

The Breeding Bird Survey

2007



The Breeding Bird Survey partnership:

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The BBS is organised by the British Trust for Ornithology (BTO), and jointly funded by BTO, the Joint Nature Conservation Committee (JNCC, the statutory adviser to Government on UK and international nature conservation, on behalf of the Council for Nature Conservation and the Countryside, the Countryside Council for Wales, Natural England and Scottish Natural Heritage) 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).

Profiles

Kate Risely is the BBS National Organiser, and is responsible for the day-to-day running of the scheme, liaising with BTO Regional Organisers and volunteers, promoting the scheme and providing feedback. Kate previously worked in the Ringing Unit at the BTO.

Dr David Noble is the Head of the Census Unit at the BTO, and oversees the running of bird surveys such as the BBS and the Waterways Breeding Bird Survey (WBBS), 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.

Acknowledgements

This is the thirteenth annual report of the Breeding Bird Survey (BBS), in which we report the results from 2007. Counts were made on 3,604 1-km squares, representing a massive effort from our volunteer fieldworkers and Regional Organisers. We would like to take this opportunity to thank everyone who has contributed to the success of the BBS.

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This report is provided free of charge to all BBS observers and Regional Organisers. Further copies are available from BTO HQ at a cost of £5 each (including p&p). It can also be downloaded, free of charge, from:

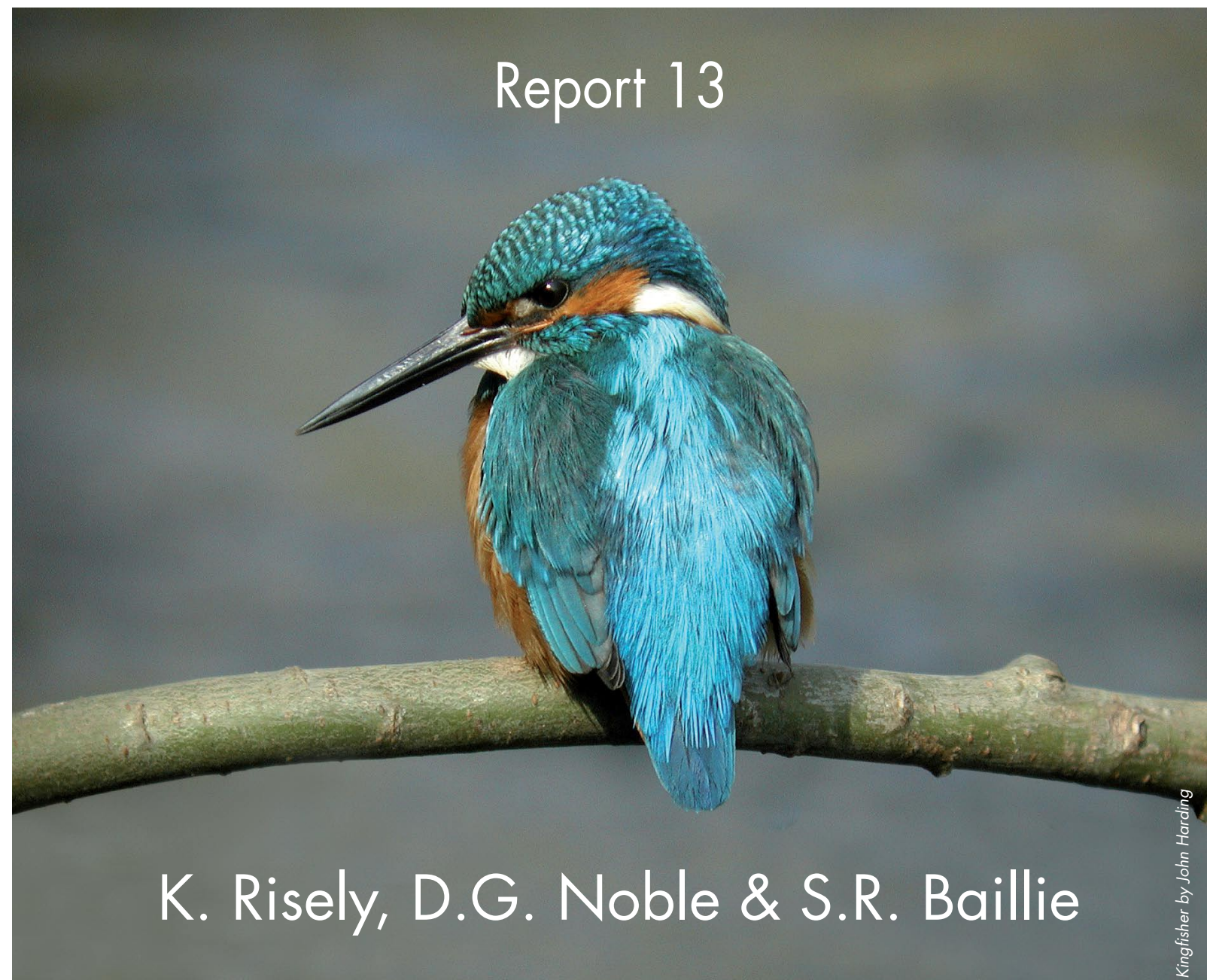
www.bto.org/bbs/results/bbsreport.htm

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Summary of 2007 BBS results

This is the thirteenth annual report of the BTO/JNCC/RSPB Breeding Bird Survey (BBS), covering the years 1994 to 2007. The aim of the survey is to monitor population trends for a range of common and widespread bird species in the UK. BBS results are increasingly used by UK Government and non-governmental organisations to set conservation priorities.

The scheme is run centrally by BTO staff, and coordinated by a network of volunteer BTO Regional Organisers, who play a crucial role in organising and encouraging volunteer effort. Information about BBS, and the latest results, can be found at www.bto.org/bbs, and more detailed information about population trends can be found at www.bto.org/birdtrends.

In 2007, 3,604 BBS squares were surveyed and 220 species were recorded. We are able to measure population changes reliably for species found on at least 40 squares per year, on average, over the whole survey period (1994–2007). In 2007 we report trends for 104 such species.

In the UK as a whole, 27 species declined significantly and 46 species increased significantly 1994–2007 (Table 4).

Declines of over 50%, in decreasing order of magnitude: Willow Tit, Wood Warbler, Turtle Dove, Spotted Flycatcher and Pied Flycatcher.

Declines of 25%–50%, in decreasing order of magnitude: Yellow Wagtail, Swift, Grey Partridge, Common Crossbill, Cuckoo, Curlew, Corn Bunting, Kestrel, Linnet, Shelduck, Starling, Whinchat and Little Owl.

Increases of over 50%, in decreasing order of magnitude: Ring-necked Parakeet, Red Kite, Stonechat, Greylag Goose, Great Spotted Woodpecker, Canada Goose, Raven, Nuthatch, Grasshopper Warbler, Tufted Duck, Blackcap, Buzzard, Great Tit and Goldcrest.

Of the 25 UK Biodiversity Action Plan priority species monitored by the BBS, 16 declined significantly and four increased significantly 1994–2007.

Declines in decreasing order of magnitude: Willow Tit, Wood Warbler, Turtle Dove, Spotted Flycatcher, Yellow Wagtail, Grey Partridge, Cuckoo, Curlew, Corn Bunting, Linnet, Starling, Yellowhammer, Lapwing, Bullfinch, Skylark and House Sparrow.

Increases in decreasing order of magnitude: Grasshopper Warbler, Reed Bunting, Dunnock and Song Thrush.

Regional trends were calculated for the nine Government Office Regions in England (Table 9). A number of species declined in all regions for which population trends could be calculated, including Cuckoo, Meadow Pipit, Linnet and Yellowhammer, though only for Cuckoo were all the declines significant. Species that showed marked regional differences in population trends include Red-legged Partridge, Grey Heron, Lapwing, Stock Dove, Skylark, Wren, Blackbird, Song Thrush, Mistle Thrush, Willow Warbler, Long-tailed Tit, Magpie, Rook, House Sparrow, Greenfinch and Bullfinch.

In England, trends were produced for 96 species, of which 28 decreased significantly and 42 increased significantly 1994–2007 (Table 5).

Declines of over 50%, in decreasing order of magnitude: Willow Tit, Turtle Dove, Nightingale, Cuckoo and Spotted Flycatcher.

Declines of 25%–50%, in decreasing order of magnitude: Yellow Wagtail, Linnet, Swift, Lesser Redpoll, Tree Pipit, Grey Partridge, Starling, Corn Bunting, Redshank, Yellowhammer and Willow Warbler.

Increases of over 50%, in decreasing order of magnitude: Ring-necked Parakeet, Raven, Stonechat, Siskin, Greylag Goose, Great Spotted Woodpecker, Canada Goose, Buzzard, Nuthatch, Goldcrest and Blackcap.

In Scotland, trends were produced for 57 species, of which eight decreased significantly and 20 increased significantly 1994–2007 (Table 6).

Declines of over 50%, in decreasing order of magnitude: Kestrel, Swift.

Declines of 25%–50%, in decreasing order of magnitude: Curlew, Hooded Crow, Lapwing, Feral Pigeon and Oystercatcher.

Increases of over 50%, in decreasing order of magnitude: Stonechat, Chiffchaff, Raven, House Martin, Blackcap, Goldfinch, Wren, Great Tit, Goldcrest, Whitethroat, Grey Heron, Treecreeper, Snipe and Reed Bunting.

In Wales, trends were produced for 53 species, of which 11 declined significantly and 22 increased significantly 1994–2007 (Table 7).

Declines of over 50%, in decreasing order of magnitude: Starling, Cuckoo.

Declines of 25%–50%, in decreasing order of magnitude: Swift, Yellowhammer, Tree Pipit, Curlew, Goldcrest, Bullfinch and Garden Warbler.

Increases of over 50%, in decreasing order of magnitude: Stonechat, Great Spotted Woodpecker, House Sparrow, Blackcap, Great Tit, Goldfinch, Nuthatch, Feral Pigeon, Swallow, Treecreeper, Long-tailed Tit and Pheasant.

In Northern Ireland, trends were produced for 28 species, of which 17 increased significantly 1994–2007, whilst none declined significantly (Table 8).

Increases of over 50%, in decreasing order of magnitude: Great Tit, Pheasant, Greenfinch, Dunnock, Goldfinch, Coal Tit, Goldcrest, Hooded Crow, Willow Warbler, Wren, Blue Tit, Starling, Chaffinch, Blackbird, Meadow Pipit, Woodpigeon and Robin.

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, to provide better habitat coverage than the main survey running at the time, the Common Birds Census (CBC). Since the final year of the CBC in 2000, the BBS has been the main scheme for monitoring the population changes of the UK's common and widespread birds. BBS trends are produced each year for over 100 species, and the results are increasingly used by Government and non-governmental organisations to set conservation priorities.

Methods and organisation

The BBS is a line-transect survey based on randomly selected 1-km squares. Squares are chosen through stratified random sampling, with more squares in areas with more potential volunteers. The difference in sampling effort is taken into account when calculating trends. Each BBS observer makes two early morning visits during the April–June survey period to count all birds encountered while walking two 1-km transects across their square. Birds are recorded in three distance categories, or as 'in flight', to assess detectability and calculate species density. Observers also record the habitat along the transects, and record any mammals seen during the survey. BBS volunteers are provided with full instructions on how to carry out the survey, together with recording forms and an Ordnance Survey map of their square. Surveying a BBS square involves around six hours of fieldwork per year, and the aim is to survey the same squares each year.

The BBS National Organiser, based at BTO HQ, is responsible for the overall running of the scheme, and is the main point of contact for the network of voluntary Regional Organisers (ROs). ROs are responsible for finding new volunteers and for allocating squares to observers in their region. At the end of the season they collect paper submissions and return them to BTO HQ, and validate submissions made online. The volunteer Regional Organisers, and the BTO Wales and Ireland Officers, provide invaluable support to the scheme, and we are very grateful for their assistance. As the survey depends entirely on the work of volunteers, every effort is made to provide up-to-date feedback to BBS observers, via this report and the BBS web pages at www.bto.org/bbs.

Through its careful design, the BBS is able to provide reliable population trends for a large proportion of our breeding species. Trends can also be produced for individual countries, regions or habitats. For these analyses, we take the higher count from the two visits for each species, summed over all four distance categories and transect sections. Only squares that were surveyed in at least two years are included in the analyses. Counts for six wader species (Oystercatcher, Golden Plover, Lapwing, Snipe, Curlew and Redshank) are corrected to exclude counts from non-breeding flocks, and observations of Golden Plover in unsuitable breeding habitat are also excluded.

Population changes are estimated using a log-linear model with Poisson error terms. Counts are modelled as a function of year and site effects, weighted to account for differences in sampling effort across the UK, with standard errors adjusted for overdispersion.

The BBS and the CBC ran alongside each other from 1994 to 2000, and this overlap period allowed the BTO to develop methods for calculating long-term trends using data from both schemes. Joint CBC/BBS trends for England and the UK are now produced annually for a range of species. The most recent are those for 1966–2006, published in 'Breeding Birds of the Wider Countryside, their conservation status 2007'. This report brings together information from a number of BTO schemes, and is available on the BTO website at www.bto.org/birdtrends.

Work has been carried out to assess the precision and reliability of BBS trends for all species, to ensure that reported trends are based on reliable data and sufficient sample sizes. As a result of this work, we do not report population trends for five species of gull (Black-headed, Common, Lesser Black-backed, Herring and Great Black-backed), as a large proportion of the records are of non-breeding, wintering or migratory birds. Trends for other species with substantial wintering populations (e.g. Fieldfare) are 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 monitors nocturnal species poorly.

BBS squares are randomly selected by computer, and can therefore turn up on any area of land in the UK. Some squares can never be surveyed, and these truly 'uncoverable' sites are removed from the system. However, squares that are temporarily inaccessible, or which are not taken up due to their remote location, are retained to maintain the integrity of the sampling design, although we recognise that some will seldom be surveyed.



Photo by Dawn Balmer

Survey coverage

Results from 3,604 BBS squares were received in 2007, the highest number since the survey began in 1994, and over 300 more than in 2006 (Table 1). Squares that have been surveyed in at least two years between 1994 and 2007 are included in the trend analyses, and, by 2007, these numbered 4,070 squares.

The number of individual observers taking part in the survey continues to increase, with 2,917 in 2007, in comparison with 2,639 in 2006 and 2,331 in 2005.

BBS-Online

The BBS-Online application was launched in 2003, and can be accessed via the BBS website, www.bto.org/bbs. Data submitted electronically can be dealt with more efficiently than paper forms, and the system is designed to be simple and user-friendly. The application allows volunteers to enter their bird, mammal, habitat and colony data online, and to view all historical records for their squares (including those submitted by other observers). Observers can now link directly to an Ordnance Survey map of their square, and facilities to edit mammal, habitat and colony records, as well as bird data, are under development.

In 2007, the fourth year in which this system has been available, data for 1,984 squares came in online (55% of the total). Online data submissions continue to reduce the cost of data entry and checking, and allow us to provide more complete and up-to-date results on the BBS website.

Other BBS web pages, available to all, provide a range of BBS results, including tables and graphs showing the latest trends, species distribution and relative abundance maps, and species lists down to county level. The website also has information on BBS methods, research projects, and how volunteers can get involved.

The BTO Information Systems Unit continues to develop BBS-Online in response to feedback from users. The system is reviewed each year, to identify and develop possible improvements.

Table 1 Number of BBS squares surveyed

	2003	2004	2005	2006	2007
England	1,737	1,884	2,177	2,558	2,783
Scotland	255	274	306	332	409
Wales	214	253	270	267	263
Northern Ireland	109	102	120	106	129
Isle of Man	4	6	3	5	4
Channel Islands	7	11	13	19	16
North West England	206	227	260	291	295
North East England	64	74	83	115	126
Yorkshire and the Humber	133	148	170	191	222
East Midlands	157	176	210	246	264
East of England	236	258	313	365	433
West Midlands	145	160	193	217	241
South East England	441	449	521	591	624
South West England	294	303	336	440	460
London	61	89	91	102	118
Total	2,326	2,530	2,889	3,287	3,604

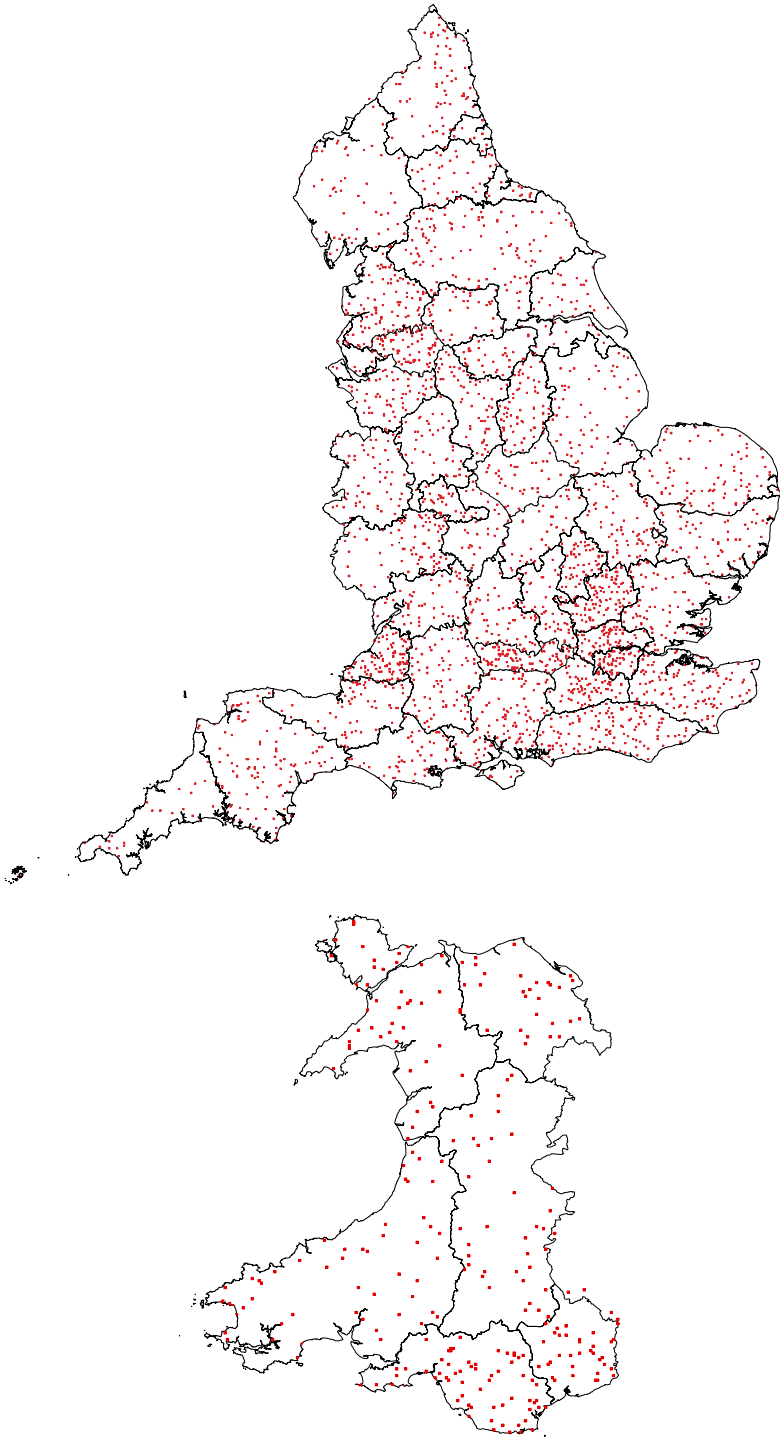


Few people get excited about sightings of Pheasants, but it is important to monitor the non-native species found in the UK

Photo by Jill Pakenham

England

In 2007, 2,783 BBS squares were surveyed in England, the highest-ever total by some 200 squares. Record coverage was achieved in all nine Government Office Regions, and in 42 of the 75 BTO regions, including substantial increases in Kent, Norfolk (South-East), Cambridgeshire and Essex (North-West).

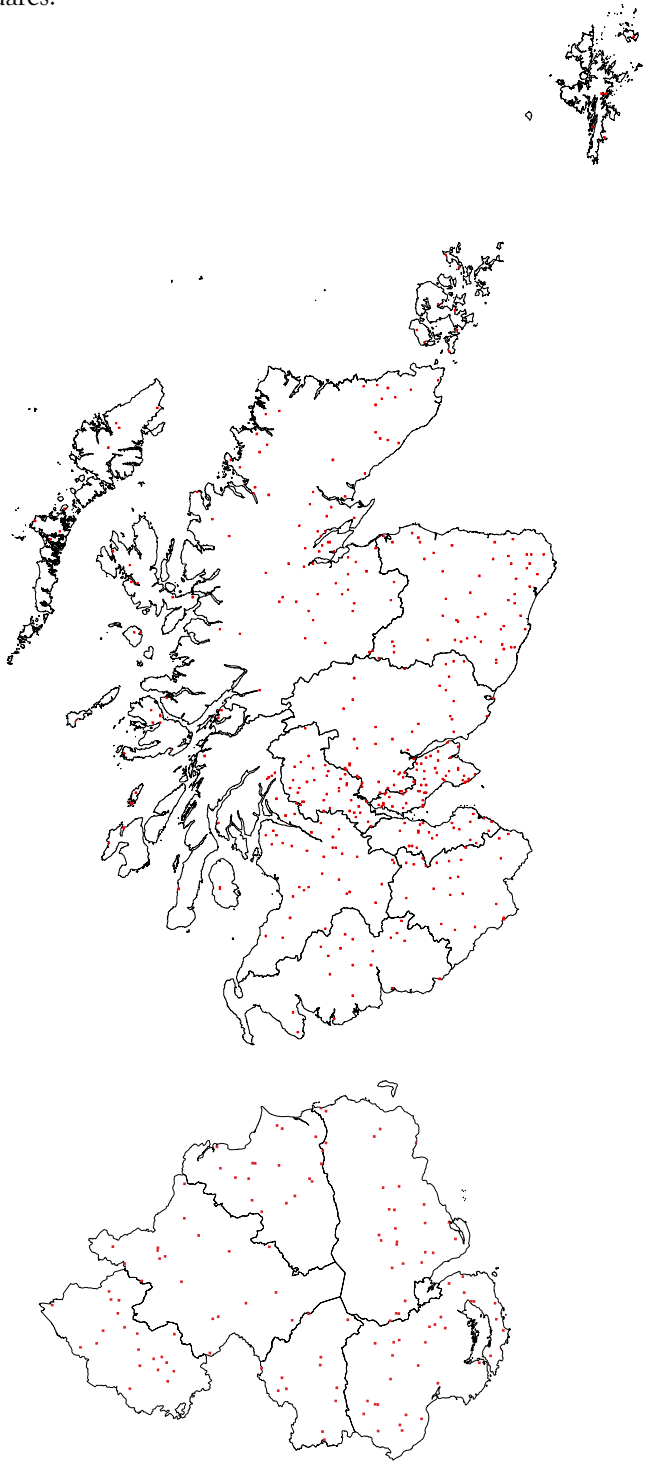


Wales

At 263, the number of BBS squares surveyed in Wales remained approximately the same as in recent years, though slightly lower than the 2006 total. Nevertheless, record coverage was achieved in the BTO regions of Clwyd (East), Merioneth, Caernarfon, Glamorgan (South) and Glamorgan (West).

Scotland

Scotland has historically had lower levels of BBS coverage than England, so it is very encouraging to see another considerable increase in coverage, from 332 in 2006 (itself a record) to 409 in 2007. This total does not include squares covered by professional fieldworkers (see page 19). Record coverage was achieved in 12 of the 28 BTO regions, and both Fife and Lanarkshire improved on the previous record by 13 squares.



Northern Ireland

In 2007, 129 squares were surveyed in Northern Ireland, the highest-ever total, topping the previous record of 120 in 2005. Of these, 52 squares were surveyed by two professional fieldworkers, funded by the Environment & Heritage Service in Northern Ireland. Record coverage was achieved in Fermanagh, Antrim & Belfast and Down.

Species recorded

In total, 220 species, including a number of subspecies, domestic breeds and escapees, were recorded on the 3,604 BBS squares surveyed in 2007. Of these, 115 were recorded on 40 or more squares (Table 2) and 105 on fewer than 40 squares (Table 3). Note that trends are produced for those species found on at least 40 squares on average over the whole survey period (1994–2007), rather than just in 2007, so the division here is for ease of interpretation only.

Gadwall, Goosander, Little Egret, Peregrine, Barn Owl, Nightingale and Indian Peafowl (Peacock) were all recorded on 40 or more squares in 2007, but as their mean sample sizes over the entire survey period remain under 40 squares, we are not yet able to report population trends for these species.

Table 2 Species recorded on at least 40 squares across the UK in 2007

Species	Scientific name	Squares	%
Mute Swan	<i>Cygnus olor</i>	335	9%
Greylag Goose	<i>Anser anser</i>	292	8%
Canada Goose (i)	<i>Branta canadensis</i>	693	19%
Shelduck	<i>Tadorna tadorna</i>	187	5%
Gadwall	<i>Anas strepera</i>	56	2%
Mallard	<i>Anas platyrhynchos</i>	1,737	48%
Tufted Duck	<i>Aythya fuligula</i>	184	5%
Goosander	<i>Mergus merganser</i>	41	1%
Red Grouse	<i>Lagopus lagopus</i>	145	4%
Red-legged Partridge (i)	<i>Alectoris rufa</i>	794	22%
Grey Partridge	<i>Perdix perdix</i>	302	8%
Pheasant (i)	<i>Phasianus colchicus</i>	2,546	71%
Little Grebe	<i>Tachybaptus ruficollis</i>	82	2%
Great Crested Grebe	<i>Podiceps cristatus</i>	94	3%
Cormorant	<i>Phalacrocorax carbo</i>	345	10%
Little Egret	<i>Egretta garzetta</i>	58	2%
Grey Heron	<i>Ardea cinerea</i>	944	26%
Red Kite	<i>Milvus milvus</i>	139	4%
Sparrowhawk	<i>Accipiter nisus</i>	446	12%
Buzzard	<i>Buteo buteo</i>	1,338	37%
Kestrel	<i>Falco tinnunculus</i>	847	23%
Hobby	<i>Falco subbuteo</i>	58	2%
Peregrine	<i>Falco peregrinus</i>	60	2%
Moorhen	<i>Gallinula chloropus</i>	891	25%
Coot	<i>Fulica atra</i>	358	10%
Oystercatcher	<i>Haematopus ostralegus</i>	427	12%
Golden Plover	<i>Pluvialis apricaria</i>	114	3%
Lapwing	<i>Vanellus vanellus</i>	864	24%
Snipe	<i>Gallinago gallinago</i>	202	6%
Curlew	<i>Numenius arquata</i>	587	16%
Common Sandpiper	<i>Actitis hypoleucos</i>	60	2%
Redshank	<i>Tringa totanus</i>	118	3%
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	712	20%
Common Gull	<i>Larus canus</i>	213	6%
Lesser Black-backed Gull	<i>Larus fuscus</i>	799	22%
Herring Gull	<i>Larus argentatus</i>	973	27%
Great Black-backed Gull	<i>Larus marinus</i>	168	5%
Common Tern	<i>Sterna hirundo</i>	89	2%
Feral Pigeon*	<i>Columba livia</i>	873	24%
Stock Dove	<i>Columba oenas</i>	970	27%
Woodpigeon	<i>Columba palumbus</i>	3,323	92%
Collared Dove	<i>Streptopelia decaocto</i>	1,824	51%
Turtle Dove	<i>Streptopelia turtur</i>	140	4%
Ring-necked Parakeet (i)	<i>Psittacula krameri</i>	112	3%
Cuckoo	<i>Cuculus canorus</i>	770	21%
Barn Owl	<i>Tyto alba</i>	72	2%
Little Owl (i)	<i>Athene noctua</i>	118	3%
Tawny Owl	<i>Strix aluco</i>	132	4%
Swift	<i>Apus apus</i>	1,220	34%
Kingfisher	<i>Alcedo atthis</i>	79	2%
Green Woodpecker	<i>Picus viridis</i>	1,119	31%
Great Spotted Woodpecker	<i>Dendrocopos major</i>	1,564	43%
Skylark	<i>Alda arvensis</i>	2,245	62%
Sand Martin	<i>Riparia riparia</i>	160	4%
Swallow	<i>Hirundo rustica</i>	2,594	72%
House Martin	<i>Delichon urbicum</i>	1,167	32%
Tree Pipit	<i>Anthus trivialis</i>	145	4%
Meadow Pipit	<i>Anthus pratensis</i>	982	27%

Though we do not report population trends for all species, some indication of population status can be found on the BBS website, where we report the number of squares on which each species is recorded, year by year.

Little Egret, Ring-necked Parakeet and Stonechat were all recorded on substantially more squares than in 2006, reflecting their expanding populations. Swan Goose and Eurasian Eagle-Owl were recorded for the first time on BBS squares, although neither species is considered to have a self-sustaining population in the UK.

Species	Scientific name	Squares	%
Yellow Wagtail	<i>Motacilla flava</i>	143	4%
Grey Wagtail	<i>Motacilla cinerea</i>	326	9%
Pied Wagtail	<i>Motacilla alba</i>	1,703	47%
Dipper	<i>Cinclus cinclus</i>	70	2%
Wren	<i>Troglodytes troglodytes</i>	3,285	91%
Dunnoch	<i>Prunella modularis</i>	2,748	76%
Robin	<i>Erithacus rubecula</i>	3,173	88%
Nightingale	<i>Luscinia megarhynchos</i>	42	1%
Redstart	<i>Phoenicurus phoenicurus</i>	189	5%
Whinchat	<i>Saxicola rubetra</i>	85	2%
Stonechat	<i>Saxicola torquatus</i>	307	9%
Wheatear	<i>Oenanthe oenanthe</i>	427	12%
Blackbird	<i>Turdus merula</i>	3,296	91%
Song Thrush	<i>Turdus philomelos</i>	2,650	74%
Mistle Thrush	<i>Turdus viscivorus</i>	1,481	41%
Grasshopper Warbler	<i>Locustella naevia</i>	105	3%
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	368	10%
Reed Warbler	<i>Acrocephalus scirpaceus</i>	178	5%
Blackcap	<i>Sylvia atricapilla</i>	2,020	56%
Garden Warbler	<i>Sylvia borin</i>	524	15%
Lesser Whitethroat	<i>Sylvia curruca</i>	373	10%
Whitethroat	<i>Sylvia communis</i>	1,752	49%
Wood Warbler	<i>Phylloscopus sibilatrix</i>	57	2%
Chiffchaff	<i>Phylloscopus collybita</i>	1,979	55%
Willow Warbler	<i>Phylloscopus trochilus</i>	1,652	46%
Goldcrest	<i>Regulus regulus</i>	1,103	31%
Spotted Flycatcher	<i>Muscicapa striata</i>	187	5%
Long-tailed Tit	<i>Aegithalos caudatus</i>	1,274	35%
Blue Tit	<i>Cyanistes caeruleus</i>	3,117	86%
Great Tit	<i>Parus major</i>	2,978	83%
Coal Tit	<i>Periparus ater</i>	1,003	28%
Willow Tit	<i>Poecile montana</i>	53	1%
Marsh Tit	<i>Poecile palustris</i>	171	5%
Nuthatch	<i>Sitta europaea</i>	656	18%
Treecreeper	<i>Certhia familiaris</i>	419	12%
Jay	<i>Garrulus glandarius</i>	1,018	28%
Magpie	<i>Pica pica</i>	2,514	70%
Jackdaw	<i>Corvus monedula</i>	2,256	63%
Rook	<i>Corvus frugilegus</i>	1,702	47%
Carriion Crow	<i>Corvus corone</i>	3,165	88%
Hooded Crow	<i>Corvus cornix</i>	182	5%
Raven	<i>Corvus corax</i>	420	12%
Starling	<i>Sturnus vulgaris</i>	2,303	64%
House Sparrow	<i>Passer domesticus</i>	2,082	58%
Tree Sparrow	<i>Passer montanus</i>	201	6%
Chaffinch	<i>Fringilla coelebs</i>	3,312	92%
Greenfinch	<i>Carduelis chloris</i>	2,492	69%
Goldfinch	<i>Carduelis carduelis</i>	2,150	60%
Siskin	<i>Carduelis spinus</i>	173	5%
Linnet	<i>Carduelis cannabina</i>	1,326	37%
Lesser Redpoll	<i>Carduelis cabaret</i>	159	4%
Common Crossbill	<i>Loxia curvirostra</i>	45	1%
Bullfinch	<i>Pyrrhula pyrrhula</i>	736	20%
Yellowhammer	<i>Emberiza citrinella</i>	1,502	42%
Reed Bunting	<i>Emberiza schoeniclus</i>	706	20%
Corn Bunting	<i>Emberiza calandra</i>	163	5%
[Indian Peafowl (Peacock)]	<i>Pavo cristatus</i>	41	1%

At the other end of the scale, Woodpigeon was recorded on the most squares (3,323 out of 3,604), closely followed by Chaffinch (3,312) and Blackbird (3,296). As in previous years, Woodpigeon was the most numerous species recorded, with 84,294 individuals counted across the UK, followed by Starling (49,781), Rook (43,465), Blackbird (41,677) and Chaffinch (37,746). Full details of the number of individuals counted, for all years, can be found on the BBS website.

On average, 31 species were recorded per square across the UK, but the highest count was 67 species, from a BBS square in Cheshire. The species richness in this case is unsurprising

Table 3 Species recorded on fewer than 40 squares across the UK in 2007

Species	Scientific name	Squares
Whooper Swan	<i>Cygnus cygnus</i>	4
Pink-footed Goose	<i>Anser brachyrhynchus</i>	5
White-fronted Goose	<i>Anser albifrons</i>	1
Greylag Goose (domestic)*	<i>Anser anser</i>	18
Snow Goose	<i>Anser caerulescens</i>	1
Barnacle Goose	<i>Branta leucopsis</i>	11
Brent Goose	<i>Branta bernicla</i>	6
Egyptian Goose (i)	<i>Alopochen aegyptiaca</i>	26
Mandarin Duck (i)	<i>Aix galericulata</i>	35
Wigeon	<i>Anas penelope</i>	13
Teal	<i>Anas crecca</i>	28
Mallard (domestic)*	<i>Anas platyrhynchos</i>	39
Pintail	<i>Anas acuta</i>	3
Shoveler	<i>Anas clypeata</i>	17
Pochard	<i>Aythya ferina</i>	24
Eider	<i>Somateria mollissima</i>	20
Common Scoter	<i>Melanitta nigra</i>	2
Goldeneye	<i>Bucephala clangula</i>	8
Red-breasted Merganser	<i>Mergus serrator</i>	13
Ruddy Duck (i)	<i>Oxyura jamaicensis</i>	14
Ptarmigan	<i>Lagopus muta</i>	4
Black Grouse	<i>Tetrao tetrix</i>	18
Quail	<i>Coturnix coturnix</i>	10
Red-throated Diver	<i>Gavia stellata</i>	10
Black-throated Diver	<i>Gavia arctica</i>	6
Great Northern Diver	<i>Gavia immer</i>	2
Black-necked Grebe	<i>Podiceps nigricollis</i>	1
Fulmar	<i>Fulmarus glacialis</i>	22
Gannet	<i>Morus bassanus</i>	17
Shag	<i>Phalacrocorax aristotelis</i>	16
White-tailed Eagle	<i>Haliaeetus albicilla</i>	1
Marsh Harrier	<i>Circus aeruginosus</i>	31
Hen Harrier	<i>Circus cyaneus</i>	15
Montagu’s Harrier	<i>Circus pygargus</i>	5
Goshawk	<i>Accipiter gentilis</i>	15
Golden Eagle	<i>Aquila chrysaetos</i>	5
Osprey	<i>Pandion haliaetus</i>	7
Merlin	<i>Falco columbarius</i>	21
Water Rail	<i>Rallus aquaticus</i>	8
Corncrake	<i>Crex crex</i>	2
Crane	<i>Grus grus</i>	2
Avocet	<i>Recurvirostra avosetta</i>	5
Stone-curlew	<i>Burhinus oedignemus</i>	3
Little Ringed Plover	<i>Charadrius dubius</i>	16
Ringed Plover	<i>Charadrius hiaticula</i>	35
Grey Plover	<i>Pluvialis squatarola</i>	1
Knot	<i>Calidris canutus</i>	1
Sanderling	<i>Calidris alba</i>	1
Little Stint	<i>Calidris minuta</i>	1
Purple Sandpiper	<i>Calidris maritima</i>	1
Dunlin	<i>Calidris alpina</i>	27
Woodcock	<i>Scolopax rusticola</i>	17
Black-tailed Godwit	<i>Limosa limosa</i>	6

(though fortunate for the observer) as the square is located on a nature reserve on the Dee Estuary.

Species richness varied across the country, with an average of 36 species recorded on squares in Norfolk, compared to 16 in the Western Isles and the Scottish Highlands. However, the value of the results does not depend on the number of species recorded, and we are particularly grateful to observers who survey species-poor, remote or urban areas, as it is just as important to know where there are few birds as where there are many. Remote upland squares, in particular, may contain important populations of a small number of specialist birds.

Species	Scientific name	Squares
Bar-tailed Godwit	<i>Limosa lapponica</i>	9
Whimbrel	<i>Numenius phaeopus</i>	31
Green Sandpiper	<i>Tringa ochropus</i>	5
Spotted Redshank	<i>Tringa erythropus</i>	1
Greenshank	<i>Tringa nebularia</i>	17
Wood Sandpiper	<i>Tringa glareola</i>	1
Turnstone	<i>Arenaria interpres</i>	6
Red-necked Phalarope	<i>Phalaropus lobatus</i>	1
Arctic Skua	<i>Stercorarius parasiticus</i>	6
Great Skua	<i>Stercorarius skua</i>	9
Kittiwake	<i>Rissa tridactyla</i>	4
Little Gull	<i>Hydrocoloeus minutus</i>	1
Mediterranean Gull	<i>Larus melanocephalus</i>	11
Iceland Gull	<i>Larus glaucoides</i>	1
Little Tern	<i>Sternula albifrons</i>	4
Black Tern	<i>Chlidonias niger</i>	1
Sandwich Tern	<i>Sterna sandvicensis</i>	11
Arctic Tern	<i>Sterna paradisaea</i>	10
Guillemot	<i>Uria aalge</i>	5
Razorbill	<i>Alca torda</i>	3
Black Guillemot	<i>Cepphus grylle</i>	3
Rock Dove	<i>Columba livia</i>	13
Short-eared Owl	<i>Asio flammeus</i>	12
Nightjar	<i>Caprimulgus europaeus</i>	3
Lesser Spotted Woodpecker	<i>Dendrocopos minor</i>	27
Woodlark	<i>Lullula arborea</i>	32
Rock Pipit	<i>Anthus petrosus</i>	23
Black Redstart	<i>Phoenicurus ochruros</i>	2
Ring Ouzel	<i>Turdus torquatus</i>	29
Fieldfare	<i>Turdus pilaris</i>	37
Redwing	<i>Turdus iliacus</i>	10
Cetti’s Warbler	<i>Cettia cetti</i>	35
Dartford Warbler	<i>Sylvia undata</i>	18
Firecrest	<i>Regulus ignicapilla</i>	8
Pied Flycatcher	<i>Ficedula hypoleuca</i>	35
Bearded Tit	<i>Panurus biarmicus</i>	2
Crested Tit	<i>Lophophanes cristatus</i>	3
Red-backed Shrike	<i>Lanius collurio</i>	2
Chough	<i>Pyrrhocorax pyrrhocorax</i>	13
Brambling	<i>Fringilla montifringilla</i>	4
Serin	<i>Serinus serinus</i>	1
Twite	<i>Carduelis flavirostris</i>	17
Scottish Crossbill	<i>Loxia scotica</i>	2
Hawfinch	<i>Coccothraustes coccothraustes</i>	2
Cirl Bunting	<i>Emberiza cirulus</i>	6
[Black Swan]	<i>Cygnus atratus</i>	3
[Swan Goose]	<i>Anser cygnoides</i>	1
[Bar-headed Goose]	<i>Anser indicus</i>	2
[Ruddy Shelduck (i)]	<i>Tadorna ferruginea</i>	2
[Wood Duck]	<i>Aix sponsa</i>	1
[Helmeted Guineafowl]	<i>Numida meleagris</i>	11
[Eurasian Eagle-Owl]	<i>Bubo bubo</i>	1

Conventions for **Tables 2 and 3**

Entirely non-native species with self-sustaining populations in the UK are followed by (i). Non-native species that are not thought to have self-sustaining populations in the UK (BOU category E) are shown in square brackets. Species marked with an asterisk are usually recognised as races or forms, rather than full species. Squares: number of squares on which the species was recorded, also shown in Table 2 as a percentage of the total number of squares surveyed.

United Kingdom

The purpose of the following sections is to present population trends for the UK's common and widespread birds, and to highlight interesting results. For a full, species-by-species discussion of these findings, and those of other surveys, please see 'Breeding Birds in the Wider Countryside: their conservation status 2007', available at www.bto.org/birdtrends.

The trends discussed here are for the period 1994–2007 unless otherwise stated. Trends are reported for species that were recorded on at least 40 squares per year, on average, during the entire survey period, as we cannot produce reliable trends for most species below this minimum sample size. However, we do report the UK trends for Hobby and Ring-necked Parakeet, although they were recorded on fewer than 40 squares on average during 1994–2007, because these species meet the criteria for reporting trends in England, where most of the populations are found.

Of the 104 species for which trends are reported, 27 declined significantly and 46 increased significantly during 1994–2007 (Table 4). Of the five species that show the greatest declines between 1994 and 2007 (Turtle Dove, Wood Warbler, Spotted Flycatcher, Pied Flycatcher and Willow Tit), four are woodland species and four are long-distance migrants. Spotted Flycatcher also declined significantly between 2006 and 2007. The decreases in farmland bird species remain evident, with Grey Partridge, Kestrel, Lapwing, Turtle Dove, Skylark, Yellow Wagtail, Starling, Linnet, Yellowhammer and Corn Bunting all showing significant declines between 1994 and 2007.

Of the six species of wader monitored by BBS, only Snipe increased significantly between 1994 and 2007. Oystercatcher, Lapwing and Curlew all decreased significantly, and during 2006–07 numbers of Golden Plover declined (though not significantly) after several years of increases.

In this report we are able to present population trends for Red Kite for the first time. The average sample size for this species has now reached 46 squares, due to population expansion after a successful reintroduction project. The population of the introduced Ring-necked Parakeet is also expanding rapidly, and these two species showed the greatest overall increases during 1994–2007. In addition, both species have increased since 2006. Birds that tend to make use of gardens, such as Dunnock, Robin, Blackbird, Song Thrush, Coal Tit, Blue Tit, Great Tit, Chaffinch, Greenfinch and Goldfinch, have all shown long-term increases, and Stonechat and Nuthatch also showed significant increases between 1994 and 2007, presumably due to range expansion.

Wren, Chiffchaff and Raven increased significantly during both 1994–2007 and 2006–07, though in all cases the 2006–07 increases follow significant declines in the previous year. Numbers of Siskin and Common Crossbill also increased significantly 2006–07 after declines in the previous year, but the opposite was the case for Sand Martin and Tree Sparrow, both of which showed significant declines after increases during 2005–06. Grasshopper Warbler continued the increases shown in recent years, and numbers have now risen significantly by 68% since 1994.

Gadwall, Goosander, Peregrine, Barn Owl and Nightingale were all recorded on an average of 30–39 squares over the entire survey period, and a future increase in BBS coverage or species range may enable us to produce reliable trends for these species. Gadwall and Barn Owl seem the most likely candidates for inclusion, as their populations appear to be increasing.

Sixteen widespread species monitored by the BBS are red-listed in 'Population Status of Birds in the UK' (Gregory et al. 2002) because their UK breeding populations declined by at least 50% between 1974 and 1999. Of these, 11 declined significantly since 1994, and three increased significantly. As in previous years, the declines include farmland specialists such as Grey Partridge, Turtle Dove, Skylark, Linnet, Yellowhammer and Corn Bunting. The red-listed species that have increased significantly are Song Thrush, Grasshopper Warbler and Reed Bunting.

The BBS monitors 31 species that are amber-listed in 'Population Status of Birds in the UK'. These species are amber-listed on one or more of the following criteria: historical population decline, decline in UK breeding populations, contraction of UK breeding range, the UK breeding population forming a large proportion of the European total, or unfavourable status in Europe. Of the 12 species amber-listed on the basis of moderate declines in the UK during 1974–99, seven decreased significantly between 1994 and 2007, and two (Grey Wagtail and Dunnock) increased significantly. Five species monitored by the BBS are amber-listed because their UK breeding population forms at least 20% of the European population, and of these, Oystercatcher and Curlew declined significantly between 1994 and 2007. Note that the designations of those species amber-listed due to unfavourable conservation status in Europe were based on the 'Species of European Conservation Concern' in the first version of 'Birds in Europe'. A revised list, together with the original, appears in the more recent version of 'Birds in Europe' (BirdLife International 2004).

Of the 47 red- or amber-listed species monitored by the BBS, 25 are UK Biodiversity Action Plan (UKBAP) priority species. Of these, 16 declined significantly and four increased significantly during 1994–2007. Species are listed as UKBAP priority species for reasons including international threat, moderate decline of internationally significant populations, and marked decline in the UK. The two UKBAP priority species that declined significantly during 2006–07 are the red-listed Spotted Flycatcher and Tree Sparrow.



Lift-off: the red-listed Reed Bunting has increased significantly since 1994

Photo by Jill Pakenham

Table 4 United Kingdom population trends during 2006–07 and 1994–2007

Species	Sample	06–07	94–07	LCL	UCL	Species	Sample	06–07	94–07	LCL	UCL
Mute Swan	212	-7	0	-13	16	Wren	2,111	13*	25*	22	29
Greylag Goose	131	6	220*	158	296	Dunnock UKBAP	1,769	0	25*	19	30
Canada Goose	395	-3	149*	121	180	Robin	2,038	3	21*	17	25
Shelduck	130	-24	-27*	-38	-14	Redstart	141	-5	23*	4	45
Mallard	1,113	6	27*	19	36	Whinchat	73	6	-26*	-41	-8
Tufted Duck	135	-12	67*	39	102	Stonechat	128	35	278*	200	377
Red Grouse UKBAP	105	17	-2	-21	20	Wheatear	271	1	13*	1	27
Red-legged Partridge	468	3	43*	29	59	Blackbird	2,129	4	24*	21	28
Grey Partridge UKBAP	225	-6	-39*	-48	-29	Song Thrush UKBAP	1,693	1	18*	12	23
Pheasant	1,522	2	40*	33	47	Mistle Thrush	1,078	1	-12*	-19	-5
Little Grebe	60	-28	21	-12	67	Grasshopper Warbler UKBAP	66	24	68*	26	123
Great Crested Grebe	63	-56*	18	-11	57	Sedge Warbler	266	9	8	-5	21
(Cormorant)	199	-2	4	-11	21	Reed Warbler	107	-10	26*	6	51
(Grey Heron)	589	5	24*	12	37	Blackcap	1,290	-2	62*	53	72
Red Kite	46	27	337*	202	531	Garden Warbler	401	7	-5	-15	6
Sparrowhawk	314	-13	-12	-24	1	Lesser Whitethroat	236	4	-12	-24	1
Buzzard	680	5	56*	43	70	Whitethroat	1,153	-4	31*	23	39
Kestrel	588	-5	-29*	-36	-22	Wood Warbler UKBAP	53	-6	-67*	-75	-56
Hobby	35	16	14	-20	63	Chiffchaff	1,185	35*	46*	38	55
Moorhen	586	-5	16*	5	27	Willow Warbler	1,268	9	1	-4	5
Coot	232	-18	32*	14	53	Goldcrest	677	9	50*	38	63
Oystercatcher	275	-7	-17*	-25	-9	Spotted Flycatcher UKBAP	197	-41*	-59*	-65	-51
Golden Plover	54	-17	1	-23	31	Pied Flycatcher	40	-13	-54*	-66	-36
Lapwing UKBAP	615	-5	-18*	-24	-11	Long-tailed Tit	778	7	8	-2	19
Snipe	133	19	38*	16	64	Blue Tit	1,995	-6	14*	10	18
Curlew UKBAP	449	3	-36*	-41	-31	Great Tit	1,861	0	55*	49	62
Common Sandpiper	60	-1	-18	-35	3	Coal Tit	661	13	19*	10	28
Redshank	76	9	-12	-29	10	Willow Tit UKBAP	54	-30	-77*	-84	-67
(Common Tern)	57	-29	-12	-35	18	Marsh Tit UKBAP	136	-2	-6	-25	17
Feral Pigeon	610	-1	-16*	-24	-8	Nuthatch	384	4	71*	52	93
Stock Dove	680	-3	-1	-10	9	Treecreeper	304	-11	14	-1	31
Woodpigeon	2,144	3	22*	17	26	Jay	634	-8	-7	-15	3
Collared Dove	1,178	-9	27*	20	34	Magpie	1,646	1	0	-4	5
Turtle Dove UKBAP	175	-13	-66*	-72	-58	Jackdaw	1,427	11	40*	32	48
Ring-necked Parakeet	37	26	459*	239	822	Rook	1,140	3	-3	-10	5
Cuckoo UKBAP	721	-10	-37*	-42	-31	Carrion Crow	2,019	-3	19*	13	25
Little Owl	96	-23	-26*	-43	-4	Hooded Crow	125	15	-14	-30	6
(Tawny Owl)	83	60	-9	-29	16	Raven	220	51*	134*	98	176
Swift	951	-20*	-41*	-46	-36	Starling UKBAP	1,624	3	-26*	-31	-22
Kingfisher	50	-18	2	-29	46	House Sparrow UKBAP	1,412	-5	-10*	-14	-6
Green Woodpecker	686	-8	31*	19	43	Tree Sparrow UKBAP	147	-44*	15	-6	40
Great Spotted Woodpecker	822	9	150*	129	173	Chaffinch	2,132	-2	14*	11	18
Skylark UKBAP	1,540	1	-13*	-17	-10	Greenfinch	1,591	-15*	27*	21	34
Sand Martin	111	-40*	25	0	56	Goldfinch	1,279	13	39*	30	49
Swallow	1,680	-9	25*	19	31	Siskin	121	50*	29*	7	55
House Martin	846	-8	9	0	18	Linnet UKBAP	1,103	-3	-27*	-32	-22
Tree Pipit UKBAP	123	9	-11	-26	7	Lesser Redpoll UKBAP	131	6	12	-9	37
Meadow Pipit	701	1	-16*	-20	-11	Common Crossbill	41	34	-37*	-56	-10
Yellow Wagtail UKBAP	153	-25	-47*	-56	-36	Bullfinch UKBAP	514	12	-18*	-26	-8
Grey Wagtail	193	9	26*	5	51	Yellowhammer UKBAP	1,082	-5	-19*	-23	-15
Pied Wagtail	1,132	1	15*	8	23	Reed Bunting UKBAP	413	-2	31*	19	44
Dipper	50	-18	-12	-37	24	Corn Bunting UKBAP	140	10	-36*	-46	-24

Trends are percentage changes, and are marked with an asterisk (*) where significant.
The sample is the mean number of squares on which the species was recorded each year over the survey period 1994–2007.
LCL and UCL are the lower and upper confidence limits for the 1994–2007 trend.
Red-listed and amber-listed species from 'Population Status of Birds in the UK' are shown in the relevant colour.
UK Biodiversity Action Plan priority species are marked with UKBAP.
Trends for species in brackets are reported with caveats (see page 2).

England

In total, 199 species were recorded on the 2,783 BBS squares covered in England in 2007. Woodpigeon, Blackbird and Carrion Crow were the most widespread species, all recorded on over 95% of squares.

Of the 96 species that were recorded on at least 30 squares on average in England during the survey period, 28 decreased significantly and 42 increased significantly between 1994 and 2007 (Table 5).

For the first time, we are able to calculate reliable trends for Nightingale and Whinchat in England, as both were found on 30 squares on average per year during the survey period. Both of these species declined during 1994–2007, probably due to a continuation of the range contractions identified prior to 1994 (Gibbons et al. 1993), so their inclusion in this report is due solely to the increased effort of BBS observers.

Those species that occur mainly in England, or with a widespread distribution in England, show broadly similar trends to those for the UK as a whole, although for some species the significant UK increases appear to be driven by the much larger increases in England. These include Buzzard, Redstart, Raven and Siskin, all of which are expanding their breeding ranges in England.

Despite significant UK declines, Oystercatcher and Lapwing both increased in England during 1994–2007. This increase was significant for Oystercatcher, perhaps due to colonisation of inland breeding sites. However, the English trend now appears to be following the national, as both declined in England during 2006–07.

Tree Pipit, Willow Warbler and Lesser Redpoll all declined significantly in England between 1994 and 2007, despite showing no significant change in the UK overall. The ranges of Tree Pipit and Lesser Redpoll have contracted markedly in England, while the causes of the decline of Willow Warbler in England are under investigation (see page 18).

Nine species were recorded on an average of 20–29 squares during the survey period, and an increase in survey coverage or species range may subsequently enable reliable trends to be calculated. These are Gadwall, Goosander, Red Kite, Common Sandpiper, Barn Owl, Lesser Spotted Woodpecker, Dipper, Grasshopper Warbler and Wood Warbler.

Table 5 Population trends in England during 2006–07 and 1994–2007

Species	Sample	06–07	94–07	LCL	UCL	Species	Sample	06–07	94–07	LCL	UCL
Mute Swan	182	-7	-17*	-28	-4	Wren	1,641	12*	12*	9	16
Greylag Goose	106	-6	141*	99	192	Duncock UKBAP	1,445	1	19*	13	24
Canada Goose	369	4	130*	104	160	Robin	1,607	2	26*	22	31
Shelduck	107	-35*	7	-10	28	Nightingale	30	-22	-60*	-73	-40
Mallard	932	6	36*	27	45	Redstart	76	-9	43*	14	80
Tufted Duck	117	10	49*	24	79	Whinchat	30	21	-25	-45	2
Red Grouse UKBAP	48	12	-17	-36	6	Stonechat	52	28	216*	121	351
Red-legged Partridge	458	2	35*	22	50	Wheatear	136	39	0	-15	18
Grey Partridge UKBAP	200	-9	-36*	-46	-25	Blackbird	1,696	4	21*	18	24
Pheasant	1,284	0	47*	40	54	Song Thrush UKBAP	1,317	1	20*	14	26
Little Grebe	49	-33	14	-21	64	Mistle Thrush	863	5	-23*	-29	-16
Great Crested Grebe	58	11	5	-20	37	Sedge Warbler	170	-14	-11	-23	4
(Cormorant)	164	-15	8	-9	29	Reed Warbler	103	-10	23*	3	48
(Grey Heron)	481	4	12	0	24	Blackcap	1,117	-4	51*	42	60
Sparrowhawk	260	-16	-23*	-34	-10	Garden Warbler	328	-2	-11	-22	1
Buzzard	412	-2	106*	84	130	Lesser Whitethroat	225	-3	-16*	-27	-3
Kestrel	509	-7	-15*	-24	-6	Whitethroat	997	-7	28*	20	36
Hobby	33	13	13	-21	63	Chiffchaff	1,001	32*	44*	36	52
Moorhen	538	-6	9	-1	19	Willow Warbler	864	1	-27*	-31	-22
Coot	210	-21	31*	13	53	Goldcrest	476	15	55*	41	72
Oystercatcher	139	-8	47*	26	72	Spotted Flycatcher UKBAP	142	-24	-53*	-62	-43
Lapwing UKBAP	505	-10	5	-4	16	Long-tailed Tit	686	13	2	-7	13
Snipe	63	1	2	-21	31	Blue Tit	1,619	-7	10*	6	14
Curlew UKBAP	269	3	-20*	-27	-12	Great Tit	1,511	-5	43*	37	50
Redshank	51	-15	-29*	-47	-3	Coal Tit	437	-3	14*	3	26
(Common Tern)	51	-35	39*	1	93	Willow Tit UKBAP	47	-33	-78*	-85	-68
Feral Pigeon	510	0	-16*	-24	-8	Marsh Tit UKBAP	122	1	-12	-30	9
Stock Dove	627	-4	-4	-14	6	Nuthatch	321	3	68*	48	90
Woodpigeon	1,714	0	27*	22	33	Treecreeper	226	-18	-12	-25	3
Collared Dove	1,040	-7	32*	25	39	Jay	550	-4	-13*	-21	-4
Turtle Dove UKBAP	172	-13	-66*	-72	-58	Magpie	1,374	1	-2	-6	3
Ring-necked Parakeet	37	26	459*	239	823	Jackdaw	1,130	6	49*	40	59
Cuckoo UKBAP	578	-10	-56*	-60	-52	Rook	898	-4	3	-6	12
Little Owl	93	-26	-19	-38	5	Carrion Crow	1,656	-2	27*	20	33
(Tawny Owl)	71	49	-3	-26	28	Raven	77	32	267*	178	384
Swift	820	-9	-41*	-46	-36	Starling UKBAP	1,332	7	-35*	-39	-31
Kingfisher	44	-18	-1	-31	42	House Sparrow UKBAP	1,168	-6	-18*	-22	-15
Green Woodpecker	634	-11	38*	25	51	Tree Sparrow UKBAP	121	-24	1	-18	24
Great Spotted Woodpecker	729	3	133*	114	155	Chaffinch	1,655	-3	18*	15	22
Skylark UKBAP	1,214	-4	-21*	-24	-17	Greenfinch	1,339	-15*	27*	21	34
Sand Martin	74	-47*	15	-10	46	Goldfinch	1,050	4	23*	14	32
Swallow	1,290	-9	25*	19	33	Siskin	38	92	155*	84	252
House Martin	671	-5	-3	-11	6	Linnet UKBAP	894	-13	-41*	-46	-36
Tree Pipit UKBAP	66	-2	-38*	-52	-21	Lesser Redpoll UKBAP	53	-34	-40*	-57	-15
Meadow Pipit	360	9	-17*	-22	-11	Bullfinch UKBAP	398	10	-24*	-32	-14
Yellow Wagtail UKBAP	150	-25	-46*	-55	-35	Yellowhammer UKBAP	945	-9	-27*	-31	-23
Grey Wagtail	126	10	48*	19	83	Reed Bunting UKBAP	309	1	19*	7	33
Pied Wagtail	861	2	17*	8	26	Corn Bunting UKBAP	133	3	-34*	-45	-22

Trends are percentage changes, and are marked with an asterisk (*) where significant. The sample is the mean number of squares on which the species was recorded each year over the survey period 1994–2007. LCL and UCL are the lower and upper confidence limits for the 1994–2007 trend. Red-listed and amber-listed species from 'Population Status of Birds in the UK' are shown in the relevant colour. UK Biodiversity Action Plan priority species are marked with UKBAP. Trends for species in brackets are reported with caveats (see page 2).

Declining in England but increasing in Scotland: what is driving changes in Willow Warbler populations?



Photo by Jill Pakenham

Scotland

In total, 167 species were recorded on the 409 BBS squares surveyed in Scotland in 2007, including the first Scottish BBS record of Little Gull. The most widespread species were Wren and Chaffinch, both found on 75% of squares, followed by Skylark (68%) and Woodpigeon (66%). Nuthatch was recorded on BBS squares for the fourth consecutive year, reflecting the spread of this species into Scotland. A number of late winter visitors and passage migrants, some of which occasionally breed in Scotland, were also noted. These included Pink-footed Goose, White-fronted Goose, Barnacle Goose, Brent Goose, Sanderling, Purple Sandpiper, Turnstone, Fieldfare, Redwing and Brambling.

Due to the increase in survey coverage in 2007, we are able to calculate trends for 57 species in Scotland, three more than in 2006. The new species are Stonechat, Chiffchaff and Treecreeper. The latter two are now found on an average of 30 squares over the survey period, while Stonechat has reached an average of 32 squares, having increased in Scotland by 43% since 2006 and 254% since 1994. Of the 57 species, eight decreased significantly and 20 increased significantly between 1994 and 2007 (Table 6). The trends discussed here are for the period 1994–2007 unless otherwise stated.

Many species showed broadly similar trends in Scotland to the UK as a whole, although for Wren, Blackcap, Whitethroat, Chiffchaff and Goldfinch, the significant UK increases appear driven by the much larger increases in Scotland. Cuckoo, House Martin, Treecreeper and House Sparrow all increased significantly in Scotland, despite showing either no significant change, or significant declines, in the rest of the UK. The red-listed Bullfinch showed a non-significant increase of 46% in Scotland, despite significant declines overall. The farmland species Skylark, Starling, Linnet and Yellowhammer were among those that appear stable in Scotland, despite overall significant declines, suggesting that they are not subject to such intense land-management pressures as further south. Conversely, Kestrel and Lapwing showed much larger declines than those seen in the UK as a whole. No species showed significant changes between 2006 and 2007.

Eleven species were recorded on an average of 20–29 squares over the survey period, and an increase in survey coverage or species range may enable trends to be calculated for these in the future. These are Grey Partridge, Redshank, Stock Dove, Great Spotted Woodpecker, Sand Martin, Tree Pipit, Grey Wagtail, Dipper, Whinchat, Spotted Flycatcher and Long-tailed Tit. Of these, Great Spotted Woodpecker appeared on an average of 29 squares, and is increasing in the UK overall, so it appears to be a likely future addition to the Scottish trends.

Lapwings have declined by 38% in Scotland – much more than in the rest of the UK



Photo by Jill Pakenham

Table 6 Population trends in Scotland during 2006–07 and 1994–2007

Species	Sample	06–07	94–07	LCL	UCL	Species	Sample	06–07	94–07	LCL	UCL
Mallard	92	15	7	-17	38	Mistle Thrush	66	-13	39	0	94
Red Grouse <small>UKBAP</small>	52	18	6	-23	46	Sedge Warbler	49	19	28	-6	73
Pheasant	115	6	-6	-22	14	Blackcap	38	27	146*	61	278
(Grey Heron)	47	-3	74*	15	165	Whitethroat	66	-1	85*	36	152
Buzzard	115	14	36*	7	72	Chiffchaff	30	38	217*	87	437
Kestrel	41	16	-56*	-69	-36	Willow Warbler	182	8	31*	15	50
Oystercatcher	122	-6	-27*	-37	-15	Goldcrest	78	-6	86*	42	144
Golden Plover	42	-17	-5	-30	28	Blue Tit	138	-8	16	-2	37
Lapwing <small>UKBAP</small>	86	9	-38*	-49	-24	Great Tit	123	9	87*	53	128
Snipe	54	30	58*	19	111	Coal Tit	104	16	14	-7	39
Curlew <small>UKBAP</small>	120	8	-48*	-56	-38	Treecreeper	30	-1	60*	1	153
Common Sandpiper	32	4	-14	-40	23	Magpie	39	-16	14	-18	59
Feral Pigeon	55	-8	-31*	-51	-2	Jackdaw	100	27	23	-2	54
Woodpigeon	174	11	-11	-23	2	Rook	101	17	-12	-34	16
Collared Dove	42	-28	-25	-47	6	Carrion Crow	165	8	6	-12	28
Cuckoo <small>UKBAP</small>	67	-6	39*	5	85	Hooded Crow	51	4	-42*	-57	-23
Swift	45	-19	-53*	-67	-32	Raven	40	75	155*	73	277
Skylark <small>UKBAP</small>	193	10	2	-9	13	Starling <small>UKBAP</small>	134	-14	1	-20	27
Swallow	148	-8	5	-11	23	House Sparrow <small>UKBAP</small>	80	3	30*	5	60
House Martin	52	6	152*	62	292	Chaffinch	206	-2	10	0	21
Meadow Pipit	197	1	-23*	-31	-14	Greenfinch	93	-12	10	-14	41
Pied Wagtail	122	6	16	-5	42	Goldfinch	72	28	91*	35	169
Wren	196	19	88*	64	114	Siskin	55	39	0	-27	37
Dunnock <small>UKBAP</small>	115	4	40*	12	75	Linnet <small>UKBAP</small>	83	38	26	-3	62
Robin	166	2	7	-7	23	Lesser Redpoll <small>UKBAP</small>	36	54	3	-30	52
Stonechat	32	43	254*	129	448	Bullfinch <small>UKBAP</small>	32	13	46	-13	145
Wheatear	75	-2	24	-3	57	Yellowhammer <small>UKBAP</small>	92	4	15	-5	38
Blackbird	166	6	25*	11	40	Reed Bunting <small>UKBAP</small>	49	-8	56*	14	113
Song Thrush <small>UKBAP</small>	148	2	12	-6	34						

Trends are percentage changes, and are marked with an asterisk (*) where significant. The sample is the mean number of squares on which the species was recorded each year over the survey period 1994–2007. LCL and UCL are the lower and upper confidence limits for the 1994–2007 trend. Red-listed and amber-listed species from ‘Population Status of Birds in the UK’ are shown in the relevant colour. UK Biodiversity Action Plan priority species are marked with UKBAP. Trends for species in brackets are reported with caveats (see page 2).

Wales

In total, 134 species were recorded on the 263 BBS squares surveyed in Wales in 2007. Wren, Blackbird, Carrion Crow and Chaffinch were the most widespread species, all recorded on over 90% of squares. Of the 53 species that were recorded on at least 30 squares per year, on average, in Wales during 1994–2007, 11 declined significantly and 22 increased significantly (Table 7). For the first time, we are able to calculate the population trend for Feral Pigeon in Wales. This species has increased by 69% in Wales since 1994, while decreasing by 16% in the UK as a whole. The trends discussed here are for the period 1994–2007 unless otherwise stated.

Stonechat showed the largest increase of any species in Wales, with a 338% increase since 1994, and a 13% increase since 2006. House Sparrow also showed a significant increase in Wales, in comparison to the significant UK decline, although the Welsh trend has levelled off in recent years, with a small, non-significant decline during 2006–07.

Northern Ireland

In 2007, we were able to produce population trends for Pheasant and Linnet for the first time in Northern Ireland, as each was found on an average of 30 squares per year during 1994–2007. This brings the number of species monitored in the Province to 28, of which 17 have increased significantly since 1994, whilst none declined significantly (Table 8). Because of the relatively small number of squares surveyed in Northern Ireland, we can produce trends only for the most widespread and numerous species, and therefore many of the species that are declining in the UK overall cannot be monitored by the BBS in Northern Ireland. Only Skylark, Mistle Thrush

The woodland species Long-tailed Tit and Treecreeper showed significant increases in Wales despite no significant changes overall, but other woodland birds such as Tree Pipit, Redstart, Willow Warbler, Goldcrest, Coal Tit and Chaffinch fared less well in Wales than in the rest of the UK. Buzzard and Raven showed no significant change in Wales, indicating that their UK increases are due to range expansion, rather than population increases in their Welsh strongholds. The farmland birds Starling and Yellowhammer showed even greater declines in Wales than in the rest of the UK, though neither showed a significant change since 2006.

Twelve species were recorded on an average of 20–29 squares during the survey period. These are Canada Goose, Sparrowhawk, Kestrel, Moorhen, Stock Dove, Grey Wagtail, Sedge Warbler, Wood Warbler, Spotted Flycatcher, Pied Flycatcher, Siskin and Reed Bunting. None of these species appear to be increasing in numbers, but increased survey coverage may enable us to calculate Welsh trends for these species in the future.

and House Sparrow have shown declines between 1994 and 2007, and these are not statistically significant. House Martin numbers have declined by 33% since 2006, and as a result, the increase since 1994 is no longer significant.

Among the greatest significant increases are those shown by typical garden birds, including Dunnock, Great Tit, Greenfinch and Goldfinch. The red-listed Starling, decreasing elsewhere in the UK, increased by 41% in Northern Ireland between 2006 and 2007, and has shown a significant 89% increase since 1994.

Twelve species were found on an average of 20–29 squares during the survey period, and an increase in coverage or species range may enable us to produce trends for these species in the future. These are Mallard, Buzzard, Curlew, Collared Dove, Cuckoo, Sedge Warbler, Blackcap, Chiffchaff, Raven, Lesser Redpoll, Bullfinch and Reed Bunting.

Isle of Man and the Channel Islands

Four BBS squares were surveyed on the Isle of Man in 2007, and 47 species were recorded, including the first BBS records for Fieldfare on the Isle of Man (during an early April visit). BBS coverage in the Channel Islands was again encouraging, with 68 species recorded on the 16 squares covered (13 squares on Jersey, two on Guernsey and one on Alderney). Cetti's Warbler and Lesser Whitethroat were recorded on BBS squares in the Channel Islands for the first time.

Greenfinches, along with several other typical garden birds, have increased significantly in Northern Ireland

Table 7 Population trends in Wales during 2006–07 and 1994–2007

Species	Sample	06–07	94–07	LCL	UCL	Species	Sample	06–07	94–07	LCL	UCL
Mallard	61	-33	-15	-37	14	Blackcap	107	9	87*	53	128
Pheasant	83	8	55*	27	89	Garden Warbler	53	3	-25*	-43	-1
(Grey Heron)	41	42	22	-14	74	Whitethroat	73	21	10	-11	37
Buzzard	132	12	9	-10	31	Chiffchaff	121	42*	42*	21	67
Curlew UKBAP	37	18	-33*	-53	-6	Willow Warbler	150	5	-20*	-29	-9
Feral Pigeon	30	-14	69*	8	164	Goldcrest	79	14	-33*	-46	-16
Woodpigeon	173	9	35*	20	52	Long-tailed Tit	54	22	58*	7	133
Collared Dove	63	-11	18	-10	54	Blue Tit	163	-3	29*	14	46
Cuckoo UKBAP	56	-26	-52*	-65	-33	Great Tit	156	15	80*	55	108
Swift	63	-23	-47*	-62	-25	Coal Tit	66	18	-16	-34	7
Green Woodpecker	45	33	48*	3	112	Nuthatch	63	19	76*	30	138
Great Spotted Woodpecker	62	66	196*	118	302	Treecreeper	39	18	60*	6	142
Skylark UKBAP	98	-6	-11	-23	2	Jay	64	-35	-14	-38	19
Swallow	157	-8	64*	38	94	Magpie	151	2	-7	-21	9
House Martin	83	-34	32	-2	78	Jackdaw	129	12	36*	9	69
Tree Pipit UKBAP	31	-8	-35*	-56	-3	Rook	74	6	-15	-38	17
Meadow Pipit	82	-11	-10	-22	4	Carrion Crow	187	-22	1	-13	18
Pied Wagtail	109	-7	4	-17	29	Raven	82	20	34*	1	77
Wren	183	11	12*	2	23	Starling UKBAP	81	-2	-53*	-64	-38
Dunnock UKBAP	138	2	38*	18	62	House Sparrow UKBAP	111	-8	93*	61	131
Robin	178	-5	7	-3	18	Chaffinch	183	-6	-13*	-21	-3
Redstart	54	-1	-4	-24	21	Greenfinch	103	-14	11	-12	38
Stonechat	33	13	338*	161	634	Goldfinch	113	40	79*	42	125
Wheatear	49	-26	-19	-41	10	Linnet UKBAP	88	-9	-12	-33	17
Blackbird	181	4	47*	34	60	Bullfinch UKBAP	59	19	-30*	-48	-6
Song Thrush UKBAP	154	-4	24*	8	43	Yellowhammer UKBAP	37	2	-41*	-56	-22
Mistle Thrush	94	6	6	-18	37						

Table 8 Population trends in Northern Ireland during 2006–07 and 1994–2007

Species	Sample	06–07	94–07	LCL	UCL	Species	Sample	06–07	94–07	LCL	UCL
Pheasant	30	15	237*	60	609	Goldcrest	38	36	175*	66	357
Woodpigeon	71	7	57*	20	106	Blue Tit	66	17	100*	48	169
Skylark UKBAP	32	-14	-26	-46	3	Great Tit	59	32	243*	144	382
Swallow	73	-15	29	-3	72	Coal Tit	52	63	182*	75	356
House Martin	34	-33	33	-24	132	Magpie	71	8	27	0	61
Meadow Pipit	58	-3	62*	27	107	Jackdaw	64	27	19	-10	58
Pied Wagtail	37	-17	35	-21	130	Rook	64	25	14	-20	63
Wren	79	11	107*	66	160	Hooded Crow	69	39	136*	67	234
Dunnock UKBAP	60	-21	208*	104	365	Starling UKBAP	68	41	89*	28	179
Robin	75	15	52*	22	88	House Sparrow UKBAP	43	-6	-23	-46	10
Blackbird	74	4	74*	41	114	Chaffinch	77	19	79*	41	126
Song Thrush UKBAP	65	0	29	-5	76	Greenfinch	45	2	226*	94	448
Mistle Thrush	52	1	-14	-43	30	Goldfinch	34	62	199*	90	370
Willow Warbler	68	27	112*	59	181	Linnet UKBAP	30	-14	17	-30	95

Trends are percentage changes, and are marked with an asterisk (*) where significant. The sample is the mean number of squares on which the species was recorded each year over the survey period 1994–2007. LCL and UCL are the lower and upper confidence limits for the 1994–2007 trend. Red-listed and amber-listed species from 'Population Status of Birds in the UK' are shown in the relevant colour. UK Biodiversity Action Plan priority species are marked with UKBAP. Trends for species in brackets are reported with caveats (see page 2).



English Government Office Regions

As the number of BBS squares covered in England increases, we are able to produce separate trends in each of the English Government Office Regions for many species. Because climate, agriculture and habitats vary throughout England, major regional differences in population trends could lead us to possible explanations for any changes. Coverage varies considerably from one region to another, with the number of squares surveyed dependent on the number of BBS observers available in the area. We only report regional trends for species found on an average of at least 30 squares per year (in that region) during the survey period, as our research has shown that this is the minimum sample size needed to produce reliable trends. All trends discussed here are for the period 1994–2007 unless otherwise stated.

The number of squares covered in each region largely determines the number of species monitored, from 21 species in London to 64 in both the East of England and the South East. Due to increased coverage in 2007, we were able to report trends for new species in several regions, including Bullfinch in the North West and the East Midlands, Coal Tit in the North East, Greylag Goose in the East of England (the first time this species has been monitored at this level), Sedge Warbler in the South East, Cormorant and Spotted Flycatcher in the South West and Blackcap and Goldfinch in London. In total, 73 species are monitored in at least one region, and 48 are monitored in at least five regions (Table 9).



Photo by Dave Leech

Bleak future: the prospects of young Cuckoos, like this one, are poor in most regions of England

Of the species monitored in at least five regions, most showed broadly similar trends throughout the country, including significant increases in all regions for Canada Goose, Blackcap, Chiffchaff and Goldcrest, as well as for the typical garden species Great Spotted Woodpecker, Robin and Great Tit. Cuckoo, Meadow Pipit, Linnet and Yellowhammer declined in all regions for which we were able to produce trends, though only for Cuckoo were all the declines significant.

A number of species, however, showed different patterns in different parts of England. Since 1994, Greenfinch numbers have declined significantly in the South East, and Blackbird numbers have decreased significantly in London, despite both species showing mostly significant increases elsewhere in the country. Mistle Thrush and Willow Warbler both increased significantly in the North West, although declining elsewhere in England. Other species that showed significant increases in some areas and significant declines in others include Red-legged Partridge, Grey Heron, Lapwing, Stock Dove, Skylark, Wren, Song Thrush, Long-tailed Tit, Magpie, Rook, House Sparrow and Bullfinch.

Government Office Region	Counties
North West	Cheshire, Cumbria, Lancashire, Greater Manchester, Merseyside
North East	Cleveland, County Durham, Northumberland
Yorkshire	East Yorkshire, North Lincolnshire, North Yorkshire, South Yorkshire, West Yorkshire
East Midlands	Derbyshire, Northamptonshire, Leicestershire & Rutland, Lincolnshire, Nottinghamshire
East of England	Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk, Suffolk
West Midlands	Birmingham, Herefordshire, Shropshire, Staffordshire, Warwickshire, Worcestershire
South East	Berkshire, Buckinghamshire, Hampshire, Isle of Wight, Kent, Oxfordshire, Surrey, Sussex
South West	Avon, Cornwall, Devon, Dorset, Gloucestershire, Somerset, Wiltshire
London	Greater London

Table 9 Population trends in English Government Office Regions during 1994–2007

Species	North West	North East	Yorkshire	East Midlands	East of England	West Midlands	South East	South West	London
Mute Swan					-1 38		-36* 46		
Greylag Goose					-6 30				
Canada Goose	331* 54			145* 33	57* 49	29 54	61* 94	204* 39	
Shelduck					50* 34				
Mallard	38* 134		8 72	8 85	11 168	76* 95	37* 189	84* 131	-13 35
Red-legged Partridge			74* 38	-29* 67	-1 164	113* 32	121* 97	103* 42	
Grey Partridge UKBAP				-43* 30	-31* 43		-64* 35		
Pheasant	140* 108	64* 48	79* 98	39* 119	8 243	53* 117	47* 318	74* 225	
(Cormorant)					33 42		53 35	-11 30	
(Grey Heron)	59* 72			13 45	-24* 75	4 51	2 103	11 71	
Sparrowhawk					-38* 42		-1 61	-36* 44	
Buzzard	132* 41					144* 69	672* 76	16 178	
Kestrel	9 61		-51* 43	-30 50	-9 97	-6 38	-33* 117	-32* 71	
Moorhen	5 66		69* 34	-4 51	5 115	-2 56	-1 126	-2 59	
Coot					20 35		4 52		
Oystercatcher	12 46								
Lapwing UKBAP	-19* 102	15 34	102* 78	160* 56	13 68	-20 36	-18 101		
Curlew UKBAP	-37* 79	-32* 34	-31* 73			-64* 30			
Feral Pigeon	-47* 68		-17 50	-27 45	-12 70	-28 40	-8 97	11 63	-11 59
Stock Dove	79* 42		54* 38	-39* 61	-21* 123	17 72	-2 163	5 105	
Woodpigeon	37* 181	21 60	86* 121	-8 156	30* 283	30* 156	18* 398	42* 293	93* 66
Collared Dove	51* 111		-13 62	49* 93	116* 187	-13 107	32* 251	23* 164	57* 43
Turtle Dove UKBAP					-69* 82		-61* 57		
Cuckoo UKBAP	-45* 36		-46* 39	-57* 56	-57* 119	-53* 60	-55* 166	-69* 84	
Swift	-44* 101		-40* 66	-6 75	-33* 140	3 72	-55* 157	-51* 131	-26 51
Green Woodpecker					149* 135	-13 52	32* 250	2 112	
Great Spotted Woodpecker	179* 66			124* 40	101* 120	153* 80	122* 231	148* 118	
Skylark UKBAP	-16* 109	-29* 50	39* 104	-29* 129	-29* 245	-24* 105	-25* 271	-18* 191	
Swallow	30* 166	46* 53	58* 113	3 118	-11 197	16 124	-3 261	61* 245	
House Martin	27 90		10 53	-35* 48	-11 96	4 73	-37* 140	3 133	
Meadow Pipit	-25* 71	-6 38	-41* 70	-24 37	-53* 41		-21 45	-17 42	
Yellow Wagtail UKBAP				-78* 34	-40* 47				
Pied Wagtail	2 113	-4 36	9 78	-15 82	36* 140	66* 79	9 179	8 135	
Wren	70* 178	31* 55	91* 123	41* 147	7 261	8 150	-12* 379	-3 287	36* 60
Dunnoek UKBAP	30* 148	40* 41	17 95	12 134	23* 231	46* 141	1 349	20* 259	20 48
Robin	46* 170	48* 51	90* 106	16* 142	33* 256	40* 154	10* 383	15* 282	74* 62
Wheatear	-35* 39								
Blackbird	56* 180	48* 52	69* 120	34* 153	5 276	32* 157	-2 398	20* 294	-26* 66
Song Thrush UKBAP	116* 134	15 45	23 79	10 103	-19* 201	72* 126	-11* 346	29* 240	-21 42
Mistle Thrush	41* 109	1 32	-21 64	-4 75	-49* 137	-21 80	-39* 218	-31* 119	
Sedge Warbler					-16 44		23 30		
Reed Warbler					6 38				
Blackcap	158* 89		87* 57	85* 85	32* 197	60* 109	41* 302	45* 217	55* 31
Garden Warbler					-23 56	-12 42	-8 87	66* 58	
Lesser Whitethroat					15 62		-31* 49	-33* 35	
Whitethroat	20 73		-4 59	17 107	16* 213	13 88	62* 241	35* 170	
Chiffchaff	144* 69		80* 40	240* 58	62* 157	79* 110	16* 281	26* 238	
Willow Warbler	30* 126	-17 51	3 87	-6 82	-58* 123	-41* 87	-64* 151	-49* 146	
Goldcrest	141* 34				55* 62	135* 36	57* 158	32* 114	
Spotted Flycatcher UKBAP							-71* 32	-36 30	
Long-tailed Tit	37 66		3 33	55* 58	27 119	2 72	-26* 190	-16 112	
Blue Tit	17* 173	-5 47	43* 110	34* 142	21* 260	1 154	8 389	-4 281	45* 65
Great Tit	58* 157	55* 41	200* 93	94* 128	24* 243	28* 148	28* 376	47* 266	130* 59
Coal Tit	15 50	49 30			3 51	42 39	-7 120	8 84	
Marsh Tit UKBAP							-13 46		
Nuthatch						128* 37	30* 134	50* 68	
Treecreeper							-12 74	-22 44	
Jay	22 56				25 91	-47* 51	-23* 183	-12 91	10 32
Magpie	-9 159		-5 77	3 113	40* 207	-19* 140	4 341	-7 247	48* 64
Jackdaw	100* 109	17 44	225* 82	96* 83	96* 179	36* 116	45* 284	15 224	
Rook	-55* 75	4 38	-44* 81	77* 75	46* 160	20 76	-1 201	14 188	
Carriion Crow	58* 187	19 59	158* 125	18* 142	73* 256	12 154	11 381	4 286	73* 66
Raven								276* 40	
Starling UKBAP	-40* 159	-42* 45	-30* 100	13 118	-34* 223	-34* 125	-48* 307	-56* 190	-34* 65
House Sparrow UKBAP	-7 136		-6 76	46* 100	-33* 189	1 125	-42* 260	-3 194	-68* 59
Chaffinch	24* 178	35* 58	50* 121	39* 150	46* 274	-5 154	13* 388	1 292	125* 39
Greenfinch	58* 134	18 36	57* 84	34* 118	54* 227	16 125	-10* 325	30* 242	139* 49
Goldfinch	88* 123	73* 35	108* 76	12 87	-12 163	63* 93	-7 240	11 203	96* 31
Linnet UKBAP	-12 85	-24 37	-25* 75	-66* 97	-44* 157	-42* 69	-45* 205	-40* 158	
Bullfinch UKBAP	-32 30			82* 31	-42* 55	-34* 45	-39* 120	-26* 89	
Yellowhammer UKBAP	-29* 55	-34* 34	-10 67	-13* 115	-24* 198	-43* 102	-38* 223	-14* 148	
Reed Bunting UKBAP	37* 51			-31* 44	29* 70		-28* 52		
Corn Bunting UKBAP					-41* 40				

This table shows trends (in bold) and sample sizes (normal font). Trends are percentage changes, and are marked with an asterisk (*) where significant. The sample is the mean number of squares occupied each year over the survey period 1994–2007. Red-listed and amber-listed species from ‘Population Status of Birds in the UK’ are in the relevant colour. UK Biodiversity Action Plan priority species are marked with UKBAP. Trends for species in brackets are reported with caveats (see page 2).

Mammal monitoring

Table 10 Common mammal species in 2007

Species	Scientific name	Squares recorded	Squares seen	Individuals
Hedgehog	<i>Erinaceus europaeus</i>	207	24	26
Mole	<i>Talpa europaea</i>	723	4	4
Rabbit	<i>Oryctolagus cuniculus</i>	2,026	1,801	18,495
Brown Hare	<i>Lepus europaeus</i>	956	865	3,064
Grey Squirrel	<i>Sciurus carolinensis</i>	1,262	1,107	2,364
Common Rat	<i>Rattus norvegicus</i>	234	46	64
Fox	<i>Vulpes vulpes</i>	846	351	333
Stoat	<i>Mustela erminea</i>	167	52	58
Weasel	<i>Mustela nivalis</i>	105	21	22
Badger	<i>Meles meles</i>	440	13	18
Domestic Cat	<i>Felis catus</i>	532	400	568
Red Deer	<i>Cervus elaphus</i>	133	90	770
Fallow Deer	<i>Dama dama</i>	136	89	885
Roe Deer	<i>Capreolus capreolus</i>	642	473	1,116
Muntjac	<i>Muntiacus reevesi</i>	194	123	162

Squares recorded: number of squares on which the species was recorded, including counts, field signs, dead animals and local knowledge.
Squares seen: number of squares on which the species was seen and counted during bird-recording visits. Individuals: total number of individuals counted

Table 11 All other mammal species in 2007

Species	Scientific name	Squares recorded
Common Shrew	<i>Sorex araneus</i>	41
Pygmy Shrew	<i>Sorex minutus</i>	5
Water Shrew	<i>Neomys fodiens</i>	3
Lesser White-toothed Shrew	<i>Crocidura suaveolens</i>	1
Greater Horseshoe Bat	<i>Rhinolophus ferrumequinum</i>	1
Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	1
Daubenton's Bat	<i>Myotis daubentonii</i>	1
Noctule	<i>Nyctalus noctula</i>	2
Pipistrelle Bat sp.	<i>Pipistrellus pipistrellus/pygmaeus</i>	15
Brown Long-eared Bat	<i>Plecotus auritus</i>	2
Mountain/Irish Hare	<i>Lepus timidus</i>	78
Red Squirrel	<i>Sciurus vulgaris</i>	54
Bank Vole	<i>Clethrionomys glareolus</i>	11
Short-tailed Vole	<i>Microtus agrestis</i>	18
Water Vole	<i>Arvicola terrestris</i>	9
Wood Mouse	<i>Apodemus sylvaticus</i>	34
Yellow-necked Mouse	<i>Apodemus flavicollis</i>	2
Harvest Mouse	<i>Micromys minutus</i>	4
House Mouse	<i>Mus domesticus</i>	10
Common Dormouse	<i>Muscardinus avellanarius</i>	1
Harbour Porpoise	<i>Phocoena phocoena</i>	1
Pine Marten	<i>Martes martes</i>	5
Polecat	<i>Mustela putorius</i>	3
Feral Ferret	<i>Mustela furo</i>	1
Mink	<i>Mustela vison</i>	26
Otter	<i>Lutra lutra</i>	34
Wildcat	<i>Felis silvestris</i>	3
Common Seal	<i>Phoca vitulina</i>	4
Grey Seal	<i>Halichoerus grypus</i>	4
Wild Boar	<i>Sus scrofa</i>	2
Sika Deer	<i>Cervus nippon</i>	25
Chinese Water Deer	<i>Hydropotes inermis</i>	6
Feral Goat	<i>Capra</i>	5

In 2007, mammal records were received from 2,826 squares, 78% of the total surveyed. Table 10 shows the 15 mammal species that were recorded on over 100 squares in 2007. For easily detectable diurnal species, such as Brown Hare, Rabbit, Grey Squirrel and some deer, the vast majority of records were of individuals seen and counted during the two BBS visits. However, a large proportion of the records for other mammals were based on field signs, dead animals, and local knowledge. These include those for mainly nocturnal or crepuscular species, such as Red Fox, Hedgehog, Mole, Badger, Stoat and Weasel. In addition to those listed in Table 10, a further 33 species were recorded during BBS visits in 2007, and these are listed in Table 11.

The most species-rich square was in Derbyshire, in which 15 mammal species were recorded, including counts, local knowledge and field signs. Live mammals were seen and counted during at least one bird-recording visit on 2,555 squares (90% of the mammal returns). On 143 squares (5%) the only mammal records were from extra visits, field signs, dead animals or local knowledge, leaving 128 squares (5%) on which the observer looked out for mammals, but encountered none. It is important that we continue to receive counts of zero mammals, to ensure that our records remain unbiased.

Mammal population trends

The BTO is a member of the Tracking Mammals Partnership (TMP), a collaborative initiative involving 25 organisations with a variety of interests in UK mammals. The TMP aims to provide good-quality trend data to guide conservation and wildlife management policy for mammals. The BBS is an important component of the TMP surveillance programme, and BBS count data are used to calculate population trends for several mammal species. The latest year for which these trends are available is 2006, when we were able to produce reliable trends for seven mammal species. Of these, Rabbit and Red Fox declined significantly between 1995 and 2006, and Grey Squirrel and Roe Deer increased significantly (Table 12).

Table 12 UK mammal trends during 2005–06 and 1995–2006

Species	Sample	05–06	95–06	LCL	UCL
Rabbit	1,010	-15*	-28*	-33	-23
Brown Hare	486	5	-3	-12	7
Grey Squirrel	451	-17	18*	6	32
Fox	197	-13	-42*	-50	-32
Red Deer	42	-10	-10	-51	64
Roe Deer	220	3	27*	10	48
Muntjac	43	20	6	-19	40

Population changes are shown for mammal species for which the sample size is at least 40 squares. Trends are percentage changes, and are marked with an asterisk (*) where significant. The sample is the mean number of squares on which the species was recorded each year during the survey period 1995–2006. The lower and upper confidence limits are for the 1995–2006 trend.

BBS news and research

2007–11 Bird Atlas and the BBS: greater than the sum of their parts?

The BTO is working with BirdWatch Ireland and the Scottish Ornithologists' Club (SOC) to map the distributions of breeding and wintering birds in Britain and Ireland. Volunteers are collecting data on presence/absence, abundance, and breeding status during four years of fieldwork 2007–11. The Atlas has two complementary fieldwork elements: Roving Records for collating bird records and breeding status, and Timed Tetrad Visits (TTVs) for recording bird abundance. TTVs are similar to BBS visits, and we hope that many of the new volunteers taking part in the Atlas will be interested in taking on BBS squares at a later date. Species records collected during BBS visits will be available for use in the Atlas, if necessary. However, any such records will only indicate presence, as BBS does not record evidence of breeding. Therefore, those BBS volunteers who wish to record breeding evidence are encouraged to submit their sightings to the Atlas as Roving Records.

The completed Atlas will hold a wealth of information about bird distributions, while BBS data can be used to calculate densities for common species (as birds are recorded in distance bands). It will therefore be possible to combine data from BBS and the Atlas to provide extensive and detailed information about our bird populations. For example, Atlas TTVs will be carried out on many areas of land already surveyed by BBS. In these cases, work is planned to compare the results of the two surveys, as this could allow population estimates from BBS data to be extrapolated to other areas covered by Atlas TTVs. Additionally, the distribution maps modelled using BBS data can be usefully compared with the information gathered directly by volunteers for the Atlas. Further information about the Atlas can be found at www.birdatlas.net.

It's not just about birds! Butterfly surveys on BBS squares

In 2007, Butterfly Conservation (BC) and BTO launched an exciting new project: the Butterflies in the Wider Countryside pilot survey. This survey is based on BBS methodology, adapted for butterflies, and BBS volunteers in selected regions were asked to make extra visits to their squares in July and August to survey butterflies. If this pilot study is successful, it is hoped that the scheme will be run in all BBS regions in future, subject to funding.

Observers were given butterfly and moth ID sheets with their recording forms, and take-up was encouraging, with 181 BBS squares surveyed by 165 recorders. This figure is all the more impressive considering that only around 700 observers were contacted, with no prior knowledge of their interest in butterflies. A further 129 squares were surveyed by BC volunteers.

In spite of poor weather in 2007, 42 butterfly species were seen across the UK, including nearly all of the target Wider Countryside species, plus a good range of migrants and rarer species. On average, nearly 100 individuals and around ten species were seen on each square, and of particular interest were the high occupancy rates of Small Heath and Wall Brown butterflies, both of which are declining UK Biodiversity Action Plan priority species. Observers also recorded dragonflies and day-flying moths.

Interesting as these results are, two years of data are needed in order to produce trends, and Butterfly Conservation are pleased to have received funding to continue the pilot in 2008.

The resulting data will be used in support of a full roll-out of the scheme, and will enable comparison with Butterfly Conservation's other survey, UKBMS transects. Further information can be found on their website, www.ukbms.org/wider_countryside_pilot.htm.

Investigating population trends in the Willow Warbler

By Catriona Morrison, University of East Anglia

Although BBS trends have been reporting serious declines in many of the UK's Afro-Palaearctic migrants for a number of years now, population declines in the Willow Warbler stand out, because, unlike many other species, the severity and extent of the population loss varies across the country. This presents an excellent opportunity to explore these nationwide differences in the processes acting on this population, with a view to identifying the drivers of the trends.

Using BBS data, we are able to build a picture of how the population is changing in different areas of the UK, and how this has varied over time. However, it is possible that important temporal changes can be masked by the geographic variation in the trends, so we are currently investigating the effect of changing the extent and position of spatial boundaries on the predicted trends. This process is very important, as it will lay the foundations for the rest of the project by determining the appropriate scale at which to explore the possible demographic and environmental factors influencing these patterns.



Using BBS to address conservation issues

Analyses of BBS data have proved crucial in demonstrating the link between bird abundance and potential drivers of change. By comparing population trends on BBS sites that differ in key characteristics (such as the amount of stubble), it has been possible to demonstrate the effects of these factors on farmland species such as Skylark. However, an even larger sample may be required to demonstrate effects for scarcer species, within a single region, over shorter time periods, or to identify more subtle effects. This is the rationale for a number of externally-funded BBS bolt-on surveys undertaken by professional fieldworkers over the past few years.

In 2005, a team of bird surveyors employed by the BTO carried out BBS-style surveys on nearly 1,000 randomly allocated squares in regions of lowland arable and pastoral farmland in England. The aim of these surveys was to collect baseline information on bird numbers, to augment the volunteer sample on farmland prior to the full implementation of the Entry Level Environmental Stewardship Scheme rolled out in England in 2005. In 2008, all 987 sites are being resurveyed by professional fieldworkers. Data from professionals and volunteers will later be analysed in relation to uptake of ES options by farmers, in order to assess the success of the scheme, and to determine how it could be improved.

In 2007, a smaller team of fieldworkers employed by BTO carried out BBS-style surveys of 120 randomly selected woodland squares in Scotland, as part of a new initiative funded by Forestry Commission Scotland and Scottish Natural Heritage to improve monitoring of woodland bird species. We hope to slowly phase in uptake of these new squares by core BBS volunteers. By targeting woodland (and accounting for this in subsequent trend analyses) we hope to add up to ten woodland species to the list of those monitored in Scotland. This will improve the Scottish woodland bird indicator, as well as measuring the responses of bird populations to changes in forest type and management. Until the second field season in 2008 is complete, it will not be possible to fully assess the impact on reporting rates for woodland species in Scotland, but we would encourage any volunteers wishing to take on one of these squares to contact their Regional Organiser.

The 2008 field season is the third for the Upland Breeding Bird Survey in England. For this project, professional surveyors have been carrying out BBS-style surveys on more than 300 1-km squares in upland areas of England, in order to augment the BBS volunteer sample in upland landscapes. Results will be combined with the core BBS to obtain more robust population trend estimates for a greater variety of upland birds. These will be used to investigate the effect of the Countryside and Rights of Way (CRoW) Act on bird population trends, as well as to assess population trends in Special Protection Areas (SPAs) and other designated land. Eventually, it is anticipated that this survey, together with the BBS, will provide sufficient information to create a representative upland bird indicator. The primary target species are characteristic upland birds such as Golden Plover and Curlew, but we are also obtaining valuable information on some of the scarcer upland species, including Ring Ouzel, Peregrine and Merlin.

BBS squares are providing a useful reference for assessing the effectiveness of coal-mining mitigation activities in south west Scotland. In a study funded by Scottish Coal, more than 30 additional randomly selected upland sites are monitored annually by professional fieldworkers using BBS methods. Data from these squares, matched in habitat to those in the mitigation areas (i.e. upland squares that contain at least 75% moorland), will be combined with volunteer-surveyed BBS squares to provide better information on the status of upland birds in this region. These squares were surveyed initially in 2007, with repeat surveys in 2008, and the resulting trends will be compared to trends for key upland species such as Red Grouse, Golden Plover, Snipe, Curlew, Skylark, Meadow Pipit, Wren and Stonechat in mitigation areas. Until the resurvey data from 2008 are available, this information cannot contribute to core BBS trends, but interesting results from the first year include sightings of Golden Eagle, Dotterel, Black Grouse and good numbers of many wader species.

Wild bird indicators

BBS data are at the core of a growing suite of wild bird indicators used in a variety of contexts throughout the UK. The latest biodiversity indicators for the UK were published in March (www.jncc.gov.uk/page-4235). This update showed a further small decrease in the now-familiar farmland bird index (the decline of which the government is committed to reversing by 2020), showing that the Environmental Stewardship (ES) Scheme rolled out in 2005 is, so far, failing to improve the fortunes of farmland specialists such as Skylark, Lapwing and Corn Bunting. Crucial next steps are to deal with the impact of potential new issues such as the loss of set-aside and increases in cereal prices, and to influence the array of ES options taken up by farmers. Alongside the indicators for farmland and woodland, a provisional new indicator for breeding birds of freshwater habitats has been developed, with sub-indicators for specialists of fast-flowing waters, wet grassland/marshes, slow-moving and standing waters, and reedbeds, using data from BBS and other BTO surveys. In England, the suite of indicators used to assess progress in the England Biodiversity Strategy include those for farmland, woodland, freshwater wetlands, coastal and marine birds, and urban birds.

Regional versions of the England indicators were published in May 2008 (www.defra.gov.uk/environment/statistics/wildlife/research/rwbi.htm), revealing a gradient from improved fortunes of both woodland and farmland birds in the north, to steeper declines in the south.

Upland species are not neglected; in Scotland, BBS data have been used to develop an upland bird indicator, in addition to those for farmland, woodland, seabirds and wintering waterbirds. The Welsh Assembly has adopted an indicator for birds of farmed habitats that includes six species characteristic of uplands.

Edge effects and farmland features: additional habitat recording

BBS observers are asked to record the habitat of each 200m section of their transect routes. This kind of detailed information is of immense value in assessing the importance of different kinds of habitats to our bird populations (see section on habitat-specific trends below). However, many BBS transect routes, by their nature, will be associated with linear features (hedgerows, watercourses etc.), which could result in over-recording of birds associated with those features (this could influence density estimates, but not population trends). In 2007, we asked volunteers to record the habitat along the 'ideal' route across their square (two parallel lines across the square, 500m apart and 250m in from the sides of the square), thus taking an unbiased sample of the habitat. We also asked observers to record details of the linear features along their actual route, and to record key agricultural features, such as crop types, in more detail than usual. This information will be used for various studies on farmland birds, including work by BTO to assess the success of government agri-environment schemes. We anticipate that we will ask for this kind of detailed habitat information about every five years.

We are very grateful to all volunteers who recorded this extra information, and were pleased to receive Additional Habitat data from 2,635 BBS squares in 2007 (73% of squares surveyed). Preliminary analysis of the data shows that in the majority of squares the route runs along a hedge with tall trees or a woodland edge, which should provide us with a means of adjusting density estimates. The information on agri-environment management options is of particular interest; 16% of squares contained some set-aside, and 29% had unplanted field margins, both of which could have a significant effect on the bird populations of the square. All this information will be used for various studies, and we will present further results in future issues of this report.

Calculating habitat-specific trends

By Nancy Ockendon, BTO

Most birds occur in more than one habitat, and their success may vary between these habitats, due to differences in their diet, and the competitor and predator species present. As described in the 2005 BBS report, we have been looking for differences in the population trends of bird species of conservation concern between the different habitats in which they are found. This should allow us to identify whether birds are declining more rapidly in some habitats than others. One of the strengths of the BBS is its stratified random design, which means that many different habitat types are surveyed across the country. The detailed, transect-level habitat information collected each year allows us to investigate how species are faring in different habitat types, by taking into account the proportion of each habitat present within each 1-km survey square.

The species investigated were all red- or amber-listed species of conservation concern. Cuckoo, Skylark and Spotted Flycatcher showed the greatest variation in population trends between habitats during 1994–2006. Meadow Pipit numbers were stable in farmland habitats 1994–2006, and showed small declines (less than 2% per year) in semi-natural grassland and heathland. However, over the same period, populations in coniferous forests declined steeply, by an average of more than 8% per year. This could be because coniferous woodland contains pockets of clearfell and recently planted plantation, and, over time, these areas grow up and become less suitable for ground-nesting species. Therefore, unless an equal area of clearfell is created each year, the suitability of this habitat for Meadow Pipit will decline.

Significant variation was found among the population trends in different habitats for all the species that we investigated. The results of this study should provide information about how to focus conservation efforts for these declining species most effectively, where population changes have been greatest.

Further reading

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Photo by Jill Pakenham

Research has shown that Meadow Pipts fare less well in coniferous woodland than in other habitats

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 here, but we would especially like to thank the ROs for their efforts.

BBS Regional Organisers in 2007:

England

Avon – John Tully
Bedfordshire – Judith Knight
Berkshire – Chris Robinson
Birmingham & West Midlands
– Steve Davies
Buckinghamshire – David Lee
Cambridgeshire – Tony Fulford
Cheshire (Mid) – Paul Miller
Cheshire (North-East) – Charles Hull
(now Mark Eddowes)
Cheshire (South) – Charles Hull
Cleveland – Vic Fairbrother
Cornwall – Stephen Jackson
Cumbria (North & South) – Clive Hartley
Derbyshire (North & South)
– Dave Budworth
Devon – John Woodland
Dorset – Mike Pleasants
Durham – David Sowerbutts
Essex (North-East) – **VACANT**
Essex (North-West) – Graham Smith
Essex (South) – Lynn Parr
Gloucestershire – Mike Smart
Hampshire – Glynne Evans
Herefordshire – Steve Coney
Hertfordshire – Chris Dee
Huntingdon & Peterborough – vacant
(now Mick Twinn)
Isle of Wight – James Gloyne
Kent – Sally Hunter
Lancashire (East) – Tony Cooper
Lancashire (North-West) – Jean Roberts
Lancashire (South) – Graham Coxall
(now **VACANT**)
Leicestershire & Rutland – Tim Grove
Lincolnshire (East) – **VACANT**
Lincolnshire (North) – **VACANT**
Lincolnshire (South) – Richard & Kay Heath
Lincolnshire (West) – Peter Overton

London (North) – Ian Woodward
London (South) – Richard Arnold
Manchester – Judith Smith
Merseyside – Bob Harris
Norfolk (North-East) – Chris Hudson
Norfolk (North-West) – Allan Hale
Norfolk (South-East) – Rachel Warren
Norfolk (South-West) – Vince Matthews
Northamptonshire – vacant
(now Barrie Galpin)
Northumberland – Muriel Cadwallender
Nottinghamshire – Lynda Milner
Oxfordshire (North) – Frances Buckel
Oxfordshire (South) – John Melling
Isles of Scilly – Will Wagstaff
Shropshire – Allan Dawes
Somerset – Penny Allwright
Staffordshire (North East, South East & West) – Gerald Gittens
Suffolk – Mick Wright
Surrey – **VACANT**
Sussex – Helen Crabtree
Warwickshire – Mark Smith
Wiltshire (North & South) – Bill Quantrill
The Wirral – Paul Miller
Worcestershire – Harry Green
Yorkshire (Bradford) – Mike Denton
Yorkshire (East) – **VACANT**
Yorkshire (Harrogate) – Mike Brown
Yorkshire (Hull) – **VACANT**
Yorkshire (Leeds & Wakefield)
– Claire Callaghan (now **VACANT**)
Yorkshire (North-East) – Mick Carroll
Yorkshire (North-West) – Gerald Light
Yorkshire (Richmond) – John Edwards
Yorkshire (South-East & South-West)
– David Gains
Yorkshire (York) – Rob Chapman

Scotland

Aberdeen – vacant (now Paul Doyle)
Angus – Ken Slater
Argyll North, Mull, Coll, Tiree & Morvern
– Sue Dewar
Argyll South, Bute & Gigha –
Richard Allan
Ayrshire & Cumbrae – Brian Broadley
Benbecula & The Uists – Brian Rabbitts
Borders – Graham Pyatt
Caithness – Donald Omand
Central – Neil Bielby
Dumfries – Edmund Fellowes
Fife & Kinross – Norman Elkins
Inverness (East & Speyside) – Hugh Insley
Inverness (West) – Hugh Insley
Islay, Jura & Colonsay – John Armitage
Kincardine & Deeside – Graham Cooper
Kirkcudbright – Andrew Bielinski
Lanark, Renfrew & Dunbarton
– John Knowler
Lewis & Harris – Martin Scott
Lothian – Alan Heaviesides
Moray & Nairn – Bob Proctor
Orkney – Colin Corse
Perthshire – Richard Paul
Ross-shire – Simon Cohen
Rum, Eigg, Canna & Muck – Bob Swann
Shetland – Dave Okill
Skye – Robert McMillan
Sutherland – **VACANT**
Wigtown – Geoff Sheppard

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BTO Wales Officer – John Lloyd
Anglesey – Tony White
Brecknock – John Lloyd
Caernarfon – Geoff Gibbs
Cardigan – Moira Convery
Carmarthen – Colin Jones
Clwyd (East) – Anne Brenchley
Clwyd (West) – Mel Ab Owain
Glamorgan (Mid) – Rob Nottage
Glamorgan (South) – Rob Nottage
Glamorgan (West) – Rhian Evans
Gwent – Jerry Lewis
Merioneth – Geoff Gibbs (now Dave Anning)
Montgomery – Jane Kelsall
Pembroke – Annie Haycock
Radnor – Brian Jones

Northern Ireland

BTO Ireland Officer – Shane Wolsey

Antrim & Belfast – Ruth Wilson
Armagh – David Knight
Down – Alastair McIlwain
Fermanagh – Philip Grosse
Londonderry – Charles Stewart
Tyrone (North & South) – Philip Grosse

Channel Islands

Alderney – Jamie Hooper (now **VACANT**)
Guernsey – Jamie Hooper
(now Philip Alexander)
Jersey – Tony Paintin

Isle of Man

Isle of Man – Pat Cullen

Many thanks are due to the following ROs who retired during the last year, having developed the BBS in their respective regions: Claire Callaghan, Graham Coxall, Geoff Gibbs (from Merioneth), Jamie Hooper and Charles Hull (from Cheshire North-East).

We would also like to thank and welcome Philip Alexander, Paul Doyle, Mark Eddowes, Barrie Galpin and Mick Twinn, who have taken over as ROs since the 2007 season.

Finally, we would like to express our thanks and appreciation to all the farmers and landowners who kindly allow volunteers to carry out BBS surveys on their land.



The success of the BBS is dependent on volunteer support throughout the UK. Please spread the word to other birdwatchers you may know, or even consider taking on another square if you have time. Thanks again for all your hard work!

If you do not already take part in the BBS, and would like to take on a square, we would be very happy to hear from you.

www.bto.org/bbs



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