	36
Greylag Goose	19	Corncrake	3	Little Owl	27	Willow Tit	14
(Domestic Mallard*)	2	Oystercatcher	40	Tawny Owl	23	Treecreeper	44
Shelduck	24	Avocet	1	Kingfisher	8	Short-toed Treecreeper	3
Mandarin	5	Little Ringed Plover	3	Lesser Spotted Woodpecker	3	Chough	1
Gadwall	12	Ringed Plover	10	Woodlark	5	Hooded Crow	23
Teal	3	Golden Plover	7	Sand Martin	25	Raven	12
Shoveler	2	Grey Plover	1	Tree Pipit	31	Tree Sparrow	20
Pochard	4	Knot	1	Rock Pipit	5	Brambling	1
Tufted Duck	42	Sanderling	1	Yellow Wagtail	32	Siskin	27
Eider	3	Dunlin	9	Grey Wagtail	40	Twite	6
Goldeneye	2	Snipe	13	Dipper	3	Lesser Redpoll	19
Red-breasted Merganser	4	Woodcock	2	Nightingale	7	Common Crossbill	4
Goosander	3	Bar-tailed Godwit	2	Redstart	11	Corn Bunting	34
Ruddy Duck	4	Whimbrel	2	Whinchat	9		
Red Kite	6	Curlew	43	Stonechat	20		
Marsh Harrier	3	Redshank	17	Wheatear	31		

A total of 168 species were recorded in 2001 compared with 215 species in 2000. Included in this 2001 total are two feral species (Black Swan and Peacock), two domestic breeds (Domestic Goose and Domestic Mallard) and a single native subspecies (Hooded Crow). No official British Birds Rarities Committee (BBRC) rarities were recorded, although some lucky observers managed to see rare breeding species such as Black-throated Diver, Black-necked Grebe, Goshawk, Golden Eagle, Corncrake, Whimbrel, Arctic Skua, Woodlark, Cetti's Warbler, Firecrest and Chough on their squares.

As in 2000, the most widely recorded species was the Wood Pigeon, occurring on 94% of surveyed squares. This was closely followed by Blackbird, Wren, Carrion Crow, Chaffinch, Robin and Blue Tit, all of which were recorded in more than 85% of squares. The most productive square in terms of the number of recorded species came from Kent with 55 species, closely followed by a square in the West Midlands with 54 species.

The smaller number of sites surveyed in 2001 compared with 2000 had a large impact on the number of species recorded on more than 100 squares. This total fell from 89 species in 2000 to only 49 species in 2001, in addition to which another 14 species were recorded in more than 50 squares. The remaining 105 species recorded during the survey included a number of late winter visitors (Grey Plover, Knot, Sanderling, Bar-tailed Godwit, Fieldfare and Brambling) and rare breeding species.

Photograph by Mike Weston. The Wood Pigeon was the most widely recorded species in 2001.

BBS results: 2000 to 2001 changes

Due to FMD access restrictions, 30% of observers did not manage to carry out an early visit, and for this reason, bird count data only from the late visits were considered. In addition, only those squares covered in both 2000 and 2001 were included in the analysis. The reduction in the number of squares surveyed and consequently the smaller data set analysed, meant that only those species that occurred in the UK on thirty of more squares were considered, instead of the usual cut-off at fifty or more squares used in previous years. Of the four constituent countries, only England and Scotland produced large enough samples for analysis and of the English Government Office Regions, London, the South East and East of England were included. It is important to note that urban and suburban squares, together with arable farmland, formed a considerably larger proportion of the total in 2001 than in 2000. This coincided with a fall in the proportion of squares containing grassland and upland habitat types. This resulted in a biased sample and for this reason, we report only on the year-to-year difference, with no test of significance.

Table 5. UK: Year-to-year population changes for 2000-01 for species that occurred in at least 30 squares in the UK. The figures presented are the percentage change in population levels for 2000-01. The sample size is the mean number of squares occupied each year over the 2000-01 period (excluding squares where the species was recorded in one year only, and considering counts from the late visits only).

Species	Sample	Change 00-01	Species	Sample	Change 00-01	Species	Sample	Change 00-01
Cormorant	34	-26	Cuckoo	81	-29	Long-tailed Tit	117	7
Grey Heron	91	-1	Swift	265	2	Coal Tit	98	10
Mute Swan	39	-3	Green Woodpecker	121	11	Blue Tit	434	-14
Canada Goose	50	-46	Great Spotted Woodpecker	135	23	Great Tit	347	-9
Mallard	169	2	Skylark	283	-5	Nuthatch	58	-10
Sparrowhawk	36	11	Swallow	265	9	Treecreeper	33	-37
Buzzard	51	56	House Martin	183	1	Jay	120	18
Kestrel	99	37	Meadow Pipit	76	-11	Magpie	371	-7
Red-legged Partridge	79	-12	Pied Wagtail	167	0	Jackdaw	244	-3
Pheasant	250	-34	Wren	462	-16	Rook	151	-2
Moorhen	120	-1	Dunnock	363	-7	Carrion Crow	451	3
Coot	58	35	Robin	434	-10	Starling	380	3
Oystercatcher	33	9	Blackbird	491	-5	House Sparrow	339	-10
Lapwing	71	-12	Song Thrush	332	2	Chaffinch	442	2
Curlew	35	-31	Mistle Thrush	165	2	Greenfinch	359	-4
Black-headed Gull	94	-13	Sedge Warbler	49	-4	Goldfinch	205	10
Lesser Black-backed Gull	83	-43	Whitethroat	243	1	Linnet	191	33
Herring Gull	94	-15	Garden Warbler	68	20	Bullfinch	75	-18
Feral Pigeon	164	-2	Blackcap	271	8	Yellowhammer	207	-1
Stock Dove	123	-23	Chiffchaff	204	20	Reed Bunting	48	28
Wood Pigeon	494	16	Willow Warbler	182	7	Corn Bunting	30	-15
Collared Dove	290	-6	Goldcrest	103	-47			
Turtle Dove	60	-25	Spotted Flycatcher	32	23			

United Kingdom

Of 67 species detected on at least 30 squares in the UK (Table 5), 15 increased in numbers by 10% or more, 22 declined by 10% or more and 30 remained relatively stable during 2000-01. A number of relatively common garden species declined, including Goldcrest (down 47%), Wren (down 16%), Blue Tit (down 14%), House Sparrow and Robin (both down 10%). However, it must be noted that Wren and Goldcrest populations are both subject to very large annual fluctuations, primarily caused by the severity of the previous winter and the success of last year's breeding season. A recent series of wet springs may have had an impact on the breeding success of some birds such as Blue Tit, whose numbers fell between 2000 and 2001.

Of the long-distance migrant species, Cuckoo and Turtle Dove numbers fell by at least 25% but Garden Warbler, Chiffchaff and Spotted Flycatcher all showed moderate increases of over 20%. The three raptor species monitored annually by the BBS fared well on those plots analysed during 2000-01, with Buzzard heading the pack with an increase of 56% and Sparrowhawk and Kestrel numbers showing moderate increases. The fortunes of woodland birds were mixed: Green and Great Spotted Woodpeckers, Coal Tit and Jay all showed small increases of 10-25%, but Treecreeper fell by 37% and Nuthatch was down by 10% on 2000 levels. It must be stressed however, that these figures were derived from the rather biased samples obtained in 2001.

The poor coverage in 2001 resulted in 32 species, previously monitored by the BBS for the UK, not being included in the 2000-01 analysis. Amongst those not included were a number of wetland birds (Great Crested Grebe, Greylag Goose, Tufted Duck, Yellow Wagtail, Reed Warbler and Sand Martin) and primarily coastal species (Shelduck and Great Black-backed Gull). Predominantly upland breeders (Red Grouse, Golden Plover, Common Sandpiper, Common Gull, Wheatear and Raven) together with those with large upland populations (Snipe, Redshank, Tree Pipit, Grey Wagtail, Whinchat, Grasshopper Warbler, Siskin and Lesser Redpoll) were also recorded in too few squares for the change in abundance to be assessed. Localised woodland species (Redstart, Wood Warbler, Pied Flycatcher, Marsh Tit and Willow Tit) and two owls (Tawny and Little Owls) also dropped out of the analysis. In addition, Tree Sparrow, Stonechat, Lesser Whitethroat also failed to be recorded in a large enough number of sites for any meaningful results to be produced. Among the 32 birds mentioned are four *Population Status of Birds in the UK* red-listed species (Grasshopper Warbler, Tree Sparrow, Marsh Tit and Willow Tit) and a number of amber-listed species (Greylag Goose, Shelduck, Red Grouse, Snipe, Redshank, Common Gull, Sand Martin, Tree Pipit, Yellow Wagtail, Grey Wagtail, Wood Warbler, Redstart, Stonechat and Lesser Redpoll). Although a number of these birds are better monitored by other surveys, several rely almost solely on the BBS. Table 6 shows the national population changes for the species included in the 1994-2000 analysis from the BBS Report for 2000.

Table 6. UK Population changes for species recorded on a mean of fifty or more squares per year over the six-year interval, 1994-2000 (excluding squares where the species was recorded in only one year). The figures presented are the percentage changes in population levels for 1994-2000, those marked with an asterisk where statistically significant. Species in bold are red-listed, and species in italics amber-listed, in *The Population Status of Birds*.

Species	*Change 94-00*	*Species*	*Change 94-00*	*Species*	*Change 94-00*
Great Crested Grebe	30	**Turtle Dove**	-24 *	Chiffchaff	5
Cormorant	31 *	*Cuckoo*	-19 *	*Willow Warbler*	13 *
Grey Heron	18 *	Little Owl	8	*Goldcrest*	87 *
Mute Swan	20 *	Tawny Owl	-8	**Spotted Flycatcher**	-21 *
Greylag Goose	69 *	Swift	-18 *	Pied Flycatcher	-16
Canada Goose	51 *	*Green Woodpecker*	22 *	Long-tailed Tit	22 *
Shelduck	-47 *	Great Spotted Woodpecker	55 *	**Marsh Tit**	45 *
Mallard	25 *	**Skylark**	-8 *	**Willow Tit**	-54 *
Tufted Duck	83 *	*Sand Martin*	39 *	Coal Tit	7
Sparrowhawk	-2	*Swallow*	21 *	Blue Tit	3
Buzzard	41 *	*House Martin*	34 *	Great Tit	18 *
Kestrel	-29 *	*Tree Pipit*	12	Nuthatch	14
Red Grouse	15	*Meadow Pipit*	4	Treecreeper	12
Red-legged Partridge	27 *	*Yellow Wagtail*	-5	Jay	-7
Grey Partridge	-22 *	*Grey Wagtail*	41 *	Magpie	9 *
Pheasant	41 *	Pied Wagtail	25 *	Jackdaw	17 *
Moorhen	18 *	Wren	24 *	Rook	6
Coot	55 *	*Dunnock*	8 *	Carrion Crow	17 *
Oystercatcher	-8	Robin	20 *	Raven	64 *
Golden Plover	-12	*Redstart*	45 *	**Starling**	-5
Lapwing	-13 *	Whinchat	-21	**House Sparrow**	-5 *
Snipe	35 *	*Stonechat*	115 *	**Tree Sparrow**	25 *
Curlew	-13 *	Wheatear	-6	Chaffinch	6 *
Redshank	8	*Blackbird*	13 *	Greenfinch	34 *
Common Sandpiper	-1	**Song Thrush**	12 *	*Goldfinch*	11 *
Black-headed Gull	-20 *	*Mistle Thrush*	-2	Siskin	19
Common Gull	8	**Grasshopper Warbler**	5	**Linnet**	-6
Lesser Black-backed Gull	34 *	Sedge Warbler	55 *	*Lesser Redpoll*	8
Herring Gull	6	Reed Warbler	14	**Bullfinch**	-25 *
Great Black-backed Gull	1	Lesser Whitethroat	-20 *	**Yellowhammer**	-12 *
Feral Pigeon	3	Whitethroat	26 *	**Reed Bunting**	-4
Stock Dove	9	Garden Warbler	-5	**Corn Bunting**	-35 *
Wood Pigeon	3	Blackcap	49 *		
Collared Dove	18 *	*Wood Warbler*	-43 *		

England

Of 61 species detected on at least 30 squares in England, 17 increased in abundance by 10% or more, 17 declined by 10% or more and 27 remained relatively stable during 2000-01 (Table 7). 83% of BBS squares surveyed in the UK in 2001 were in England, this proportion having increased from a quite consistent 75% each year over the 1994-2000 period. Many of the results for the 2000-01 period were therefore very similar in England to those of the UK overall. A few notable differences were apparent however, with Willow Warbler and Coal Tit numbers declining in England while recording little change in the UK. Garden Warbler and Spotted Flycatcher numbers both increased by more than 20% in the UK while changing little in England, and Grey Heron, Sparrowhawk, Meadow Pipit and Sedge Warbler increased in England, while being at best stable in the UK. The Wood Pigeon remained the most widely recorded species, being noted in 98% of squares surveyed in England and was closely followed by Blackbird, Carrion Crow, Wren, and Blue Tit, all of which were recorded in more than 90% of sites.

Table 7. ENGLAND: Year-to-year population changes for 2000-01 for species that occurred on at least 30 squares in England. The figures presented are the percentage changes in population levels for 2000-01. The sample size indicated is the mean number of squares occupied each year over the 2000-01 period (excluding squares where the species was recorded in one year only, and only considering counts from the late visits).

Species	Sample	Change 00-01	Species	Sample	Change 00-01	Species	Sample	Change 00-01
Cormorant	30	-3	Swift	246	7	Long-tailed Tit	113	4
Grey Heron	83	34	Green Woodpecker	119	14	Coal Tit	74	-36
Mute Swan	35	17	Great Spotted Woodpecker	127	17	Blue Tit	392	-14
Canada Goose	50	-47	Skylark	245	-6	Great Tit	316	-13
Mallard	153	3	Swallow	223	0	Nuthatch	56	29
Sparrowhawk	33	188	House Martin	163	3	Jay	113	8
Kestrel	90	31	Meadow Pipit	33	20	Magpie	351	-6
Red-legged Partridge	79	-13	Pied Wagtail	144	-10	Jackdaw	220	-7
Pheasant	227	-42	Wren	405	-16	Rook	134	12
Moorhen	115	-3	Dunnock	324	-12	Carrion Crow	396	3
Coot	54	57	Robin	384	-6	Starling	340	12
Lapwing	62	27	Blackbird	438	-5	House Sparrow	304	-3
Black-headed Gull	83	10	Song Thrush	289	7	Chaffinch	381	-5
Lesser Black-backed Gull	61	-13	Mistle Thrush	149	-3	Greenfinch	324	-4
Herring Gull	59	-10	Sedge Warbler	37	28	Goldfinch	185	4
Feral Pigeon	146	3	Whitethroat	222	5	Linnet	170	33
Stock Dove	118	-23	Garden Warbler	63	-7	Bullfinch	68	-22
Wood Pigeon	439	6	Blackcap	256	-1	Yellowhammer	83	-2
Collared Dove	270	-5	Chiffchaff	188	30	Reed Bunting	39	15
Turtle Dove	59	-25	Willow Warbler	136	-18			
Cuckoo	70	-38	Goldcrest	82	-32			

Scotland

The relatively small number of squares surveyed in Scotland during 2001 restricted the number of species whose population changes could be assessed. Of the nine species detected on at least 30 squares in Scotland, all of which were relatively common birds, three increased by 10% or more, three declined by 10% or more and three remained relatively stable (Table 8). Notable changes included a doubling in the recorded number of Wood Pigeons, a 36% decline in Robin and 23% decline in Wren numbers. The Chaffinch, not the Wren as in 2000, was the most widely recorded species in Scotland, being noted in 77% of squares surveyed in 2001. The next most widespread Scottish species were Wren, Willow Warbler and Meadow Pipit.

Table 8. SCOTLAND: Year-to-year population changes for 2000-01 for species that occurred on at least 30 squares in Scotland. The figures presented are the percentage changes in population levels for 2000-01. The sample size indicated is the mean number of squares occupied each year over the 2000-2001 period (excluding squares where the species was recorded in one year only, and only considering counts from the late visits).

Species	Sample	Change 00-01	Species	Sample	Change 00-01	Species	Sample	Change 00-01
Wood Pigeon	38	100	Wren	38	-23	Willow Warbler	38	20
Skylark	32	-7	Robin	34	-36	Carrion Crow	35	-1
Meadow Pipit	36	-11	Blackbird	31	-9	Chaffinch	45	10

Wales & Northern Ireland

We were unable to produce any population indices for Wales for the 2000-01 period, because of the very small sample size received for 2001 (20 squares). In Northern Ireland the entire survey was cancelled for the season.

Between-year changes in the Government Office Regions

Breeding bird population trends were produced for three out of the nine GORs in 2001. These were the London Region, East of England (Norfolk, Suffolk, Cambridgeshire, Essex, Bedfordshire and Hertfordshire) and South East England (Kent, Sussex, Surrey, Hampshire, Berkshire, Buckinghamshire, Oxfordshire and the Isle of Wight). For the six remaining GORs, the sample size was too small for any meaningful results to be produced. In common with the UK, England and Scotland, the habitat coverage in 2000 and 2001 contained some notable differences. In all of the regions looked at, the proportion of recorded habitat sections containing grassland was considerably less in 2001 than in 2000. In contrast to this, the proportion of urban and suburban habitat surveyed increased accordingly. The figures presented from these biased samples must therefore be treated with considerable caution.

East of England

Of 37 species detected on at least 30 squares in the East of England Region, 10 species increased by 10% or more, 15 declined by 10% or more and 12 remained relatively stable during 2000-01 (Table 9). The Mistle Thrush fared the worst, with a decline of 41%, closely followed by Pied Wagtail (down 29%) and Stock Dove (down 27%). Several other relatively common garden birds also showed declines in excess of 10%, including Robin, Greenfinch, House Martin, Goldfinch, Wren, Blue Tit and Great Tit. On a more positive note, Swift numbers were up by 91% and both Green and Great Spotted Woodpeckers increased by more than 60%. The Wood Pigeon was the most widely recorded species in the East of England, being noted in 98% of all squares surveyed in 2001, and was closely followed by Blackbird, Chaffinch and Wren, all being seen in more than 90% of squares.

Table 9. EAST OF ENGLAND: Year-to-year population changes for 2000-01 for species that occurred on at least 30 squares in the East of England Government Office Region. The figures presented are the percentage changes in population levels for 2000-01. The sample size indicated is the mean number of squares occupied each year over the 2000-01 period (excluding squares where the species was recorded in one year only, and only considering counts from the late visits).

Species	Sample	Change 00-01	Species	Sample	Change 00-01	Species	Sample	Change 00-01
Mallard	34	26	House Martin	30	-20	Magpie	67	24
Red-legged Partridge	35	-14	Pied Wagtail	32	-29	Jackdaw	52	-13
Pheasant	74	9	Wren	89	-12	Rook	44	20
Moorhen	33	-12	Dunnock	67	-2	Carrion Crow	83	14
Stock Dove	33	-27	Robin	88	-24	Starling	73	12
Woodpigeon	98	1	Blackbird	96	-7	House Sparrow	59	6
Collared Dove	61	12	Song Thrush	61	-8	Chaffinch	96	-8
Turtle Dove	35	-17	Mistle Thrush	33	-41	Greenfinch	72	-23
Swift	49	91	Whitethroat	66	-2	Goldfinch	42	-15
Green Woodpecker	31	60	Blackcap	61	8	Linnet	40	1
Great Spotted Woodpecker	31	69	Chiffchaff	39	20	Yellowhammer	61	-2
Skylark	81	-10	Blue Tit	85	-11			
Swallow	61	-5	Great Tit	72	-10			

Table 10. SOUTH EAST ENGLAND: Year-to-year population changes for 2000-01 for species that occurred on at least 30 squares in the South East England Government Office Region. The figures presented are the percentage changes in population levels for 2000-01. The sample size indicated is the mean number of squares occupied each year over the 2000-01 period (excluding squares where the species was recorded in one year only, and only considering counts from the late visits).

Species	Sample	Change 00-01	Species	Sample	Change 00-01	Species	Sample	Change 00-01
Mallard	39	-2	Wren	136	-4	Nuthatch	35	33
Pheasant	83	-14	Dunnock	108	-7	Jay	51	4
Moorhen	36	26	Robin	129	-9	Magpie	116	-9
Feral Pigeon	34	81	Blackbird	145	-4	Jackdaw	82	-20
Stock Dove	47	59	Song Thrush	112	-8	Rook	44	12
Wood Pigeon	144	-1	Mistle Thrush	48	-8	Carrion Crow	136	2
Collared Dove	89	-1	Whitethroat	74	14	Starling	106	-4
Cuckoo	32	9	Blackcap	97	3	House Sparrow	93	-14
Swift	66	29	Chiffchaff	79	18	Chaffinch	135	-11
Green Woodpecker	57	21	Willow Warbler	36	-21	Greenfinch	115	5
Great Spotted Woodpecker	54	17	Goldcrest	46	-15	Goldfinch	59	32
Skylark	83	1	Long-tailed Tit	37	-30	Linnet	57	23
Swallow	73	6	Coal Tit	32	-17	Bullfinch	30	-19
House Martin	51	-4	Blue Tit	133	-10	Yellowhammer	60	4
Pied Wagtail	48	-1	Great Tit	112	-25			

South East England

Of 44 species recorded on at least 30 squares in the South East, 12 increased by 10% or more, 11 declined by 10% or more and 21 remained relatively stable during 2000-01 (Table 10). The Long-tailed Tit fared the worst, with a decline of 30%, although this species is subject to considerable annual fluctuations in numbers. In addition, several common garden birds and small-bodied residents showed declines in excess of 10%, including Blue, Great and Coal Tits, Goldcrest, House Sparrow and Chaffinch. The greatest increases in numbers were recorded for Feral Pigeon (up 81%) and the primarily urban Swift; the two woodpeckers (Green and Great Spotted) and migrant Chiffchaff and Whitethroat all recorded increases in excess of 10%. The Blackbird was the most widely recorded species in the South East in 2001, not the Wood Pigeon as in 2000, being noted in 98% of squares surveyed. The next most widespread species were Wood Pigeon, Blue Tit and Carrion Crow.

London

London was the least affected region in terms of the number of squares surveyed in 2001 compared to 2000, with 87% of the squares from 2000 being completed. This represents the least biased sample looked at so far and it may be possible in the future to include these data in the long-term trend. Of 12 species detected on at least 30 squares in London, two increased by 10% or more, five declined by 10% or more and five remained relatively stable during 2000-01 (Table 11). In complete contrast to the increase recorded in the South East, Swift numbers in London fell by 38%. Notable declines were also recorded for Blue Tit (down 28%) and House Sparrow (down 25%). Blackbird and Wood Pigeon were the most widely recorded species in London in 2001 being noted in 94% of squares surveyed in the region.

Photograph by Tommy Holden. Recent studies have shown Starling densities in urban and suburban areas to be an order of magnitude greater than on farmland.

Table 11. LONDON: Year-to-year population changes for 2000-01 for species that occurred on at least 30 squares in the London Government Office Region. The figures presented are the percentage changes in population levels for 2000-01. The sample size indicated is the mean number of squares occupied each year over the 2000-01 period (excluding squares where the species was recorded in one year only, and only considering counts from the late visits).

Species	Sample	Change 00-01	Species	Sample	Change 00-01	Species	Sample	Change 00-01
Feral Pigeon	38	-21	Robin	40	-3	Magpie	43	3
Wood Pigeon	44	11	Blackbird	44	-5	Carrion Crow	44	-9
Swift	36	-37	Blue Tit	42	-28	Starling	44	-12
Wren	39	11	Great Tit	31	-4	House Sparrow	40	-25

BBS Mammal monitoring in 2001

In 2001, 86% of observers surveyed their BBS squares for mammals and submitted these records for 501 squares along with their bird data. This was a small but encouraging increase on the 84% recorded in 2000. Table 12 shows the fifteen most frequently recorded mammal species in 2001. The top four mammals remained unchanged from the previous year, with Rabbit being by far the most frequently recorded species. Due to FMD, urban squares formed a larger proportion of the squares covered in 2001 relative to 2000 and this showed itself in the increased reporting rates of Grey Squirrel, Feral/Domestic Cat and Brown Rat. In contrast, proportionally fewer farmland squares were covered in 2001, leading to small declines in the percentages of Brown Hare, Mole and Badger records. In addition to the mammals listed in Table 12, a number of localised species were recorded including Water Vole, Otter and Sika Deer.

Table 12. Rates of occurrence of common mammal species on BBS squares in 2001.

Mammal	Number of squares	% of squares 2001	2000
Rabbit	322	64%	74%
Grey Squirrel	266	53%	40%
Red Fox	197	39%	38%
Brown Hare	153	31%	35%
Feral Domestic Cat	153	31%	19%
Mole	140	28%	31%
Hedgehog	105	21%	15%
Roe Deer	104	21%	21%
Brown Rat	83	17%	10%
Badger	62	12%	15%
Muntjac	46	9%	6%
Fallow Deer	39	8%	5%
Stoat	38	8%	9%
Weasel	37	7%	6%
Red Deer	19	4%	4%

BBS research and development

House Sparrow population changes: results from the BBS, 1994-2000

The primarily urban House Sparrow is recorded in more than 1,200 BBS squares in a normal year. This large sample size has enabled us to produce annual population indices for all four constituent countries of the UK, the nine English GORs and for the UK as a whole. The UK population trend has undergone a small, but still significant population decline of 5% between 1994 and 2000. These results follow the long-term decline of 46% identified from Common Bird Census (CBC) data between 1974 and 1999. It must be noted, however, that neither the House Sparrow nor urban habitat in general were well covered by the CBC. Here we look at some of the population trends that have been identified by the BBS over the 1994-2000 period.

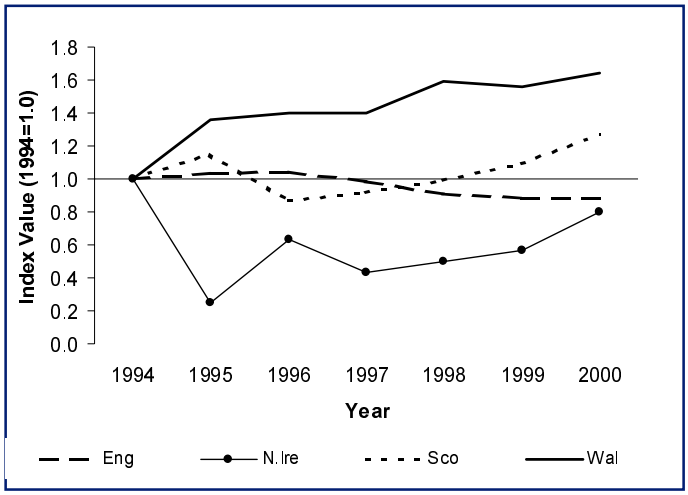

Figure 3. House Sparrow population indices for the four constituent countries of the UK

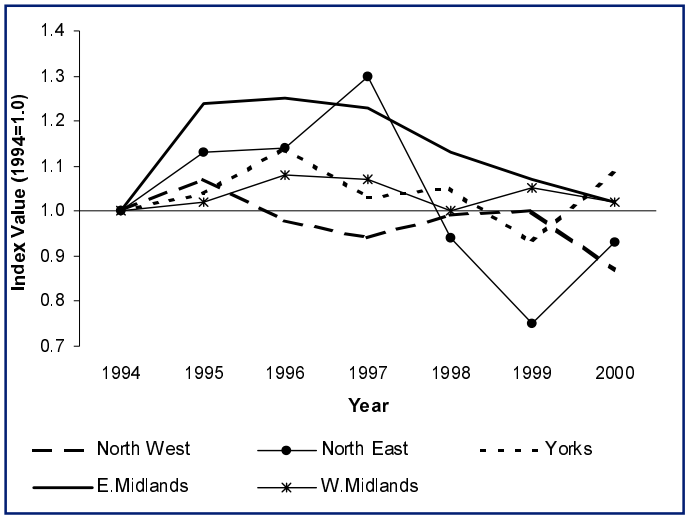

Figure 4. House Sparrow population indices for northern and midland England

The overall decline in House Sparrow numbers in the UK hides distinct differences between the four constituent countries. The population in England showed a significant decline of 12% during 1994-2000, in sharp contrast to significant increases of

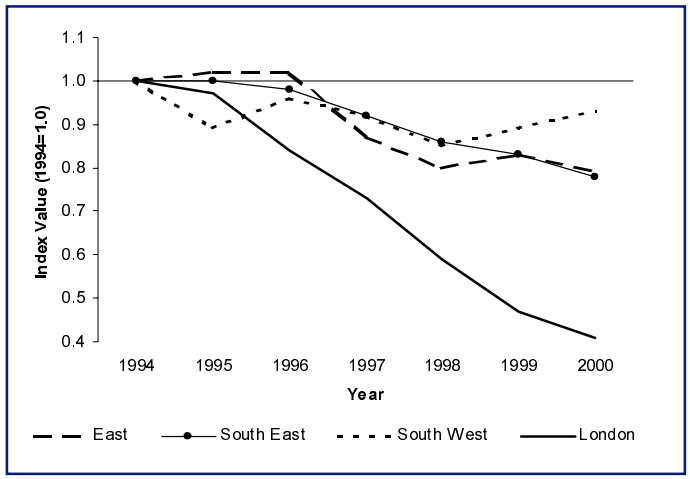

Figure 5. House Sparrow population indices in southern England.

27% in Scotland and 64% in Wales (Figure 3). If we discount the first two years' worth of data in Northern Ireland when the sample size was very small, then the population here is probably stable. Looking at the results from the nine English Government Office Regions, populations in the north are faring better than those in the south. Figure 4 shows that the population trends for Northern and Midland England were generally stable over the 1994-2000 period in most regions, apart from the North West where a signficant decline of 13% was recorded. Numbers have also shown significant declines in three of the four GORs in southern England (Figure 5). The greatest decline was recorded in the London region, with numbers falling by 59% during 1994-2000, together with smaller, but still significant declines in the South East (down 22%) and East of England (down 21%). The situation in the South West was a little better, with a non-significant decline of 8% being recorded.

BBS data have shown House Sparrow numbers to be reasonably stable in Scotland, Wales, Northern Ireland and most of the north and midlands of England. The situation throughout most of southern England is less encouraging, with significant declines recorded since the mid 1990s. These results are discussed further overleaf, in relation to the recent BTO study to assess House Sparrow populations.

BBS data used for research on House Sparrow & Starling declines

BBS data were used in a recent study to assess the status of Starling and House Sparrow populations in the UK, both of which are declining at such a rate that they have been added to the red list in *Population Status of Birds in the UK* (2002). This BTO-led study, funded by DEFRA, is a collaboration between the BTO and RSPB, Central Science Laboratory and WildWings Bird Management (see Crick *et al.* 2002).

BBS data were used to estimate densities of Starlings in seven habitat types (including grassland, woodland, suburban and urban areas). By far the greatest densities occur in urban and suburban areas, with densities in arable farmland an order of magnitude lower. Densities in grassland are about twice those on arable farms. Long-term data from the CBC suggest that Starlings in woodland are declining faster than populations on farmland, probably because this habitat is less suitable for foraging and is vacated first as the population declines. It is difficult to convert

the overall estimate of more than eight million Starlings to breeding pairs for a number of reasons. First of all, BBS counts do not distinguish between males and females, nor between breeders and non-breeders. Secondly, many Starlings are polygamous and hence breeding units may consist of more than two birds.

BBS data were also used to estimates densities of House Sparrows in six habitat types (this species is not found in woodland) across the UK. Densities were greatest, by an order of magnitude, in suburban and rural garden habitats. Steep declines have been reported for this species in the wider countryside and, more recently, particularly in urban areas. Causes are probably related to changes in farming practices such as reduced loss of grain during harvesting and better storage of grain, but changes in house roof structures, and the increased use of lead-free petrol have also been implicated. BBS data suggest a UK population of about 13 million birds. This is higher than previous estimates but those were based on CBC density estimates, with almost certainly too little allowance for urban/suburban habitats.

Photograph by Mike Weston. House Sparrow numbers have declined by 5% on BBS squares with the greatest decrease occurring in London (down 59%).

The Wider Countryside Report, and website developments

Included in the annual BBS reports are tables showing population changes over the longest period covered by the BBS (since 1994) and the change since the previous year (this year's report being an exception because of the effects of FMD on coverage). Due to the lack of space available, the report contains plots of only a few species, selected for particular interest. It is now also possible to download copies of the latest BBS annual report from the BTO website.

BBS results are also reported annually on the BTO website in *Breeding Birds in the Wider Countryside: their conservation status 2001 (Baillie et al. 2002)*. This site can be found at www.bto.org/birdtrends. By using the pull-down menus to find a species of interest, it is possible to look at plots of population and breeding performance trends derived from other surveys (e.g. Nest Records Scheme, Waterways Bird Survey) as well as BBS for the different countries (where data permit). For each species, there is a short discussion of the pattern of trends and possible explanations for changes in population status or breeding performance. The report also contains summary tables of population and demographic trends from each survey, organised by time period (e.g. 25 years, ten years, five years), and draws attention to changes that may require further research or conservation action.

The *Population Status of Birds in the UK:* birds of conservation concern 2002-07

The red and amber lists in Birds of Conservation Concern (1996), a document produced by a consortium of non-governmental organisations involved in bird conservation, were used, along with other considerations by the government, to set species priorities for bird conservation in the UK. Hence, most of the species in the red list are now included in the Biodiversity Action Plan, and plans are under way to reverse declines and meet BAP targets over the coming decade. The 1996 list was revised in 2002, by a consortium of conservation organisations and JNCC (acting on behalf of the country conservation agencies), and is known as the *Population Status of Birds in the UK*.

In the revision of the red and amber lists, results from all available sources – including the BBS where reliable longer-term data were not available – were considered in establishing the population status of each breeding species in the UK. Although long-term data (such as the 25-year CBC trend) were used preferentially to estimate population change, the shorter-term BBS data were essential to assess the conservation status of a handful of species not covered by the CBC. Although no species were admitted to the red list on the basis of BBS trends, one species (Wood Warbler) has been added to the amber list because of significant BBS declines in excess of 25%.

State of the UK's Birds 2001

BBS results are also reported in *The state of the UK's birds 2001*, another annual publication produced jointly by a partnership between government (JNCC) and non-government organisations (RSPB, BTO & WWT). In the latest edition, the six-year population change measures based on the BBS from 1994 to 2000 were reported for 85 species alongside the longer-term population trends revealed by the CBC or the WBS. Only species for which the BBS sample was considered appropriate, and which were observed in at least 50 squares annually, are included. Some BBS trends reveal a continuation of the long-term declines on CBC plots (e.g. Skylark, Turtle Dove and Spotted Flycatcher), whereas others suggest recent signs of recovery of the population (e.g. Song Thrush) perhaps due to mild winters. Other differences in the short-term and long-term trends may be due to differences in the coverage of the two surveys. Lesser Redpolls appear to be faring better in northern areas surveyed by the BBS, whereas the decline in the south and east has strongly influenced the CBC trend.

News of common bird monitoring elsewhere in Europe

France: a new annual survey of breeding birds was introduced in France in 2001. The French BBS is based on point counts taken over five-minute intervals, with ten counts carried out in each randomly selected square. 1,800 counts were completed in 2001 across most of the country and hopes for the 2002 season are high, with nearly 800 squares being issued to volunteers, representing 8,000 different point counts.

Republic of Ireland: The Countryside Bird Survey (CBS) is a national monitoring programme initiated in 1998 to monitor the abundance and distribution of breeding bird populations in the Republic of Ireland. The CBS uses the same methodology as the BBS and now covers over 300 1-km squares on an annual basis across the country. Unfortunately fieldwork for the 2001 season was completely cancelled due to fear of Foot and Mouth Disease. Results from the recently published CBS Report for 1998-2000 show that of a total of 133 species recorded during the survey, an average of 56 species occurred in more than thirty squares. Of these, five species decreased significantly and 13 species increased significantly over the three-year period.

Among the declining birds were Coal, Blue and Great Tits, while those showing a significant increase in the Republic of Ireland included small resident species (Wren, Pied Wagtail and Stonechat), and migrants (Swallow, Sedge Warbler), together with Moorhen, Jackdaw and Hooded Crow. Meadow Pipit, Yellowhammer, Curlew and Linnet numbers also showed a significant increase.

Linking the CBC to the BBS update

Work to develop methods of linking the BBS to the historical CBC data set continues. Previous work showed that although it was possible to produce an index combining BBS and CBC data for many species, more than a third of the species monitored by the CBC show a distinct difference in trends between the area of southern Britain mainly covered by the CBC and other parts of the UK. This means that the long-term pattern for these species is applicable to southern Britain. The short-term pattern revealed by the BBS reflects the entire UK, but because of the sparseness of historical data from areas such as Scotland, Wales and the Southwest, the UK trend cannot be estimated prior to 1994. A comparison between CBC and BBS data within southern Britain (an area bounded by easting 3000 and northing 5000 of the National Grid), found little difference in trends between 1994 and 2000 for the majority of species, so these data could be combined into a single index, although trends calculated here could not be extrapolated to estimate long-term trends for the entire UK. As an example, BBS and CBC trends and combined CBC/BBS indices for two species (Moorhen and Kestrel) are shown in Figures 6 and 7. Because of the larger number of BBS squares surveyed relative to CBC plots, the combined trends are closer in pattern to the BBS than to the CBC trends. This work has important implications for the reporting of long-term population trends, including analyses of population status for initiatives such as *Population Status of Birds in the UK*, and development of biodiversity indicators.

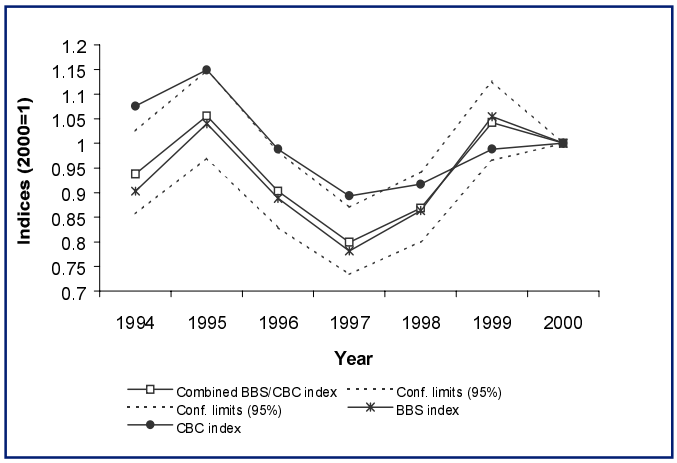

Figure 6. Comparison between BBS and CBC indices and indices calculated by combining these two surveys for Moorhen for the

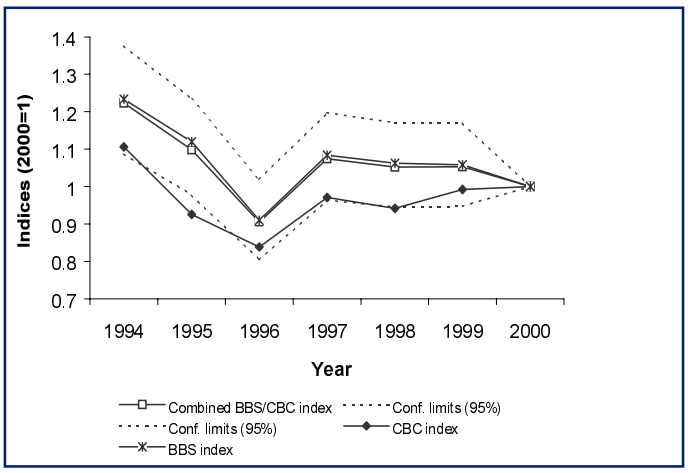

Figure 7. Comparison between BBS and CBC indices and indices calculated by combining these two surveys for Kestrel for the period 1994 to 2000.

Mammal monitoring through the BBS

In 1995 the scope of the BBS was expanded to allow the recording of mammals. By recording the number of each mammal species seen during the BBS survey and the occurrence of species such as Badgers and Moles from obvious signs of their presence, the BBS has the potential to monitor UK mammal populations. From an average of 1,773 1-km BBS squares surveyed for mammals each year between 1995 and 2000, 45 species of British mammal were recorded, including several rare species. However, the main strength of a survey of this kind is its potential for identifying changes in abundance and distribution of commoner species.

The occurrence of nine mammal species on BBS squares over the period was adequate to allow annual indices of abundance to be calculated. This included four species of deer (Red, Roe, Fallow and Muntjac), three lagomorphs (Brown Hare, Mountain/Irish Hare and Rabbit), Grey Squirrel and Red Fox. These species are abundant and, with the exception of Mountain/Irish Hare and to a lesser extent Muntjac, are widespread throughout much of the UK. They are all diurnal (day active) or crepuscular (active at dawn and dusk) and are relatively large in size, so their detectability is high.

As species are likely to show annual fluctuations in abundance, a model was developed to reveal the underlying trends. Whilst six years is still a rather short period in which to identify population change, the abundance of Roe Deer increased significantly during this time (Figure 8). Further analysis of the data set, broken down into three broad regions, suggests that this increase has mainly been in the north and southwest of Britain. Rabbit, Mountain Hare, Red Fox, Grey Squirrel and Fallow Deer all showed significant variation in abundance within the period, but no change overall. There is also some indication of a decline in Brown Hare over the survey period, although this is non-significant. However, examining trends separately for the southwest, southeast and north of Britain revealed a significant decline in Brown Hare in the southwest (Figure 9). In the past, the largest historical decline in Brown Hares is believed to have occurred in the southwest, resulting in the much higher densities

in the southeast by the time of the national Brown Hare survey of 1991-93. This difference in trends appeared to be related to a difference in habitat between these areas, with Hares mainly occurring on arable farmland in the southeast and pastoral habitat in the southwest, although the underlying mechanism driving the decline is not understood.

Although designed for monitoring widespread and abundant bird populations in the UK, the BBS has been shown to be a useful tool for collecting national mammal data and for providing annual indices of abundance for a number of species. For species such as Badger, Mole and Hedgehog, where the majority of records are based on indirect evidence of presence (field signs, road kills etc), an alternative approach can be used that monitors their change in presence on BBS squares over time. For those species too seldom detected for any indices to be calculated, the BBS can still provide information on their distribution and changes in abundance.

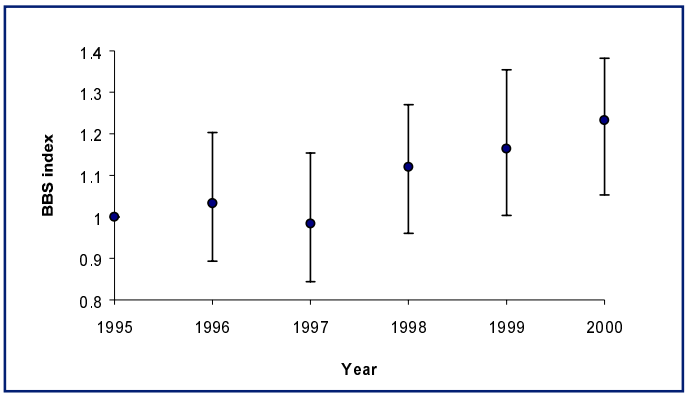

Figure 8. BBS indices of Roe Deer 1995-2000. Results are means and 95% confidence interval.

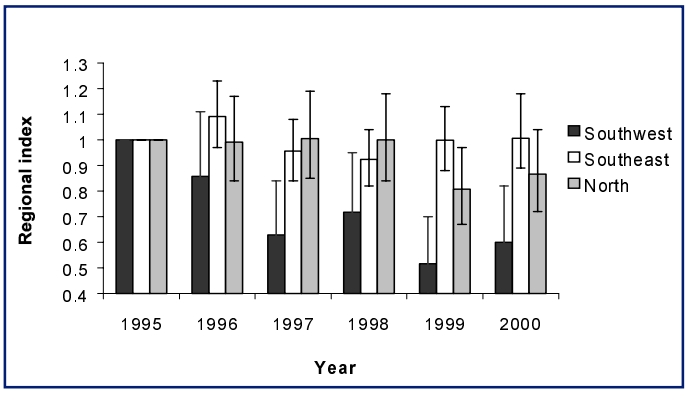

Figure 9. BBS regional indices of Brown Hare 1995-2000. Results are means ± standard error.

Winter Mammal Monitoring Project

The winter of 2002/03 will be the second season of the pilot Winter Mammal Monitoring project run jointly by the BTO and the Mammal Society. The methodology of this survey is similar to the BBS, but is designed to record target mammal species through separate sightings and field signs visits. By doing this it is hoped to increase the number of species monitored. Being a winter survey, it will complement the BBS summer mammal monitoring and help to understand national trends in mammal populations. As in the first year, participants (including several hundred BBS observers) will be asked to walk their BBS route during the winter to record sightings of mammals and field signs of a small number of target species. Depending on the outcome of the analyses of the first year's data and responses to the questionnaire, the methodology will be broadly similar to the previous year.

Further Reading

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The Future

With the difficulties of the 2001 breeding season hopefully now over, the outlook for 2002 is to date, far more promising, with higher than normal numbers of BBS forms being sent out to ROs. It is vitally important that we continue to monitor our sometimes struggling bird populations across a wide variety of habitats. Good coverage throughout the UK in 2002 will enable us to continue monitoring species that we have looked at over the past seven years and hopefully expand our knowledge of the differing regional trends within individual species. We continue to work to improve both the coverage and overall running efficiency of the survey.

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. ROs during the 2001 season were:

BBS Regional Organisers for 2001:

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 – Martin Coath; 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) – Frances Marks; 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; Aberdeen (south) – Graham Cooper; 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 –Hugh Clark; Central Scotland – Neil Bielby; Dumfries – Richard Mearns; Fife & Kinross – Norman Elkins; Inverness – Hugh Insley; Islay, Jura & Colonsay – Malcolm Ogilvie; Kincardine – Graham Cooper; Kirkcudbright - Andrew Bielinski; **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; **Sutherland – vacant**; 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) – Mel Ab Owain; 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: Ian Buxton.

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: Geoffrey Munns, Roger Evans, Peter Ottaway, Malcolm Priestley, Anita Donaghy, Richard Mearns, Phil Richardson and Mr and Mrs J Clark. We would also like to thank Roy Ledgerton, Frances Marks, Michael Carroll, Ruth Wilson, Duncan Irving, Bill Metcalfe and Geoff Gibbs for kindly taking over as Regional Representatives since the 2001 season.

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 would also like to thank the farmers and landowners for their support and co-operation in allowing BBS volunteers onto their land during the FMD crisis. 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:
The Census Unit, British Trust for Ornithology, The Nunnery, Thetford, Norfolk IP24 2PU
Tel 01842 750050 • *Fax* 01842 750030 • *E-mail* bbs@bto.org
Registered charity no. 216652