

The Breeding Bird Survey 2003

Report Number 9



by

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

Published by

British Trust for Ornithology, Joint Nature Conservation Committee and
Royal Society for the Protection of Birds,
July 2004

© British Trust for Ornithology, Joint Nature Conservation Committee and
Royal Society for the Protection of Birds, 2004



BTO Research Report Number 363
ISSN 1368-9932
ISBN 1-904870-11-2

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 (www.bto.org/bbs), or visit BirdWeb for information about other bird surveys (www.bto.org/birdweb or www.rspb.org.uk/science/birdweb).

This report is provided free to all BBS fieldworkers and Regional Organisers. Further copies are available from BTO HQ at a cost of £5 (postage and packing included).

The ninth annual report for the Breeding Bird Survey (BBS) allows us to look at the progress of the scheme over the past nine years, 1994-2003. We also present the survey coverage and bird population changes between the two most recent years, 2002-03. Data were collected from 2,254 squares in 2003, representing a massive effort from our volunteer fieldworkers and Regional Organisers (ROs). We would like to take this opportunity to thank everyone who has contributed to the success of the BBS.

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 (chair, BTO) and Dr David Noble (BTO). We are grateful to the following people who have provided assistance to the scheme since its inception: Dr Nicholas Aebischer, Dr Mark Avery, Dr Ian Bainbridge, Richard Bashford, George Boobyer, Prof. Steve Buckland, Dr Nick Carter, the late Dr Steve Carter, Dr Humphrey Crick, Anita Donaghy, Dr Iain Downie, Dr Steve Freeman, Dr Colin Galbraith, Dr David Gibbons, Dr John Goss-Custard, Dr Rhys Green, Prof. Jeremy Greenwood, Dr Richard Gregory, James Hall, Dr Andrew Joys, John Marchant, Dr Ian McLean, James Mackinnon, Mike Meharg, Dr Dorian Moss, Dr Stuart Newson, Dr Will Peach, Dr Ken Perry, Angela Rickard, Dr Ken Smith, David Stroud, Dr Derek Thomas, Richard Weyl and Karen Wright. We also acknowledge the support of the Environment and Heritage Service in Northern Ireland who generously funded two professional fieldworkers to cover 52 squares in the Province, and the help of staff from the RSPB office in Belfast who organised the fieldwork. Maps of coverage were produced using DMAP, which was written by Dr Alan Morton. The cover photograph of a Tree Sparrow is by Tommy Holden and the BBS logo is by Andy Wilson. Other photographs in this report are by Tommy Holden and Mike Weston. Report production and design are by Angela Rickard.

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.

Citation: Raven, M.J., Noble, D.G., & Baillie, S.R. (2004).

The Breeding Bird Survey 2003. BTO Research Report 363. British Trust for Ornithology, Thetford.

The Breeding Bird Survey 2003

Summary

- This is the ninth annual report of the BTO/JNCC/RSPB Breeding Bird Survey (BBS), covering the years 1994 to 2003. 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-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 aim is to survey the same squares 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 visits are early morning counts to survey breeding birds. A line transect method is used, with birds recorded in distance bands. Each survey requires only 5-6 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, who in most cases are BTO Regional Representatives, with help from the BTO's Welsh and Irish Officers and BTO Scotland. Regional Organisers play a vital role in coordinating and fostering local fieldwork effort.
- A total of 212 species and subspecies was recorded on 2,254 BBS squares in 2003. 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 100 species.
- The population trends for five gull species (Black-headed, Common, Lesser Black-backed, Herring and Great Black-backed) are no longer reported as a large proportion of the counts are of non-breeding, wintering or migratory birds. Trends for Cormorant, Grey Heron and Common Tern are reported with the caveat that counts may contain a high proportion of birds away from breeding sites, and the trend for Tawny Owl with the caveat that the BBS method monitors nocturnal species poorly.
- In the UK, 26 species declined and 44 species increased significantly between 1994 and 2003, with only Wood Warbler and Willow Tit decreasing by more than 50%. Great Crested Grebe, Shelduck, Grey Partridge, Curlew, Turtle Dove, Cuckoo, Tawny Owl, Swift, Sand Martin, Lesser Whitethroat, Spotted Flycatcher, Pied Flycatcher, Starling, Siskin and Corn Bunting all showed moderate declines (25-50%). Greylag Goose, Canada Goose, Tufted Duck, Buzzard, Coot, Great Spotted Woodpecker, Grey Wagtail, Stonechat, Goldcrest, Raven and Tree Sparrow all showed increases in excess of 50% (Table 4).
- Sixteen widespread species monitored by the BBS have been Red-listed on the basis of long-term population trends (see Gregory *et al.* 2002) and of these, nine species declined significantly on BBS squares between 1994 and 2003 (Grey Partridge, Turtle Dove, Skylark, Spotted Flycatcher, Willow Tit, Starling, Bullfinch, Yellowhammer and Corn Bunting) and three species increased significantly (Song Thrush, Tree Sparrow and Reed Bunting).
- Population changes are provided for all four constituent UK countries – England, Scotland, Wales and Northern Ireland and for each of the nine English Government Office Regions.
- In England, 24 species declined and 40 species increased significantly between 1994 and 2003. Willow Tit and Lesser Redpoll declined by more than 50%, and Great Crested Grebe, Grey Partridge, Turtle Dove, Cuckoo, Swift, Sand Martin, Tree Pipit, Lesser Whitethroat, Willow Warbler, Spotted Flycatcher, Starling and Corn Bunting all showed moderate declines (25-50%). Increases greater than 50% were recorded for Greylag Goose, Canada Goose, Buzzard, Coot, Great Spotted Woodpecker, Grey Wagtail, Stonechat and Raven (Table 5).
- In Scotland, six species declined and 22 species increased significantly between 1994 and 2003. Swift declined by more than 50% and Lapwing, Curlew, Hooded Crow and Siskin showed moderate declines (25-50%). Increases greater than 50% were recorded for Grey Heron, Buzzard, House Martin, Wren, Mistle Thrush, Whitethroat, Goldcrest, Blue Tit, Great Tit, Magpie, Rook, Raven, House Sparrow and Goldfinch (Table 6).
- In Wales, 11 species declined and 18 species increased significantly between 1994 and 2003. Starling declined by more than 50% and Mallard, Cuckoo, Tree Pipit, Garden Warbler, Willow Warbler, Coal Tit, Bullfinch and Yellowhammer showed moderate declines (25-50%). Increases greater than 50% were recorded for Great Spotted Woodpecker, Blackcap, Nuthatch, House Sparrow and Goldfinch (Table 7).
- In Northern Ireland, no species were recorded as declining significantly whereas, between 1994 and 2003, 14 species increased. Increases greater than 50% were recorded for Wood Pigeon, Wren, Dunnock, Blackbird, Goldcrest, Coal Tit, Blue Tit, Great Tit, Hooded Crow, Starling, Chaffinch and Greenfinch (Table 8).
- In England, a number of species, showed declines in most of the regions for which population trends could be produced, including Curlew, Turtle Dove, Cuckoo, Swift, Skylark, Yellow Wagtail, Lesser Whitethroat, Willow Warbler, Starling, Bullfinch and Yellowhammer. Species that showed marked regional differences in population trends included Stock Dove, Swallow, House Martin, Song Thrush, Mistle Thrush, Magpie, Rook and Goldfinch.

Breeding Bird Survey

Background

The status of wild bird populations is an important indicator of the health of the countryside. The BTO/JNCC/RSPB Breeding Bird Survey (BBS) was launched in 1994, with the aim of improving the geographical scope of UK bird monitoring by including all habitats and, therefore, more species of breeding birds than had the previous Common Birds Census (CBC). Since the final year of the CBC in 2000, the BBS has become the primary scheme for monitoring the population changes of our common and widespread bird species in the UK. By surveying more than 2,000 sites each year, we are routinely able to generate UK population trends for 100 species, and BBS results are being used increasingly to set conservation priorities by the Government and non-governmental organisations.

Methods and organisation

The BBS uses a line-transect method in randomly selected 1-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, the former to enable detectability to be assessed and species density 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. Data from the BBS can also be summarised for individual countries, counties and habitats.

Population changes are 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, first summed over all distance categories and transect sections. Counts are modelled as a function of year and site effects, weighted to account for differences in sampling intensity among regions of the UK, with standard errors adjusted for over-dispersion. Only squares that were counted in at least two years are included in the analyses. Counts for six species of wader (Oystercatcher, Lapwing, Golden Plover, Curlew, Redshank and Snipe) have been corrected to exclude counts of non-breeding flocks and, for Golden Plover, observations in unsuitable breeding habitat have also been excluded.

Work has recently been undertaken to assess the precision and reliability of BBS trends for all species, with the aim of developing a protocol to ensure that reported trends are based on reliable data and sufficient sample sizes. This has resulted in the population trends of five species of gull (Black-headed, Common, Herring, Lesser Black-backed and Great Black-backed) being excluded from the report as a large proportion of the counts are of non-breeding, wintering or migratory birds. Trends for other species with substantial wintering populations (e.g. Fieldfare) would be excluded for the same reason. Trends for Cormorant, Grey Heron and Common Tern are reported with the caveat that counts may contain a high proportion of birds away from breeding sites, and the trend for Tawny Owl with the caveat that the BBS method monitors nocturnal species poorly.

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 assigned to them

from the sampling strategy to BBS observers in their particular region, and for finding new volunteers. They also manage incoming online submissions, and ensure that survey forms are collected and sent to BTO HQ as soon after the field season as possible. Since the success of the survey depends on volunteer surveyors, we are keen to provide them with up-to-date feedback. All BBS observers receive a copy of the annual report and those returning completed sets of forms are acknowledged by BTO HQ. Those with Internet access can also view BBS data and summaries of trends (see www.bto.org/bbs).

Survey coverage

To date, we have received 2,254 sets of completed BBS forms for 2003, a considerable increase on the total of 2,149 received for 2002 (Table 1), and coverage is now back to the levels achieved before the Foot & Mouth Disease crisis of 2001 (Figure 1). Only those squares that have been surveyed in two or more years between 1994 and 2003 are included in the results, leading to bird counts from 3,009 sites being included in this analysis. BBS squares are randomly selected by computer, and can therefore turn up on any area of land in the UK. A few squares can never be surveyed and truly 'uncoverable' sites are removed from the system. However, squares that are temporarily inaccessible, or which are not taken up because of their remote location, are retained in order to maintain the integrity of the sampling design, although we recognise that some will seldom be surveyed.

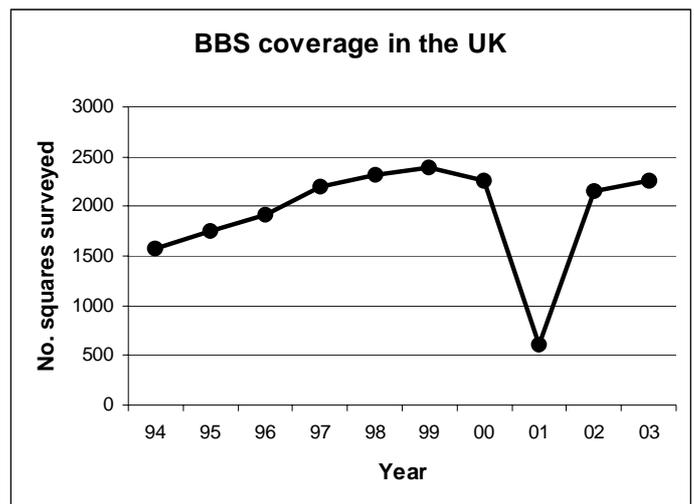


Figure 1. BBS coverage in the UK

England

Overall, there was a 5% increase in the number of squares surveyed in England between 2002 and 2003, and this total was only 30 squares short of that achieved in 2000. This increase in coverage was recorded in eight of the nine English Government Office Regions. A record number of BBS squares was surveyed in the North East region in 2003, and coverage in the Yorkshire, East

Midlands, South East, South West and London regions was back to pre-2001 levels. ROs were particularly successful in a number of BTO regions in England, with record levels of coverage achieved in Berkshire, Cheshire (South), Derbyshire (South), Devon, Durham, Lincolnshire (South), Northumberland, Norfolk (North East), Oxfordshire (South), Somerset and Yorkshire (North West). Good coverage was also achieved in Birmingham, Cheshire (Mid), Cumbria (North), Huntingdonshire, Lancashire (East), Lancashire (North West), London, Nottinghamshire, Oxfordshire (North), Yorkshire (Harrogate) and Yorkshire (Richmond), with the total number of squares surveyed in 2003 exceeding that of 2002 and 2000.

Scotland

The BBS had a very successful year in Scotland in 2003, with the total number of squares surveyed being 10% higher than that achieved in 2002 and 4% higher than that of 2000. Record coverage was achieved in the Fife BTO region, and good coverage was also achieved in Benbecula & The Uists, Central Region, Dumfries and Kincardine, with the total number of squares surveyed in 2003 exceeding that of 2002 and 2000. Thanks must be given to the ROs and to staff at BTO Scotland, who have both contributed significantly towards achieving this success.

Wales

In contrast to England and Scotland, BBS coverage in Wales fell by 5% between 2002 and 2003, although coverage in 2002 was particularly good. However, record levels of coverage were achieved in the Merioneth and Pembroke BTO regions.

Northern Ireland

A highest-ever total of 105 BBS squares were surveyed in Northern Ireland in 2003. Fifty-two squares were surveyed by two professional fieldworkers, funded by the Environment and Heritage Service in Northern Ireland.

Table 1. A comparison of BBS coverage in 2000, 2002 and 2003. The number of squares surveyed in each country and English Government Office Region (GOR).

Country/GOR	2000 covered	2002 covered	2003 covered
England	1,701	1,589	1,671
Scotland	246	231	255
Wales	216	222	212
Northern Ireland	83	97	105
Isle of Man	3	3	4
Channel Isles	7	7	7
North West England	196	179	196
North East England	54	56	65
Yorkshire & the Humber	137	132	138
East Midlands	149	125	151
East of England	257	256	242
West Midlands	168	136	146
South East England	385	367	378
South West England	293	279	292
London	62	59	63
Total:	2,256	2,149	2,254

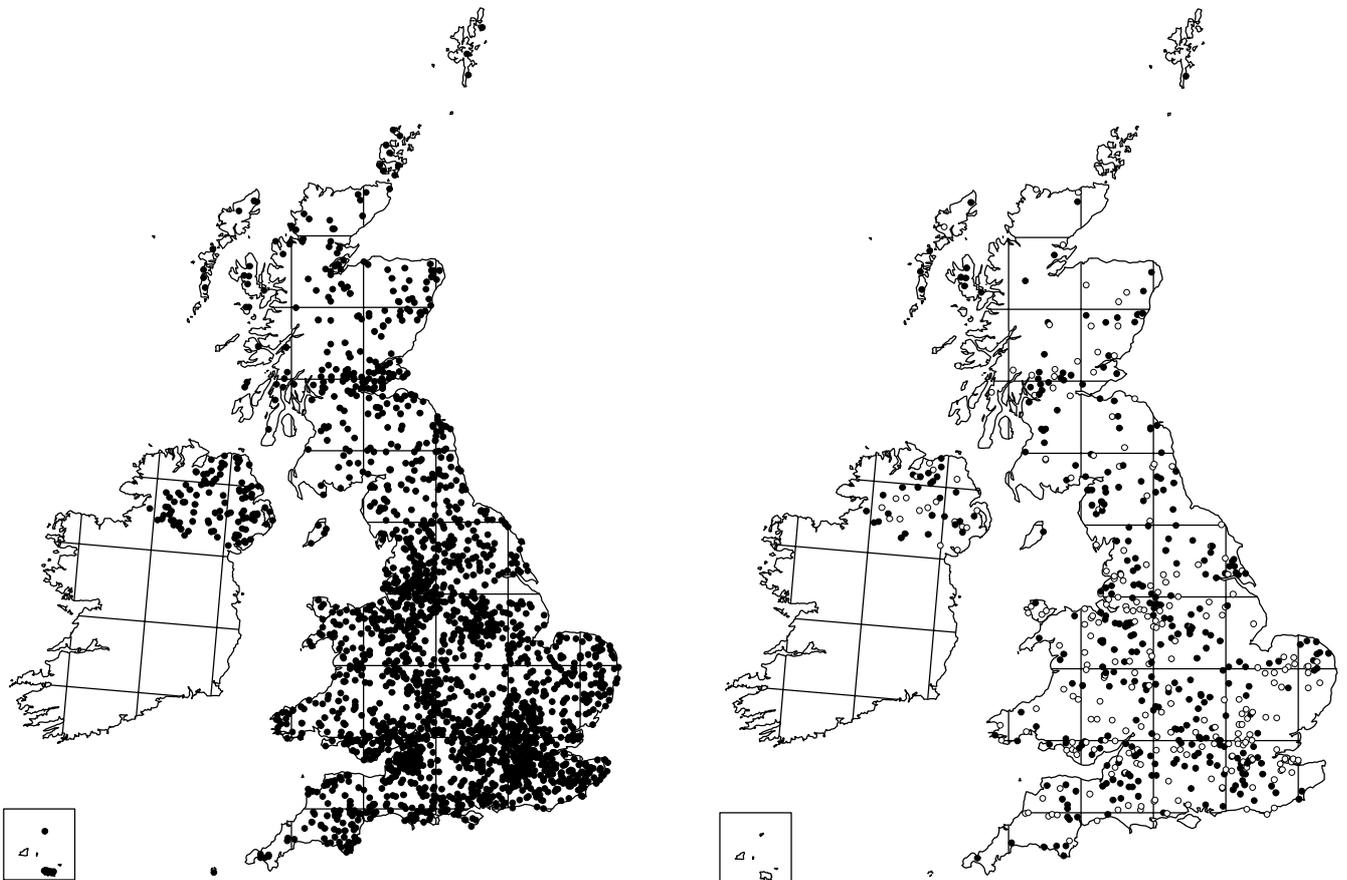


Figure 2. The left-hand map shows the distribution of BBS squares covered in 2003 and the right-hand map shows the distribution of squares covered in 2002 but not in 2003 (open symbols) and squares covered in 2003 but not in 2002 (shaded symbols).

Survey results

Species recorded

A total of 212 species, including a number of escapes, subspecies and domestic breeds was recorded on BBS visits in the UK in 2003, exactly the same total as in 2002. Of these, 103 species were recorded in 50 or more squares (Table 2) and a further 109 species in fewer than 50 squares (Table 3).

The vast majority of the UK's regular breeding species are recorded on BBS squares each year, including a number of species that are becoming increasingly widespread, such as the Red Kite which was recorded on 46 squares (2.1% of the total) in 2003, compared to only nine squares (0.6%) in 1994. Likewise, the number of squares in which Ring-necked Parakeet was recorded increased from four (0.3%) to 37 (1.7%), and for Little Egret 1 (0.1%) to 16 (0.7%). A number of winter visitors were recorded on an unusually high number of squares in 2003, including Fieldfare on 77 squares and Redwing on 27 squares. A high proportion of these sites were located in the east and south of the country. A number of less widespread winter visitors were also noted, including Great Northern Diver, Whooper Swan, Scaup and Iceland Gull.

The Wood Pigeon continued to be the most abundant species on BBS squares, with 46,681 birds counted in 2003, followed by

Starling (32,001), Blackbird (25,543) and Rook (25,542). However, the most widespread species was the Wren, which was recorded on 92% of surveyed squares, closely followed by Blackbird, Chaffinch and Wood Pigeon (all 91%).

Impressive totals of 66 species were recorded on single squares in Berkshire and the West Midlands, and these species-abundant sites were closely followed by a square in Lancashire with 65. At the other end of the spectrum, only one species was recorded on an upland square in Tayside. Due credit must be given to observers who survey remote areas, which may hold important populations of a small number of specialist species; it is just as important to know where there are no birds as where there are many. At a county level, 37 species were recorded on average in squares in Berkshire, while an average of only 17 species were found on squares in both Highland Region and the Western Isles of Scotland.

United Kingdom

Of the 100 species that were recorded on an average of 40 or more squares in the UK between 1994 and 2003 (Table 4), 26 species declined significantly and 44 species increased significantly between 1994 and 2003. The trends discussed in

Table 2. Species recorded in 50 or more squares across the UK during the 2003 BBS survey. 'Number of squares' is the number of squares a species was recorded in, and '%' the percentage of squares the species was recorded in. 'Species' in parenthesis are usually recognized as races or forms rather than full species.

Species	Number of squares	%	Species	Number of squares	%	Species	Number of squares	%
Little Grebe	58	3%	Turtle Dove	158	7%	Chiffchaff	1294	58%
Great Crested Grebe	53	2%	Cuckoo	543	24%	Willow Warbler	1095	49%
Cormorant	197	9%	Little Owl	99	4%	Goldcrest	704	31%
Grey Heron	644	29%	Tawny Owl	71	3%	Spotted Flycatcher	172	8%
Mute Swan	215	10%	Swift	897	40%	Long-tailed Tit	778	35%
Greylag Goose	153	7%	Kingfisher	57	3%	Marsh Tit	136	6%
Canada Goose	397	18%	Green Woodpecker	664	30%	Willow Tit	52	2%
Shelduck	125	6%	Great Spotted Woodpecker	816	36%	Coal Tit	672	30%
Mallard	1081	48%	Skylark	1407	63%	Blue Tit	1935	86%
Tufted Duck	111	5%	Sand Martin	84	4%	Great Tit	1808	81%
Sparrowhawk	321	14%	Swallow	1568	70%	Nuthatch	387	17%
Buzzard	751	34%	House Martin	820	37%	Treecreeper	306	14%
Kestrel	612	27%	Tree Pipit	98	4%	Jay	627	28%
Red Grouse	98	4%	Meadow Pipit	687	31%	Magpie	1572	70%
Red-legged Partridge	429	19%	Yellow Wagtail	120	5%	Jackdaw	1397	62%
Grey Partridge	172	8%	Grey Wagtail	221	10%	Rook	1076	48%
Pheasant	1467	66%	Pied Wagtail	1173	52%	Carrion Crow	1915	86%
Moorhen	549	25%	Wren	2049	92%	Hooded Crow	143	6%
Coot	231	10%	Dunnock	1749	78%	Raven	240	11%
Oystercatcher	280	13%	Robin	1956	87%	Starling	1493	67%
Golden Plover	81	4%	Redstart	116	5%	House Sparrow	1335	60%
Lapwing	630	28%	Whinchat	55	2%	Tree Sparrow	147	7%
Snipe	149	7%	Stonechat	149	7%	Chaffinch	2042	91%
Curlew	429	19%	Wheatear	252	11%	Greenfinch	1550	69%
Redshank	69	3%	Blackbird	2047	91%	Goldfinch	1237	55%
Black-headed Gull	437	20%	Fieldfare	77	3%	Siskin	102	5%
Common Gull	139	6%	Song Thrush	1685	75%	Linnet	1129	50%
Lesser Black-backed Gull	522	23%	Mistle Thrush	1093	49%	Lesser Redpoll	118	5%
Herring Gull	545	24%	Grasshopper Warbler	55	2%	Crossbill	64	3%
Great Black-backed Gull	94	4%	Sedge Warbler	223	10%	Bullfinch	532	24%
Common Tern	50	2%	Reed Warbler	90	4%	Yellowhammer	981	44%
Feral Pigeon	574	26%	Lesser Whitethroat	206	9%	Reed Bunting	403	18%
Stock Dove	687	31%	Whitethroat	1054	47%	Corn Bunting	120	5%
Wood Pigeon	2041	91%	Garden Warbler	347	16%			
Collared Dove	1126	50%	Blackcap	1216	54%			

this section are for the period 1994-2003 unless otherwise stated. Of 16 species Red-listed in *Population Status of Birds in the UK* (Gregory *et al.* 2002), because their UK breeding populations had declined by at least 50% during 1974-99, and for which we are able to produce population trends, nine declined significantly and three increased significantly between 1994 and 2003. Those in decline include familiar farmland specialists such as Skylark (down 14%), Grey Partridge (down 39%), Corn Bunting (down 35%) and Yellowhammer (down 17%). Starling numbers fell further between 2002 and 2003, resulting in a 28% decline over the whole survey period, 1994-2003. In contrast, House Sparrow numbers increased between 2002 and 2003, resulting in no significant change over the entire survey period. Similarly, Grasshopper Warbler and Linnet showed no significant changes during 1994-2003, while Song Thrush, Tree Sparrow and Reed Bunting increased.

The changing status of some of our woodland species was again highlighted by the significant decline in Spotted Flycatcher, whose numbers fell by 42% between 1994 and 2003. There were also significant declines in Wood Warbler (down 68%) and Pied Flycatcher (down 43%) over the same period, although both results were derived from a rather small number of squares. Populations of Green Woodpecker (up 28%) and Great Spotted Woodpecker (up 85%) continued on their upward trend, and numbers of Song Thrush (up 18%) continue to recover from a long-term decline.

A total of 30 species for which we are able to generate population trends, are Amber-listed in *Population Status of Birds in the UK*. These species are Amber-listed on the basis of one or

more criteria, including declines in breeding numbers, declines in breeding range, the UK breeding population forms a large proportion of the European total, or the species has an unfavourable status in Europe. Of twelve species Amber-listed on the basis of moderate (25-49%) declines in the UK during 1974-99, three increased significantly (House Martin, Grey Wagtail and Dunnock) and five decreased significantly (Lapwing, Cuckoo, Yellow Wagtail, Willow Warbler and Wood Warbler) on BBS squares during 1994-2003. However, the significant increase in Kestrel numbers between 2002 and 2003 means that there was no significant change over the entire survey period. Five species for which BBS trends are produced are Amber-listed on the basis that their UK breeding population forms at least 20% of the European population, and of these, Oystercatcher and Curlew declined significantly and Stock Dove increased significantly between 1994 and 2003. Seven species are Amber-listed partly because of their unfavourable status in Europe ('Species of European Concern') and, of these, only Sand Martin declined significantly, whilst Green Woodpecker, Swallow and Stonechat increased.

Most Green List species (all of which show no evidence of long-term decline) continued to fare well, particularly a suite of typical woodland and garden species (Wren, Robin, Blackbird, Blackcap, Chiffchaff, Coal Tit, Blue Tit, Great Tit, Nuthatch and Chaffinch). However, two migrant species (Lesser Whitethroat and Garden Warbler) continued to show declines in numbers. In contrast to the last set of published BBS results, for 1994-2002, there were significant declines in Siskin (down 33%) and Jay (down 11%) during 1994-2003.

Table 3. Species recorded on fewer than 50 squares for the whole of the UK during the 2003 survey. Species marked with an asterisk are feral or non-native species in Category E of the British Ornithologists' Union British List. Species in parenthesis 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	13	Scaup	2	Little Ringed Plover	13	Long-eared Owl	2
Black-throated Diver	1	Eider	6	Ringed Plover	27	Short-eared Owl	16
Great Northern Diver	1	Goldeneye	4	Grey Plover	1	Nightjar	2
Black-necked Grebe	1	Red-breasted Merganser	12	Knot	1	Lesser Spotted Woodpecker	24
Fulmar	16	Goosander	43	Dunlin	26	Woodlark	14
Manx Shearwater	1	Ruddy Duck	11	Woodcock	11	Rock Pipit	12
Gannet	5	Honey Buzzard	1	Black-tailed Godwit	1	Dipper	48
Shag	5	Red Kite	46	Bar-tailed Godwit	2	Nightingale	19
Little Egret	16	White-tailed Eagle	1	Whimbrel	16	Ring Ouzel	17
Black Swan*	2	Marsh Harrier	18	Greenshank	6	Redwing	27
Whooper Swan	7	Hen Harrier	16	Green Sandpiper	4	Cetti's Warbler	10
Pink-footed Goose	6	Montagu's Harrier	1	Wood Sandpiper	1	Dartford Warbler	6
(Domestic Goose*)	1	Goshawk	13	Common Sandpiper	49	Wood Warbler	33
Barnacle Goose	4	Golden Eagle	4	Arctic Skua	6	Firecrest	3
Brent Goose	2	Osprey	4	Great Skua	10	Pied Flycatcher	31
Egyptian Goose	8	Merlin	14	Mediterranean Gull	3	Bearded Tit	1
Ruddy Shelduck*	1	Hobby	33	(Yellow-legged Gull)	1	Crested Tit	1
Wood Duck*	1	Peregrine	29	Iceland Gull	1	Golden Oriole	1
Mandarin	21	Ptarmigan	1	Kittiwake	1	Chough	10
(Domestic Mallard*)	10	Black Grouse	4	Sandwich Tern	8	(Carrion/Hooded Crow Hybrid)	1
Wigeon	7	Quail	5	Arctic Tern	6	Brambling	6
Gadwall	27	Golden Pheasant	1	Little Tern	1	Twite	19
Teal	37	Peacock*	10	Guillemot	1	Scottish Crossbill	2
Pintail	1	Helmeted Guineafowl*	3	Razorbill	1	Hawfinch	1
Garganey	3	Water Rail	8	Black Guillemot	3	Chirl Bunting	1
Shoveler	14	Corncrake	1	(Rock Dove)	10		
Red-crested Pochard	3	Avocet	5	Ring-necked Parakeet	37		
Pochard	14	Stone-curlew	2	Barn Owl	38		

Conventions for the population trends tables (Tables 4 to 9)

The figures presented in the trends tables are the percentage changes in population levels for the respective time periods, marked with an asterisk where significant. For the 1994-2003 period, the lower and upper 95% confidence limits are given. The sample size indicated is the mean number of squares occupied

each year over the survey period 1994-2003 (excluding squares where the species was recorded in only one year). Species in bold are Red-listed and those in italics Amber-listed in *Population Status of Birds in the UK*. Trends for species in parenthesis must be treated with caution, because it is considered that the species is either poorly covered by the BBS method, or a high proportion of the counts were likely to have been made away from breeding sites.

Table 4. UK. Population changes for species recorded on a mean of 40 or more squares per year for 2002-03 and 1994-2003.

Species	Sample	Change 02-03	Change 94-03	lcl	ucl	Species	Sample	Change 02-03	Change 94-03	lcl	ucl
Little Grebe	49	1	49 *	7	107	<i>Dunnock</i>	1513	9	21 *	15	26
Great Crested Grebe	56	-39	-28 *	-47	-1	Robin	1749	0	17 *	13	21
(Cormorant)	153	-28	14	-4	37	<i>Redstart</i>	131	-18	11	-8	33
(Grey Heron)	494	6	40 *	26	56	Whinchat	76	10	-10	-29	14
<i>Mute Swan</i>	174	-6	14	-2	33	<i>Stonechat</i>	88	3	168 *	100	258
<i>Greylag Goose</i>	92	14	183 *	120	264	Wheatear	239	-6	2	-10	17
Canada Goose	311	44 *	136 *	108	169	Blackbird	1832	2	18 *	15	21
<i>Shelduck</i>	114	-9	-39 *	-49	-26	Song Thrush	1428	4	18 *	12	24
Mallard	943	-12	24 *	16	33	<i>Mistle Thrush</i>	964	4	2	-6	10
Tufted Duck	121	9	50 *	22	85	Grasshopper Warbler	58	-22	-3	-32	38
Sparrowhawk	271	2	-5	-18	10	Sedge Warbler	241	-34 *	-9	-21	4
Buzzard	504	2	53 *	38	69	Reed Warbler	87	-15	10	-10	35
<i>Kestrel</i>	514	36 *	-5	-15	5	Lesser Whitethroat	202	-15	-39 *	-48	-27
<i>Red Grouse</i>	100	17	22	-1	50	Whitethroat	987	-10	17 *	9	24
Red-legged Partridge	379	7	28 *	14	43	Garden Warbler	366	-2	-17 *	-27	-6
Grey Partridge	210	-25	-39 *	-49	-27	Blackcap	1067	-6	36 *	28	44
Pheasant	1262	14 *	33 *	26	39	<i>Wood Warbler</i>	54	-24	-68 *	-78	-55
Moorhen	508	8	32 *	19	45	Chiffchaff	978	22 *	46 *	38	55
Coot	194	30	102 *	74	134	<i>Willow Warbler</i>	1191	-3	-11 *	-15	-7
<i>Oystercatcher</i>	237	1	-14 *	-23	-5	<i>Goldcrest</i>	553	-1	57 *	44	71
Golden Plover	53	21	-9	-31	21	Spotted Flycatcher	190	4	-42 *	-51	-31
<i>Lapwing</i>	542	2	-13 *	-20	-6	Pied Flycatcher	41	-38	-43 *	-59	-20
<i>Snipe</i>	121	-1	46 *	21	76	Long-tailed Tit	646	13	11	-1	23
<i>Curlew</i>	429	-10	-27 *	-33	-21	Marsh Tit	122	-9	16	-7	46
<i>Redshank</i>	67	-4	-22	-39	0	Willow Tit	54	55	-55 *	-68	-37
Common Sandpiper	60	13	-12	-31	12	Coal Tit	559	3	29 *	19	40
(Common Tern)	46	7	1	-28	42	Blue Tit	1710	9 *	18 *	13	22
Feral Pigeon	539	36 *	14 *	3	25	Great Tit	1568	7	26 *	20	31
<i>Stock Dove</i>	597	1	13 *	2	24	Nuthatch	303	-1	42 *	24	61
Wood Pigeon	1851	7	12 *	8	17	Treecreeper	268	-8	9	-7	27
Collared Dove	1003	5	31 *	23	38	Jay	524	-21 *	-11 *	-20	-1
Turtle Dove	184	-5	-44 *	-53	-33	Magpie	1422	0	1	-3	6
<i>Cuckoo</i>	707	-12	-36 *	-41	-30	Jackdaw	1203	6	20 *	13	27
Little Owl	90	-22	1	-22	32	Rook	1012	9	8	0	17
(Tawny Owl)	76	6	-32 *	-49	-10	Carrion Crow	1734	-7	8 *	3	14
Swift	852	4	-28 *	-34	-22	Hooded Crow	111	32	-4	-23	21
<i>Kingfisher</i>	42	-26	23	-16	82	Raven	173	31	99 *	65	141
<i>Green Woodpecker</i>	561	7	28 *	16	40	Starling	1469	-17 *	-28 *	-33	-23
Gt Spotted Woodpecker	619	7	85 *	68	104	House Sparrow	1239	7	-2	-6	2
Skylark	1378	0	-14 *	-17	-10	Tree Sparrow	133	0	52 *	24	85
<i>Sand Martin</i>	96	-51 *	-46 *	-59	-29	Chaffinch	1833	2	7 *	4	11
<i>Swallow</i>	1437	-1	8 *	2	14	Greenfinch	1329	-1	30 *	23	37
<i>House Martin</i>	736	1	15 *	6	26	Goldfinch	1053	12	33 *	24	43
<i>Tree Pipit</i>	119	-2	-1	-19	21	Siskin	112	-21	-33 *	-46	-16
<i>Meadow Pipit</i>	628	7	3	-2	8	Linnet	1024	3	-1	-8	6
<i>Yellow Wagtail</i>	151	14	-17 *	-29	-2	<i>Lesser Redpoll</i>	120	-8	11	-10	37
<i>Grey Wagtail</i>	162	3	53 *	26	85	Bullfinch	448	3	-19 *	-28	-9
Pied Wagtail	982	9	34 *	24	43	Yellowhammer	992	-3	-17 *	-21	-13
Dipper	44	68	34	-8	95	Reed Bunting	338	11	13 *	2	26
Wren	1816	3	17 *	13	20	Corn Bunting	139	10	-35 *	-45	-22

Table 5. ENGLAND. Population changes for species recorded on a mean of 30 or more squares per year for 2002-03 and 1994-2003.

Species	Sample	Change				Species	Sample	Change			
		02-03	94-03	lcl	ucl			02-03	94-03	lcl	ucl
Little Grebe	40	-17	47	0	114	<i>Dunnock</i>	1237	5	13 *	8	19
Great Crested Grebe	49	-40	-33 *	-51	-7	Robin	1374	2	25 *	20	29
(Cormorant)	126	13	27 *	5	53	<i>Redstart</i>	69	-12	49 *	15	92
(Grey Heron)	339	13	23 *	10	38	Whinchat	31	3	-25	-45	3
Mute Swan	149	6	-6	-19	9	<i>Stonechat</i>	34	43	237 *	120	417
Greylag Goose	73	-11	100 *	60	150	Wheatear	113	-4	7	-12	30
Canada Goose	293	50 *	131 *	103	162	Blackbird	1461	3	17 *	14	20
Shelduck	94	0	-11	-27	9	Song Thrush	1104	1	15 *	9	21
Mallard	786	-8	28 *	19	37	<i>Mistle Thrush</i>	777	2	-9 *	-17	-1
Tufted Duck	103	-1	26 *	2	56	Sedge Warbler	152	-28 *	-6	-20	11
Sparrowhawk	224	7	-7	-21	9	Reed Warbler	83	-12	6	-14	30
Buzzard	280	-2	56 *	37	78	Lesser Whitethroat	193	-13	-39 *	-49	-27
Kestrel	444	39 *	7	-4	20	Whitethroat	857	-18 *	13 *	6	21
Red Grouse	40	-5	4	-19	33	Garden Warbler	298	-8	-21 *	-31	-9
Red-legged Partridge	373	8	25 *	12	40	Blackcap	930	-11	22 *	15	30
Grey Partridge	184	-7	-32 *	-43	-19	Chiffchaff	828	22 *	46 *	38	55
Pheasant	1069	13 *	41 *	34	49	<i>Willow Warbler</i>	823	-7	-37 *	-41	-33
Moorhen	467	5	26 *	14	39	<i>Goldcrest</i>	380	5	51 *	36	68
Coot	174	32	117 *	87	153	Spotted Flycatcher	139	-3	-38 *	-49	-24
Oystercatcher	110	10	35 *	13	60	Long-tailed Tit	567	9	-3	-13	8
Lapwing	436	6	16 *	5	27	Marsh Tit	110	-10	8	-14	36
Snipe	54	55	47 *	13	91	Willow Tit	48	27	-62 *	-74	-45
Curlew	247	-9	-19 *	-27	-11	Coal Tit	360	-17	9	-2	22
Redshank	44	-14	1	-27	39	Blue Tit	1389	6	10 *	6	15
(Common Tern)	41	-17	41	-3	105	Great Tit	1274	4	18 *	13	24
Feral Pigeon	454	42 *	11	0	22	Nuthatch	249	2	37 *	19	57
Stock Dove	552	0	11	0	22	Treecreeper	198	-3	-2	-18	16
Wood Pigeon	1478	6	14 *	9	19	Jay	457	-25 *	-20 *	-29	-11
Collared Dove	894	4	34 *	26	42	Magpie	1188	-1	-1	-6	4
Turtle Dove	181	-5	-44 *	-54	-33	Jackdaw	947	8	30 *	22	39
Cuckoo	572	0	-48 *	-53	-43	Rook	793	-3	-10 *	-18	-2
Little Owl	87	-22	6	-19	40	Carrion Crow	1416	-3	18 *	12	25
(Tawny Owl)	63	25	-1	-27	33	Raven	50	45	220 *	130	344
Swift	737	3	-29 *	-35	-23	Starling	1210	-17 *	-36 *	-40	-31
Kingfisher	37	3	17	-20	73	House Sparrow	1032	2	-11 *	-15	-7
Green Woodpecker	518	5	36 *	23	50	Tree Sparrow	111	15	23	0	52
Gt Spotted Woodpecker	552	9	81 *	64	100	Chaffinch	1416	3	13 *	9	16
Skylark	1074	1	-20 *	-23	-16	Greenfinch	1121	-2	30 *	23	38
Sand Martin	64	-32	-29 *	-47	-5	Goldfinch	870	7	16 *	7	25
Swallow	1102	-5	4	-2	10	Siskin	32	-34	-35	-58	2
House Martin	583	11	3	-6	13	Linnet	836	3	-9 *	-16	-2
Tree Pipit	63	14	-26 *	-43	-4	<i>Lesser Redpoll</i>	47	-46	-51 *	-67	-26
Meadow Pipit	309	5	-3	-10	4	Bullfinch	349	9	-18 *	-28	-7
Yellow Wagtail	148	16	-15	-28	0	Yellowhammer	861	1	-17 *	-21	-12
Grey Wagtail	102	-5	60 *	27	103	Reed Bunting	253	10	-5	-15	8
Pied Wagtail	742	10	36 *	25	47	Corn Bunting	132	8	-31 *	-42	-18
Wren	1409	3	10 *	6	13						

England

A total of 186 species was recorded on BBS visits in England in 2003 and, of these, Wood Pigeon and Blackbird were the most widespread, both being recorded on 96% of squares, closely followed by Wren (94%). Of the 93 species that were recorded on an average of 30 or more squares in England (Table 5), 24 species had declined significantly and 40 species had increased significantly between 1994 and 2003.

For several species that have a mainly English distribution in the UK, the trends for England and the UK are generally similar. However, the population trends for several species in England

differed from those for the UK. Oystercatcher and Lapwing both increased significantly in England, whilst declining significantly in the UK. Lesser Redpoll, Tree Pipit, Mistle Thrush, Linnet and House Sparrow declined significantly in England, but showed no significant trend in the UK.

Scotland

A total of 153 species was recorded on BBS visits in Scotland in 2003 and, of these, the Chaffinch was the most widespread, being recorded on 75% of squares, closely followed by Wren (72%), Meadow Pipit (71%) and Skylark (69%). Of the 52 species that

Table 6. SCOTLAND. Population changes for species recorded on a mean of 30 or more squares per year for 2002-03 and 1994-2003.

Species	Sample	Change		lcl	ucl	Species	Sample	Change		lcl	ucl
		02-03	94-03					02-03	94-03		
(Grey Heron)	41	4	110 *	38	218	Blackbird	147	5	14 *	1	28
Mallard	83	-12	35 *	5	73	Song Thrush	132	14	27 *	5	52
Buzzard	99	5	81 *	41	132	<i>Mistle Thrush</i>	59	27	82 *	31	153
<i>Kestrel</i>	39	31	-28	-50	3	Sedge Warbler	47	-41	-6	-33	32
<i>Red Grouse</i>	56	33	32	-2	77	Whitethroat	54	47	66 *	20	130
Pheasant	99	9	-5	-22	16	<i>Willow Warbler</i>	172	0	25 *	9	42
<i>Oystercatcher</i>	116	-1	-23 *	-34	-10	<i>Goldcrest</i>	70	-7	112 *	61	180
Golden Plover	43	28	-13	-36	19	Coal Tit	96	27	42 *	17	73
<i>Lapwing</i>	84	-8	-42 *	-53	-28	Blue Tit	120	48 *	64 *	38	95
<i>Snipe</i>	51	-13	47 *	9	100	Great Tit	106	22	52 *	23	88
<i>Curlew</i>	120	-14	-36 *	-45	-25	Magpie	33	23	59 *	13	124
Common Sandpiper	34	15	-8	-35	29	Jackdaw	90	-7	4	-17	31
Feral Pigeon	50	8	12	-21	59	Rook	96	42	52 *	15	101
Wood Pigeon	158	15	2	-11	18	Carrion Crow	149	-17	-15	-29	3
Collared Dove	34	43	-7	-36	36	Hooded Crow	50	49	-36 *	-53	-13
<i>Cuckoo</i>	63	-12	14	-15	53	Raven	38	15	85 *	19	186
Swift	40	-22	-62 *	-74	-44	Starling	121	-30	-4	-26	24
Skylark	183	-1	-1	-11	10	House Sparrow	72	31	65 *	33	105
<i>Swallow</i>	131	4	-3	-18	15	Chaffinch	190	0	1	-8	12
<i>House Martin</i>	43	-8	152 *	57	304	Greenfinch	81	-3	12	-13	46
<i>Meadow Pipit</i>	192	11	0	-10	10	Goldfinch	61	19	104 *	43	191
Pied Wagtail	114	6	38 *	11	71	Siskin	56	-29	-40 *	-58	-16
Wren	176	11	56 *	36	80	Linnet	79	-7	23	-5	60
<i>Dunnock</i>	102	22	43 *	14	80	<i>Lesser Redpoll</i>	36	-5	17	-21	72
Robin	150	0	-4	-17	11	Yellowhammer	87	-22	-13	-28	7
Wheatear	72	-3	5	-18	35	Reed Bunting	40	5	36	-4	94

were recorded on an average of 30 or more squares in Scotland (Table 6), six had declined significantly and 22 had increased significantly between 1994 and 2003.

For many species, the trends in Scotland were broadly similar to those in England, including significant increases in Buzzard and Raven, and increases in the numbers of small-bodied residents such as Pied Wagtail, Wren, Dunnock, Goldcrest, Blue Tit and Great Tit, still benefiting from the continued run of relatively mild winters. At the other end of the spectrum, numbers of Swift and Curlew declined significantly in both countries.

A number of species continued to fare better in Scotland than in other parts of the country. Willow Warbler numbers increased significantly in Scotland during 1994-2003, whereas their counterparts in England and Wales declined. Likewise, Mistle Thrush, Rook and House Sparrow all increased significantly north of the border, whilst showing a downward trend in England. Magpie numbers increased by 59% in Scotland (but note the wide confidence limits of +13% to +124%), whilst in England there was little change. Cuckoo, Skylark, Starling, Lesser Redpoll and Linnet all showed a downward trend in England, whilst appearing to be relatively stable in Scotland.

Thirteen species were recorded on 20-29 squares in Scotland, and hence too few squares for Scottish population trends to be generated. These include three UK Biodiversity Action Plan species (Grey Partridge, Spotted Flycatcher and Bullfinch) as well as Redshank, Tree Pipit, Grey Wagtail, Dipper, Whinchat, Stonechat, Blackcap, Chiffchaff, Long-tailed Tit and Treecreeper.

Wales

A total of 134 species was recorded on BBS visits in Wales in 2003 and of these, the Carrion Crow was the most widespread, being recorded on 93% of squares, closely followed by Wren (92%) and Chaffinch and Blackbird (both 91%). Of the 51

species that were recorded on an average of 30 or more squares in Wales (Table 7), 11 species had declined significantly and 18 had increased significantly between 1994 and 2003.

The Welsh trends for a number of species followed the UK pattern, with significant declines in Curlew, Cuckoo, Garden Warbler, Willow Warbler, Starling, Bullfinch and Yellowhammer. Starling underwent the greatest decline of any species monitored by the BBS in Wales, with numbers falling by 62% between 1994 and 2003. The Welsh trends for a range of typical garden and woodland species matched the UK pattern, with numbers of Great Spotted Woodpecker, Dunnock, Robin, Blackbird, Song Thrush, Blackcap, Chiffchaff, Blue Tit, Great Tit and Nuthatch all increasing. However, Mallard, Goldcrest, Coal Tit and Chaffinch all showed a significant decline in Wales, whilst increasing in the UK, and the 45% decline in Welsh Tree Pipit numbers contrasted with no significant change seen in the UK overall. The very considerable increase in Welsh House Sparrow numbers (up 85%) also differed from the pattern of little overall change across the UK.

Species that showed relatively little change in their numbers in Wales, in contrast to significant increases in the UK, included Buzzard, Wood Pigeon, Collared Dove and Jackdaw, whilst numbers of Swifts in Wales showed little change against a backdrop of overall decline in the UK. Nine species not shown in Table 7 were recorded on 20-29 squares in Wales and hence too few squares for Welsh indices to be generated (Kestrel, Feral Pigeon, Stock Dove, Grey Wagtail, Stonechat, Wood Warbler, Spotted Flycatcher, Pied Flycatcher and Reed Bunting).

Northern Ireland

A total of 100 species was recorded on BBS visits in Northern Ireland in 2003 and, of these, Wren was the most widespread, being recorded on 96% of squares, followed by Hooded Crow

Table 7. WALES. Population changes for species recorded on a mean of 30 or more squares per year for 2002-03 and 1994-2003.

Species	Sample	Change		lcl	ucl	Species	Sample	Change		lcl	ucl
		02-03	94-03					02-03	94-03		
(Grey Heron)	38	12	47 *	1	114	Garden Warbler	51	3	-29 *	-48	-3
Mallard	53	-32	-37 *	-54	-13	Blackcap	90	2	64 *	32	104
Buzzard	113	-4	5	-14	29	Chiffchaff	100	42	46 *	23	73
Pheasant	66	49	27 *	1	60	Willow Warbler	136	-8	-34 *	-42	-25
Curlew	38	-16	-31	-52	0	Goldcrest	69	-22	-24 *	-39	-4
Wood Pigeon	150	-6	4	-8	19	Long-tailed Tit	48	-38	-17	-48	35
Collared Dove	52	3	5	-22	40	Coal Tit	60	-43 *	-27 *	-45	-4
Cuckoo	54	-23	-49 *	-63	-28	Blue Tit	141	-8	19 *	5	35
Swift	58	43	-4	-32	35	Great Tit	132	1	30 *	11	52
Green Woodpecker	39	20	28	-15	93	Nuthatch	54	-9	57 *	13	118
Great Spotted Woodpecker	47	-1	63 *	14	133	Treecreeper	37	-15	39	-12	118
Skylark	88	2	-10	-22	5	Jay	54	-7	-8	-34	30
Swallow	133	2	41 *	18	69	Magpie	133	6	-5	-20	12
House Martin	77	-9	44 *	7	93	Jackdaw	110	-1	3	-15	26
Tree Pipit	30	-40	-45 *	-64	-15	Rook	68	19	5	-26	49
Meadow Pipit	73	-2	19 *	3	37	Carrion Crow	161	-7	-1	-15	14
Pied Wagtail	94	14	12	-11	39	Raven	68	43	46 *	10	92
Wren	158	-11	5	-5	16	Starling	78	-30	-62 *	-72	-49
Dunnock	118	10	27 *	7	51	House Sparrow	94	11	85 *	53	125
Robin	153	-4	12 *	1	23	Chaffinch	157	1	-17 *	-25	-8
Redstart	51	-21	-17	-36	7	Greenfinch	86	-1	14	-9	44
Wheatear	42	-18	-21	-44	11	Goldfinch	94	25	110 *	64	168
Blackbird	154	-2	22 *	11	34	Linnet	78	8	26	-5	67
Song Thrush	130	3	30 *	12	51	Bullfinch	49	11	-28 *	-48	-1
Mistle Thrush	83	-10	-6	-28	23	Yellowhammer	37	-8	-39 *	-56	-16
Whitethroat	62	-13	-18	-37	5						

Table 8. NORTHERN IRELAND. Population changes for species recorded on a mean of 30 or more squares per year for 2002-03 and 1994-2003.

Species	Sample	Change		lcl	ucl	Species	Sample	Change		lcl	ucl
		02-03	94-03					02-03	94-03		
Wood Pigeon	58	35	66 *	25	120	Coal Tit	42	2	128 *	32	296
Skylark	31	2	-7	-34	31	Blue Tit	53	17	73 *	27	136
Swallow	60	-3	8	-21	47	Great Tit	47	8	145 *	65	265
Meadow Pipit	51	8	39 *	7	80	Magpie	59	-7	15	-12	51
Wren	66	2	64 *	28	110	Jackdaw	52	22	4	-24	43
Dunnock	48	23	229 *	108	422	Rook	52	-17	24	-16	83
Robin	62	-3	21	-5	53	Hooded Crow	56	20	139 *	64	248
Blackbird	62	-14	67 *	31	113	Starling	54	17	76 *	16	167
Song Thrush	53	-4	26	-10	78	House Sparrow	34	8	-31	-54	4
Mistle Thrush	42	-7	-2	-38	57	Chaffinch	63	12	58 *	19	109
Willow Warbler	57	0	47 *	9	99	Greenfinch	33	3	175 *	52	397
Goldcrest	31	73	145 *	37	336						

(92%), Chaffinch (90%) and Robin and Blackbird (both 89%). Of the 23 species that were recorded on an average of 30 or more squares in Northern Ireland (Table 8), no species had declined significantly and 14 species increased significantly between 1994 and 2003.

Because of the relatively small number of squares surveyed in Northern Ireland, we are able to produce population indices for only the most widespread and numerous birds in the Province. Most of the species that are declining in other parts of the UK cannot be monitored by the BBS in Northern Ireland. Several typical garden and woodland species continued to show a strong and significant upward trend, including Wren, Dunnock, Blackbird, Goldcrest, Blue Tit, Great Tit, Coal Tit, Chaffinch

and Greenfinch. Willow Warbler numbers followed their counterparts in Scotland by increasing significantly (up 47%), contrasting with the significant declines shown in England (down 37%) and Wales (down 34%). Hooded Crow numbers also increased significantly in Northern Ireland (up 139%), although this was in contrast to a decline in Scotland (down 36%). Only House Sparrow (down 31%) showed any evidence of a decline in numbers, although this was not significant.

Eleven species were recorded on 20-29 squares in Northern Ireland and hence too few squares for indices to be produced (Pheasant, Curlew, House Martin, Pied Wagtail, Sedge Warbler, Chiffchaff, Goldfinch, Linnet, Lesser Redpoll, Bullfinch and Reed Bunting).

Government Office Regions within England

The nine Government Office Regions are as follows:

GOR 1 (North West) – Cheshire (inc. Wirral), Cumbria, Lancashire, Greater Manchester and Merseyside

GOR 2 (North East) – Cleveland, County Durham and Northumberland

GOR 3 (Yorkshire & The Humber) – East Yorkshire, North Lincolnshire, North Yorkshire, South Yorkshire and West Yorkshire

GOR 4 (East Midlands) – Derbyshire, Leicestershire & Rutland, Lincolnshire, Northamptonshire and Nottinghamshire

GOR 5 (East of England) – Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk and Suffolk

GOR 6 (West Midlands) – Birmingham, Hereford, Shropshire, Staffordshire, Warwickshire and Worcestershire

GOR 7 (South East) – Berkshire, Buckinghamshire, Hampshire, Kent, Oxfordshire, Surrey and Sussex

GOR 8 (South West) – Avon, Cornwall, Devon, Dorset, Gloucestershire, Somerset and Wiltshire

GOR 9 London

The good coverage achieved in England meant that we were able to generate population trends for many species in the nine English Government Office Regions (Table 9). The nine regions are made up of the groups of counties listed above. Because climate, agriculture and habitats vary throughout England, major regional differences in population trends may point us towards possible reasons for population changes. Coverage varies considerably from one region to another, with the number of squares surveyed being largely dependent upon the number of BBS observers available in that area. As a result of the work done to determine how many occupied squares are needed to generate reliable population trends, we report trends only for species recorded on 30 or more squares. The variation in coverage and regional differences in the distribution of species meant that population trends could be generated for only 16 species in London and 20 species in the North East, compared to 62 species in the South East and 63 species in the East of England. For 71 species, there were records from enough squares for trends to be generated in at least one region, while for 46 species we could produce trends for five or more regions.



Photograph by Tommy Holden. Great Spotted Woodpecker numbers have increased significantly in all of the UK countries and regions for which trends can be generated.

For some species, the trends in the different regions were very similar. Wood Pigeon, Collared Dove, Great Spotted Woodpecker, Pied Wagtail, Robin, Blackbird, Chiffchaff and Greenfinch all showed a significant increase in nearly all of the five or more English regions for which trends could be generated. Skylark declined significantly in six of the eight regions for which a trend could be produced; Cuckoo declined in six out of seven reportable regions, and Starling declined in eight out of nine regions.

For a number of species however, distinctly different patterns of population change were seen in the English regions. Blackbird and Song Thrush declined significantly in the London region, whilst showing stability or an increase in numbers in most other regions, although Song Thrush numbers were also down in the East of England. Mistle Thrush showed a downward trend in the South East, South West and East of England regions, whilst increasing in the North West. The situation for Willow Warbler further worsened in England, with significant declines reported in seven of the eight regions for which a trend could be produced, and only in the North West were numbers stable. House Sparrow continued to decline in the South East, East and London regions, but was relatively stable elsewhere in England. For both the Swallow and Goldfinch, the East of England was the only region for which a significant decline was reported. Swift declined significantly for the first time in the survey period in the North West and East Midlands.

2003 was a good year for Lapwing, which showed a significant increase in the East Midlands and South East for the first time in the survey period. Likewise, Blue Tit increased significantly for the first time in Yorkshire and the South East, as did Chiffchaff in the South East and South West.

BBS mammal monitoring in 2003

In 2003, mammal records were received for 86% of surveyed BBS squares (1,928 squares). Table 10 shows the 15 most frequently recorded mammal species in 2003.

For easily detectable, diurnal species such as Rabbit, Grey Squirrel, Brown Hare and some of the deer, the vast majority of records were for individuals seen and counted during the two

Table 10. Occurrence of common mammal species on BBS squares in 2003. The figures under the 'Present' column indicate the number of squares each species was recorded in (both present and counted); those under the 'Seen' column, the number of squares in which the species was seen and counted; and 'individuals', the total number of individuals counted.

Mammal species	No. squares		Individuals
	Present	Seen	
Rabbit	1,372	1,218	12,542
Grey Squirrel	722	597	1,333
Red Fox	672	250	312
Brown Hare	669	603	2,132
Mole	642	0	0
Roe Deer	441	327	745
Feral/Domestic Cat	421	308	562
Badger	340	13	18
Brown Rat	209	35	70
Hedgehog	189	11	13
Muntjac Deer	117	64	98
Stoat	113	30	33
Fallow Deer	83	47	254
Weasel	81	13	17
Red Deer	78	48	817

bird-count visits. However, for other mammals, a large proportion of the records were based on field signs, dead animals and local knowledge of the species' presence on that site. These include nocturnal or crepuscular species (seldom seen, but easily detected) such as Mole, Red Fox, Badger, Hedgehog and most of the mustelids.

In addition to those listed above, a further 25 mammal species were recorded during the survey, including (number of squares in brackets): Mountain/Irish Hare (64), Mink (29), Otter (28), Red Squirrel (27), Sika Deer (12), Common Shrew (11), Water Vole (10), Field Vole (7), Wood Mouse (6), Pine Marten (5), Chinese Water Deer (4), Bank Vole (4), Pipistrelle Bat sp. (4), Common Seal (3), Feral Goat (3), Grey Seal (2), Orkney Vole (2), Pygmy Shrew (2), Harvest Mouse (2), House Mouse (2), Lesser White-toothed Shrew (1), Brown Long-eared Bat (1), Yellow-necked Mouse (1), Wild Cat (1) and Wild Boar (1).

Habitat coverage

In total, the habitat details for 21,463 transect sections were completed in 2003. The habitat breakdown was very similar to that of 2002, with farmland being the most frequently recorded category (54.8% of 200m sections), followed by human sites (16.7%), woodland (12.7%), heathland and bog (5.8%), semi-natural grassland (5.1%), scrub (2.4%), water bodies (1.9%), coastal (0.6%) and inland rock (0.3%). This now-substantial set of habitat information will be used to produce habitat-specific population trends this year. These data have already been used to relate spatial variation in abundance to habitat, and estimate species density in different habitats for producing population estimates and other purposes. Recording habitat is a vital part of the BBS and greatly increases the scientific and conservation value of the results.

BBS research and development

BBS-online www.bto.org/bbs

BBS-online went live in October 2003, allowing observers to submit their BBS counts electronically via the web. To date, the bird, mammal and habitat data for more than 400 BBS squares have been submitted online for the 2004 field season. All of the historical BBS data (1994-2002), together with the latest counts for 2003 have been loaded onto the system and this now provides the user with a fascinating insight into the birds, mammals and habitat recorded on BBS squares over the past nine years. The website pages provide all visitors to the site with a wealth of information on BBS trends, county and regional species lists, species distribution maps, scheme coverage, methodology and how to take part. Once the BBS observer has registered as an online user, they can enter their BBS counts and view past data

Summary for a square

BBS Grid Square: TL679 DEC user: MICHAEL RAYNE

Species	Max. number per 200m transect					
	1994	1995	1996	1997	1998	1999
Cormorant				1		
Grey Heron	1					
Walden Duck	2	3	3	4		3
Greyling Gull		1	2			
Canada Goose	5		1		2	
Mallard	4	12	9	18	8	7
Tufted Duck	7	2	9	3	3	
Spurrell	1	1				
Wader	1		1			
Willy				1		
Red-legged Partridge	4	6	3	6	4	6
Grey Partridge				2		
Pheasant	15	16	4	12	7	11
Magpie	2	6	3	3		1
Lapwing		14	2		1	
Black-headed Gull	1				2	

Figure 3. BBS observers can view past data for their squares.

for their squares. We would strongly urge BBS observers to enter their counts using BBS-online, for not only does the system provide instant feedback to the user, but is also a quick and easy way of submitting their data. Online submission will help to speed up the reporting of the BBS results, further enhancing their value as a conservation tool. However, it must be stressed that BBS-online provides an alternative method of data submission, and the paper forms will continue for those who prefer to use them.

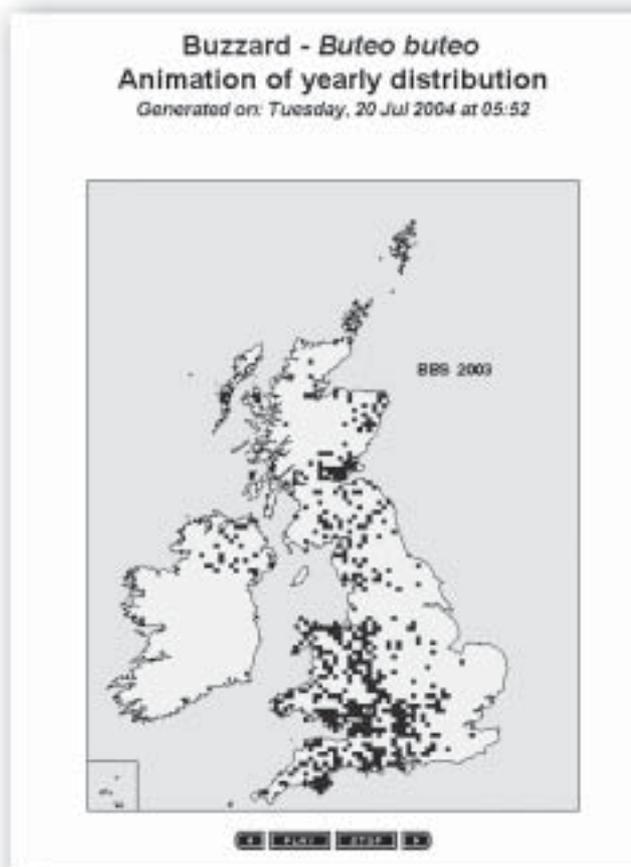


Figure 4. Visitors to the BBS web pages can view the distribution maps of more than 100 species.

One of the aims of the system is to encourage new volunteers to take part in the BBS, and so it has been very encouraging to see so many enquiries to participate in the scheme since the system went live. Many thanks must be given to the RSPB for generously funding the development of BBS-online, and to members of the BTO's Information Systems Unit, who have developed the system and provide technical support (Iain Downie, Karen Wright, James Hall and James Mackinnon).

Pan-European Common Bird Monitoring

The Pan-European Common Bird Monitoring (PECBM) project is a collaborative initiative of the European Bird Census Council, RSPB, Birdlife International and Statistics Netherlands, with the participation of national bird monitoring organisations. In its first year, eighteen national scheme organisers, including the BTO, contributed national population indices for 24 farmland and 24 woodland species. National indices were linked to national population sizes and used to generate pan-European wild bird indicators of farmland and woodland. These showed that, since 1980, farmland birds have declined by about 30% overall across Europe (more steeply in western, mainly EU countries than in the eastern, mainly non-EU countries) and that numbers of woodland species have fluctuated but remained (at least among this group of common and widespread woodland species) at approximately 1980 levels. For those who have had the opportunity to go birding in countries such as Slovakia or Hungary, a stark contrast with the UK is clearly evident; large numbers of Tree Sparrow, Corncrake, Red-backed Shrike, Quail and Golden Oriole are typical of farmland in these counties. The PECBM indicators were launched in Berlin in January this year, and some additional European funding was obtained to develop them further. The indicators and European trends for each of the 48 farmland and woodland species are now available at www.birdlife.cz/index.php?ID=672. (a website managed by the PECBM coordinator, Petr Vorisek, based in Prague). To date, the BTO's contribution to PECBM has been to supply CBC trends, but from next year onwards, trends will be based on combined CBC and BBS data.

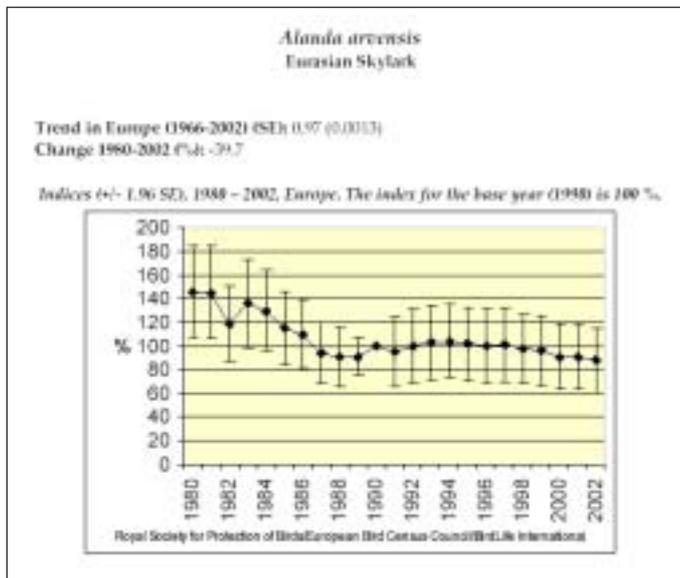


Figure 5. European bird index for Skylark.

Updated long-term population trends

The Common Birds Census (CBC) was used to monitor a suite of about 70 widespread bird species in the UK from the early 1960s until it ended in 2000 and this role has been taken over, and expanded to about 100 species, by the BBS. Following considerable work on the development of methods to link the historical CBC data to BBS data, the first joint CBC-BBS trends, using data from the BBS from 1994 to 2002, were published on the BTO website (www.bto.org/birdtrends) this spring. As for previously published CBC trends, these are smoothed to reduce

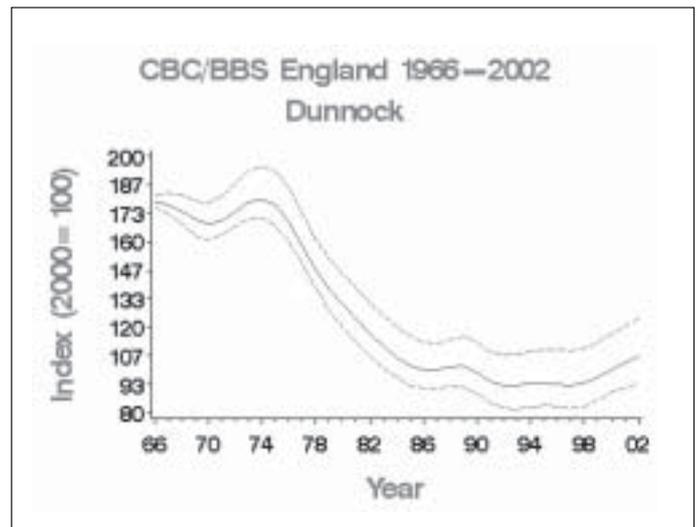


Figure 6. Combined CBC/BBS index for Dunnock.

the impact of year-to-year fluctuations on the overall pattern, and the alerts are calculated to the penultimate year of data collection to reduce the effects of errors at the end of the time series. Because of reduced data collection during the Foot & Mouth Disease epidemic in 2001, the 'penultimate' year used is actually 2000! An important conclusion from the analyses of CBC and BBS datasets is that for some species (e.g. Tree Pipit, Willow Warbler and Kestrel), population trends in southern and eastern Britain differ from those outside this region, and hence CBC and BBS data can only be combined in England. This is why for these species (most having been previously reported with caveats on the CBC trend) the long-term trend is for England only. For species showing little regional variation in population trends (e.g. Wren, Chaffinch) or for species, which occur mainly in southern and eastern Britain (e.g. Turtle Dove, Corn Bunting), a UK long-term trend is presented. This is the first time that these joint trends have been presented, along with the BBS trends for the UK and any constituent countries or Government Office Regions for which there were sufficient data. Importantly, these ensure that the population changes recorded by the CBC over the past 30 years are intrinsically linked to trends based on the BBS and provide much-needed historical context to the current situation.

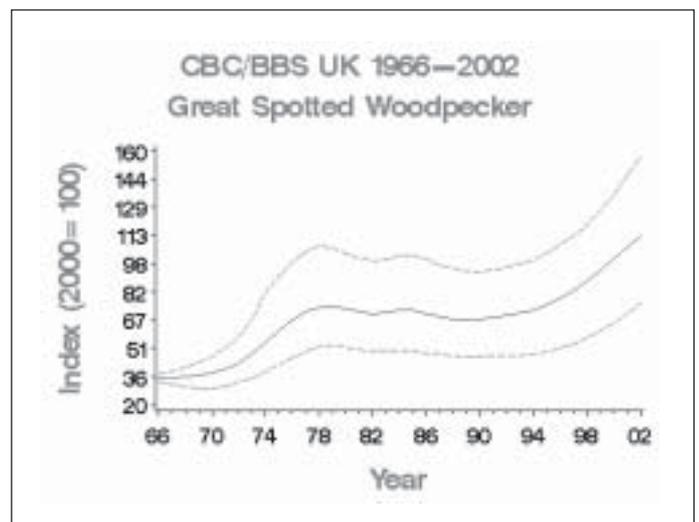


Figure 7. Combined CBC/BBS index for Great Spotted Woodpecker.

Use of BBS data for farmland bird conservation

The BBS has taken over from the CBC the role of supplying information on changes in UK terrestrial breeding bird populations, and these data are more important for conservation than ever, particularly on farmland at the moment but in woodland, wetland and upland landscapes in the near future. BBS data are now fully integrated with CBC data in the headline wild bird indicators, and the Farmland Bird Index has been adopted by the government as a Public Service Agreement target, with a promise to reverse declines by 2020. Attention has focused on the 12 declining species in the indicator, and because BBS is now the only source of trend data, its annual indices are assessed regularly by a panel of experts looking at the influence of changes in agricultural practices in relation to other factors such as climate. Many farmland species have Biodiversity Action Plans because of their long-term population declines, and progress towards BAP targets at national and local levels is assessed for widespread species using the most recent BBS trends. For rarer species such as Stone Curlew and Cirl Bunting, progress is assessed using the results of special surveys.



Photograph by Mike Weston.
Skylark numbers declined by 14% in the UK during 1994-2002.

Data from the BTO's Nest Record Scheme and Constant Effort Sites have been analysed to determine whether reductions in breeding performance or changes in survival over the winter can be linked to population declines in farmland birds. Armed with this information and intensive studies of their ecological requirements, scientists now have a much better idea about the changes in agricultural practices that are needed to reverse declines. The next step is to test management options on the ground and there are a number of broad-scale experiments currently underway. These include studies of the impact of winter food availability on seed-eating farmland birds in East Anglia, the effectiveness of skylark scrapes for nesting in arable crops, and on the provision of field margins in pastoral systems.

Early results from these projects, and other research within Europe, were highlighted at a recent BOU Farmland Bird Conference in Leicester attended by academics, farmers, representatives from conservation organisations and those responsible for government agricultural policy. It was clear that one of the most important outcomes of farmland bird monitoring and research over the past few decades is that in January 2005, the government will be launching its new Entry Level Environmental Stewardship Scheme – with a wide selection of agri-environment options for farmers. These include familiar options such as set-aside and organic farming, but also a variety of new options based on the results of research aimed at improving

biodiversity (not just for birds) in agricultural landscapes. Most importantly, the success of the broad-scale implementation of these options across the UK will be measured by changes in breeding bird populations in BBS squares.

BBS data are also being used in a special project (the Farmland Bird Database) to map the distributions of the less widespread species in order to direct agri-environment scheme applications to sites where they are likely to have the most impact on populations. We are very grateful to everyone who has contributed to this initiative and who continues to supply us with counts from their BBS squares (online or on paper) for monitoring and conservation research.

Further reading

- Crick, H.Q.P., Marchant, J.H., Noble, D.G., Baillie, S.R., Balmer, D.E., Beaven, L.P., Coombes, R.H., Downie, I.S., Freeman, S.N., Joys, A.C., Leech, D.I., Raven, M.J., Robinson, R.A. & Thewlis, R.M. (2004) *Breeding Birds in the Wider Countryside: their conservation status 2003*. BTO Research Report No. 353. BTO, Thetford. (www.bto.org/birdtrends)
- Greenwood, J.J.D., Baillie, S.R., Gregory, R.D., Peach, W.J. & Fuller, R.J. (1995) Some new approaches to conservation monitoring of British breeding birds. *Ibis* 137: S16-28.
- Gregory, R.D. & Baillie, S.R. (1994) *Evaluation of sampling strategies for 1km squares for inclusion in the Breeding Bird Survey*. BTO Research Report 139. BTO, Thetford.
- Gregory, R.D., Eaton, M.A., Noble, D.G., Robinson, J.A., Parsons, M., Baker, H., Austin, G. & Hilton, G.M. (2003) *The state of the UK's birds 2002*. RSPB, BTO, WWT and JNCC, Sandy.
- Gregory, R.D., Wilkinson, N.I., Noble, D.G., Robinson, J.A., Brown, A.F., Hughes, J., Procter, D., Gibbons, D.W. & Galbraith, C.A. (2002) The population status of birds in the United Kingdom, Channel Islands and Isle of Man: an analysis of conservation concern 2002-2007. *British Birds* 95: 410-450.
- Raven, M.J., Noble, D.G. & Baillie, S.R. (2003) *The Breeding Bird Survey 2002*. BTO Research Report 334. BTO, Thetford.

The future

The 2003 fieldwork season was a very successful one for the BBS, with coverage now back to levels achieved before the Foot & Mouth Disease crisis in 2001. The outlook for 2004 is very good, with many ROs reporting a higher-than-normal take-up of BBS squares and some requesting additional squares to enable them to provide survey sites to new volunteers. With the help of the web site and BBS-online, it is hoped that coverage will soon return to the peak levels achieved in the late 1990s. It is vitally important that we continue to monitor our sometimes struggling bird populations across a wide variety of habitats and it is only by continuing to survey our BBS squares year after year that we can do this. Good coverage throughout the UK in future seasons will enable us to continue monitoring species that we have looked at over the past nine years, and hopefully expand our knowledge of the differing regional trends within individual species.

SPECIAL THANKS

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

BBS Regional Organisers for 2003:

 **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) – vacant (now Charles Hull); Cheshire (south) – Charles Hull; Cleveland – Russell McAndrew; **Cornwall** – **Terry Hasdell (now vacant)**; Cumbria (north) – Clive Hartley; Cumbria (south) – Stephen Dunstan; Derbyshire (north & south) – Dave Budworth; Devon – John Woodland; Dorset – Catherine Whitby; Durham – David Sowerbutts; Essex (north-east) – Peter Dwyer; Essex (north-west) – Roy Ledgerton; **Essex (south)** – **vacant**; Gloucestershire – Mike Smart; Hampshire – Glynne Evans; Herefordshire – Steve Coney; Hertfordshire – Chris Dee; Huntingdon & Peterborough – Philip Todd; Kent – Martin Coath; Lancashire (east) – Tony Cooper; Lancashire (north-west) – Keith Woods; Lancashire (south) – Philip Shearwood; Leicestershire & Rutland – Tim Grove; Lincolnshire (east) – Rob Watson; Lincolnshire (north) – vacant (now John Turner); 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) – vacant (now Chris Day); Norfolk (south-west) – Vincent Matthews; Northamptonshire – Bill Metcalfe; Northumberland – Tom and Muriel Cadwallender; Nottinghamshire – Lynda Milner; Oxfordshire (north) – Frances Marks; Oxfordshire (south) – Peter Abbott (now John Melling); Isles of Scilly – Will Wagstaff; Shropshire – Allan Dawes; Somerset – Eve Tigwell; Staffordshire (south & west) – Liz Palmer (now Martin Godfrey); **Staffordshire (north)** – **vacant**; Suffolk – Mick Wright; Surrey – Hugh Evans; Sussex – Barrie Watson; Warwickshire – Joe Hardman (now Mark Smith); Isle of Wight – James Gloyn; **Wiltshire (north)** – **Mark Lang (now vacant)**; Wiltshire (south) – Andrew Carter; Wirral – vacant (now Paul Miller); Worcestershire – Harry Green; Yorkshire (north-west) – Gerald Light; Yorkshire (Richmond) – John Edwards; Yorkshire (Harrogate) – Mike Brown; Yorkshire (east) – vacant (now Cliff Carter and Martin Chadwick); Yorkshire (north-east) – Michael Carroll; Yorkshire (Bradford) – Mike Denton; Yorkshire (York) – Rob Chapman; Yorkshire (Leeds & Wakefield) – Peter Smale; Yorkshire (south-east & south-west) – Chris Falshaw.

 **SCOTLAND:** Aberdeen – Peter Walker (now John Littlejohn); Angus – Ken Slater; **Argyll (south, Bute & Gigha)** – **David Wood (now vacant)**; Argyll (north, Mull, Coll, Tiree & Morvern) – Richard Evans (now Sue Dewar); Ayrshire – vacant (now Brian Broadley); Benbecula & the Uists – Brian Rabbitts; Borders – Alex Copland (now Steve Hunt); Caithness – Hugh Clark; Central – Neil Bielby; Dumfries – Duncan Irving; Fife & Kinross – Norman Elkins; Inverness (east and west) – Hugh Insley; Islay, Jura & Colonsay – Malcolm Ogilvie; Kincardine & Deeside – 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 (now vacant)**; Ross-shire – Dave Butterfield (now Simon Cohen); Shetland – Dave Okill; Skye – Robert McMillan; Small Isles (Rum, Eigg, Muck, Canna) – Bob Swann; Sutherland – David Devonport; Wigtown – Geoff Sheppard.

 **WALES:** Anglesey – Tony White; Brecon – John Lloyd; Caernarfon – John Barnes; Cardigan – Moira Convery; Carmarthen – David Poulter (now Colin Jones); Clwyd (east) – Anne Brenchley; Clwyd (west) – Mel Ab Owain; Glamorgan (west) – Rhian Evans; Glamorgan (mid & south) – Rob Nottage; Gwent – Jerry Lewis; Merioneth – Peter Haveland; Montgomery – Brayton Holt (now Jane Kelsall); Pembrokeshire – Annie Poole; **Radnorshire** – **Pete Jennings (now vacant)**.

 **NORTHERN IRELAND:** Antrim – Ruth Wilson; Armagh – David Knight; Down – Alistair McIlwain; Fermanagh – Phil Grosse; Londonderry – Charles Stewart; Tyrone (south) – Phil Grosse; 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: Peter Abbott, Dave Butterfield, Richard Evans, Alex Copland, Joe Hardman, Terry Hasdell, Brayton Holt, Mark Lang, Liz Palmer, David Poulter, Andrew Wight and David Wood. We pay special tribute to Peter Walker of Aberdeenshire, who died in 2003. We would also like to thank Brian Broadley, Cliff Carter, Martin Chadwick, Simon Cohen, Chris Day, Sue Dewar, Steve Hunt, Colin Jones, Jane Kelsall, John Littlejohn, John Melling, Tony Paintin, Mark Smith and John Turner for kindly taking over as ROs since the 2003 season, and to Charles Hull, Martin Godfrey and Paul Miller for taking on additional 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 would also like to thank the farmers and landowners for their support and co-operation in allowing BBS volunteers onto their land. 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