



**Wild bird population indicators
for the English regions:
1994 – 2006**

22 May 2008

Department for Environment, Food and Rural Affairs

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Summary

This statistical release provides updated figures for bird populations in the English Government Office Regions, covering farmland, woodland and all native birds. Between 1994 and 2006, the population index of farmland birds showed a decline of more than 10 per cent in three regions; the South West, the South East and the West Midlands. In the East of England region the rate of decline was the same as the national level (7% decline). Farmland birds in northern regions saw a small increase in their population.

There is a similar north-south pattern in the changes between 1994 and 2006 in the populations of woodland birds, which showed a decline in the South West and the South East regions, but an increase in the East Midlands, North West, North East, Yorkshire and the Humber. There was little or no change in the remaining regions.

The population index of all native birds increased in the Yorkshire and the Humber, the North West and the North East between 1994 and 2006, whilst there was little change in the rest of England.

These indicators are based on the Breeding Bird Survey run by the British Trust for Ornithology (BTO), which provides comprehensive information on the medium term changes in bird populations across the UK. The changes shown by the regional indicators for 1994 to 2006 need to be interpreted in the light of the long-term decline in the populations of farmland and woodland birds apparent from the national indicators.

The Breeding Bird Survey (BBS) monitors terrestrial birds throughout the UK to provide information that underpins the conservation of species and habitats. The BBS is organised by the BTO on behalf of BTO, Joint Nature Conservation Committee (JNCC) and the Royal Society for the Protection of Birds (RSPB).

Key results

Farmland species

- In the West Midlands, the South West and the South East, the farmland bird population fell by more than 10 per cent between 1994 and 2006. There was no significant change in any of the other English regions. This compares with an overall England decrease of 7 per cent over the same period.[#]
- At the national level farmland birds, such as Goldfinch, have recovered from large declines in the 1980s, but this is not true for all farmland species. On average, farmland generalists (e.g. Woodpigeon) have maintained their populations, while farmland specialists (those that breed or feed mainly or solely on farmland, e.g. Skylark) are now at their lowest level, having declined by over 60 per cent since 1970. However, some species, such as Tree Sparrow, are showing signs of recovery in the last ten years.*

Woodland species

- The largest increase in woodland bird populations between 1994 and 2006 was in the North West, which saw a rise of 32 per cent. There was also an increase of 19 per cent in the Yorkshire and the Humber region. There was a decrease of 19 per cent in the South East and 10 per cent in the South West, but little change in the remaining regions. This compares with an overall England decline of 7 per cent over the same period.[#]
- At the national level woodland birds species showing the greatest declines overall are woodland specialists (those that breed or feed mainly or solely in woodland), with Lesser Redpoll, Willow Tit and Tree Pipit declining particularly severely. Against this, other woodland specialists such as Great Spotted Woodpecker, Green Woodpecker and Nuthatch have increased.*

All native bird species

The comparisons between regions can be difficult to interpret because all-species indicators of regional wild bird populations cover a wide range of different species in each region.

- In most regions, there was little change in the all-species indicator, the exceptions being the North East (+14%) , North West (+23%), and Yorkshire and the Humber (+17%) where the indices rose significantly over the period 1994 to 2006. This compares with an overall England increase of 6 per cent over the same period.

[#] The overall change in the England indicator is not an average of the changes in the individual regional indicators, because there are differences in the species composition of the indices in some of the regions.

* See Statistical Release: Wild Bird Populations 2006: Sustainable Development Strategy and Public Service Agreement Indicators (www.defra.gov.uk/news/2007/071018a.htm)

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Chapter 1: Introduction

The UK index of wild bird populations is part of the Government's set of indicators for UK sustainable development¹, the UK Biodiversity Partnership's Biodiversity Indicators² and indices for England are used as Defra's Public Service Agreement indicator³ on biodiversity. Bird populations are considered to be a good indicator of the broad state of wildlife and countryside because they occupy a wide range of habitats, they tend to be near or at the top of the food chain, and considerable long-term data on bird populations have been collected.

This bulletin presents the fifth set of wild bird indices for the English regions. These analyses were produced for Defra by the Royal Society for the Protection of Birds (RSPB) and the British Trust for Ornithology (BTO)^{4,5}.

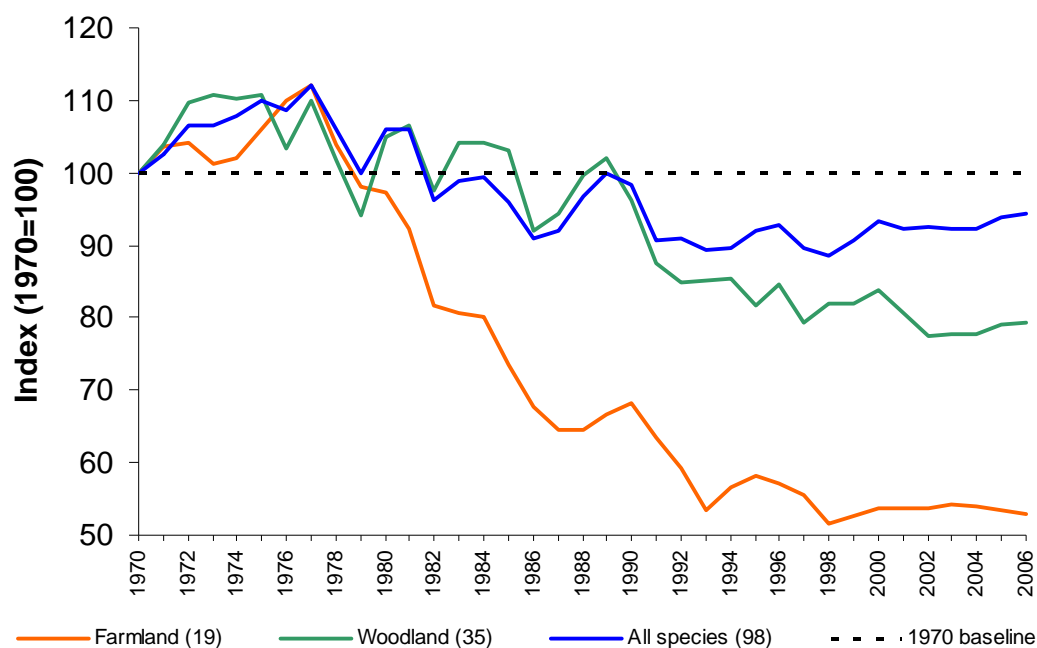
Like the previous bulletin published in March 2007⁶, indices for Scotland, Wales or Northern Ireland have not been produced. Scotland has been excluded because a separate process of wild bird indicator development is now in train under the guidance of Scottish Natural Heritage. Northern Ireland is excluded because the indices were not sufficiently robust owing to the relatively small number of species covered and the small number of sites from which they are reported. Wales is excluded because an index has recently been adopted by the Welsh Assembly.

The regional wild bird indicators are based on a similar approach to that used to produce the UK indicator, with separate indices for all bird species, for woodland species and for farmland species. However, as the indicators are based on the BTO/RSPB/JNCC Breeding Bird Survey (BBS), which was introduced in the 1994, the time period covered by the indicators is much shorter. A previous report⁷, covering indices between 1970 and 2000, was based upon the Common Birds Census (CBC), which was discontinued in 2000.

At the national level the results from the BBS have been integrated with CBC data to give a time series plot covering 1970 to 2006 for England⁸ and the UK⁹. Chart 1.1 shows the steep decline in farmland bird populations in England. They have declined on average by 50 per cent between the mid 1970s and the early 1990s, after which they have broadly stabilised. Woodland bird populations also experienced a decline until around 1990, but have since stabilised. The all-species index has been fairly stable since the late 1970s. In the analyses which follow, most attention is given to changes in farmland and woodland birds, since these birds frequent the habitat which covers most of the land area of the England, but changes in the all-species index will be also noted.

Chart 1.1 – England Wild Birds Indicator: 1970 – 2006

(numbers in brackets indicate the number of species)



Comparing figures across the two main sources of information (the CBC and the BBS) at regional level is more difficult, not only because of the different survey methods involved but also because of the following reasons:

- Species which declined before 1994 may no longer be recorded in sufficient numbers to be included in the index. Such changes in the species-composition of each index makes the interpretation of indices very difficult.
- In addition, in some regions the CBC data were not sufficiently detailed for reliable estimates of farmland or woodland bird population changes to be produced. In these cases there is some information about the numbers of species with increasing or decreasing populations over the period 1970 to 1994 that can be used as a broad indication of the overall population changes over the period. It is also possible to take into account the information about the numbers of species which have increased or decreased their breeding ranges between 1968-72 and 1988-91, the years covered by the BTO's Breeding Birds Atlas.

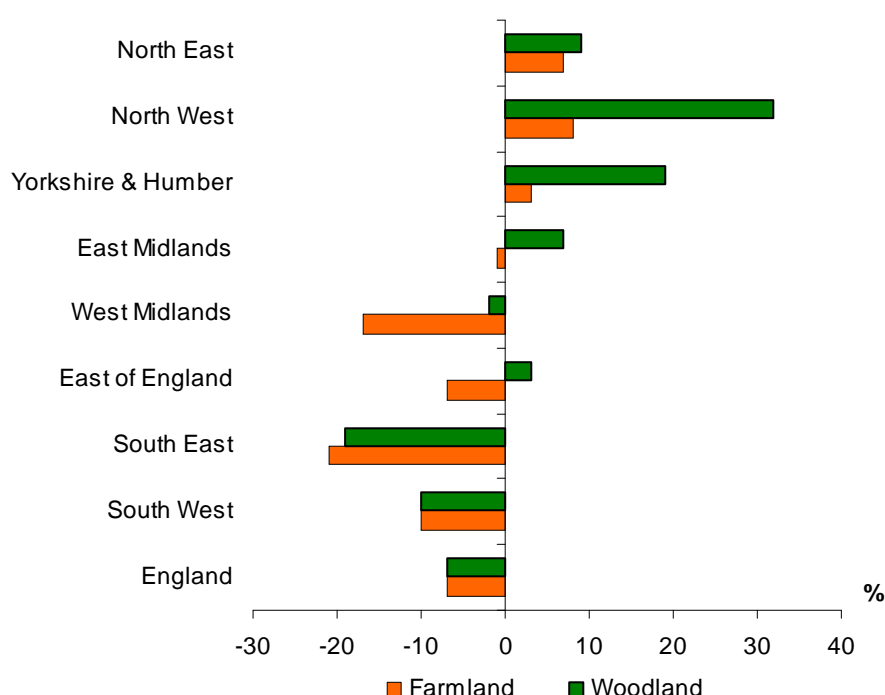
Comparisons between different regions, and between each region and the overall national index, are also difficult to interpret, because geographical variations in the number of species recorded in the BBS mean that each regional indicator could potentially cover a different subset of the species covered by the England indicator. The methodology used for this report is an attempt to ensure that the species composition across the regions is more comparable, by using estimates of population changes in areas outside the specific region to inform the estimate of the change within the region for species which would otherwise not be included owing to sample size limitations.

Chapter 2: Summary of regional data

For the purpose of these estimates, a population index showing significant change is defined as one where the index has increased or decreased by 10 per cent or more over the period. This threshold is broadly in line with recent research by BTO¹⁰, which showed that 95 per cent confidence intervals for regional indicators were of the order of +/- 10 per cent.

Figures for London have been excluded from this analysis, because the amount of data available from BBS sites within London is not sufficient to compile a robust indicator. Results for London are given in Annex 3.

Chart 3.1 – Percentage changes in wild bird indicators by region: 1994 – 2006



Farmland birds

There is a marked north-south difference in farmland bird population indices between 1994 and 2006. Farmland bird numbers fell significantly in the South East (-21%), the West Midlands (-17%) and the South West (-10%). There was also a small decline in bird numbers in the East of England (-7%), although this should not be regarded as significant. There were, however, signs of increased numbers in the North West (+8%) and the North East (+7%), although this should not be regarded as significant.

Table 3.1 shows how many farmland bird species increased and decreased in each region between 1994 and 2006.

Table 3.1 – Percentage changes in farmland bird populations by region: 1994 - 2006

(showing the percentage change and number (and percentage) of declining and increasing species (+/- 10 per cent) over this period)

Region / Country	% change in indicator	No. of species declining (% total)	No. of species increasing (% total)	Total number of species
North East	7	5 (28)	10 (56)	18
North West	8	5 (28)	8 (44)	18
Yorkshire & The Humber	3	8 (42)	9 (47)	19
East Midlands	-1	7 (37)	8 (42)	19
West Midlands	-17	12 (63)	6 (32)	19
East of England	-7	12 (63)	7 (37)	19
South East	-21	12 (63)	4 (21)	19
South West	-10	7 (44)	7 (44)	16
England	-7	8 (42)	8 (42)	19

These medium term changes need to be considered in the light of the longer term changes in farmland birds at both the national and regional level. Detailed information on the population indices of farmland birds, based on the Common Birds Census (CBC), is only available for four regions, but they all showed a decline between 1970 and 1994, with the South West down 45 per cent; the South East down 31 per cent; the East of England down 44 per cent; and the North West down 38 per cent. Comparisons between these figures and the more recent BBS data should be interpreted with caution, both because of the differences in survey methodology, and because, for some of the regions, the species covered by the CBC index differ from those covered by the BBS index.

Woodland birds

There is also a north-south difference in the woodland bird population indices between 1994 and 2006. The woodland bird index showed a significant decrease in the South East (-19%) and the South West (-10%). It increased in the North West (+32%) and Yorkshire and the Humber (+19%). Smaller increases occurred in the North East (+9%) and the East Midlands (+7%) but those should not be regarded as significant.

The regional woodland bird indices are particularly difficult to interpret, because of the different species covered by the index in each region. The overall index for England covers 35 species, but the number of species covered in the regional indices ranges from 27 in the East of England to 32 each in the North East and the West Midlands. This means that it is quite possible for the England indicator (which includes declining species that are too thinly spread across England to be included in any regional index) to show a decrease that appears to be out-of-line with the general scale and direction of changes in the regional indices.

It should be noted that the purpose of the wild bird indicators is to monitor the changes in the populations of reasonably common birds: the fact that there are variations in the species found in each region does not invalidate the indicators,

although it does mean that comparisons between regions need to be interpreted with care.

Table 3.2 shows how many woodland bird species have increased and decreased in each region between 1994 and 2006.

Table 3.2 – Percentage changes in woodland bird populations by region: 1994 - 2006

(showing the percentage change and number (and percentage) of declining and increasing species (+/- 10 percent) over this period)

Region / Country	% change in indicator	No. of species declining (% total)	No. of species increasing (% total)	Total number of species
North East	9	11 (34)	16 (50)	32
North West	32	6 (21)	19 (66)	29
Yorkshire & The Humber	19	10 (33)	18 (60)	30
East Midlands	7	10 (33)	16 (53)	30
West Midlands	-2	10 (31)	16 (50)	32
East of England	3	10 (37)	13 (48)	27
South East	-19	16 (55)	8 (28)	29
South West	-10	11 (35)	11 (35)	31
England	-7	14 (40)	15 (43)	35

Information on the population indices of woodland birds is based on the Common Birds Census (CBC). This shows that between 1970 and 1994 woodland bird populations fell by about 20 per cent in three regions, South East, South West and East of England. In two other regions, woodland bird populations rose by 20 per cent (in the East Midlands) and 74 per cent (in the North West) between 1970 and 1994. There was little or no change in the other three regions.

All native species

A north-south difference can also be seen in the all native bird population indices between 1994 and 2006. The all native bird index showed little change in the South West and the West Midlands, but significant increases in the North West (+23%), Yorkshire and the Humber (+17%) and the North East (+14%). There was a decrease in the South East (-9%), although this is not sufficient to be regarded as significant.

Table 3.3 gives a summary of the changes in the all species indicators of wild bird populations, and shows how many species have increased or decreased in each region between 1994 and 2006. Owing to the many differences between the species covered in each index (details of which are given in the RSPB/BTO report⁴), comparisons between regions should be treated with caution.

Table 3.3 – Percentage changes in all species population indices by region: 1994 - 2006

(showing the percentage change and number (and percentage) of declining and increasing species (+/- 10 percent) over this period)

Region / Country	% change in indicator	No. of species declining (% total)	No. of species increasing (% total)	Total number of species
North East	14	29 (33)	47 (54)	87
North West	23	21 (25)	47 (55)	85
Yorkshire & The Humber	17	33 (39)	45 (54)	84
East Midlands	9	26 (32)	39 (48)	82
West Midlands	-3	33 (41)	35 (43)	81
East of England	7	28 (36)	37 (48)	77
South East	-9	37 (46)	28 (35)	80
South West	0	24 (30)	36 (46)	79
England	6	35 (35)	49 (47)	105

Chapter 3: Detailed regional analyses

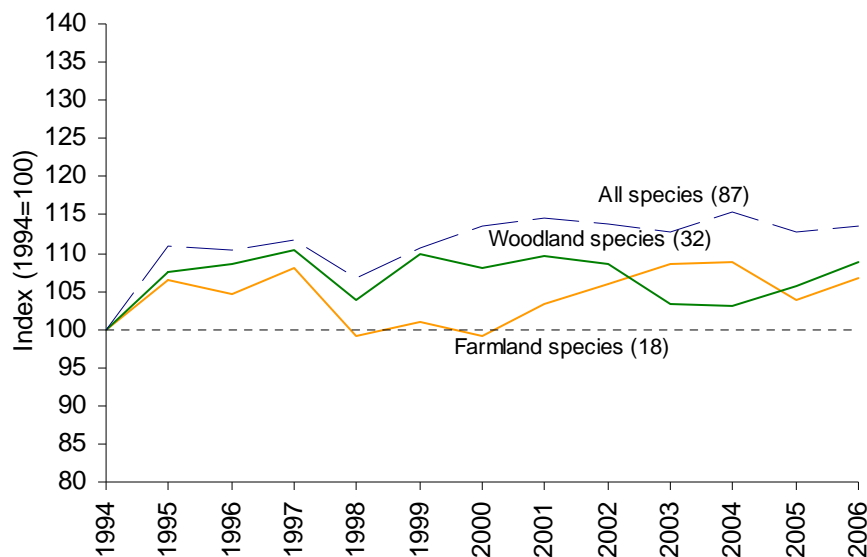
North East Region

Summary:

Between 1994 and 2006, the North East population index for all native bird species showed a significant increase (+14%), while the indices for woodland (+9%) and farmland (+7%) birds showed increases, although these are insufficient to be regarded as significant. In all cases, the indices were above the national index.

Chart 4.7 – North East wild bird indicators: 1994 – 2006

(numbers in brackets indicate the number of species)

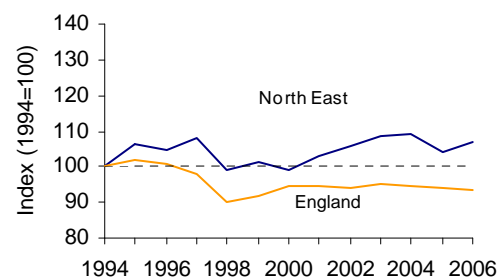


Farmland birds

The population of farmland birds in the North East showed the index increasing by 7 per cent between 1994 and 2006, differing from the national index, which had seen a slight decline (-7%).

The indices for nine of the 18 individual farmland bird species included in the index increased by 10 per cent or more. Goldfinch and Tree Sparrow saw increase in their population by more than 50 per cent.

Chart 4.8 Farmland species: 1994 – 2006



Population estimates for eight of the 18 individual farmland bird species were partly based on data from areas outside the region.

Chart 4.9a - Proportion of changes in farmland bird species populations: North East region, 1970-1994
(Number of species: 15)

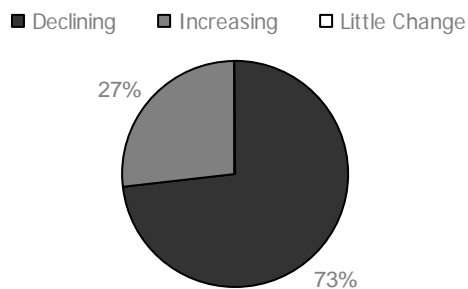
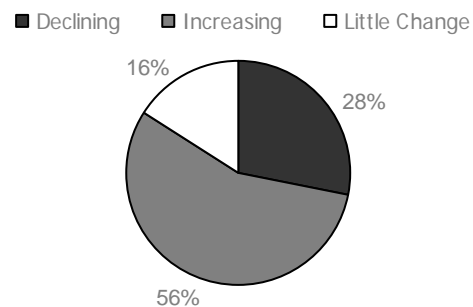


Chart 4.9b - Proportion of changes in farmland bird species populations: North East region, 1994-2006
(Number of species: 18)



This is only the fourth time that an indicator of farmland bird populations in the North East has been compiled, because the previous information, provided from the Common Birds Census (CBC), was based on a relatively small number of sites and species. Hence it is difficult to draw conclusions about the longer term changes. The CBC information suggested that, between 1970 and 1994, almost three quarters of the farmland bird species were in decline, with less than a third increasing. The more recent information, from the BTO/RSPB/JNCC Breeding Bird Survey (BBS), shows a change of fortunes, with under a third of species declining (28%) and more than half (56%) increasing between 1994 and 2006. This comparison needs to be treated with caution due to differences in methodology and species composition.

Woodland birds

The population of woodland birds in the North East showed the index increasing by 9 per cent between 1994 and 2005, differing from the national index, which had seen a slight decline (-7%).

The indices for 16 of the 32 individual woodland bird species included in the index increased by 10 per cent or more. Great Spotted Woodpecker and Nuthatch saw increases of more than 100 per cent in their indices. Blackcap, Coal Tit, Chiffchaff and Treecreeper also saw a 50 per cent increase in their indices.

Population estimates for 21 of 32 individual woodland bird species were partly based on data from areas outside the region.

Previously published⁷ indices showed woodland birds in the North East increasing by 45 per cent between 1970 and 1994. Fifteen of the twenty-four individual species covered by the old index showed populations rising, with Goldcrest, Coal Tit and Nuthatch increasing markedly. Owing to differences in the species composition and methodology between the two periods, comparisons should be approached with care.

Chart 4.10 Woodland species: 1994 – 2006

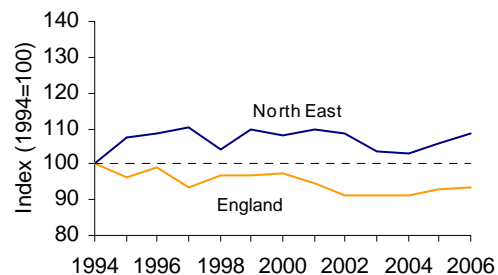


Chart 4.11a - Proportion of changes in woodland bird species populations: North East region, 1970-1994
(Number of species: 24)

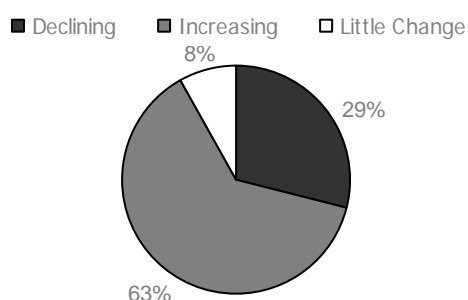
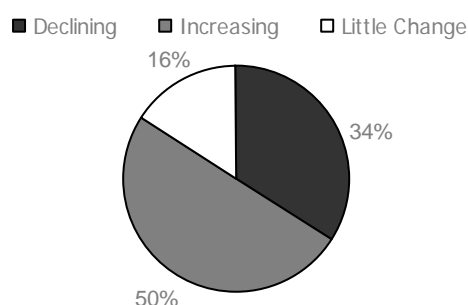


Chart 4.11b - Proportion of changes in woodland bird species populations: North East region, 1994-2006
(Number of species: 32)

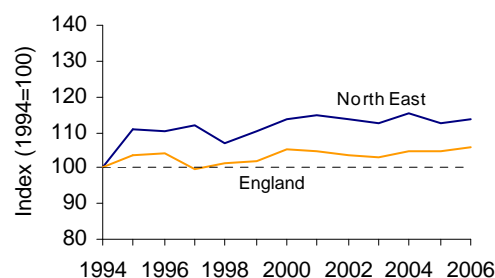


All native bird species

The population of all native birds, including farmland and woodland species, in the North East increased by 14 per cent between 1994 and 2006, slightly above the national index.

The indices for 47 of the 87 individual bird species included in the index increased by 10 per cent or more over the period.

Chart 4.12 – All native bird species: 1994 – 2006



Population estimates for 53 of the 87 individual bird species, including some farmland and woodland species, were partly based on data from areas outside the region.

It is worth noting that the moderate rise shown by the index is sensitive to choice of baseline. If a three-year average of the index for 1994-1996 was used as the baseline, only a 6 per cent increase would be shown by the index between that baseline and 2005, rather than the 13 per cent rise shown with reference to 1994.

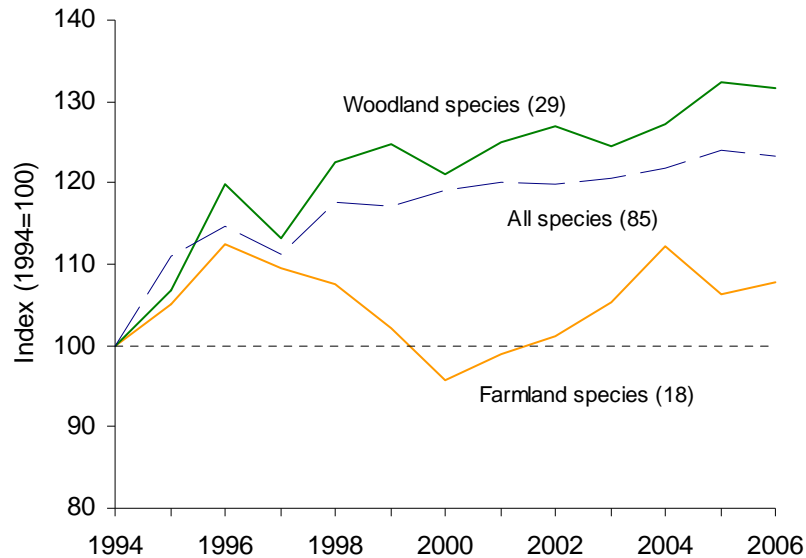
This increase in wild bird populations between 1994 and 2006 in the North East builds on earlier increases, as shown by the indicator for all native species published in a previous report⁷, which suggested that populations increased by 14 per cent between 1970 and 1994, compared with a fall of 8 per cent for England as a whole over the same period.

North West Region

Summary:

Between 1994 and 2006, the North West population indices increased for all native bird species (+23%) and for woodland birds (+32%). The index for farmland birds also showed a relatively small change (+8%). In all cases, the indices were above the national index.

Chart 4.1 – North West wild bird indicators: 1994 – 2006
(numbers in brackets indicate the number of species)

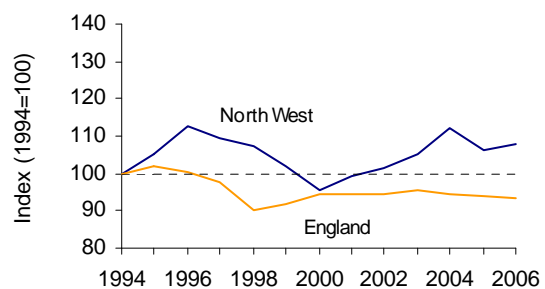


Farmland birds

The population of farmland birds in the North West showed the index increasing by 8 per cent between 1994 and 2006, differing from the national index, which had seen a slight decline.

The indices for eight of the 18 individual farmland bird species included in the index increased by 10 per cent or more. Greenfinch, Goldfinch and Stock Dove all saw a rise of 50 per cent or more in their populations. Tree Sparrow populations nearly doubled in number. The population of Corn Bunting decreased by more than 50 per cent.

Chart 4.2 Farmland species: 1994 – 2006



Population estimates for two of the 18 estimates for individual farmland bird species were partly based on data from areas outside the region.

Previously published⁷ indices showed farmland birds in the North West increasing by 30 per cent to a peak in 1976, after which, by 1994, they halved in line with the national average. Eleven of the 17 individual species covered by the old index showed populations decreasing, with Yellow Wagtail, Starling and Tree Sparrow showing particularly large declines. Comparisons between the two periods need to be approached with care owing to differences in species composition and methodology.

Chart 4.3a - Proportion of changes in farmland bird species populations: North West region, 1970-1994
(Number of species: 17)

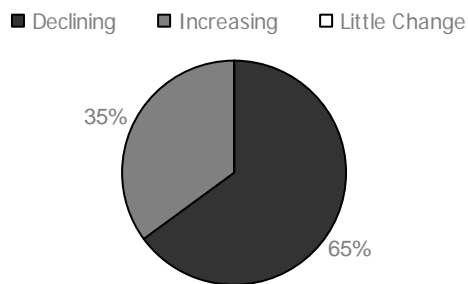
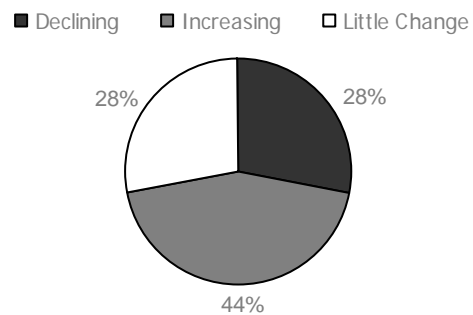


Chart 4.3b - Proportion of changes in farmland bird species populations: North West region, 1994-2006
(Number of species: 18)

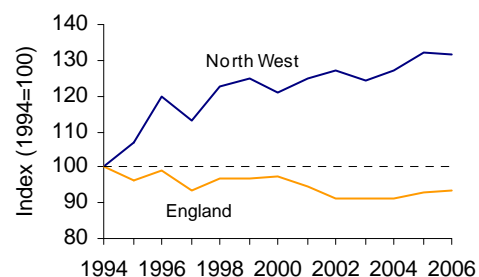


Woodland birds

The population of woodland birds in the North West showed the index increasing by 32 per cent between 1994 and 2006, differing from the national index, which had seen a slight decline (-7%).

The indices for 19 of the 29 individual woodland bird species included in the index increased by 10 per cent or more.

Chart 4.4 Woodland species: 1994 – 2006



Population estimates for 10 of the 28 individual woodland bird species were partly based on data from areas outside the region.

Previously published⁷ indices showed woodland birds in the North West increasing by 74 per cent between 1970 and 1994. Twenty-one of the 27 individual species covered by the old index showed populations rising, with large increases in the numbers of Sparrow Hawks and Green Woodpeckers. Comparisons between the two periods need to be approached with care due to differences in methodology and species composition.

Chart 4.5a - Proportion of changes in woodland bird species populations: North West region, 1970-1994
(Number of species: 27)

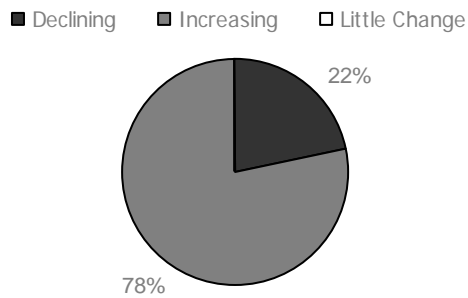
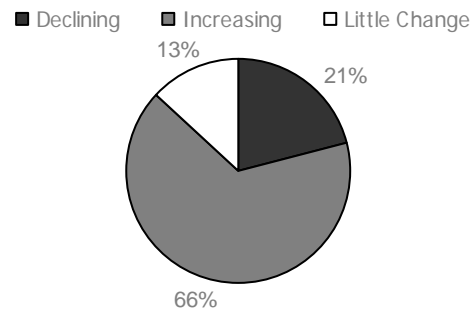


Chart 4.5b - Proportion of changes in woodland bird species populations: North West region, 1994-2006
(Number of species: 29)

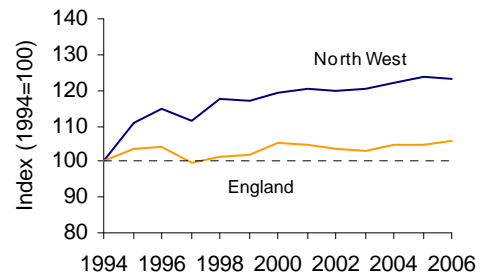


All native bird species

The population of all native birds, including farmland and woodland species, in the North West, increased by 23 per cent between 1994 and 2006, above the national index.

The indices for 55 of the 85 individual bird species included in the index increased by 10 per cent or more. Kingfisher and Sand Martin saw increases in population of 8 times and 5 times respectively. Coot, Goldcrest, Blackcap, Buzzard, Chiffchaff and Great Spotted Woodpecker also saw an increase of more than 100 per cent increase in their population. Bullfinch populations fell by 59 percent.

Chart 4.6 – All native bird species: 1994 – 2006



Population estimates for 27 of the 85 individual bird species, including some farmland and woodland species, were partly based on data from areas outside the region.

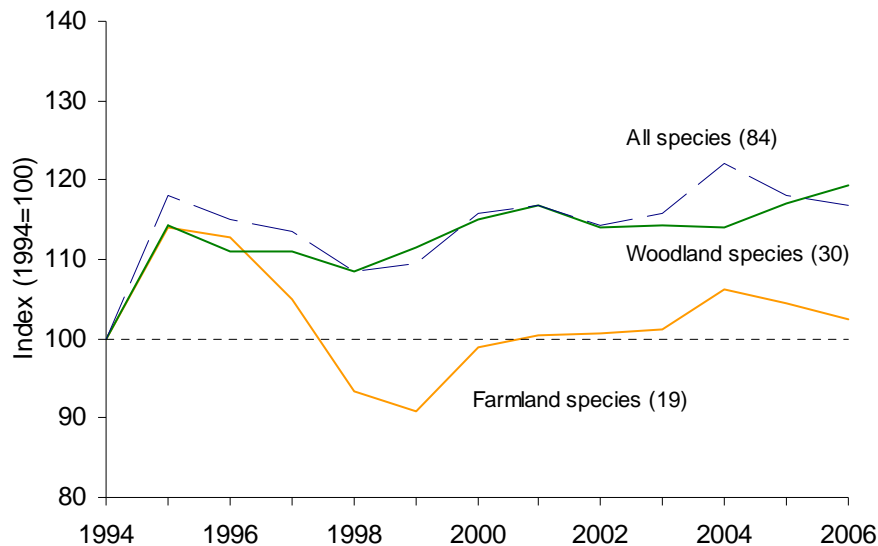
This increase in wild bird populations in the North West between 1994 and 2005 builds on earlier increases, as shown by the indicator for all native species published in a previous report⁷, which suggested that populations increased by 23 per cent between 1970 and 1994, compared with a fall of 8 per cent for England as a whole over the same period.

Yorkshire and the Humber Region

Summary:

Between 1994 and 2006, the Yorkshire and the Humber population indices for all native bird species (+17%) and for woodland bird species (+19%) showed significant increases, while the index for farmland birds (+3%) showed no significant change. In all cases, the indices were above the national index.

Chart 4.13 – Yorkshire and the Humber wild bird indicators: 1994 – 2006
(numbers in brackets indicate the number of species)

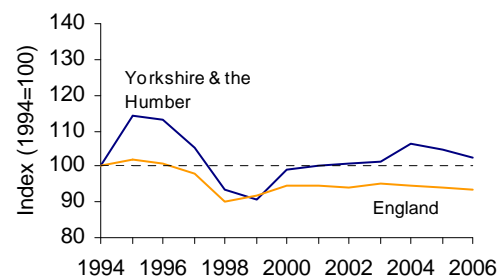


Farmland birds

In Yorkshire and the Humber, the index of farmland bird populations showed no significant change between 1994 and 2006, with the index increasing by 3 per cent between 1994 and 2006, differing from the national index, which had seen a slight decline (-7%).

The populations of Rook and Grey Partridge declined by 50 per cent, while Stock Doves, Jackdaws and Greenfinch saw an increase of more than 80 per cent.

Chart 4.14 - Farmland species: 1994 – 2006



Population estimates for four of the 19 individual farmland bird species were partly based on data from areas outside the region.

Chart 4.15a - Proportion of changes in farmland bird species populations: Yorkshire and the Humber region, 1970-1994

(Number of species: 16)

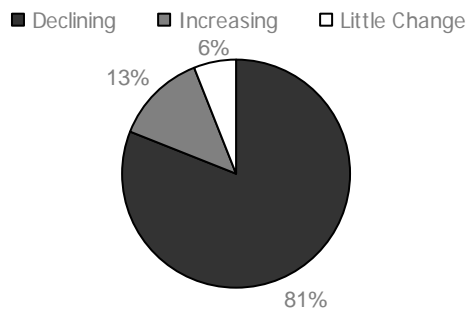
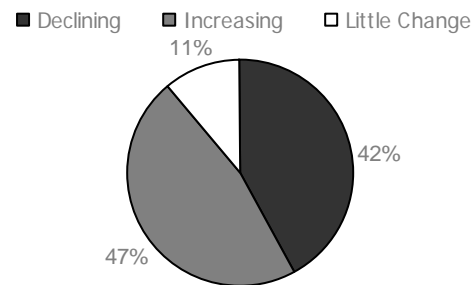


Chart 4.15b - Proportion of changes in farmland bird species populations: Yorkshire and the Humber region, 1994-2006

(Number of species: 19)



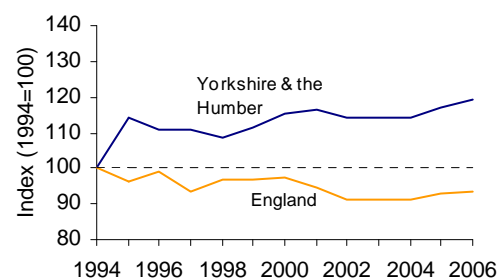
This is the fourth time that an indicator of farmland bird populations in Yorkshire and the Humber has been compiled, because the previous information, provided from the Common Birds Census (CBC), was based on a relatively small number of sites and species. Hence it is difficult to draw conclusions about the longer term changes. The CBC information suggested that, between 1970 and 1994, all but three of the farmland bird species were in decline. The more recent information, from the BTO/RSPB/JNCC Breeding Bird Survey (BBS), shows marked difference, with just over half of farmland bird species increasing and just under a third in decline between 1994 and 2006. Comparisons between the two periods need to be treated with caution owing to differences in methodology and species composition.

Woodland birds

The population of woodland birds in Yorkshire and the Humber showed the index increasing by 19 per cent between 1994 and 2006, differing from the national index, which had seen a slight decline.

The indices for 18 of the 30 individual woodland bird species included in the index increased by 10 per cent or more. Blackcap, Great Tit, Long-tailed Tit, Nuthatch and Redstart populations saw an increase of more than 100 per cent. Willow Tit saw a 70 per cent decrease in population.

Chart 4.16 - Woodland species: 1994 – 2006



Population estimates for 16 of the 30 individual woodland bird species were partly based on data from areas outside the region.

Previously published⁷ indices showed woodland birds in Yorkshire and the Humber increasing by 35 per cent between 1970 and 1994. Eleven of the 20 individual species covered by the old index had rising populations, with Coal Tit and Great Spotted Woodpecker showing noticeable increases. Comparisons between the two

periods need to be approached with care due to differences in the methodology and species composition.

Chart 4.17a - Proportion of changes in woodland bird species populations: Yorkshire and the Humber region, 1970-1994

(Number of species: 20)

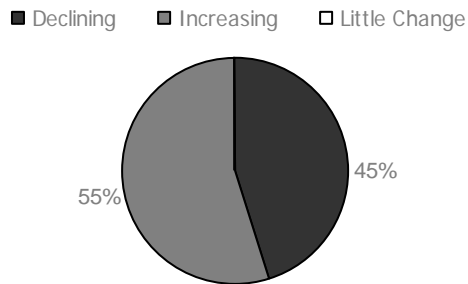
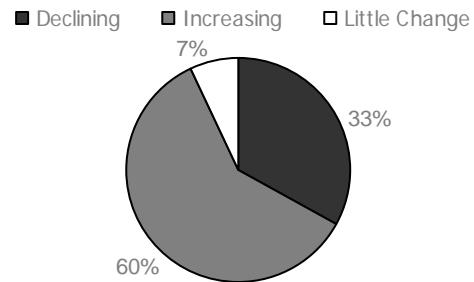


Chart 4.17b - Proportion of changes in woodland bird species populations: Yorkshire and the Humber region, 1994-2006

(Number of species: 30)

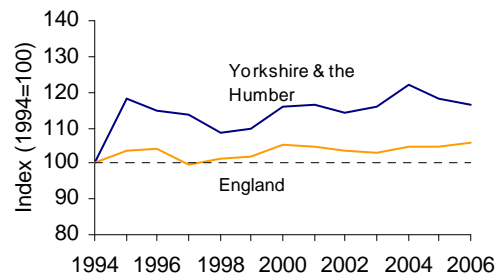


All native bird species

The population of all native birds, including farmland and woodland species, in Yorkshire and the Humber showed a moderate rise, with the index increasing by 17 per cent, between 1994 and 2006, slightly above the national index.

The indices for 45 of the 84 individual bird species included in the index increased by 10 per cent or more. Buzzard and House Martin saw more than three fold increases in their population. Raven, Coot and Oystercatcher also saw an increase of more than 150 per cent in their indices.

Chart 4.18 – All native bird species: 1994 – 2006



Population estimates for thirty-two of the 84 individual bird species, including some farmland and woodland species, were partly based on data from areas outside the region.

This increase in wild bird populations between 1994 and 2006 in Yorkshire and the Humber is in contrast to earlier declines, as shown by the indicator for all native species published in a previous report⁷, which suggested that populations fell by 21 per cent between 1970 and 1994, compared with a fall of 8 per cent for England as a whole over the same period.

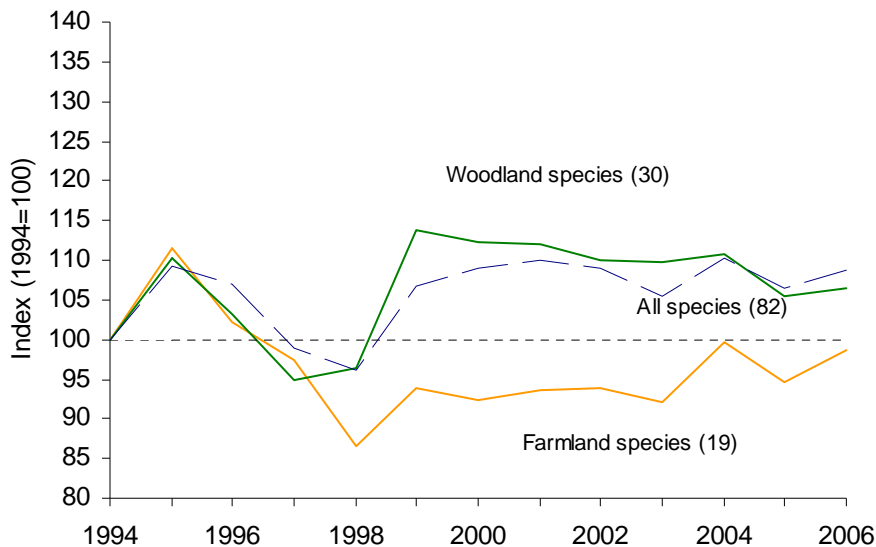
East Midlands Region

Summary:

Between 1994 and 2006, the East Midlands population indices for all native birds with (+9%) and woodland birds (+7%) increased, while farmland birds (-1%) showed no significant change. The woodland birds index was above the national index, while the all native and farmland birds indices showed figures similar to the national averages.

Chart 4.19 –East Midlands wild bird indicators: 1994 – 2006

(numbers in brackets indicate the number of species)



Farmland birds

The population of farmland birds in the East Midlands showed no significant change, with the index decreasing by 1 per cent between 1994 and 2006, similar to the national index.

The indices for 7 of the 19 individual farmland bird species included in the index decreased by 10 per cent or more. Greenfinch and Lapwing saw a rise of 50 per cent or more in their populations. Yellow Wagtail and Linnet saw more than 50 per cent decrease in their populations.

Population estimates for one of the 19 individual farmland bird species was partly based on data from areas outside the region.

Chart 4.20 - Farmland species: 1994 – 2006

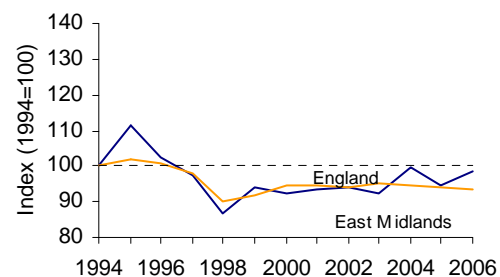


Chart 4.21a - Proportion of changes in farmland bird species populations: East Midlands region, 1970-1994
(Number of species: 15)

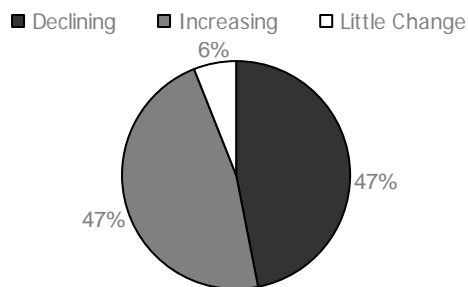
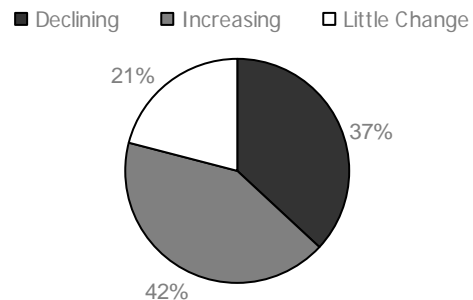


Chart 4.21b - Proportion of changes in farmland bird species populations: East Midlands region, 1994-2006
(Number of species: 19)



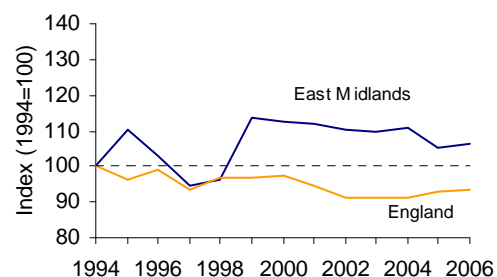
This is the fourth time that an indicator of farmland bird populations in the East Midlands has been compiled, because the previous information, provided from the Common Birds Census (CBC), was based on a relatively small number of sites and species. Hence it is difficult to draw conclusions about longer term changes. The CBC information suggested that, between 1970 and 1994, seven of the 15 farmland bird species covered by the CBC were increasing, with a further seven in decline. The more recent information, from the BTO/RSPB/JNCC Breeding Bird Survey (BBS), shows that between 1994 and 2006, under half of the 19 farmland bird species covered by the BBS declined and about a third were increasing. Comparisons between these two periods need to be treated with caution due to differences in methodology and species composition.

Woodland birds

The population of woodland birds in the East Midlands showed the index increasing by 7 per cent between 1994 and 2006, differing from the national index, which had seen slight decrease.

The indices for 16 of the 30 individual woodland bird species included in the index increased by 10 per cent or more. Green Woodpecker, Green Spotted Woodpecker, Great Tit and Chiffchaff saw increase of more than 90 percent in their populations. Spotted Flycatcher and Willow Tit saw a drop of more than 70 per cent in their populations.

Chart 4.22 - Woodland species: 1994 – 2006



Populations estimates for ten of the 29 individual woodland bird species were partly based on data from areas outside the region.

Previously published⁷ indices showed woodland birds in the East Midlands increasing by 20 per cent between 1970 and 1994. Fifteen of the 26 individual species covered by the old index had rising populations, with Goldcrest, Great Spotted Woodpecker, Lesser Whitethroat and Coal Tit showing marked increases.

However, comparisons between the two periods need to be approached with care owing to differences in methodology and species composition.

Chart 4.23a - Proportion of changes in woodland bird species populations: East Midlands region, 1970-1994
(Number of species: 26)

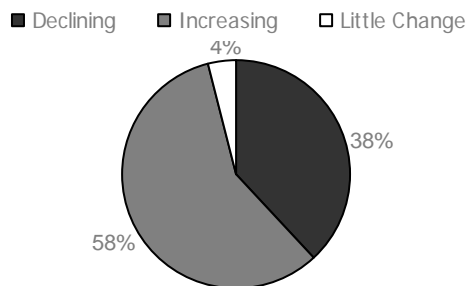
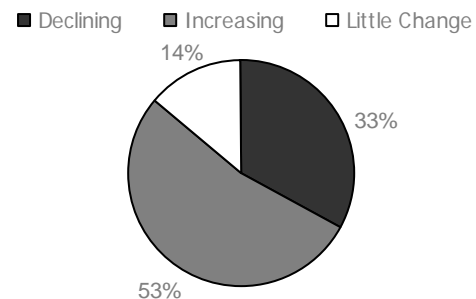


Chart 4.23b - Proportion of changes in woodland bird species populations: East Midlands region, 1994-2006
(Number of species: 30)

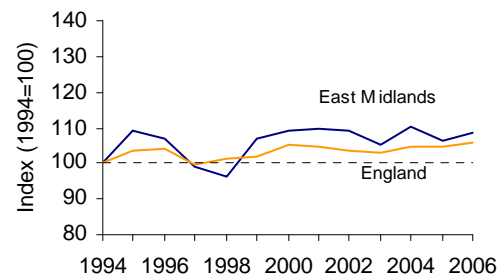


All native bird species

The population of all native birds, including farmland and woodland species, in the East Midlands showed the index increasing by 9 per cent between 1994 and 2006, similar to the national index.

The indices for 39 of the 82 individual bird species included in the index increased by 10 per cent or more. Buzzard and Kingfisher saw a 2-fold and 9-fold increase in their populations respectively.

Chart 4.24 – All native bird species: 1994 – 2006



Population estimates for 28 of the 82 individual bird species, including some farmland and woodland species, were partly based on data from areas outside the region.

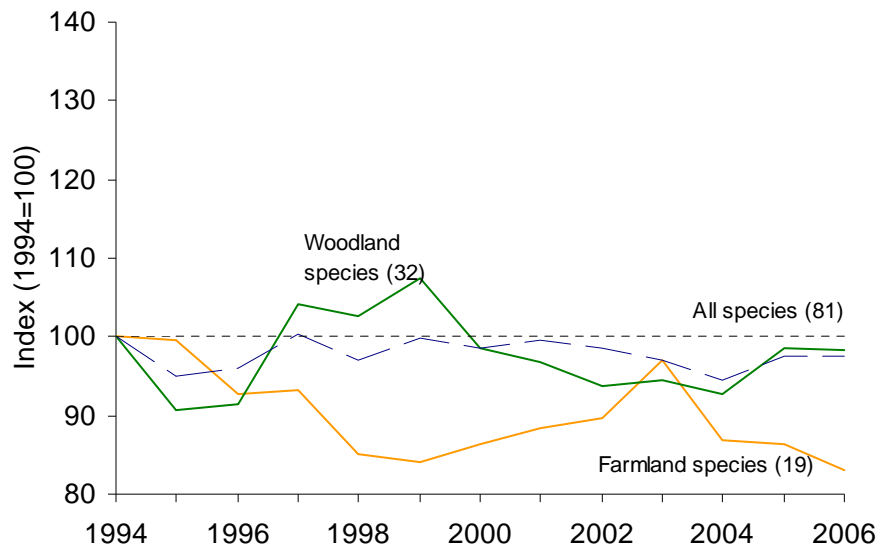
The all-species indicator for wild bird populations in the East Midlands, published in a previous report⁷, suggested that populations increased by 10 per cent between 1970 and 1994, compared with a fall of 8 per cent for England as a whole over the same period.

West Midlands Region

Summary:

Between 1994 and 2006, the West Midlands population index for farmland birds decreased significantly (-17%), while there were small decrease in indices for all native birds (-3%) and woodland birds (-2%), which should not be regarded as significant. The farmland and all species indices were below the national index, while the woodland birds index was above the national index.

Chart 4.25 – West Midlands wild bird indicators: 1994 – 2006
(numbers in brackets indicate the number of species)



Farmland birds

The population of farmland birds in the West Midlands showed a significant change, with the index decreasing by 17 per cent between 1994 and 2006, slightly below the national index.

The indices for 12 of the 19 individual farmland bird species included in the index decreased by 10 per cent or more. Corn Bunting, Yellow Wagtail and Turtle Dove saw 50 per cent falls in their populations. Greenfinch was the only species with more than 50 per cent rise in its population index in the West Midlands.

Population estimates for five of the 19 farmland bird species were partly based on data from areas outside the region.

Chart 4.26 - Farmland species: 1994 – 2006

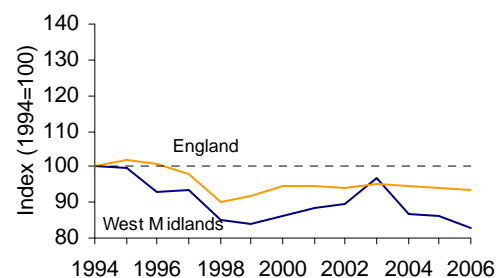


Chart 4.27a - Proportion of changes in farmland bird species populations: West Midlands region, 1970-1994
(Number of species: 14)

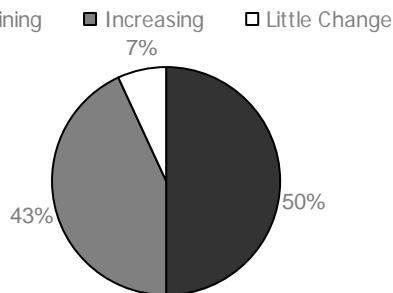
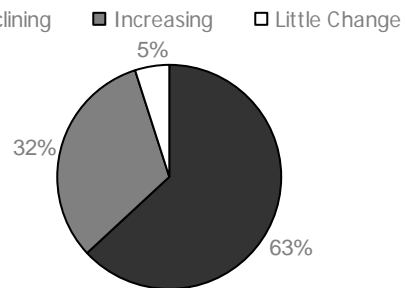


Chart 4.27b - Proportion of changes in farmland bird species populations: West Midlands region, 1994-2006
(Number of species: 19)



This is only the fourth time that an indicator of farmland bird populations in the West Midlands has been compiled, because the previous information, provided from the Common Birds Census (CBC), was based on a relatively small number of sites and species. Hence it is difficult to draw conclusions about the longer term changes. The CBC information suggested that, between 1970 and 1994, there was little change overall, with half of the 14 farmland bird species in decline and nearly half increasing. The more recent information, from the BTO/RSPB/JNCC Breeding Bird Survey (BBS), shows that between 1994 and 2006, Twelve of the 19 species covered by the BBS were in decline, six were increasing and one species was with little change. Comparisons between the two periods need to be treated with caution owing to differences in methodology and species composition.

Woodland birds

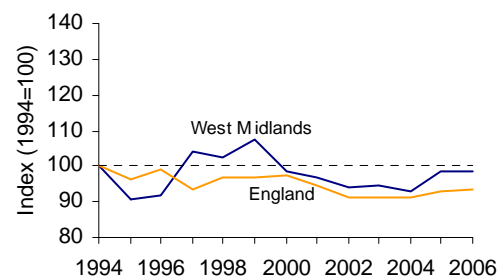
The population of woodland birds in the West Midlands showed non-significant change and a small decline (-2%) between 1994 and 2006, above the national index.

The indices for 16 of the 32 individual woodland bird species included in the index increased by 10 per cent or more. Great Spotted Woodpecker, Nuthatch and Goldcrest saw increase of more than 100 per cent rise in their populations, while Tawny Owl, Wood Warbler and Willow Tit saw a 70 per cent decline in their populations.

Population estimates for 10 of the 32 individual woodland bird species were partly based on data from areas outside the region.

Previously published⁷ indices showed woodland birds in the West Midlands increasing by 67 per cent between 1970 and 1994. Sixteen of the 22 individual species covered by the old index had rising populations, with Great Spotted Woodpecker and Goldcrest showing marked increases. However, it should be noted

Chart 4.28 - Woodland species: 1994 – 2006



that comparisons between the two periods are to be approached with care because of the differences in methodology and species composition.

Chart 4.29a - Proportion of changes in woodland bird species populations: West Midlands region, 1970-1994
(Number of species: 22)

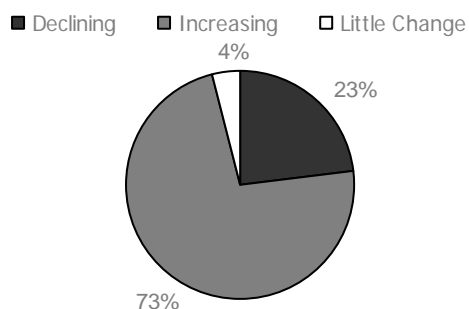
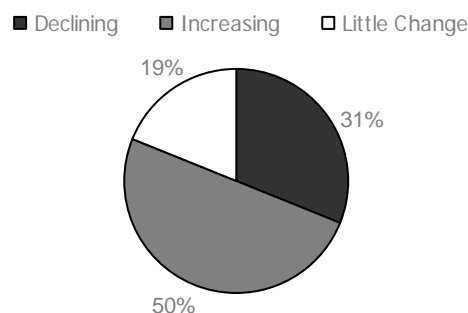


Chart 4.29b - Proportion of changes in woodland bird species populations: West Midlands region, 1994-2006
(Number of species: 32)



All native bird species

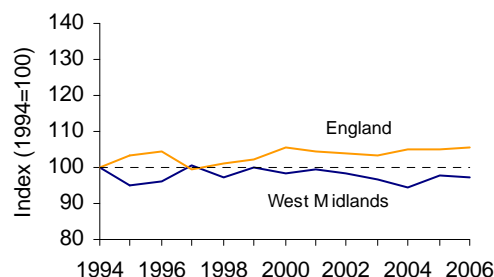
The population of all native birds, including farmland and woodland species, in the West Midlands showed no significant change, with the index decreasing by just 3 per cent between 1994 and 2006, differing from the national index, which saw a small increase.

The indices for 35 of the 81 individual bird species included in the index increased by 10 per cent or more. There have been decline of nearly 70 per cent in the populations of Wood Warbler, Tawny Owl and Willow Tit. Kingfishers saw a three fold increase, while Buzzard, Nuthatch, Coot and Great Spotted Woodpecker also saw increases of more than 100 per cent in their populations.

Population estimates for 30 of the 81 individual bird species, including some farmland and woodland species, were partly based on data from areas outside the region.

The indicator published in a previous report⁷ showed the all-species index of wild bird populations in the West Midlands increasing by 26 per cent between 1970 and 1994, compared with a fall of 8 per cent for England as a whole over the same period.

Chart 4.30 – All native bird species: 1994 – 2006



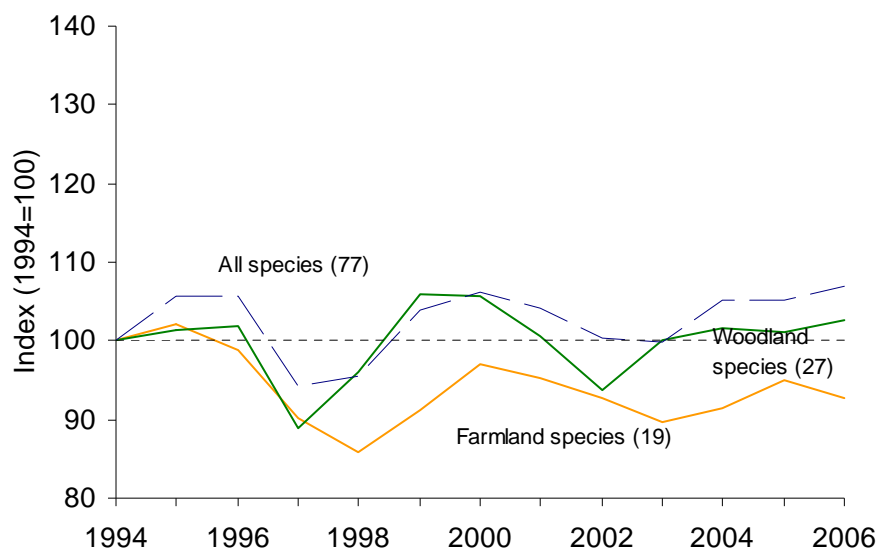
East of England Region

Summary:

Between 1994 and 2006 the East of England population indices for all native bird species (+7%) and woodland bird species (+3%) showed non-significant increase, There was a non-significant decrease for farmland bird species (-7%). In the case of farmland birds the change was similar to the national index and for woodland birds, the index was above the national index.

Chart 4.31 – East of England wild bird indicators: 1994 – 2006

(numbers in brackets indicate the number of species)

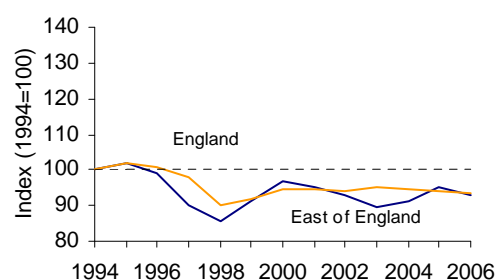


Farmland birds

The population of farmland birds in the East of England showed the index decreasing by 7 per cent between 1994 and 2006, similar to the national index.

The indices for 12 of the 19 individual farmland bird species included in the index decreased by 10 per cent or more. Turtle Dove populations decreased by 65 per cent. Jackdaw and Rook saw increases of 70 per cent in their populations.

Chart 4.32 - Farmland species: 1994 – 2006



Population estimates for one of the 19 individual farmland bird species was partly based on data from areas outside the region.

Previously published⁷ indices showed that farmland birds in the East of England declined by 44 per cent between 1970 and 1994. Thirteen of the 18 individual species covered by the old index showed populations falling, with large declines in the numbers of Lapwing, Grey Partridge, Starling and Reed Bunting. Owing to the differences in species composition and methodology, comparisons should be approached with care.

Chart 4.33a - Proportion of changes in farmland bird species populations: East of England region, 1970-1994
(Number of species: 18)

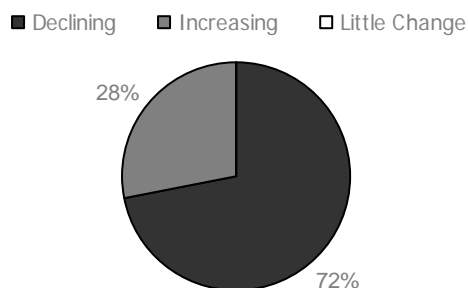
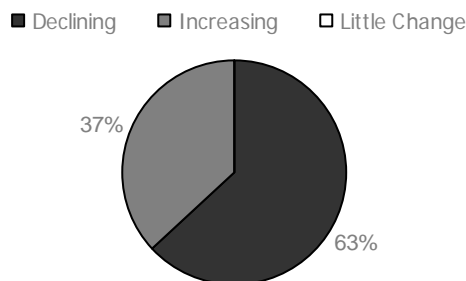


Chart 4.33b - Proportion of changes in farmland bird species populations: East of England region, 1994-2006
(Number of species: 19)

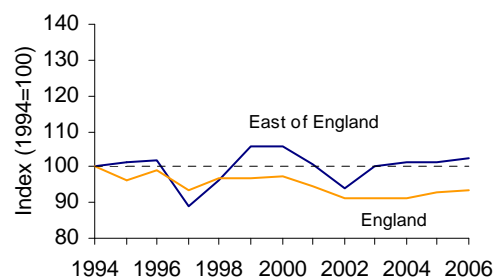


Woodland birds

The population of woodlands birds in the East of England showed no significant change, with the index increasing by 3 per cent between 1994 and 2006, differing from the national index, which had seen a slight decrease.

The indices for 13 of the 27 individual woodland bird species included in the index increased by 10 per cent or more. Green Woodpecker and Great Spotted Woodpecker populations saw increase of more than 100 per cent in their populations, while Spotted Flycatcher saw a 70 per cent decrease in its population.

Chart 4.34 - Woodland species: 1994 – 2005



Population estimates for three of the 27 estimates for individual woodland bird species were partly based on data from areas outside the region.

Previously published indices showed woodland birds in the East of England declining by 19 per cent between 1970 and 1994. Thirteen of the 26 species covered by the old index increased over the period, but this was outweighed by 9 species which showed decreases of 50 per cent or more. Comparisons between the two periods need to be approached with care owing to differences in species composition and methodology.

Chart 4.35a - Proportion of changes in woodland bird species populations: East of England region, 1970-1994
(Number of species: 26)

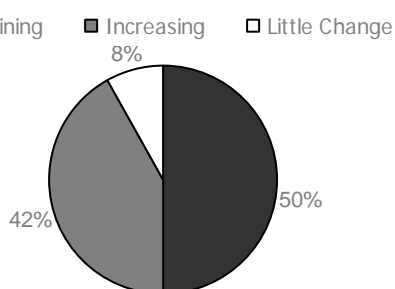
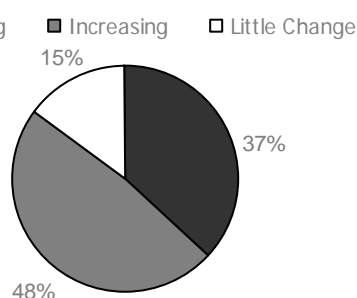


Chart 4.35b - Proportion of changes in woodland bird species populations: East of England region, 1994-2006
(Number of species: 27)

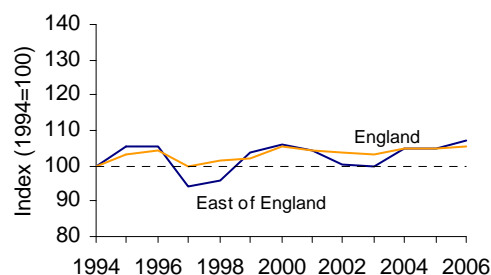


All native bird species

The population of all native birds, including farmland and woodland species, in the East of England showed no significant change, with the index increasing by 7 per cent between 1994 and 2006, in line with the national index.

The indices for 37 of the 77 individual bird species included in the index increased by 10 per cent or more. Buzzard saw a ten fold increase in its population. Turtle Dove saw a 65 per cent drop in its population.

Chart 4.36 – All native bird species: 1994 – 2006



Population estimates for 14 of the 77 individual bird species, including some farmland and woodland species, were partly based on data from areas outside the region.

The indicator published in a previous report⁷ showed the all-species index of wild bird populations in the East of England decreasing by 21 per cent between 1970 and 1994, compared with a fall of 8 per cent for England as a whole over the same period.

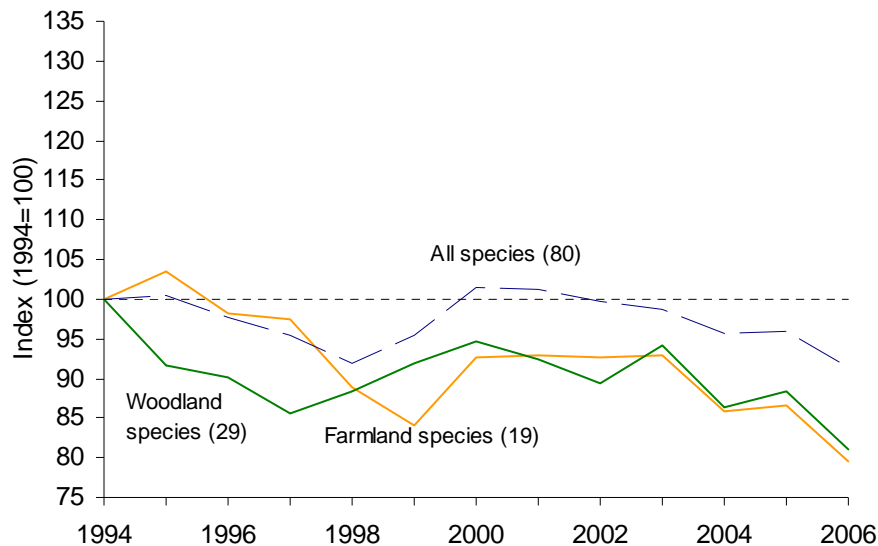
South East Region

Summary:

Between 1994 and 2006, the South East population indices for farmland birds (-21%) and woodland birds (-19%) decreased significantly, while the index for all native bird species saw a small decrease (-9%), which should not be regarded as significant. In all cases, the indices were below the national index.

Chart 4.37 – South East wild bird indicators: 1994 – 2006

(numbers in brackets indicate the number of species)

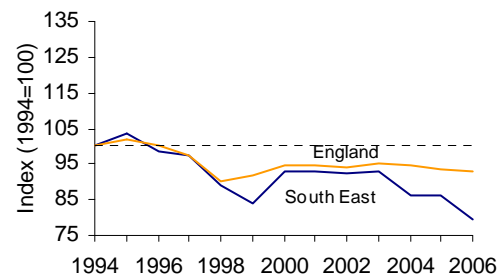


Farmland birds

The population of farmland birds in the South East showed the index decreasing by 21 per cent between 1994 and 2006, below the national index.

The indices for 12 of the 19 individual farmland bird species included in the index decreased by 10 per cent or more. Grey Partridge, Turtle dove and Corn Bunting saw decrease of more than 50 per cent in their populations. Whitethroat saw an increase of more than 70 per cent in its population.

Chart 4.38 - Farmland species: 1994 – 2006



Populations estimates for one of the 19 estimates for individual farmland bird species was partly based on data from areas outside the region.

Previously published⁷ indices showed farmland birds in the South East declining by 31 per cent between 1970 and 1994. Twelve of the 18 individual species covered by the old index showed falling populations, with large declines for Grey Partridge, Starling and Corn Bunting. Owing to differences in methodology and species composition, comparisons need to be approached with care.

Chart 4.39a - Proportion of changes in farmland bird species populations: South East region, 1970-1994
(Number of species: 18)

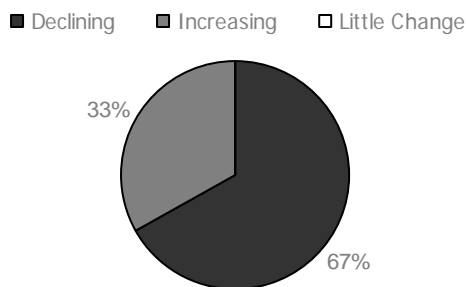
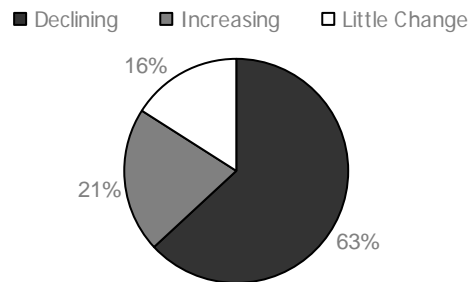


Chart 4.39b - Proportion of changes in farmland species populations: South East region, 1994-2006
(Number of species: 19)

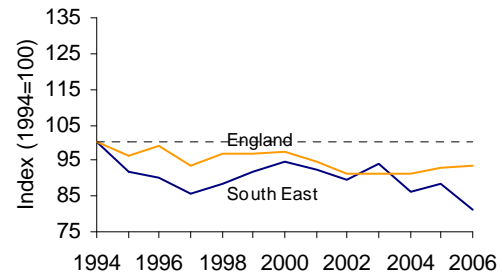


Woodland birds

The population of woodland birds in the South East showed the index decreasing by 19 per cent between 1994 and 2006, slightly below the national index.

The indices for 16 of the 29 individual woodland bird species included in the index decreased by 10 per cent or more. Spotted Flycatcher, Willow Warbler and Willow Tit populations dropped by more than 50 per cent. Great spotted woodpecker saw an increase of more than 100 per cent in its population.

Chart 4.40 - Woodland species: 1994 – 2006



Population estimates for three of the 28 individual woodland bird species were partly based on data from areas outside the region.

Previously published⁷ indices showed woodland bird populations in the South East declining by 21 per cent between 1970 and 1994. Fifteen of the 30 individual species covered by the old index showed populations falling, with large declines for some species such as Lesser Spotted Woodpecker, Woodcock and Willow Tit. Comparisons between the two periods need to be approached with care owing to differences in species composition and methodology.

Chart 4.41a - Proportion of changes in woodland bird species populations: South East region, 1970-1994
(Number of species: 30)

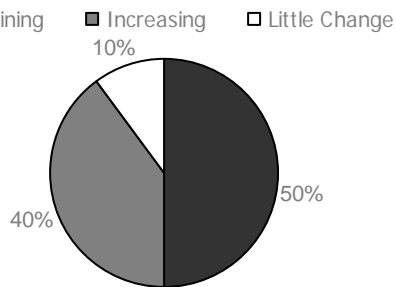
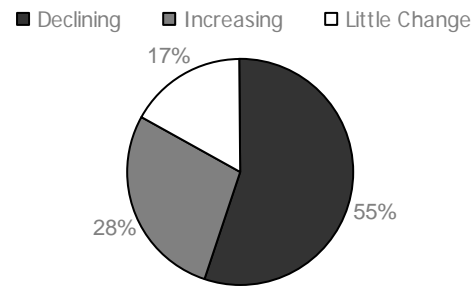


Chart 4.41b - Proportion of changes in woodland bird species populations: South East region, 1994-2006
(Number of species: 29)

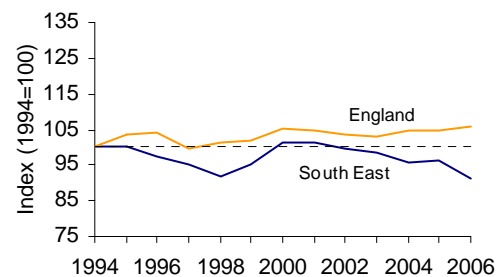


All native bird species

The population of all native birds, including farmland and woodland species, in the South East showed a decrease of 9 per cent between 1994 and 2006, differing from the national index, which had seen a slight increase.

The indices for 37 of the 80 individual bird species included in the index decreased by 10 per cent or more, with Willow Tit, Willow Warbler, Turtle Dove, Spotted Flycatcher and Grey Partridge populations decreasing by more than 50 per cent decrease. However, Buzzard, saw a seven fold increase in its population.

Chart 4.42 – All native bird species: 1994 – 2006



Population estimates for 19 of the 80 individual bird species, including some farmland and woodland species, were partly based on data from areas outside the region.

The indicator for all native species published in a previous report⁷ also showed little change in wild bird populations (down by 8 per cent) between 1970 and 1994, compared with a fall of 8 per cent for England as a whole over the same period.

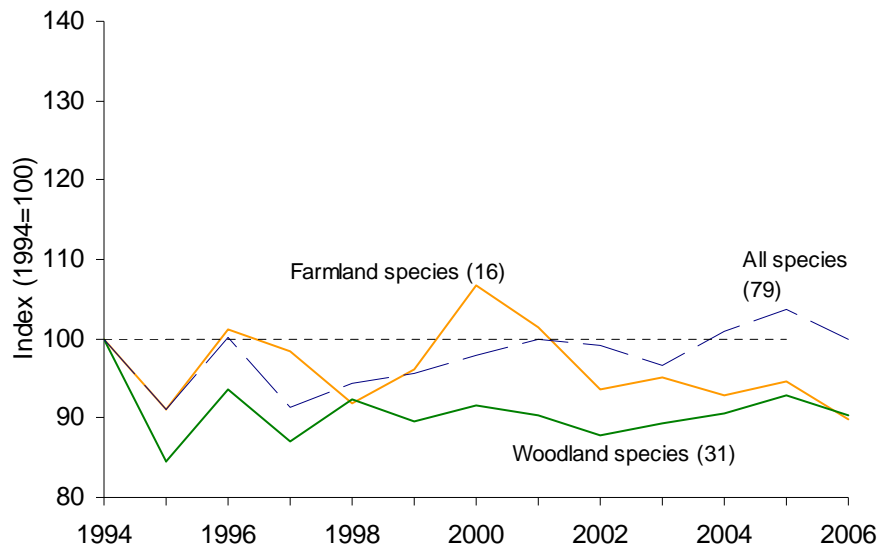
South West Region

Summary:

Between 1994 and 2006, the South West population indices for all native bird species was unchanged. The indices for both farmland birds and for woodland birds dropped by 10 per cent. In all cases, the indices were broadly in line with the national index.

Chart 4.43 – South West wild bird indicators: 1994 – 2006

(numbers in brackets indicate the number of species)

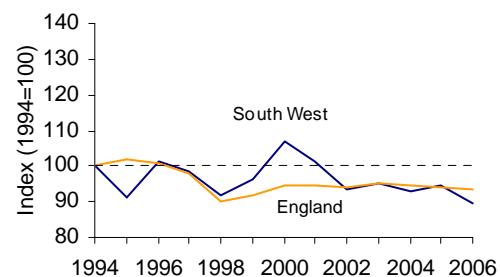


Farmland birds

The population of farmland birds in the South West showed significant change, with the index decreasing by 10 per cent between 1994 and 2006, similar to the national index.

The indices for seven of the 16 individual farmland bird species included in the index showed a decrease of 10 per cent or more. Lapwing, Starling and Grey Partridge saw decreases of more than 50 per cent in their populations. Greenfinch population increased by more than 50 per cent.

Chart 4.44 - Farmland species: 1994 – 2006



Two of the 16 estimates for individual farmland bird species were partly based on data from areas outside the region.

Previously published⁷ indices showed farmland bird populations in the South West declining by 45 per cent between 1970 and 1994, with 10 of the 15 individual species covered by the old index showing falling populations, with a large decline for Grey Partridges. Owing to the differences in species composition and methodology, comparisons between the two periods need to be approached with care.

Chart 4.45a - Proportion of changes in farmland bird species populations: South West region, 1970-1994
(Number of species: 15)

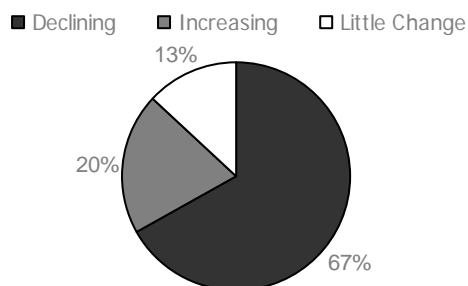
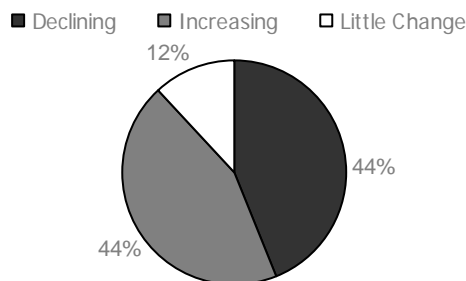


Chart 4.45b - Proportion of changes in farmland bird species populations: South West region, 1994-2006
(Number of species: 16)

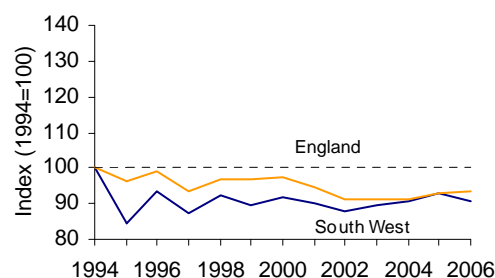


Woodland birds

The population of woodland birds in the South West showed the index decreasing by 10 per cent between 1994 and 2006, broadly in line with the national index.

The indices for 11 of the 31 individual woodland bird species included in the index decreased by 10 per cent or more. Willow Tit and Wood Warbler decreased by more than 70 per cent.

Chart 4.46 - Woodland species: 1994 – 2006



Six of the 31 estimates for individual woodland bird species were partly based on data from areas outside the region.

Previously published⁷ indices showed woodland birds in the South West declining by 32 per cent between 1970 and 1994. Sixteen out of the 26 species covered by the index declined over the period, with a large decline for Tawny Owls. Comparisons between the two periods need to be approached with care, owing to differences in methodology and species composition.

Chart 4.47a - Proportion of changes in woodland bird species populations: South West region, 1970-1994
(Number of species: 26)

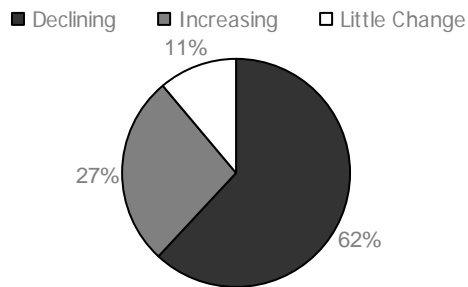
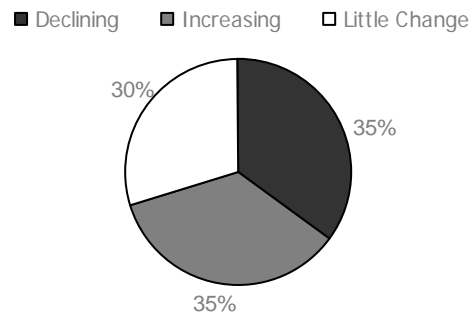


Chart 4.47b - Proportion of changes in woodland bird species populations: South West region, 1994-2006
(Number of species: 31)



All native bird species

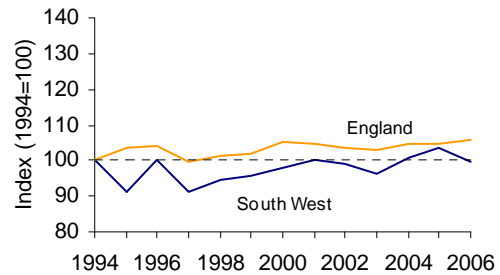
The population of all native birds, including farmland and woodland species, in the South West showed no significant change between 1994 and 2006, similar to the national index.

The indices for 36 of the 79 individual bird species included in the index increased by 10 per cent or more. The Raven, Great Spotted Woodpecker, Coot, Wheatear, Shelduck saw increases of more than 100 per cent rise in their populations, while Willow Tit, Wood Warbler and Cuckoos populations decreased by more than 70 per cent.

Population estimates for nineteen of the 79 individual bird species, including some farmland and woodland species, were partly based on data from areas outside the region.

The indicator for all native species published in a previous report⁷ showed populations declining by 24 per cent between 1970 and 1994, compared with a fall of 8 per cent for England as a whole over the same period.

Chart 4.48 – All native bird species: 1994 – 2005



Annex 1: Explanatory Notes

1. Regional versions of the indicators, up to 2005, were last published online on 15 March 2007. This includes the regional wild birds indicator (covering both the medium term data for the years 1994 to 2005, and the longer term data for a subset of regions for the years 1970 to 1994).
2. National figures up to 2006 were published on 18 October 2007. National bird population data are used by Defra for its Public Service Agreement indicator on biodiversity as indicated by changes in wild breeding bird populations in England, as a proxy for the health of wider biodiversity.
3. All the wild bird population indicators are compiled by the RSPB and BTO, and are based on a wide range of sources, principally the BTO/RSPB/JNCC Breeding Bird Survey, the Common Birds Census, the BTO Waterways Bird Survey and the JNCC Seabird Monitoring Programme. The regional wild bird indicators are based on a similar approach to that used to produce the UK indicator, with separate indices for all bird species, for woodland species and for farmland species.
4. A new methodology was introduced in 2005 in which estimates of population changes in areas outside the specific region were used to inform the estimate of the change within the region for species which would otherwise not be included due to sample size limitations. This was introduced in an effort to make the species composition across the regions more comparable. Other data sources were also considered for species which are poorly monitored by the BBS, but which are relatively abundant (national populations exceeding 500 pairs). More information about these changes is included in last year's report regarding the production of the regional indicators from the RSPB and the BTO⁴.
5. It was not possible to complete the BTO/RSPB/JNCC Breeding Bird Survey in 2001 because of the restrictions on access resulting from the occurrence of Foot and Mouth Disease: estimates for this year are based on the average of 2000 and 2002 for individual species.
6. The Regional breakdown reflects the Government Office Region structure in England.

Annex 2: Woodland and Farmland bird species included in the indicator¹

Woodland² (33)

Blackbird
Blackcap
Blue Tit
Bullfinch
Chaffinch
Chiffchaff
Coal Tit
Dunnock
Garden Warbler
Goldcrest
Great Spotted Woodpecker
Great Tit
Green Woodpecker
Hawfinch
Jay
Lesser Spotted Woodpecker
Lesser Redpoll
Lesser Whitethroat
Long-tailed Tit
Marsh Tit
Nightingale
Nuthatch
Redstart
Robin
Song Thrush
Sparrowhawk
Spotted Flycatcher
Tawny Owl
Tree Pipit
Trecreeper
Willow Tit
Willow Warbler
Wood Warbler
Wren

Farmland³ (19)

Corn Bunting
Goldfinch
Greenfinch
Grey Partridge
Jackdaw
Kestrel
Lapwing
Linnet
Reed Bunting
Rook
Skylark
Starling
Stock Dove
Tree Sparrow
Turtle Dove
Whitethroat
Woodpigeon
Yellowhammer
Yellow Wagtail

1 Habitat classifications are generally based on 'Gibbons, D.W., Reid, J.B. & Chapman, R.A. 1993. The New Atlas of Breeding Birds in Britain and Ireland: 1988-1991. London: T. & A.D. Poyser.'

2 In addition, figures for Wood Warbler have been estimated for three regions: North East, West Midlands and South West.

3 Turtle Dove is not included in the species list for North East and North West, and in the South West Tree Sparrow, Turtle Dove and Yellow Wagtail are not included in the species list.

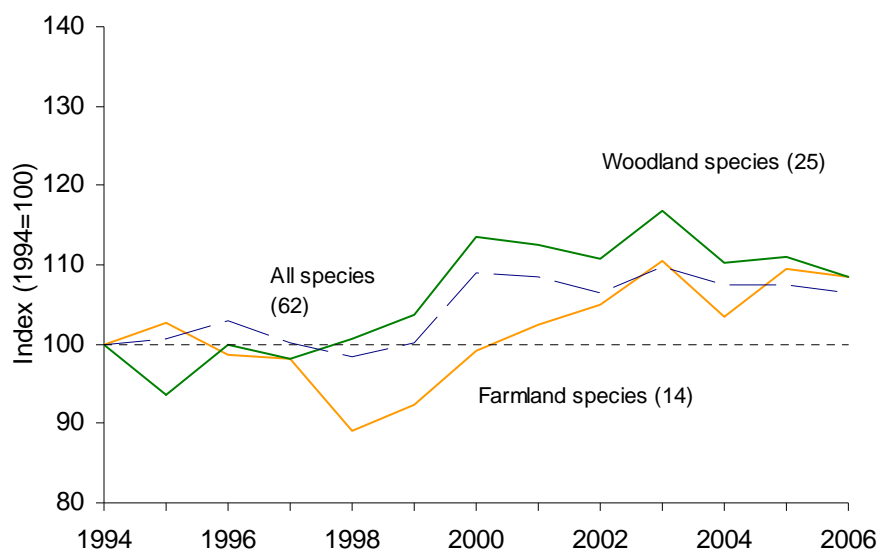
Annex 3: London Region

Please note that some of the information used to construct these indicators is drawn from the area surrounding London, so that interpretation of the data should be approached with caution.

Summary:

Between 1994 and 2006, the London population indices for all native bird species (+6%), woodland species (+9%) and farmland species (+8%) showed no significant change. In all cases, the indices were above the national index.

Chart 4.49 – London wild bird indicator: 1994 – 2006
(numbers in brackets indicate the number of species)

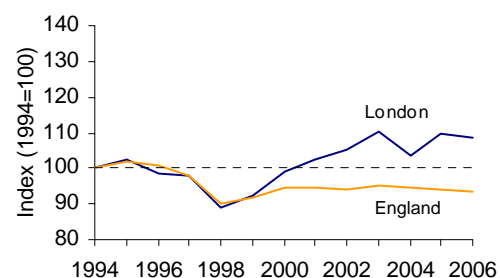


Farmland birds

The population index of farmland birds in London increased by 8 per cent between 1994 and 2006, in contrast to the national index, which had seen a slight decline.

The indices for five of the 14 individual farmland bird species included in the index increased by 10 per cent or more. Greenfinch, woodpigeon and Jackdaw populations saw increases of more than 70 per cent.

Chart 4.50 - Farmland species: 1994 – 2006



Population estimates for ten of the 14 individual farmland bird species were partly based on data from areas outside the region.

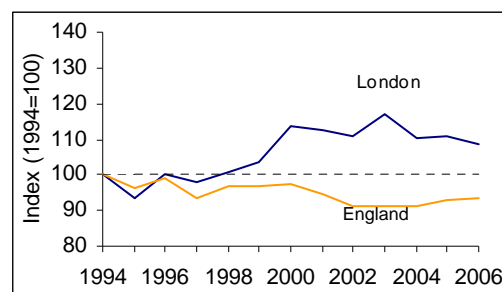
This is only the fourth time that such an index for London birds has been produced, and no comparisons with years before 1994 are possible.

Woodland birds

The population of woodland birds in London the index increasing by 9 per cent between 1994 and 2006 differing to the national index, which had seen a slight decline.

The indices for 11 of the 25 individual woodland bird species included in the index showed an increase of 10 per cent or more. Green Woodpecker, Great Spotted Woodpecker, Great Tit saw increases of more than 100 per cent in their populations.

Chart 4.51 - Woodland species: 1994 – 2006



Population estimates for 13 of the 25 estimates for individual woodland bird species were partly based on data from areas outside the region.

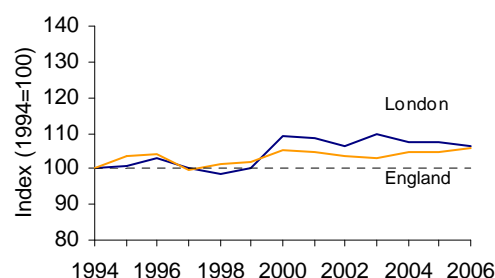
This is only the fourth time that such an index for London birds has been produced, and no comparisons with years before 1994 are possible.

All native bird species

The population of all native birds, including farmland and woodland species, in London showed no significant change, with the index increasing by 6 per cent between 1994 and 2006, broadly in line with the national index.

The indices for 26 of the 62 individual bird species included in the index increased by 10 per cent or more, with Chaffinch, Great Tit, Greenfinch, Great Spotted Woodpecker and Green Woodpecker populations increasing by more than 100 per cent.

Chart 4.52 – All native bird species: 1994 – 2006



Population estimates for 38 of the 62 estimates for individual bird species, including some farmland and woodland species, were partly based on data from areas outside the region.

This is only the fourth time that such an index for London birds has been produced, and no comparisons with years before 1994 are possible.

Notes and references

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- ¹ *Securing the Future – UK Government sustainable development strategy*, March 2005, Department for Environment, Food and Rural Affairs
www.sustainable-development.gov.uk/publications/uk-strategy/index.htm
- ² *The UK Biodiversity Partnership. Biodiversity Indicators*.
www.JNCC.gov.uk/biypf
- ³ *Public Service Agreement indicator on biodiversity*. For details of the Natural Environment Delivery Agreement see
www.hm-treasury.gov.uk/media/1/3/pbr_csr07_psa28.pdf
- ⁴ *Production of Regional Indicators for Wild Bird Populations*, May 2002, David Noble, Richard Gregory Rob Field, John Marchant and Mike Raven [RSPB/BTO] for a description of the methodology used. Available at
www.defra.gov.uk/environment/statistics/wildlife/research/download/rwbrpt.pdf
- ⁵ *The production of BBS-based Regional Indicators for Wild Bird Populations: 1994-2004*, Noble, D.G., Joys, and Eaton, M.A. [RSPB/BTO], which will be published on the Defra website
www.defra.gov.uk/environment/statistics/wildlife/research/download/regbirds1994-2004.pdf
- ⁶ *Wild bird indicators for the English Regions: 1994-2004*, March 2006.
www.defra.gov.uk/environment/statistics/wildlife/research/rwbi.htm
- ⁷ *Regional Wild Birds Indicators in England: 1970 – 2000*, March 2003.
- ⁸ The time series for England covering BBS results from 1970 to 2005 is available at
www.defra.gov.uk/wildlife-countryside/biodiversity/biostrat/indicators/index.htm
- ⁹ *Wild Bird Populations: Headline indicators for sustainable development, 2004*, DEFRA, October 2005.
- ¹⁰ *Generation of Confidence Intervals for Wild Bird Indicators*, March 2005, Andrew Joys and David Noble [RSPB/BTO]. Available at
www.defra.gov.uk/environment/statistics/wildlife/research/rwbi.htm