The state of the UK's birds 2013

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Throughout this report, species are colour-coded according to their conservation status, as published in *Birds of Conservation Concern 3* in 2009. The 52 species identified as being of the greatest conservation concern are **red-listed**, the 126 species of moderate concern are **amber-listed** and the 68 species of least concern are **green-listed**.



Populations of cuckoos in the north of the UK are increasing, while those in the south continue to decline

uckoo by David Kjaer (rspb-images.

Headlines

This report presents the latest results from bird monitoring in the UK and its Overseas Territories. Some of the key headlines include...

Snipe have disappeared from much of southern England



New Bird Atlas reveals declines

The newly-published *Bird Atlas 2007–11*, perhaps the most ambitious bird-monitoring project ever attempted in Britain and Ireland, has given us new maps of the distribution and abundance of all our regular breeding and wintering birds. For example, it tells us that:

- The breeding range of **snipe** is now 31% smaller than in 1968–72, and these birds are now long gone from much of their former range in southern England. Their disappearance is linked to agricultural intensification and the drainage of wet pastures.
- The range of wintering **pochards** has decreased by 21% since 1981–84. This contraction is greater in Ireland (49%) than in Britain (13%).
- Willow tits have shown one of the most dramatic contractions in range of any species, accelerating from 10% between the first two atlases (covering 1968–72 and 1988–91) to 50% since the early 1990s.

Red kites are recovering from centuries of persecution

1

Ups and downs

Turtle doves and **wood warblers** are continuing to decline, alongside other species of high conservation concern. We should, however, celebrate the ongoing recovery of the long-persecuted **red kite**.

Many of our breeding waterbirds have increased, including **mute swans** and **tufted ducks**, as have some of our common woodland birds such as **nuthatches** and **great spotted woodpeckers**.

Since 1999, there have been worrying declines in **dotterels**, which are down 43%, and **ring ouzels**, which have declined by 29%.

Recent hard winters have hit populations of some of our rare resident breeding birds: bearded tits, Cetti's warblers and especially Dartford warblers have shown steep declines since 2008.

Wintering populations of a number of waterbirds have declined in recent years. Whilst some declines may be due to shifting ranges, we are concerned that others, such as the decline of **pochards**, may indicate population-level problems.

Headlines



Rats bite back overseas

In the UK's Overseas Territories (OTs), the presence of invasive non-native species remains a huge conservation issue.

Ascension frigatebirds and masked boobies

have benefited from the removal of cats on Ascension Island. However, the failure of rat eradication on Henderson Island means that the benefits for **Henderson reed warblers** and many thousands of seabirds may be short-lived.

Introduction

This is the 14th *The state of the UK's birds* (*SUKB*) report. Published in 2013, it contains results from annual, periodic and one-off surveys and studies from as recently as 2012. It draws on many sources of information to give an up-to-date overview of the health of bird populations in the UK and its Overseas Territories.

Excitingly, the publication of this report follows hot on the heels of the *Bird Atlas 2007–11*, the pinnacle of years of organisation, fieldwork and analysis by the BTO, BirdWatch Ireland and the Scottish Ornithologists' Club.

This mammoth effort has given us state-of-the-art maps of the distribution of Britain and Ireland's birds, in both the breeding season and winter. It is an invaluable tool for monitoring the fortunes of the UK's birds. Throughout *SUKB 2013*, we refer to some of the hot-off-the-press results of this work, and highlight the Atlas in a special centrepiece article. However, we would urge you to check out the Atlas itself at: **bto.org/shop/bird-atlas**

The state of the UK's birds 2013 is produced by a coalition of three NGOs – the Royal Society for the Protection of Birds (RSPB), the British Trust for Ornithology (BTO) and the Wildfowl & Wetlands Trust (WWT) – and the UK Government's statutory nature conservation agencies – Natural England (NE), Natural Resources Wales (NRW), Northern Ireland Environment Agency (NIEA), Scottish Natural Heritage (SNH) and the Joint Nature Conservation Committee (JNCC).

This year saw the publication of a new report, State of Nature, which attempted to summarise the fortunes of all of the UK's plants and animals. The State of Nature partnership, which includes the three NGO partners in SUKB, intends to produce regular reports in the future. However, we believe that SUKB will continue to provide a valuable in-depth focus on the fortunes of the UK's birds which State of *Nature* cannot. Therefore, we are committed to continuing with annual SUKB reports.

This report should be referenced as:

Eaton MA, Balmer DE, Bright J, Cuthbert R, Grice PV, Hall C, Hayhow DB, Hearn RD, Holt CA, Knipe A, Mavor R, Noble DG, Oppel S, Risely K, Stroud DA and Wotton S (2013). *The state of the UK's birds 2013*. RSPB, BTO, WWT, NRW, JNCC, NE, NIEA and SNH, Sandy, Bedfordshire.

A special thank you to volunteers

Bird monitoring in the UK is led by NGOs in collaboration with the Governments, but it relies heavily on the efforts of many thousands of volunteers. Without these dedicated volunteers, the body of evidence available to influence our conservation decisions would be considerably poorer.

The state of the UK's birds gives us the opportunity to recognise and celebrate the huge role of volunteers in bird monitoring, and to thank them for the time and effort they devote to the schemes described within the report, such as the many thousands of hours of volunteer time dedicated to the *Bird Atlas 2007–11*.

If you are one of these volunteers, then thank you. If not, why not consider taking up one of the wide variety of monitoring opportunities outlined on pages 50–51?



Wild bird indicators

UK wild bird indicator

The UK wild bird indicator is an important, high-level measure of the state of biodiversity in the UK. It is also used to measure the country's progress towards sustainable development goals.

It shows broad trends in bird populations within four habitats along with an "all species" line. However, it should be remembered that within these lines there can be great variation in the trends of individual species, with some prospering while others are declining. The individual species trends that feed into the indicators can be found on pages 9–12 (for common breeding birds including those in the farmland, woodland and wetland indicators) and page 32 (for seabirds).

The good news is that there has been a slight upturn in the woodland indicator, although it remains below its start value. However, the farmland bird indicator remains stalled at less than half its 1970 value, and the wetland and seabird indicators have both shown recent declines.

UK wintering waterbird indicator

The UK holds internationally important populations of swans, geese, ducks and wading birds every winter. The wintering waterbird indicator shows how numbers rose steadily from the mid 1970s to the late 1990s and then stabilised before entering a shallow decline. See pages 36-37 for trends in individual species and more discussion of the indicator.

All the indicators start from a value of 100. If an index rises to 200 then, on average, populations of species in the indicator have doubled: if it falls to 50 then they have halved.



Wild bird indicator



Wintering waterbird indicator

An update on common breeding birds

The task of monitoring and summarising the changes in numbers of the UK's common and widespread birds is a mammoth one. Every year, thousands of Breeding Bird Survey (BBS) volunteers collectively walk ten thousand miles and count over one million individual birds.

These counts are analysed. compared with previous records and, finally, distilled down to a single change figure for each species, which we present here. In 2012, 3,430 BBS squares were surveyed - the second highest total ever.

The table opposite shows the estimated long-term (1970-2011) and short-term (1995-2011) trends for common breeding birds in the UK, based on the results of four annual bird surveys; the Common Birds Census (CBC) from 1970 to 2000, its replacement, the Breeding Bird Survey (BBS), from 1994 onwards, the Waterways Bird Survey (WBS) from 1974 to 2011, and its replacement, the Waterways Breeding Bird Survey (WBBS), from 1998 onwards.

Rocketing increases

The trends show a massive range, from rocketing increases to plummeting declines. Increasing species include waterbirds such as mute swans, mallards and tufted ducks, and common woodland birds such as blue and great tits, nuthatches and great spotted woodpeckers. Striking increases were also seen in red kites and buzzards, which are returning to their former levels after many centuries of persecution. Perhaps less welcome are increases in non-native Canada geese and ring-necked parakeets.



Trends in common breeding birds in the UK

Species	Long-term trend % (1970–2011)	BBS trend % (1995–2011)	
Mute swan	187	27	
Greylag goose	n/a	179	
Canada goose	n/a	57	
Shelduck	120*	-5	
Gadwall	n/a	86	
Mallard	99	20	
Tufted duck	71	5	
Red grouse	n/a	6	
Red-legged partridge	-15	24	
Grey partridge	-91	-53	
Pheasant	74*	32	
Grey heron	4	-10	
Little grebe	-49	-32	
Great crested grebe	n/a	11	
Red kite	n/a	676	
Sparrowhawk	98	0	
Buzzard	452*	80	
Kestrel	-43*	-30	

Common breeding birds

Nuthatches have increased by 88% since 1995

(Continued overleaf)

Plummeting declines

Amongst the declining species, several groupings are readily apparent. Some of the most extensive declines are in farmland birds such as grey partridges, corn buntings and turtle doves, with the latter showing the greatest decrease – 85% since 1995 – of any species. A number of woodland specialists have also declined, with willow tits, lesser spotted woodpeckers and wood warblers amongst them.

Wood warblers belong to a group of birds found in a range of habitats: Afro-Palearctic migrants. Along with the aforementioned **wood warblers** and turtle doves, whinchats and pied flycatchers have at least halved in numbers since 1995, with the declines of others, such as yellow wagtails and spotted flycatchers, close to this mark.



Numbers of wood warblers have more than halved

Species	Long-term trend % (1970–2011)	BBS trend % (1995-2011)
Hobby	n/a	12
Peregrine	n/a	-28
Moorhen	-25	-9
Coot	70	29
Oystercatcher	n/a	-16
Golden plover	n/a	-9
Lapwing	-63	-41
Snipe	n/a	8
Curlew	-62*	-45
Common sandpiper	-44	-31
Redshank	n/a	-42
Feral pigeon	n/a	-15
Stock dove	96*	11
Woodpigeon	134	40
Collared dove	372	19
Turtle dove	-95	-85
Ring-necked parakeet	n/a	1,057
Cuckoo	-62*	-50
Barn owl	n/a	279
Little owl	-56	-44
Tawny owl	-30	-18
Swift	n/a	-39
Kingfisher	-13	1
Green woodpecker	113*	38
Great spotted woodpecker	365	139
Lesser spotted woodpecker	-80	n/a
Magpie	99	-1
Jay	5	15
Jackdaw	140	51
Rook	n/a	-17
Carrion crow	93*	13
Hooded crow	n/a	6
Raven	n/a	5
Goldcrest	-29*	-9
Blue tit	28	7
Great tit	92	45
Coal tit	39	20
Willow tit	-94	-82
Marsh tit	-69	24
Skylark	-59*	-22
Sand martin	26	18
Swallow	25*	36
House martin	-42*	-2
Long-tailed tit	120*	32
Wood warbler	n/a	-69
Chiffchaff	89	93
		(Continued overleaf)

one of a number of farmland birds



All short-term trends are based on the smoothed BBS estimates of change in the UK between 1995 and 2011, except for seven riverine species (little grebe, tufted duck, kingfisher grey wagtail, sand martin, dipper and common sandpiper) for which a similar measure is calculated by combining the WBS and WBBS data, and the grey heron for which trends are based on the Heronries Census.

For most species, the long-term trends are based on the smoothed estimates of change between 1970 and 2011 in a combined CBC-BBS analysis. However, for species with evidence of marked differences in the population monitored by the BBS and its predecessor the CBC (coded *) we use the CBC results until 1994, and solely the BBS from 1994 to 2012. Hence, long-term trends for these species may not be representative of the UK population prior to 1994, due to the more limited geographical and habitat coverage of the CBC (mainly farmland and woodland sites in England).

Long-term trends for the seven riverine species are based on smoothed WBS-WBBS estimates of change between 1975 and 2011. Although all data, including the most recent from 2012, are included in these analyses, we report measures of change from 1970 or 1995 to the penultimate year (2011), to avoid unreliable effects due to smoothing at the endpoints of time series.

Apart from the seven riverine species, long-term trends cover shorter time periods due to the later availability of reliable data, as follows: 1972–2011 for **collared doves**, 1975–2011 for **sparrowhawks** and 1977–2011 for **house sparrows**.

More details on the BBS, including *The Breeding Bird Survey 2012* report, can be found at: **bto.org/volunteer-surveys/bbs**

Species	Long-term trend % (1970–2011)	BBS trend % (1995-2011)	
Willow warbler	-33*	5	
Blackcap	269	133	
Garden warbler	6	-10	
Lesser whitethroat	21	4	
Whitethroat	14	40	
Grasshopper warbler	n/a	24	
Sedge warbler	-10	11	
Reed warbler	137	31	
Nuthatch	248	88	
Treecreeper	-13	4	
Wren	21	-5	
Starling	-81*	-53	
Dipper	-30	-16	
Blackbird	-16	22	
Song thrush	-56	7	
Mistle thrush	-59	-31	
Spotted flycatcher	-88	-49	
Robin	31	6	
Nightingale	n/a	-46	
Pied flycatcher	n/a	-52	
Redstart	57	31	
Whinchat	n/a	-60	
Stonechat	n/a	3	
Wheatear	n/a	-1	
Dunnock	-30	22	
House sparrow	-64*	-1	
Tree sparrow	-90*	113	
Yellow wagtail	-69	-45	
Grey wagtail	-58	-31	
Pied wagtail	21	-13	
Tree pipit	-71*	1	
Meadow pipit	-44*	-21	
Chaffinch	37	12	
Greenfinch	-17	-17	
Goldfinch	143*	109	
Siskin	n/a	89	
Linnet	-54*	-19	
Lesser redpoll	-84*	55	
Common crossbill	n/a	130	
Bullfinch	-38	12	
Yellowhammer	-54	-13	
Reed bunting	-39	19	
Corp bupting	90	24	



Although house sparrows are declining overall, they are increasing in western areas

The BBS allows us to say that the total number of breeding **yellowhammers** in the UK has declined by 13% since 1994, there has been a 49% decline in the **spotted flycatcher** population over the same period, and **chiffchaffs** have increased by 93%.

These headline figures are useful when a clear overall message is needed, such as when assessing the impact of changes in land-use or land management at a national scale, or when determining the relative conservation priorities of species. However, these UK-wide figures may be deceptively simple. Not only do bird numbers fluctuate from year to year, as survival, productivity and mortality change depending on conditions, but the spatial variation in both densities and trends can be dramatic. Cuckoo numbers, for example, are increasing in the north and declining strongly in the south, a pattern masked by the overall short-term change of -50%. This spatial variation is particularly relevant when trying to link changes in bird numbers with fine-scale differences in habitat and environment that may be driving these changes.

Mapping changes

BBS counts are repeated at the same sites every year, giving a good indication of annual fluctuations in bird numbers. However, it would be impossible to monitor every single field, moor and wood, so a random selection of 1 km squares, designed to be representative of the country as a whole, is surveyed.

The area covered is only slightly more than 1% of the total UK land area, so complex statistical techniques are needed in order to map fine-scale changes across the rest of the country. Statistical models use bird detectability, calculated from counts of birds in distance bands from survey transect lines, together with habitat information and location, to infer densities and changes over time in unsurveyed areas across the whole of the UK. The map of modelled densities for **house sparrows** (top left) illustrates how these birds are concentrated in urban areas, and how rare they are across much of Scotland.

The **house sparrow** map (top right) shows variation in trends in **house sparrow** numbers since the start of the BBS. The red areas show that the greatest declines have been in London, the area where house sparrows are still most common. Western areas, however, have seen increases in **house sparrow** populations, which is perhaps surprising given the well-documented decline of this species.

The map of **cuckoo** density (bottom left) is almost a negative image of the **house sparrow** density map, with marked absences from urban areas.

Cuckoos are most common in the far south and north, but the map (bottom right) shows that numbers in the south are falling rapidly, while those in the north are actually increasing.



Chiffchaffs have increased by 93% since 1994

House sparrow density from the BBS



Cuckoo density from the BBS



Common breeding birds

House sparrow trend map from the BBS



Cuckoo trend map from the BBS



Bird Atlas 2007–11: adding to our knowledge of change

Modelled information, such as that used to create the maps on the previous page, can be used to illuminate the relationship between changes in bird numbers and possible causes of these changes, even in areas not directly surveyed for birds. However, such models need a lot of data in order to provide robust outputs and can only be created for around 50 of the UK's most common species. For other, less common species, direct counts are needed on a large scale to assess patterns of distribution, abundance and change.

This was precisely the aim of the Bird Atlas 2007–11, for which all parts of Britain and Ireland were surveyed for birds between 2007 and 2011. The scope of the atlas was far larger than the 3,500 or so 1 km squares surveyed every year for the BBS; standardised "Timed Tetrad Visit" (TTV) counts were made on around 50,000 2x2 km squares in both the breeding season and in winter. Very detailed information on distribution and relative abundance was collected for all species, and TTVs allowed comparisons to be made with the previous breeding bird atlas that spanned the period 1988-91.

Maps of change derived from TTV counts, while presented at a courser scale than the modelled BBS trend maps, can be calculated for more species, and can be used to independently confirm our existing knowledge of population changes.

House sparrows

The Atlas abundance change map for **house sparrows** (top left) tells the same story as the BBS trend map, with declines in the east and increases in the west, including substantial increases in the Republic of Ireland that are not monitored by the BBS.

The breeding season distribution change map (top right) shows that this species is still hanging on in many 10 km squares in Scotland and upland areas, despite the very low densities on the BBS density map.

Cuckoos

The map of change in **cuckoo** abundance (bottom left) confirms the north-south divide in population trends. This pattern is also shown by a number of other species, such as **willow warblers**. The distribution change map (bottom right) reveals that **cuckoos** have been lost altogether from many 10 km squares across Ireland and England, a fact that can only be discovered through direct surveys, rather than modelling. The detailed information provided by the Atlas is the result of volunteer effort of such magnitude that it can only be undertaken around every 20 years, and cannot be used to monitor year-to-year changes in the same way as the BBS. It's clear from this that the Atlas and BBS methodologies both have strengths and weaknesses. However, when combined they can give a clear picture of presence, density, and change for many of our breeding bird species. When consistent results emerge from these two separate projects we can have confidence that the patterns observed are genuine.

The examples shown here demonstrate how maps can give detail and context to the simple percentage changes given on pages 9–12. All BBS density and trend maps can be viewed on the BBS website **bto.org/bbs**, and all the Atlas maps are available in the *Bird Atlas* 2007–11; see pages 24–31 for more detail on this publication.

Change in house sparrow abundance between the 1998–91 and 2007–11 bird atlases



Change in cuckoo abundance between the 1988–91 and 2007–11 bird atlases





Cuckoo chick

Common breeding birds

Change in house sparrow occurrence between the 1968–72 and 2007–11 bird atlases



Change in cuckoo occurrence between the 1968–72 and 2007–11 bird atlases



Rare breeding birds

News from the Rare Breeding Birds Panel

The Rare Breeding Birds Panel (RBBP) has reported on the populations of the UK's rarest breeding birds since 1973. In recent years, a pattern has emerged in the fortunes of many of these birds; whilst some species have dwindled in numbers, with UK extinction a possibility for the likes of wrynecks, golden orioles and marsh warblers, many have increased.

A substantial number of the increasing species have a southerly distribution, and so are apparently benefiting from climate change. This includes a range of species characteristic of continental Europe that are pushing north to colonise the UK, in particular a number of waterbirds that are exploiting newly-created wetlands across southern England. In recent *SUKB* reports, we have reported on the arrival of **spoonbills**, cattle egrets, little bitterns and **purple herons** as breeders: the great white egret is another to add to that list, following breeding in Somerset in 2012.

Hard winters hit Dartford warblers

Other rare breeders that have shown increases include well-established residents that have benefited from milder winters in the 1990s and 2000s, such as **Dartford** and **Cetti's warblers** and **bearded tits**. However, the latest RBBP reports show a dramatic reversal



Numbers of Dartford warblers reported to the RBBP

in the fortunes of these three, a consequence of the run of harder winters that the UK has experienced since 2008/09.

The number of **Dartford warblers**

a small-bodied insectivore
vulnerable to cold weather –
reported to the Panel has fallen by
75%, from 2,110 pairs in 2008 to
530 in 2011. Likewise, the number
of bearded tits reported halved
between 2010 and 2011, and
Cetti's warblers have fallen from
2,255 in 2008 to 1,484 in 2011.

Whilst annual reporting for these species is incomplete, and levels of coverage vary from year to year, it is clear there have been substantial declines. Interestingly, there are clear geographical patterns; whilst **Dartford warbler** numbers have crashed in the southern core, some of the peripheral populations at the expanding edge of the range, such as in East Anglia and the Midlands, have survived and the small Welsh population has continued to increase.

Firecrests flourishing

By way of contrast, another small insectivorous southern species, the **firecrest**, has continued to flourish. In 2011, 758 pairs were reported to the Panel, with the true population probably in excess of a thousand; ten years ago just 121 pairs were reported. The difference here between our breeding population of firecrests and Dartford warblers is that firecrests migrate, at the very least to our milder south-western coasts, if not further south - thus avoiding potentially fatal winter freezes.

Firecrests continue to flourish: increasing from 121 pairs to 758 pairs in just 10 years



Upland bird update

The UK's uplands are challenging places to work, and our true montane habitats even more so. Their remoteness, the rough terrain, and extremes of weather, not to mention the low density of birds, combine to make monitoring the species that rely on them particularly difficult.

As a result, our knowledge of the status of upland birds is poorer than for many other habitats, despite the fact that the UK holds internationally important populations of some upland species. However, this year we can provide updates on three of our special upland birds that have been surveyed in recent years.

In 2011, the national montane birds survey aimed to provide the third national survey for **dotterels**, and the first ever national assessment of **snow buntings**. The second ever national **ring ouzel** survey took place in 2012. Both were herculean efforts, with professional and volunteer fieldworkers battling the terrain and weather, but also reaping the rewards of working in some of the country's wildest and most beautiful places. Both **dotterels** and **snow buntings** rely on montane habitats; these habitats, above the natural tree line, occupy approximately 3% of Britain's land surface and the majority are found in the Scottish Highlands.

Dotterels

Dotterels are one of just three UK breeding birds that show sexual role reversal; females regularly mate with more than one male and the male remains with the eggs to rear the chicks, while the female moves on to look for more males.

In some cases, she will head as far as Norway to do so. For this reason, population estimates are given as the number of breeding males, rather than pairs.

population to be 423 breeding males (95% confidence limits 279-644), a significant decline of 43% since the previous survey in 1999 (which found 510-755 breeding males). This continues a decline observed since the first survey in 1987-88 reported 981 breeding males (95% confidence limits 873-1,101). As in 1999, the majority (61%) of the population were found in the eastern Highlands, and 89% of males bred in only three regions - the East, Central and North Highlands. As the maps from the 1987/88 and 2011 surveys show, the population appears to be contracting, with an absence of **dotterels** from previously-occupied sites in the Western and North Western Highlands.

The 2011 survey estimated the

Sites occupied by breeding dotterels in Scotland in 1987/88 (left) and 2011 (right) are shown with darker shading







Although no **dotterels** were recorded during montane survey visits in England or Wales, fieldwork for the *Bird Atlas 2007–11* found one breeding record, in Cumbria. Only 17% of all sites surveyed had breeding **dotterels** in 2011, compared to a third of sites in 1999, further evidence of a retraction to core areas.

Britain is at the south-western extent of the **dotterels'** range: the bulk of the population occupies breeding grounds eastwards from Scandinavia towards Siberia. The wintering grounds centre on North Africa and the Middle East. Changes in numbers breeding in Scotland could be a result of habitat changes on either montane breeding areas or on the wintering grounds; research is underway to investigate the potential impact of climate change on **dotterels** in Scotland.

Snow buntings

Snow buntings breed in high corries and boulder fields in the Scottish mountains. Due to the remoteness of such locations, and the small population size, a comprehensive survey has never been undertaken. In 2011, surveyors visited sites across the Scottish Highlands where **snow** **buntings** had been recorded during the breeding season since the 1970s. In total, 58 sites were surveyed, of which 40% were occupied. As expected, 80% of the records came from the species' stronghold in the central Cairngorms.

The surveyors found a minimum of 35 territorial pairs, but confirming such pairs is difficult and using additional records of single males gives a minimum of 79 possible territories. A further correction for birds undetected during surveying suggests an estimate in the order of 100 possible breeding pairs. This is in line with previous estimates of the **snow bunting** breeding population, but gives a far more robust baseline upon which to base future monitoring of this vulnerable species.

How **snow buntings** respond to climate change is of particular interest, as the Scottish breeding population is at the southern edge of the global breeding range.

Ring ouzels

The **ring ouzel** is a red-listed species of conservation concern owing to a decline of 58% between the late 1980s and the first UK survey in 1999. The birds The majority of ring ouzels in the UK are found in Scotland)anny Green (rspb-images.com

Touna in Scotland

can be very difficult to detect, so survey methods in 1999 and 2012 used call playback at specific points along tetrad transect lines to help elicit a response from any ring ouzels present. The second national survey in 2012 found further evidence for population decline across the UK: an estimate of 5,332 territories (95% confidence limits 4,096–6,875) represents a 29% decline since 1999. A comparison of the 36 tetrads that were surveyed in both years showed a significant decrease of 35%. In 1999, these tetrads held a maximum of 78 territories: in 2012 they held 51 territories.

The majority of the UK population is found in Scotland, and there was evidence for greater losses there than elsewhere, with a decline of 36% between 1999 and 2012 (an estimated 3,520 territories in 2012 compared to 5,503 in 1999).

In 2012, **ring ouzel** territories were found over a greater altitudinal range than in 1999, from 100 m to 1200 m above sea level (asl), with an average of 407 m in England, 467 m in Wales and 549 m in Scotland. Over the UK as a whole, there was no significant difference between the mean territory altitudes between 1999 (472 m asl) and 2012 (490 m asl).

Other survey news

Mixed fortunes for crakes

The second national survey of the elusive spotted crake was carried out in 2012, 13 years on from the first.

This occupant of fens and marshes is rarely seen, but its distinctive "whipcrack" call can be heard across wetlands on calm spring and summer nights. Although tracking the fortunes of such an easily overlooked species through history is difficult, records show that it was once widespread across the UK. with a decline through the 19th century driven by the loss of wetlands. It is now a rare breeder, restricted to a few sites every year.

The 80 singing birds found during the 1999 survey was the highest number reported

in modern times, but numbers reported to the RBBP suggested a substantial decline since then. This was confirmed by the 2012 survey, which recorded just 28 singing males at 11 sites, a fall of 65%.

Although an exceptionally wet spring caused some traditionally used sites, such as the Ouse Washes, to be flooded out, it seems unlikely that this played a huge role in the reduced numbers; we still do not know the cause of the substantial decline in this little-studied species.

One surprise was the number of Baillon's crakes discovered during the **spotted crake** survey: at least six, and maybe as many as 11, calling males were found. Although we know that the species bred in the UK historically, most recently in 1889, in recent years it has only occurred as a very infrequent vagrant, so this influx was unprecedented. Larger than usual numbers were also detected on the near continent, possibly as a result of drought conditions in southern Spain, rendering some of the core sites unsuitable and forcing birds to look for breeding grounds further north.





Bird Atlas 2007-11

Bird Atlas 2007–11: a landmark publication

The publication of the *Bird Atlas 2007–11* has been eagerly awaited by volunteer birdwatchers, research scientists and conservationists alike.

It is the culmination of years of planning and fundraising, four winters and four breeding seasons of fieldwork, and two final years of hard work to collate and analyse the vast dataset.

In total, over 40,000 dedicated volunteers took part in data collection, covering the length and breadth of Britain and Ireland.

In this article, we pick out a few highlights from the book, together with a selection of maps, to illustrate the range of information provided and just some of the many fascinating stories it tells.

Setting the scene

Ornithologists in Britain and Ireland have a long history of creating bird atlases and are at the forefront of generating and analysing data to assess the changes in bird populations.

Over the last 50 years, two breeding atlases have been created, covering 1968–72 and 1988–91, and there has been one previous winter atlas, covering the winters of 1981–84.

How did it work?

The aim of the Atlas was to compile a comprehensive species list for every grid square (10 km squares in Britain and Ireland), to give us information on species distribution. In addition, evidence of breeding activity was recorded during the breeding season using codes that are standardised across Europe, in order to categorise breeding as possible, probable or confirmed. To complement the information on distribution gained from the species lists, information on how common or scarce a species is was provided by timed counts: observers counted the number of birds seen over a fixed period in at least eight of the 25 tetrads (2 km x 2 km squares) in every 10 km square.

In addition to the atlas records collected by volunteer observers, records from a wide range of other sources were included in the Atlas to ensure that the distribution maps were as complete as possible. BirdTrack, for example, contributed 8.1 million records from over 10,000 observers. Important records of breeding birds were provided by RSPB monitoring on reserves and elsewhere, and essential contributions were also made by bird clubs, the Rare Breeding Birds Panel, the Irish Rare Breeding Birds Panel, BirdWatch Ireland surveys and the BTO's Nest Record and Ringing Schemes.

Online records

The internet played a vital role in the success of the Bird Atlas 2007-11: over 97% of all records were submitted online. The Atlas website provided volunteers with daily updates on the progress of coverage and used novel tools to direct them to areas where help was most needed and to focus effort on collecting breeding evidence for specific species. It also provided a great way to communicate with participants and motivate supporters, by showing provisional results throughout the four years of fieldwork.

Over 17,000 volunteers submitted records directly to the Atlas website or through BirdTrack. The website was also used by 45 local atlas projects to gather records for their own project.

The importance of volunteers

Volunteer observers achieved fantastic coverage of Britain and Ireland, managing to reach all of the remote and difficult to access areas, as well as covering city centres and offshore islands. Some intrepid volunteers even canoed around remote Scottish islands to reach areas inaccessible by foot, to ensure coverage was as complete as possible.

We would like to express our sincere thanks to all fieldworkers, regional organisers and helpers for their time, commitment and enthusiasm. The Atlas would not have been possible without you. Over 40,000 dedicated volunteers collected data for the 2007–11 Bird Atlas



Bird Atlas 2007–11

Data analysis and map production

Simple maps of winter and breeding season distribution were produced for 296 species. Although these provide important information about broad-scale distributions, they don't tell us about how common or scarce a species is. So, using information from the timed counts, maps showing the relative abundance of species were also produced.

For instance, goldcrests were recorded in 88% of 10 km squares in Britain and Ireland, yet the relative abundance map (right) shows that densities are generally higher in Ireland than Britain. With these maps, important species hotspots can be identified, such as Thetford Forest for **goldcrests**.

As protocols were designed to be comparable to the field methods used in the 1988–91 Breeding Atlas, we have also been able to produce change maps, showing changes in 10 km square occupancy. These maps have produced some fascinating results and complement similar work carried out using Breeding Bird Survey data (see pages 14–17).

Patterns and changes

We are in a privileged position to be able to look at changes in breeding season distributions over the last 40 years. This simple check reveals fascinating stories such as that of the **little egret**, which has rapidly colonised our islands, and the great spotted woodpecker, which has colonised Ireland in the last 10 years.

By carrying out more in-depth analyses, we can look at changes in groups of species, such as waders, and start to investigate the factors that may be driving the changes in their distribution and abundance.

Map of relative abundance of goldcrests



Great spotted woodpeckers have colonised Ireland in the last 10 years



Using the Bird Atlas for conservation

Atlas results are invaluable for providing up-to-date information on the distribution of species and where range shifts have occurred. and are complementary to the population trend information provided by annual population monitoring. This information is used in a number of ways:

- to identify species that trigger red or amber listing because of significant contractions in range, at the UK or European level
- to comply with new European requirements related to the Birds Directive, to provide information on bird populations' spatial distribution and trends
- to help assess overall population size by combining occupancy information with more localised estimates of densities.

For example, reductions in range greater than 50% trigger red-listing in the UK's Birds of Conservation Concern assessments, and the

occurrence of a species at only a small number of sites can trigger amber listing, because this indicates vulnerability. Atlas maps can also be used to identify important areas within a species' distribution, which can aid the future designation of special sites, and to assess the extent to which current protected areas and designated site networks encompass the populations of species of conservation concern. This information can also be used to target conservation effort, such as the development of regional targeting strategies within agri-environment schemes (AES) for farmland birds, and for assessing AES applications.

Lastly, looking more widely, Atlas data from Britain and Ireland can be combined with information on bird distribution in other European countries to assess overall range and patterns of change across Europe.



The little egret has colonised Britain during the period between the last two breeding atlases

Bird Atlas 2007–11

However, the Atlas's main strength is in its value for research. Biodiversity atlases such as this generate geographicallycomprehensive and fine-scale information on long-term changes in the occurrence and relative abundance of species. This provides a unique opportunity to investigate reasons for changes in bird communities. Can the patterns observed be related to changes in land use, to climate change or to protection within special areas, such as SPAs? Or perhaps they can be linked to the take-up of agri-environment schemes, forest management policies or interactions with other species, including the spread of non-natives? The list of potential research questions is endless! Since birds are one of the best known and monitored taxa, information about changes in their use of the landscape can provide valuable insights into changes in biodiversity more broadly.

Bird Atlas 2007–11

Non-native species

Given the damage that invasive species can cause to native wildlife, careful monitoring is valuable: the Atlas has been instrumental in providing up-to-date information on the distribution and spread of non-native birds.

Unlike for previous Atlases. the importance of recording all non-native species was made clear from the start of the Bird Atlas 2007–11. As a result. we have a wealth of new information, and evidence of large increases in the range of species such as the **Egyptian** goose and ring-necked parakeet, as well declines in species such as the Lady Amherst's pheasant. The map (right) shows the spread of mandarin ducks: the number of 10 km squares in which they are confirmed to breed has increased more than tenfold since the 1968-72 Atlas.

The Atlas includes maps and species accounts for 25 non-native species (including those like **snow geese** that can arrive naturally, as well as escape from captivity), and an appendix lists the rates of occurrence for another 75.

Using the Atlas to monitor rare species

Although the UK's annual bird monitoring schemes, such as the BBS, are among the best in the world, even these fail to capture enough data to accurately assess around 130 of the scarcer, more cryptic or nocturnal species, or those with very specialised habitat requirements. Special periodic surveys of species such as the **peregrine**, marsh harrier and **Dartford warbler** help, and trends for very rare species are collated by the Rare Breeding Bird



Breeding range change in mandarin ducks between the 1968–72 and 2007–11 bird atlases



Mandarin duck

Panel. Nevertheless, there is a gap in reliable monitoring information for many of our less common species and the periodic bird atlases are the best or only

source of data for a large suite of species including the barn owl, water rail, hawfinch, and teal. Two examples are shown opposite.

Whinchats

Trends for whinchats are in fact still reported in the BBS, but their rapid decline suggests this may not be possible for much longer. The Atlas shows that the breeding distribution of whinchats (red dots) is currently confined to marginal upland areas in Scotland, northern and south-west England and Wales. There is also a significant population in and near Salisbury Plain. Only migrant birds (grey dots) are regularly seen in the lowlands.

Whinchats are believed to have been in decline since the early 1900s, and the 47% contraction of their breeding range in Britain has been attributed to agricultural intensification and the loss of food-rich marginal habitats. Climate change may also be having an effect, through reduced overwinter survival.

Ptarmigans

The ptarmigan, a resident species of montane habitats, is seldom seen and is not covered by current monitoring schemes. Given predicted changes in range due to climate change, atlas results are of particular interest.

Since the 1981-84 winter atlas, the winter distribution of ptarmigans appears to have increased by 64%; however this is likely to be the result of improved coverage during the Bird Atlas 2007–11, particularly by visiting mountaineers. Outlying records probably reflect movements to lower altitudes in extreme winters.

In contrast, the ptarmigan's breeding range appears to have contracted, possibly due to the loss of food plants through overgrazing by sheep.

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Bird Atlas 2007–11

Breeding distribution of whinchats from Bird Atlas 2007-11



Winter distribution of ptarmigans from Bird Atlas 2007-11



Bird Atlas 2007–11

Changes over the last 20 years

One of the key aims of the Bird Atlas was to determine whether bird distributions have changed over the last 20 years. Results show plenty of evidence of that. for both breeding and wintering populations.

Overall, breeding waders such as redshanks and curlews exhibited some of the most marked contractions in distribution, continuing the trend seen in the second atlas. Since 1968-72, the British range of snipe has decreased by 31%, and they are



Redshank

Pochards

In Britain and Ireland, pochards winter in lowland areas with nutrient-rich water bodies. Overall, 629 10 km squares lost **pochards** and 248 squares gained them, giving an overall range contraction of 21% since 1981–84. The pattern varies geographically, with range contraction greater in Ireland (49%) than in Britain (13%).

The causes of wintering population declines, especially at Lough Neagh, are unknown, although the adverse effects of eutrophication and European-wide wintering area shifts resulting from short-stopping in eastern Europe are implicated.

30



Wintering range change in pochards between the 1981–84 and 2007–11 bird atlases

now long gone from much of their

former range in southern England.

and the drainage of wet pastures.

Their disappearance is linked

Concerted efforts to improve

habitats on lowland wetland

reserves have so far failed

to attract snipe to colonise,

such as food availability, are

at work.

suggesting that other factors,

However, healthy populations remain in Scotland, north-west England and Wales, and in the

Irish midlands where marshy

expansions in western Scotland

confirm the increasing Scottish

wet pasture and moorland

still exist. The recent range

BBS trend for this species.

to agricultural intensification

Willow tits

Willow tits have shown one of the largest contractions in range of any species, accelerating from 10% between the first two atlases to 50% since the early 1990s. This species has virtually disappeared from south-east England and from traditional core areas in East Anglia, the southern Midlands and from southern England.

Willow tits prefer damp woodland with sufficient dead wood. Drying soils and the loss of understory vegetation are possible causes of the population declines and range contraction.



House martins

Although almost ubiquitous in Britain and Ireland, house martins are much commoner in Ireland than in Britain. Comparisons of relative abundance figures with those from 1988–91 suggest that house martins have declined in abundance in most of England and Wales (brown areas), particularly in the extreme south-east, whilst they have increased in abundance in the Scottish lowlands and throughout Ireland (red areas). This polarised pattern of increases and decreases is shared by several other long-distance migrants including willow warblers and cuckoos, and merits closer scrutiny.

Lasting legacy

The maps shown here provide a tiny snapshot of the numerous interesting results. However, looking at these patterns is only the start of the story; the



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lasting legacy of the Bird Atlas 2007–11, as for its predecessors, will be in its major contribution to conservation and ecological research, and how it is used

Bird Atlas 2007–11

Change in house martin abundance between the 1988–91 and 2007–11 bird atlases

> to inform and address some of the most critical conservation issues currently facing us. See the Atlas for yourself at bto.org.uk/shop/bird-atlas

Monitoring seabirds

Since 1986, the Seabird Monitoring Programme (SMP) has co-ordinated the monitoring of breeding seabird populations in the UK.

An extensive sample of colonies is monitored each year by partner organisations and volunteers, and is supplemented with more intensive monitoring of behavioural and demographic parameters at key colonies. This information is helping us understand how the main drivers of change are affecting the UK's internationally important seabird populations.

The SMP receives data from between 200 and 250 different sites each year, monitoring 25 species. Abundance data from these sites are used as a measure of population state, with the view of making inferences about the wider marine environment.

The table shows the differing fortunes of species monitored by the SMP.

Trends in breeding seabirds

Species	1986–2012 trend %	2000–2012 trend %	
Fulmar	-23	-13	
Gannet*	74	24	
Cormorant	1	-14	
Shag	-36	-20	
Arctic skua	-80	-68	
Great skua*	48	17	
Kittiwake	-62	-47	
Black-headed gull	21	17	
Lesser black-backed gull	-22	-51	
Herring gull	-27	-36	
Great black-backed gull	-38	-42	
Little tern	-9	13	
Sandwich tern	8	3	
Common tern	-19	-24	
Roseate tern	-67	125	
Arctic tern	4	-5	
Guillemot	36	4	
Razorbill	49	3	

^{*} trends derived from census interpolations and extrapolations





Since 1986, the most substantial declines have occurred in kittiwakes roseate terns. shags, Arctic skuas and great black-backed gulls. Declines have continued since 2000 in all these species, with the exception of the roseate tern, which continues a steady recovery from large declines during the 1980s.

Conversely, great skua numbers may be at their highest since monitoring began, although survey work in Orkney in 2010 recorded a 23% decline since 2000. In contrast, Arctic skuas continue to decline, with numbers at their lowest yet; it is likely that the decline in Arctic skuas is linked to the increase in great skuas.

Seabird distribution

Thanks to the efforts of thousands of volunteers, the Bird Atlas 2007-11 has given us a third update on the breeding distribution of our seabird populations, adding to the knowledge provided by the sample-based SMP.

Here we investigate what these new maps tell us about changes in the distribution of our gull populations. Understanding why

species shift their distribution can provide information about environmental pressures such as prey availability, changes in land and sea use and climate change. It is also important in determining species conservation status.

Gulls on the move

As shown in the table (opposite), most gulls have been declining in the UK recently, with the exception of the **black-headed** gull. However, population trends do not tell us how gull distribution has changed. While the black-headed gull has similar numbers breeding inland as on the coast, other species are more traditionally coastal breeders. However, in recent decades both herring and lesser black-backed **gulls** have increasingly moved inland, establishing breeding

colonies away from the coast.

The diet of these species is distinctly opportunistic and in the 1970s gulls would congregate in their thousands to scavenge at rubbish tips. It is thought that this led to an increase in the levels of botulism in gulls, particularly herring gulls, which posed a serious public health risk and led to high gull mortality. Nowadays,

Breeding seabirds

this problem is managed by covering newly tipped materials with soil, and covering tips with netting to reduce scavenging.

This has not halted the influx of gulls into inland areas, however. The abundance of food and rubbish in cities, and the lack of predators, means that urban gull colonies are increasing. In other inland areas, changes in agricultural operations have led to more gulls foraging on arable land than before.

While annual monitoring shows that **herring** and **lesser** black-backed gulls are declining substantially in traditional coastal colonies, this decline may be offset, to a certain extent, by the apparent increase in inland colonies.

Maps produced as part of the Bird Atlas 2007–11 (overleaf) show that, while some coastal colonies have declined, particularly around the north-west of the UK, colonies across southern England and Wales have increased, with large numbers of inland colonies appearing. Many of these changes are recent (since the 1988–91 Bird Atlas) as indicated by the filled red (gain) and black (loss) triangles.

Breeding seabirds

Changes in herring gull colonies between the 1968-72 and 2007-11 breeding atlases



Changes in lesser black-backed gull colonies

between the 1968–72 and 2007–11 breeding atlases



These apparent changes in distribution mean that it is vital to understand changes in population size at a UK and colony scale. Due to the logistical constraints met when surveying inland gull colonies, few are included in the annual SMP population trends.

It is possible to analyse coastal colonies separately, showing a large decline in both the herring

and lesser black-backed gull abundance index, but too few data are available to produce population trends for inland colonies. However, most inland colonies where regular counts have been conducted have shown increases.

It should be noted that surveys of winter gull roosts, covering both coastal and inland sites,

have also found substantial decreases: herring gull numbers fell by between 53 and 60% between surveys in 1983/84 and 2004/05. Although an impact from a change in wintering range cannot be discounted, this does support other evidence that there has been a real decline in overall numbers.



Seabird census

One way to acquire a complete overview of gull numbers and distribution is through a national census. Approximately every 15 years since 1969, a national seabird census has taken place with the aim of complete coverage of 25 species of seabird which breed across Britain and Ireland.

These censuses were: Operation Seafarer (1969–70), the Seabird Colony Register (1985–88) and

Seabird 2000 (1998-2002). The SMP was involved in the past two, and work is underway to source funds for the next census, which is scheduled to commence in 2015.

Seabird 2000 surveyed the majority of inland gull colonies and produced the best population estimates to date.

For the next national census, advances in aerial survey technology and methodology



Breeding seabirds

will be employed, in order to give an even more complete assessment of our inland breeding gull populations.

The results of the census will help to determine the conservation status of breeding gulls in Britain and Ireland.

Visitors to UK wetlands

In winter, the UK hosts internationally important numbers of migratory wildfowl and waders, who come to our shores to take advantage of the UK's extensive wetland habitats and relatively mild climate. Come spring, they travel as far afield as northern Canada, Iceland and Siberia to breed.

During severely cold winters. such as in 2010/11, the UK assumes even greater conservation importance, as an increased number of birds will seek refuge on the relatively mild Atlantic fringe of north-west Europe. Long-term monitoring at site, national and flyway levels is therefore essential. This will help us understand if annual changes in the number of birds using our wetlands reflect the changes in international population size, or whether they are due to changing distributions.

The wintering waterbird indicator on page 8 illustrates the overall trend for 46 native species/ populations, primarily using data from the Wetland Bird Survey (WeBS) Core Counts and the Goose & Swan Monitoring Programme (GSMP).

The indicator shows a steady increase in numbers of wintering waterbirds in the UK from the mid-1970s to the late-1990s. This was due in part to the establishment of a network of protected wetland sites and, for some species, a reduction in hunting pressure may have contributed to these increases. However, since the mid-1990s, the waterbird indicator has shown evidence of a slight decline, particularly for waders. It is important to note that indicators only provide an indication of change in overall abundance;

Trends in wintering waterbirds

Species	Long-term trend % (1984/85–2009/10)	10-year trend % (1999/2000–2009/10)	
Mute swan	108	-6	
Bewick's swan	-35	-19	
Whooper swan	230	68	
Pink-footed goose	221	46	
European white-fronted goose	-72	-52	
Greenland white-fronted goose	36	-39	
Icelandic greylag goose	16	21	
British greylag goose	335	34	
Canada goose	93	9	
Greenland barnacle goose	165	53	
Svalbard barnacle goose	237	38	
Dark-bellied brent goose	-14	-14	
Canadian light-bellied brent goose	116	45	
Svalbard light-bellied brent goose	251	119	
Shelduck	-7	-15	
Wigeon	55	-4	
Gadwall	301	26	
Teal	55	-3	
Mallard	-38	-19	
Pintail	-26	-19	
Shoveler	61	11	
Pochard	-53	-49	
Tufted duck	18	-13	
Scaup	45	-4	
Eider (except Shetland)	-7	-13	
Goldeneye	-32	-43	
Red-breasted merganser	-22	-31	
Goosander	6	18	
Ruddy duck	-83	-93	

if individual species, populations, or groups of species are examined separately, different trends can become apparent.

Monitoring and conservation of waterbirds is typically undertaken at a population scale, across the distinct flyways used by the birds. Collaboration between national waterbird monitoring schemes is therefore essential, and data from both WeBS and GSMP are fed into the International Waterbird Census (IWC), co-ordinated by Wetlands International. The IWC is a collation of counts undertaken in January each year in countries across the globe, and is crucial for the assessment of waterbird population status at the flyway level. The critical role that UK wetlands play in the life cycles of waterbirds means that the most important sites are designated as Special Protection Areas (SPAs) and Wetlands of International Importance (Ramsar Sites).

In autumn and winter, large numbers of pochards come to the UK to escape the bitter cold in eastern Europe and Russia



Species

Lower coverage of some habitats (such as non-estuarine open coast, rivers and farmland) means that trends for species found largely on such habitats (for example **sanderlings, mallards** and **lapwings**) may be less representative than those for species found in habitats with better survey coverage.

Long-term trends are the percentage changes between the smoothed index values for 1984/85 and 2009/10.



Long-term (1984/85–	1 trend % 2009/10)	10-year trend % (1999/2000–2009/10)	
n/a	а	1	
n/a	а	6	
45	5	-10	
24	1	-10	
-8	}	-15	
>10	00	56	
-31	6	-31	
23	1	-28	
56	6	-13	
72	2	-41	
6		4	
73	3	34	
-54	4	-24	
-2	5	-27	
40	2	61	
-10	3	-8	
16	3	-21	
7		-21	
-29	9	-13	

Ten-year trends are the percentage changes between the smoothed index values for 1999/2000 and 2009/10. Calculation of smoothed indices by use of a generalised additive model is detailed further at bto.org/volunteersurveys/webs/publications/webs-alerts. National monitoring of **little grebes** and **cormorants** started later than for other species, so only 10-year trends are shown.

Ben Hall (rspb-images.cor

Estuaries: barometers of cold weather effects

The UK's estuaries are particularly important for waders, and it is vital that such sites are protected, so that they remain unpolluted and retain plentiful food supplies.

Many of our estuaries are crucial elements of networks of sites that span the African-Eurasian flyway, and are recognised as being internationally important for many individual species and for all the waterbirds they support.

The trends in waterbird numbers at these sites are variable, and there is evidence that the freezing conditions experienced across north-west Europe during the winter of 2010/11 forced species of waders such as **dunlins** and **bar-tailed godwits** to the UK from the near continent.

While numbers of **oystercatchers** and **knots** have remained relatively stable in the UK, several familiar estuarine waders, such as **ringed plovers**, **dunlins**, **redshanks** and **curlews**, have declined. More encouragingly, decreases shown by grey plovers and bar-tailed godwits have halted in recent years, and numbers of black-tailed godwits and avocets have risen in line with breeding population increases in Iceland and the UK respectively.

Dabbling ducks decline

UK estuaries are also important for a range of wintering wildfowl. There are some indications that several dabbling ducks, such as **shelducks, mallards, pintails** and **wigeons** have declined in the UK in recent years. Research using data from across north-west Europe has suggested that dabbling duck distribution is less affected by winter temperatures than that of diving ducks, so it is unclear whether these trends are a direct response to climate change. Numbers of **brent geese** tend to fluctuate in response to productivity on their Arctic breeding grounds; in recent years, winter numbers have decreased slightly, following five years of relatively poor breeding success.

Away from estuaries, the UK's rocky shores provide refuges for turnstones and purple sandpipers, two species that have declined in recent years. Offshore, seaducks, divers and grebes occur in important numbers, and declines in several of the seaducks that winter around Britain's coast provide cause for concern. As discussed in SUKB 2012, declines of velvet scoters and long-tailed ducks mirror trends elsewhere across their flyways, yet questions remain about their status in some areas, highlighting the need for improvements to the current monitoring programmes.



Oystercatchers

Freezing conditions across north-west Europe during the winter of 2010/11 forced large numbers of dunlins to the UK

Wintering waterbirds

Monitoring inland wetlands

Dabbling ducks that more typically inhabit freshwater sites, such as shovelers, teals and gadwalls, have all shown long-term increases in the UK, in contrast to estuarine waterfowl.

Peak numbers at two of the UK's most important inland wetlands the Ouse Washes and Somerset

Levels - have risen in recent years: and coots. However it is clear 45,000 teals were recorded at the latter in February 2011. An increase in the number of flooded gravel pits and reservoirs within the UK during the course of the last half-century has probably benefited diving species, such as tufted ducks, goosanders, great crested grebes, little grebes

from their WeBS trends that pochards and goldeneyes are declining at a steady rate. While large increases in goldeneyes reported from the Baltic Sea provide a strong indication that this species is short-stopping in large numbers, the evidence is less clear for **pochards**.

The conditions across Europe in

Declining or shifting?

Due to climate change, the more northerly parts of the Baltic Sea have remained ice-free in recent years, sometimes throughout the winter. These areas are now available to waterbirds for longer, and changes in the core wintering ranges of some diving ducks in north-west Europe have been observed as a consequence.

Species like the **tufted duck**, goosander, goldeneye and **pochard** have become more numerous in the Baltic during winter, while declining sharply in parts of the western fringe of Europe, including the UK, the Republic of Ireland, France and the Netherlands. These changes suggest distribution shift is the major explanation for some species, but for pochards it is less clear.

In Northern Ireland, WeBS counts at Loughs Neagh and Beg, which are internationally important for diving ducks, yielded more than 40,000 pochards as recently as 20 years ago, but the peak in 2010/11 only just surpassed 5,000. Research has shown that declines there are partly due to nutrient enrichment, which has affected invertebrate food supplies, but the situation is most probably a combination of that, a climate-related eastward shift of the birds, and a true decline in the population.

the winter of 2010/11, the coldest in the UK for 35 years, caused a westerly movement of ducks such as smews and goosanders, as well as geese such as **European white-fronted geese** and Svalbard light-bellied brent geese. It is of concern, therefore, that despite this movement of other species, the UK's winter population of **pochards** fell to its lowest ever level and has halved in the last 25 years. This suggests a wider problem with the total population and demands continued close international collaboration in terms of both monitoring and any conservation action required.







Goose & Swan Monitoring Programme

Since SUKB 2012, there has been little change in the fortunes of the UK's goose and swan populations, with the majority continuing to fare well. The British greylag goose population is doing particularly well, with numbers rising rapidly since the 1990s, most likely due to continued high rates of breeding success.

Licensed control of greylags on Tiree and the Uists (key sites for the birds in Scotland, where their numbers cause conflict with agricultural interests) has

led to a reduction and stabilisation in numbers at those sites, respectively. In Orkney, however, numbers continue to increase, with results from a survey in August 2012 suggesting the population there has now reached approximately 21,400 geese, an annual rate of increase of 19% since the previous survey in 2008.

Amongst those goose populations showing negative trends, numbers of Greenland white-fronted geese in spring 2012 were the lowest recorded since 1986.



Wintering waterbirds

Greenland white-fronted geese remain of the greatest conservation concern of any of the UK's migratory geese

This is, in part, due to another poor breeding season in 2011. Birds also stayed in Iceland late into the autumn due to mild weather, but were affected by severe weather when they did migrate south. This probably resulted in additional mortality as well as some birds being blown off course to Norway, along North Sea coasts and to eastern Britain.

This population of **Greenland** white-fronted geese remains of the greatest conservation concern of any of our migratory geese.

The changing status of waterbirds

The UK has international obligations to protect its important populations of waterbirds. The WeBS Alerts system provides a method of identifying changes in the numbers of non-breeding waterbirds over time at a variety of spatial scales. It can therefore be used to review the status of species on Special Protection Areas (SPAs) and Sites of Special Scientific Interest (SSSIs), which are designated wholly, or in part, for their waterbird interest.

The Alerts system uses WeBS data to measure change in the numbers of waterbirds at individual sites over the short-(5-year), medium- (10-year) and long- (25-year) term, and for all SPAs the time-frame relating to the period since classification is also used. The system also makes the same assessments for the whole network of SPAs together. Species that have undergone major changes in numbers are flagged by the issuing of an "Alert".

- Declines of greater than 50% trigger "High Alerts" (red) and between 25% and 50% trigger "Medium Alerts" (orange).
- Changes between a 25% decrease and 33% increase are classed as "Stable" (grey).
- Increases between 33% and 100% are classes as "Medium Increase" (pale green) and greater than 100% increase as "High Increase" (dark green).

A new WeBS Alerts report was published online in 2013 at **bto.org/webs/alerts**. Based on data to 2010/11, it reports Alerts status as of 2009/10. The WeBS Alerts are intended to be advisory; subject to interpretation, they should be used as a basis on which to focus research and subsequent conservation efforts if required. The information can be summarised both graphically (right) and on a map (below).

East vs west

The results show that there is variation in how the UK's protected sites have fared over the short-, medium- and long-term, with respect to their designated waterbird features. In general, non-breeding waterbirds in eastern parts of the UK have fared slightly

better than those in the west. Although this could be associated with subtle changes taking place in waterbird distributions in response to climate change, it is important that the results are examined on a site-by-site basis to ensure that local conservation issues are not overlooked. For example, the short-term, WeBS Alerts show that the frequency of negative species trends is particularly marked on the Upper Solway Flats and Marshes, Mersey Estuary and Breydon Water SPAs, which may be caused by factors at a local scale.

Long-term WeBS Alerts for SPAs across the UK



The map provides a visual impression of the **long-term (25-year) Alerts** in the UK. Each pie chart represents an SPA, sized according to the number of waterbird species for which the site is designated and divided according to the Alerts status of those species during the 25-year period up to 2009/10. A greater proportion of red sectors in northern and western parts of the UK indicates a trend towards poorer WeBS Alerts status there.

Short-term WeBS Alerts by Special Protection Area



The stacked histogram shows the **short-term (5-year) WeBS Alerts** status for the 35 SPAs with the highest number of Alerts. Each bar represents an SPA which is identified by name, sized according to the number of waterbird species for which the site is designated, and sub-divided according to the Alerts status of those species during the 5-year period up to 2009/10.

Wintering waterbirds

Birds in the OTs

Overseas Territories

The impact of non-native invasive species on breeding birds, and in particular seabirds, in the UK's Overseas Territories (OTs) is a topic that has been covered previously in *SUKB*. However, it holds such significance that we will return to the subject again in this year's update.

The combination of globally important seabird populations, introduced mammals (particularly predators such as cats and rodents), and the massive impact these invasive species can have on seabird populations makes this one of the UK's most pressing conservation concerns. As a result, it should be one of its highest priorities for action. Here we review attempts to remove non-native mammals from a number of OTs, and bring the latest news on the outcomes, both good and bad.

Seabirds bouncing back in the tropical South Atlantic

The two volcanic islands of Ascension and St Helena in the tropical South Atlantic are home to 12 species of seabirds. Among them is the majestic **Ascension frigatebird**, which only breeds on a small island next to Ascension, and is threatened with global extinction.

Both Ascension and St Helena were first discovered by sailors over five centuries ago, and humans quickly introduced rats, and later cats, to these islands where no land predator was present at the time.

The rats and cats killed enormous numbers of seabirds, and for many years seabirds were restricted to breeding on very steep and rugged cliffs or offshore islands that are inaccessible to introduced predators. Some species, such as the **St Helena petrel**, were lost forever.

Ascension frigatebirds return after 120 years

More than 10 years ago, the RSPB (funded by the UK Government) helped the people and government of Ascension to get rid of feral cats to restore the seabird community on Ascension. Since 2004, no feral cat has roamed the rocky lunar landscape of Ascension, and many seabird species have recolonised the island. The success of the eradication project was confirmed in late 2012, when two breeding pairs of the endemic **Ascension frigatebird** were discovered on

the Ascension mainland – the first confirmed breeding record for over 120 years!

The rest of the world's population of this species nests only on tiny Boatswainbird Island, 300 m east of Ascension – a seabird city where 10 different species occupy every inch of space. Frigatebirds are kleptoparasites: they steal fish that other seabirds catch, in order to feed themselves and their chicks. One common victim of Ascension frigatebird robbery is the masked booby, a large gannet-like bird that plunges into the sea to catch fish. In contrast to Ascension frigatebirds, masked boobies recolonised mainland Ascension as soon as the last cat was gone. The masked booby colony on Ascension has grown tremendously since 2002 and numbered well over 300 pairs in 2013.

The effects of the feral cat eradication on Ascension may even be felt on St Helena, 1500 km away to the south-east, where feral cats continue to plague seabirds and other native species, including the Critically Endangered **St Helena plover**. In 2009, **masked boobies** recolonised steep rocky ridges on St Helena, and by 2013 the colony numbered around Masked boobies recolonised mainland Ascension Island as soon as cats were removed



Birds in the OTs

200 pairs. It is possible that this influx of birds is generated by the increased breeding success on Ascension.

GPS trackers reveal epic journeys

To explore how far **masked boobies** and **Ascension frigatebirds** fly to catch fish and feed their chicks, the RSPB – in collaboration with the Ascension Island Government

Ascension frigatebird foraging trips from Ascension Island



and the University of Exeter – started a tracking study in 2013. Miniature GPS loggers weighing less than 20 g were taped to the tail feathers of boobies and frigatebirds and revealed the amazing journeys these birds undertake across the South

Both the **Ascension frigatebirds** and the **masked boobies** set off in all directions and flew up to 600 km away from Ascension, foraging along the way, before

Atlantic (see figure below).

returning to the colony between one and seven days later. Most birds did not fly off in the same direction on subsequent trips, and there was no "hotspot" where seabirds congregated around Ascension.

The birds explored a huge expanse of ocean to find food for their chicks: one **masked booby** completed an epic 1,163 km foraging trip in 60 hours and an **Ascension frigatebird** covered 2,662 km in the same time.

Distance and duration of Ascension frigatebird foraging trips





Ascension frigatebird



Tagging an Ascension frigatebird

While much more needs to be learned about the remarkable foraging journeys of Ascension's seabirds, it is clear that sustainable management of the waters in a large (greater than 300 km) radius around the island will be necessary to ensure that these birds can continue to raise their chicks on Ascension. The study continues in September 2013, and will

Tracking birds in the Caribbean

Other tracking work has begun in the Caribbean OTs of Anguilla and the British Virgin Islands (BVI), to identify important feeding areas for seabirds using GPS tracking devices. This follows on from pilot work in 2012, where 20 **brown boobies** were tracked in Anguilla, and found to travel up to 300 km in a round trip.

Brown boobies, magnificent frigatebirds and sooty terns

will be tracked on Dog Island, Anguilla, which is one of the most important sites for seabirds in the region, and home to four globally important populations. Dog Island and Great Tobago, BVI, support two of just four **magnificent frigatebird** colonies in the area, and it is hoped that tracking **magnificent frigatebirds** on Great Tobago will help to explore solutions to entanglement with fishing line,

Two steps forward, one step back

In SUKB 2011, we reported on the plight of birds on Henderson Island, part of the Pitcairn group in the South Pacific. Remote and uninhabited, this island holds four endemic land birds – the Henderson lorikeet, Henderson fruit dove, Henderson rail and Henderson reed warbler. It is also the only known breeding site for the Henderson petrel and holds globally important populations of other seabirds, such as Murphy's petrels.

However, these species, and in particular the **Henderson petrel**, are threatened by introduced Pacific rats, which were brought to the island by Polynesian settlers many centuries ago. It is estimated that more than 25,000 chicks of the four species of gadfly petrels are killed each year, and all are threatened with local extinction on the island, which, in the case of the **Henderson petrel**, would also mean global extinction.

After years of planning, an ambitious attempt was made to clear the island of rats through a massive poison bait drop in August 2011. At 43 km², Henderson is the largest tropical or sub-tropical island on which rodent clearance has been attempted. Helicopters followed GPS-controlled flight lines to ensure full coverage of the island.

Lessons to learn

Unfortunately, although initial signs were good, in May 2012 it became apparent that some rats had survived. This may be because a drought in early 2011, followed by wetter

Birds in the OT's

include **masked boobies** on St Helena to better understand the foraging movements of seabirds on those two neighbouring islands.

which was responsible for 60 deaths in the colony in 2012.

The work will provide new information on these species' feeding ecology and help to identify important feeding areas, which can inform marine planning in the area. Potential threats to seabirds in Anguilla and BVI will also be identified through long-term seabird monitoring programmes.

weather immediately before the baiting, prompted an abundance of fruit, meaning that not all rats were tempted into eating the bait and a high proportion were breeding.

Work is ongoing to determine why the attempt was unsuccessful, and to learn how to increase the likelihood that a future attempt, and other similar projects, will succeed.

In the meantime, whilst the rat population was greatly depleted, the birds of Henderson enjoyed a respite from high levels of predation. Early indications are that populations of all four endemic land birds have increased.

Efforts to protect the **Henderson rail**, known to be susceptible to the poison bait, have been successful and numbers of

Birds in the OTs



South Georgia pipit

Henderson reed-warblers are several times higher than before the eradication.

The period with very low rat numbers was also successful at increasing the breeding success of petrels on the island; 80% of those **Murphy's petrel** chicks that hatched after the bait drop survived long enough to fledge in 2011, in comparison with none surviving in the two years of monitoring when rats were abundant on the island.

Good news on Oeno

On the tiny coral atoll of Oeno, another of the Pitcairn's four

islands, rats were successfully eradicated in 1997. Subsequent surveys of the island have shown that, freed from predation, the **Murphy's petrel** population has increased markedly over the last 13 years, demonstrating the dramatic impact that removal of non-native predators can have.

Wider work in the OTs

Unfortunately, the issue of non-native predators is not isolated to Ascension, Henderson, St Helena and Oeno, but steady progress is being made in tackling the issue throughout the OTs.

For example, on South Georgia, baiting to eliminate rodents has now covered 70% of the island and it is hoped that the task will be completed in 2015. The segmented, glacial nature of the island means that it can be cleared in stages without the fear of recolonisation. These operations, carried out by the South Georgia Heritage Trust and the Government of South Georgia and the South Sandwich Islands should have huge ecological benefits, and open more potential habitat for burrowing seabirds and for the endemic **South Georgia pipit**.

Elsewhere in the South Atlantic, studies have suggested that eradication of the introduced house mouse from Steeple Jason in the Falkland Islands is feasible. This could benefit the endemic **Cobb's wren**, nesting storm petrels and invertebrates on the island which are all known to be affected by mice. On Gough Island, in the Tristan da Cunha group, introduced house mice are thought to be responsible for the deaths of up to half a million seabird chicks a year, including those of the Critically Endangered **Tristan albatross** and Endangered **Atlantic petrel**.

Ongoing research and trials to establish the best methods for an eradication attempt are now nearing completion. So too are plans to protect populations of the endemic **Gough moorhen** and the **Gough bunting**, which is Critically Endangered and declining.



Sue Flood (naturepl.com)

The OTs are home to many birds found nowhere else in the world, including the Henderson fruit dove

Current and planned surveys

The information summarised in *The state of the UK's birds 2013* is drawn from the annual and periodic monitoring programmes described below and from the work of individual ornithologists. Anyone interested or wishing to take part in these surveys should contact the relevant organisations at the addresses listed on page 54.

The Breeding Bird Survey (BBS)

is the monitoring scheme for common and widespread breeding land birds throughout the UK, and aims to provide data on population trends to inform and direct conservation action. It is a partnership between the British Trust for Ornithology (BTO), the Joint Nature Conservation Committee (JNCC) – on behalf of Natural England (NE), Scottish Natural Heritage (SNH), Natural Resources Wales (NRW) and Department of Environment Northern Ireland (DOENI) – and the RSPB. **Contact the BTO.**

The Wetland Bird Survey (WeBS)

is the monitoring scheme for non-breeding waterbirds in the UK. It aims to provide the principal data for the conservation of their populations and wetland habitats. In October 2014, WeBS will provide the majority of surveying for the UK element of a Europe-wide survey of golden plovers. It is a partnership between the BTO, the RSPB and JNCC (on behalf of DOENI, NE, NRW and SNH) in association with the Wildfowl & Wetlands Trust (WWT). **Contact the BTO.**

The Goose & Swan Monitoring Programme (GSMP) comprises a suite

of surveys, funded under the WWT/JNCC/SNH partnership, designed to accurately assess the abundance and breeding success of geese and migratory swans during the non-breeding season. **Contact the WWT**.

The Waterways Breeding Bird

Survey (WBBS) has been running since 1998. This scheme, and its predecessor, the Waterways Bird Survey (WBS, which ran from 1974 to 2007), aims to monitor riverside breeding birds, particularly waterway specialists, across the UK. Contact the BTO.

The Heronries Census collects counts of

apparently occupied nests each year from as many heronries as possible throughout the UK, to monitor populations of colonial waterbirds, especially grey herons, little egrets and cormorants. **Contact the BTO.**

The Seabird Monitoring

Programme gathers information on breeding numbers, breeding success and other parameters to help us understand drivers of change and to target conservation action. Co-ordinated by the JNCC, it is a partnership between the statutory nature conservation agencies, research and conservation organisations. **Contact the JNCC.**

The Big Garden Birdwatch is the

largest wildlife survey in the world. Its simple design (one hour watching birds and other wildlife in the garden each January) means that nearly 600,000 people took part in 2013. The data provide an excellent snapshot of garden bird numbers across the UK.

Contact the RSPB.



Garden Bird Watch is a year-round scheme recording the weekly occurrence and numbers of birds in participants' gardens. The data collected provide valuable information on changes in birds' use of rural and urban habitats, that can be related to population trends in the wider countryside **Contact the BTO**.

BirdTrack is a year-round online bird recording system run by the BTO, the RSPB, BirdWatch Ireland, the Scottish Ornithologists' Club and the Welsh Ornithological Society. The collection of list data from a large number of observers will enable the fulfilment of a range of national research and monitoring objectives. **Contact the BTO/RSPB or visit birdtrack.net**

The Ringing Scheme is run by the BTO and covers Britain and Ireland. It is funded by a partnership of the BTO, the JNCC, DOENI, NE, NRW and SNH, The National Parks and Wildlife Service (Ireland) and the ringers themselves. Volunteer bird ringers collect data on the survival, productivity, movements and condition of birds. Project ringing, such as the Constant Effort Sites Scheme, the Ringing Adults for Survival project, and other targeted ringing, forms an important part of the overall Scheme **Contact the BTO**. **The Nest Record Scheme** gathers vital information on the breeding success of Britain's birds by asking volunteer nest recorders to find and follow the progress of individual birds' nests. The scheme is funded by a partnership of the JNCC and BTO (on behalf of DOENI, NE, NRW and SNH). **Contact the BTO.**

The Statutory Conservation Agencies and RSPB Annual Breeding Bird Scheme

(SCARABBS) is an advance programme of UK-wide surveys of other priority breeding species. Twites were surveyed in 2013; species to be surveyed in 2014 may include choughs. Contact the RSPB.

BTO surveys cover a number of different

species. A repeat national survey of **peregrines** is planned for 2014, once funding is confirmed. Following the work in Wales in 2012 and 2013, planning is underway for a national chat survey in the rest of the UK, possibly in 2014, but more likely the following year. The second season of the BTO's Winter Thrushes Survey, which aims to establish a baseline for winter thrushes and identify key winter food resources, is currently underway. It includes core counts in a short mid-winter period and recording of all thrushes from September to March.

Contact the BTO.



Working together

Monitoring of birds in the UK, such as that covered in this report, involves a broad partnership of government agencies, NGOs, sponsors and independent ornithologists, including:

Anglian Water; BirdWatch Ireland; British Birds; the British Trust for Ornithology; British Waterways; Centre for Ecology and Hydrology; CJ WildBird Foods; Darwin Initiative; Darwin Plus Fund; Department for Environment, Food and Rural Affairs (Defra); Environment Agency; Environment Wales; European Bird Census Council; European Social Fund; European Union Life Programme; Foreign & Commonwealth Office; Forestry Commission; Forest Enterprise; Game and Wildlife Conservation Trust; Greenland White-fronted Goose Study; Hawk and Owl Trust; Irish Brent Goose Research Group; Joint Nature Conservation Committee; Manx BirdLife; Ministry of Defence; National Trust; National Trust for Scotland; Natural England; Natural Resources Wales; Northern England Raptor Forum; Northern Ireland Environment Agency; Northumbrian Water; Raptor Study Groups; Rare Breeding Birds Panel; the Royal Society for the Protection of Birds; Scottish Executive Rural Affairs Department; Scottish Natural Heritage; Scottish Ornithologists' Club; Scottish Raptor Study Groups; Seabird Group; Severn Trent Water; Shetland Oil Terminal Environmental Advisory Group; Thames Water; University of Cambridge; University of Exeter Centre for Ecology and Conservation; University of Liverpool; Wales Raptor Study Group; Welsh Kite Trust; the Wildfowl & Wetlands Trust; the Wildlife Trusts; Woodland Trust.

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The state of the UK's birds 2013 is also available online on the websites of the BTO, the RSPB and WWT (see addresses below).

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Working together to give nature a home



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