BTO RESEARCH REPORT

Breeding Birds in the Wider Countryside: their conservation status 2007

Baillie, S., Marchant, J., Crick, H., Noble, D., Balmer, D., Barimore, C., Coombes, R., Downie, I., Freeman, S., Joys, A., Leech, D., Raven, M., Robinson, R. & Thewlis, R.

Birds Science People

Breeding Birds in the Wider Countryside: their conservation status 2007

Trends in numbers and breeding performance for UK birds

- Summary of key findings
- Choose species information
- Using this website
- Contents of this report

Tree Pipits – one of a group of long-distance migrants that are of conservation concern – have declined by 82% over the past 25 years

Using this website

This website is a "one-stop shop" for information about the population status of our common terrestrial birds. It is based on data gathered by many thousands of volunteers who contribute to BTO-led surveys. With one page per species, users can quickly find all the key information about trends in population size and breeding performance over the period 1967–2006, as measured by BTO monitoring schemes.

The **summary of key findings** provides a brief overview of our main findings this year. For each species, we provide:

- General information concerning species' conservation listings and UK population sizes
- A brief summary of observed changes in the size of the population and information concerning the possible causes of these changes
- A series of graphs and tables showing the trends and changes in population size and breeding performance over the past 38 years
- Trends calculated from BTO/JNCC/RSPB Breeding Bird Survey (BBS) data, not only for the UK as a whole but also for each of its constituent countries (England, Scotland, Wales and Northern Ireland)
- A system of Alerts that highlight population declines in any census scheme of greater than 25% or greater than 50% that have occurred over the past 5 years, 10 years, 25 years and 38 years.

The website also provides details of the field and analytical **methods** that were used to produce the results for each species and of the methods used to identify **alerts**. We **discuss** overall patterns of trends in abundance and breeding success, and compare the latest trend information and alerts with the Population Status of Birds list (**Gregory *et al.* 2002**). Four **appendices** list alerts and population changes by scheme, and there is also a facility to select and display your own **tables of population change**.

You can navigate your way around the site using links from the **contents page** and between sections. Alternatively use the drop-down menus accessible from the menu bar at the top of each page. The top right menu provides a drop-down list with quick access to the species accounts. To find out about other online survey results and how you can participate, visit **BirdWeb** by clicking on the BirdWeb logo in the page footers.

The website covers the majority of British breeding birds, over 100 species in total, but excludes (with a few exceptions) colonial seabirds, which are well covered by the JNCC's **Seabird Monitoring Programme** (**Mavor *et al.* 2006**), and rare species that are included in the reports of the **Rare Breeding Birds Panel** (e.g. **Holling & RBBP 2007a**, **2007b**).

We value your comments on this report and particularly any suggestions on how it can be improved.

Email your comments

Authors

This report was written by Stephen Baillie, John Marchant, Humphrey Crick, David Noble, Dawn Balmer, Carl Barimore, Rachel Coombes, Iain Downie, Steve Freeman, Andrew Joys, David Leech, Mike Raven, Rob Robinson and Richard Thewlis. The formal citation for the report is given in the page footer.

Next page – Key findings

Key findings

Declining species

Best trend estimates over the longest available time period (usually 38 years) provide alerts to rapid declines of 50% or greater for 22 species. These are **Grey Partridge**, **Little Grebe**, **Woodcock**, **Turtle Dove**, **Cuckoo**, **Lesser Spotted Woodpecker**, **Skylark**, **Tree Pipit**, **Yellow Wagtail**, **Song Thrush**, **Whitethroat**, **Willow Warbler**, **Spotted Flycatcher**, **Marsh Tit**, **Willow Tit**, **Starling**, **House Sparrow**, **Tree Sparrow**, **Linnet**, **Lesser Redpoll**, **Yellowhammer** and **Corn Bunting**.

Most of these rapidly declining species are already red or amber listed on the Population Status of Birds (PSoB) list (**Gregory *et al.* 2002**).

Turtle Doves have declined by 82% over the last 38 years

The **Whitethroat** decline results from the severe crash between 1968 and 1969 linked to conditions on the wintering grounds. The **Little Grebe** decline should be treated with caution as we have long-term data only from waterways.

Lesser Redpoll, **Tree Pipit** and **Woodcock** also have limited data. For several of the species listed here long-term trend data are only available for England, where BTO has more volunteers to record information. Different long-term trends could be operating in other parts of the UK.

A further 13 species trigger alerts as a result of long-term declines of between 25% and 50% over periods of 20 to 38 years. These are **Red-legged Partridge**, **Kestrel**, **Lapwing**, **Redshank**, **Common Sandpiper**, **Little Owl**, **Tawny Owl**, **Meadow Pipit**, **Dunnock**, **Mistle Thrush**, **Reed Warbler**, **Lesser Whitethroat** and **Bullfinch**. Most of these species are already on the PSoB list on account of their population declines.

Recent alerts and alert changes

Tawny Owl is one of two owl species for which we report new long-term declines

We draw special attention to the alerts for three species that have recently crossed the 50% decline threshold. These are **Yellow Wagtail** (-70%), **Willow Warbler** (-60%) and **Cuckoo** (-59%). These may be candidates for future addition to the red section of the PSoB list.

We also identify four species that may become candidates to join the amber list due to declines of between 25% and 50%. These are **Common Sandpiper** (-26% over 25 years), **Little Owl** (-41% over 38 years), **Tawny Owl** (-27% over 25 years) and **Lesser Whitethroat** (-25% over 25 years). The two owl species are highlighted in this way for the first time. **Red-legged Partridge** also falls within this decline category (-30% over 25 years) but would not be a candidate for amber listing because it is an introduced species.

Bullfinch is a currently red-listed species, but its long-term population decline is now just under 50%, at -49% over 38 years, due to a population increase of 10% over the past 5 years. Similarly the red-listed **Reed Bunting** now shows only a 21% decline over the last 38 years, brought about by an increase of 27% over the past 5 years. If these trends continue both species may be candidates for changing from red to amber lists.

Reed Warbler populations monitored on reedbed sites have shown a population decline of -31% over the past 21 years. This is a worrying trend that needs further investigation.

Positive changes

Only a few of those species that have declined previously show evidence of improvements in status, with nine formerly declining species showing clear positive trends over the last 10 years. These are **Red-legged Partridge**, **Snipe**, **Grey Wagtail**, **Dunnock**, **Song Thrush**, **Whitethroat**, **Goldcrest**, **Tree Sparrow** and **Reed Bunting**. The increases in the red-listed **Song Thrush** and **Reed Bunting** are particularly encouraging, as are the positive trends for amber-listed **Dunnock** and **Grey Wagtail**. However the most recent figures for **Song Thrush** and **Grey Wagtail** suggest that their recoveries may be levelling off well short of their previous population levels. Similarly, while the BBS shows a 29% increase in **Snipe** over the last 10 years, the population has been declining again since 2003.

Tree Sparrows are starting to recover from their long-term decline

Eighteen species have more than doubled over the longest time period for which data are available (usually 38 years). These are **Mute Swan**, **Canada Goose**, **Shelduck**, **Mallard**, **Goosander**, **Oystercatcher**, **Sparrowhawk**, **Buzzard**, **Stock Dove**, **Collared Dove**, **Woodpigeon**, **Green Woodpecker**, **Great Spotted Woodpecker**, **Nuthatch**, **Blackcap**, **Great Tit**, **Magpie** and **Carrion Crow**.

Reduced breeding success

Lapwings have declined due to reduced breeding success

There are a number of species for which declines in breeding performance are likely to be driving the population declines (**Linnet** and **Lapwing**) or helping to inhibit recovery (possibly **Reed Bunting**). The importance of decreases in individual aspects of breeding performance for declining **Yellow Wagtail**, **Willow Warbler**, **Spotted Flycatcher** and **House Sparrow** remain to be determined, as do the implications of the large reductions in CES productivity measures recorded for **Song Thrush**, **Willow Warbler**, **Linnet**, **Lesser Redpoll** and **Reed Bunting**. Many declining species show improving productivity, probably as a consequence of density-dependent processes (there are more resources available to feed the young when population numbers are low).

Increased breeding success

Increasing breeding performance may be helping to drive population expansion of a number of rapidly increasing species: the predatory **Grey Heron**, **Sparrowhawk** and **Buzzard**; the corvids **Jackdaw**, **Magpie** and **Carrion Crow**; the seed-eaters **Collared Dove** and **Stock Dove**; and the insectivores **Pied Wagtail**, **Robin**, **Wren**, **Nuthatch**, **Blue Tit** and **Great Tit**.

Early nesting

Data from the Nest Record Scheme provide strong evidence of shifts towards earlier laying in a range of species, linked to climate change (**Crick *et al.* 1997**, **Crick & Sparks 1999**). We have now identified 37 species that, on average, are laying up to 30 days earlier than they did 38 years ago. The species involved represent a wide range of taxonomic and ecological groups. Examples include **Long-tailed Tit** (15 days earlier), **Greenfinch** (14 days earlier), **Redstart** (11 days earlier) and **Swallow** (7 days earlier). The consequences of these changes for bird populations need further investigation.

On average, Greenfinches are now laying 14 days earlier than in 1968

Next page – Contents

Contents

1. INTRODUCTION

Since its formation in 1933, BTO has been deeply committed to gathering quantitative information on the bird populations of the UK. Its nationwide network of skilled volunteers, many of whom are long-term contributors to survey schemes, provides the ideal way to monitor the bird populations that are widely distributed across the countryside. BTO data, from such schemes as the **BTO/JNCC/RSPB Breeding Bird Survey**, the **Common Birds Census** and **Nest Record Scheme**, have been increasingly influential in determining nature conservation policy in the UK. The partnership between JNCC and BTO has ensured that these schemes are operated and developed so as to provide high-quality information for nature conservation.

The value of the monitoring work undertaken by the BTO was recognised in the Government's Biodiversity Steering Group report (**Anon. 1995**). The BTO's results, particularly those regarding declining farmland species, are highlighted as an example of the way in which broad-scale surveillance techniques can identify important new trends. More generally, the report states that monitoring is essential if the broad aims, specific objectives and precise targets of the Government's Biodiversity Action Plans are to be achieved. It notes that:

- baselines must be established;
- regular and systematic recording must be made, to detect change; and
- the reasons for change should be studied, to inform action.

The BTO's monitoring schemes fulfil a considerable portion of these needs for a wide range of bird species in the UK.

The current system of **alerts** derived from the BTO's census and nest record data ensures that conservation bodies are quickly made aware of important demographic changes. Multi-species **indicators**, making extensive use of BTO census data, track how bird populations are faring generally across the countryside, UK-wide and within specific regions or habitats. These indicators were developed in association with Government and some have been adopted by them as policy drivers. More recently, indicators have been developed on the European scale (**click here**).

1.1 The BTO's monitoring of breeding birds in the UK

The Integrated Population Monitoring Programme has been developed by the BTO, in partnership with JNCC, to monitor the numbers, breeding performance and survival rates of a wide range of bird species. It has the following specific aims (Baillie 1990, 1991):

(a) to establish thresholds that will be used to notify conservation bodies of requirements for further research or conservation action;

(b) to identify the stage of the life cycle at which demographic changes are taking place;

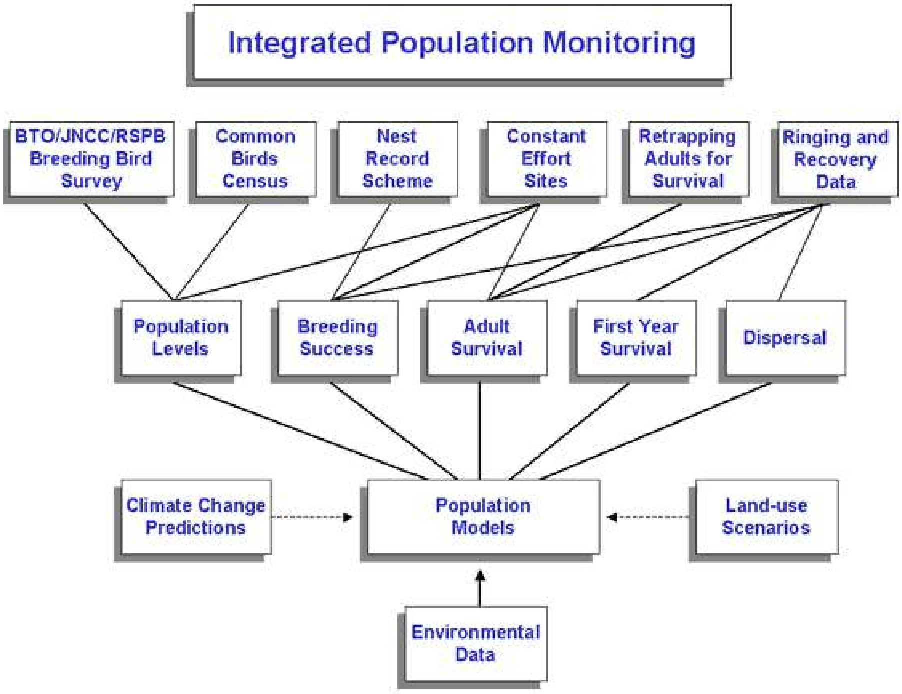
(c) to provide data that will assist in identifying the causes of such changes; and

(d) to distinguish changes in population sizes or demographic rates induced by human activities from those that are due to natural fluctuations.

The programme brings together data from several long-running BTO schemes.

- Changes in numbers of breeding birds are measured by:
  - the **BTO/JNCC/RSPB Breeding Bird Survey (BBS)** – which began in 1994 and replaced the CBC (below) as the major monitoring scheme for landbirds, after a seven-year overlap. BBS is based on around 3000 1-km squares, within each of which birdwatchers count and record birds in a standardised manner along a 2-km transect. Because the survey squares are chosen randomly, the results are not biased towards particular habitats or regions. Combined CBC/BBS indices now provide long-running and ongoing population monitoring for many common birds.
  - the **Common Birds Census (CBC)** – which ran from 1962 to 2000. This scheme mapped the breeding territories of common birds on 200–300 mainly farmland and woodland plots each year, averaging about 70 and 20 ha respectively.
  - the **Waterways Bird Survey (WBS)** – which began in 1974 and will close once results from 2007 have been fully processed. WBS maps the territories of birds along rivers, streams and canals on 80–130 plots each year, each on average 4.5 km long. WBS will be replaced by **WBBS**, a transect scheme akin to BBS but with transects running alongside linear waterways, which started in 1998.
  - the **Constant Effort Sites Scheme (CES)** – which began in 1983 and is based on bird ringing at over 100 sites. The catching effort is kept constant at each site during each year, so that changes in numbers of birds caught will reflect population changes and not variation in catching effort.
  - the **Heronries Census** – through which counts of 'apparently occupied nests' have been collected annually from a high proportion of the UK's heronries since 1928.
- Changes in breeding performance are measured by:
  - the **Nest Record Scheme** – which began in 1939 and collates standardised information on up to 35,000 individual nesting attempts per year. This allows the measurement of:
    - laying dates
    - clutch sizes
    - brood sizes
    - nesting success during egg and chick stages.
  - the **CES** (see above) – which provides information on overall productivity for a range of species by measuring the ratio of juveniles to adults caught each year.
- Changes in survival are measured by:
  - the **British and Irish Ringing Scheme** – which provides information on the finding circumstances and longevity of ringed birds found dead by members of the public.
  - The **CES** can also provide information on survival rates, based on the recapture of ringed birds at CES sites. In future further information on survival rates will be provided through the **Retrapping Adults for Survival** (RAS) scheme.

The ways in which the schemes fit together are shown in the diagram below, which also demonstrates the way in which the BTO aims to combine all this information to understand the mechanisms behind changes in population sizes using population models.



Next section –1.2 The value of combining results from different monitoring schemes

Back to Introduction Index

1.2 The value of combining results from different monitoring schemes

Monitoring the changes in the size of a population does not in itself provide sufficient information on which to base an effective conservation strategy (**Goss-Custard 1993**, **Furness & Greenwood 1993**). Concurrent monitoring of breeding performance and survival rates is necessary to allow changes in population size to be properly interpreted (**Temple & Wiens 1989**, **Crick *et al.* 2003**) and, for long-lived species, can provide early warning of impending conservation problems (**Pienkowski 1991**).

Where good long-term data sets for breeding performance and survival are lacking, conservation action may have to be taken without an adequate understanding of the mechanisms involved or need to wait for detailed research to be undertaken. For many species, however, BTO already has the necessary data, collected by its volunteers over periods of several decades (**Greenwood 2000**).

For a long-lived species, a decline in population may not begin until a long period of low survival or reduced reproductive output has elapsed. The classic example is that of the **Peregrine**, which in the UK suffered from poor breeding performance during the 1940s and 1950s due to sub-lethal DDT contamination. This decreased the capacity of the non-breeding population to buffer the severe mortality of breeding adults that occurred due to cyclodiene poisoning from the mid 1950s onwards (**Ratcliffe 1993**). Monitoring of breeding performance gave an early warning of subsequent numerical decline (**Pienkowski 1991**). Another example of a decline in breeding performance that presaged population decline is the catastrophic breeding failures of seabirds, particularly Arctic Terns, in Shetland (**Monaghan *et al.* 1989**, **1992**, **Walsh *et al*. 1995**, **Mavor *et al.* 2003**, **2004**, **Wanless *et al.* 2005**).

Farmland birds

During the mid 1980s, the BTO identified rapid declines in the population sizes of several farmland bird species (**O'Connor & Shrubb 1986**, **Fuller *et al.* 1995**). The BTO has since been able to investigate the demographic mechanisms underlying these declines, using its long-term historical data sets (**Siriwardena *et al.* 1998a**, **2000a**).

This investigation, which was Government-funded and undertaken jointly with Oxford University, looked at changes in population size, breeding performance and survival rates of a variety of species in relation to changing farming practice. It showed that species responded to different aspects of the agricultural environment, but that typically these aspects were linked to intensification or regional specialisation. Declines in survival rates were found to be the main factor driving population decline in these species, with the exception of **Linnet**, for which the main factor appears to have been a decline in nesting success at the egg stage (**Siriwardena *et al.* 2000b**). The study was therefore able to eliminate some possible causes of change, and identify areas for future research, thus helping conservation bodies to use their scarce resources productively. This work made an important contribution to the wider programme of work on farmland birds undertaken by many research and conservation organisations (**Aebischer *et al.* 2000**, **Vickery *et al.* 2004**).

This report describes a number of other cases where the combined analysis of BTO data sets has helped to identify the causes of population declines, for example on the pages for **Lapwing** (**Peach *et al.* 1994**), **Song Thrush** (**Baillie 1990**, **Thomson *et al.* 1997**, **Robinson *et al.* 2004**), **Sedge Warbler** (**Peach *et al.* 1991**), **Willow Warbler** (**Peach *et al.* 1995a**), **Spotted Flycatcher** (**Freeman & Crick 2003**), **Starling** (**Freeman *et al.* 2002**, **2007b**), and **House Sparrow** (**Freeman & Crick 2002**). A fully integrated approach, estimating trends in numbers and demographic parameters through a single model containing data from various BTO surveys, is introduced by **Besbeas *et al.* (2002)**.

Biodiversity Action Plans

The ability to quickly determine the stage of the life-cycle most heavily involved during population declines is particularly important for the conservation agencies when considering the plight of species on the lists of conservation concern (**JNCC 1996**, **Anon. 1995**, **1998**). Analysis of BTO data sets, which has already helped to build these lists, is a key point in several of the UK Government's **Biodiversity Action Plans** for rapidly declining species. Once conservation actions have been initiated, the BTO's Integrated Population Monitoring programme has a further function, because the success of these actions will be measured and assessed by continued BTO monitoring.

Next section – 1.3 The aims of this report

Back to Introduction Index

1.3 The aims of this report

This report is the latest in a series of reports that are used by conservation practitioners as a ready-reference guide to recent changes in status of breeding birds in the UK. By publishing it on the BTO website, we aim to make it available to a much wider audience, especially to BTO members and the general birdwatching public. We hope that it also provides a useful resource for schools, colleges and universities, the media, ecological consultants, decision-makers, local government, and the more general world of industry and commerce. In summary, its aims are:

1) To provide, to as wide a readership as possible, a species-by-species overview of the trends in breeding population and reproductive success of birds covered by BTO monitoring schemes since the 1960s, at the UK or UK-country scale.
2) To provide warning alerts to JNCC and Country Agencies and to other conservation bodies about worrying declines in population size or reproductive success, with special reference to species on the UK red and amber lists.

This document is the result of the sustained fieldwork of many thousands of the BTO's volunteer supporters. Without their enthusiasm for collecting these hard-won facts, the cause of conservation in the UK would be very much the poorer.The data we present here include information on distributions, from breeding-season and winter atlas projects, and on estimates of the absolute size of breeding populations, which are reported at intervals by the Avian Population Estimates Panel (**Stone *et al.* 1997**, **Baker *et al*. 2006**). Colonial seabirds, which are well covered by the recently published results of Seabird 2000 (**Mitchell *et al.* 2004**) and by the JNCC's **Seabird Monitoring Programme** (**Mavor *et al.* 2006**), and the majority of species covered by the **Rare Breeding Birds Panel** (**Holling & RBBP 2007a**, **2007b**), are not included here. Wintering populations of waterfowl are covered by the Wetland Bird Survey annual reports (e.g. **Banks *et al*. 2006**) and by the WeBS alerts system (**Maclean *et al*. 2005**).

The main emphasis of this report is on trends in the abundance and demography of individual species. The data on trends in abundance also provide the basis for multi-species **indicators** of bird population changes (**Gregory *et al.* 2004**). The **Wild Bird Indicator** has been adopted as one of the UK Government's 15 headline Quality of Life indicators. Furthermore, the related **Farmland Bird Indicator** is now being used as the basis of the Government's target for farmland bird recovery. This approach is now being extended more widely through a collaboration between EBCC, BirdLife and RSPB to produce **pan-European bird indicators**.

The report is the latest in a series, begun in 1997, produced under the BTO's partnership with the Joint Nature Conservation Committee (on behalf of Natural England, Scottish Natural Heritage, the Countryside Council for Wales, and the Environment and Heritage Service in Northern Ireland) as part of its programme of research into nature conservation. Only the first two reports were published as paper reports, with subsequent ones being produced solely as web documents. A complete list of all the previous reports and links to those published online can be found **here**.

Section 2 – Methodology

Back to Introduction Index

2. METHODOLOGY

Six monitoring schemes have contributed data to this report. Five provide data on changes in abundance: these are the **Breeding Bird Survey**, **Common Birds Census**, **Waterways Bird Survey**, **Heronries Census** and **Constant Effort Sites** ringing scheme. Two schemes, the **Nest Record Scheme** and Constant Effort Sites, provide data on changes in breeding productivity. In addition, information from detailed analyses of the recoveries of ringed birds, from the Ringing Scheme, is included where relevant.

The methodologies of the monitoring schemes are described below, including information on fieldwork, data preparation, sampling considerations and the statistical methods used in analysis.

Next page – Breeding Bird Survey

Back to Contents

2.1 Breeding Bird Survey

The BTO/JNCC/RSPB Breeding Bird Survey (BBS) was launched in 1994, following two years of extensive pilot work and earlier desk-based studies. The introduction of the BBS was a move designed to overcome the limitations of the **Common Birds Census** (CBC), which had monitored bird populations since 1962. In particular, it improves the geographical representativeness of UK bird monitoring, thus boosting coverage of both species and habitats.

The BBS uses line transects rather than the more intensive territory-mapping method used by the CBC. This makes the survey relatively quick to undertake, and has been successful in encouraging a large number of volunteers to take part. The average time observers spend per visit is only around 90 minutes. Sampling units are the 1x1-km squares of the Ordnance Survey national grid, of which there are some 254,000 in the UK. From these we make random selections, by computer, for inclusion in the scheme (see **Square selection**, below). The BBS requires a relatively large sample of survey squares, and the initial aim was to achieve coverage of about 2,500 squares.

An important aspect of BBS is its coordination through a network of volunteer BBS Regional Organisers. Information and survey forms are distributed first to these organisers, who contact volunteers willing to survey the squares every year. After the field season, forms are returned to BTO headquarters again via the Regional Organisers. On-line submission of BBS data is also available and is the recommended method – see the **BBS pages** of the main BTO website for details.

Fieldwork involves three visits to each survey square each year. The first is to record details of habitat and to establish or re-check the survey route, while the second and third (termed 'early' and 'late') are to count birds. A survey route is composed of two roughly parallel lines, each 1 km in length, although for practical reasons routes typically deviate somewhat from the ideal. Each of these lines is divided into five sections, making a total of ten 200-m sections, and birds and habitats are recorded within these ten units. The two bird-count visits are made about four weeks apart (ideally in early May and early June), ensuring that late-arriving migrants are recorded. Volunteers record all the birds they see or hear as they walk along their transect routes. Birds are noted in three distance categories (within 25 m, 25–100 m, or more than 100 m on either side of the line, measured at right angles to the transect line), or as in flight. Recording birds within distance bands provides a measure of bird detectability in different habitats and thus allows population densities to be estimated more accurately. The total numbers of each species, excluding juveniles, are recorded in each 200-m transect section and distance category, as well as the timing of the survey and weather conditions.

By 1998, more than 2,300 BBS squares were being surveyed annually, close to the original target of 2,500. Only around a quarter of these plots were covered in 2001, owing to Foot & Mouth Disease access restrictions, but (thanks to our keen observers) the sample recovered immediately to over 2,100 in 2002 and had increased further to 2,254 squares in 2003, 2,526 in 2004 and 2,879 in 2005. The sample soared to 3,295 in 2006. Squares are distributed throughout the UK and cover a broad range of habitats, including uplands and urban areas. There are around 100 species that are present on 40 or more BBS squares annually and so can be monitored with good precision at the UK scale (**Joys *et al.* 2003**), although a few present special difficulties because of their colonial or flocking habit or their wide-ranging behaviour. For most of these, BBS can also assess annual population changes within **England** alone, using data from 30 or more squares, and for about half the species also within **Scotland** and **Wales** as separate units. Sample sizes in **Northern Ireland** currently allow about 25 species to be indexed annually.

Square selection

Survey squares are chosen randomly using a stratified random sampling approach from within 83 sampling regions. These sampling regions, which in most cases are the standard BTO regions, are the 'strata' (literally layers) of the sample. Survey squares are chosen at random within each region, to a density that varies with the number of BTO members resident there. Regions with larger numbers of potential volunteers are thereby allocated a larger number of squares, enabling more birdwatchers to become involved in these areas. This does not introduce bias into the results because the analysis takes the differences in regional sampling density into account (see below).

Data analysis

Change measures between years are assessed using a log–linear model with Poisson error terms. For each species and square, counts are summed across all sections and distance bands for each visit ('early' and 'late') and the higher value is used in the model (or the single count if the square was visited only once). Counts are modelled as a function of square and year effects. Each observation is weighted by the number of 1-km squares in each region divided by the number of squares counted in that region, to correct for the differences in sampling density between regions. The upper and lower confidence limits of the changes indicate the certainty that can be attached to each change measure. When the limits are both positive or both negative, we can be 95% confident that a real change has taken place. Note that this presentation and its interpretation differs from the 85% confidence limits shown on most graphs within this report (see **here** for details).

Trends are presented as graphs in which annual population indices are shown in blue and their 95% confidence limits in green. A caveat, 'small sample', is provided against the trends for England, Northern Ireland, Wales and Scotland where the mean sample size is between 30 and 40 plots per year. A minimum sample size of 40 plots is required for the UK trends.

Next section – 2.2 Common Birds Census

Back to Methodology Index

CLICK HERE to go to the BBS section of the main BTO website

2.2 Common Birds Census

The Common Birds Census (CBC), which ran from 1962 to 2000, was the first of the BTO's schemes for monitoring population trends among widespread breeding birds, but has now been superseded for this purpose by **BBS**.

The CBC was instigated to provide sound information on farmland bird populations in the face of rapid changes in agricultural practice. Although the original emphasis was on farmland, woodland plots were added by 1964. Fieldwork was carried out by a team of 250–300 dedicated volunteers. The same observers surveyed the same plots using the same methods year after year. On average, plots were censused for around seven consecutive years but a few observers surveyed the same sites for more than 30 years. Farmland plots averaged around 70 hectares in extent. Woodland plots were generally smaller, averaging just over 20 hectares. A small number of plots of other habitats, including heathlands and small wetlands, were also surveyed annually, especially before 1985.

A territory-mapping approach was used to estimate the number and positions of territories of each species present on each survey plot during the breeding season. Volunteers visited their survey plots typically eight to ten times between late March and early July and all contacts with birds, either by sight or sound, were plotted on 1:2,500 maps. Codes were used to note each bird's species, with sex and age where possible, and also to record activity such as song or nest-building. The registrations were then transferred to species maps and returned to BTO headquarters for analysis. The pattern of registrations on the species maps reveals the numbers of territories for each species. All assessments of territory number were made by trained BTO staff, applying rigorous guidelines, to ensure consistency between estimates across sites and years. Observers also provided maps and other details of the habitat on their plots. This makes it possible to match the distribution of bird territories with habitat features, providing the potential for detailed studies of bird–habitat relationships.

In 1990, the results from the Common Birds Census were brought together in the book *Population Trends in British Breeding Birds* (**Marchant *et al.* 1990**). This landmark publication discussed long-term population trends for the years 1962 to 1988 for 164 species, with CBC or WBS population graphs for around two-thirds of these.

The results from the Common Birds Census (CBC) provided reliable population trends for more than 60 of the UK's commoner breeding species, and continue to be hugely influential in determining conservation priorities in the UK countryside. The store of detailed maps of almost a million birds' territories, collected through the CBC and maintained by BTO since the early 1960s, is a uniquely valuable resource for investigating the relationships between breeding birds and their environment, over wide temporal and spatial scales.

The weaknesses of the CBC as a monitor of UK bird populations were largely related to the time-consuming nature of both fieldwork and analysis. This inevitably limited the number of volunteers able to participate in the scheme, with the result that areas with few birdwatchers were under-represented. Constrained by the relatively small sample size, CBC concentrated on farmland and woodland habitats. Bird population trends in built-up areas and the uplands were therefore poorly represented. Furthermore, as the plots were chosen by the observers, some may not have been representative of the surrounding countryside and some bias towards bird-rich habitats might be suspected. It is for these reasons that the BBS was introduced in 1994. The two surveys were run in parallel for seven years to allow calibration between the results: for many species, CBC and BBS trends can be linked to form joint CBC/BBS trends that provide ongoing monitoring, continuous since the 1960s (**Freeman *et al.* 2003**, **2007a**; **Section 2.3** of this report).

Validation studies

The CBC was the first national breeding bird monitoring scheme of its kind anywhere in the world and its value has been widely recognised internationally. The territory-mapping method adopted by the CBC is acknowledged as the most efficient and practical way of estimating breeding bird numbers in small areas, and has been well validated. Although intensive nest searches may sometimes reveal more birds, a comparison by **Snow (1965)** concluded that mapping censuses were a good measure of the true breeding population for 70% of species. Experiments to test differences between observers' abilities to detect birds found that, although there was considerable variation between individual abilities, the observers were consistent from year to year (**O'Connor & Marchant 1981**). As the CBC relies on data from plots covered by the same observer in consecutive years, this source of bias has no implications for the CBC's ability to identify population trends. It has also been confirmed that the sample of plots from which CBC results are drawn has not changed in composition or character over the years (**Marchant *et al.* 1990**) and that the results of territory analysis are not affected by changes in analysts, once trained (**O'Connor & Marchant 1981**). **Fuller *et al.* (1985)** found that farmland CBC plots were representative of ITE lowland land-classes throughout England (excluding the extreme north and southwest), and closely reflected the agricultural statistics for southern and eastern Britain.

Data analysis

Population changes are modelled using a generalised additive model (GAM), a type of log–linear regression model that incorporates a smoothing function (**Fewster *et al.* 2000**). This replaces the Mountford model that employed a six-year moving window (**Mountford 1982**, **1985**, **Peach & Baillie 1994**) and was used to produce annual population indices until 1999, but the principles are similar.

These models are also very similar to log–linear poisson regression as implemented by program TRIM (**Pannekoek & van Strien 1996**). Counts are modelled as the product of site and year effects on the assumption that between-year changes are homogeneous across plots. Smoothing is used to remove short-term fluctuations (e.g. those caused by periods of severe weather or measurement error) and thus reveal the underlying pattern of population change. This is achieved by setting the degrees of freedom to about 0.3 times the number of years in the series. Confidence limits on the indices are estimated by bootstrapping (a resampling method; **Manly 1991**) and thus do not make any assumptions about the underlying distribution of counts.

Indices are plotted as the blue line on the graphs, and provide a relative measure of population size on an arithmetic scale relative to an arbitrary value of 100 in one of the years of the sequence. If an index value increases from 100 to 200, the population has doubled; if it declines from 100 to 50, it has halved. The two green lines on the graphs, above and below the index line, are the upper and lower 85% confidence limits. A narrow confidence interval indicates that the index series is estimated precisely, and a wider interval indicates that it is less precise. The use of 85% confidence limits allows relatively straightforward comparison of points along the modelled line: non-overlap of the 85% confidence limits is equivalent to a significant difference at approximately the 5% level (**Anganuzzi 1993**).

Caveats are provided to show where the data suffer from a 'Small sample' if the mean number of plots was less than 20. Data are flagged as 'Unrepresentative?' if the average abundance of a species in 10-km squares containing CBC plots was less than that in other 10-km squares of the species' distribution in the UK (as measured from *1988–91 Breeding Atlas* data (**Gibbons *et al.* 1993**)), or, where average abundances could not be calculated, if expert opinion judged that CBC data may not be representative.

In practice most CBC data included in this report have been combined with BBS data to provide joint CBC/BBS trends, using the methods described in the next section. These methods for producing joint trends represent an extension of those described above.

Next section – 2.3 Joint CBC/BBS trends

Back to Methodology Index

CLICK HERE to go to the CBC section of the main BTO website

2.3 Combined Common Birds Census (CBC) and Breeding Bird Survey (BBS) trends

The field protocols for the two surveys are described in sections 2.1 and 2.2. As previously noted, the CBC has been an enormously influential project, providing the main source of information on national population levels in the UK since its inception. Its coverage had always been uneven, however. Coverage was predominantly in lowland, southeastern Britain, where the numbers of potential volunteers are greatest. Coverage in more sparsely populated upland regions had always been much more patchy. Even within the well-covered regions, sites were situated in a limited number of habitats, predominantly farmland and woodland. Within southeastern Britain, the results are nevertheless believed to be broadly representative (**Fuller *et al.* 1985**). However, several species such as Wood Warbler and Meadow Pipit have the greater part of their numbers in northern or western Britain, outside the area adequately covered. For these species, the CBC may not accurately reflect national trends.

The BBS, on account of its more rigorous, stratified random sampling design, and its simplicity in the field, produces data that better cover the previously under-represented regions and habitats. In some early editions of 'Breeding Birds in the Wider Countryside' (e.g. **Baillie *et al.* 2002**), separate indices were published from CBC and BBS data, for those species with sufficiently large sample sizes. There being no new CBC data since 2000, however, it is futile to present a CBC-only trend – except for those few species where no joint or BBS index is available.

For most purposes, the presentation and analysis of longer time-series is required, dating back to before the establishment of the BBS but coming right up to the present day. The calculation of 25-year alert designations, as in this report, provides just one example. This need led to the BTO carrying out research into the compatibility of indices from BBS and CBC data in various years and regions, and the possibility of deriving trustworthy long-term indices from the two data sources in combination (**Freeman *et al.* 2003**, **2007a**). This research suggested that for the vast majority of species considered there was no significant difference between population trends, calculated from the two surveys, based on that part of the country where CBC data are sufficient to support a meaningful comparison. Where a statistically significant difference was found, this was sometimes for very abundant species for which the power to detect even a biologically insubstantial difference was considerable. Within this region, therefore, long-term trends based on CBC and BBS data can be produced for almost all species previously monitored by the CBC alone. For (**Freeman *et al.* 2003**, **2007a**) this was the area covered by **Fuller *et al.* (1985)** (England and Wales south and east from Seascale, Scarborough and Exeter), because CBC plots in that region were shown to be representative of lowland farmland there. As this region covers the bulk of England, and for consistency with the rest of this report, we have produced joint indices for CBC/BBS for the whole of England (the CBC/BBS England index), rather than just the English part of the 'Fuller rectangle'.

A second question then is whether one can obtain reliable trends over the same period for the entire UK. That is, since prior to 1994 only CBC data are available, are the population trends within the region well covered by the CBC typical of those for the UK as a whole? The shortage of CBC data in the north and west means that the only way of investigating this is via the BBS data. Significant differences in trends between the area well covered by the CBC and the rest of the UK were found for approximately half the species (see **Freeman *et al.* 2003**, **2007a**, for full details). For such species, the regional bias in CBC data means that no reliable UK index can be produced prior to 1994. In summary, joint population indices dating back to the start of the CBC can continue to be produced for that part of the country well served by the CBC (essentially England) for almost all common species. However, a similar UK index can be produced for only about 50% of species (CBC/BBS UK index).

This report presents joint CBC/BBS trends for the UK and/or England as appropriate. Ideally the trends would have been estimated using generalised additive models (**Fewster *et al.* 2000**) but these were too computationally intensive, given the large number of sites involved. Therefore we fitted a generalised linear model, with counts assumed to follow a Poisson distribution, and a logarithmic link function, to the combined CBC/BBS data. Standard errors were calculated via a bootstrapping procedure and there is therefore no need to model overdispersion, as it does not affect the parameter estimates. BBS squares were weighted by the number of 1-km squares in each sampling region divided by the number of squares counted in that region as in standard BBS trend analyses. CBC plots were assigned the average weight of all BBS squares as this allows them to be incorporated within the analysis while retaining the convention of not applying weights within the BBS sample. The population trend was smoothed using a thin-plate smoothing spline with 11 degrees of freedom. Confidence intervals were calculated via a bootstrap procedure. Bootstrap samples were generated by resampling sites from the original data set, with replacement. A generalised linear model was then fitted to each bootstrap replicate and a smoothing spline fitted to the annual population indices as described above. Confidence limits were then calculated as the appropriate percentiles from the sets of smoothed estimates. The overall result is a smoothed trend that is mathematically equivalent to that produced from a generalised additive model. The method of estimation is less statistically efficient because the smoothing is not incorporated within the estimation procedure, and is likely to have resulted in more conservative statistical tests and wider confidence limits. However this compromise was necessary to make it possible to fit the trends within a reasonable amount of computer time (still several weeks).

Indices are plotted as the blue line on the graphs, and provide a relative measure of population size on an arithmetic scale relative to an arbitrary value of 100 in 2002. If an index value increases from 100 to 200, the population has doubled; if it declines from 100 to 50, it has halved. The two green lines on the graphs, above and below the index line, are the upper and lower 85% confidence limits. A narrow confidence interval indicates that the index series is estimated precisely, and a wider interval indicates that it is less precise. The use of 85% confidence limits allows relatively straightforward comparison of points along the modelled line: non-overlap of the 85% confidence limits is equivalent to a significant difference at approximately the 5% level (**Anganuzzi 1993**).

Next section – 2.4 Waterways Bird Survey

Back to Methodology Index

2.4 Waterways Bird Survey

The Waterways Bird Survey (WBS) has monitored the population trends of up to 24 riparian bird species on canals and rivers throughout the UK since 1974. WBS uses a territory-mapping method like that of its parent scheme, the **Common Birds Census**, to estimate the breeding population of waterbirds on each plot. Detailed territory maps are prepared that can be compared with habitat data to show which features of linear waterways are important to breeding birds. The plots average 4.4 km in length; almost half are slow-flowing lowland rivers with the rest either fast-flowing rivers/streams or canals. In recent years there have been around 90 plots distributed throughout the UK. The proportion of plots in the north and west of England is higher than existed in the CBC (**Marchant *et al.* 1990**). As with CBC, coverage outside England has been relatively poor.

All fieldwork is carried out by volunteers. Observers are asked to survey their plots on nine occasions between March and July, mapping all the birds seen or heard onto 1:10,000-scale maps. Registrations are then transferred to species maps, which are analysed to reveal the numbers and positions of territories for each species. For the first 20 years all territory analysis was performed by trained headquarters staff but, during 1994–2007, observers completed their own territory analysis, based on the scheme's written guidelines, with results checked by BTO staff. As WBS has employed very similar methods to those of CBC, the validation studies carried out for the latter generally hold true for WBS (see **section 2.2**). **Marchant *et al.* (1990)** found that there had been little change in the composition of the WBS sample in terms of waterway type or geographical spread.

Population changes along waterways have been reported annually in *BTO News* for around 20 riparian species, of which Goosander is not covered by BBS monitoring. For specialist waterbirds, including Little Grebe, Mute Swan, Common Sandpiper, Kingfisher, Sand Martin, Grey Wagtail, Dipper and Reed Warbler, targeted surveys along waterways can provide a better precision of monitoring than is possible through the more generalised BBS surveys. WBS indices can also add a new perspective on trends in waterbirds that are monitored, largely in different habitats, by CBC/BBS. For **Lapwing**, populations declined rapidly on arable farmland during the late 1980s while numbers on WBS plots, typically representing populations along river floodplains, were more stable. **Yellow Wagtails** have declined much more steeply in WBS habitats than elsewhere.

WBS has similar limitations as a monitoring scheme that led to the CBC's replacement by BBS. In particular, plot distribution is biased geographically and possibly also towards sites that are good for birds, and an intensive survey method is used that severely limits the sample size (**Marchant *et al.* 1990**). A drawback specific to WBS is that it covers only waterbirds. BTO has addressed these issues by setting up the **Waterways Breeding Bird Survey (WBBS)**, which has been running since 1998 in parallel with WBS. WBBS uses BBS-style transect methods along random waterways, and includes all species of birds. WBS closes after the 2007 season and it is now expected that WBBS will become an ongoing scheme, providing useful monitoring data to supplement BBS.

Data analysis

Smoothed population trends are estimated using generalised additive models, with confidence intervals calculated by bootstrapping (**Fewster *et al.* 2000**). Trend analysis and presentation follows the same pattern as CBC (**section 2.2**), except that the 'Unrepresentative?' caveat has not been used. A caveat of 'Small samples' is provided when the number of plots falls between 10 and 20.

Next section – 2.5 Heronries Census

Back to Methodology Index

CLICK HERE to go to the WBS section of the main BTO website

2.5 Heronries Census

The BTO Heronries Census began in 1928 and is the longest-running breeding-season bird monitoring scheme in the world. As predators at the top of the freshwater food chain, Grey Herons are excellent indicators of environmental health in the countryside. They build large stick nests, mostly in colonies at traditional sites. The aim of this census is to collect annual nest counts of Grey Herons from as many sites as possible in the United Kingdom. Volunteer observers make counts of 'apparently occupied nests' at heron colonies each year. Changes in the numbers of nests, especially over periods of several years, provide a clear measure of the population trend. In recent seasons, observers have also counted the nests of **Little Egrets** *Egretta garzetta*, which have been appearing in an increasing number of southern heronries since the first breeding records in 1996. Counts of Cormorant colonies, which often occur alongside heronries, are also welcome (**Newson *et al*. 2007**).

Coverage is coordinated through a network of regional organisers. A core of birdwatchers and ringers monitor their local colonies annually, providing a backbone of regular counts. Around two-thirds of the heronries in England and Wales are currently counted each year, with more-complete censuses carried out in 1929, 1954, 1964, 1985 and 2003. Historically rather few counts have been made of heronries in Scotland and Northern Ireland, except during the special surveys, but support for the Heronries Census has been growing fast in recent years. Counts are submitted mostly on cards and the data are entered onto computer at BTO headquarters. The number of heronries counted each year has grown in recent years to around 550–600.

Data analysis

Population changes are estimated using a ratio-estimators approach derived from that of **Thomas (1993)**. Essentially, the ratios of the populations in any two (not necessarily consecutive) years of the survey are estimated from counts at sites visited in each of those years. These ratios can be used to estimate the counts at sites that were not visited, and hence build an estimate of the total population. Further modifications have been made to allow for the extinction of colonies and the establishment of new ones (**Marchant *et al.* 2004**).

On the **Grey Heron** page of this report, the UK trend is presented graphically with annual estimates in blue and their 85% confidence limits in green. A smooth trend line in red is based on a non-parametric regression model, using thin-plate smoothing splines with 23 degrees of freedom. Trends are also shown for England and Wales together, and for England, Wales and Scotland alone.

Next section – 2.6 Constant Effort Sites Scheme

Back to Methodology Index

CLICK HERE to visit the Heronries Census page of the main BTO website

CLICK HERE to visit the Little Egrets page of the main BTO website (WeBS)

2.6 Constant Effort Sites Scheme

The Constant Effort Sites (CES) Scheme uses changes in catch sizes across a network of standardised mist-netting sites to monitor changes in the abundance and breeding success of common passerines in scrub and wetland habitats. At each constant effort site, licensed ringers erect a series of mist nets in the same positions, for the same amount of time, during 12 morning visits evenly spaced between May and August. Year-to-year changes in the number of adults caught provide a measure of changing population size, while the ratio of young birds to adults in the total catch is used to monitor annual productivity (breeding success). By monitoring the abundance of young birds between May and August, the CES method should integrate contributions to annual productivity from the entire nesting season, including second and third broods for multi-brooded species. Between-year recaptures of ringed birds can also be used to calculate annual survival rates, although this requires specialised analytical techniques (e.g. **Peach 1993**) and is not considered further here. Further details of the CES Scheme and methods of analysis are presented by **Peach *et al.* (1996)**.

The CES Scheme began in 1983 with 46 sites and now has nearly 150. The distribution of CES sites tends to reflect the distribution of ringers within Britain and Ireland. The majority are operated in England, and there are small numbers in Scotland, Wales, Northern Ireland and the Republic of Ireland. The CES monitors the populations of 28 species of passerines in scrub and wetland habitats.

Data analysis

Annual estimates of the abundance of adults and young are separately assessed through application of log–linear Poisson regression models, from which fitted year-effects are taken as annual relative abundances, compared to an arbitrary value of 100 in a recent year in the sequence. An 85% confidence interval is based on the corresponding asymptotic standard errors. At sites where catching effort in a year falls below the required 12 visits, but eight or more visits have been completed, annual catch sizes are corrected according to experience during years with complete coverage, by incorporating an offset into the generalised linear model (see **Peach *et al.* 1998** for full details). Sites with fewer than eight visits in a given year are omitted for the year in question.

Annual indices of productivity (young per adult) are estimated from logistic regression models applied to the proportions of juvenile birds in the catch, the year-effects then being transformed to measures of productivity relative to an arbitrary value of 100 in a recent year. As above, catch sizes are corrected where small numbers of visits have been missed. It should be noted that these indices are relative, and are not estimates of the actual numbers of young produced per adult (**Freeman *et al*. 2001**).

Data are presented graphically with annual estimates in blue and their 85% confidence limits in green. Methods and software for the optimal fitting of smoothed trends to CES data remain in development. Here, we also present a non-parametric regression model fitted to the calculated annual indices of abundance and productivity (via thin-plate smoothing splines with six degrees of freedom), to provide a simple smoothed picture. This is the red smoothed line on the CES graphs on the species pages. A caveat is provided for 'Small samples' when the average number of plots per year is between 10 and 20.

Next section – 2.7 Nest Record Scheme

Back to Methodology Index

CLICK HERE to go to the CES section of the main BTO website

2.7 Nest Record Scheme

The BTO's Nest Record Scheme is the largest, longest-running and most highly computerised of such schemes in the world and possesses the most advanced and efficient techniques of data gathering, data capture and analysis (**Crick *et al.* 2003**). There are currently more than a million nest records held by the Trust, of which 35% are computerised.

The primary aim of the Nest Record Scheme is to monitor the breeding performance of a wide range of UK birds annually as a key part of the BTO's data collection. Annual reports are published in *BTO News* (e.g. **Leech *et al.* 2006b**) and the significant results communicated immediately to JNCC. Another primary aim is to undertake detailed analyses of breeding performance of species of conservation interest (e.g. **Crick *et al.* 1994**, **Brown *et al.* 1995**, **Peach *et al.* 1995a**, **Crick 1997**, **Chamberlain & Crick 1999**, **Siriwardena *et al.* 2001**, **Crick *et al.* 2002**, **Chamberlain & Crick 2003**, **Freeman & Crick 2003**, **Browne *et al.* 2005**, **Tryjanowski *et al.* 2006**).

The Nest Record Scheme gathers data on the breeding performance of birds in the UK through a network of volunteer ornithologists. Each observer is given a code of conduct that emphasises the responsibility of recorders towards the safety of the birds they record and explains their legal responsibilities. These observers complete standard nest record cards for each nest they find, giving details of nest site, habitat, contents of the nest at each visit and evidence for success or failure. When received by the BTO staff, the cards are checked, sorted and filed away ready for input and analysis. Those for Schedule 1 species are kept confidential. (These are species protected from disturbance at the nest by Schedule 1 of the **Wildlife & Countryside Act 1981**: they are generally rare species and the location of their nests may need to be protected from egg collecting (an illegal activity) or other potential disturbance. To visit the nests of these species a special licence is required.) Computer programs developed by BTO check the data for errors and calculate first-egg date, clutch size, nest loss rates at egg and chick stages. Data are computerised according to priorities for population monitoring and for specific research projects.

Currently the BTO collects a total of more than 30,000 records each year for around 180 species. Typically, there are more than 150 records for 55 species and more than 100 for a further 10–15 species. The quality of records improved substantially in 1990 with the introduction of a new recording card, which promotes greater standardisation and clarity in the information recorded by observers. The general distribution of Nest Record Cards is patchy at the county scale but is more even over larger regions of the UK. Overall, Northern Ireland and parts of Scotland (southeast, Western Isles) and parts of England (West Midlands, southwest) have relatively low coverage, often reflecting observer density. A major analysis of trends over time in various aspects of breeding performance found relatively few differences between major regions in the UK, when analysed using analysis of covariance (**Crick *et al.* 1993**). Habitat coverage is broad, as the scheme receives records from all the UK's major habitats. Most records come from woodland, farmland and freshwater sites, but the scheme also receives data from scrub, grassland, heathland and coastal areas.

Data analysis

Five different variables were analysed for this report: laying date (where day 1 = January 1); clutch size; brood size; and daily nest failure rates during egg and nestling stages, calculated using the methods of **Mayfield (1961**, **1975**) and **Johnson (1979)** (see **Crick *et al.* 2003** for review).

In order to minimise the incidence of errors and inaccurately recorded nests, a set of rejection criteria was applied to the data: laying date included only cases where precision was within �5 days; clutch size was not estimated for nests which had been visited only once, for nests which were visited when laying could still have been in progress, or for nests which were visited only after hatching; and maximum brood size was calculated only for nests which were observed after hatching. The last variable is an underestimate of brood size at hatching because observers may miss early losses of individual chicks; it differs from clutch size because eggs may be lost during incubation and hatching success may be incomplete.

Daily failure rates of whole nests were calculated using a formulation of **Mayfield's (1961**, **1975**) method as a logit–linear model with a binomial error term, in which success or failure over a given number of days (as a binary variable) was modelled, with the number of days over which the nest was exposed during the egg and nestling periods as the binomial denominator (**Crawley 1993**, **Etheridge *et al.* 1997**, **Aebischer 1999**). Number of exposure days during the egg and nestling periods was calculated as the midpoint between the maximum and minimum possible, given the timing of nest visits recorded on each Nest Record Card (note that exposure days refer only to the time span for which data were recorded for each nest and do not represent the full length of the egg or nestling periods). Each calculation assumes that failure rates were constant during the period considered. Violations of this assumption of the Mayfield method can lead to biased estimates if sampling of nests is uneven over the course of each period. It is unlikely that any such bias would vary from year to year, so although absolute failure rates may be biased, annual comparisons should be unaffected (**Crick *et al.* 2003**). In this report, therefore, we present only temporal trends in daily nest failure rates.

Statistical analyses of nest record data were undertaken using SAS programs (**SAS 1990**). Regressions through annual mean laying dates, clutch sizes and brood sizes were weighted by sample size. Nest survival was analysed by logistic regression. Quadratic regressions were used when the inclusion of a quadratic term provided a significant improvement over linear regression. These are described as 'curvilinear' in the tables on species pages. Significant linear trends are described as 'linear'. The best-fitting regressions (i.e. quadratic or linear) are presented on the figures in this report.

Where neither regression is significant the linear regression line is shown for illustrative purposes.

Results are presented only if the mean sample size of records for a particular variable and species exceeds 10 per year, and are presented with a caveat for small sample sizes if the mean number of records contributing data was between 10 and 30 per year.

Next section – 2.8 The alert system

Back to Methodology Index

CLICK HERE to go to the NRS section of the main BTO website

2.8 The Alert System

2.8.1 General approach

The alert system used within this report is designed to draw attention to developing population declines that may be of conservation concern, and is described in detail in **Baillie & Rehfisch (2006)**. It also identifies situations where long-term declines have reversed, leading to an improvement in conservation status. It must be stressed that the changes reported here are advisory and do not supersede the agreed UK conservation listings (**Gregory *et al*. 2002**; see **PSoB** pages). They are based on similar criteria to *The Population Status of Birds in the UK*, however, and so provide an indication of likely changes at future revisions.

The system is based on statistical analyses of the population trend data for individual species. Alerts seek to identify rapid declines (>50%) and moderate declines (>25% but <50%). These declines are measured over a number of time-scales, depending on the availability of data – the full length of the available time series, and the most recent 25 years, 10 years and 5 years for which change can be estimated. The conservation emphasis is particularly on the longer periods, but short-term changes help to separate declines that are continuing – or accelerating – from those that have ceased or reversed.

The alerts are calculated annually using standard automated procedures. Where species are at the margin of two categories (e.g. a decline of about 25%) they may fire alerts in some years but not others, or different levels of alert in different years.

Data on some species might be biased, owing to unrepresentative monitoring, or imprecise, owing to small sample sizes. Because these data often provide the only information that is available, our general approach is to report all the alerts raised but to clearly flag up any deficiencies in the data.

2.8.2 Smoothing population trends

Bird populations show long-term changes that do not follow simple mathematical trajectories. In addition to the long-term trends, unsmoothed population indices also show short-term fluctuations resulting from a combination of natural population variability and statistical error. We use smoothing techniques that aim to extract the long-term pattern of population change, without forcing it to follow any particular shape (such as a straight line or a polynomial curve). These methods remove most of the effects of short-term fluctuations (including any natural year-to-year variability) so that the long-term trend is revealed more clearly.

Technical details available here

2.8.3 Years used for analysis

Once a smoothed population trend has been calculated, change measures are calculated from the ratio of the smoothed population indices for the two years of interest. Population indices for the first and last years of a smoothed time series are less reliable than the others, and so we always drop them before calculating alerts. Because the latest year is not included, the alerts are therefore less up-to-date than they could be, but fewer false alarms are generated. The latest year's data points do contribute to the smoothed curve and are dropped only after the smoothing has taken place.

The time taken to collate and analyse bird monitoring data is another factor affecting the years that can be included in these analyses. Full analyses of data sets are not usually all available until 12–15 months after the end of a particular breeding season. Thus for a report prepared in year X (eg 2005) we have analyses of monitoring data up to year (X-1) (eg 2004). As we drop the final year of the smoothed time series, we report here on change measures up to year (X-2) (eg 2003).

Long-term changes for most of the species included in this report are calculated from joint Common Birds Census and Breeding Bird Survey data (CBC/BBS indices). The CBC started on farmland in 1962 and on woodland in 1964. However, the early years of the CBC population indices are strongly influenced by the effects of the unusually severe winters of 1961/62 and 1962/63, as well as by developments in methodology (**Marchant *et al.* 1990**). Therefore joint CBC/BBS indices have been calculated using the data from 1966 onwards and population changes are calculated back to 1967.

2.8.4 Confidence limits and statistical testing

We show 90% confidence limits for population change measures wherever possible. Any decline where the confidence limits do not overlap zero (no change) is regarded as statistically significant and will trigger an alert if it is of sufficient magnitude. Note that, because we are seeking to detect only declines, we are using a one-tailed test – with a P value of 0.05. These confidence limits therefore do not indicate whether increases are statistically significant.

The graphs of population trends show 85% confidence limits because these allow an approximate visual test of whether the difference between the indices for any two given years is statistically significant: if the indices for two given years are assumed independent and normally distributed with standard errors of comparable size (standard errors differing by a factor of up to about 2 are quite acceptable), then to a good approximation the difference between the indices is significant at the 5% level if there is no overlap in their 85% confidence intervals (**Buckland *et al.* 1992**, **Anganuzzi 1993**). This test is fairly robust, and the independence assumption is reasonable if the years are some distance apart.

Technical details available here

2.8.5 Data-deficient species

There is uncertainty about the reliability of the results for some species, either because data may be unrepresentative or because they are based on a very small sample of plots. In these cases the cause of the uncertainty is recorded in the comment column of the population change table.

Unrepresentative data

In this report we only present joint UK or England CBC/BBS trends if there was no substantial or statistical difference between the trends from the two schemes over the period when they ran in parallel. Thus the trends are always considered representative of the region concerned.

In previous reports representativeness was assessed using the criteria developed by **Gibbons *et al.* (1993)**. Data from the 1988–91 Breeding Atlas were used to compare the average abundance of a given species in 10-km squares with and without CBC plots. If average abundance is higher in squares without CBC plots, it is likely that much of the population is not well sampled by the CBC. In past reports, CBC data for such species were labelled as "unrepresentative". Where there are insufficient data to undertake such calculations, expert opinion was used.

Sample size

Sample size is assessed from the average number of plots contributing to the population indices for a given species in each year. A plot with a zero count would be included provided that the species had been recorded there in at least one year and that records for that plot were available for at least two years. Plots where a species has never been recorded do not enter the index calculations. These average sample sizes are shown in column four (plots) of the population change tables. For CBC, WBS and CES, a mean of between 10 and 19 plots is flagged as a small sample. For BBS indices for individual countries a mean in the range 30–39 plots is flagged as a small sample. UK BBS indices are only presented for samples of at least 40 plots.

2.8.6 Application to individual schemes

Currently the full methodology outlined above is applied to the CBC/BBS and the WBS trends. For the CES scheme and the Heronries census we present annual indices with confidence limits and then fit a smoothed curve through the annual index values. We do not currently have confidence limits for this smoothed curve. Therefore all alert labels for CES are shown in square brackets. There are no alerts for Grey Heron.

BBS started in 1994 and we do not consider it sufficiently useful with the current time series length to apply the smoothing methods and alerts framework outlined above. Therefore we have simply calculated change measures between the first and last years of the BBS time series based on the standard 'sites x years' model that is used to produce the BBS indices each year.

Technical details available here

Next section – 2.9 Statistical methods used for alerts

Back to Methodology Index

2.9 Statistical methods used for alerts

The **Alert System** page contains a general overview of how the alert system works. More detailed information is given below about the statistical methods used to estimate population indices, population changes and their confidence intervals.

2.9.1 General structure of data

The data for all of the schemes reported here consist of annual counts made over a period of years at a series of sites. They can thus be summarised as a data matrix of sites x years, within which a proportion of the cells contain missing values because not all of the sites are covered every year. Such data can be represented as a simple model:

log (count) = site effect + year effect

Each site has a single site-effect parameter. These site parameters are not usually of biological interest but they are important because abundance is likely to differ between sites. The main parameters of interest are the year effects. These can be modelled either with as many parameters as years (an annual model), or with a smaller number of parameters, representing a smoothed curve.

A simple annual model would be fitted as a generalised linear model with Poisson errors and a log link function. This is the main model provided by the widely used program TRIM (**Pannekoek & van Strien 1996**).

2.9.2 Fitting smoothed models

Our preferred method for generating a smoothed population trend is to fit a smoothed curve to the data directly using a generalised additive model (GAM) (**Hastie & Tibshirani 1990**, **Fewster *et al.* 2000**). Thus the model from the previous section becomes:

log (count) = site effect + smooth (year)

where smooth (year) represents some smooth function of year. It was not straightforward to fit GAMs to the CBC/BBS, CES or Heronries Census data and we have therefore fitted smooth curves with a similar degree of smoothing to the annual indices (details given below).

The non-parametric smooth curve fitted in our models is based on a smoothing spline. The degree of smoothing is specified by the number of degrees of freedom (df). A simple linear trend has df = 1 while the full annual model has df = t-1, where t is the number of years in the time series. Here we set df to be approximately 0.3 times the number of years in the time series (**Fewster *et al.* 2000**). The degrees of freedom used for the main data sets presented in this report are summarised below.

	Years	Length of time series	df for smoothed index
CBC/BBS	1966–2004	40	12
Waterways Bird Survey	1974–2004	32	10
Constant Effort Sites	1983–2004	23	7
Heronries Census	1928–2004	78	23

Note that the numbers of years shown here are different from those available for calculating change measures, because we use the whole time series available for analysis (i.e. prior to the truncation of end points), and because we count the number of years in the time series rather than the number of annual change measures.

2.9.3 CBC/BBS trends

The model fitted to these combined data is that historically employed for the BBS, a Generalised Linear Model with counts assumed to follow a Poisson distribution and a logarithmic link function. Standard errors were calculated via a bootstrapping procedure. For presentation in the figures, both the population trend and its confidence limits were also subsequently smoothed using a thin-plate smoothing spline.

2.9.4 Waterways Bird Survey

GAMs were fitted to the WBS data using the approach described above (**Fewster *et al.* 2000**). Confidence limits were fitted using a bootstrap technique to avoid restrictive assumptions about the distribution of the data. Bootstrap samples were drawn from the data by sampling plots with replacement. We generated 199 bootstrap samples from each data set and fitted a GAM to each of them. Confidence limits for the smoothed population indices (85% cl) and change measures (90% cl) were determined by taking the appropriate percentiles from the distributions of the bootstrap estimates The section on **confidence limits and statistical testing (2.8.4)** gives the reasons for choosing these particular confidence limits.

The GAMs were fitted using a modified version of the FORTRAN program GAIM (**Hastie & Tibshirani 1990**).

2.9.5 Constant Effort Sites

Annual indices were fitted to catches of adults and juveniles separately using the method described by **Peach *et al.* (1998)**. This is essentially the annual 'sites x years' model described above but with the addition of an offset to correct for missing visits.

Offsets could not easily be incorporated in the GAM software that we have available. Therefore we fitted a smooth curve to the annual indices. This was done using PROC TSPLINE of SAS. This procedure should give very similar estimates to a GAM analysis, but it does not provide confidence intervals for the smoothed population trends, nor for the change measures derived from it. Therefore all alert flags relating to the CES are shown in square brackets.

2.9.6 Heronries Census

The Heronries Census data were analysed using a modified sites x years model based on ratio estimation which incorporates information about new colonies (sites) that have been established and other colonies from the sample that are known to have gone extinct. The method was developed by **Thomas (1993)** specifically in relation to the heronries data set. Since then the heronries database has been substantially upgraded and the method has been applied to the full data set (**Marchant *et al.* 2004**).

The above method of analysis cannot be easily applied within a GAM framework. Therefore we fitted a smooth curve to the annual indices. This was done using PROC TSPLINE of SAS. This procedure should give very similar estimates to a GAM analysis but it does not provide confidence intervals for the smoothed population trend or the change measures derived from it. This is not a serious limitations as there are no potential alerts for **Grey Heron**, whose populations have generally been increasing.

Section 3 – Species pages

Back to Methodology Index

SPECIES LIST

List of species (in BOU taxonomic order)

Information to aid interpretation of the pages for individual species
can be found on the **Species Help Page**

MUTE SWAN
Cygnus olor

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: amber (>20% of European breeding population)

Long-term trend

UK, England: rapid increase

UK population size

28,000–30,000 adults in 1990 (**Delany *et al.* 1992**: **APEP06**); 23,900–25,600 pairs in 2000 (updated using CBC/BBS trend: **BiE04**); 28,600–35,200 birds in Britain in 2002 (**Rowell & Spray 2004**)

Status summary

Mute Swan populations, which had been fairly stable since the 1960s, have increased progressively since the mid 1980s, perhaps reflecting warmer winter weather and the replacement of anglers' lead weights, which had earlier caused many casualties, with non-toxic alternatives (**Rowell & Spray 2004**). WBS plots, likely to be a preferred habitat for breeding swans, show a more moderate rate of increase than CBC/BBS. Winter trends as measured by WeBS have shown a parallel upturn (**Banks *et al.* 2006**). The reductions in breeding performance, although statistically significant, may be to some extent artefacts of the relatively small and perhaps unrepresentative annual samples in the 1990s. The recent change of conservation listing from green to amber is unconnected with its UK trend.

Population changes

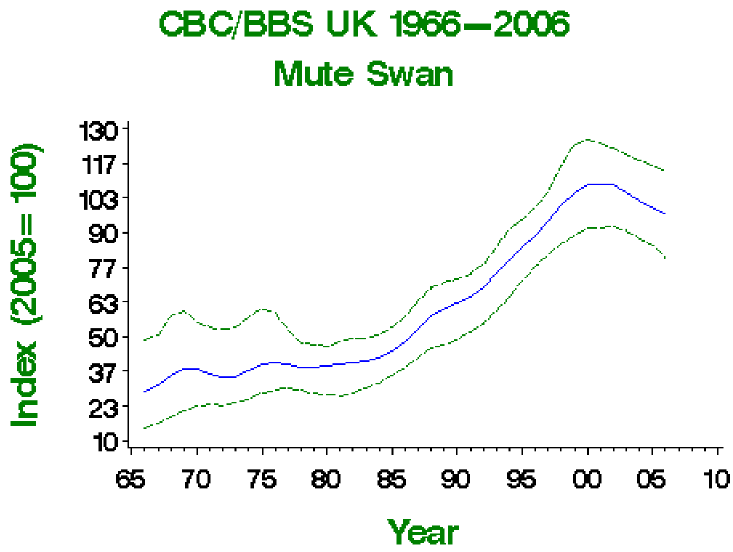
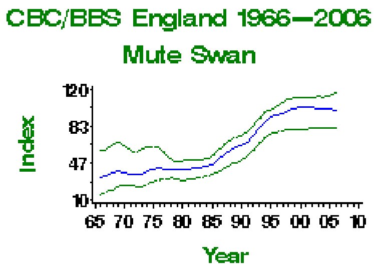
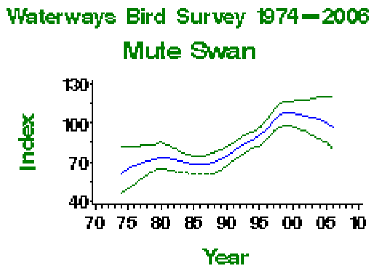


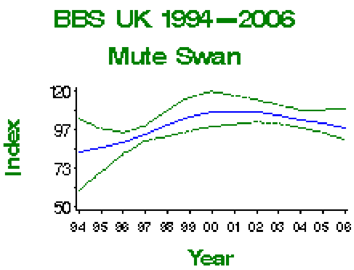
Table of population changes for Mute Swan

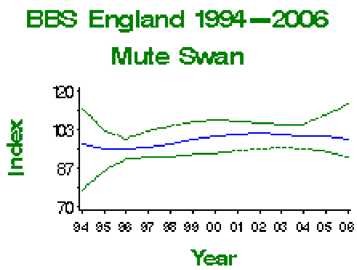
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	74	216	60	632		
	25	1980-2005	105	159	86	331		
	10	1995-2005	218	19	2	51		
	5	2000-2005	238	-8	-20	6		
CBC/BBS England	38	1967-2005	64	193	29	548		Small CBC sample
	25	1980-2005	89	148	72	272		Small CBC sample
	10	1995-2005	186	9	-3	30		
	5	2000-2005	198	-2	-11	19		
WBS waterways	30	1975-2005	44	56	2	134		
	25	1980-2005	47	36	-1	88		
	10	1995-2005	56	10	-8	41		
	5	2000-2005	49	-7	-18	10		
BBS UK	10	1995-2005	203	17	-2	51		
	5	2000-2005	234	-7	-17	10		
BBS England	10	1995-2005	172	5	-9	29		
	5	2000-2005	195	0	-12	20		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





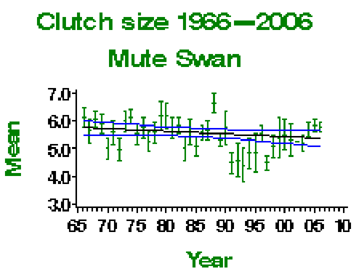


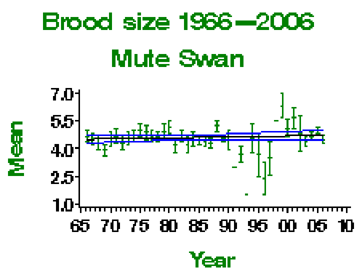


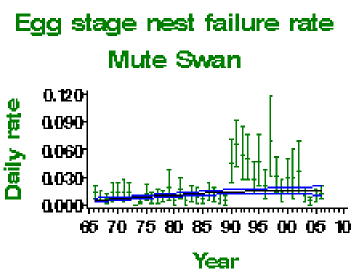
Productivity trends

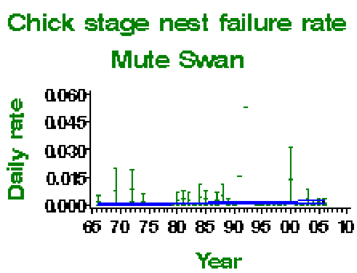
Table of productivity changes for Mute Swan

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	22	None				Small sample
Brood size	37	1968-2005	37	None				
Daily failure rate (eggs)	37	1968-2005	29	Curvilinear	0.62% nests/day	1.52% nests/day	145.2%	Small sample
Daily failure rate (chicks)	37	1968-2005	24	None				Small sample
Laying date	37	1968-2005	13	None				Small sample

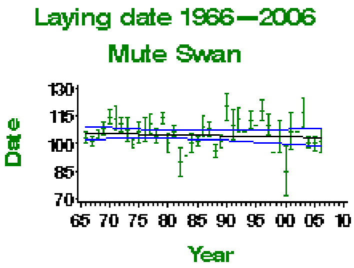








Insufficient data on CES
available for this species



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

GREYLAG GOOSE
Anser anser

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: not listed (introduced population);
amber (localised NW Scottish population);
amber (in winter, localised and >20% of NW European Flyway population)

Long-term trend

UK: rapid increase

UK population size

3,200 indigenous pairs in 1997, and 30,900 introduced adults in 1999 (**Mitchell *et al.* 2000**, **Rehfisch *et al.* 2002**, **APEP06**); 15,600–15,800 pairs in 2000 (**BiE04**)

Status summary

Apart from a small indigenous population in northwest Scotland and the Western Isles, and winter visitors mainly from Iceland, the Greylag Goose is an introduced species throughout the UK. Introduced Greylags have increased very rapidly, at a rate estimated at 12% per annum in southern Britain between the 1988–91 Atlas period and 1999 (**Rehfisch *et al.* 2002**). This equates across Britain to 170%, or 9.4% per annum, in the period to 2000 (**Austin *et al.* 2007**). The WBS sample became large enough for annual monitoring in 1992, since when further steep increase has been recorded along linear waterways. Annual breeding-season monitoring in a wider range of habitats through BBS has shown similar strong increases. Winter counts confirm that the introduced population is likely to be already much larger than the latest agreed population size estimates from 1999 and 2000 (**Banks *et al.* 2006**).

Population changes

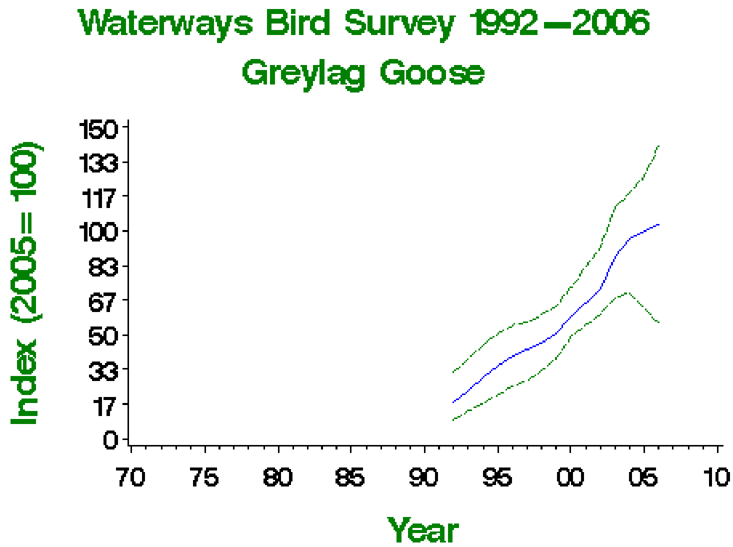
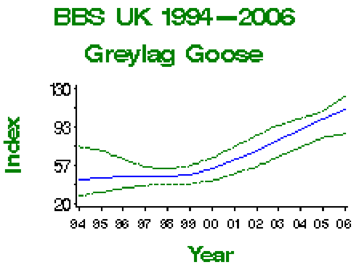
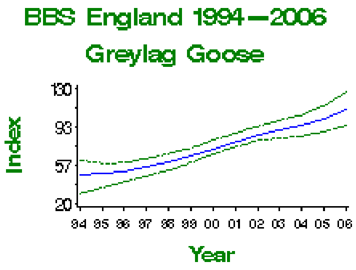


Table of population changes for Greylag Goose

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	12	1993-2005	10	332	49	919		Small sample
	10	1995-2005	11	182	17	556		Small sample
	5	2000-2005	11	71	-16	163		Small sample
BBS UK	10	1995-2005	115	124	12	281		
	5	2000-2005	145	90	44	156		
BBS England	10	1995-2005	93	105	46	230		
	5	2000-2005	119	39	13	71		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

CANADA GOOSE
Branta canadensis

- Population changes
- Productivity trends
- Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: not listed (introduced)

Long-term trend

UK: rapid increase

UK population size

82,550 adults in 1999 (**Rehfisch *et al.* 2002**: **APEP06**); 88,866 adults in Britain in 2000 (**Austin *et al.* 2007**)

Status summary

Canada Geese have increased rapidly, at a rate estimated at 9.3% per annum in Britain between the 1988–91 Atlas period and 2000, with no sign of any fall in the rate of increase (**Austin *et al.* 2007**). Most of this increase, amounting to 166% during that period, has been in areas previously with low goose densities. The WBS sample became large enough for annual monitoring in 1980, since when further, apparently accelerating, increase on linear waterways occurred during the 1990s. WBS results for recent seasons suggest little change in this habitat since 2004. Annual breeding-season monitoring in a wider range of habitats through BBS has shown similar strong increases in England and in the UK as a whole. Winter monitoring by WeBS shows a continuing long-term increase (**Banks *et al.* 2006**).

Population changes

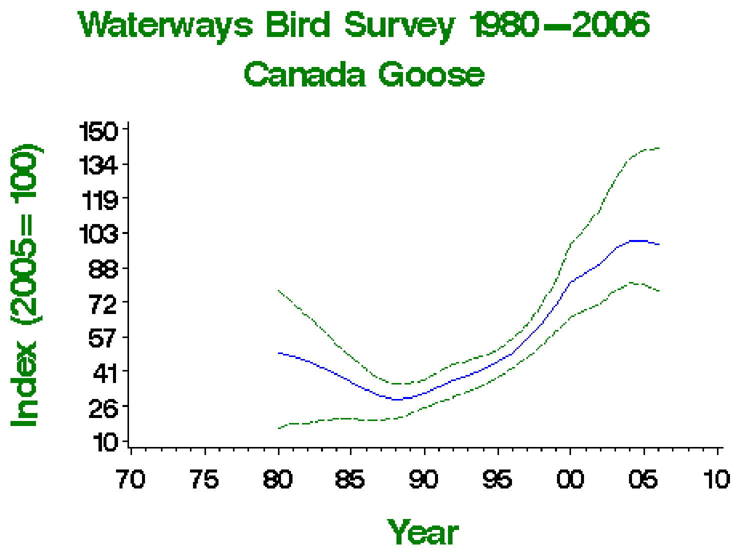
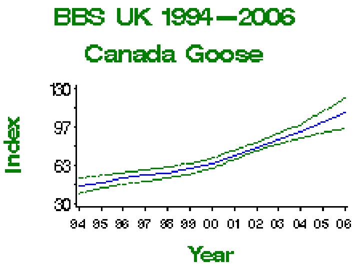
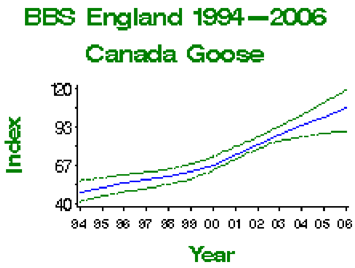


Table of population changes for Canada Goose

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	24	1981-2005	30	109	7	797		
	10	1995-2005	38	120	71	258		
	5	2000-2005	34	24	3	64		
BBS UK	10	1995-2005	369	106	66	159		
	5	2000-2005	444	55	29	82		
BBS England	10	1995-2005	346	96	50	147		
	5	2000-2005	412	50	21	79		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

SHELDUCK
Tadorna tadorna

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: amber (localised in winter, >20% of NW European population in winter)

Long term-trend

UK: rapid increase

UK population size

10,900 pairs in 1990 (1988–91 Atlas: **APEP06**); 5,800–10,800 pairs in 2000 (updated using CBC and BBS trends: **BiE04**)

Status summary

Shelducks occurred on relatively few CBC plots, most of which were close to a coast or an estuary, and it is unclear how well the CBC trend represented that of the UK breeding population. The CBC showed a substantial increase from the mid 1960s until the early 1980s, some decrease during the 1980s, and stability during the 1990s, although the wide confidence intervals provide scope for other interpretations. Population increase was associated with expansion of range, measured as an additional 20% of occupied 10-km squares in Britain between 1968–72 and 1988–91 (**Gibbons *et al.* 1993**). The UK winter Shelduck population rose during the 1960s and 1970s, alongside the rise in breeding numbers, but has been falling again since the mid 1990s (**Banks *et al.* 2006**). The BBS index is affected by occasional large counts, and as a result is difficult to interpret.

Population changes

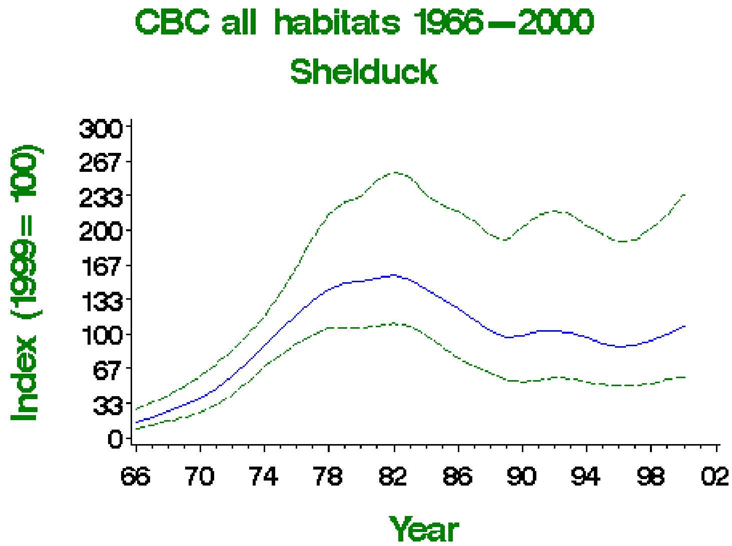
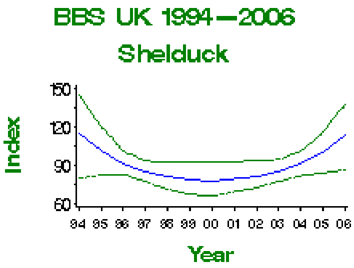
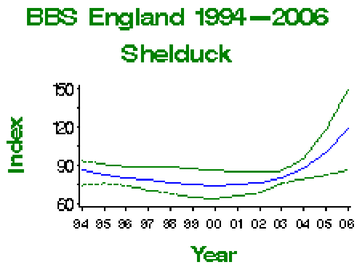


Table of population changes for Shelduck

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	18	300	94	787		Small sample
	25	1974-1999	21	12	-40	118		
	10	1989-1999	21	3	-21	40		
	5	1994-1999	23	4	-18	39		
BBS UK	10	1995-2005	125	-1	-29	39		
	5	2000-2005	132	29	-4	77		
BBS England	10	1995-2005	103	21	-9	55		
	5	2000-2005	106	36	-5	90		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

MALLARD
Anas platyrhynchos

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK, England: rapid increase

UK population size

50,400–127,100 pairs in 1990 (1988–91 Atlas: **APEP06**); 63,000–158,900 pairs in 2000 (updated using CBC/BBS trend: **BiE04**)

Status summary

The Mallard has increased steadily as a breeding bird in the UK since the 1960s, and especially in England, a trend to which ongoing large-scale releases for shooting may have contributed (**Marchant *et al.* 1990**). Mallards originating from domesticated birds and not resembling wild-type birds in either plumage or behaviour are very abundant but perhaps under-represented in survey data, especially since many individuals appear to be semi-captive. A large part of the increase in breeding numbers may be attributable to such birds, rather than to true-bred stock. Winter populations have declined since the late 1980s (**Banks *et al.* 2006**), linked apparently to a decrease in continental immigration (**Mitchell *et al.* 2002**).

Population changes

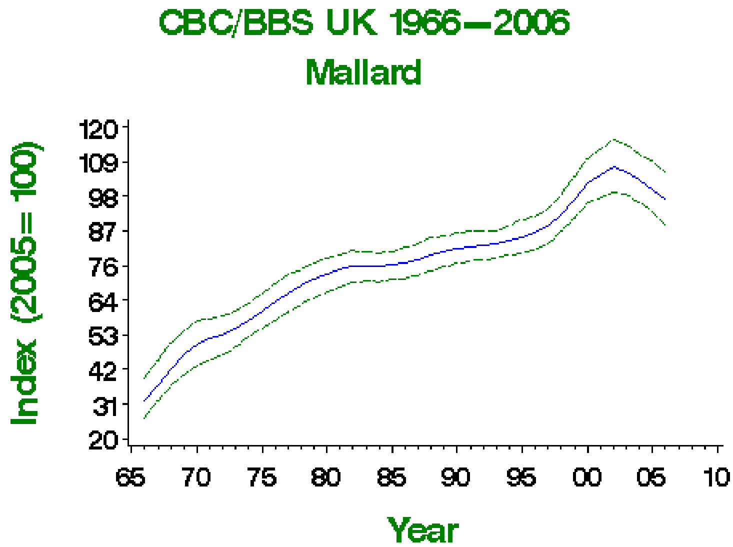
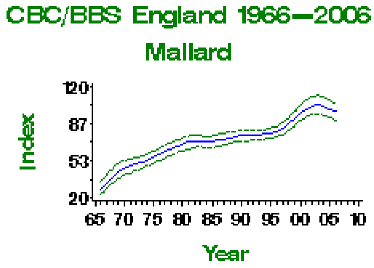


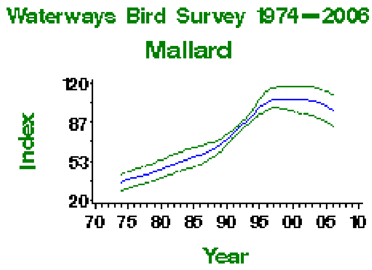
Table of population changes for Mallard

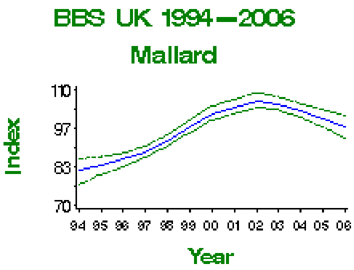
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	396	167	107	240		
	25	1980-2005	550	37	19	62		
	10	1995-2005	1130	18	11	27		
	5	2000-2005	1202	-2	-7	3		
CBC/BBS England	38	1967-2005	333	202	126	271		
	25	1980-2005	460	46	24	76		
	10	1995-2005	944	28	19	36		
	5	2000-2005	1006	4	-2	10		
WBS waterways	30	1975-2005	92	166	93	281		
	25	1980-2005	96	114	51	192		
	10	1995-2005	99	1	-11	14		
	5	2000-2005	84	-6	-12	1		
BBS UK	10	1995-2005	1065	19	12	28		
	5	2000-2005	1185	-1	-6	3		
BBS England	10	1995-2005	888	28	21	38		
	5	2000-2005	991	5	-1	10		
BBS Scotland	10	1995-2005	90	-5	-23	13		
	5	2000-2005	89	-25	-35	-16		

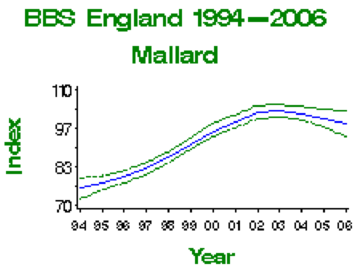
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

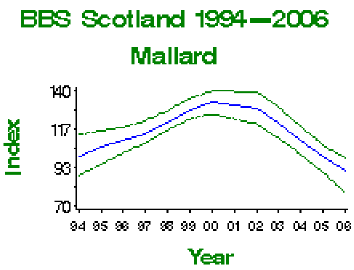
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

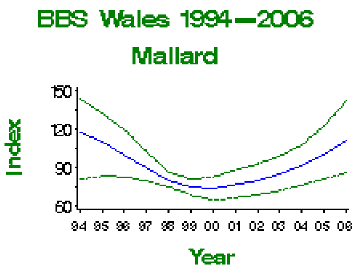












Productivity trends

Productivity information is not currently available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

TUFTED DUCK
Aythya fuligula

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: green

Long-term trend

UK: shallow increase

UK population size

7,000–8,000 pairs in GB in 1979–83 (**Owen *et al.* 1986**: **APEP06**); 10,200–11,500 pairs in UK in 2000 (1988–91 Atlas estimate updated using WBS trend: **BiE04**)

Status summary

The colonisation of the UK by Tufted Ducks, which began in 1849, was aided by the spread of the zebra mussel *Dreissena polymorpha*, which had been introduced accidentally to Britain a few decades earlier. The long-term shallow increase shown by WBS, and the 15% increase in range in Britain between the two atlas periods (**Gibbons *et al.* 1993**) may indicate that population expansion and in-filling of range are still occurring. BBS data suggest significant further increase since 1994, in England and in the UK as a whole. The species' winter trend in the UK since the 1960s, which includes many continental visitors, is also shallowly upward overall (**Banks *et al.* 2006**). In contrast, moderate recent declines elsewhere in northern Europe have resulted in reclassification as a species of conservation concern.

Population changes

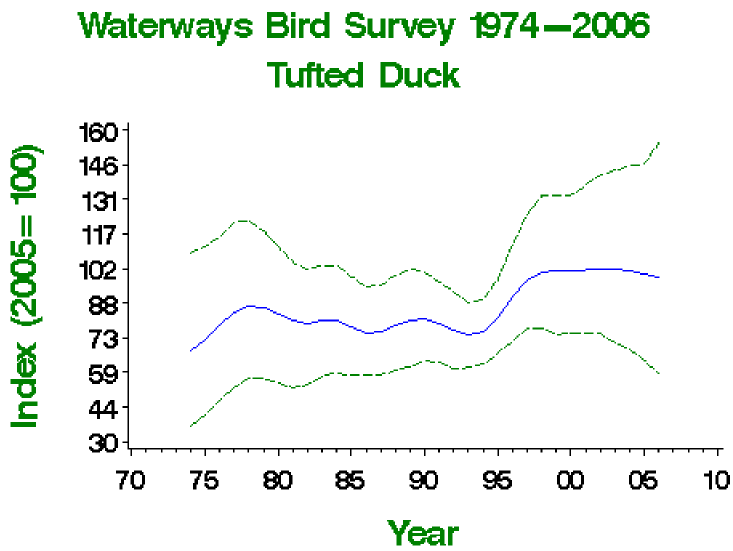
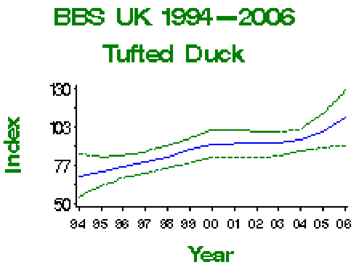
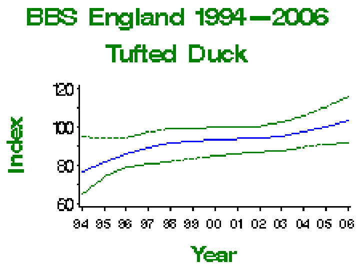


Table of population changes for Tufted Duck

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	30	1975-2005	23	37	-43	314		
	25	1980-2005	24	20	-43	195		
	10	1995-2005	25	22	-31	108		
	5	2000-2005	17	-1	-33	48		Small sample
BBS UK	10	1995-2005	131	39	8	77		
	5	2000-2005	139	10	-11	34		
BBS England	10	1995-2005	113	23	-4	48		
	5	2000-2005	121	7	-7	27		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**
- **Garden BirdWatch results**

GOOSANDER
Mergus merganser

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: rapid increase

UK population size

2,600 (2,300–2,900) pairs in 1987 (**Gregory *et al.* 1997**: **APEP06**); 2,900–3,600 pairs in 2000 (updated using WBS trend: **BiE04**)

Status summary

Goosanders were first discovered to have colonised the UK in Perthshire in 1871, and spread from Scotland into northern England in the 1940s (**Holloway 1996**). Between the two breeding atlases, the species expanded its range in northern England, and colonised Wales and southwest England. WBS samples became large enough for annual monitoring in 1980, and have shown sustained population increase. The BTO's two national surveys of sawbills demonstrated an average increase in population size of 3% per annum between 1987 and 1997 (**Rehfisch *et al.* 1999**). Reasons for the colonisation of the UK, and the subsequent range expansion and population increase, are unknown. The species' winter trend in Britain, comprising British breeders and continental visitors, rose at an accelerating rate from the late 1960s to the mid 1990s, but has since entered a decline (**Banks *et al.* 2006**).

Population changes

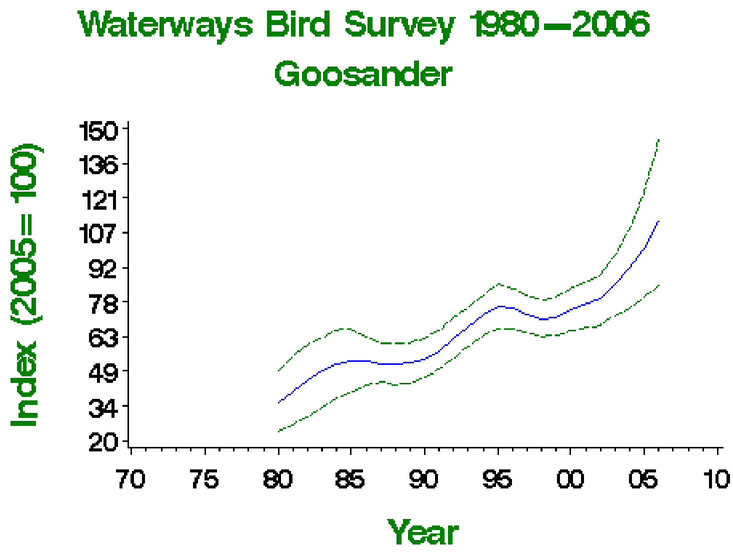


Table of population changes for Goosander

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	24	1981-2005	23	146	36	338		
	10	1995-2005	26	32	-6	82		
	5	2000-2005	24	34	9	67		

Productivity trends

Productivity information is not currently available for this species

Additional information

- Distribution maps for this species are not currently available online (see **Atlases species help**)
- **BirdFacts page on species biology**
- **BirdTrack results**

RED GROUSE
Lagopus lagopus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: amber (25–50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

UK: decline

UK population size

155,000 pairs in 2000 (1988–91 Atlas estimate updated using GCT gamebag data: **BiE04**, **APEP06**)

Status summary

The distinctive dark-winged race *scotica* is endemic to Britain and Ireland and has the vast bulk of its population within the UK. BBS shows no overall trend since 1994. **Shooting bags** have revealed long-term declines, apparently driven by loss of heather moorland, increased predation from corvids and foxes, and an increasing incidence of viral disease (**Hudson 1992**, **Newton 2004**), which have prompted the move of the species from the Green to the Amber List. Raptor predation is believed not to affect breeding populations significantly, although it can reduce numbers in the post-breeding period (**Redpath & Thirgood 1997**). Longer-term trends in Red Grouse abundance are overlain by cycles, with periods that vary regionally, linked to the dynamics of infection by a nematode parasite (**Dobson & Hudson 1992**, **Gibbons *et al.* 1993**).

Population changes

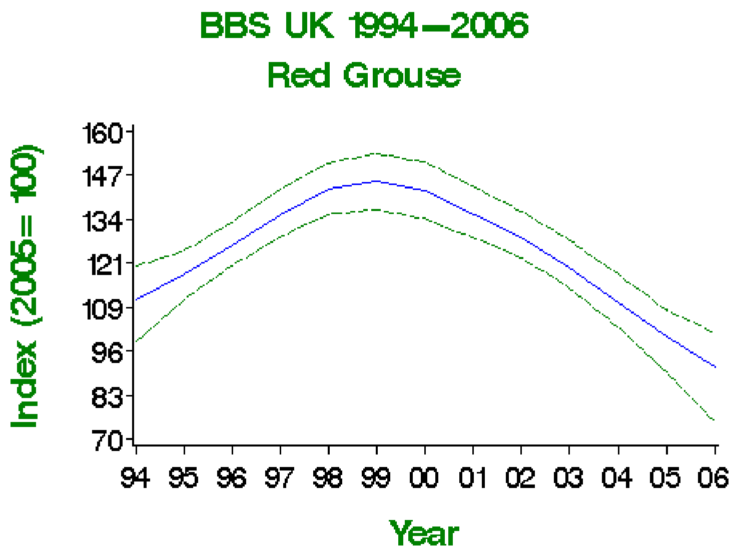
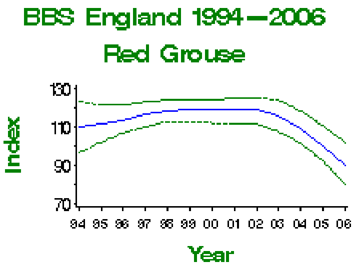
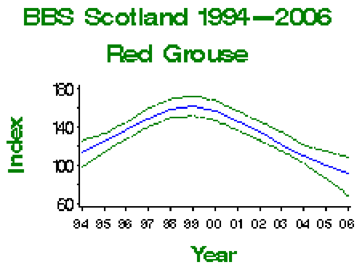


Table of population changes for Red Grouse

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	105	-15	-27	-2		
	5	2000-2005	101	-30	-41	-19	>25	
BBS England	10	1995-2005	46	-10	-26	10		
	5	2000-2005	51	-16	-25	-3		
BBS Scotland	10	1995-2005	55	-19	-34	-2		
	5	2000-2005	45	-36	-50	-23	>25	

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

RED-LEGGED PARTRIDGE
Alectoris rufa

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2 (declining)
UK: not listed (introduced)

Long-term trend

UK, England: shallow decline

UK population size

72,000–200,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Since Red-legged Partridge is a non-native species released in the UK to be shot by hunters, the BTO alerts generated over the recent 25-year period raise no conservation concern. Moreover, BBS data indicate that significant increase has occurred in the UK since 1994. Since 1990, **game-bag data** show that the numbers released per unit area onto shooting estates have more than doubled since 1990, and the number shot has also about doubled, both as parts of long-term trends evident since the 1960s. The effects of such releases on native fauna have been poorly studied. It is now believed, however, that shooting operations based on large-scale releases of Red-legged Partridges can lead to local extinction of the native **Grey Partridge** (**Watson *et al.* 2007**).

Population changes

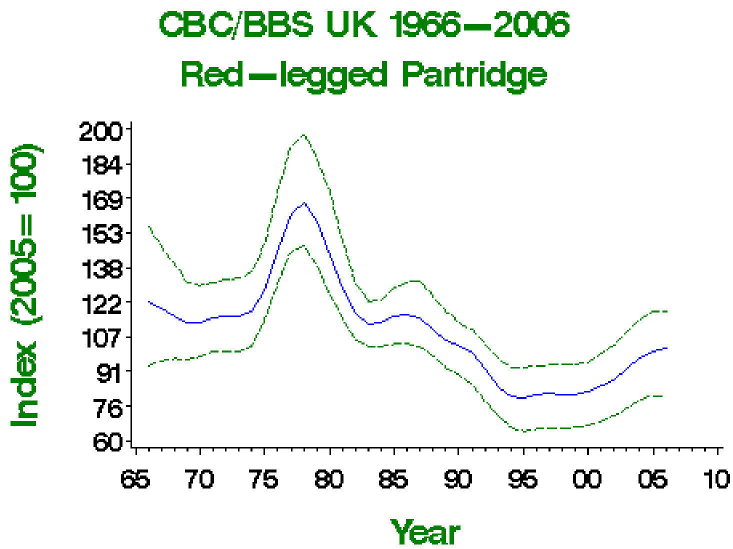
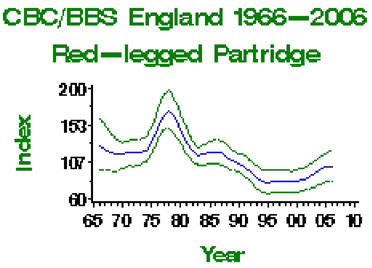
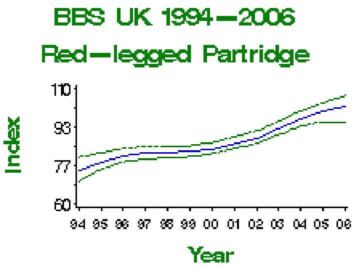


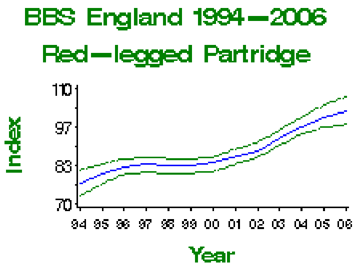
Table of population changes for Red-legged Partridge

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	153	-16	-46	25		
	25	1980-2005	217	-30	-56	-8	>25	
	10	1995-2005	461	26	13	39		
	5	2000-2005	497	22	14	31		
CBC/BBS England	38	1967-2005	151	-19	-45	23		
	25	1980-2005	213	-32	-53	-7	>25	
	10	1995-2005	452	23	11	35		
	5	2000-2005	485	21	13	30		
BBS UK	10	1995-2005	443	28	16	41		
	5	2000-2005	493	20	11	27		
BBS England	10	1995-2005	434	24	14	36		
	5	2000-2005	480	19	12	27		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

GREY PARTRIDGE
Perdix perdix

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (vulnerable)
UK: red (>50% population decline)
UK Biodiversity Action Plan: click here

Long-term trend

UK, England: rapid decline

UK population size

70,000–75,000 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

This species has declined enormously, probably because of the effects of agricultural intensification (specifically herbicides) on the food plants of young chicks' insect prey (Potts 1986). Despite years of research and the application of a government Biodiversity Action Plan (Aebischer & Ewald 2004), the continuing decline shown by CBC/BBS suggests that all efforts to boost the population have so far been unsuccessful. Local extinctions are now likely to be widespread, but masked in some areas by continuing releases of hand-reared birds onto shooting estates. The practice of releasing Red-legged Partridges in large numbers can lead to Grey Partridge extinction, in part because shooters are unable to distinguish these two species (Watson *et al.* 2007). These authors conclude that overshooting has greater implications for Grey Partridge conservation than raptor predation.

Population changes

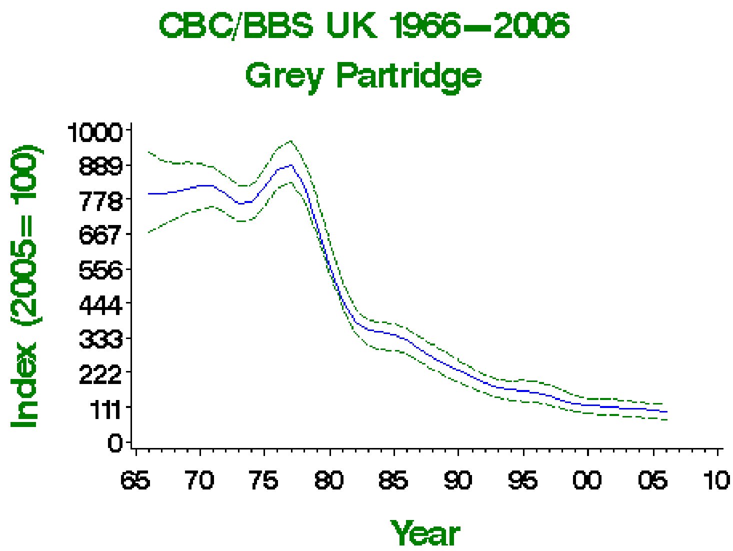
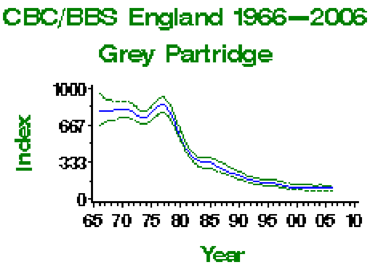
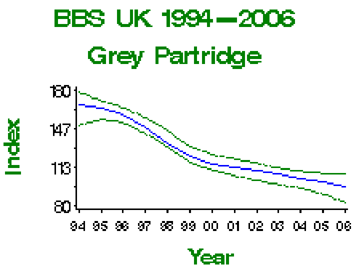


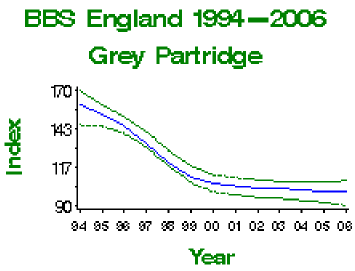
Table of population changes for Grey Partridge

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	115	-87	-92	-82	>50	
	25	1980-2005	133	-82	-88	-78	>50	
	10	1995-2005	241	-39	-46	-30	>25	
	5	2000-2005	210	-12	-27	1		
CBC/BBS England	38	1967-2005	103	-87	-91	-82	>50	
	25	1980-2005	119	-82	-87	-78	>50	
	10	1995-2005	214	-33	-40	-25	>25	
	5	2000-2005	189	-3	-15	7		
BBS UK	10	1995-2005	221	-39	-47	-30	>25	
	5	2000-2005	206	-14	-28	-1		
BBS England	10	1995-2005	195	-35	-42	-26	>25	
	5	2000-2005	185	-5	-17	6		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

PHEASANT
Phasianus colchicus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: not listed (introduced)

Long-term trend

England: moderate increase

UK population size

1,800,000–1,900,000 females in 2000 (**Robertson *et al.* 1989**, updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Pheasants have increased in abundance since the 1960s, at a rate that appears to be accelerating, but it must be noted that numbers of this introduced gamebird are determined principally by releases of reared birds for shooting (**Marchant *et al.* 1990**). The Game Conservancy Trust estimates that about 20–22 million birds are released in the UK each autumn, a figure that has increased approximately four-fold since the mid 1960s (**Tapper 1999**). More than two million newly released birds are expected to survive until spring, when they must form the major part of the breeding population.The BBS records increase in England and Wales, but little change in Scotland since 1994. During 1968–88, a period when the total biomass of birds in Britain fell by an estimated 10%, CBC data indicate that Pheasant biomass rose by about 2,500 tonnes – more than ten times more than any other species (**Dolton & Brooke 1999**). High Pheasant densities potentially have negative effects, that have not been adequately studied, on native UK birds: these include the effect on the structure of the field layer, the spread of disease and parasites, and competition for food (**Fuller *et al.* 2005**).

Population changes

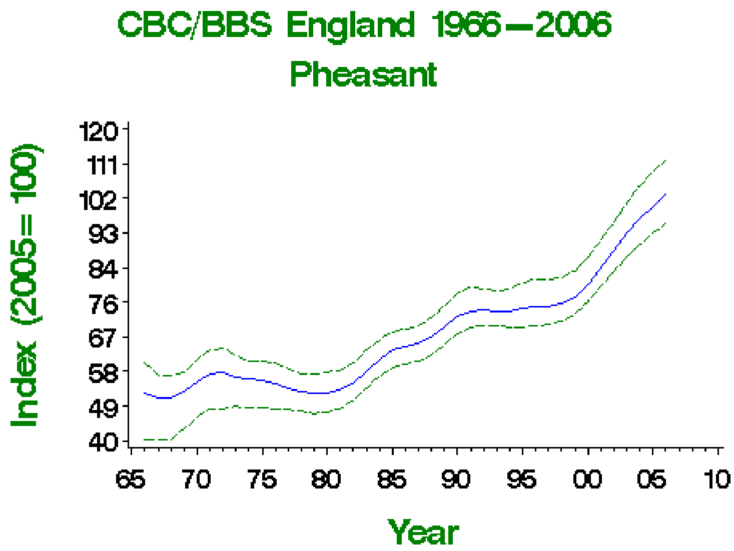
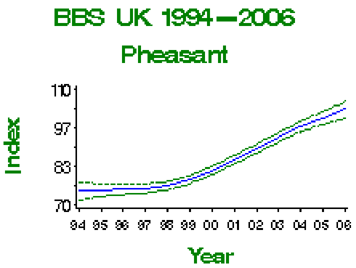
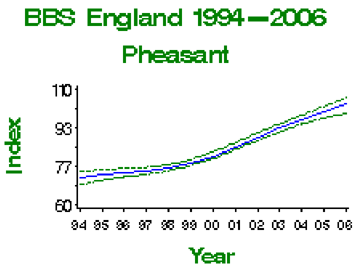


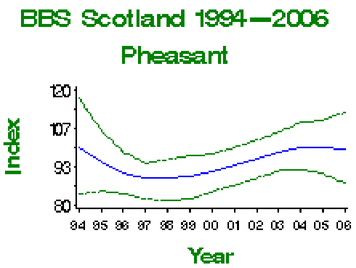
Table of population changes for Pheasant

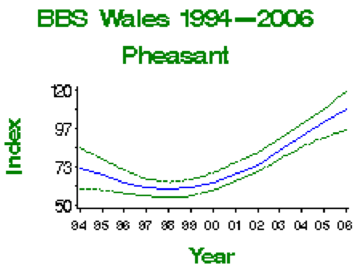
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	437	96	61	176		
	25	1980-2005	614	92	62	129		
	10	1995-2005	1287	35	29	42		
	5	2000-2005	1370	25	20	29		
BBS UK	10	1995-2005	1436	33	26	41		
	5	2000-2005	1606	23	18	27		
BBS England	10	1995-2005	1212	37	30	45		
	5	2000-2005	1351	23	18	27		
BBS Scotland	10	1995-2005	108	6	-15	31		
	5	2000-2005	111	9	-6	30		
BBS Wales	10	1995-2005	77	47	15	87		
	5	2000-2005	94	58	32	83		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB









Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

RED-THROATED DIVER
Gavia stellata

- Population changes
- Productivity trends
- Additional information

Conservation listings

Europe: SPEC category 3 (depleted)
UK: amber (25–50% population decline)

Long-term trend

Shetland: moderate decline

UK population size

935–1,500 pairs in 1994 (**Gibbons *et al.* 1997**: **BiE04**, **APEP06**)

Status summary

Population trends are not monitored by the BTO, but JNCC's **Seabird Monitoring Programme** shows that numbers at sample study areas in Shetland fluctuated without long-term change during 1980–2005, with low points in 1980, 2000 and 2004 (**Mavor *et al.* 2006**). Complete surveys of Shetland indicated a decrease of 36% there between 1983 and 1994, however (**Gibbons *et al.* 1997**). Since in 1994 Shetland held 28–45% of the total UK population, this warrants amber listing for Red-throated Diver, in addition to its depleted status in Europe as a whole. Since the 1980s, there may have been some tendency for more pairs to hatch a second chick, although two-chick broods are only occasional in Orkney and the proportion of nest records from there could have changed over time.

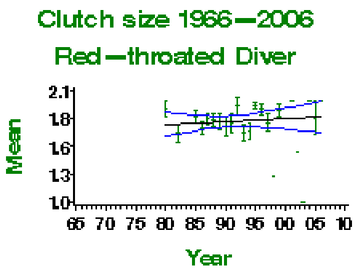
Population changes

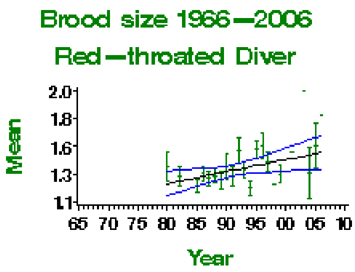
Annual breeding population changes are not currently monitored by BTO for this species

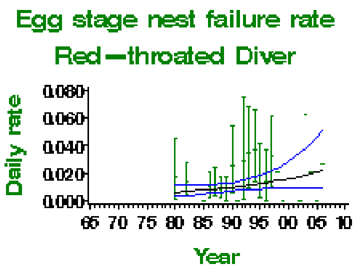
Productivity trends

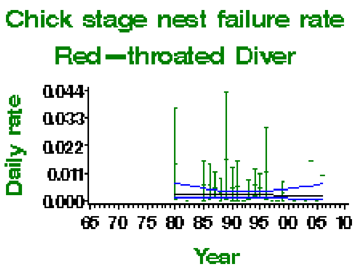
Table of productivity changes for Red-throated Diver

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	25	1980-2005	22	None				Small sample
Brood size	25	1980-2005	34	Linear increase	1.25 chicks	1.49 chicks	19.2%	
Daily failure rate (eggs)	25	1980-2005	12	None				Small sample
Daily failure rate (chicks)	25	1980-2005	18	None				Small sample









Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Distribution maps for this species are not currently available online (see **Atlases species help**)
- **BirdFacts page on species biology**

LITTLE GREBE
Tachybaptus ruficollis

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: uncertain

UK population size

5,900–12,000 pairs in 1990 (1988–91 Atlas: **APEP06**); 3,800–13,000 pairs in 2000 (updated using CBC and WBS trends: **BiE04)**

Status summary

The rapid decline shown by the WBS may reveal problems among birds on linear waterways during the early 1980s and since the late 1990s, while shallow increases shown by the CBC and by BBS may suggest that wider populations (including birds on small still waters) are healthy. Because of the shortage of data, and the conflict between WBS and BBS assessments, the rapid decline indicated by WBS has not triggered a conservation listing. In an analysis of nest record cards, **Moss & Moss (1993)** found that nests on ponds and lakes were significantly more successful than those on rivers and streams and that nests on rivers, subject to fluctuating water levels, experienced significantly higher failure rates through flooding than those on canals, where water levels are artificially maintained. Winter numbers, monitored by **WeBS**, have shown sustained shallow increase (**Banks *et al.* 2006**).

Population changes

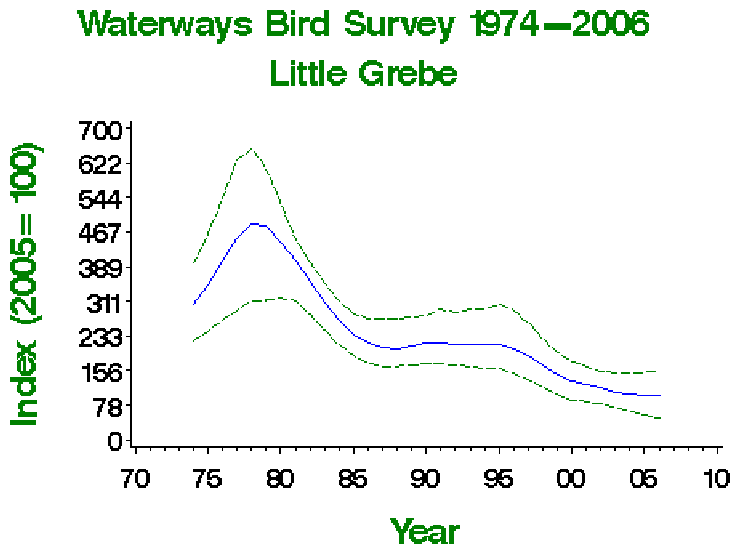
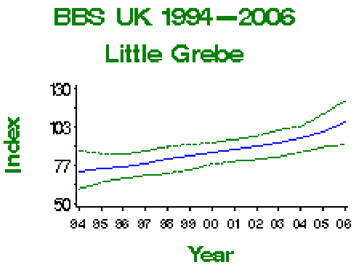
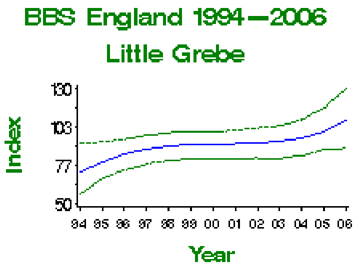


Table of population changes for Little Grebe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	30	1975-2005	16	-71	-88	-38	>50	Small sample
	25	1980-2005	16	-78	-89	-52	>50	Small sample
	10	1995-2005	12	-53	-74	-27	>50	Small sample
BBS UK	10	1995-2005	59	34	5	75		
	5	2000-2005	70	17	-3	46		
BBS England	10	1995-2005	48	27	-8	85		
	5	2000-2005	56	10	-13	43		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

GREAT CRESTED GREBE
Podiceps cristatus

• **Population changes** • **Productivity trends** • **Additional information**

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: probable increase

UK population size

9,400 adults in 1990 (1988–91 Atlas:**APEP06**); 6,100 pairs in 2000 (updated using BBS trend: **BiE04**)

Status summary

This species was believed to be on the verge of extinction in Britain around 1860, when only 32–72 pairs were known in England (**Holloway 1996**). A subsequent increase followed reductions in persecution, aided by statutory protection, and the creation of habitat in the form of gravel pits (**Gibbons *et al.* 1993**). Increase was tracked by special surveys to around 7,000 adult birds in Britain by 1975 (**Hughes *et al.* 1979**). The BBS provides the first annual, national monitoring of this species and indicates shallow increase since 1994. Winter numbers, monitored by **WeBS**, have shown sustained shallow increase (**Banks *et al.* 2006**).

Population changes

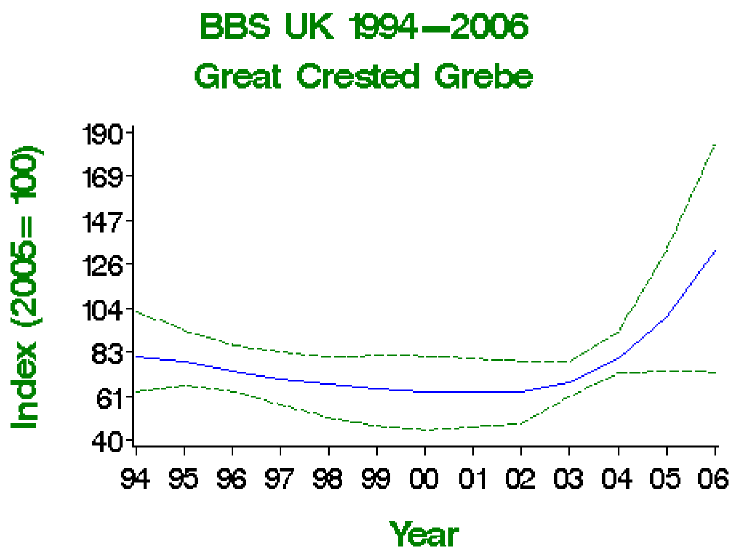
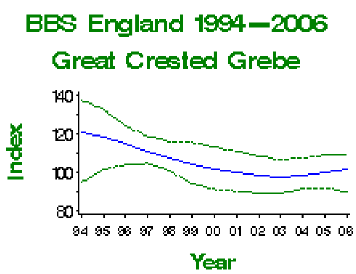


Table of population changes for Great Crested Grebe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	62	28	-24	90		
	5	2000-2005	67	57	-7	217		
BBS England	10	1995-2005	56	-15	-31	11		
	5	2000-2005	61	-2	-15	14		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



Productivity trends

Productivity information is not currently available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

CORMORANT
Phalacrocorax carbo

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: amber (breeding localised, >20% of European population in winter)

Long-term trend

UK: increase

UK population size

9,018 pairs in 1998–2002 (Mitchell *et al.* 2004: APEP06, 9,100 including Channel Islands BiE04)

Status summary

The Cormorant was almost exclusively a coastal breeder in the UK until 1981, but has since established colonies in many inland areas of eastern and central England (Rehfisch *et al.* 1999; Newson *et al.* 2006). Breeding numbers and productivity at sample colonies have been monitored annually since 1986 by JNCC's Seabird Monitoring Programme. Overall in Britain and Ireland there was a 15% increase in the population between full surveys in 1985–88 and 1998–2002 (Mitchell *et al.* 2004). Latest annual results show decreases in Scotland and in northeast and southwest England since the early or mid 1990s, but no trend in Wales, and steep increases inland in England and in regions bordering the northern part of the Irish Sea (Mavor *et al.* 2006). By 2005, breeding had been recorded at 58 inland sites, and the inland population had risen to about 2,130 pairs (Newson *et al.* 2007). Inland breeding in England is thought to have been sparked by birds of the continental race *sinensis* from the Netherlands and Denmark, although many nominate *carbo* from coastal colonies in Wales and England have contributed to its development. The winter trend in Britain, comprising British and Irish breeders and continental visitors, has shown strong increase since the late 1980s (Banks *et al.* 2006). The species has recently been moved from the green to the amber list, for reasons unconnected with its UK trend.

Population changes

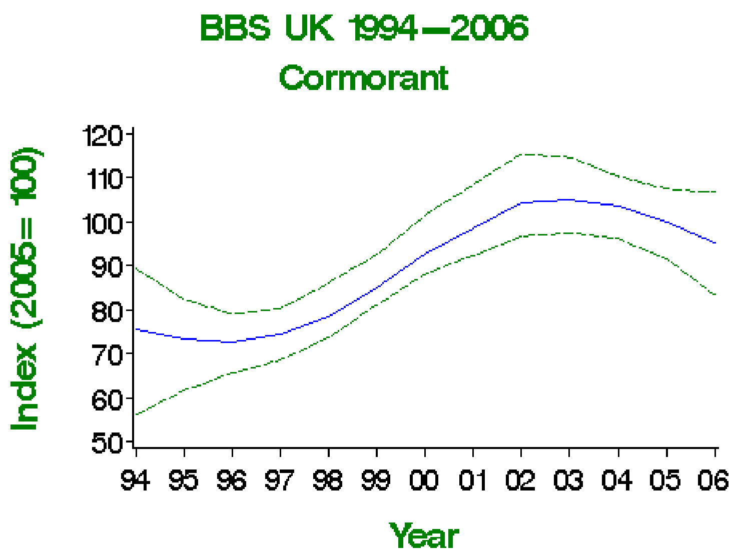
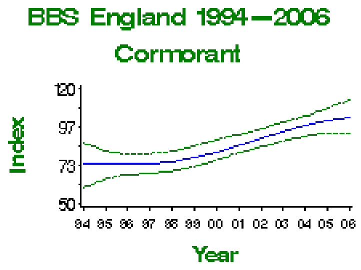


Table of population changes for Cormorant

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	188	36	11	72		Non-breeders included
	5	2000-2005	233	8	-8	20		Non-breeders included
BBS England	10	1995-2005	154	34	12	69		Non-breeders included
	5	2000-2005	190	23	6	40		Non-breeders included

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

Page not foun[redacted]

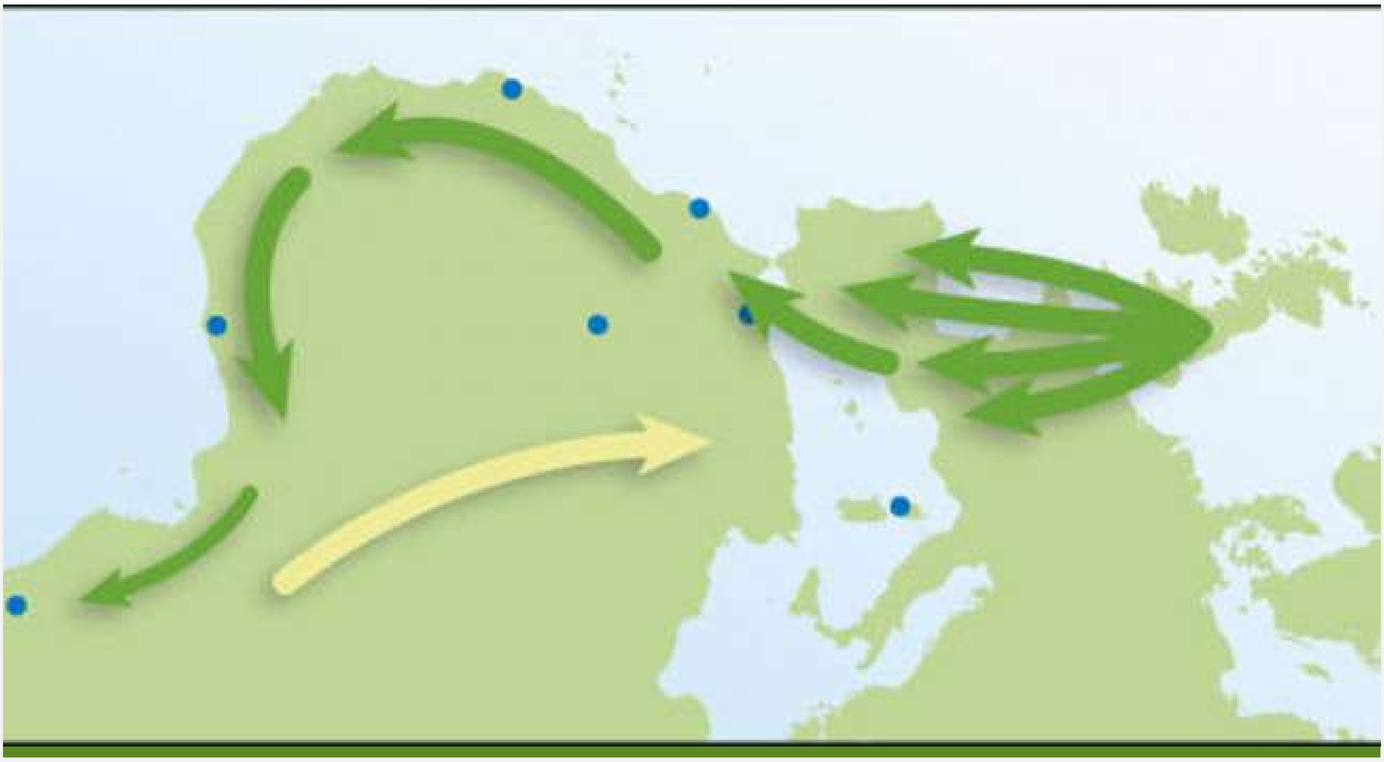
Terribly sorry...

The page you are looking for could not be found.

- Try searching using the search bar (top right)
- Navigate to the area you are looking for using the main menu (above)
- Return to our homepage
- Email us about what you are trying to find, or to tell us about a broken link - info@bto.org

Share this page

Related content



ARTICLE

Results

See live NBC results and watch the breeding season unfold

ARTICLE

Bird tracking - a masterclass

Phil Atkinson explains the technology behind tracking.

BLOG

Widening BTO's appeal

Andy Clements, BTO's Chief Executive, looks at how BTO can engage new audiences.

HEN HARRIER
Circus cyaneus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3, vulnerable
UK: red (historical decline)

Long-term trend

UK: stable (between 1988–89 and 1998)

UK population size

570 (500–640) territorial pairs in 1998 (**Sim *et al.* 2001**: **BiE04**, **APEP06**); 806 (732–889) territorial pairs in 2004 (**Sim *et al.* 2007a**)

Status summary

Red listed because of substantial declines over the last two centuries, this species has suffered in recent decades from loss of habitat as forestry plantations have matured (**Bibby & Etheridge 1993**) but more especially from continuing illegal persecution on grouse moors (**Etheridge *et al.* 1997**). The UK population was unchanged between surveys in 1988–89 and 1998, with declines in Orkney and England but increases in Northern Ireland and the Isle of Man (**Sim *et al.* 2001**). A decrease of 70% in the Orkney population over the last 20 years has been linked to reductions in the area of unmanaged grassland (**Amar & Redpath 2005**); the demographic drivers of this decline have been a decrease in polygyny and reduced nesting success among secondary females (**Amar *et al.* 2005**). The latest survey reveals a 41% increase in the UK and Isle of Man during 1998–2004, but with decreases in the Southern Uplands, east Highlands and England, all being areas with many managed grouse moors (**Sim *et al.* 2007a**). Although average clutch size declined substantially during the 1980s, further investigation has shown that this trend is due to the increased proportions in recent years of records from Orkney, where clutch sizes tend to be smaller than on the mainland (**Summers 1998**, **Crick 1998**).

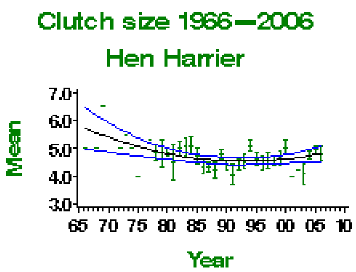
Population changes

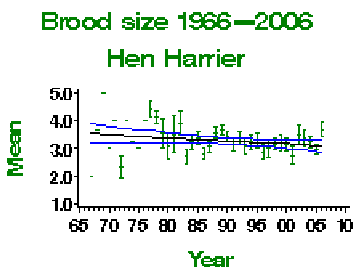
Annual breeding population changes for this species are not currently monitored by BTO

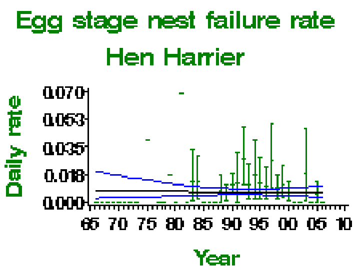
Productivity trends

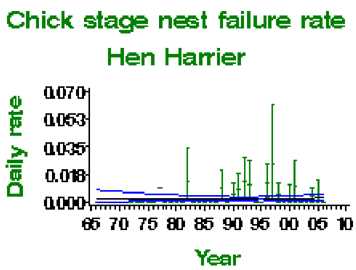
Table of productivity changes for Hen Harrier

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	13	Curvilinear	5.54 eggs	4.78 eggs	-13.7%	Small sample
Brood size	37	1968-2005	20	None				Small sample
Daily failure rate (eggs)	37	1968-2005	11	None				Small sample
Daily failure rate (chicks)	37	1968-2005	14	None				Small sample









Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Distribution maps for this species are not currently available online (see **Atlases species help**)
- **BirdFacts page on species biology**
- **BirdTrack results**

SPARROWHAWK
Accipiter nisus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

England: rapid increase

UK population size

40,100 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Sparrowhawks increased strongly in the UK as the population recovered from the crash caused by organochlorine pesticides in the 1950s and 1960s (**Newton 1986**). The species became common enough on CBC plots for annual monitoring in the early 1970s, and many former haunts especially in the Midlands and east of England were reoccupied between the two atlas periods (**Gibbons *et al.* 1993**). Improving breeding performance is likely to have contributed to this remarkable period of success: failure rates at the egg stage (c.44 days from laying the first egg) fell markedly from high initial values, and brood sizes increased throughout. The population has stabilised since the mid 1990s and, possibly through the effects of interspecific competition, average brood size has begun to drop again.

Population changes

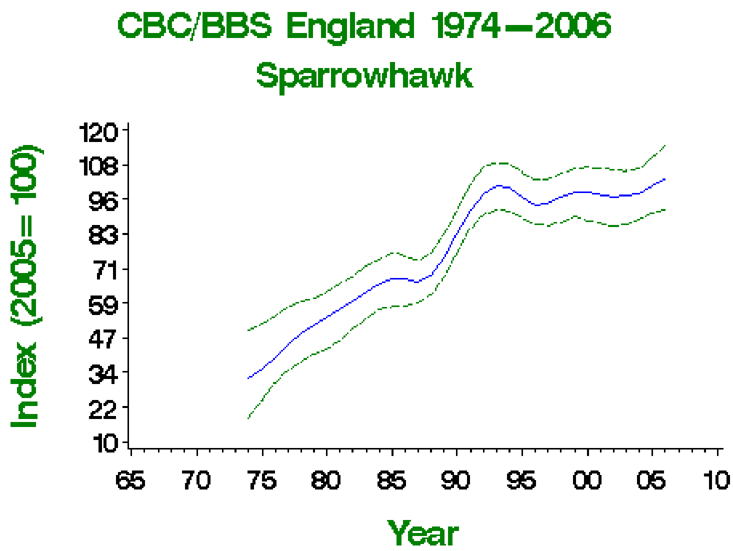
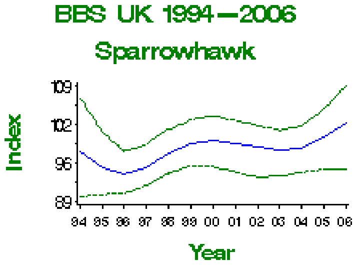
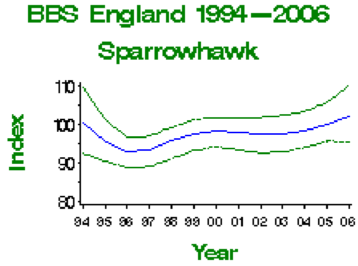


Table of population changes for Sparrowhawk

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	30	1975-2005	123	179	77	339		
	25	1980-2005	142	87	40	168		
	10	1995-2005	277	4	-5	14		
	5	2000-2005	281	2	-5	10		
BBS UK	10	1995-2005	300	6	-6	16		
	5	2000-2005	328	1	-8	10		
BBS England	10	1995-2005	250	5	-6	18		
	5	2000-2005	274	2	-6	12		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

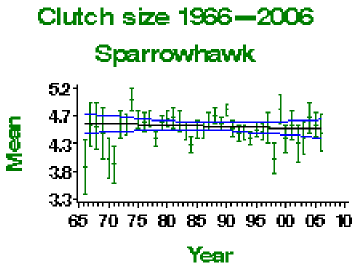


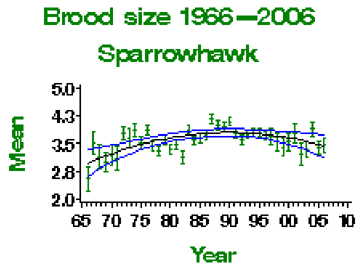


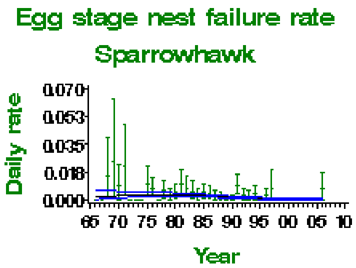
Productivity trends

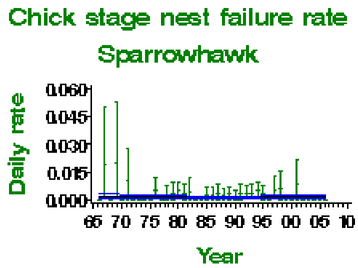
Table of productivity changes for Sparrowhawk

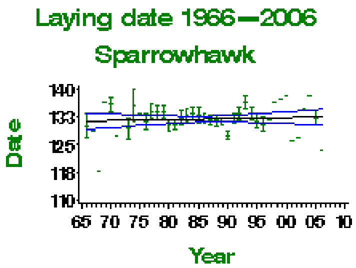
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	37	None				
Brood size	37	1968-2005	72	Curvilinear	3.1 chicks	3.48 chicks	12.1%	
Daily failure rate (eggs)	37	1968-2005	34	Curvilinear	0.25% nests/day	0.02% nests/day	-92%	
Daily failure rate (chicks)	37	1968-2005	48	None				
Laying date	37	1968-2005	14	None				Small sample











Insufficient data on CES
available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

BUZZARD
Buteo buteo

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK, England: rapid increase

UK population size

31,100–44,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**); 44,000–61,000 territorial pairs in GB in 2001 (**Clements 2002**)

Status summary

The Common Buzzard has shown a substantial eastward range expansion since the 1988–91 Atlas, and is arguably now the most abundant diurnal raptor in Britain (**Clements 2002**). The increasing trend identified by the CBC relates especially to the spread of range into central and eastern Britain, where CBC was more strongly represented. The upsurge has, however, if anything, been ampified by the addition of the more geographically representative BBS data since 1994. The increase has been associated with improving nesting success, perhaps through reduced persecution, the recovery of rabbit populations from the effects of myxomatosis and release from the deleterious effects of organochlorine pesticides (**Elliott & Avery 1991**, **Clements 2002**). Numbers have risen widely in Europe since 1980 (**PECBM 2006**).

Population changes

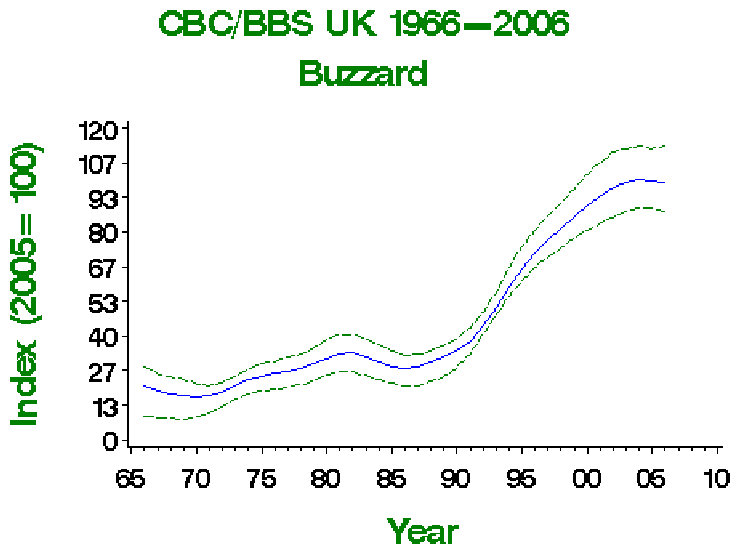
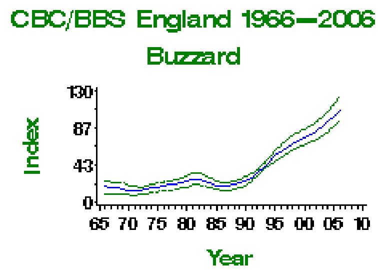


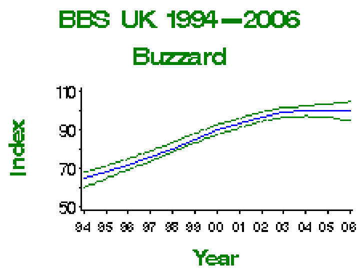
Table of population changes for Buzzard

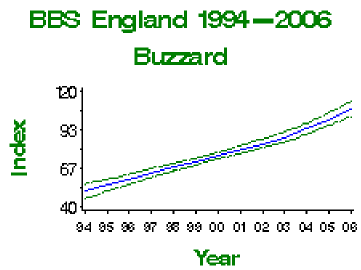
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	190	422	259	1244		
	25	1980-2005	283	219	124	365		
	10	1995-2005	644	51	39	64		
	5	2000-2005	790	11	4	18		
CBC/BBS England	38	1967-2005	113	455	267	1145		Small CBC sample
	25	1980-2005	167	300	186	579		
	10	1995-2005	380	86	68	106		
	5	2000-2005	478	32	22	42		
BBS UK	10	1995-2005	619	47	36	59		
	5	2000-2005	782	12	5	18		
BBS England	10	1995-2005	361	82	62	107		
	5	2000-2005	472	33	25	43		
BBS Scotland	10	1995-2005	111	32	13	56		
	5	2000-2005	126	-8	-17	3		
BBS Wales	10	1995-2005	127	3	-11	19		

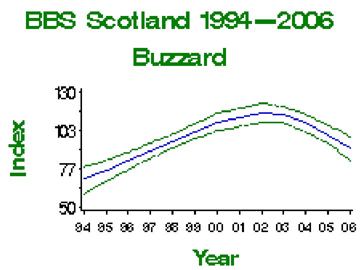
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

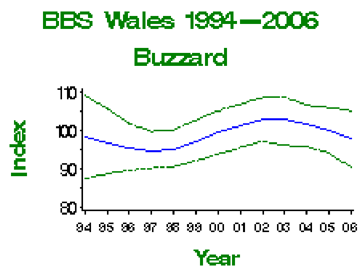
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







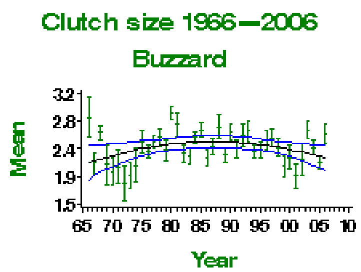


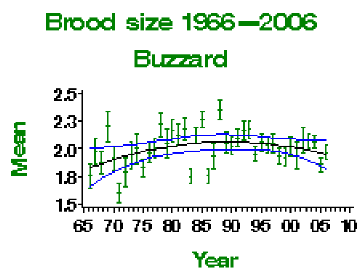


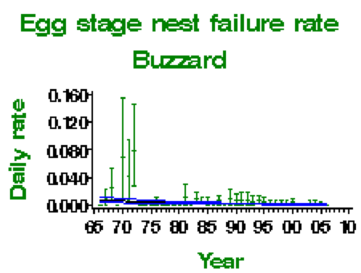
Productivity trends

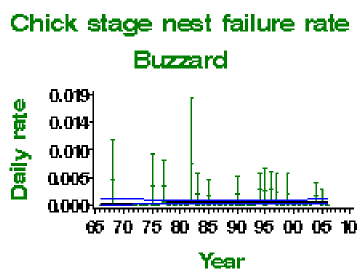
Table of productivity changes for Buzzard

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	31	Curvilinear	2.2 eggs	2.24 eggs	1.6%	
Brood size	37	1968-2005	91	Curvilinear	1.87 chicks	1.97 chicks	5.2%	
Daily failure rate (eggs)	37	1968-2005	25	Linear decline	0.68% nests/day	0.13% nests/day	-80.9%	Small sample
Daily failure rate (chicks)	37	1968-2005	45	None				









Insufficient data on laying dates

Insufficient data on CES

available for this species available for this species

Additional information

- Distribution maps for this species are not currently available online (see **Atlases species help**)
- **BirdFacts page on species biology**
- **BirdTrack results**

KESTREL
Falco tinnunculus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3, declining
UK: amber (25–50% population decline)

Long-term trend

England: moderate decline (since mid 1970s)

UK population size

36,800 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Kestrels had recovered from the lethal and sublethal effects of organochlorine pesticides by the mid 1970s, the recovery probably driven by improving nesting success, but subsequently entered a decline which has been linked to the effects of agricultural intensification on farmland habitats and their populations of small mammals (**Gibbons *et al.* 1993**). BBS data reveal limited recovery of the population over the last five years. The failure rate at the egg stage (c.28 days from laying the first egg) has declined substantially since the 1970s; brood sizes increased up to 1990, but a subsequent decline has resulted in the addition of Kestrel to the NRS Concern List (**Leech *et al.* 2006b**).

Population changes

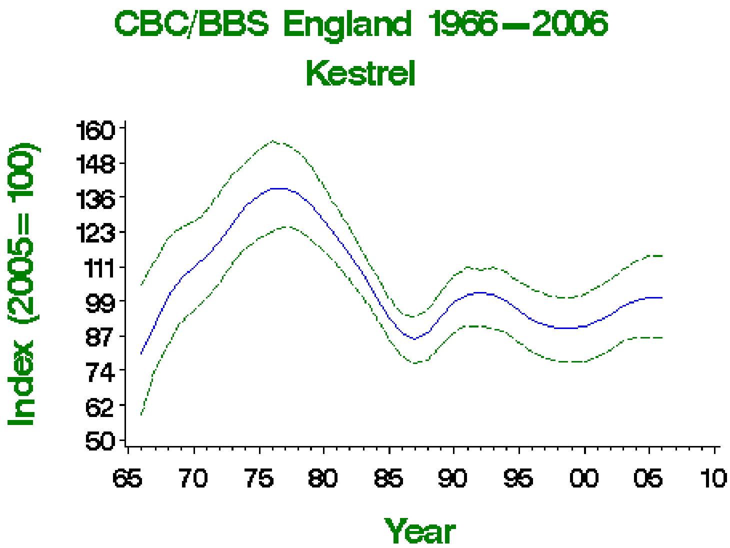
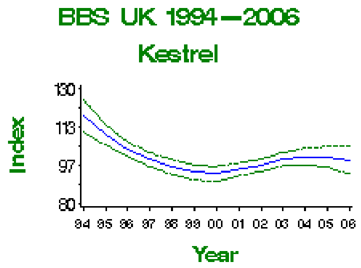
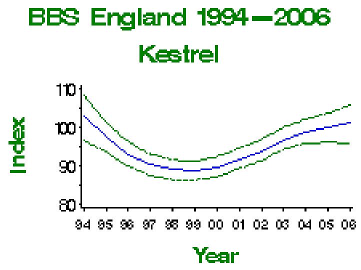


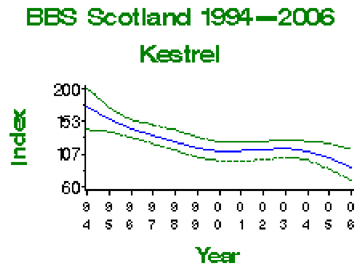
Table of population changes for Kestrel

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	202	10	-23	53		
	25	1980-2005	268	-21	-39	-2		
	10	1995-2005	521	4	-2	13		
	5	2000-2005	528	11	4	20		
BBS UK	10	1995-2005	562	-9	-17	-1		
	5	2000-2005	599	8	0	16		
BBS England	10	1995-2005	484	3	-5	11		
	5	2000-2005	518	12	5	19		
BBS Scotland	10	1995-2005	42	-36	-50	-13	>25	
	5	2000-2005	41	-8	-29	21		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



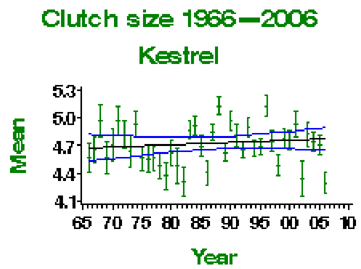


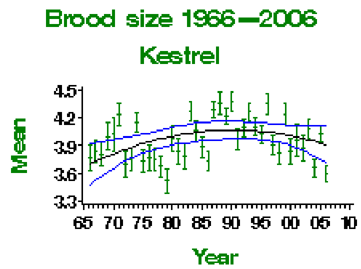


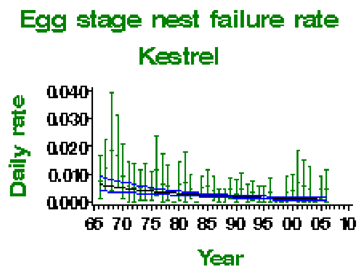
Productivity trends

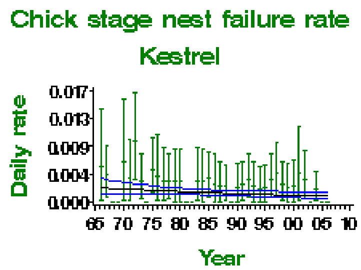
Table of productivity changes for Kestrel

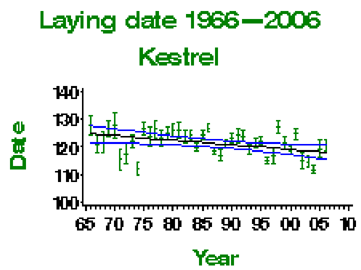
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	53	None				
Brood size	37	1968-2005	116	Curvilinear	3.76 chicks	3.93 chicks	4.6%	
Daily failure rate (eggs)	37	1968-2005	40	Linear decline	0.56% nests/day	0.09% nests/day	-83.9%	
Daily failure rate (chicks)	37	1968-2005	63	None				
Laying date	37	1968-2005	21	Linear decline	May 4	Apr 28	-6 days	Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

MERLIN
Falco columbarius

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: amber (historical decline)

Long-term trend

UK: probable increase

UK population size

1,300 pairs in 1990–94 (**Rebecca & Bainbridge 1998**: **BiE04**, **APEP06**)

Status summary

Having declined substantially over the past two centuries, Merlin shows indications of a recent doubling of population (**Rebecca & Bainbridge 1998**). This increase may be associated with an increased use of forest edge as a nesting habitat (**Parr 1994**). Because of its recent population upturn, the species has been moved from the red to the amber list. It remains much too scarce, however, for annual population monitoring via BBS: dedicated observers and specialised field methods are required, as described by **Hardey *et al.* (2006)**. Submissions to the Rare Breeding Birds Panel fall well short of the estimated UK total population but show an average of 1.86 young fledged per occupied territory during 1996–2004 (**Holling & RBBP 2007a**). Breeding performance has tended to improve since the 1960s, probably linked to the declining influence of organochlorine pesticides (**Crick 1993**). Hatching rates in the southeast Yorkshire Dales were consistently higher than had been recorded in earlier studies in Northumberland (**Wright 2005**).

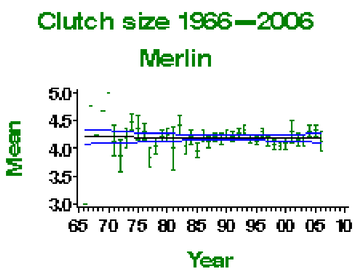
Population changes

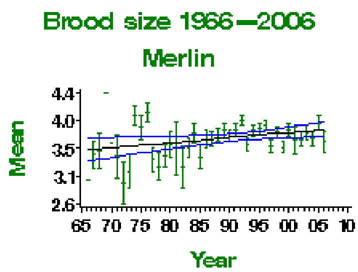
Annual breeding population changes for this species are not currently monitored by BTO

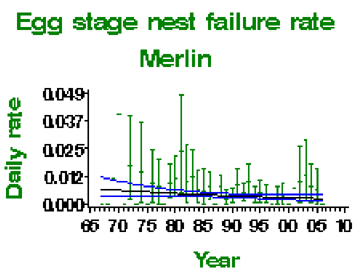
Productivity trends

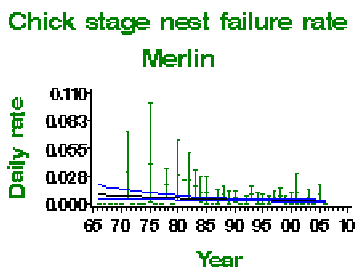
Table of productivity changes for Merlin

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	38	None				
Brood size	37	1968-2005	56	Linear increase	3.5 chicks	3.8 chicks	8.3%	
Daily failure rate (eggs)	37	1968-2005	26	None				Small sample
Daily failure rate (chicks)	37	1968-2005	29	Linear decline	0.89% nests/day	0.27% nests/day	-69.7%	Small sample









Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

HOBBY
Falco subbuteo

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: increase

UK population size

2,200 pairs in 2000 (**Clements 2001**: **BiE04**, **APEP06**)

Status summary

This species cannot be monitored by any of the standard monitoring schemes, due to its low population density and unobtrusive habits. Many sightings must refer to migrants, first-summer non-breeders, or to breeding birds from distant nests, and do not help to establish whether nesting occurs in the locality. Dedicated observers and specialised field methods are required, as described by **Hardey *et al.* (2006)**. The Rare Breeding Birds Panel collects annual data, which under-represent the true population to unknown degrees, but adequately establish the long-term upward trend (**Holling & RBBP 2007a**). The Hobby's distribution has spread markedly northwards in England since the 1970s (**Gibbons *et al.* 1993**), perhaps linked to increases in its dragonfly prey supplies (**Prince & Clarke 1993**) and to a decreasing dependency on its traditional heathland habitat, but the reasons underlying the increase are still only speculative (**Clements 2001**). A success rate of more than 90% was recorded for nests in Derbyshire during 1992–2001, with successful nests fledging a mean of 2.44 young (**Messenger & Roome 2007**). The small annual samples of nest record cards indicate no long-term change in either brood size or nest success.

Population changes

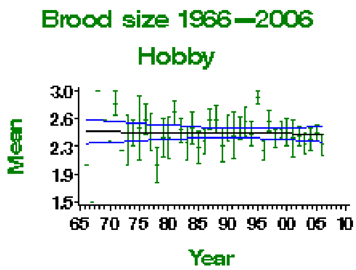
Annual breeding population changes for this species are not currently monitored by BTO

Productivity trends

Table of productivity changes for Hobby

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Brood size	37	1968-2005	17	None				Small sample
Daily failure rate (chicks)	37	1968-2005	11	None				Small sample

Insufficient data on clutch size available for this species



Insufficient data on nest failure available for this species

Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Distribution maps for this species are not currently available online (see **Atlases species help**)
- **BirdFacts page on species biology**
- **BirdTrack results**

PEREGRINE
Falco peregrinus

- Population changes
- Productivity trends
- Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: amber (European status)

Long-term trend

UK, England: increase
Northwest Scotland: decline since 1991

UK population size

1,283 pairs in 1991 (**Crick & Ratcliffe 1995**: **APEP06**);
1,400 pairs in 2002 (**Banks *et al.* 2003**: **BiE04**)

Status summary

The UK population size, distribution and breeding performance have all largely recovered from the detrimental effects of organochlorine pesticides in the 1950s and 1960s. Populations and breeding performance have declined recently, however, in northwest Scotland and the Northern Isles (**Crick & Ratcliffe 1995**), and nest record information for the UK as a whole shows a significant decline in clutch size, although samples for the first ten years are small. The number of UK breeding pairs has been censused every ten years since 1961 by BTO/JNCC/RSPB/Raptor Study Groups, and has been estimated as follows: 1961 – 385 pairs; 1971 – 489 pairs; 1981 – 728 pairs; 1991 – 1,283 pairs (**Ratcliffe 1993**). The **National Peregrine Survey 2002** found 1,402 breeding pairs, a further 10% increase overall since 1991 but with declines in north and west Scotland, North Wales and Northern Ireland (**Banks *et al.* 2003**). Similar increases across Europe have resulted in a downgrading of conservation listing from 'SPEC 3 (rare)' to 'secure' (**BirdLife International 2004**).

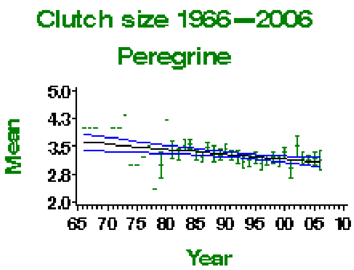
Population changes

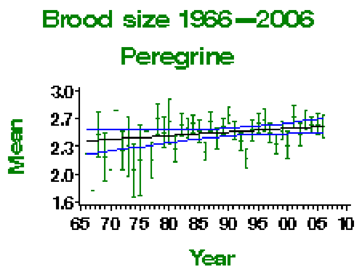
Annual population changes are not monitored for this species

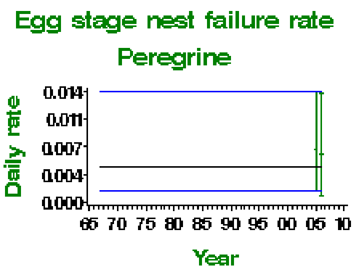
Productivity trends

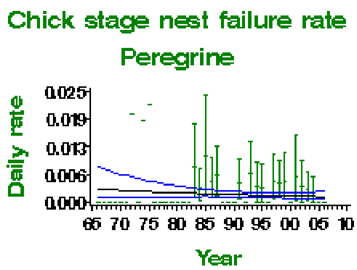
Table of productivity changes for Peregrine

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	16	Linear decline	3.59 eggs	3.09 eggs	-13.9%	Small sample
Brood size	37	1968-2005	40	None				
Daily failure rate (eggs)	37	1968-2005	21	None				Small sample
Daily failure rate (chicks)	37	1968-2005	22	None				Small sample









Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Distribution maps for this species are not currently available online (see **Atlases species help**)

- **BirdFacts page on species biology**

MOORHEN
Gallinula chloropus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: fluctuating, with no long-term trend

UK population size

270,000 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

While the long-term CBC/BBS trend is of shallow increase, much of the population increase took place before 1974, when WBS monitoring began, and may have been a recovery from heavy mortality during the cold winters of the early 1960s. On both CBC/BBS and WBS evidence, there was decrease during the 1970s and 1980s, but this has been followed by a partial recovery. A decline in the number and quality of farmland ponds, and the spread of American mink *Mustela vison*, which is an important predator especially along watercourses, have been suggested as possible causes of decline. The decline has been associated with significant reductions in breeding performance. Average clutch size has declined and the failure rate of nests over the full 25-day egg period (20 days for incubation and 5 days for laying) has increased, but average brood sizes have improved.

Population changes

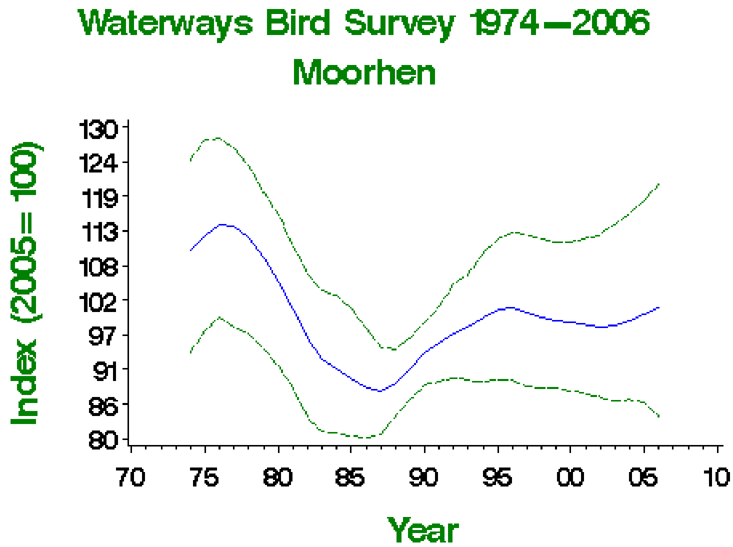
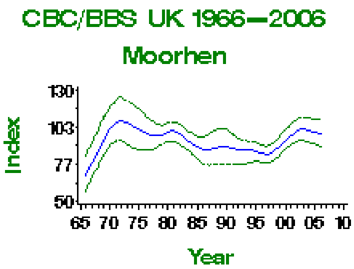
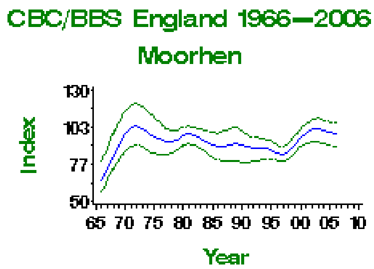


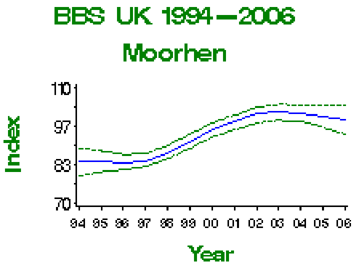
Table of population changes for Moorhen

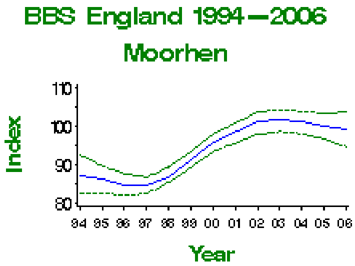
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	245	29	0	67		
	25	1980-2005	319	0	-13	18		
	10	1995-2005	613	16	8	26		
	5	2000-2005	624	6	0	12		
CBC/BBS England	38	1967-2005	223	36	3	64		
	25	1980-2005	292	3	-11	19		
	10	1995-2005	562	15	6	24		
	5	2000-2005	573	4	-2	9		
WBS waterways	30	1975-2005	78	-11	-34	25		
	25	1980-2005	80	-5	-29	37		
	10	1995-2005	83	-1	-19	21		
	5	2000-2005	70	1	-12	17		
BBS UK	10	1995-2005	562	19	9	28		
	5	2000-2005	612	5	-1	11		
BBS England	10	1995-2005	515	16	8	27		
	5	2000-2005	562	5	-1	9		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





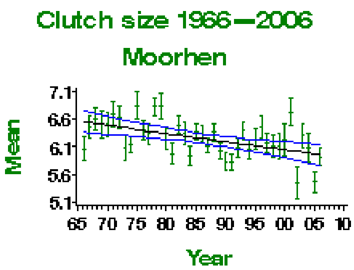


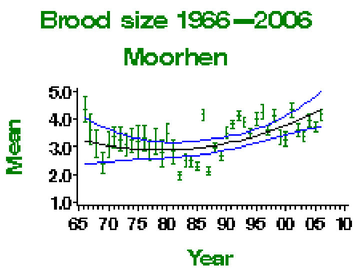


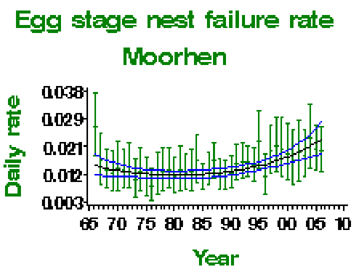
Productivity trends

Table of productivity changes for Moorhen

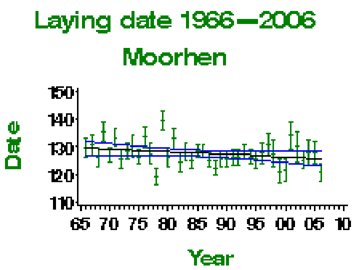
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	91	Linear decline	6.52 eggs	5.97 eggs	-8.4%	
Brood size	37	1968-2005	76	Curvilinear	3.13 chicks	4.25 chicks	35.7%	
Daily failure rate (eggs)	37	1968-2005	109	Curvilinear	1.37% nests/day	2.16% nests/day	57.7%	
Daily failure rate (chicks)	37	1968-2005	35	None				
Laying date	37	1968-2005	68	None				







Insufficient data on nestling failure available for this species



Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

COOT *Fulica atra*

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: shallow increase

UK population size

22,600–28,800 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS and WBS trends: **BiE04**, **APEP06**)

Status summary

WBS and CBC/BBS trends for Coot indicate a long-term increase, although the magnitude of the change is not clear. Small CBC samples, mainly of birds on small water-bodies, suggested a rapid rise in the late 1960s. WBS and BBS both include more birds on larger waters, and so may be more representative of Coot populations, but WBS has not recorded the strong increase found by BBS observers since 1994. The combination of CBC and BBS data suggests that the long-term increase in the UK and England may have been rapid. Winter abundance on large still waters, as monitored by WeBS, has also shown some shallow increase since the mid 1980s (**Banks *et al.* 2006**).

Population changes

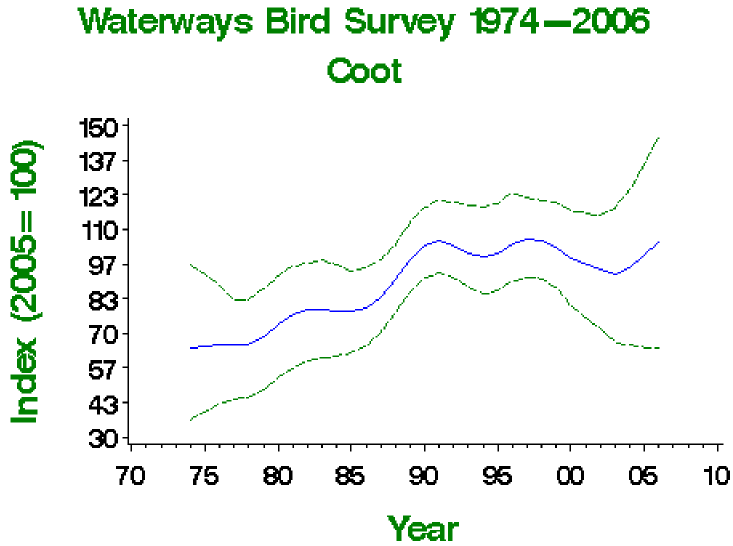
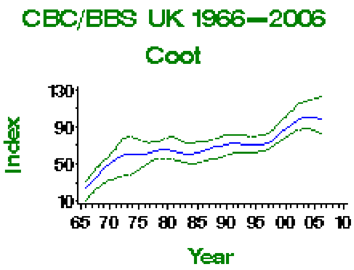
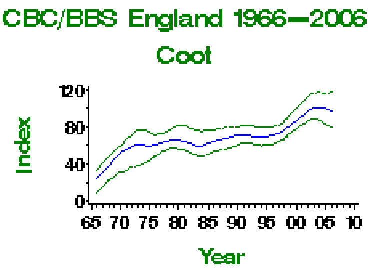


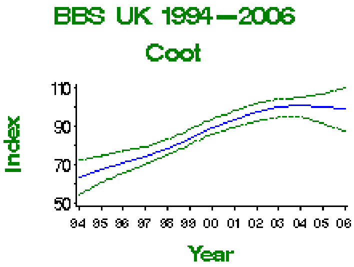
Table of population changes for Coot

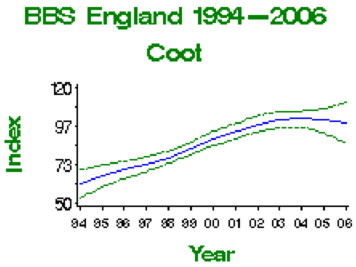
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	89	227	121	593		
	25	1980-2005	122	53	13	111		
	10	1995-2005	244	42	23	73		
	5	2000-2005	260	13	2	29		
CBC/BBS England	38	1967-2005	81	224	110	723		
	25	1980-2005	110	51	9	107		
	10	1995-2005	220	44	19	69		
	5	2000-2005	234	14	1	28		
WBS waterways	30	1975-2005	39	54	-29	257		
	25	1980-2005	42	36	-31	143		
	10	1995-2005	46	-1	-40	42		
	5	2000-2005	36	1	-25	24		
BBS UK	10	1995-2005	224	49	21	77		
	5	2000-2005	255	13	-1	25		
BBS England	10	1995-2005	202	51	27	84		
	5	2000-2005	230	13	-1	28		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB









Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

OYSTERCATCHER
Haematopus ostralegus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: amber (>20% of European breeding population, >20% of East Atlantic Flyway population in winter, localised wintering population)

Long-term trend

UK: rapid increase

UK population size

113,000 (98,500–127,000) pairs in 1985–99 (O'Brien 2005: BiE04, APEP06)

Status summary

Oystercatchers increased along linear waterways between 1974 and about 1986, as the species colonised inland sites across England and Wales (Gibbons *et al.* 1993). Thereafter, the WBS index stabilised, so showing a pattern similar to that in winter abundance revealed by WeBS (Banks *et al.* 2006). Surveys in England and Wales revealed an increase of 47% in breeding birds in wet meadows between 1982 and 2002 (Wilson *et al.* 2005). BBS data since 1994, which include birds in a broader range of locations and habitats, show strong increase in England but apparently a significant decline in Scotland. The increase in nest failure rates for the 27-day egg stage (25 days for incubation and 2 days for laying) probably results from the spread of the species into less favourable habitats, where predation or trampling may be more likely. The trend towards earlier laying can be partly explained by recent climate change (Crick & Sparks 1999).

Population changes

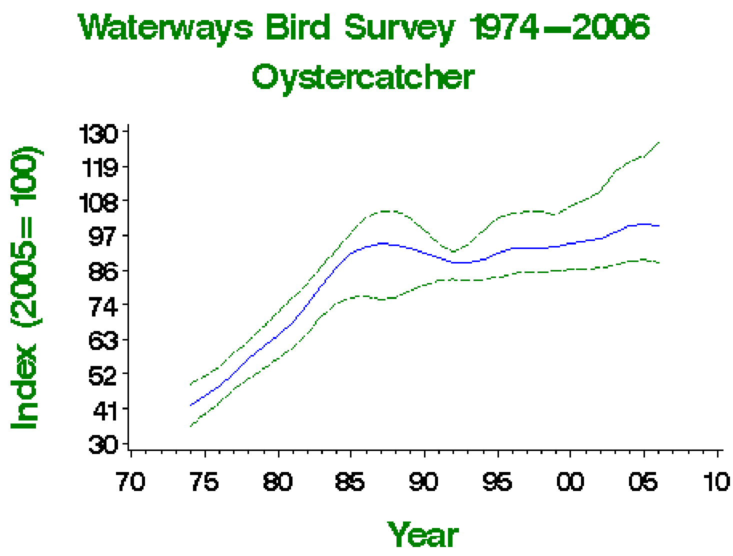
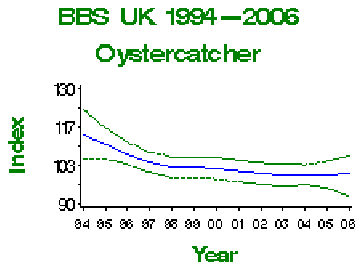
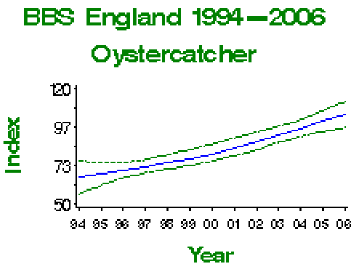


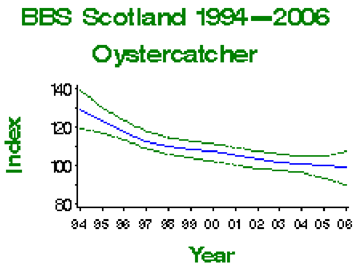
Table of population changes for Oystercatcher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	30	1975-2005	23	122	78	213		
	25	1980-2005	24	55	24	126		
	10	1995-2005	27	10	-5	45		
	5	2000-2005	23	7	0	26		
BBS UK	10	1995-2005	263	-9	-18	-1		
	5	2000-2005	283	-2	-9	6		
BBS England	10	1995-2005	130	46	23	75		
	5	2000-2005	151	25	9	39		
BBS Scotland	10	1995-2005	121	-19	-28	-10		
	5	2000-2005	116	-7	-17	1		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



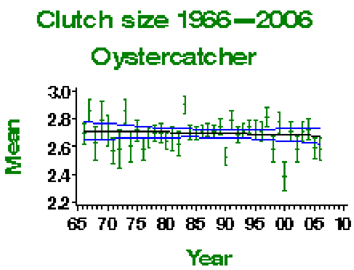




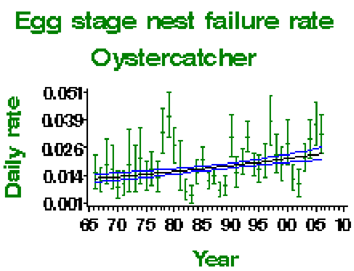
Productivity trends

Table of productivity changes for Oystercatcher

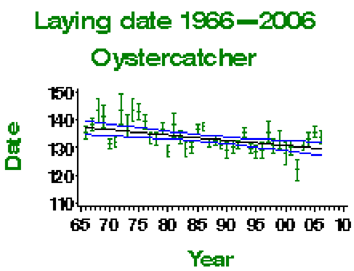
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	100	None				
Daily failure rate (eggs)	37	1968-2005	109	Linear increase	1.25% nests/day	2.29% nests/day	83.2%	
Laying date	37	1968-2005	46	Linear decline	May 17	May 10	-7 days	



Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species



Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

RINGED PLOVER
Charadrius hiaticula

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: amber (25–50% decline in winter population, >20% East Atlantic Flyway population in winter)

Long-term trend

UK: uncertain

UK population size

8,540 pairs in 1984 (**Prater 1989**: **APEP06**, rounded to 8,600 **BiE04**)

Status summary

This species was already amber-listed on the strength of its concentration within UK in the winter, but a decline in winter numbers since the late 1980s (**Banks *et al.* 2006**) adds a further amber criterion. The breeding population is not monitored annually, but a BTO survey in 1984 showed increases throughout the UK since the previous survey in 1973–74 (**Prater 1989**). The spread of the breeding distribution inland between the two atlas periods, especially in England, was probably associated with the increase in number of gravel pits and reservoirs (**Gibbons *et al.* 1993**). The 1984 survey revealed that over 25% of the UK population nested on the Western Isles, especially on the machair, but breeding waders there have subsequently suffered greatly from predation by introduced hedgehogs (**Jackson *et al.* 2004**). Surveys in England and Wales revealed an increase of 12% in breeding birds in wet meadows between 1982 and 2002 (**Wilson *et al.* 2005**). The marked increase in nest failures at the egg stage is worrying and warrants investigation. Ringed Plovers that choose beaches for nesting are especially vulnerable to disturbance, and were in some regions in 1984 largely confined to wardened reserves (**Prater 1989**). Human usage of beach areas severely restricts the availability of this habitat to nesting plovers (**Liley & Sutherland 2007**). BTO undertook a repeat breeding survey of Ringed Plovers (and Little Ringed Plovers *C. dubius*) throughout the UK during April–July 2007 (**click here**).

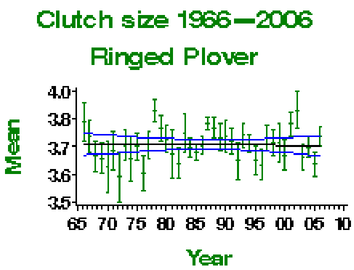
Population changes

Annual breeding population changes for this species are not currently monitored by BTO

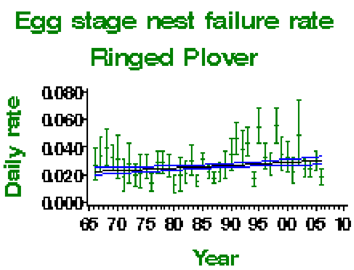
Productivity trends

Table of productivity changes for Ringed Plover

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	87	None				
Daily failure rate (eggs)	37	1968-2005	124	Linear increase	2.28% nests/day	3.01% nests/day	32%	
Laying date	37	1968-2005	39	None				

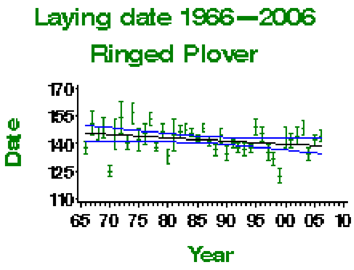


Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species

Insufficient data on CES



available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

GOLDEN PLOVER
Pluvialis apricaria

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK: possible decline

UK population size

22,600 pairs in 1981–84 (**Reed 1985**, **Stroud *et al.* 1987**: **APEP06**); 38,400–59,400 pairs in 1980–2000 (**BiE04**)

Status summary

The species has recently been moved from the amber to the green list because new data suggest that it does not qualify as internationally important during the breeding season. There was no annual monitoring of the breeding population before the inception of BBS. Since 1994, BBS has shown apparent stability in Scotland and the UK, but this is believed to follow an earlier decline (**Gibbons *et al.* 1993**). Nest survival on grass moors, unlike that on heather moors, may have declined over time (**Crick 1992**), perhaps linked to increased stocking densities of sheep (**Fuller 1996**). There is no clear trend in clutch size; a large number of late-season nest records, which provide higher proportions of two- and three-egg clutches, were submitted from an intensive study during 1996–98 (J.W. Pearce-Higgins, pers. comm.). Warmer springs are reported to advance the breeding phenology of Golden Plovers and of their tipulid prey (**Pearce-Higgins *et al*. 2005**). Winter numbers counted by WeBS, mainly at coastal sites and omitting some big concentrations inland, have increased sharply in Britain since the mid 1980s (**Banks *et al*. 2006**); these birds are mainly of Fennoscandian or Russian origin.

Population changes

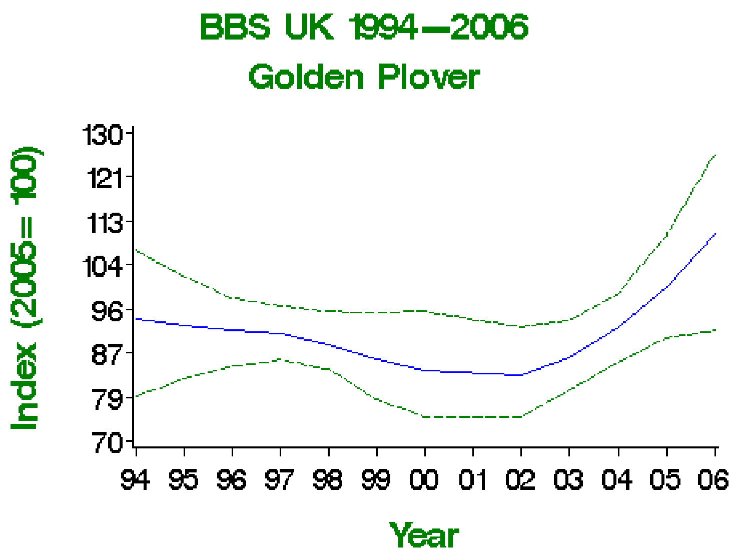
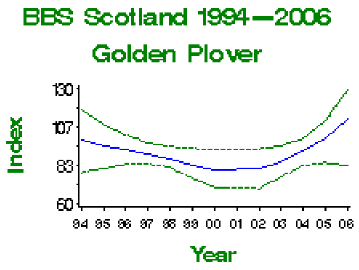


Table of population changes for Golden Plover

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	53	8	-11	32		
	5	2000-2005	45	19	-4	50		
BBS Scotland	10	1995-2005	41	5	-19	35		
	5	2000-2005	32	24	-9	55		

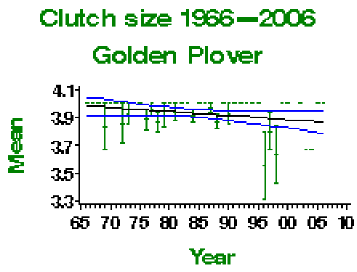
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



Productivity trends

Table of productivity changes for Golden Plover

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	14	None				Small sample



Insufficient data on brood size available for this species

Insufficient data on nest failure available for this species

Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

LAPWING
Vanellus vanellus

- Population changes
- Productivity trends
- Additional information

Conservation listings

Europe: SPEC category 2, vulnerable
UK: amber (25–50% population decline, >20% European wintering population)
UK Biodiversity Action Plan: in preparation

Long-term trend

UK: moderate decline

UK population size

156,000 (137,000–174,000) pairs in 1985–99 (**O'Brien 2005**: **BiE04**, **APEP06**)

Status summary

Although CBC recorded some increase in its early years, Lapwings have declined continuously on lowland farmland since the mid 1980s, probably because changes in agricultural practice have led to their breeding productivity dropping below a sustainable level (**Hudson *et al.* 1994**, **Siriwardena *et al.* 2000a**, **Besbeas *et al.* 2002**, **Milsom 2005**). National surveys in England and Wales showed a 49% population decline between 1987 and 1998 (**Wilson *et al.* 2001**). Population declines of more than 50% over 15 years in Northern Ireland (**Henderson *et al.* 2002**) mirror similar declines throughout grassland areas of Wales and southeast England (**Wilson *et al.* 2001**, **2005**). BBS data indicate shallow increase in England since 1994, but steep decline in Scotland. Adult and first-year survival rates show no trend through time (**Peach *et al.* 1994**, **Catchpole *et al.* 1999**). Mean clutch size increased significantly as the population fell. Using NRS data for 1962–99, **Chamberlain & Crick (2003)** found that marginal upland had relatively low reproductive performance, and arable relatively high, while grazed grass had higher failure rates and lower clutch sizes than ungrazed grass: their results suggest that recent population change may have been influenced by changes in clutch failure rates, perhaps mediated by an increase in grazing intensity in marginal uplands and by increased predation rates, possibly associated with habitat change. There have been several very poor years for egg-stage survival since 1996, and the species is therefore now of NRS concern (**Leech *et al.* 2007**). A recent study has indicated that 88% of nest predations occurred during darkness, suggesting nocturnal mammals were to blame (**Bolton *et al.* 2007**).

The amber listing of this species is now based on UK decline, as well as the original criterion of international importance. Winter numbers counted by WeBS, mainly at coastal sites and omitting some big concentrations inland, have increased in Britain since the mid 1980s but decreased in Northern Ireland (**Banks *et al.* 2006**); these birds are mainly of continental origin.

Population changes

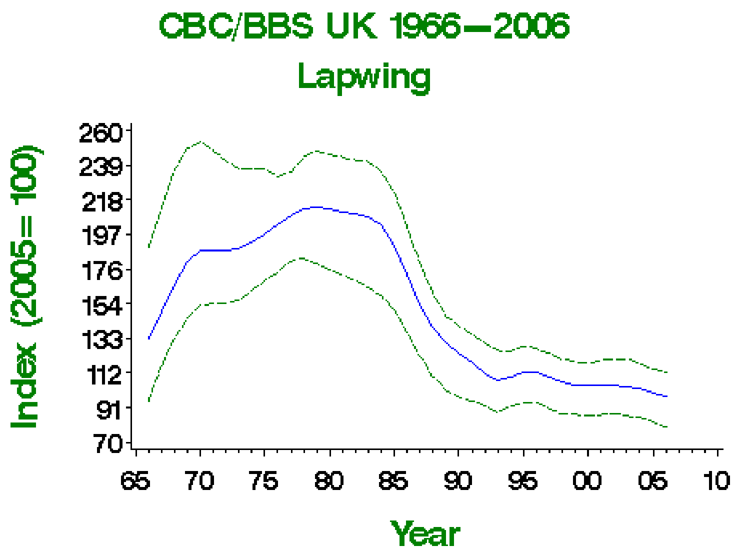
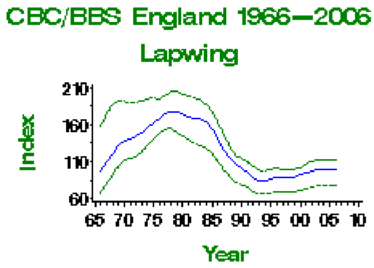


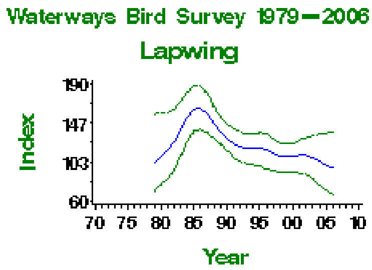
Table of population changes for Lapwing

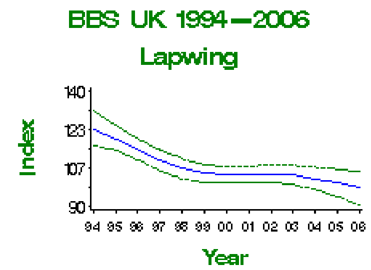
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	215	-33	-63	-3	>25	
	25	1980-2005	294	-53	-64	-37	>50	
	10	1995-2005	612	-11	-22	0		

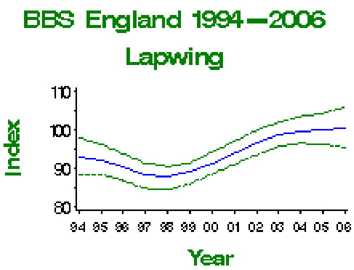
Source CBC/BBS England	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	25	1980-2005	241	-43	-59	-27	>25	
	10	1995-2005	502	14	3	24		
	5	2000-2005	534	9	1	17		
WBS waterways	25	1980-2005	38	-9	-52	64		
	10	1995-2005	36	-16	-41	30		
	5	2000-2005	30	-9	-29	21		
BBS UK	10	1995-2005	592	-16	-25	-6		
	5	2000-2005	636	-4	-12	5		
BBS England	10	1995-2005	484	9	0	19		
	5	2000-2005	530	10	3	18		
BBS Scotland	10	1995-2005	85	-40	-54	-27	>25	
	5	2000-2005	81	-21	-37	-5		

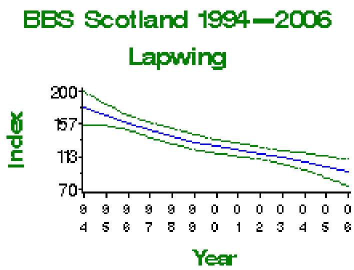
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







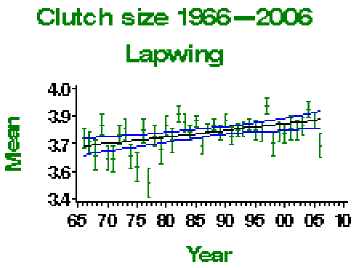




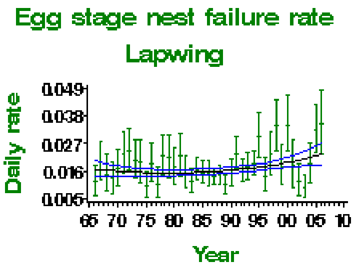
Productivity trends

Table of productivity changes for Lapwing

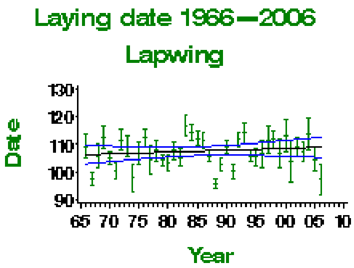
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	122	Linear increase	3.69 eggs	3.82 eggs	3.6%	
Daily failure rate (eggs)	37	1968-2005	132	Curvilinear	1.64% nests/day	2.2% nests/day	34.1%	
Laying date	37	1968-2005	30	None				



Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species



Insufficient data on CES available for this species<

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

SNIPE
Gallinago gallinago

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: amber (>50% population decline, but data possibly unrepresentative)

Long-term trend

UK: probable decline

UK population size

59,300 (52,600–69,000) pairs in 1985–99 (**O'Brien 2005**: **BiE04**, **APEP06**)

Status summary

Snipe were monitored by the CBC mainly in lowland England, where numbers have fallen rapidly since the 1970s as farmland has been drained (**Gibbons *et al.* 1993**, **Siriwardena *et al.* 2000a**). The CBC index was discontinued after 1984, when the number of occupied plots became too small (**Marchant *et al.* 1990**), and the graph is not shown here. In Northern Ireland, a breeding decline of around 30% occurred between the mid 1980s and 1999 (**Henderson *et al.* 2002**). Surveys in England and Wales revealed a decrease of 62% in breeding birds in wet meadows between 1982 and 2002, with the remaining birds becoming highly aggregated into a tiny number of suitable sites (**Wilson *et al.* 2005**). The trend in the upland and moorland strongholds of the species is not fully known, but the 1988–91 atlas documented range loss widely in Wales, Northern Ireland and Scotland, as well as lowland England, and a general decrease is therefore probable. The BBS shows increases in England and especially in Scotland since 1994. Daily nest failure rates at the egg stage appear to have halved. Following declines across much of Europe during the 1990s, this previously 'secure' species is now provisionally evaluated as 'declining' (**BirdLife International 2004**).

Population changes

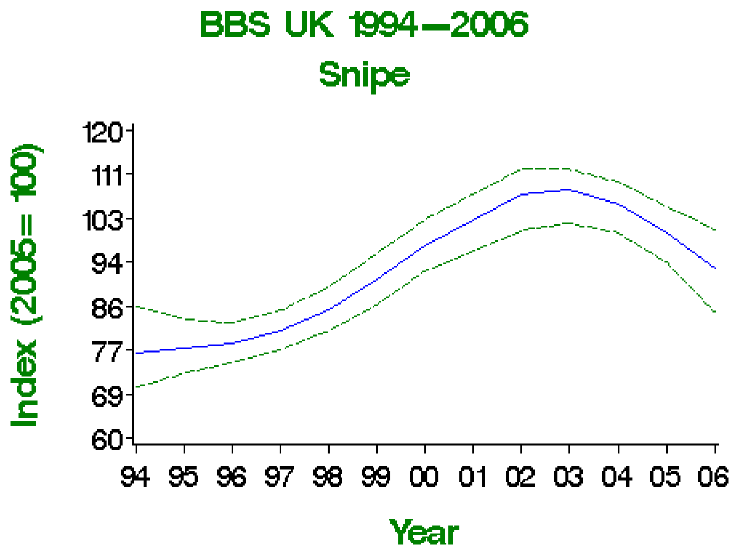
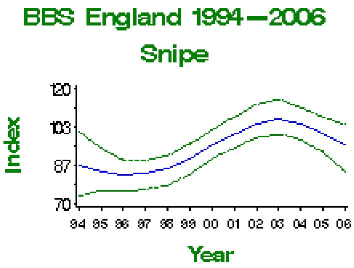
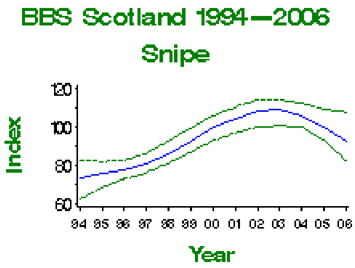


Table of population changes for Snipe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	129	29	13	44		
	5	2000-2005	135	3	-9	15		
BBS England	10	1995-2005	59	19	-2	43		
	5	2000-2005	65	5	-8	18		
BBS Scotland	10	1995-2005	53	32	16	57		
	5	2000-2005	50	1	-13	16		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

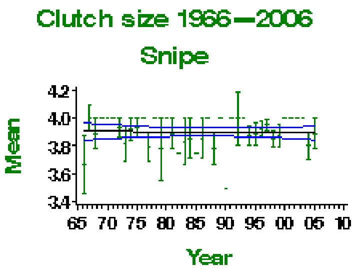




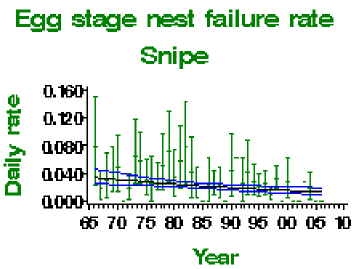
Productivity trends

Table of productivity changes for Snipe

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	13	None				Small sample
Daily failure rate (eggs)	37	1968-2005	16	Linear decline	3.3% nests/day	1.4% nests/day	-57.6%	Small sample



Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

WOODCOCK
Scolopax rusticola

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: amber (>50% population decline, but data possibly unrepresentative)

Long-term trend

UK: rapid decline

UK population size

5,400–13,700 pairs in 2000 (1988–91 Atlas estimate updated using CBC trend: BiE04, APEP06)

Status summary

The Woodcock has declined rapidly and significantly on CBC plots. Because CBC did not include many coniferous forests and was concentrated in lowland Britain, however, it is not certain how well this trend represents the whole population and provisionally, therefore, the results warrant only an amber listing. Range contractions, that may have the same cause as the decline in abundance, were recorded concurrently with part of the CBC decline (**Gibbons *et al.* 1993**). Recreational disturbance, the drying out of natural woodlands, overgrazing by deer, and the maturation of new plantations are possible causes of the Woodcock's decline, but there is no strong hypothesis as yet (**Fuller *et al.* 2005**). BBS is inefficient at recording this species, and cannot continue the index series. The first special survey aimed at monitoring the UK's breeding Woodcock took place in 2003 and has provided a sound baseline for future monitoring (**Fuller & Hoodless 2004**; for more information, **click here**). Annual numbers shot in the UK, which include winter visitors from declining populations in Europe, increased during the 1970s and have since been maintained around the higher level (**click here**). The effects of hunting on breeding populations of Woodcock across Europe have not yet been evaluated.

Population changes

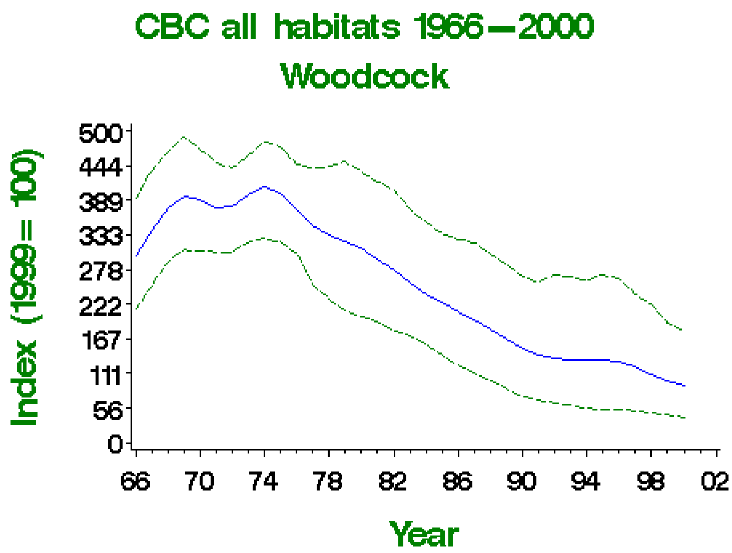


Table of population changes for Woodcock

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	20	-74	-88	-49	>50	Small sample
	25	1974-1999	20	-76	-88	-51	>50	Small sample
	10	1989-1999	13	-40	-62	-11	>25	Small sample
	5	1994-1999	13	-24	-44	-3		Small sample

Productivity trends

Productivity information is not currently available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

CURLEW
Numenius arquata

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2 (declining)
UK: amber (>20% of European breeding and winter populations)
UK Biodiversity Action Plan: in preparation

Long-term trend

England: probable decline

UK population size

107,000 (99,500–125,000) pairs in 1985–99 (**O'Brien 2005**: **BiE04**, **APEP06**)

Status summary

Curlews monitored by CBC were mostly in lowland habitats and may have been affected primarily by drainage of farmland (**Gibbons *et al.* 1993**). Surveys in England and Wales revealed a decrease of 39% in breeding birds in wet meadows between 1982 and 2002 (**Wilson *et al.* 2005**). In Northern Ireland, a breeding decline of around 60% occurred between the mid 1980s and 1999 (**Henderson *et al.* 2002**). BBS data also show that decline has been widespread. WBS data, in contrast, indicate a moderate increase during the 1980s in Curlews nesting alongside waterways, followed by stability. Wintering Curlew abundance has shown a shallow long-term increase (**Banks *et al.* 2006**). Although samples are small, failure rate of nests at the egg stage have fallen slightly.

Population changes

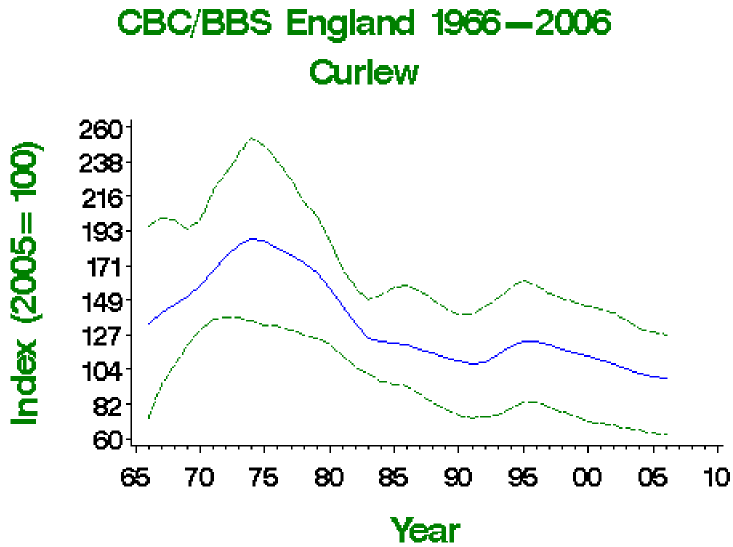
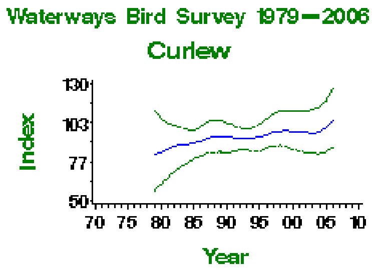
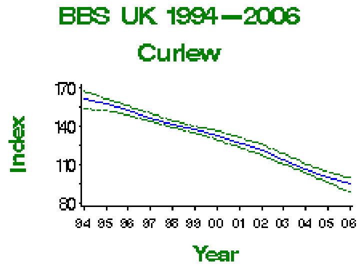


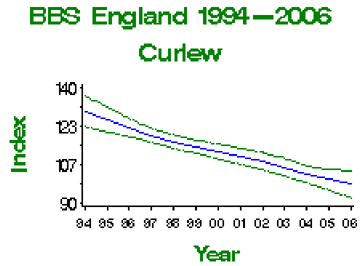
Table of population changes for Curlew

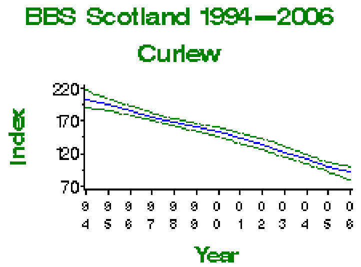
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	88	-29	-75	37		Small CBC sample
	25	1980-2005	126	-36	-69	13		Small CBC sample
	10	1995-2005	273	-18	-26	-11		
	5	2000-2005	273	-11	-17	-6		
WBS waterways	25	1980-2005	22	21	-21	95		
	10	1995-2005	21	7	-14	35		
	5	2000-2005	15	3	-14	15		Small sample
BBS UK	10	1995-2005	447	-36	-41	-32	>25	
	5	2000-2005	448	-25	-29	-20		
BBS England	10	1995-2005	262	-21	-27	-14		
	5	2000-2005	271	-11	-17	-5		
BBS Scotland	10	1995-2005	121	-48	-54	-42	>25	
	5	2000-2005	110	-35	-42	-28	>25	
BBS Wales	10	1995-2005	39	-47	-57	-34	>25	
	5	2000-2005	40	-35	-48	-21	>25	

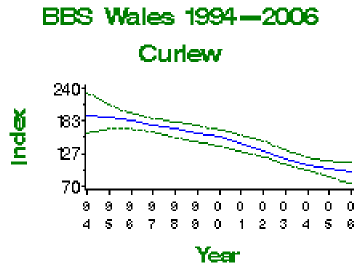
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







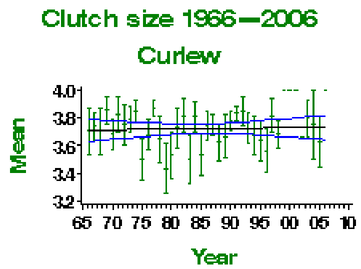




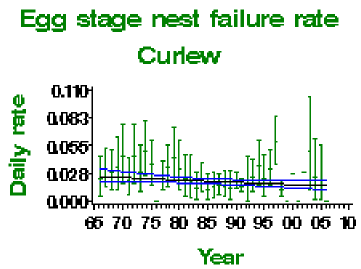
Productivity trends

Table of productivity changes for Curlew

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	21	None				Small sample
Daily failure rate (eggs)	37	1968-2005	24	None				Small sample



Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

COMMON SANDPIPER
Actitis hypoleucos

- Population changes
- Productivity trends
- Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: green

Long-term trend

UK: moderate decline

UK population size

12,000 pairs in 2000 (1988–91 Atlas estimate updated using WBS trend: **BiE04**, **APEP06**); about 24,000 pairs in Britain (**Dougall *et al.* 2004**)

Status summary

WBS results for this species show a decline from 1985 onwards (after a more gradual increase) that has yet to be explained. The recent decrease is matched by BBS data from Scotland and from the UK as a whole, and warrants a BTO alert. Poorer breeding success and reduced survival of first-year birds over winter in West Africa were both suggested as possible reasons for the failure of the Peak District population to recover after a hard-weather event in 1989 (**Holland & Yalden 2002**). Following declines during the 1990s in the large Swedish and Finnish populations, and more widely in Europe, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**). The mean change across all European countries during the 1990s was a significant decline (**Sanderson *et al.* 2006**). UK clutch sizes have shown a slight decline since the 1960s.

Population changes

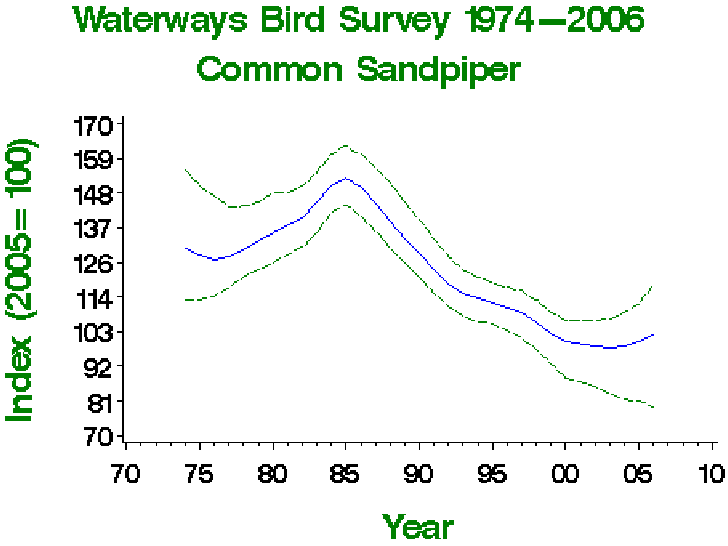
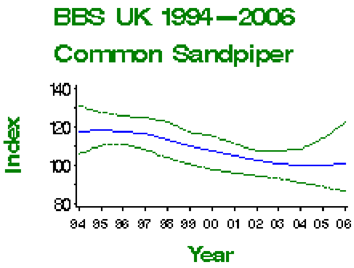
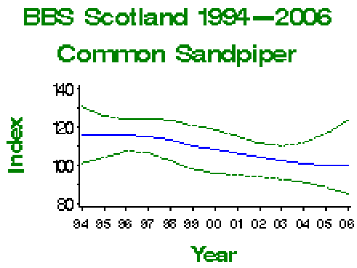


Table of population changes for Common Sandpiper

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	30	1975-2005	26	-22	-45	-3		
	25	1980-2005	26	-26	-46	-11	>25	
	10	1995-2005	23	-11	-31	6		
	5	2000-2005	17	0	-17	13		Small sample
BBS UK	10	1995-2005	61	-15	-30	5		
	5	2000-2005	55	-7	-22	19		
BBS Scotland	10	1995-2005	32	-14	-28	11		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

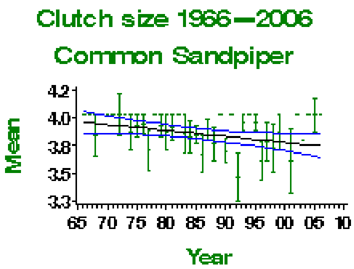




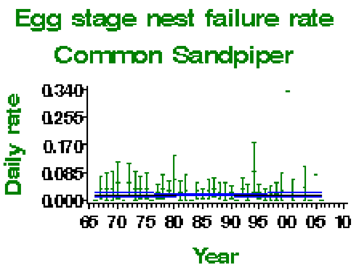
Productivity trends

Table of productivity changes for Common Sandpiper

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	11	Linear decline	3.93 eggs	3.75 eggs	-4.5%	Small sample
Daily failure rate (eggs)	37	1968-2005	13	None				Small sample



Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

REDSHANK
Tringa totanus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2 (declining)
UK: amber (>50% population decline but data possibly unrepresentative, >20% of East Atlantic Flyway population in winter)

Long-term trend

UK: moderate decline

UK population size

38,800 (31,400–44,400) pairs in 1985–99 (**O'Brien 2005**: **BiE04**, **APEP06**)

Status summary

UK population decline has recently been added to the criteria by which Redshank qualifies for amber listing. Considerable range contraction had occurred from many areas of the UK by 1988–91, probably as a result of the drainage of farmland (**Gibbons *et al.* 1993**). WBS results show a decline along waterways that apparently accelerated during the 1990s. BBS shows a shallow increase overall, but this assessment rests entirely upon the upturn recorded in 2004: the earlier UK trend had been a decrease. Surveys in England and Wales revealed a decrease of 29% in breeding birds in wet meadows between 1982 and 2002 (**Wilson *et al.* 2005**). The substantial section of the British population that nests on saltmarshes decreased by 23% between 1985 and 1996 (**Brindley *et al.* 1998**). Wintering populations (augmented by many Icelandic and some other northern European breeders) have been stable since the mid 1980s (**Banks *et al.* 2006**). The failure rate of nests at the egg stage has fallen steeply since the 1960s.

Population changes

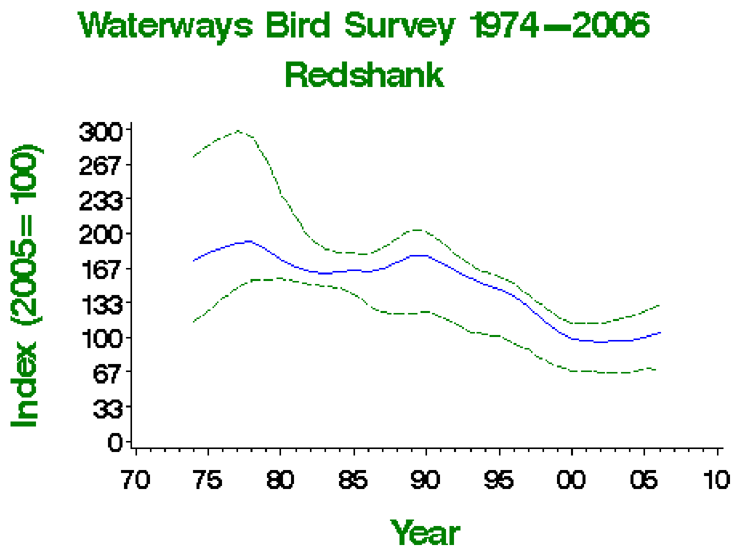
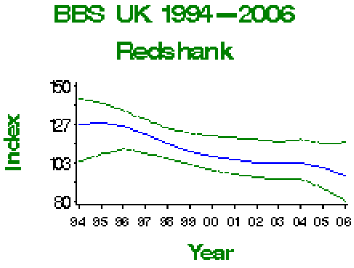
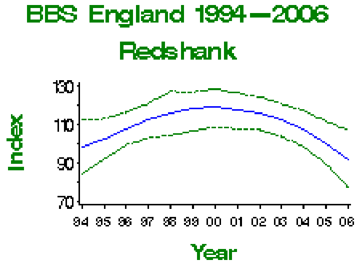


Table of population changes for Redshank

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	30	1975-2005	17	-45	-79	-2	>25	Small sample
	25	1980-2005	18	-43	-76	-21	>25	Small sample
	10	1995-2005	14	-31	-44	-3	>25	Small sample
BBS UK	10	1995-2005	74	-21	-37	6		
	5	2000-2005	81	-7	-25	15		
BBS England	10	1995-2005	50	-2	-19	18		
	5	2000-2005	57	-16	-31	4		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

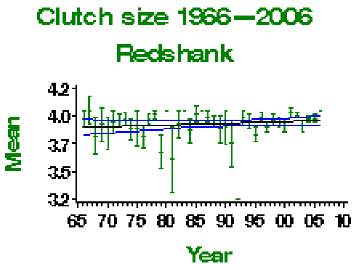




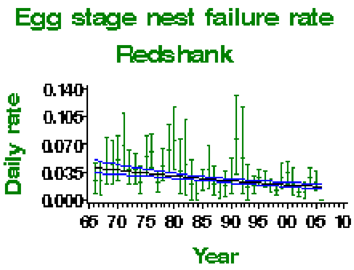
Productivity trends

Table of productivity changes for Redshank

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	31	None				
Daily failure rate (eggs)	37	1968-2005	34	Linear decline	3.97% nests/day	1.74% nests/day	-56.2%	



Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

FERAL PIGEON
Columba livia

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: possible increase

UK population size

>100,000 pairs in 1968–72 (1968–72 Atlas: **APEP06**);
100,000–250,000 pairs in 1988–91 (**BiE04**)

Status summary

CBC samples for Feral Pigeon were consistently too small for annual monitoring, and there was no trend information before BBS began in 1994. Breeding atlas data show a 39% increase in occupied 10-km squares between 1968–72 and 1988–91 (**Gibbons *et al.* 1993**), suggesting that Feral Pigeons may be on an upward trajectory, like the other *Columba* species in the UK. At the time of the first atlas, however, Feral Pigeons were commonly excluded from bird surveys, and some of the reported subsequent range increase may have been due to greater observer awareness. It is now clear that Feral Pigeons are almost ubiquitous in the UK, nesting in rural as well as urban habitats, and avoiding only the highest ground. No distinction can realistically be drawn between birds of domestic origin and true wild-type Rock Doves, although birds of wild-type plumage may still predominate on remote Scottish islands. In field conditions, it is not usually possible to distinguish between Rock Doves, wild-nesting Feral Pigeons, semicaptive dovecote breeders, and passing racing pigeons, and BBS counts are likely to include all these groups. BBS indices have yet to reveal any trends.

Population changes

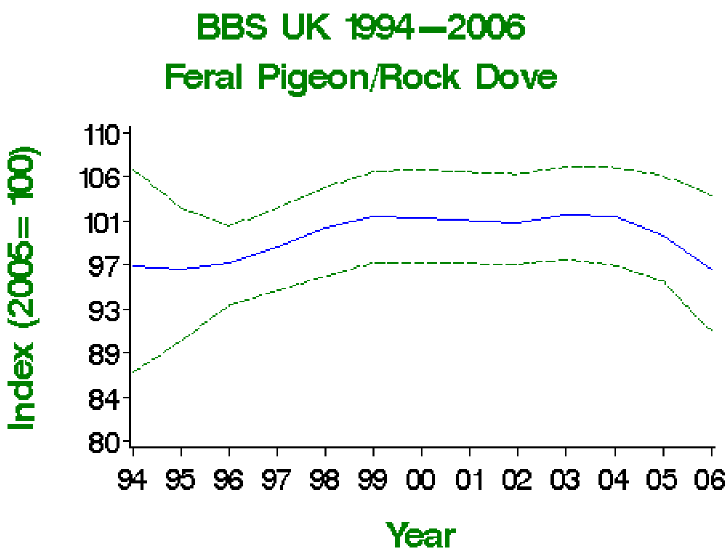
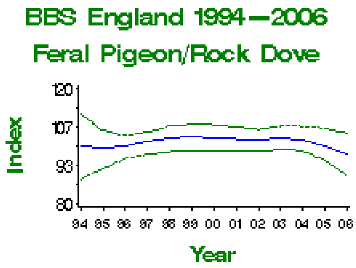
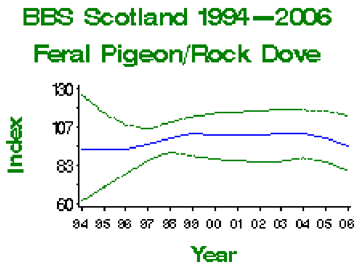


Table of population changes for Feral Pigeon/Rock Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	597	3	-7	17		
	5	2000-2005	635	-2	-10	9		
BBS England	10	1995-2005	500	1	-9	15		
	5	2000-2005	526	-3	-9	7		
BBS Scotland	10	1995-2005	54	8	-26	68		
	5	2000-2005	55	-2	-21	28		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**
- **Garden BirdWatch results**

STOCK DOVE
Columba oenas

- Population changes
- Productivity trends
- Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: amber (>20% of European breeding population)

Long-term trend

England: rapid increase

UK population size

309,000 territories in 2000 (1988–91 Atlas estimate updated using CBC trend: **BiE04**, **APEP06**)

Status summary

Following release from the lethal and sublethal effects of the organochlorine seed-dressings used in the 1950s and early 1960s, Stock Dove populations have increased very substantially (**O'Connor & Mead 1984**). Numbers appeared to level off in the early 1980s, and entered a further increasing phase in the early 1990s. Recent BBS indices suggest that numbers have now stabilised again. The increase in nest failure rates at the egg stage, now reversed, was not detectable in farmland habitats alone (**Siriwardena *et al.* 2000b**). Overall, nest failure rates have fallen substantially. Most nests appear to be started around two weeks later in the year now than in the 1960s and 1970s.

Population changes

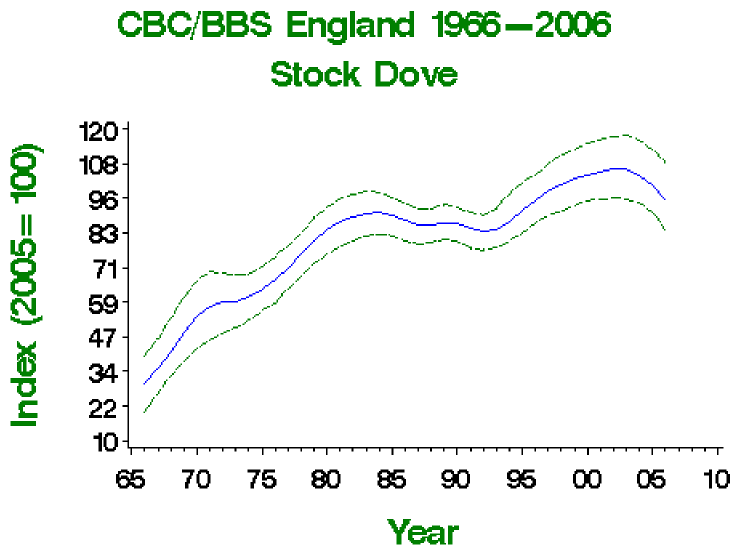
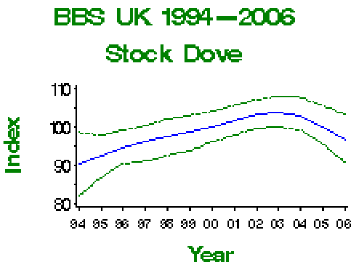
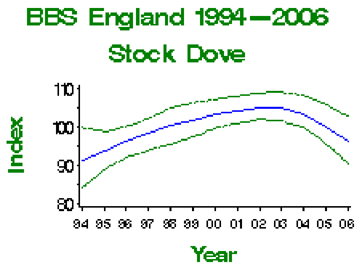


Table of population changes for Stock Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	232	181	98	329		
	25	1980-2005	322	18	-5	48		
	10	1995-2005	645	10	-2	22		
	5	2000-2005	670	-4	-10	4		
BBS UK	10	1995-2005	658	8	-2	23		
	5	2000-2005	716	0	-8	9		
BBS England	10	1995-2005	606	7	-3	18		
	5	2000-2005	658	-3	-10	5		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

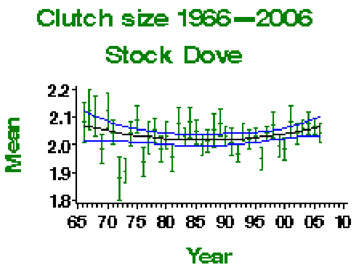


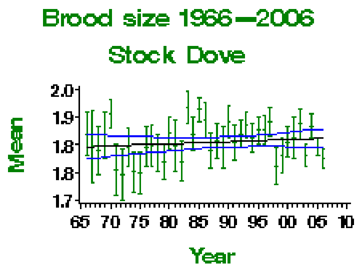


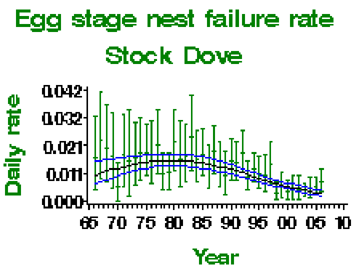
Productivity trends

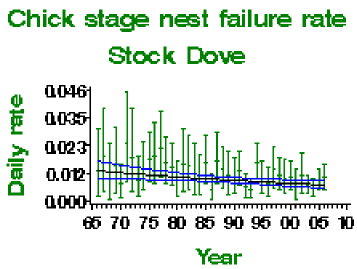
Table of productivity changes for Stock Dove

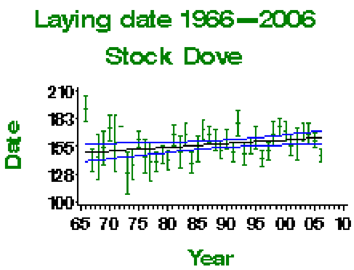
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	76	Curvilinear	2.07 eggs	2.07 eggs	0.1%	
Brood size	37	1968-2005	103	None				
Daily failure rate (eggs)	37	1968-2005	73	Curvilinear	1.13% nests/day	0.33% nests/day	-70.8%	
Daily failure rate (chicks)	37	1968-2005	54	Linear decline	1.22% nests/day	0.69% nests/day	-43.4%	
Laying date	37	1968-2005	16	Linear increase	May 30	Jun 13	14 days	Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

WOODPIGEON
Columba palumbus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK, England: rapid increase

UK population size

2,570,000–3,160,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

The CBC/BBS trend for this species is of a steady, steep increase since at least the mid 1970s. The spread of intensive arable cultivation, especially of oilseed rape, which has been shown to promote overwinter survival, may explain the rise in numbers (**Gibbons *et al.* 1993**). Since 1994, BBS has recorded significant increase in the UK, and in England, Wales and Northern Ireland separately, but stability in Scotland. **O'Connor & Shrubb (1986)** found that the breeding season had advanced in response to the switch to autumn sowing, and thus earlier ripening, of cereals, with more pairs nesting in May and June and relatively fewer in July–September. Earlier nesting could have led CBC, with fieldwork finishing in early July, to overestimate the rate of increase (**Marchant *et al.* 1990**). Numbers have risen widely in Europe since 1980 (**PECBM 2006**).

Population changes

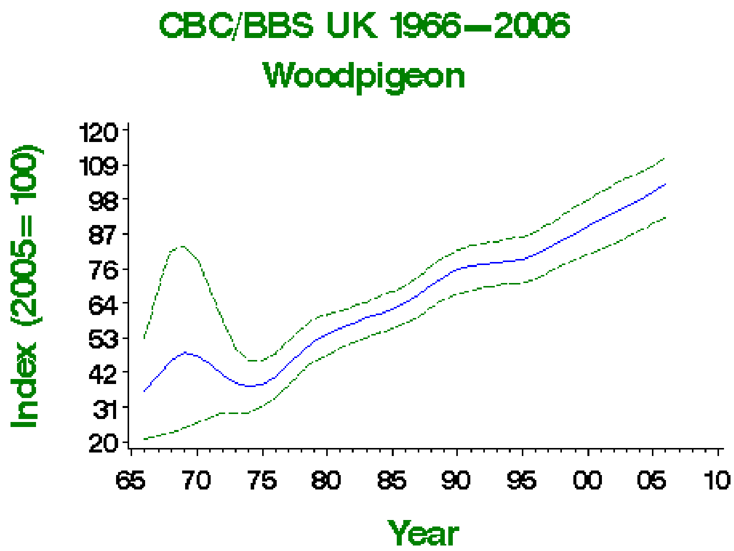
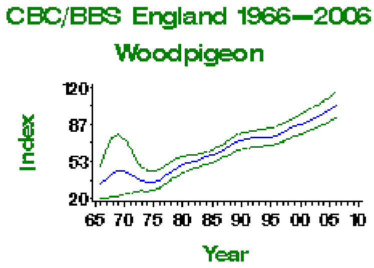


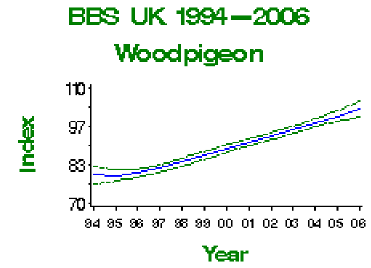
Table of population changes for Woodpigeon

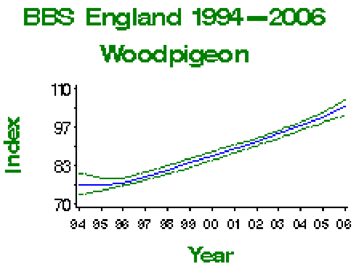
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	663	143	30	428		
	25	1980-2005	989	84	56	119		
	10	1995-2005	2150	27	23	32		
	5	2000-2005	2252	12	9	16		
CBC/BBS England	38	1967-2005	532	162	31	485		
	25	1980-2005	792	100	58	154		
	10	1995-2005	1716	32	27	37		
	5	2000-2005	1778	15	10	19		
BBS UK	10	1995-2005	2057	26	20	32		
	5	2000-2005	2229	13	9	16		
BBS England	10	1995-2005	1637	31	24	36		
	5	2000-2005	1758	15	12	20		
BBS Scotland	10	1995-2005	169	-3	-20	16		
	5	2000-2005	170	-2	-16	9		
BBS Wales	10	1995-2005	171	29	15	42		
	5	2000-2005	201	16	9	24		
BBS N.Ireland	10	1995-2005	70	64	28	107		

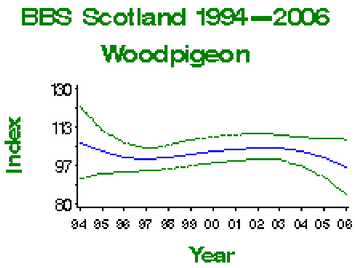
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

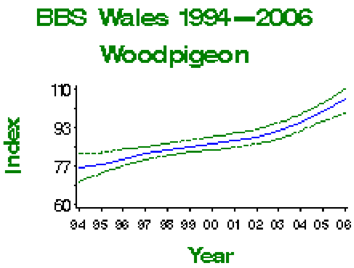
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

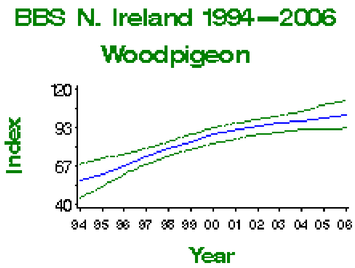












Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**
- **Garden BirdWatch results**

COLLARED DOVE
Streptopelia decaocto

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK, England: rapid increase

UK population size

298,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

Collared Dove abundance has increased rapidly since the species first colonised Britain in 1955. From just four birds known to be present in that year, the population was put conservatively at 15,000–25,000 pairs by 1970 (Hudson 1972). The CBC index showed an almost exponential rise as colonisation continued during the early 1970s, but had levelled off by about 1980. BBS shows continuing increases, at least in England and Wales. The UK population size now rivals that of Stock Dove. Despite the population increase, productivity has increased.

Population changes

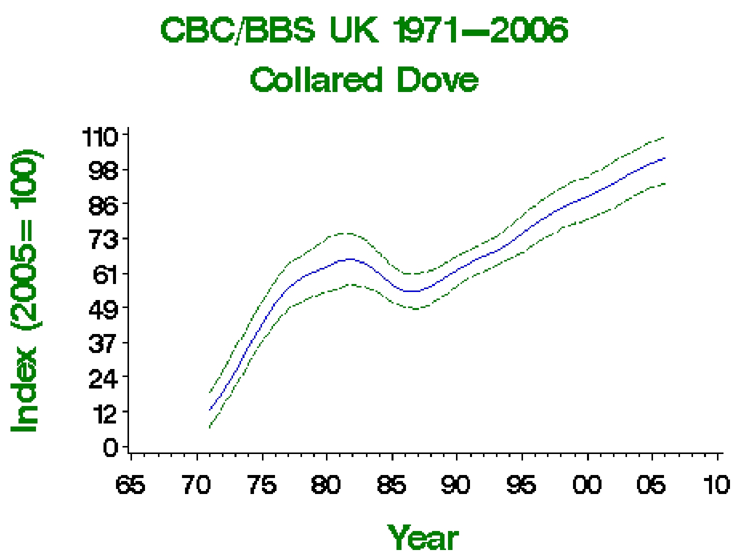
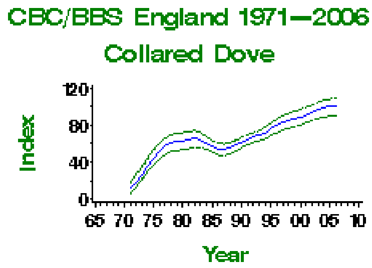
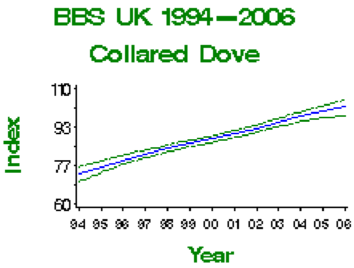


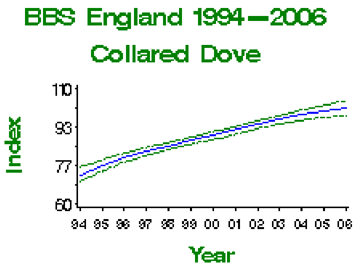
Table of population changes for Collared Dove

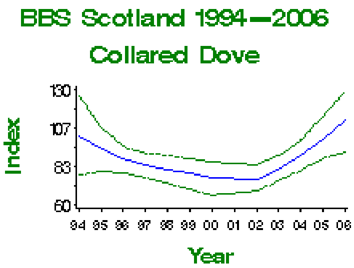
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	33	1972-2005	432	428	247	667		
	25	1980-2005	547	58	23	101		
	10	1995-2005	1171	34	25	40		
	5	2000-2005	1258	14	9	18		
CBC/BBS England	33	1972-2005	381	450	242	728		
	25	1980-2005	483	58	22	112		
	10	1995-2005	1035	32	23	41		
	5	2000-2005	1100	12	8	17		
BBS UK	10	1995-2005	1129	32	24	40		
	5	2000-2005	1248	14	9	18		
BBS England	10	1995-2005	998	31	23	39		
	5	2000-2005	1091	12	8	16		
BBS Scotland	10	1995-2005	39	6	-18	40		
	5	2000-2005	42	31	3	66		
BBS Wales	10	1995-2005	61	51	5	100		
	5	2000-2005	73	20	5	38		

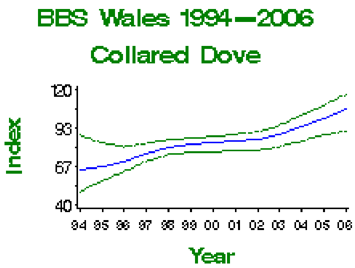
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







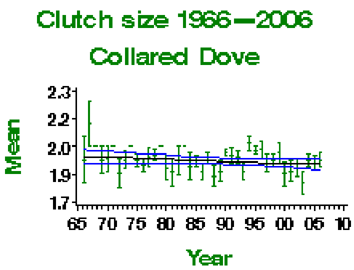


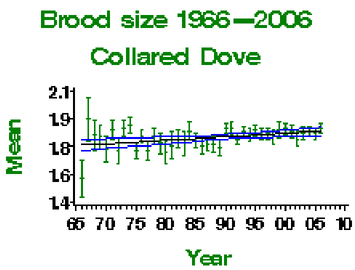


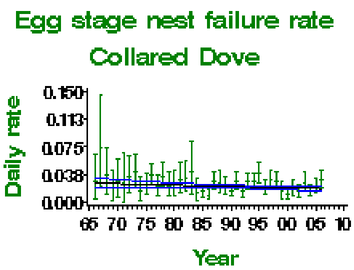
Productivity trends

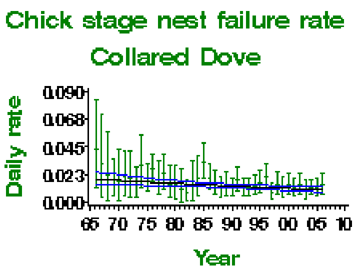
Table of productivity changes for Collared Dove

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	43	None				
Brood size	37	1968-2005	70	Linear increase	1.76 chicks	1.84 chicks	4.4%	
Daily failure rate (eggs)	37	1968-2005	61	None				
Daily failure rate (chicks)	37	1968-2005	55	Linear decline	1.84% nests/day	1.06% nests/day	-42.4%	
Laying date	37	1968-2005	43	None				

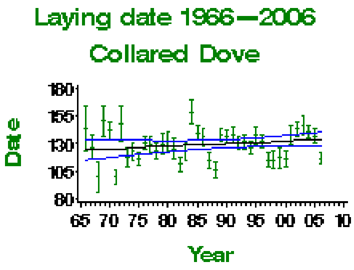








Insufficient data on CES available for this species



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

TURTLE DOVE
Streptopelia turtur

- Population changes
- Productivity trends
- Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: red (>50% population decline)
UK Biodiversity Action Plan: click here

Long-term trend

UK, England: rapid decline

UK population size

44,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

The CBC/BBS trend is of severe declines in Turtle Dove abundance, beginning in the late 1970s and continuing to the present. There has also been a highly significant mean decline across Europe as a whole during the 1990s (**Sanderson *et al.* 2006**). Hunting during migration is a possible cause of the UK decline, to add to those related to agricultural intensification that have been postulated for other farmland seed-eaters (**O'Connor & Shrubb 1986**, **Krebs *et al.* 1999**). Analysis of nest record cards and ringing data for farmland Turtle Doves suggests, although without statistical significance, that productivity per nesting attempt has increased while annual survival has fallen (**Siriwardena *et al.* 2000a**, **2000b**, **Browne *et al.* 2005**). **Browne & Aebischer (2004, 2005)** conclude that Turtle Doves today have a substantially earlier close to the breeding season and consequently produce barely half the number of clutches and young per pair than in the 1960s. Thus, the recovery of Turtle Doves in Britain would benefit from the provision and sympathetic management of nesting as well as foraging habitats.

Population changes

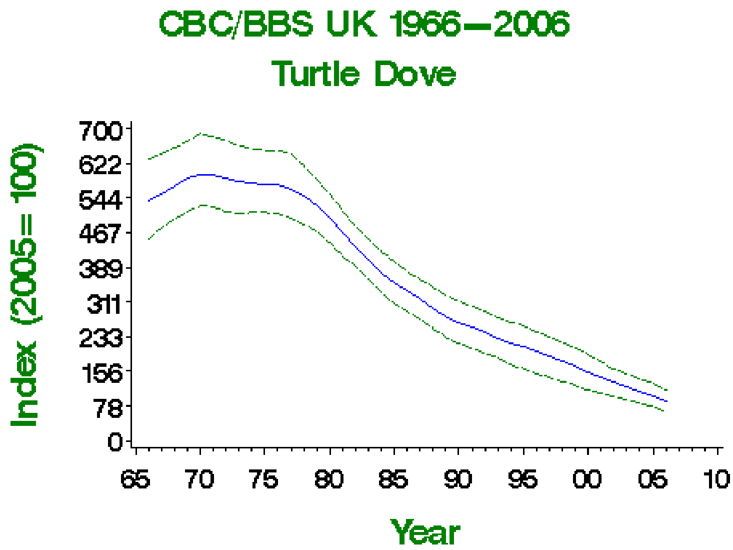
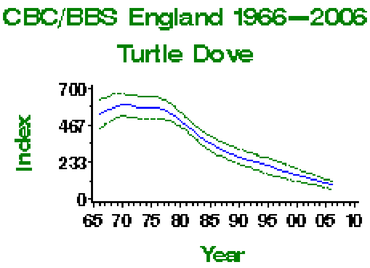
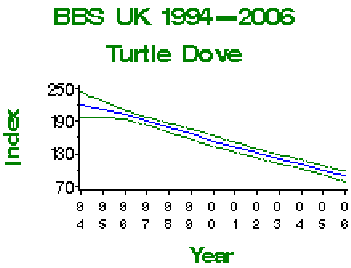


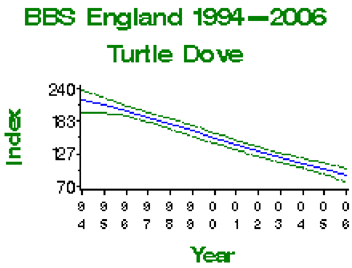
Table of population changes for Turtle Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	105	-82	-88	-74	>50	
	25	1980-2005	121	-80	-86	-72	>50	
	10	1995-2005	205	-52	-58	-45	>50	
	5	2000-2005	174	-35	-42	-25	>25	
CBC/BBS England	38	1967-2005	104	-82	-89	-73	>50	
	25	1980-2005	120	-80	-87	-72	>50	
	10	1995-2005	202	-52	-59	-44	>50	
	5	2000-2005	171	-35	-43	-27	>25	
BBS UK	10	1995-2005	186	-53	-60	-45	>50	
	5	2000-2005	170	-35	-42	-27	>25	
BBS England	10	1995-2005	183	-53	-58	-44	>50	
	5	2000-2005	167	-35	-43	-26	>25	

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



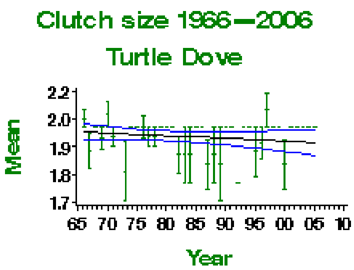


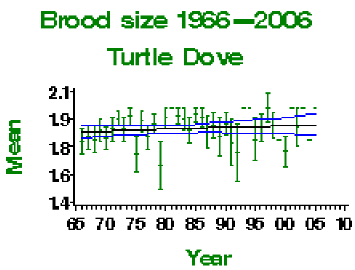


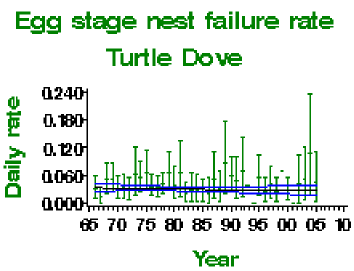
Productivity trends

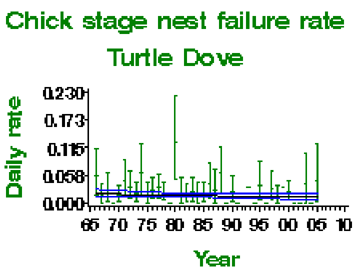
Table of productivity changes for Turtle Dove

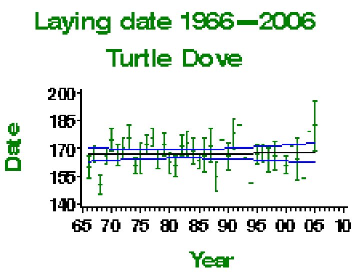
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	12	None				Small sample
Brood size	37	1968-2005	17	None				Small sample
Daily failure rate (eggs)	37	1968-2005	16	None				Small sample
Daily failure rate (chicks)	37	1968-2005	12	None				Small sample
Laying date	37	1968-2005	13	None				Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

RING-NECKED PARAKEET
Psittacula krameri

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: not evaluated (introduced)
UK: not listed (introduced)

Long-term trend

England: rapid increase

UK population size

4,300 individual adults in winter 2000/01 (**Butler 2002**: **APEP06**); further growth (**Holling & RBBP 2007b**)

Status summary

Following escapes and releases over many decades, this African and Asian parrot began breeding annually in the UK in 1969. Substantial but highly localised self-sustaining populations of this species have since built up, with the largest being in the southern part of Greater London and in the Isle of Thanet, east Kent. Population modelling has revealed that populations in Greater London have increased by approximately 30% per year, and those in Thanet by 15% per year, but that the range has expanded by only 0.4 km per year in the Greater London area and so far not at all in Thanet (**Butler 2003**). A single roost site used each night by birds from throughout the south London range held 6,818 birds in August 2003 (**Holling & RBBP 2007b**). The species has already been reported causing economic damage to crops, as has occurred elsewhere in its native and introduced range (**Butler 2003**).

Population changes

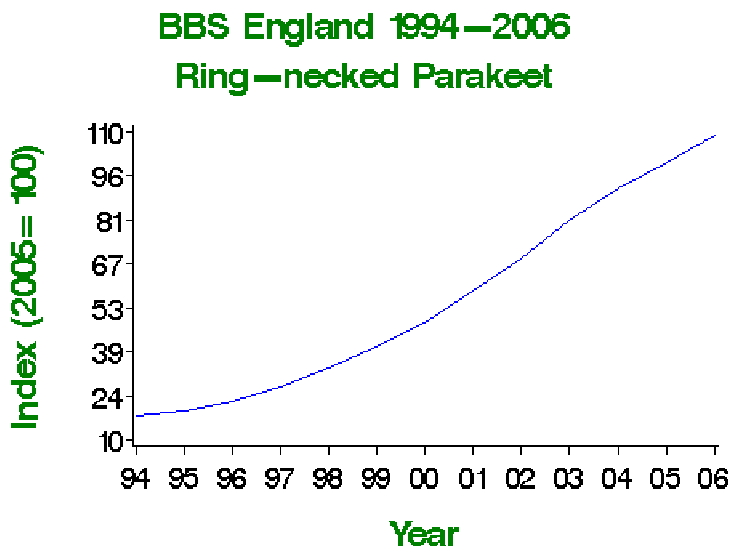


Table of population changes for Ring-necked Parakeet

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS England	5	2000-2005	49	108	.	.		

Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**
- **Garden BirdWatch page**

CUCKOO
Cuculus canorus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: amber (25–50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

England: rapid decline

UK population size

9,600–20,000 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

The CBC/BBS trend shows Cuckoo abundance to have been in decline since the early 1980s. The species has recently been moved from the green to the amber list, but the data now meet red-list criteria. The sensitivity of CBC to change in this species may have been relatively low, mainly because Cuckoo territories were typically larger than census plots (Marchant *et al.* 1990). BBS shows a continuing strong decline in England and Wales, but apparent increase in Scotland. Cuckoo numbers may have fallen because the populations of some key host species, such as Dunnock and Meadow Pipit, have declined (Brooke & Davies 1987). Decreases among British moths may have reduced food supplies for returning adults, and the species may also be suffering difficulties on migration or in winter (Glue 2006). Numbers have fallen widely in Europe since 1980 (PECBM 2006).

Population changes

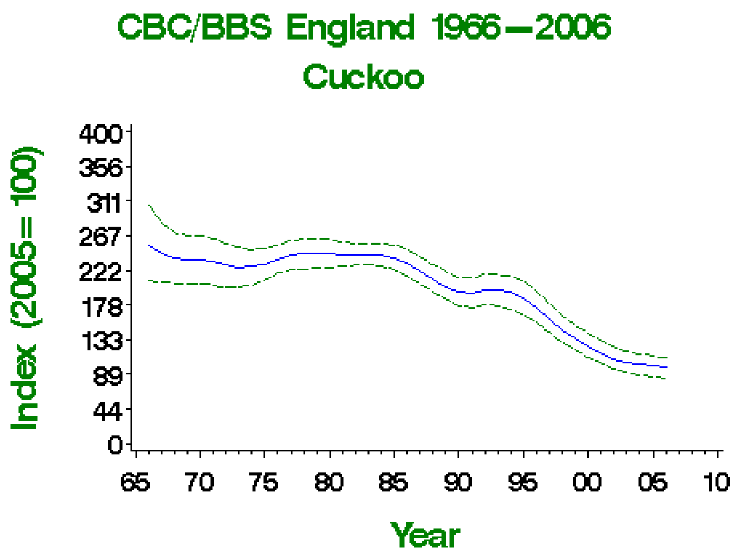
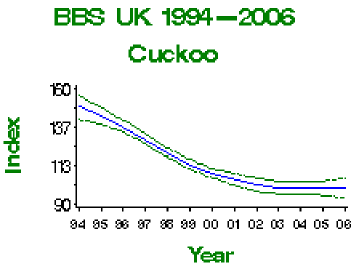
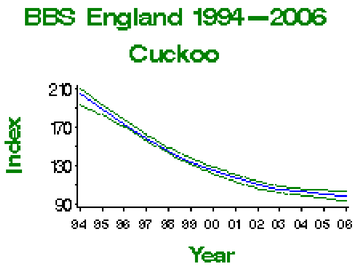


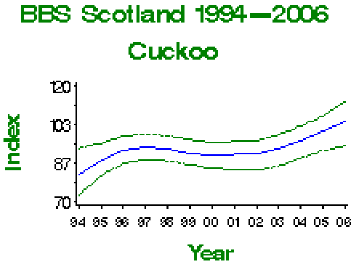
Table of population changes for Cuckoo

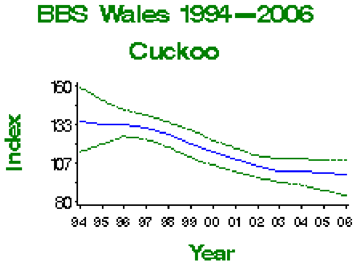
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	250	-59	-70	-44	>50	
	25	1980-2005	331	-59	-67	-51	>50	
	10	1995-2005	621	-46	-51	-42	>25	
	5	2000-2005	531	-20	-25	-14		
BBS UK	10	1995-2005	723	-30	-36	-25	>25	
	5	2000-2005	665	-8	-15	-2		
BBS England	10	1995-2005	579	-47	-50	-43	>25	
	5	2000-2005	523	-19	-24	-15		
BBS Scotland	10	1995-2005	65	14	-4	31		
	5	2000-2005	58	11	-3	27		
BBS Wales	10	1995-2005	56	-25	-42	-9		
	5	2000-2005	57	-12	-25	-1		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB









Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

BARN OWL
Tyto alba

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: amber (25–50% distribution decline)

Long-term trend

UK: decline

UK population size

4,000 (3,000–5,000) pairs in 1995–97 (**Toms *et al.* 2001**: **BiE04**, **APEP06**)

Status summary

Distributional data provide good evidence for a decline in this species that lasted throughout the 20th century, although annual monitoring started only very recently. Productivity has tended to improve since the 1950s and 1960s when Barn Owls appear to have been affected by organochlorine pesticides (**Percival 1990**). A national census during 1995–97, organised jointly by Hawk & Owl Trust and BTO, provided a replicable baseline population estimate (**Toms *et al.* 2000**, **2001**; for more information, **click here**). The lack of annual population change data for this species is now being addressed by the BTO's **Barn Owl Monitoring Programme (BOMP)**, which began in 2000; additional nest record, ringing and biometric information is also being collected through this scheme (**Leech *et al.* 2005**). BOMP already provides evidence that fewer pairs attempt to nest following cold or wet winters (**Leech *et al.* 2006a**). The plight of such a charismatic and popular bird led to extensive releasing of captive-bred birds in earlier decades: by 1992, when licensing became a requirement for such schemes, it was estimated that between 2,000 and 3,000 birds were being released annually by about 600 operators, although many birds died quickly and few would have joined the nesting population (**Balmer *et al.* 2000**). More recently, the erection of Barn Owl nest boxes, numbering c. 25,000 by the mid 1990s, has enabled the species to occupy areas (notably the Fens) that were previously devoid of nesting sites, and may have been a factor in improving nesting success.

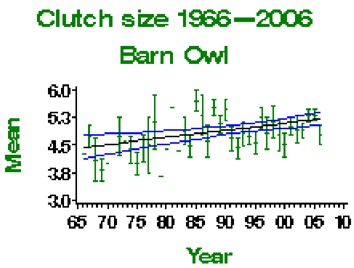
Population changes

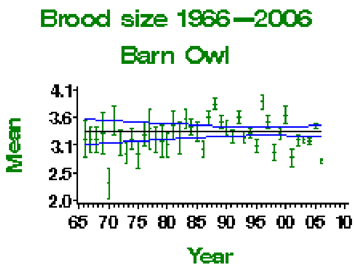
Annual breeding population changes for this species are not currently monitored by BTO

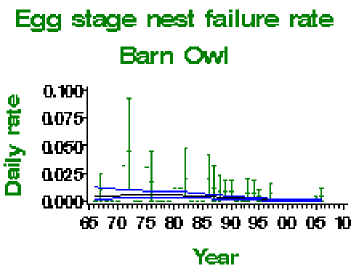
Productivity trends

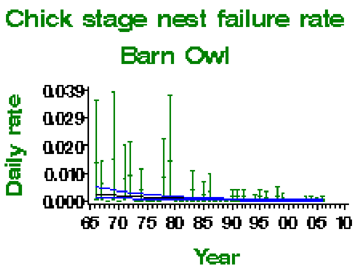
Table of productivity changes for Barn Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	19	Linear increase	4.48 eggs	5.19 eggs	15.7%	Small sample
Brood size	37	1968-2005	115	None				
Daily failure rate (eggs)	37	1968-2005	15	Curvilinear	0.47% nests/day	0.04% nests/day	-91.5%	Small sample
Daily failure rate (chicks)	37	1968-2005	57	Linear decline	0.22% nests/day	0.03% nests/day	-86.4%	









Insufficient data on laying date

Insufficient data on CES

available for this species

available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

LITTLE OWL
Athene noctua

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3, declining
UK: not listed (introduced)

Long-term trend

UK, England: possible decline

UK population size

5,800–11,600 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

The CBC/BBS trend for Little Owl shows very wide fluctuations, but a downturn in recent seasons suggests a possible moderate decline long-term in the UK. Trends are poorly known, however, because the species has large territories and is difficult to detect except by dedicated surveys. A population estimate of c. 7,000 pairs from the BTO/Hawk & Owl Trust's **Project Barn Owl** (**Toms *et al.* 2000**) is the first replicable estimate for Little Owls in the UK. No trends are evident in productivity, but few nest records are available.

Population changes

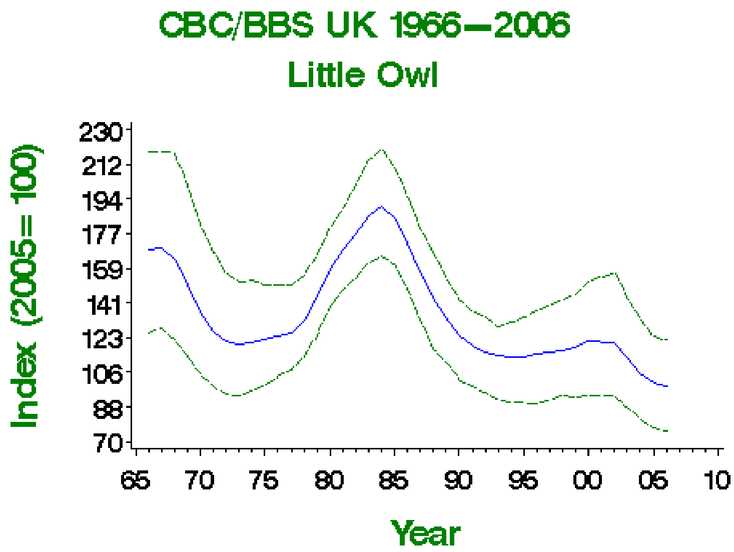
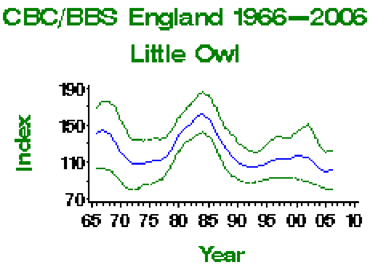
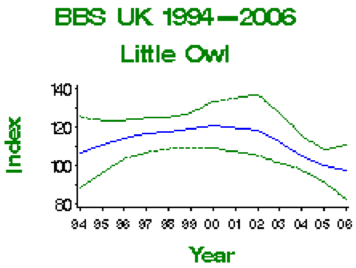


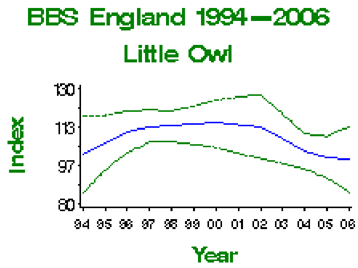
Table of population changes for Little Owl

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	52	-41	-64	-2	>25	
	25	1980-2005	65	-37	-57	-10	>25	
	10	1995-2005	110	-12	-23	6		
	5	2000-2005	104	-18	-32	-2		
CBC/BBS England	38	1967-2005	49	-31	-54	16		
	25	1980-2005	62	-28	-48	0		
	10	1995-2005	106	-8	-21	10		
	5	2000-2005	100	-14	-29	3		
BBS UK	10	1995-2005	95	-9	-24	11		
	5	2000-2005	100	-17	-31	-1		
BBS England	10	1995-2005	91	-6	-22	13		
	5	2000-2005	96	-13	-26	2		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



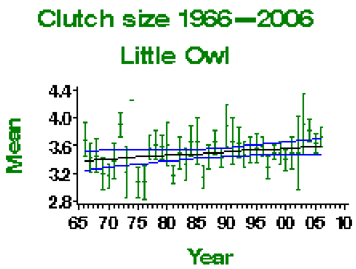


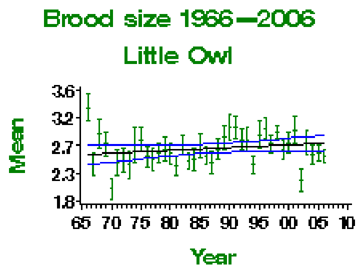


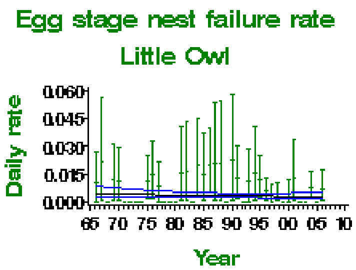
Productivity trends

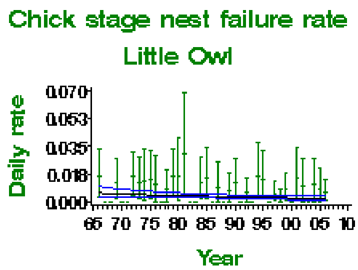
Table of productivity changes for Little Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	17	None				Small sample
Brood size	37	1968-2005	37	None				
Daily failure rate (eggs)	37	1968-2005	16	None				Small sample
Daily failure rate (chicks)	37	1968-2005	19	None				Small sample









Insufficient data on laying dates available for this species

Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

TAWNY OWL
Strix aluco

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK, England: stable

UK population size

19,400 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

As a nocturnal species, Tawny Owl is poorly covered by the BTO's monitoring schemes. The pattern shown by CBC/BBS is a relatively stable one, however, in keeping with the longevity, sedentary behaviour, and slow breeding rate of this species. There is a slight indication from CBC/BBS of a shallow downward trend since the early 1970s, although the data for England alone appear more stable. It may be relevant to this possible long-term change that **Gibbons *et al.* (1993)** found evidence for a contraction of the species' UK range between the two atlas periods. The substantial improvements in nest success during the c.29-day egg stage could be linked to the declining impact of organochlorine pesticides, which were banned in the 1960s. Special surveys of this species took place in 2005 (**click here**).

Population changes

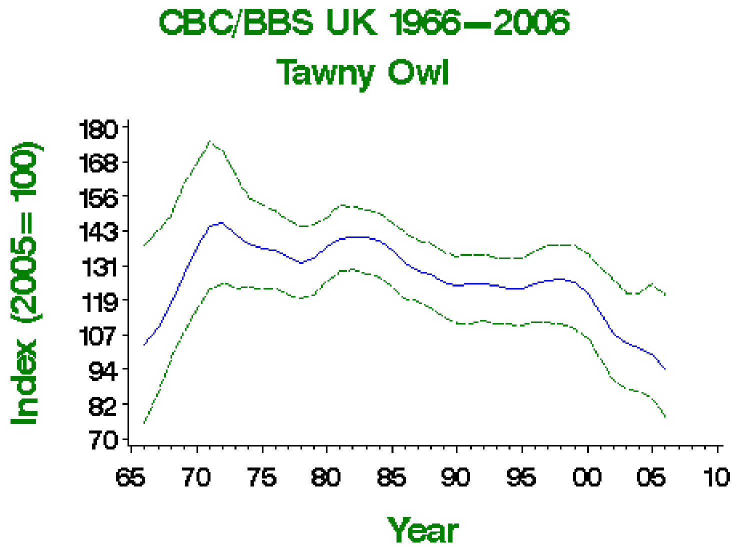
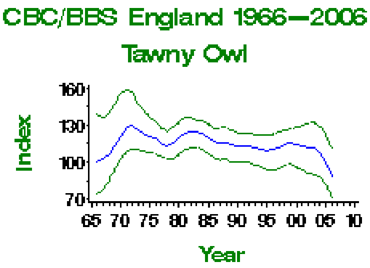
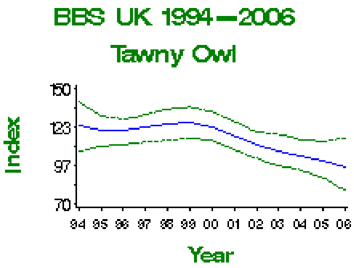


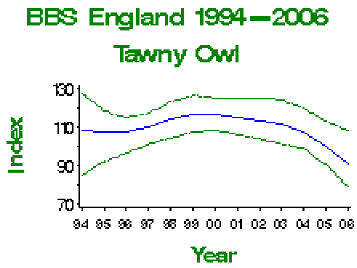
Table of population changes for Tawny Owl

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	75	-9	-41	31		
	25	1980-2005	87	-27	-42	-6	>25	
	10	1995-2005	113	-19	-31	2		
	5	2000-2005	90	-17	-30	3		
CBC/BBS England	38	1967-2005	63	-2	-39	64		
	25	1980-2005	73	-17	-38	12		
	10	1995-2005	97	-8	-27	14		
	5	2000-2005	78	-13	-25	7		
BBS UK	10	1995-2005	82	-18	-32	1		Nocturnal species
	5	2000-2005	82	-19	-34	2		Nocturnal species
BBS England	10	1995-2005	70	-7	-23	25		Nocturnal species
	5	2000-2005	72	-14	-26	5		Nocturnal species

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



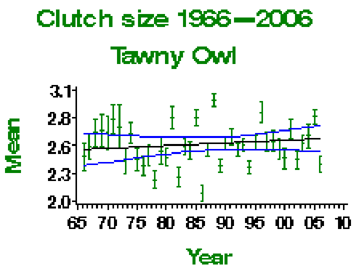


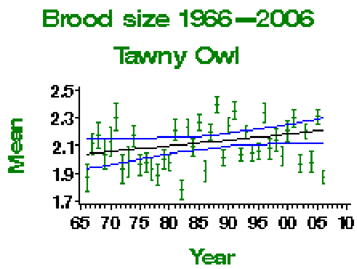


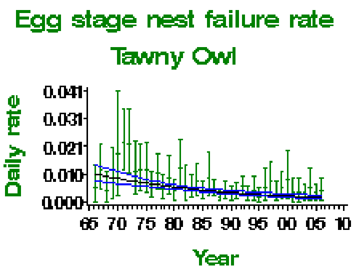
Productivity trends

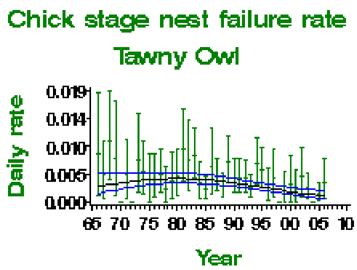
Table of productivity changes for Tawny Owl

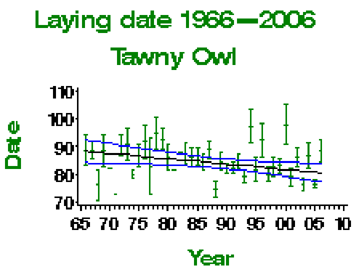
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	76	None				
Brood size	37	1968-2005	135	None				
Daily failure rate (eggs)	37	1968-2005	53	Linear decline	0.95% nests/day	0.19% nests/day	-80%	
Daily failure rate (chicks)	37	1968-2005	80	Curvilinear	0.3% nests/day	0.12% nests/day	-60%	
Laying date	37	1968-2005	14	Linear decline	Mar 29	Mar 22	-7 days	Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

NIGHTJAR
Caprimulgus europaeus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2, (declining)
UK: red (>50% distribution decline)
UK Biodiversity Action Plan: click here

Long-term trend

UK: uncertain

UK population size

3,400 males in 1992 (Morris *et al.* 1994: BiE04, APEP06); 4,600 males in 2004 (Conway *et al.* 2007)

Status summary

Following a catastrophic decline in range of more than 50% of 10-km squares between breeding atlases, the 1992 national survey revealed a welcome increase of 50% in population size since 1981, probably due to increased availability of young forest habitat as plantations were felled and replanted (Morris *et al.* 1994). A National Nightjar Survey in 2004 revealed that a further 36% increase had taken place in the UK population in 12 years, with a 2.6% increase in the number of 10-km squares occupied (Conway *et al.* 2007). There was evidence of population declines and range contractions since 1992, however, in North Wales, northwest England, and Scotland. The apparent increase in nest failure rates, especially at the chick stage in the period up to 1995, is probably an artefact of very small sample sizes in the early years. A recent study suggests that nest failure is more likely in areas heavily frequented by walkers and dogs (Langston *et al.* 2007).

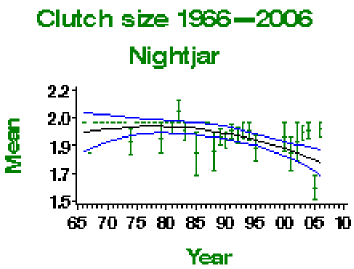
Population changes

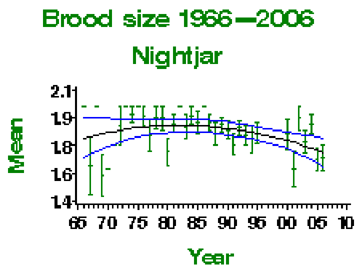
Annual population changes are not monitored for this species

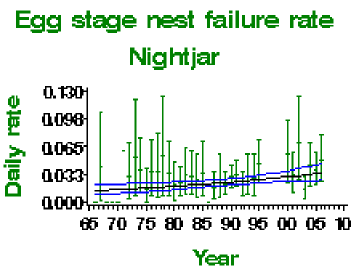
Productivity trends

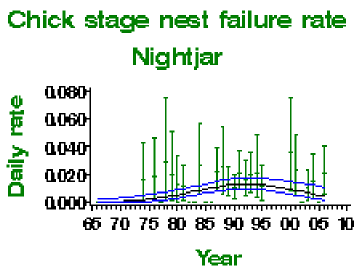
Table of productivity changes for Nightjar

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	16	Curvilinear	1.94 eggs	1.76 eggs	-9.6%	Small sample
Brood size	37	1968-2005	24	Curvilinear	1.82 chicks	1.73 chicks	-5.1%	Small sample
Daily failure rate (eggs)	37	1968-2005	21	Linear increase	1.42% nests/day	3.33% nests/day	134.5%	Small sample
Daily failure rate (chicks)	37	1968-2005	20	Curvilinear	0.03% nests/day	0.52% nests/day	1633.3%	Small sample
Laying date	37	1968-2005	18	None				Small sample

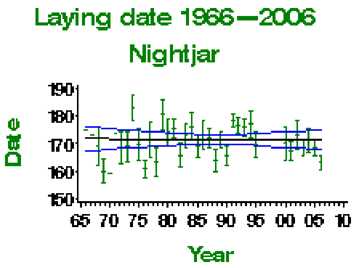








Insufficient data on CES available for this species



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

COMMON SWIFT
Apus apus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: unknown

UK population size

85,000 pairs in 1990 (1988–91 Atlas:**APEP06**); 20,000–100,000 pairs in 2000 (**BiE04**)

Status summary

Swifts were not monitored before the inception of the BBS. Monitoring is complicated by the difficulty of finding occupied nests, by the weather-dependent and sometimes extraordinary distances from the nest at which adults may forage, and by the variable midsummer influx of non-breeding individuals. Since Swifts do not normally begin breeding until they are four years old, non-breeding numbers can at times be substantial. BBS results so far suggest decline in England and Scotland, and possibly in Wales, but, because there are wide fluctuations, a long time-series may be needed before trends can be estimated with confidence. **Concern for Swifts**, a small organisation of private individuals, is trying to promote the deliberate provision of nesting sites for this species, as so many suitable cavities are being lost to re-development. It is also gathering information on populations to assess whether the species should be listed as of conservation concern.

Population changes

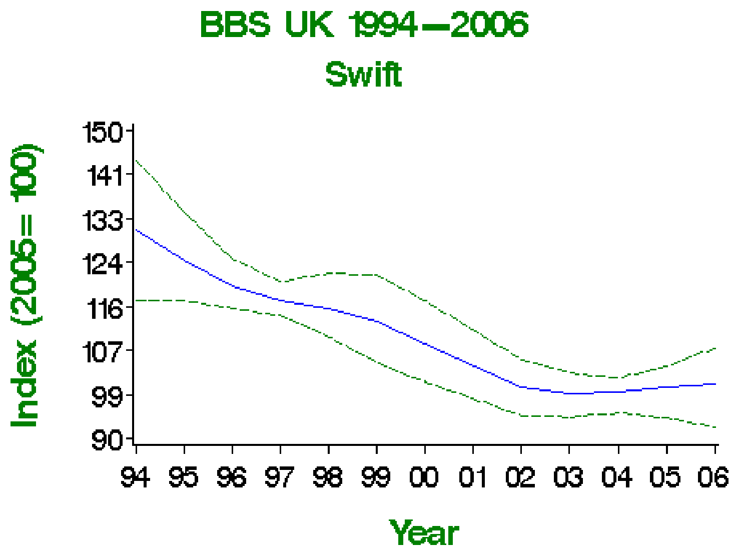
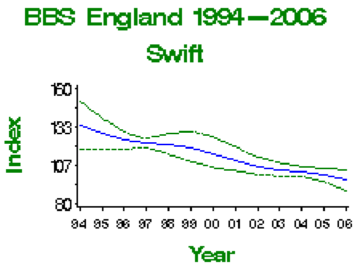
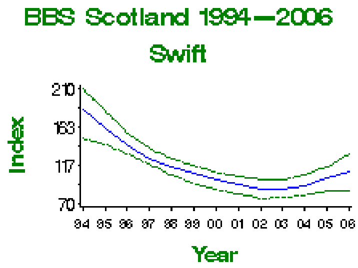


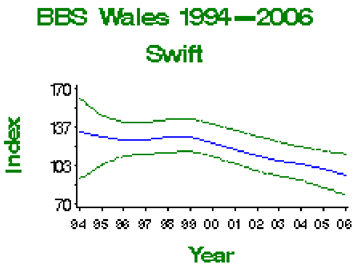
Table of population changes for Swift

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	926	-20	-29	-12		
	5	2000-2005	984	-8	-19	3		
BBS England	10	1995-2005	796	-22	-30	-14		
	5	2000-2005	836	-12	-24	-3		
BBS Scotland	10	1995-2005	45	-38	-55	-18	>25	
	5	2000-2005	47	2	-17	24		
BBS Wales	10	1995-2005	64	-22	-42	14		
	5	2000-2005	74	-18	-36	1		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

KINGFISHER
Alcedo atthis

- Population changes
- Productivity trends
- Additional information

Conservation listings

Europe: SPEC category 3, depleted
UK: amber (European status)

Long-term trend

UK: fluctuating, with no long-term trend

UK population size

4,800–8,000 pairs in 2000 (1988–91 Atlas estimate updated using WBS trend: **BiE04**, **APEP06**)

Status summary

The Kingfisher declined along linear waterways (its principal habitat) until the mid 1980s, since when it seems to have made a complete recovery. The decline was associated with a contraction of range in England (**Gibbons *et al.* 1993**). Kingfishers suffer severe mortality during harsh winters but, with up to three broods in a season, and up to six chicks in a brood, their potential for rapid recovery is unusually high. Amber listing of this species in the UK results from its 'depleted' status in Europe as a whole, follow declines between 1970 and 1990 (**BirdLife International 2004**).

Population changes

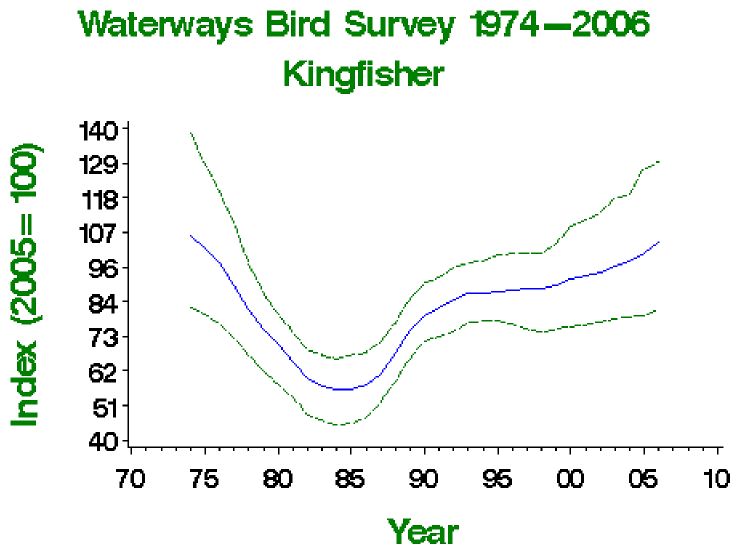
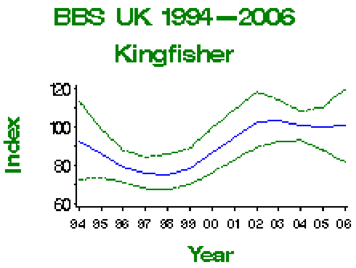
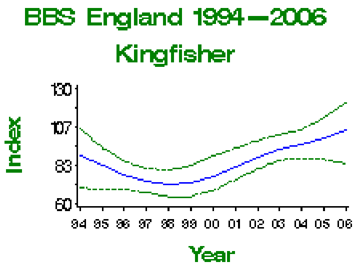


Table of population changes for Kingfisher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	30	1975-2005	32	-1	-40	71		
	25	1980-2005	32	42	2	121		
	10	1995-2005	35	14	-12	56		
	5	2000-2005	32	9	-9	33		
BBS UK	10	1995-2005	47	17	-8	50		
	5	2000-2005	52	16	-11	50		
BBS England	10	1995-2005	41	20	-8	59		
	5	2000-2005	44	31	-1	64		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

GREEN WOODPECKER
Picus viridis

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2 (depleted)
UK: amber (European status)

Long-term trend

England: rapid increase

UK population size

24,200 pairs in 2000 (1988–91 Atlas estimate updated using CBC trend: **BiE04**, **APEP06**)

Status summary

Green Woodpecker populations have risen steadily in Britain since 1966, except for a period of stability or shallow decline centred around 1980 that was probably the result of a series of harsh winters. There was considerable range expansion in central and eastern Scotland between the 1968–72 and 1988–91 atlas periods. Recent results indicate that the current phase of increase is continuing across most of the UK range. The ecological factors underlying the increase are not yet known but, given the species' susceptibility to cold weather, it may be related to climate change. Numbers have risen widely in Europe since 1980 (**PECBM 2006**).

Population changes

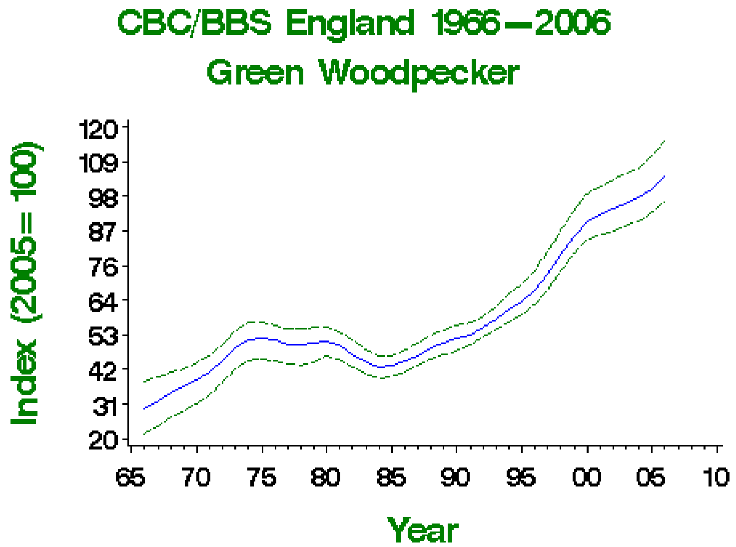
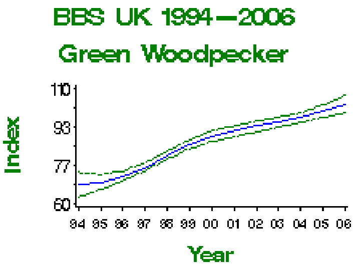
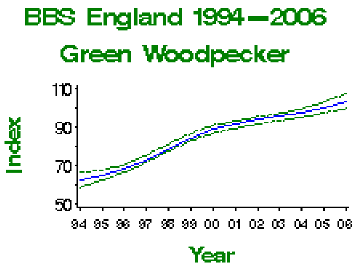


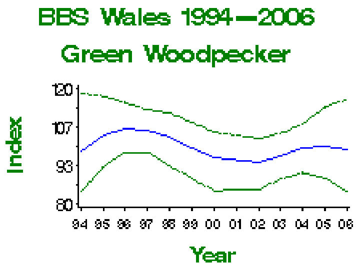
Table of population changes for Green Woodpecker

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	232	211	137	355		
	25	1980-2005	324	96	67	140		
	10	1995-2005	656	56	46	67		
	5	2000-2005	710	11	6	17		
BBS UK	10	1995-2005	650	44	33	54		
	5	2000-2005	750	12	7	18		
BBS England	10	1995-2005	600	54	43	65		
	5	2000-2005	694	13	7	18		
BBS Wales	10	1995-2005	44	-3	-24	19		
	5	2000-2005	50	4	-14	30		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

GREAT SPOTTED WOODPECKER
Dendrocopos major

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK, England: rapid increase

UK population size

37,000–44,400 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

This species increased rapidly in the 1970s and began a further increase in the early 1990s. Dutch Elm Disease, which greatly increased the amount of standing dead timber and its associated insects, has been linked to the 1970s increase (Marchant *et al.* 1990). The ecological factors underlying the current increase are not yet known, but the species may be benefiting from the maturation of new forests and from the increasing provision of winter food in gardens. The decline in Starling numbers in recent decades has led to increased breeding success of this woodpecker and may have allowed it to expand its breeding distribution into less wooded habitats (Smith 2005, 2006). Nesting phenology in Hertfordshire woodlands has advanced over the last two decades in response to warmer spring weather (Smith 2006). Numbers have risen widely in Europe since 1980 (PECBM 2006).

Population changes

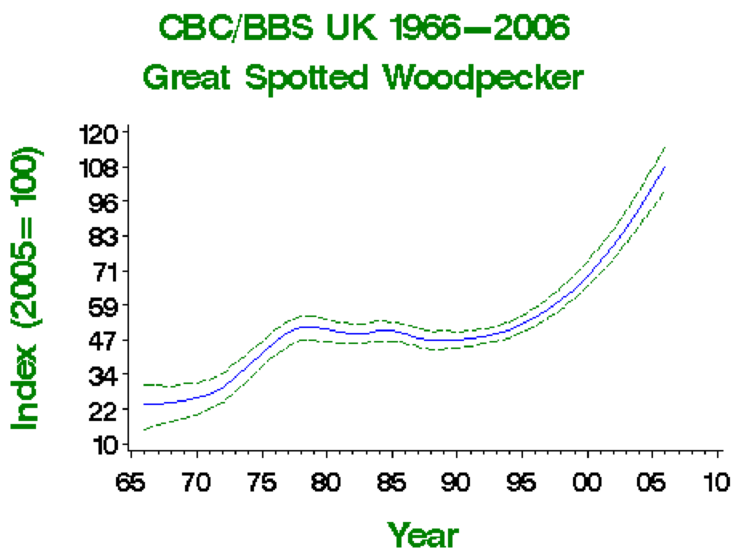
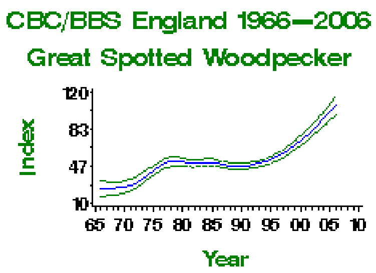
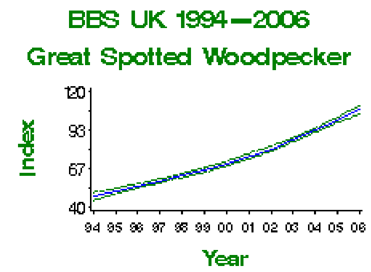


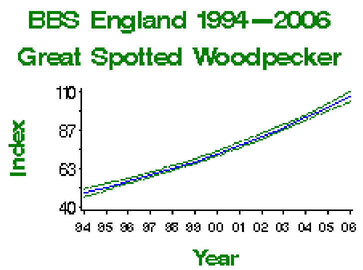
Table of population changes for Great Spotted Woodpecker

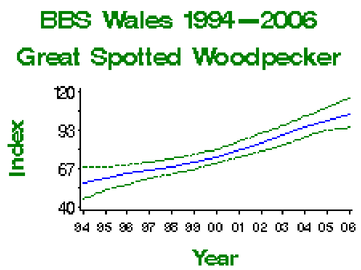
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	293	317	204	582		
	25	1980-2005	409	98	73	136		
	10	1995-2005	821	92	81	103		
	5	2000-2005	924	44	37	51		
CBC/BBS England	38	1967-2005	263	306	197	535		
	25	1980-2005	366	96	65	129		
	10	1995-2005	732	89	78	100		
	5	2000-2005	816	40	33	46		
BBS UK	10	1995-2005	751	97	85	106		
	5	2000-2005	905	43	37	49		
BBS England	10	1995-2005	666	93	81	104		
	5	2000-2005	799	39	33	45		
BBS Wales	10	1995-2005	58	67	38	122		
	5	2000-2005	73	35	17	55		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







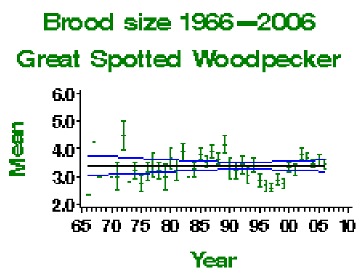


Productivity trends

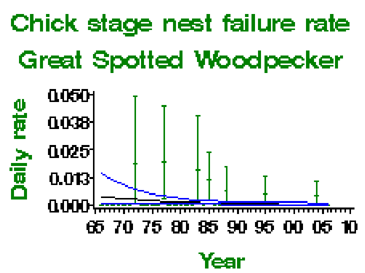
Table of productivity changes for Great Spotted Woodpecker

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Brood size	37	1968-2005	22	None				Small sample
Daily failure rate (chicks)	37	1968-2005	29	Linear decline	0.35% nests/day	0.03% nests/day	-91.4%	Small sample

>Insufficient data on clutch size available for this species



Insufficient data on egg nest failure available for this species



Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology

- **BirdTrack results**
- **Garden BirdWatch results**

LESSER SPOTTED WOODPECKER
Dendrocopos minor

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: red (>50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

UK: rapid decline

UK population size

1,400–2,900 pairs in 2000 (1988–91 Atlas estimate updated using CBC trend: **BiE04**, **APEP06**)

Status summary

The Lesser Spotted Woodpecker has declined significantly and very rapidly since around 1980, following a shallower increase; it had already contracted in range between the two atlas periods (**Gibbons *et al.* 1993**), and has subsequently disappeared from many more of its former localities. It easily qualifies for red listing, but has become so rare in recent years that BBS observers have been unable to continue the annual monitoring that was possible until 2000 through CBC. Competition with and predation by Great Spotted Woodpeckers, and reductions in small-diameter dead wood suitable for foraging, are the most likely causes of decline, while the species' large home ranges suggest that landscape-scale changes in woodland (loss of mature broadleaved woodland, losses of non-woodland trees such as elms, and woodland fragmentation) may also be important (**Fuller *et al.* 2005**). Numbers have fallen widely in Europe since 1980 (**PECBM 2006**).

Population changes

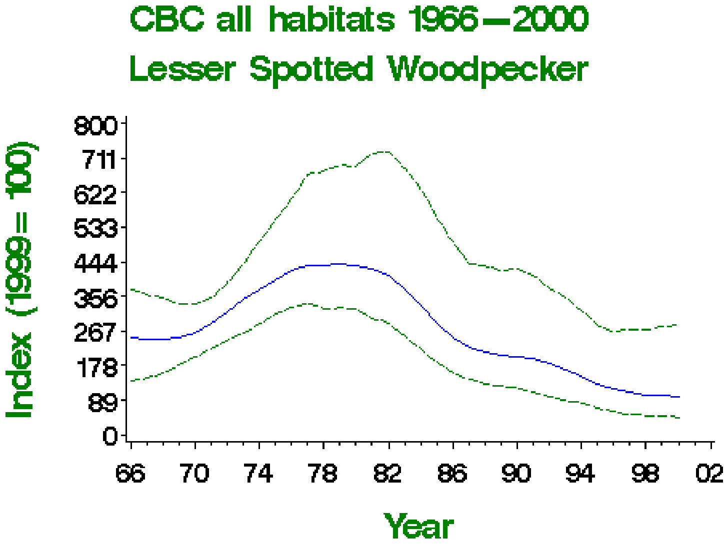


Table of population changes for Lesser Spotted Woodpecker

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	17	-60	-81	40		Small sample
	25	1974-1999	18	-73	-86	-31	>50	Small sample
	10	1989-1999	11	-51	-75	-22	>50	Small sample
	5	1994-1999	9	-33	-56	0		Small sample

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

WOODLARK
Lullula arborea

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2 (depleted)
UK: red (>50% distribution decline)
UK Biodiversity Action Plan: click here

Long-term trend

UK: increase

UK population size

1,426–1,552 pairs in 1997 (Wotton & Gillings 2000: APEP06, rounded to 1,400–1,600 BiE04)

Status summary

This species is too rare and restricted in range for population changes to be monitored annually by BTO observers. A 62% reduction in the number of 10-km squares occupied between 1968–72 and 1988–91 warranted red-listing on grounds of range contraction; the species had ceased to breed in Wales and in several southern English counties over this period (Gibbons *et al.* 1993). Sitters *et al.* (1996) report that the population increased from c.250 pairs in 1986 to c.600 pairs in 1993, probably helped by recent mild winters and increased habitat availability due to storm damage in plantations, forest restocking, and heathland management. A repeat national survey in 1997 showed that the population had increased further, accompanied by expansion of the range into new areas (Wotton & Gillings 2000; for more information, click here). Farmland setaside, especially close to forest, is valuable additional habitat for the expanding population, although clutch sizes may be lower there than in more traditional habitats (Wright *et al.* 2007). Nest failure rates have become less frequent at the egg stage, but considerably more so at the chick stage. BTO conducted a new national survey in spring 2006 (for more information, click here).

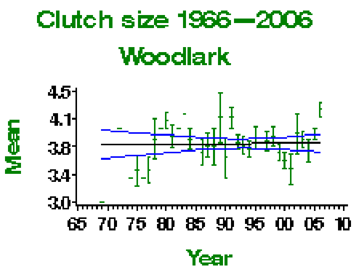
Population changes

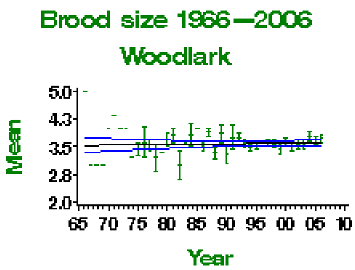
Annual breeding population changes for this species are not currently monitored by BTO

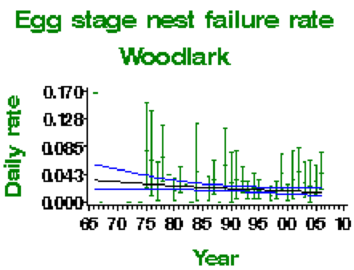
Productivity trends

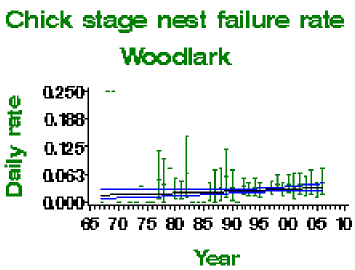
Table of productivity changes for Woodlark

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	16	None				Small sample
Brood size	37	1968-2005	26	None				Small sample
Daily failure rate (eggs)	37	1968-2005	18	None				Small sample
Daily failure rate (chicks)	37	1968-2005	27	None				Small sample
Laying date	37	1968-2005	17	None				Small sample

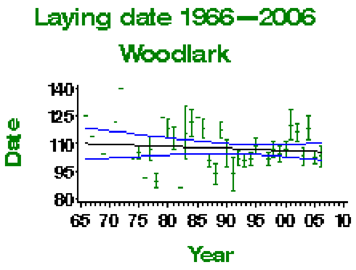








Insufficient data on CES available for this species



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

SKYLARK
Alauda arvensis

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (depleted)
UK: red (>50% population decline)
UK Biodiversity Action Plan: **click here**

Long-term trend

England: rapid decline

UK population size

1,785,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**); 801,000–1,003,000 pairs in Britain in 1997 (**Browne *et al.* 2000**)

Status summary

The Skylark declined rapidly from the mid 1970s until the mid 1980s, when the rate of decline slowed; more recent data show further decline, however, at least in England. Considerable effort by BTO and other researchers in recent years has indicated that the most likely cause of the decline is the change to autumn sowing of cereals: this practice restricts opportunities for late-season nesting attempts, because the crop is by then too tall, and may depress overwinter survival by reducing the area of stubbles (**Wilson *et al.* 1997**, **Donald & Vickery 2000**, **2001**; for more information, **click here**). **Chamberlain & Siriwardena (2000)** have provided a general review of the effects of agricultural practice on Skylark population trends. Breeding success per nesting attempt increased during the decline (**Chamberlain & Crick 1999**, **Siriwardena *et al.* 2000b**) but, since 2000, nest losses have apparently increased and previous gains in clutch and brood sizes have been lost. Leaving small, rectangular patches of bare ground ('Skylark plots') within autumn-sown cereals appears to provide many of the benefits of spring-sown cereals at very low cost to the farmer (**Donald & Morris 2005**).

Population changes

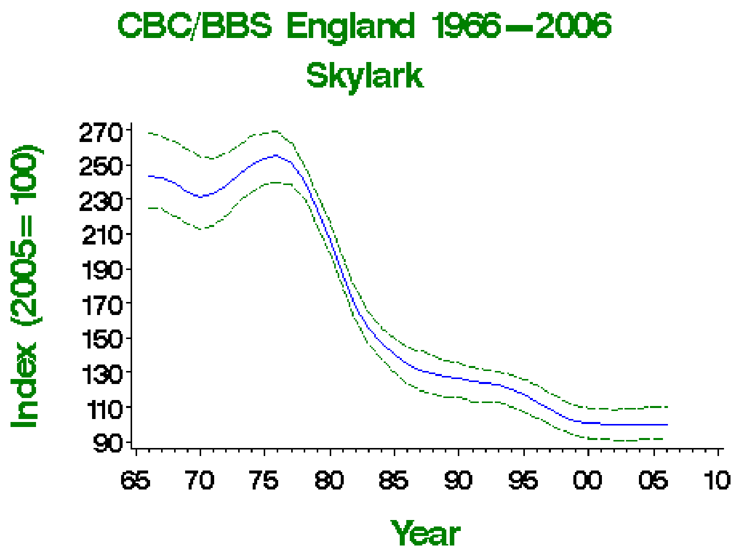
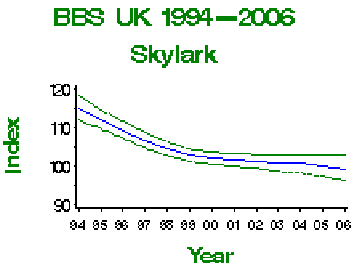


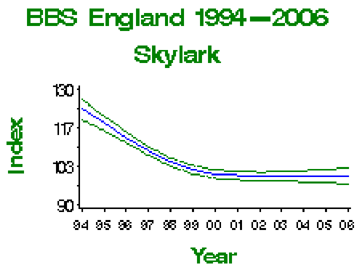
Table of population changes for Skylark

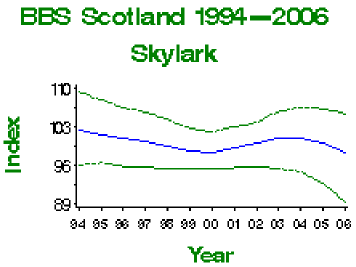
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	423	-59	-66	-51	>50	
	25	1980-2005	582	-51	-58	-45	>50	
	10	1995-2005	1217	-15	-18	-11		
	5	2000-2005	1222	-1	-4	3		
BBS UK	10	1995-2005	1485	-11	-15	-6		
	5	2000-2005	1527	-2	-5	2		
BBS England	10	1995-2005	1164	-15	-19	-12		
	5	2000-2005	1209	-1	-4	3		
BBS Scotland	10	1995-2005	189	-1	-15	12		
	5	2000-2005	173	2	-8	12		
BBS Wales	10	1995-2005	96	-1	-13	12		
	5	2000-2005	107	0	-9	8		
BBS N.Ireland	10	1995-2005	34	-23	-35	-8		

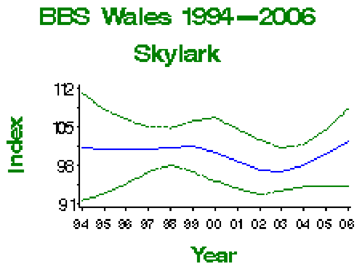
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





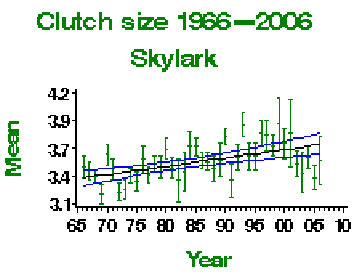


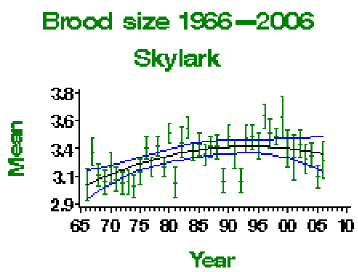


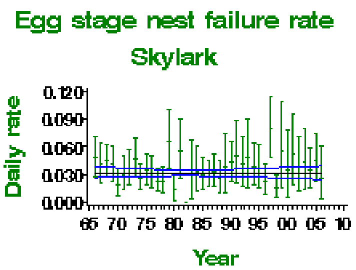
Productivity trends

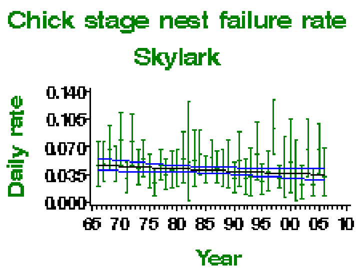
Table of productivity changes for Skylark

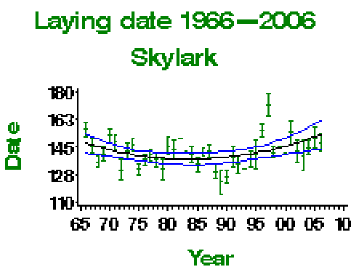
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	38	Linear increase	3.37 eggs	3.68 eggs	9.1%	
Brood size	37	1968-2005	68	Curvilinear	3.1 chicks	3.31 chicks	6.9%	
Daily failure rate (eggs)	37	1968-2005	48	None				
Daily failure rate (chicks)	37	1968-2005	56	None				
Laying date	37	1968-2005	20	Curvilinear	May 25	May 31	6 days	Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

SAND MARTIN
Riparia riparia

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (depleted)
UK: amber (European status)

Long-term trend

UK: fluctuating, with no long-term trend

UK population size

85,000–270,000 nests in 1990 (1988–91 Atlas: **APEP06**); 66,300–211,000 pairs in 2000 (updated using WBS trend: **BiE04**)

Status summary

This species is conspicuously difficult to monitor, because active and inactive nest holes are difficult to distinguish, and because whole colonies frequently disperse or shift to new locations as suitable sand cliffs are created and destroyed. WBS counts, which are of apparently occupied nest holes, suggest a stable or shallowly increasing population, with wide fluctuations, although the ongoing decrease since the late 1990s has been steep enough to raise BTO alerts. BBS counts, which are of birds seen, show clearly that large year-to-year changes occur, but do not yet reveal a clear long-term trend. Nest record samples are small, but indicate that nest success has improved enormously since the 1960s, and that clutch size has also increased. Rainfall in the species' trans-Saharan wintering grounds prior to the birds' arrival has long been known to promote annual survival and thus abundance in the following breeding season (**Szép 1995**). More recently, it has been discovered that summer rainfall on the breeding grounds has a negative influence on survival rates through the following winter (**Cowley & Siriwardena 2005**).

Population changes

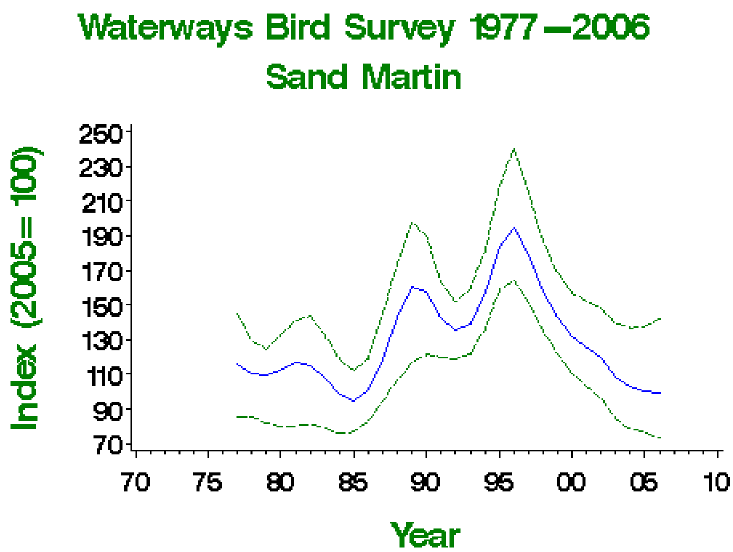
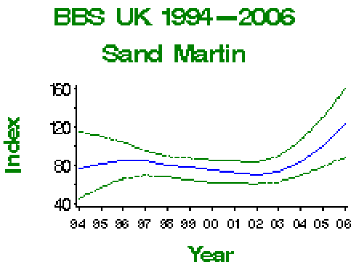
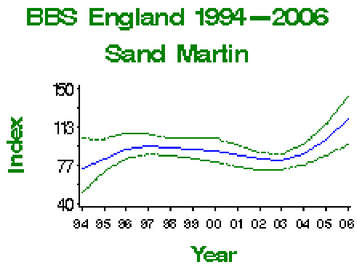


Table of population changes for Sand Martin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	27	1978-2005	19	-9	-40	71		Small sample
	25	1980-2005	19	-11	-43	68		Small sample
	10	1995-2005	23	-46	-61	-18	>25	
	5	2000-2005	18	-24	-36	1		Small sample
BBS UK	10	1995-2005	109	23	-34	135		
	5	2000-2005	115	34	2	98		
BBS England	10	1995-2005	72	20	-17	61		
	5	2000-2005	76	10	-12	45		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

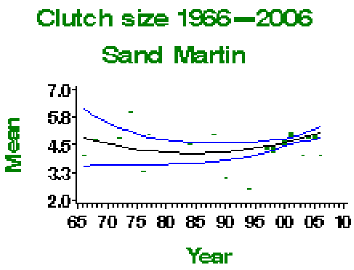


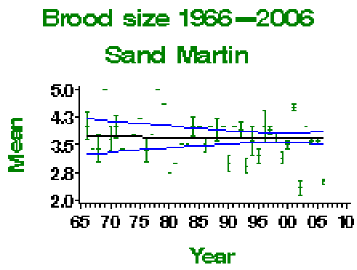


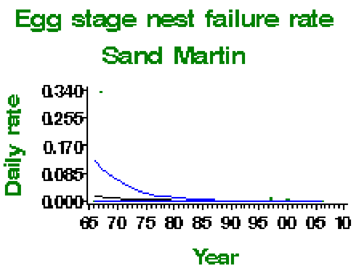
Productivity trends

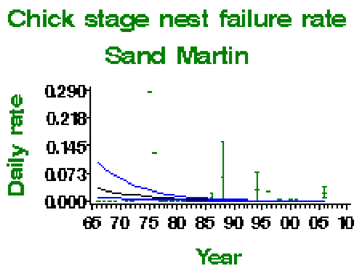
Table of productivity changes for Sand Martin

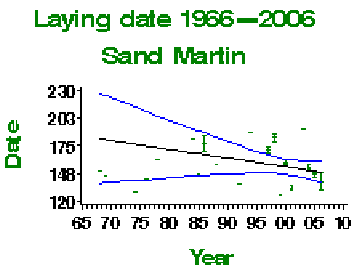
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	32	Curvilinear	4.68 eggs	4.98 eggs	6.4%	
Brood size	37	1968-2005	31	None				
Daily failure rate (eggs)	37	1968-2005	22	Linear decline	1.27% nests/day	0.01% nests/day	-99.2%	Small sample
Daily failure rate (chicks)	37	1968-2005	31	Linear decline	2.6% nests/day	0.04% nests/day	-98.5%	
Laying date	37	1968-2005	31	None				











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

SWALLOW
Hirundo rustica

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (depleted)
UK: amber (European status)

Long-term trend

UK, England: fluctuating, with no long-term trend

UK population size

726,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Swallow was originally amber-listed partly on the strength of a perceived CBC decline, but continues to qualify through its widespread decline across the European continent (**BirdLife International 2004**). Modern methods of estimating population change from CBC give evidence of fluctuations but not for long-term decline in the UK (**Robinson *et al.* 2003**). Detailed analysis has shown that the population fluctuations are most strongly related to losses on their wintering grounds (**Baillie & Peach 1992**). More recently, population change has been shown to be correlated with rainfall in the western Sahel prior to the birds' spring passage through West Africa, but with neither cattle numbers nor nest-site availability in the UK (**Robinson *et al.* 2003**). It is likely that, in eastern parts of the UK, the loss of livestock farming and grazed grassland, together with arable intensification, has caused the Swallow population to decline, while an increase in the area of pasture in the west and north has promoted a population increase which has more than compensated for declines elsewhere (**Evans & Robinson 2004**). A link between regional changes in the availability of preferred feeding habitats and the regional patterns of UK population change again suggests that habitat change on the breeding grounds may explain population trend, at least partly (**Henderson *et al.* 2007**). Recent BBS data suggest increases throughout the UK since 1994. Brood sizes increased up to the late 1980s, and may now be falling again. The trend towards earlier laying can be partly explained by recent climate change (**Crick & Sparks 1999**).

Population changes

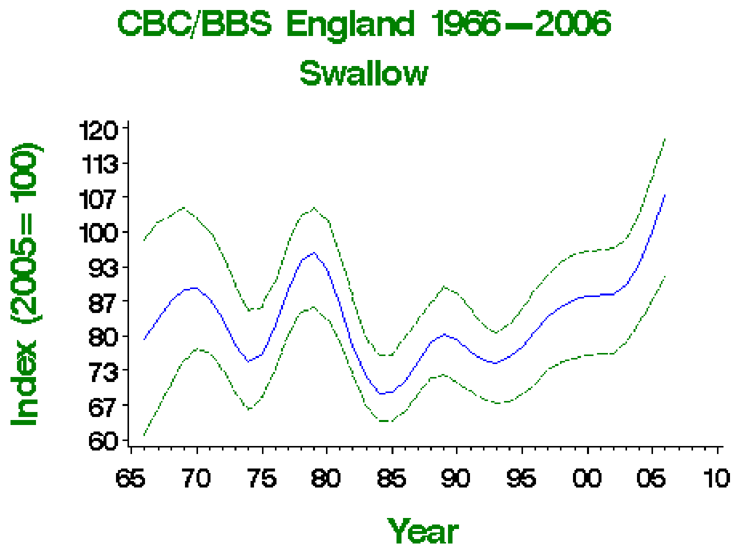
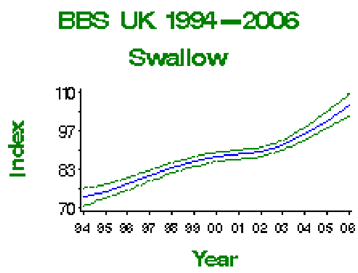


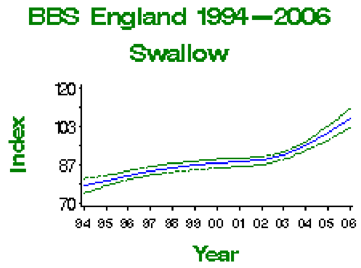
Table of population changes for Swallow

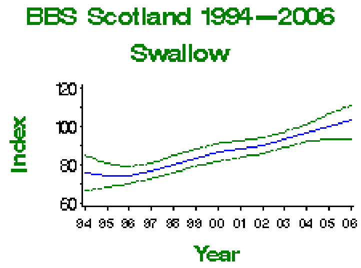
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	400	20	-13	68		
	25	1980-2005	576	8	-14	31		
	10	1995-2005	1260	28	22	35		
	5	2000-2005	1330	14	9	21		
BBS UK	10	1995-2005	1604	32	24	41		
	5	2000-2005	1750	14	9	20		
BBS England	10	1995-2005	1224	26	19	33		
	5	2000-2005	1321	15	9	21		
BBS Scotland	10	1995-2005	144	35	18	58		
	5	2000-2005	148	16	5	30		
BBS Wales	10	1995-2005	153	48	23	78		
	5	2000-2005	180	15	1	31		
BBS N.Ireland	10	1995-2005	73	39	8	77		

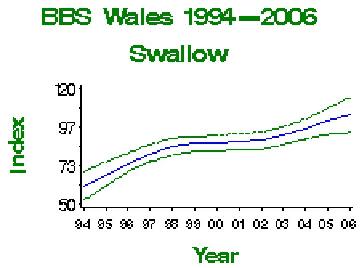
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

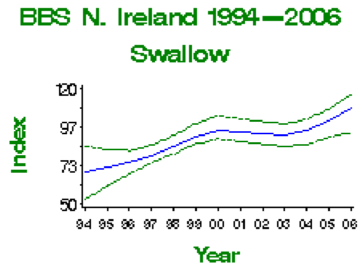
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







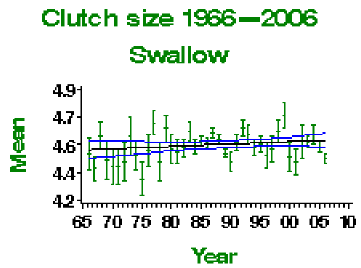


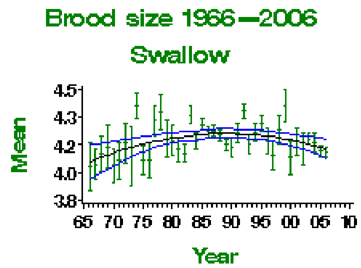


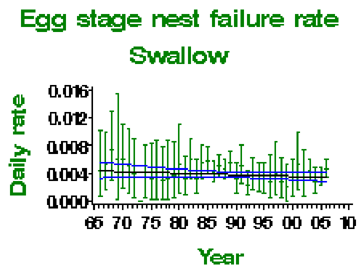
Productivity trends

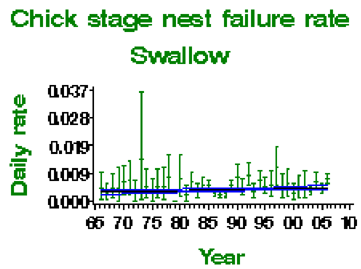
Table of productivity changes for Swallow

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	201	None				
Brood size	37	1968-2005	338	Curvilinear	4.07 chicks	4.14 chicks	1.7%	
Daily failure rate (eggs)	37	1968-2005	254	None				
Daily failure rate (chicks)	37	1968-2005	224	None				
Laying date	37	1968-2005	97	Curvilinear	Jun 20	Jun 13	-7 days	



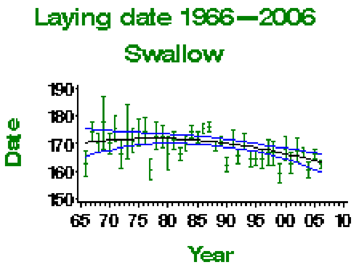






Insufficient data on CES

available for this species



Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

HOUSE MARTIN
Delichon urbicum

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: amber (25–50% population decline)

Long-term trend

UK: probable decline

UK population size

273,000–535,000 pairs in 2000 (1988–91 Atlas estimate updated using CBC trend: **BiE04**, **APEP06**)

Status summary

The House Martin's loosely colonial habits and strong association with human settlements mean that it is extraordinarily difficult to monitor. Anecdotal evidence of decline is often unreliable, because demise of a colony may be balanced by single nests or small groups becoming established elsewhere. For these reasons, study areas should be large, covered thoroughly, and ideally randomly selected. The available long-term data suggest a rapid decline, although BBS shows significant increase in recent years. The species has recently been moved from the green to the amber list, because of moderate decline in the CBC trend for 1974–99, and is newly listed as of European concern following declines elsewhere in Europe (**BirdLife International 2004**). The mean change across all European countries during the 1990s was a significant decline (**Sanderson *et al.* 2006**).

Population changes

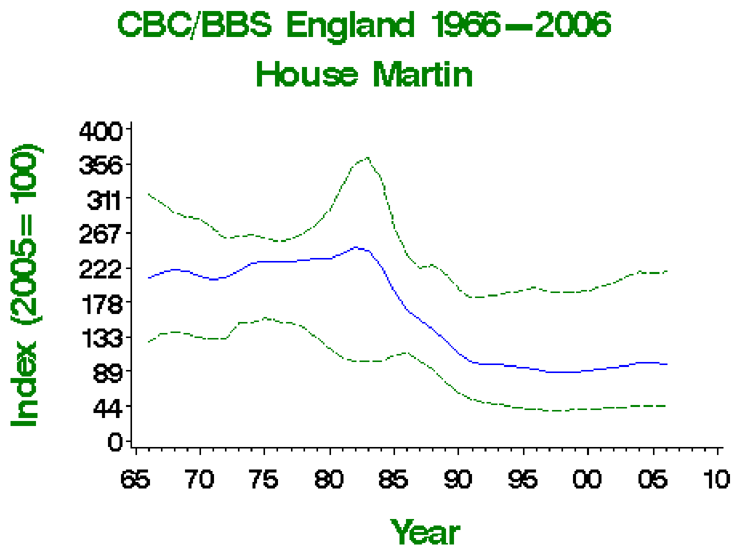
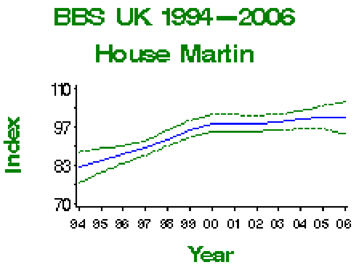
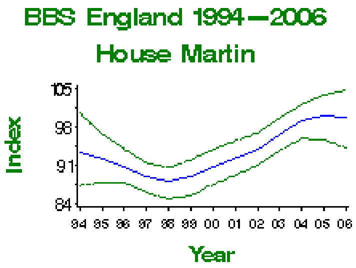


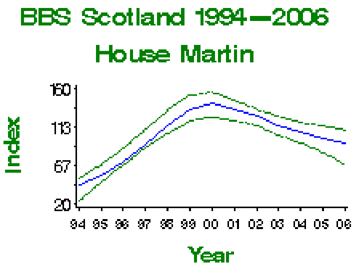
Table of population changes for House Martin

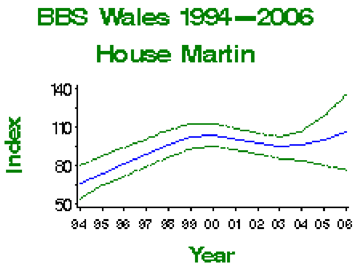
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	199	-53	-86	72		Small CBC sample
	25	1980-2005	292	-57	-86	97		Small CBC sample
	10	1995-2005	659	7	-4	20		
	5	2000-2005	710	11	3	19		
BBS UK	10	1995-2005	824	18	7	28		
	5	2000-2005	908	3	-5	10		
BBS England	10	1995-2005	649	8	-1	18		
	5	2000-2005	707	10	3	18		
BBS Scotland	10	1995-2005	50	81	25	128		
	5	2000-2005	55	-29	-48	-6	>25	
BBS Wales	10	1995-2005	83	35	-9	92		
	5	2000-2005	94	-3	-30	27		
BBS N.Ireland	10	1995-2005	34	79	16	156		
	5	2000-2005	45	13	-9	43		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB









Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

TREE PIPIT
Anthus trivialis

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: amber (>50% population decline but data possibly unrepresentative)
UK Biodiversity Action Plan: in preparation

Long-term trend

England: rapid decline

UK population size

74,400 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

The species was moved from the green to the amber list in 2002, on the strength of its population decline. Tree Pipits occur in greatest abundance in Wales, northern England and Scotland, and thus the marked CBC decline between the two atlas periods may reflect the range contraction that occurred then in central and southeast England (Gibbons *et al.* 1993). Since 1994, CBC/BBS data have shown further severe decrease, especially in England. The causes of the population decline are unclear, but may be linked to changing forest structure, as new plantations mature, and reduced management of lowland woods (Fuller *et al.* 2005). Improvements have occurred in breeding performance, with an increase in brood size and a substantial decline in failure rates over the 17-day egg stage (13 days incubation and 4 days laying). Although the species has no European conservation listing, numbers have fallen widely in Europe since 1980 (PECBM 2006), and the mean change across all European countries during the 1990s was a significant decline (Sanderson *et al.* 2006).

Population changes

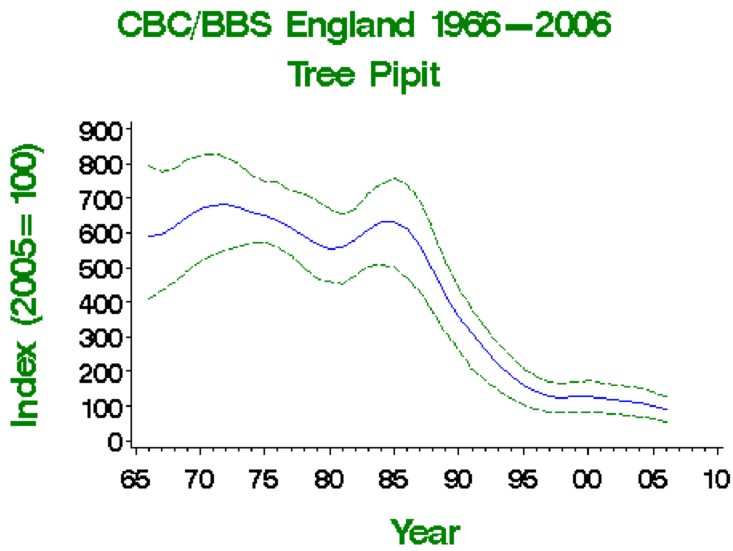
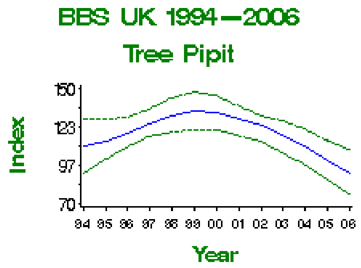
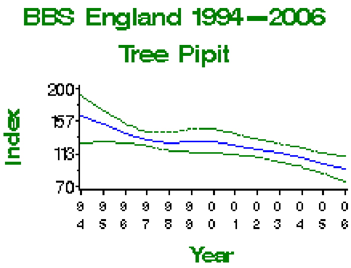


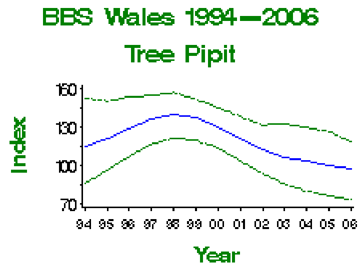
Table of population changes for Tree Pipit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	43	-83	-91	-69	>50	
	25	1980-2005	47	-82	-90	-71	>50	
	10	1995-2005	73	-38	-54	-18	>25	
	5	2000-2005	66	-23	-38	-2		
BBS UK	10	1995-2005	121	-12	-31	12		
	5	2000-2005	118	-25	-41	-7	>25	
BBS England	10	1995-2005	65	-34	-50	-11	>25	
	5	2000-2005	64	-22	-38	-2		
BBS Wales	10	1995-2005	31	-17	-50	30		
	5	2000-2005	32	-23	-45	5		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



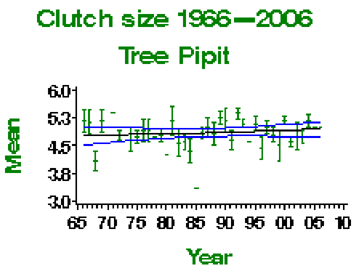


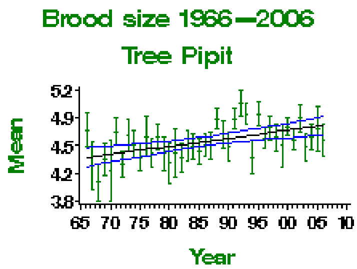


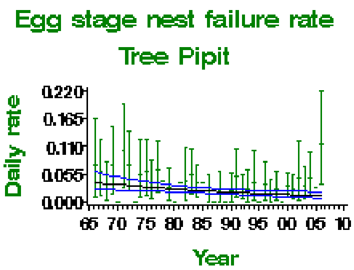
Productivity trends

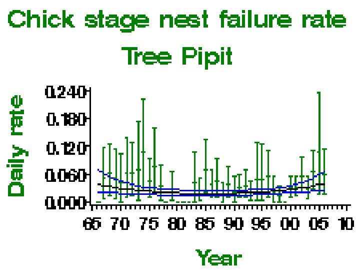
Table of productivity changes for Tree Pipit

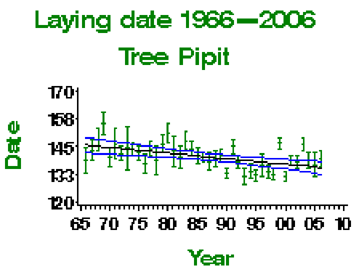
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	10	None				Small sample
Brood size	37	1968-2005	28	Linear increase	4.37 chicks	4.74 chicks	8.4%	Small sample
Daily failure rate (eggs)	37	1968-2005	12	Linear decline	3.68% nests/day	1.31% nests/day	-64.4%	Small sample
Daily failure rate (chicks)	37	1968-2005	19	Curvilinear	3.36% nests/day	3.74% nests/day	11.3%	Small sample
Laying date	37	1968-2005	18	Linear decline	May 25	May 16	-9 days	Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

MEADOW PIPIT
Anthus pratensis

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: amber (25–50% population decline)

Long-term trend

England: moderate decline

UK population size

1,680,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

The CBC/BBS trend has been downward since the mid 1970s, accompanied by a range contraction from lowland England (**Gibbons *et al.* 1993**). Meadow Pipits are partial migrants and conditions on the Iberian wintering grounds have been linked to the decline, as have losses of marginal land from parts of the breeding range (**Gibbons *et al.* 1993**). Moorland, the key Meadow Pipit habitat, was not covered well by the CBC, leading to some doubt about the significance of the early results for this species, but BBS now provides more representative monitoring. With the species' move from the green to the amber list, however, its decrease has been recognised as worthy of conservation concern. Nest failure rates at the 12-day nestling stage have declined markedly, which may reflect the loss of birds from suboptimal habitat. A trend towards earlier laying is probably related to climate change (**Crick & Sparks 1999**).

Population changes

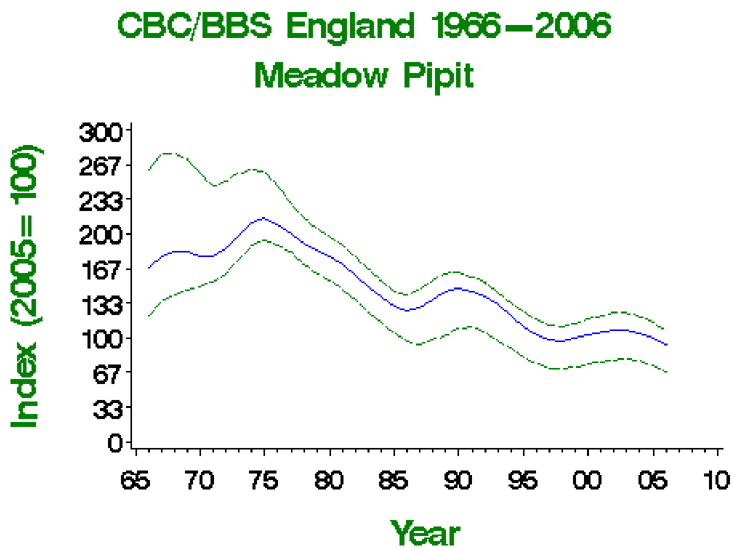
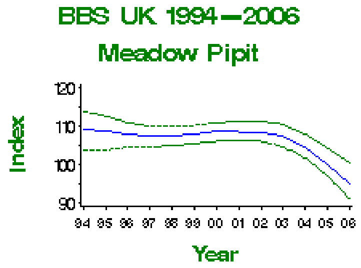
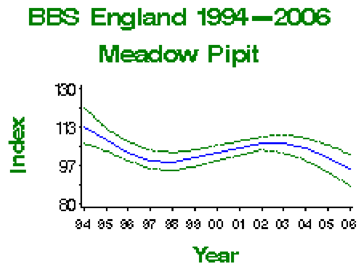


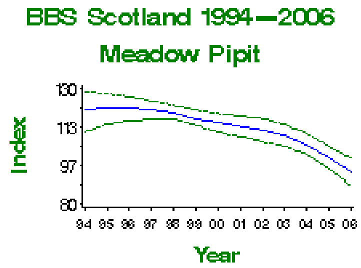
Table of population changes for Meadow Pipit

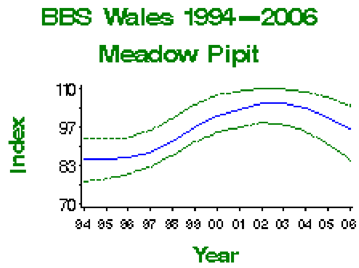
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	126	-44	-74	-13	>25	
	25	1980-2005	172	-44	-62	-32	>25	
	10	1995-2005	357	-10	-21	0		
	5	2000-2005	373	-2	-13	11		
BBS UK	10	1995-2005	680	-8	-14	0		
	5	2000-2005	714	-8	-12	-2		
BBS England	10	1995-2005	343	-7	-17	3		
	5	2000-2005	370	-2	-11	6		
BBS Scotland	10	1995-2005	194	-18	-25	-7		
	5	2000-2005	175	-13	-19	-8		
BBS Wales	10	1995-2005	82	17	-1	35		
	5	2000-2005	95	-1	-15	14		
BBS N.Ireland	10	1995-2005	59	52	19	108		
	5	2000-2005	71	8	-11	19		

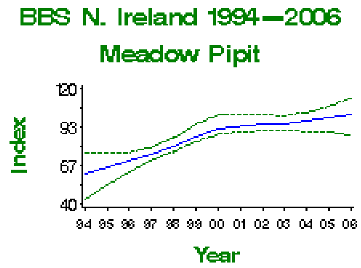
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







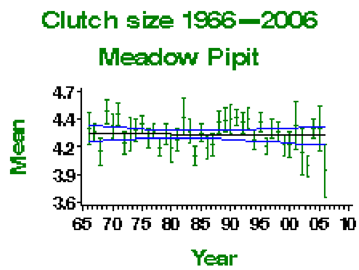


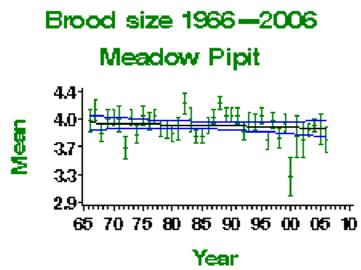


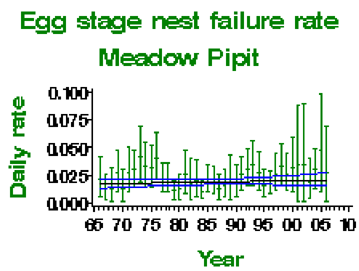
Productivity trends

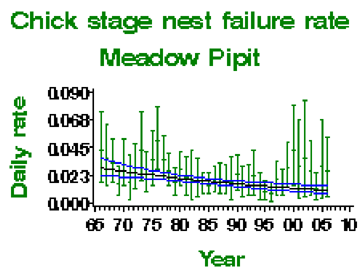
Table of productivity changes for Meadow Pipit

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	36	None				
Brood size	37	1968-2005	68	None				
Daily failure rate (eggs)	37	1968-2005	46	None				
Daily failure rate (chicks)	37	1968-2005	61	Linear decline	2.73% nests/day	1.08% nests/day	-60.4%	
Laying date	37	1968-2005	38	Linear decline	May 17	May 12	-5 days	

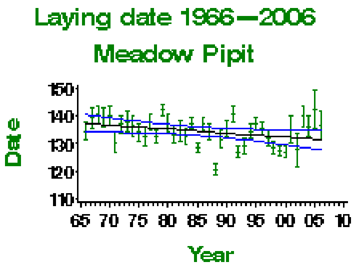








Insufficient data on CES available for this species



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

YELLOW WAGTAIL
Motacilla flava

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: amber (25–50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

UK, England: rapid decline

UK population size

11,500–26,500 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS and WBS trends: **BiE04**, **APEP06**)

Status summary

Britain holds almost the entire population of the distinctive race *flavissima*, and so population changes in the UK are of special signficance. Yellow Wagtails have been in decline since the early 1980s, according to CBC/BBS and especially WBS, and have now been moved from the green to the amber list. Further losses since 1999 already suggest that red listing is appropriate. Monitoring samples along waterways may soon become too small to continue the annual index. **Gibbons *et al.* (1993)** identified a range contraction towards a core area in central England, concurrent with the early years of decline. Farmland drainage, the conversion of pasture to arable land, the change from spring to winter cereals, and the loss of insects associated with cattle have been cited as possible causes (**Gibbons *et al.* 1993**, **Nelson *et al.* 2003**). Although nest record sample sizes are small, there has been a notable reduction in brood size since the mid 1960s.

Population changes

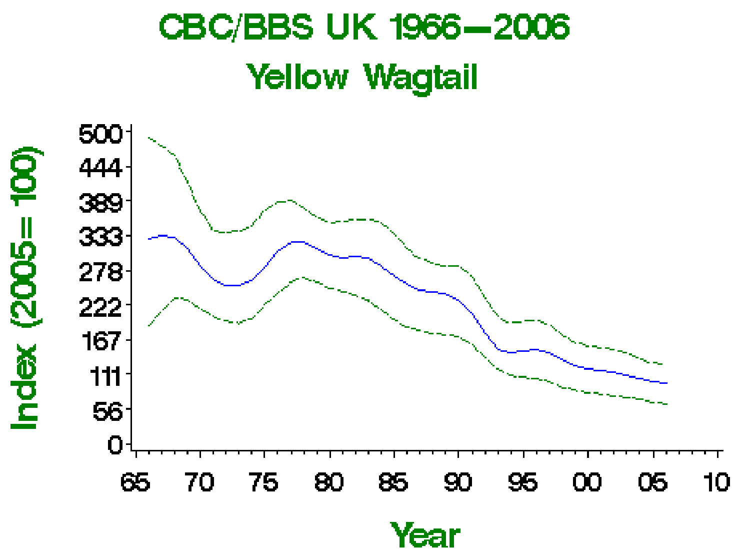
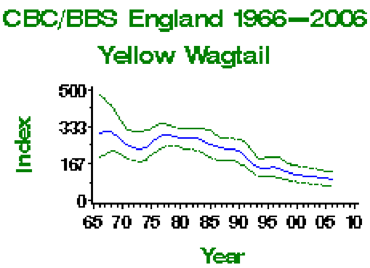
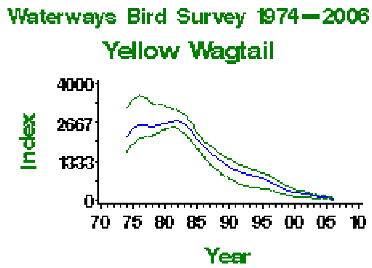


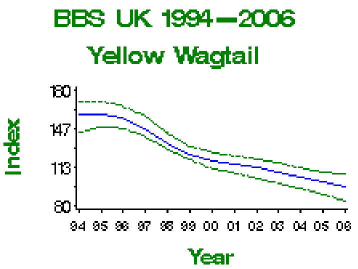
Table of population changes for Yellow Wagtail

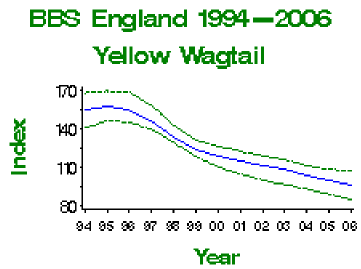
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	68	-70	-86	-39	>50	
	25	1980-2005	86	-67	-81	-47	>50	
	10	1995-2005	164	-33	-44	-23	>25	
	5	2000-2005	147	-17	-26	-7		
CBC/BBS England	38	1967-2005	66	-68	-84	-40	>50	
	25	1980-2005	84	-65	-79	-44	>50	
	10	1995-2005	161	-32	-45	-19	>25	
	5	2000-2005	143	-16	-26	-3		
WBS waterways	30	1975-2005	19	-96	-99	-93	>50	Small sample
	25	1980-2005	17	-96	-99	-94	>50	Small sample
	10	1995-2005	10	-87	-92	-81	>50	Small sample
BBS UK	10	1995-2005	155	-37	-48	-26	>25	
	5	2000-2005	145	-16	-26	-6		
BBS England	10	1995-2005	152	-36	-49	-25	>25	
	5	2000-2005	141	-15	-27	-6		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







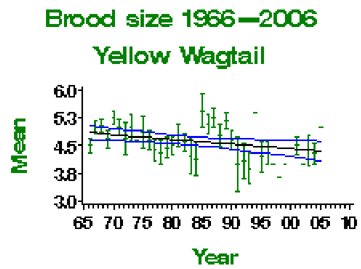


Productivity trends

Table of productivity changes for Yellow Wagtail

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Brood size	37	1968-2005	13	Linear decline	4.83 chicks	4.35 chicks	-9.9%	Small sample

Insufficient data on clutch size available for this species



Insufficient data on nest failure available for this species

Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

GREY WAGTAIL
Motacilla cinerea

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: amber (25–50% population decline)

Long-term trend

UK: probable shallow decline

UK population size

38,400–46,200 pairs in 2000 (1988–91 Atlas estimate updated using CBC and WBS trends: **BiE04**, **APEP06**)

Status summary

Grey Wagtails occur at highest densities along fast-flowing upland streams. WBS shows a fluctuating population size along waterways, with a fall during the late 1970s and early 1980s from an initial high point in 1974. The species has recently been moved from the green to the amber list, because of a 41% decline recorded between 1975 and 1999, but the current figures show that the population has entered a new phase of increase. The trends for Grey Wagtail are very similar to those for **Pied Wagtail**, suggesting that similar factors may be affecting these two species. Clutch and brood size of Grey Wagtails rose as the population fell, and are now getting smaller again. Nest failure rates have dropped substantially.

Population changes

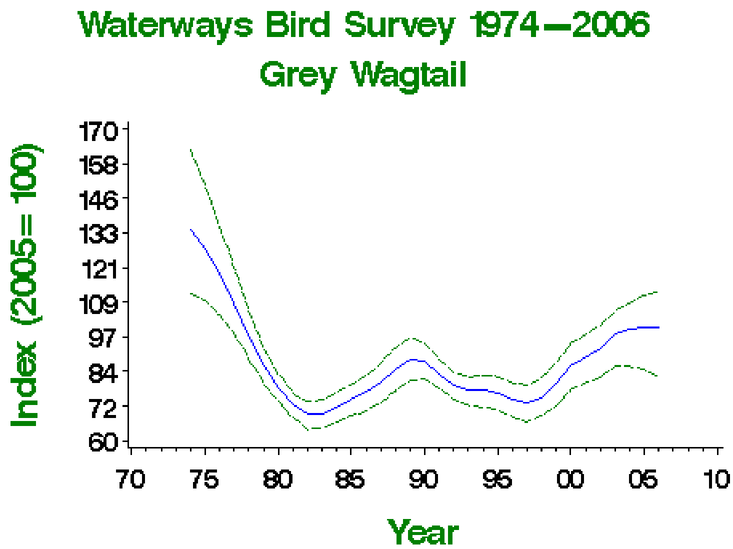
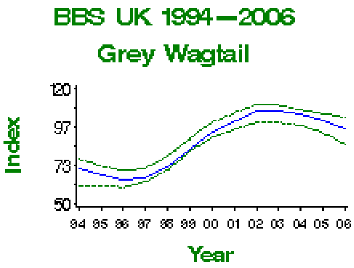
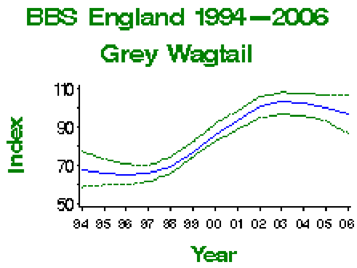


Table of population changes for Grey Wagtail

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	30	1975-2005	55	-22	-44	3		
	25	1980-2005	56	28	0	47		
	10	1995-2005	55	30	8	48		
	5	2000-2005	47	16	0	28		
BBS UK	10	1995-2005	185	49	28	72		
	5	2000-2005	224	7	-6	16		
BBS England	10	1995-2005	119	51	24	82		
	5	2000-2005	146	16	2	29		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

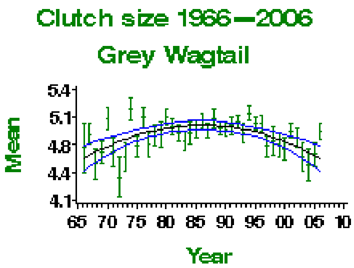


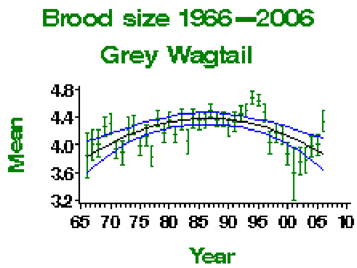


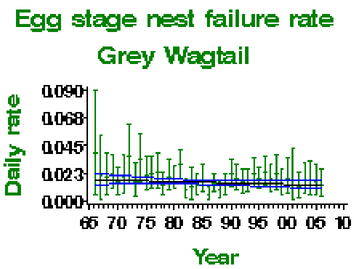
Productivity trends

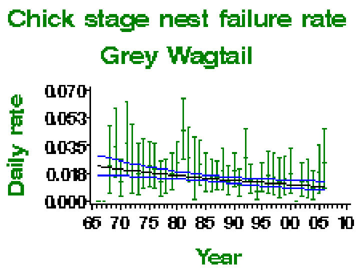
Table of productivity changes for Grey Wagtail

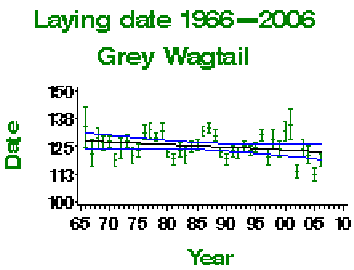
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	38	Curvilinear	4.66 eggs	4.63 eggs	-0.7%	
Brood size	37	1968-2005	80	Curvilinear	3.93 chicks	3.93 chicks	-0.1%	
Daily failure rate (eggs)	37	1968-2005	59	None				
Daily failure rate (chicks)	37	1968-2005	58	Linear decline	2.11% nests/day	0.95% nests/day	-55%	
Laying date	37	1968-2005	60	None				











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

PIED WAGTAIL
Motacilla alba

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: uncertain

UK population size

272,000–352,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS and WBS trends: **BiE04**, **APEP06**)

Status summary

Britain and Ireland together hold almost the entire population of the distinctive dark-backed race *yarrellii*, and for this reason population changes in the UK are of special significance. The CBC shows that a strong increase occurred up to the mid 1970s, such that populations have shown moderate increase overall since 1966. Since 1974, however, the results of monitoring are somewhat conflicting: CBC/BBS and WBS trends fluctuate in parallel but, whereas little overall change is evident in the CBC/BBS index, WBS has shown a moderate decline, perhaps suggesting the influence of factors specific to linear waterways. The long-term trend in abundance is similar to those shown by **Wren** and **Long-tailed Tit**, two other resident insectivores (**Siriwardena *et al.* 1998a**). Average clutch and brood sizes have declined a little, but this has been counteracted by a fall in nest failure rates at the egg stage.

Population changes

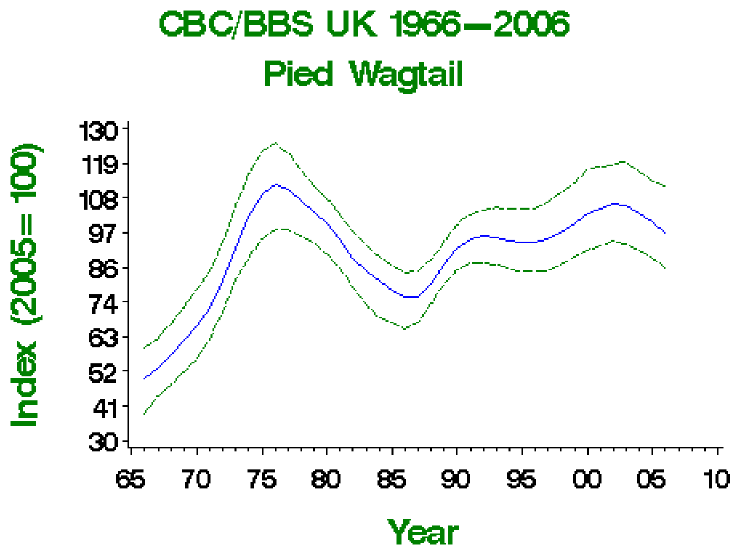
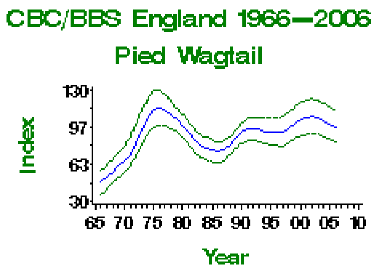


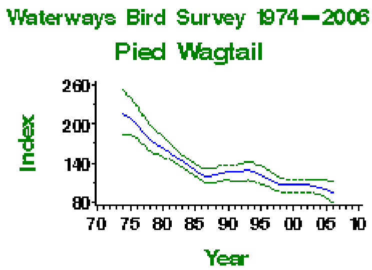
Table of population changes for Pied Wagtail

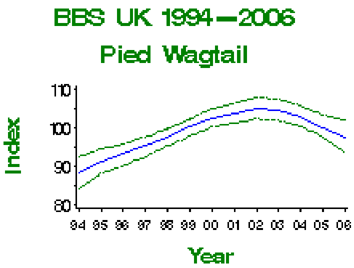
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	380	87	38	172		
	25	1980-2005	532	0	-20	29		
	10	1995-2005	1142	7	-1	13		
	5	2000-2005	1224	-3	-8	1		
CBC/BBS England	38	1967-2005	293	92	40	174		
	25	1980-2005	406	1	-22	33		
	10	1995-2005	868	9	3	15		
	5	2000-2005	929	-3	-7	1		
WBS waterways	30	1975-2005	64	-52	-63	-40	>50	
	25	1980-2005	65	-39	-52	-23	>25	
	10	1995-2005	62	-19	-30	-9		
	5	2000-2005	52	-6	-17	4		
BBS UK	10	1995-2005	1100	10	3	19		
	5	2000-2005	1214	-2	-7	3		
BBS England	10	1995-2005	832	12	5	18		
	5	2000-2005	920	-3	-7	1		

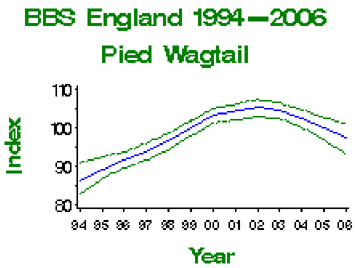
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales	10	1995-2005	107	15	-3	34		
	5	2000-2005	126	11	-1	25		
BBS N.Ireland	10	1995-2005	36	28	.	.		
	5	2000-2005	47	5	.	.		

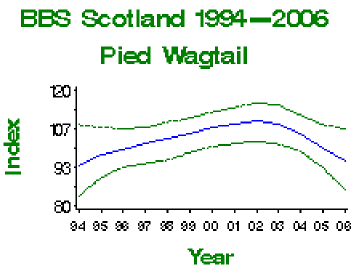
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

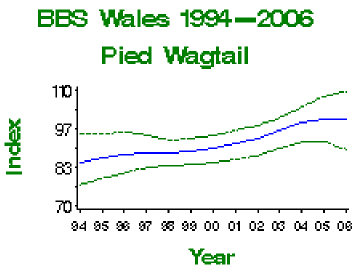












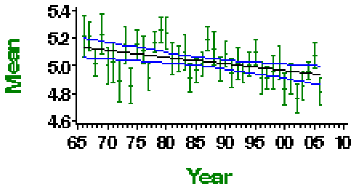
Productivity trends

Table of productivity changes for Pied Wagtail

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	59	Linear decline	5.12 eggs	4.93 eggs	-3.6%	
Brood size	37	1968-2005	112	Linear decline	4.54 chicks	4.33 chicks	-4.6%	
Daily failure rate (eggs)	37	1968-2005	82	Curvilinear	1.46% nests/day	0.6% nests/day	-58.9%	
Daily failure rate (chicks)	37	1968-2005	90	Linear decline	1.28% nests/day	0.84% nests/day	-34.4%	
Laying date	37	1968-2005	78	None				

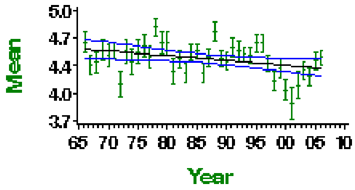
Clutch size 1966—2006

Pied Wagtail



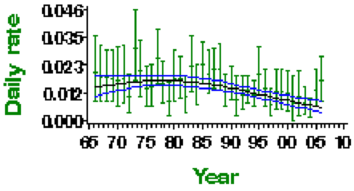
Brood size 1966—2006

Pied Wagtail



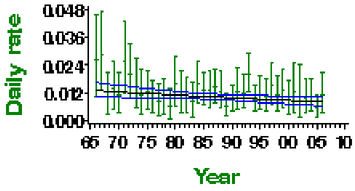
Egg stage nest failure rate

Pied Wagtail



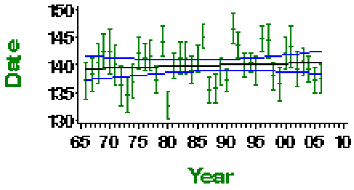
Chick stage nest failure rate

Pied Wagtail



Laying date 1966—2006

Pied Wagtail



Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

DIPPER
Cinclus cinclus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: fluctuating, with no long-term trend

UK population size

6,800–20,000 pairs in 2000 (1988–91 Atlas estimate updated using WBS trend: BiE04, APEP06)

Status summary

The WBS trend shows that Dipper populations have fluctuated over the last thirty years, but shown little overall trend. The species is a good indicator of acidity and other water pollution (Ormerod & Tyler 1989, 1990), so warrants careful monitoring. Breeding performance has improved strongly over time, and laying dates have become earlier, perhaps because of climate change (Crick & Sparks 1999). Broods now average larger, and there has been substantial reduction in failure rates of nests at the egg stage.

Population changes

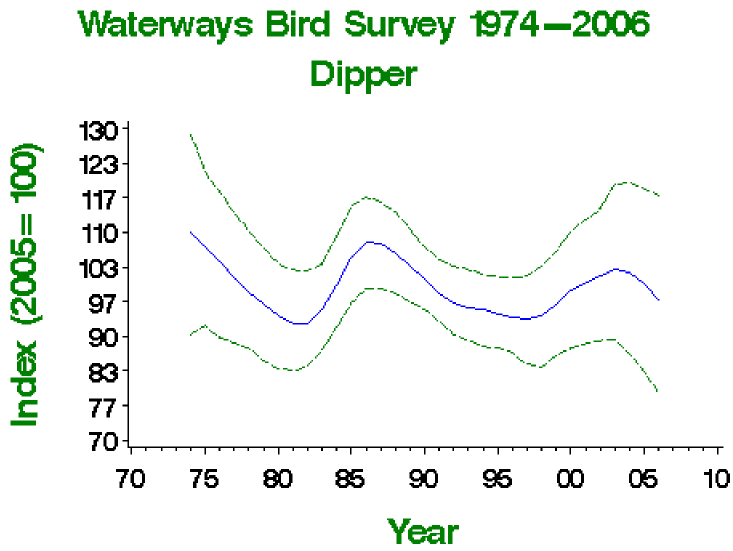
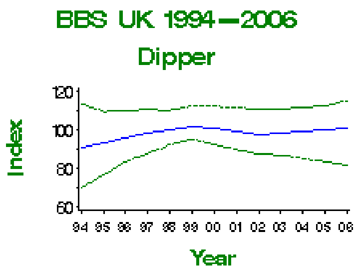


Table of population changes for Dipper

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	30	1975-2005	35	-7	-31	35		
	25	1980-2005	37	7	-20	42		
	10	1995-2005	32	6	-15	27		
	5	2000-2005	29	1	-12	16		
BBS UK	10	1995-2005	49	7	-24	48		
	5	2000-2005	50	-1	-21	17		

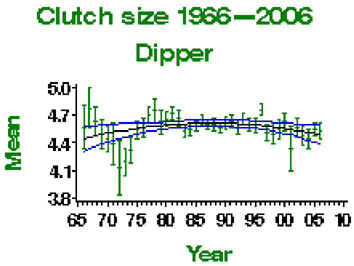
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

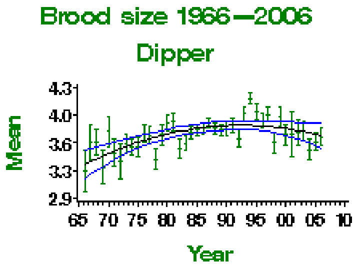


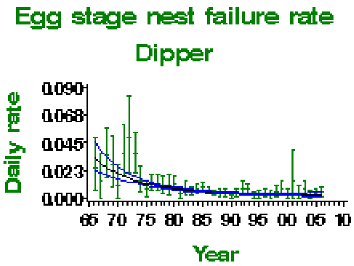
Productivity trends

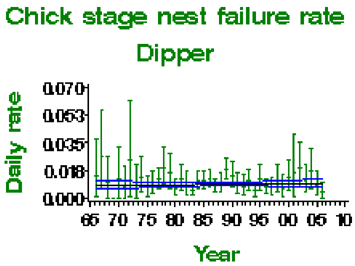
Table of productivity changes for Dipper

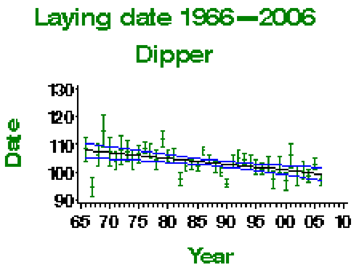
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	71	Curvilinear	4.48 eggs	4.5 eggs	0.6%	
Brood size	37	1968-2005	135	Curvilinear	3.39 chicks	3.71 chicks	9.2%	
Daily failure rate (eggs)	37	1968-2005	99	Curvilinear	2.54% nests/day	0.32% nests/day	-87.4%	
Daily failure rate (chicks)	37	1968-2005	77	None				
Laying date	37	1968-2005	59	Linear decline	Apr 17	Apr 10	-7 days	











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

WREN
Troglodytes troglodytes

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green
UK Biodiversity Action Plan (Fair Isle & St Kilda races only): in preparation

Long-term trend

UK, England: moderate increase

UK population size

8,512,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

The Wren's current UK population estimate is the highest for any species. Abundance can vary sharply from year to year in this species, as is evident from the unsmoothed trends presented here for BBS. Annual numbers are influenced by mortality rates that may be very high in severe winters and by the species' high breeding potential (**Peach *et al.* 1995b**). Wren numbers in the UK were greatly depleted by the cold winter of 1962/63 (**Marchant *et al.* 1990**). Following a rapid recovery up to the mid 1970s, abundance fell again in response to a further series of cold winters only to return to its previous high level. BBS results suggest that increase since 1994 has been much stronger in Scotland and Northern Ireland than in Wales and England. Brood size appears to have shown a small improvement in the long term, and fewer nests are now failing at the egg stage. Numbers have risen widely in Europe since 1980 (**PECBM 2006**).

Population changes

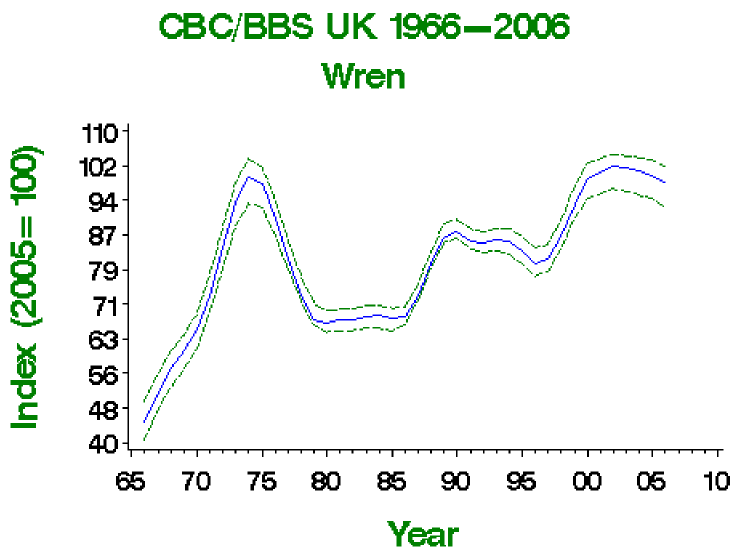
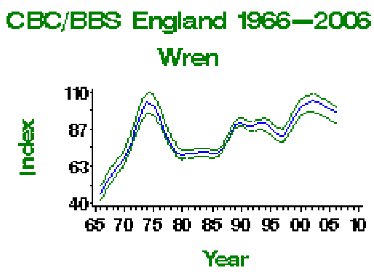


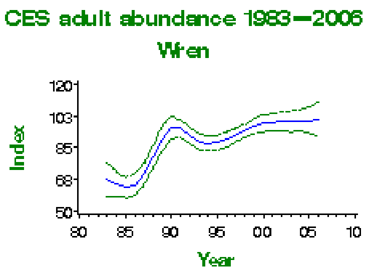
Table of population changes for Wren

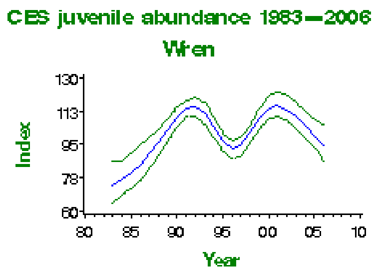
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	762	95	69	120		
	25	1980-2005	1048	50	35	59		
	10	1995-2005	2147	20	16	24		
	5	2000-2005	2256	1	-2	3		
CBC/BBS England	38	1967-2005	607	88	58	115		
	25	1980-2005	826	42	25	53		
	10	1995-2005	1674	14	9	17		
	5	2000-2005	1738	-1	-4	1		
CES adults	21	1984-2005	95	55	30	84		
	10	1995-2005	109	14	4	26		
	5	2000-2005	102	2	-6	11		
CES juveniles	21	1984-2005	94	31	6	59		
	10	1995-2005	108	3	-6	16		
	5	2000-2005	102	-12	-20	-4		
BBS UK	10	1995-2005	2023	21	16	24		

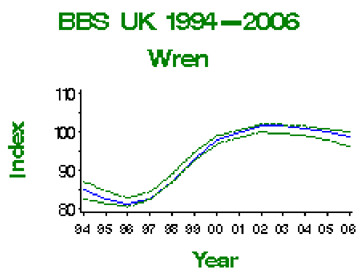
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS England								
	5	2000-2005	1710	1	-2	3		
BBS Scotland	10	1995-2005	188	62	41	81		
	5	2000-2005	191	9	0	18		
BBS Wales	10	1995-2005	179	17	3	24		
	5	2000-2005	214	1	-4	6		
BBS N.Ireland	10	1995-2005	79	54	20	91		
	5	2000-2005	97	-2	-10	7		

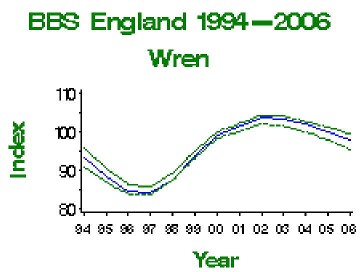
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

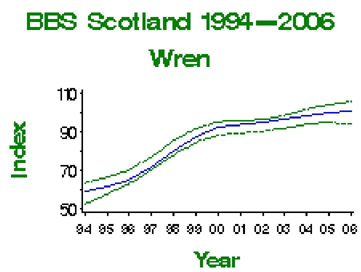


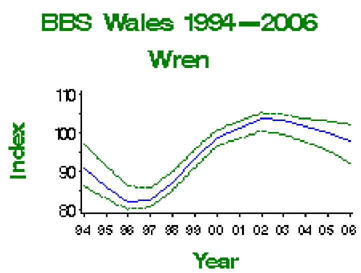


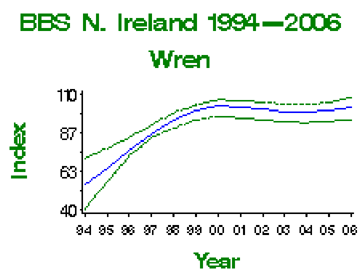










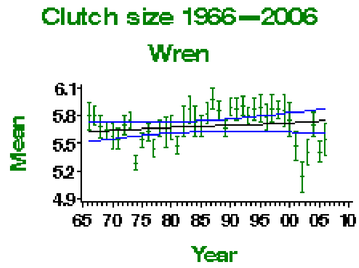


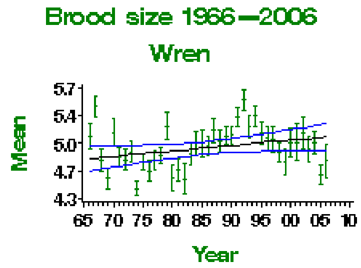
Productivity trends

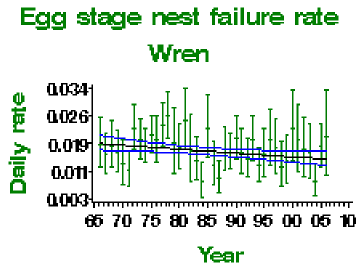
Table of productivity changes for Wren

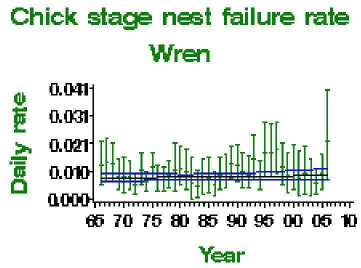
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	94	None				
Brood size	37	1968-	94	None				

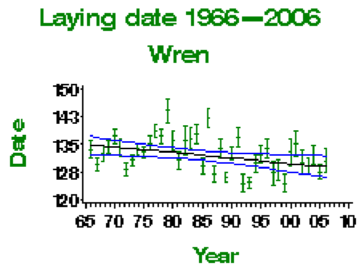
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Daily failure rate (eggs)								
Daily failure rate (chicks)								
		2005						
Laying date	37	1968-2005	87	Linear decline	May 14	May 9	-5 days	
Juvenile to Adult ratio (CES)	21	1984-2005	99	Smoothed trend	109 Index value	100 Index value	-8%	
Juvenile to Adult ratio (CES)	10	1995-2005	111	Smoothed trend	107 Index value	100 Index value	-7%	
Juvenile to Adult ratio (CES)	5	2000-2005	105	Smoothed trend	113 Index value	100 Index value	-12%	

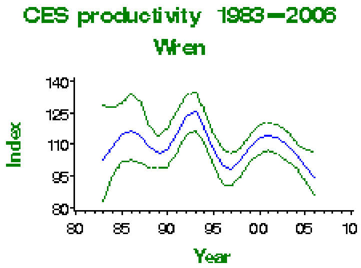












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

DUNNOCK
Prunella modularis

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: amber (25–50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

UK, England: moderate decline

UK population size

2,163,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Dunnock abundance fell substantially between the mid 1970s and mid 1980s, after a period of population stability. Some recovery has occurred throughout the UK since the late 1990s, but the species is still subject to amber listing. The cause of the decline remains unknown. In many lowland woods, canopy closure in the absence of forest management and increasing browsing pressure from deer are likely to have reduced the suitability of the habitat for this species (**Fuller *et al.* 2005**). There has been little variation in survival rates over time (**Siriwardena *et al.* 1998a**). Clutch and brood sizes increased as the population fell. Numbers have fallen widely in Europe since 1980 (**PECBM 2006**).

Population changes

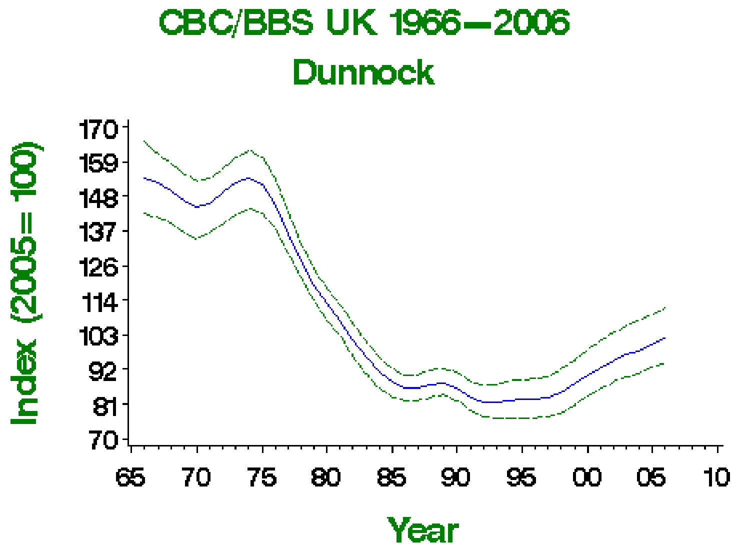
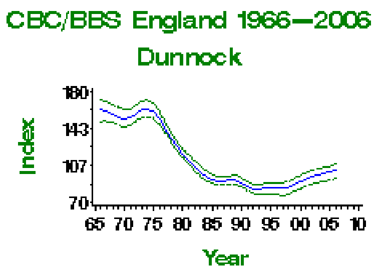


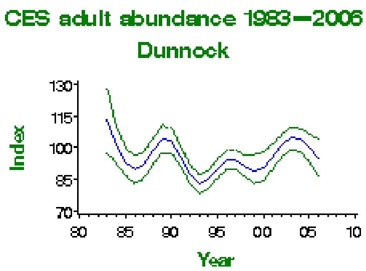
Table of population changes for Dunnock

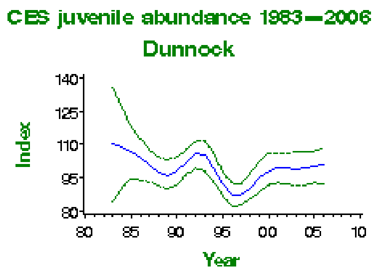
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	655	-34	-44	-21	>25	
	25	1980-2005	888	-12	-21	-1		
	10	1995-2005	1801	21	17	27		
	5	2000-2005	1896	10	7	14		
CBC/BBS England	38	1967-2005	542	-38	-46	-29	>25	
	25	1980-2005	731	-16	-25	-8		
	10	1995-2005	1470	18	13	22		
	5	2000-2005	1525	10	6	12		
CES adults	21	1984-2005	94	-1	-16	14		
	10	1995-2005	106	11	1	22		
	5	2000-2005	99	11	0	20		
CES juveniles	21	1984-2005	91	-8	-27	18		
	10	1995-2005	105	8	-1	18		
	5	2000-2005	99	2	-9	12		
BBS UK	10	1995-2005	1693	21	16	26		
	5	2000-2005	1868	11	8	14		
BBS England	10	1995-2005	1375	16	10	20		
	5	2000-2005	1500	11	7	13		

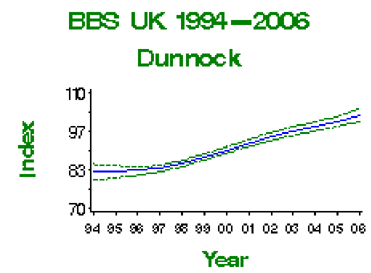
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales	10	1995-2005	136	40	20	61		
	5	2000-2005	162	21	12	32		
BBS N.Ireland	10	1995-2005	59	91	29	134		
	5	2000-2005	75	4	-4	22		

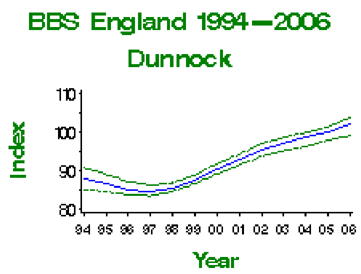
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

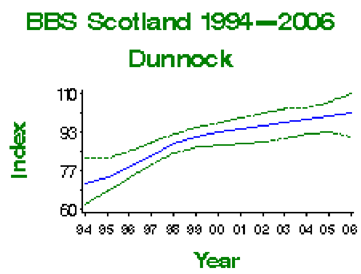


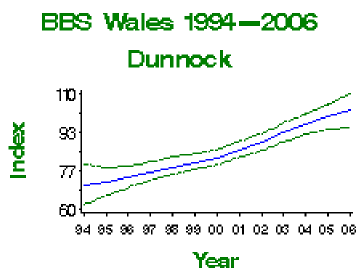


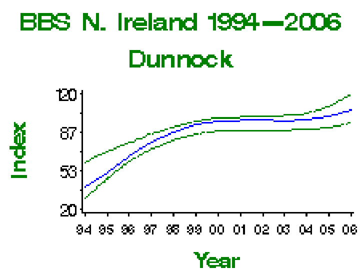










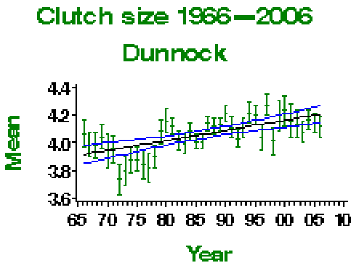


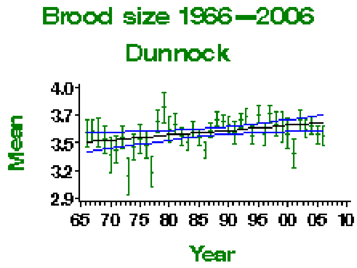
Productivity trends

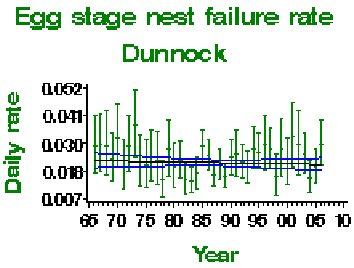
Table of productivity changes for Dunnock

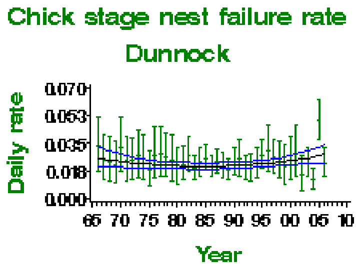
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	99	Linear increase	3.93 eggs	4.2 eggs	6.9%	
Brood size	37	1968-2005	105	Linear increase	3.47 chicks	3.65 chicks	5.1%	
Daily failure rate (eggs)	37	1968-2005	143	None				
Daily failure rate (chicks)	37	1968-	116	Curvilinear	2.47%	2.72%	10.1%	

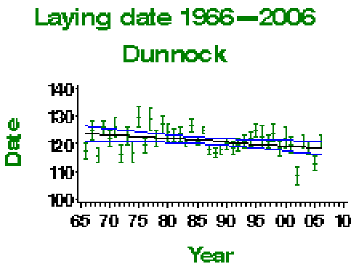
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
(CES)		2005		trend	value	value		
Juvenile to Adult ratio (CES)	10	1995-2005	111	Smoothed trend	101 Index value	100 Index value	-1%	
Juvenile to Adult ratio (CES)	5	2000-2005	103	Smoothed trend	118 Index value	100 Index value	-15%	

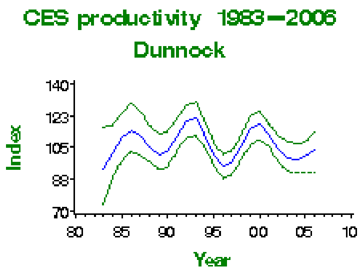












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

ROBIN
Erithacus rubecula

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK, England: shallow increase

UK population size

5,895,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

Robins have increased markedly since the mid 1980s, according to both CBC/BBS and CES results, having been set back earlier by a succession of cold winters. Significant improvements have occurred concurrently in breeding performance, as measured by nest record data, due to reductions in nest failure rates at both egg and chick stages, although CES productivity measures have declined. The CES and BBS graphs show that marked and significant annual fluctuations occur, perhaps in response to winter weather, although these are not evident in the smoothed trends presented from CBC/BBS data. Laying dates have advanced by almost a week since the 1960s. Numbers have risen widely in Europe since 1980 (PECBM 2006).

Population changes

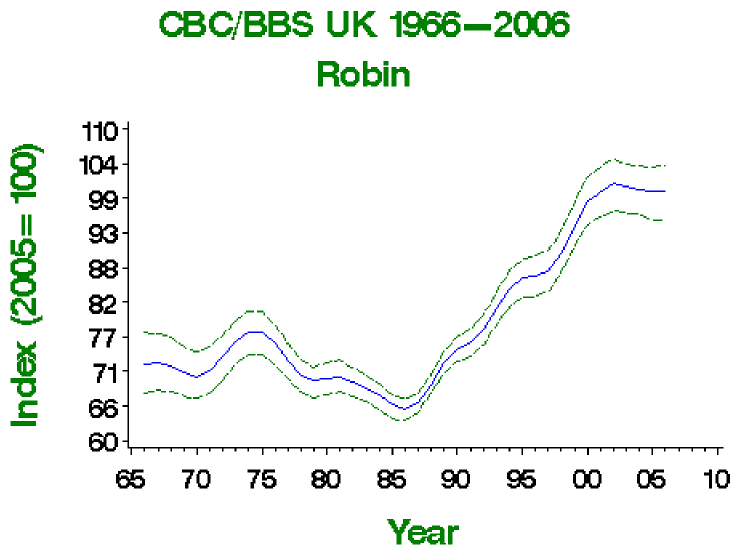
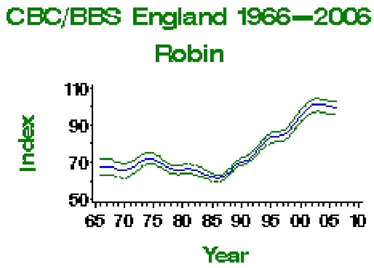


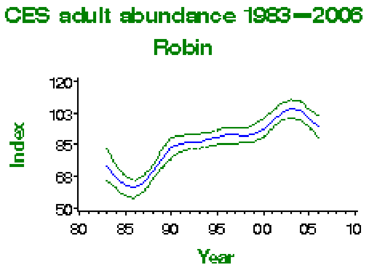
Table of population changes for Robin

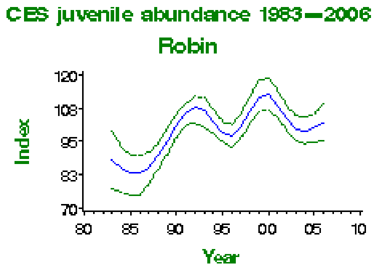
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	739	38	22	53		
	25	1980-2005	1014	43	32	54		
	10	1995-2005	2076	16	12	20		
	5	2000-2005	2172	2	-2	4		
CBC/BBS England	38	1967-2005	594	48	33	64		
	25	1980-2005	808	51	39	62		
	10	1995-2005	1638	20	16	23		
	5	2000-2005	1693	5	2	7		
CES adults	21	1984-2005	90	50	33	74		
	10	1995-2005	103	12	4	20		
	5	2000-2005	98	7	-2	16		
CES juveniles	21	1984-2005	94	17	3	40		
	10	1995-2005	108	2	-6	10		
	5	2000-2005	102	-11	-17	-5		
BBS UK	10	1995-2005	1953	15	11	19		
	5	2000-2005	2141	3	1	5		
BBS England	10	1995-2005	1531	19	15	22		
	5	2000-2005	1666	6	4	8		

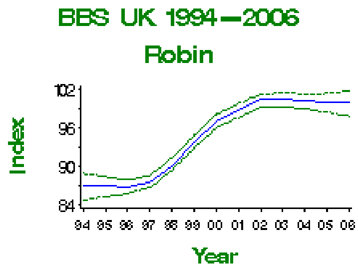
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales	10	1995-2005	176	13	4	22		
	5	2000-2005	210	3	-2	7		
BBS N.Ireland	10	1995-2005	75	4	-14	20		
	5	2000-2005	91	-14	-23	-5		

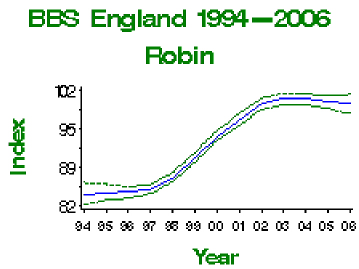
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

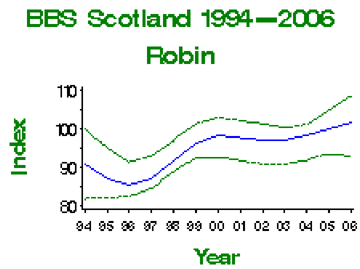


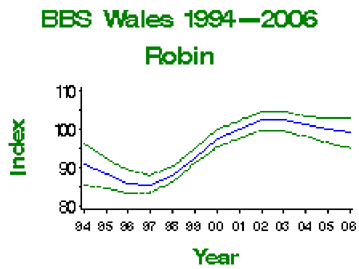


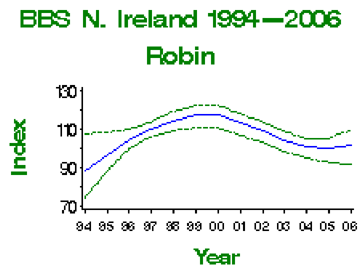










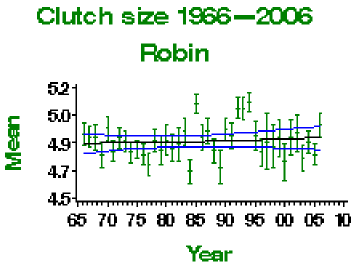


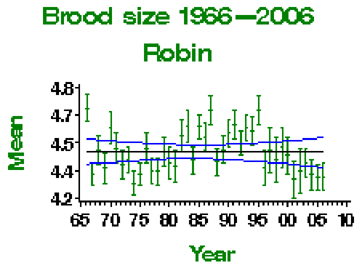
Productivity trends

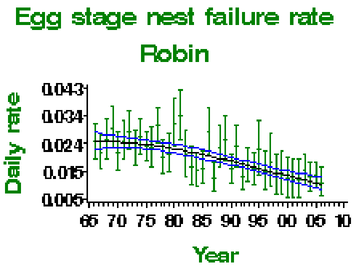
Table of productivity changes for Robin

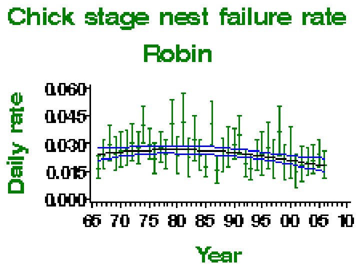
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	122	None				
Brood size	37	1968-2005	166	None				
Daily failure rate (eggs)	37	1968-2005	184	Curvilinear	2.47% nests/day	1.07% nests/day	-56.7%	
Daily failure rate (chicks)	37	1968-	158	Curvilinear	2.49%	1.85%	-25.7%	

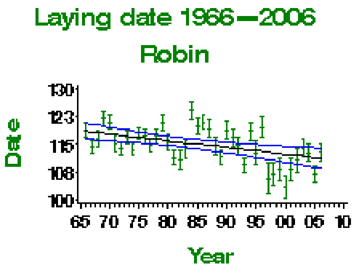
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
(CES)		2005		trend	value	value		
Juvenile to Adult ratio (CES)	10	1995-2005	112	Smoothed trend	115 Index value	100 Index value	-13%	
Juvenile to Adult ratio (CES)	5	2000-2005	105	Smoothed trend	126 Index value	100 Index value	-20%	

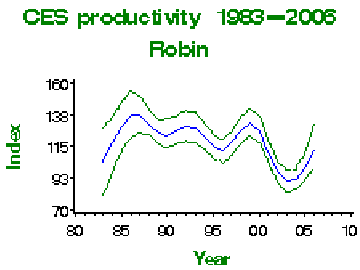












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

NIGHTINGALE
Luscinia megarhynchos

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: amber (25–50% distribution decline)

Long-term trend

UK: probable shallow decline

UK population size

6,700 (5,600–9,350) males in 1999 (**Wilson *et al.* 2002**: **BiE04**, **APEP06**)

Status summary

In 1999, the BTO organised a national survey of Nightingales, which showed a marked range contraction since the previous survey in 1980, but only an 8% overall population decline (**Wilson *et al.* 2002**; for more details **click here**). Nightingales are scarce birds, and CBC and BBS data are correspondingly meagre. Nevertheless, analysis of the available CBC data shows continuous decline (G.M. Siriwardena, unpubl.) and CES suggests a fluctuating pattern, or possible decline. **Fuller *et al.* (2005)** suggest the likely causes of Nightingale decline relate to pressures on migration and in winter, perhaps compounded by habitat loss and reduced habitat quality in Britain. CES indicates a sharp decline in productivity during the 1980s, perhaps because Nightingale nesting success may be adversely affected by cold and wet springs. Numbers have fallen widely in Europe since 1980 (**PECBM 2006**).

Population changes

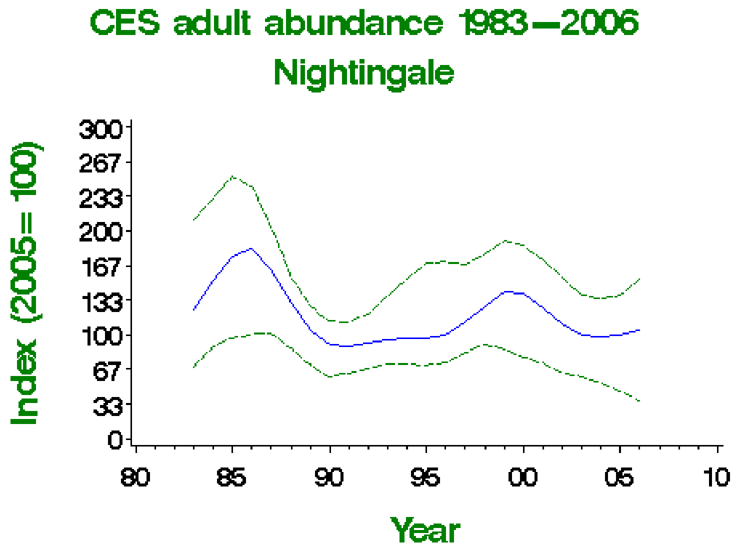
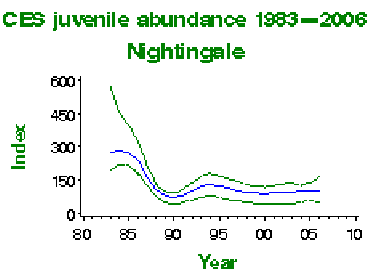


Table of population changes for Nightingale

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CES adults	10	1994-2004	10	8	-62	99		Small sample

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



Productivity trends

Table of productivity changes for Nightingale

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Juvenile to Adult ratio (CES)	21	1984-2005	11	Smoothed trend	1043 Index value	100 Index value	-90% >50	Small sample
Juvenile to Adult ratio (CES)	10	1995-2005	11	Smoothed trend	231 Index value	100 Index value	-57%	Small sample

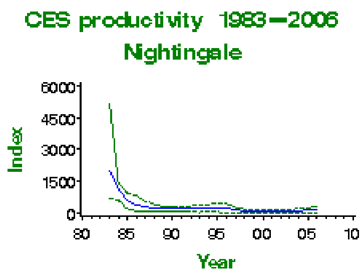
Insufficient data on clutch size available for this species

Insufficient data on brood size available for this species

Insufficient data on nest failure available for this species

Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

REDSTART
Phoenicurus phoenicurus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2 (depleted)
UK: amber (European status)

Long-term trend

UK, England: fluctuating, with no long-term trend

UK population size

At least 101,000 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

The decline in the late 1960s and early 1970s was thought to be due to severe drought conditions in the Sahel wintering area in Africa (Marchant *et al.* 1990). There was a loss of range of 20% in Britain between 1968–72 and 1988–91, in terms of the numbers of occupied 10-km squares (Gibbons *et al.* 1993). A recovery in population size began in the mid 1970s and appears to have continued, at least in England, into the late 1990s. This increase has been associated with improving breeding performance and progressively earlier laying dates. The trend towards earlier laying can be partly explained by recent climate change (Crick & Sparks 1999).

Population changes

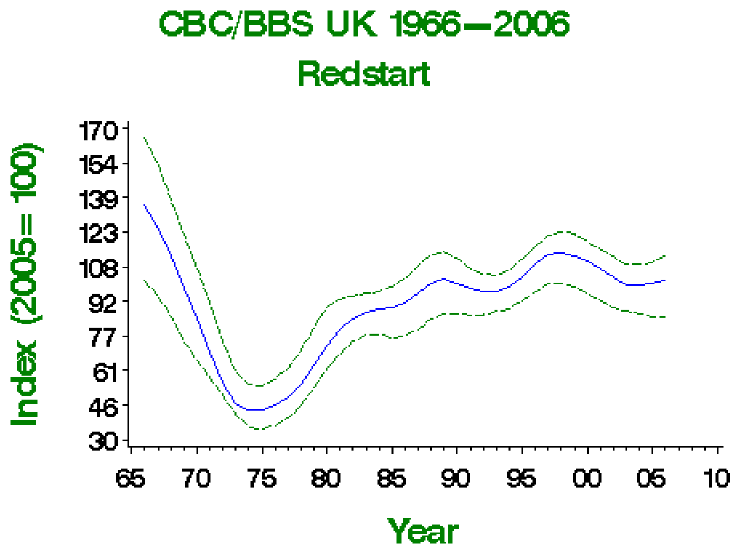
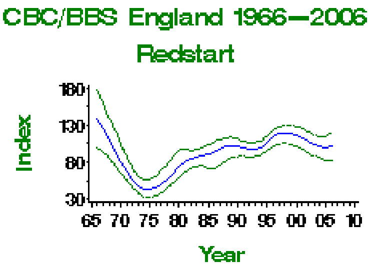
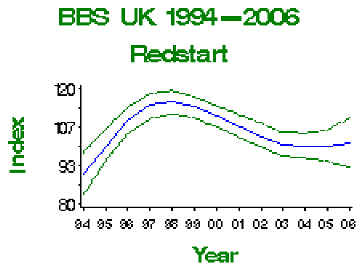


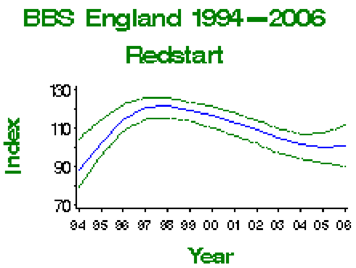
Table of population changes for Redstart

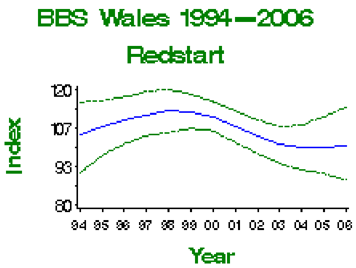
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	59	-20	-43	18		
	25	1980-2005	79	38	-4	76		
	10	1995-2005	153	-3	-15	8		
	5	2000-2005	141	-9	-18	-1		
CBC/BBS England	38	1967-2005	37	-20	-49	21		Small CBC sample
	25	1980-2005	48	35	-12	82		Small CBC sample
	10	1995-2005	86	-6	-25	9		
	5	2000-2005	76	-14	-24	-3		
BBS UK	10	1995-2005	138	0	-11	13		
	5	2000-2005	138	-9	-17	-1		
BBS England	10	1995-2005	74	-2	-21	12		
	5	2000-2005	73	-14	-22	-4		
BBS Wales	10	1995-2005	53	-6	-23	13		
	5	2000-2005	54	-10	-21	5		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





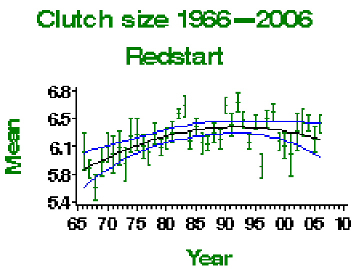


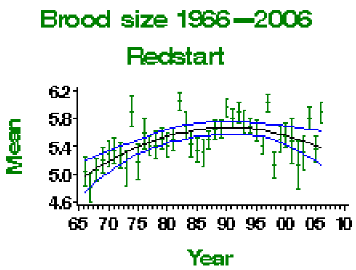


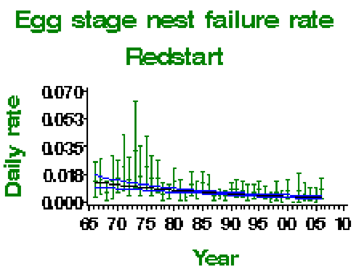
Productivity trends

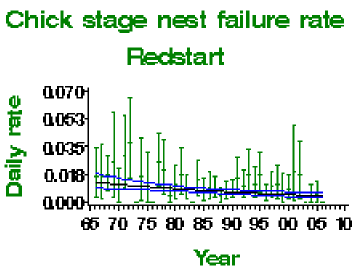
Table of productivity changes for Redstart

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	48	Curvilinear	5.88 eggs	6.21 eggs	5.5%	
Brood size	37	1968-2005	85	Curvilinear	5.08 chicks	5.42 chicks	6.6%	
Daily failure rate (eggs)	37	1968-2005	72	Linear decline	1.18% nests/day	0.31% nests/day	-73.7%	
Daily failure rate (chicks)	37	1968-2005	52	Linear decline	1.2% nests/day	0.43% nests/day	-64.2%	
Laying date	37	1968-2005	61	Curvilinear	May 21	May 10	-11 days	

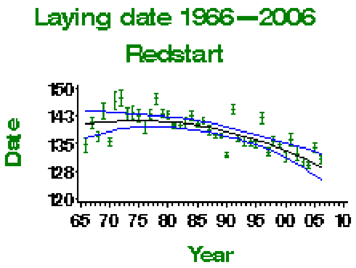








Insufficient data on CES available for this species



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

WHINCHAT
Saxicola rubetra

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK: decline

UK population size

14,000–28,000 pairs in 1990 (1988–91 Atlas: **APEP06**); 11,000–22,100 pairs in 2000 (updated using BBS trend: **BiE04**)

Status summary

Whinchats were not monitored until the BBS began in 1994. By then, however, **Gibbons *et al.* (1993)** had identified a major range contraction, mainly from lowland England, that was probably at least partly due to the loss of marginal farmland habitats (**Marchant et al. 1990**). Further extinctions have occurred since then among remaining pockets of lowland breeders. BBS data suggest that some population decline took place during the 1990s, provisionally raising a BTO alert. Nest record samples are small, but indicate a substantial rise in nest losses at the egg stage. Numbers have fallen widely in Europe since 1980 (**PECBM 2006**).

Population changes

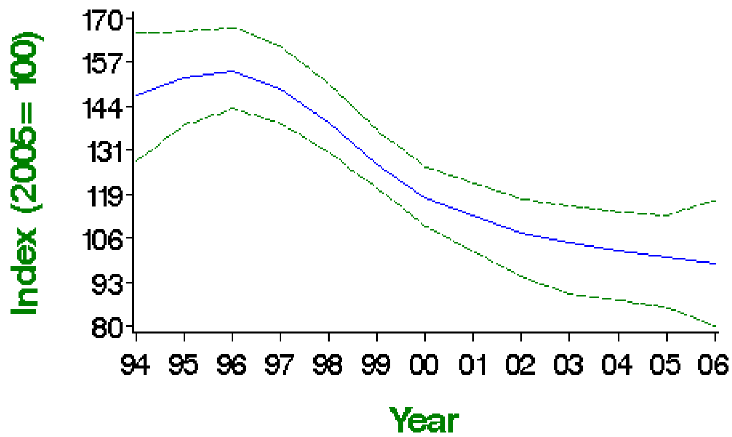


Table of population changes for Whinchat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	74	-34	-48	-19	>25	
	5	2000-2005	61	-15	-33	-1		

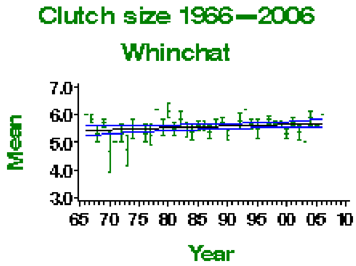
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

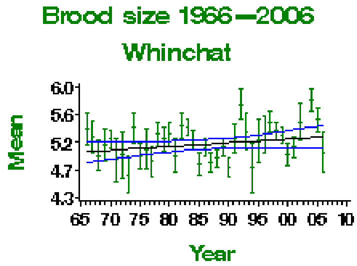
Productivity trends

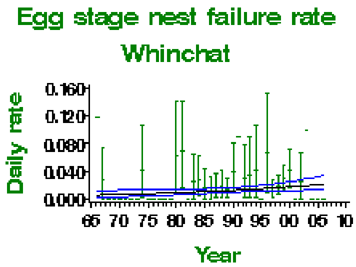
Table of productivity changes for Whinchat

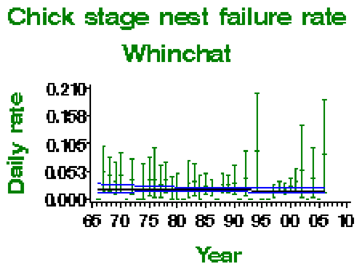
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	12	None				Small sample
Brood size	37	1968-2005	38	None				
Daily failure rate (eggs)	37	1968-2005	15	Linear increase	0.65% nests/day	2.11% nests/day	224.6%	Small sample

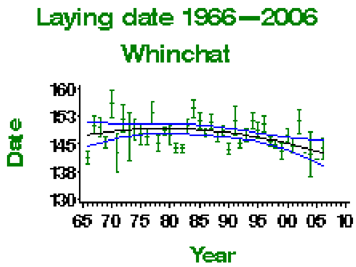
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Daily f... (chicks)								
Laying date								











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

STONECHAT
Saxicola torquatus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: amber (European status)

Long-term trend

UK: uncertain, possible decline

UK population size

9,000–23,000 pairs in 1990 (1988–91 Atlas: **APEP06**); 19,300–49,400 pairs in 2000 (updated using BBS trend: **BiE04**)

Status summary

Numerical trends were not measurable before the start of the BBS, but a long-term decline is suspected: severe winter weather, and loss and fragmentation of suitable breeding habitat in many inland regions, are believed to have reduced the population from the 1940s onward (**Marchant *et al.* 1990**). Breeding atlas data showed a substantial contraction in the Stonechat's range between the early 1970s and late 1980s (**Gibbons *et al.* 1993**). Nest failure rates have fallen markedly over the long term. Against this background, the current, strongly increasing BBS trend represents substantial recovery. Following similar increases widely across Europe, the species is now provisionally categorised as 'secure' (**BirdLife International 2004**). The UK amber listing rests on the earlier European decline, so a change to green may be warranted at the next review.

Population changes

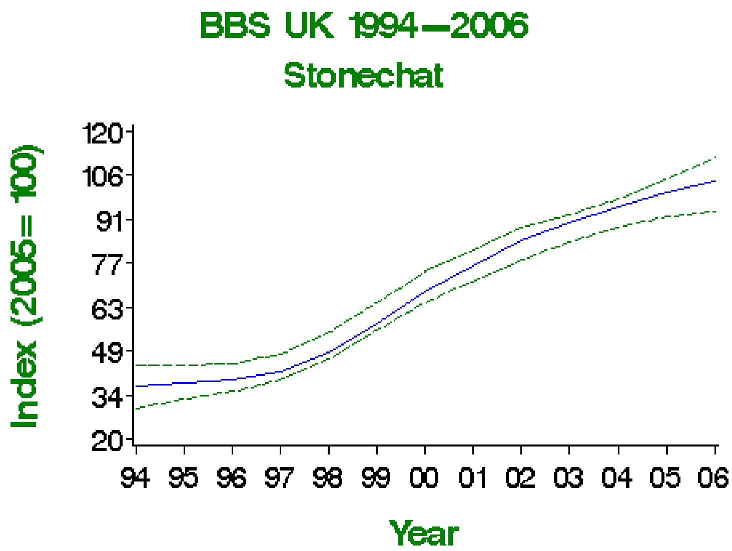
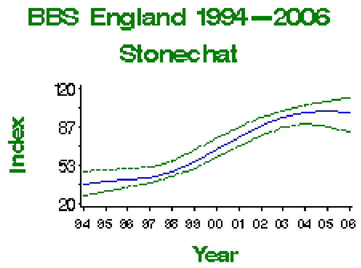


Table of population changes for Stonechat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	112	161	106	224		
	5	2000-2005	151	47	23	62		
BBS England	10	1995-2005	43	159	79	264		
	5	2000-2005	58	51	14	85		
BBS Wales	10	1995-2005	31	200	.	.		
	5	2000-2005	43	34	.	.		

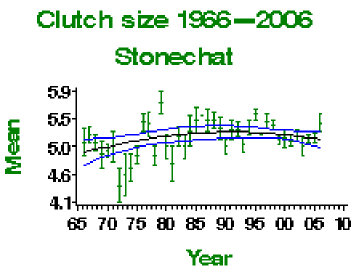
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

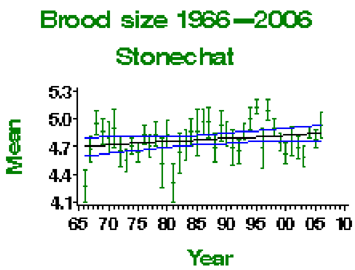


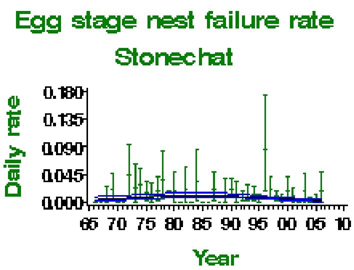
Productivity trends

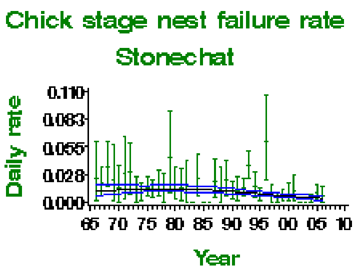
Table of productivity changes for Stonechat

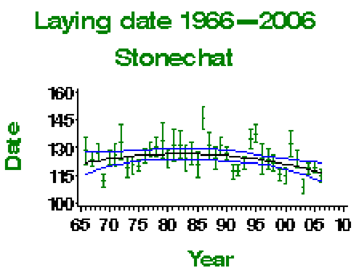
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	29	Curvilinear	4.95 eggs	5.14 eggs	3.7%	Small sample
Brood size	37	1968-2005	57	None				
Daily failure rate (eggs)	37	1968-2005	33	Curvilinear	0.51% nests/day	0.29% nests/day	-43.1%	
Daily failure rate (chicks)	37	1968-2005	51	Curvilinear	1.16% nests/day	0.43% nests/day	-62.9%	
Laying date	37	1968-2005	33	Curvilinear	May 3	Apr 28	-5 days	











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

WHEATEAR
Oenanthe oenanthe

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: green

Long-term trend

UK: possible decline

UK population size

56,000 pairs in 1990 (1988–91 Atlas: **APEP06**); 52,500 pairs in 2000 (updated using BBS trend: **BiE04**); 100,000–200,000 pairs in Britain (**Sellers 2006**)

Status summary

Although it is a common breeding species in many upland areas, the Wheatear was not monitored at UK scale until the BBS began in 1994. **Gibbons *et al.* (1993)** had by then identified range contractions from lowland Britain, perhaps due to losses of suitable grassland and declines in rabbit abundance. BBS shows wide fluctuations, with further decrease in England but as yet no clear trend in abundance since 1994 in either Scotland or Wales. BBS data indicate that the estimates of UK population made for the 1988–91 Atlas were a long way too low, possibly by an order of magnitude (**Gillings *et al.* 2007**). Failure rates at the egg stage (18 days, comprising 14 days incubation and 4 days laying) have fallen substantially, but there has also been a minor drop in average brood size. Following widespread declines across Europe during the 1990s, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

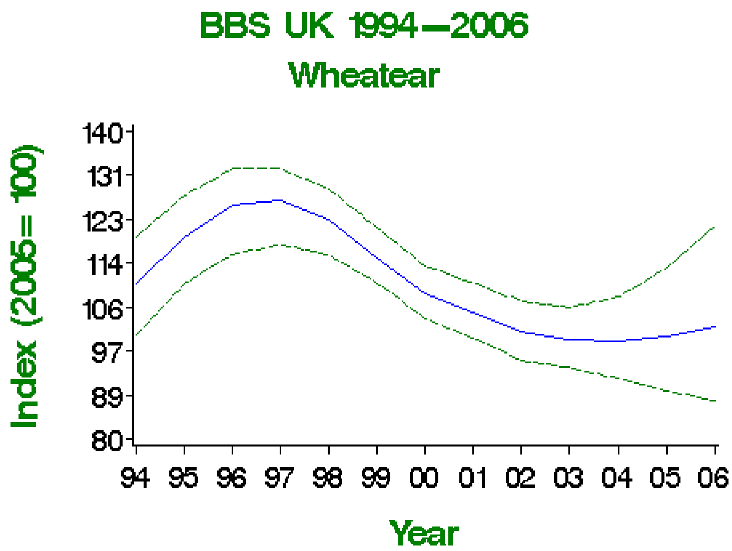
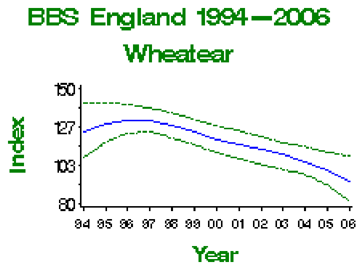
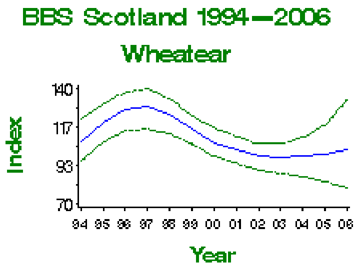


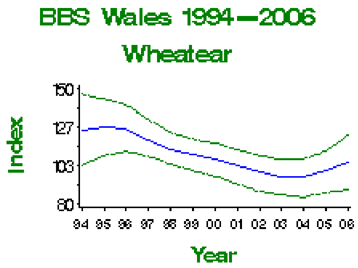
Table of population changes for Wheatear

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	261	-16	-30	4		
	5	2000-2005	266	-8	-22	10		
BBS England	10	1995-2005	127	-22	-35	-5		
	5	2000-2005	132	-16	-29	1		
BBS Scotland	10	1995-2005	74	-16	-39	12		
	5	2000-2005	66	-6	-26	23		
BBS Wales	10	1995-2005	48	-21	-40	5		
	5	2000-2005	56	-6	-21	11		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



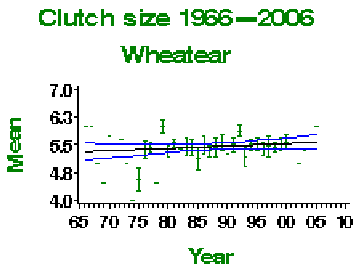


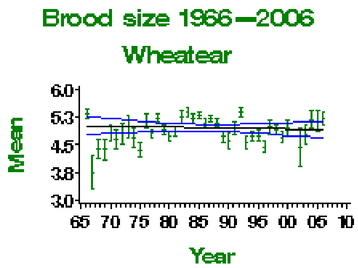


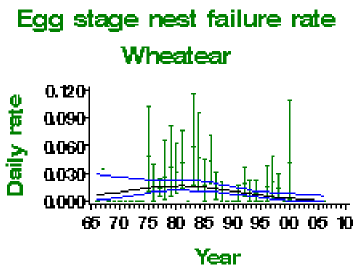
Productivity trends

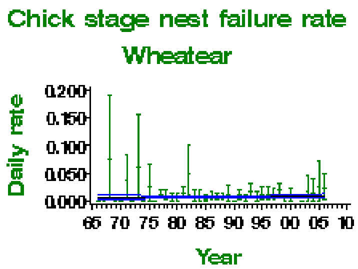
Table of productivity changes for Wheatear

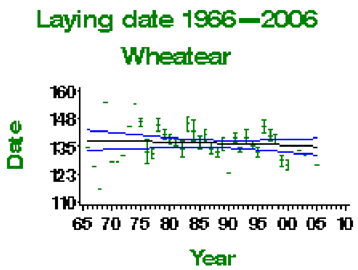
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	13	None				Small sample
Brood size	37	1968-2005	59	None				
Daily failure rate (eggs)	37	1968-2005	18	Curvilinear	0.82% nests/day	0.11% nests/day	-86.6%	Small sample
Daily failure rate (chicks)	37	1968-2005	40	None				
Laying date	37	1968-2005	13	None				Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

RING OUZEL
Turdus torquatus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: red (>50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

UK: probable decline

UK population size

6,157–7,549 pairs in 1999 (**Wotton *et al.* 2002**: **BiE04**, **APEP06**)

Status summary

The first breeding atlases showed a decline of 27% in the number of 10-km squares occupied between 1968–72 and 1988–91 (**Gibbons *et al.* 1993**), and the extent of population decline has since been established by a special survey: a 58% population decline was estimated for the period between 1988–91 and 1999, warranting red listing for this species (**Gregory *et al.* 2002**). British & Irish bird observatory data show a decline in spring passage Ring Ouzels at western locations during 1970–98 that matches the estimated UK breeding decline, but no decline at eastern observatories where most birds are of Fennoscandian origin (**Burfield & Brooke 2005**). These authors infer that, since these populations winter together, the reasons for decline among UK breeders must lie on the breeding grounds or on passage: they also point out that UK birds are more exposed to hunting pressures, particularly in southwest France. It has proved difficult to establish any reasons for decline that are linked to the breeding grounds (**Buchanan *et al.* 2003**). In southeast Scotland, however, the breeding sites that are still occupied tend to be those at higher altitude and that have retained an extensive cover of heather (**Sim *et al.* 2007b**). In the same study, it was shown that declines were greatest in years following warm summers on the breeding grounds and also greater two years after high spring rainfall in Morocco: these results suggest that the population decline could be linked to reduced food supplies, and consequently higher rates of natural mortality, in autumn and winter (**Beale *et al.* 2006**).

Population changes

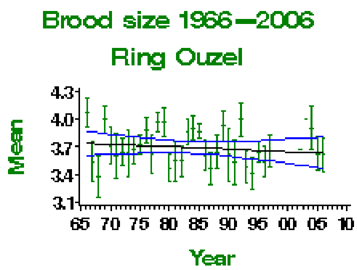
Annual breeding population changes for this species are not currently monitored by BTO

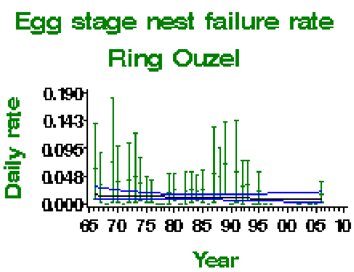
Productivity trends

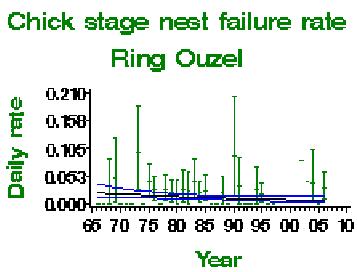
Table of productivity changes for Ring Ouzel

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Brood size	37	1968-2005	22	None				Small sample
Daily failure rate (eggs)	37	1968-2005	11	None				Small sample
Daily failure rate (chicks)	37	1968-2005	15	None				Small sample
Laying date	37	1968-2005	24	Linear decline	May 15	May 7	-8 days	Small sample

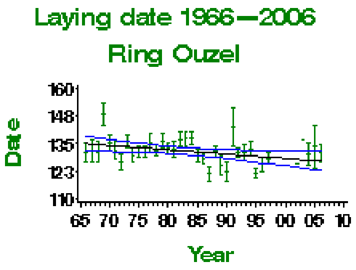
Insufficient data on clutch size available for this species







Insufficient data on CES available for this species



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

BLACKBIRD
Turdus merula

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK, England: shallow decline

UK population size

4,935,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Both CBC/BBS and CES data show long-term declines in Blackbird abundance, but recent increases suggest that the population has begun to recover. The moderate-decline criteria for amber listing and for BTO alerts are no longer met, and the species is now listed as green. CBC results indicate that the decline began in the mid 1970s. Nest success has improved over this period, and it is likely that reduced survival drove the decline (**Siriwardena *et al.* 1998a**). Agricultural intensification is likely to have contributed (**Fuller *et al.* 1995**), but, since numbers fell in woodland as well as farmland, additional factors probably operated.

Population changes

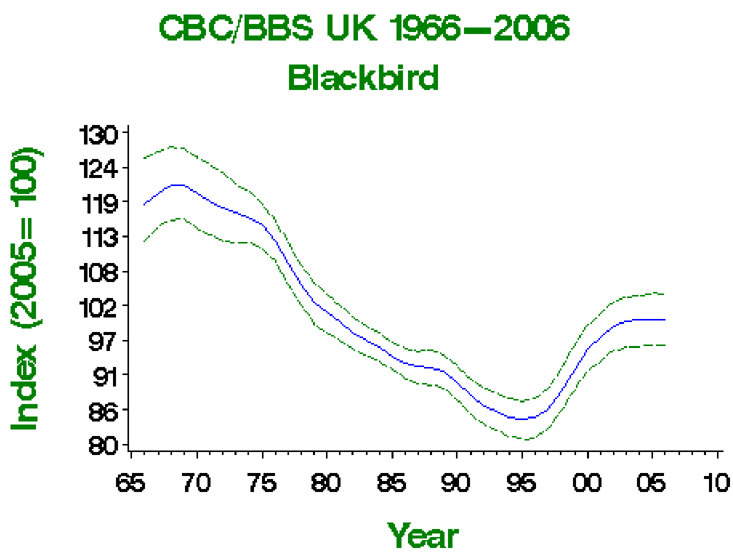
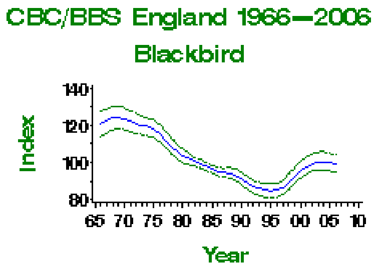


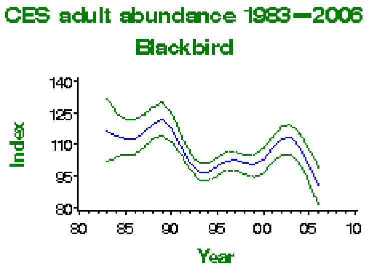
Table of population changes for Blackbird

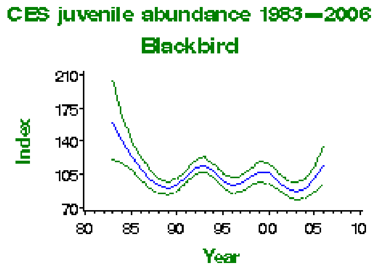
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	771	-17	-24	-9		
	25	1980-2005	1058	-1	-8	7		
	10	1995-2005	2165	19	16	22		
	5	2000-2005	2259	5	3	7		
CBC/BBS England	38	1967-2005	625	-18	-26	-9		
	25	1980-2005	851	-4	-12	6		
	10	1995-2005	1726	18	15	21		
	5	2000-2005	1771	4	3	6		
CES adults	21	1984-2005	96	-12	-27	4		
	10	1995-2005	109	1	-10	10		
	5	2000-2005	102	-3	-11	7		
CES juveniles	21	1984-2005	86	-29	-48	-2	>25	
	10	1995-2005	99	1	-13	18		
	5	2000-2005	93	-6	-23	13		
BBS UK	10	1995-2005	2040	20	17	23		
	5	2000-2005	2227	5	3	7		
BBS England	10	1995-2005	1618	19	16	22		
	5	2000-2005	1743	5	3	7		
BBS Scotland	10	1995-2005	159	23	9	41		

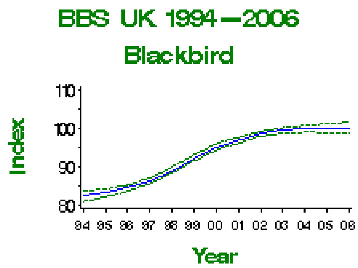
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales	5	2000-2005	213	16	10	22		
BBS N.Ireland	10	1995-2005	75	40	10	59		
	5	2000-2005	91	-11	-18	-3		

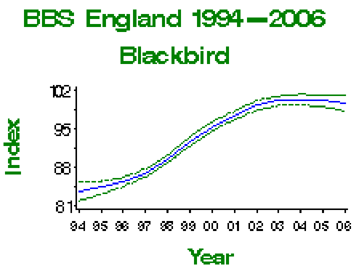
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

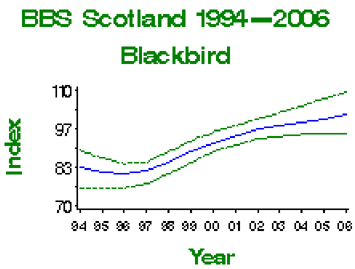


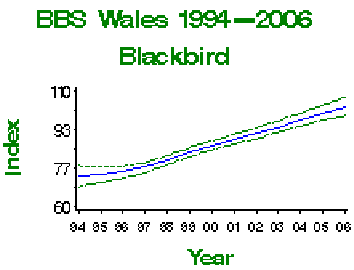


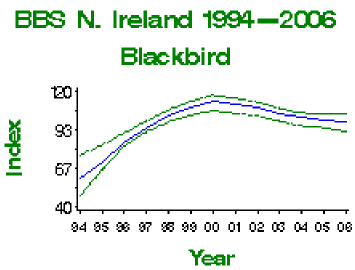










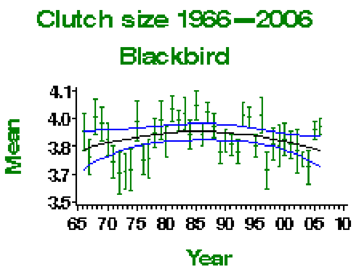


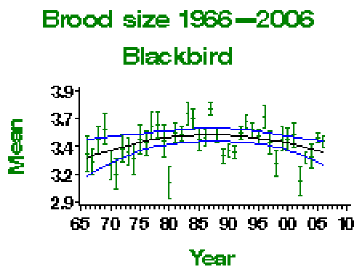
Productivity trends

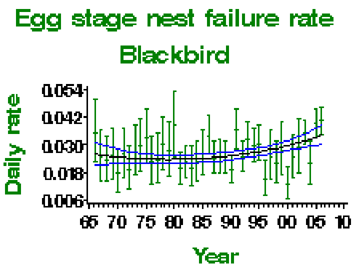
Table of productivity changes for Blackbird

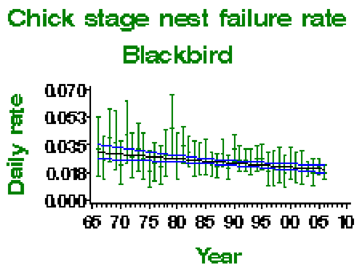
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	109	Curvilinear	3.8 eggs	3.78 eggs	-0.5%	
Brood size	37	1968-2005	137	Curvilinear	3.33 chicks	3.36 chicks	0.7%	
Daily failure rate (eggs)	37	1968-2005	163	Curvilinear	2.53% nests/day	3.33% nests/day	31.6%	
Daily failure rate (chicks)	37	1968-2005	139	Linear decline	2.99% nests/day	1.99% nests/day	-33.4%	

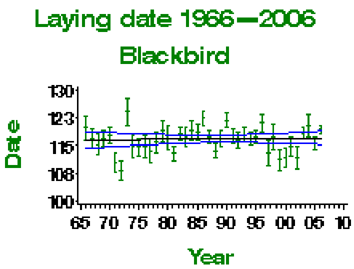
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Juvenile to Adult ratio (CES)	10	1995-2005	111	Smoothed trend	98 Index value	100 Index value	2%	
Juvenile to Adult ratio (CES)	5	2000-2005	104	Smoothed trend	98 Index value	100 Index value	2%	

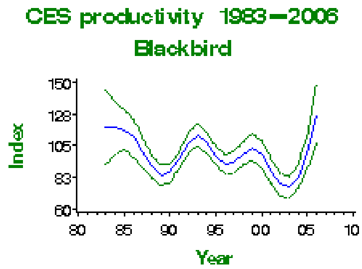












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

SONG THRUSH
Turdus philomelos

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: red (>50% population decline)
UK Biodiversity Action Plan: click here

Long-term trend

UK, England: rapid decline

UK population size

1,144,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

CBC/BBS shows a rapid decline in Song Thrush abundance that began in the mid 1970s. The second half of this decline can also be seen in the CES index. CES productivity showed an initial decrease, followed by some partial recovery, and NRS data indicate that nest success has improved since 1981. Changes in survival in the first winter, and perhaps also the post-fledging period, are sufficient to have caused the population decline (**Thomson *et al.* 1997**, **Siriwardena *et al.* 1998a**, **Robinson *et al.* 2004**). The environmental causes of these changes are not known, but changes in farming practices, land drainage, pesticides and predators are all candidates (**Fuller *et al.* 1995**, **Robinson *et al.* 2004**). In woodland, drainage of damp ground and the depletion of woodland shrub layers through canopy closure and deer browsing may also be implicated (**Fuller *et al.* 2005**). Recent CBC/BBS data show consistent increase, but population levels remain relatively low. Recovery of rural Song Thrush populations requires challenging new policy initiatives that should aim to restore nesting cover in scrub and woodland understorey, grazed grassland in arable-dominated areas, and damper soils in summer (**Peach *et al.* 2004**).

Population changes

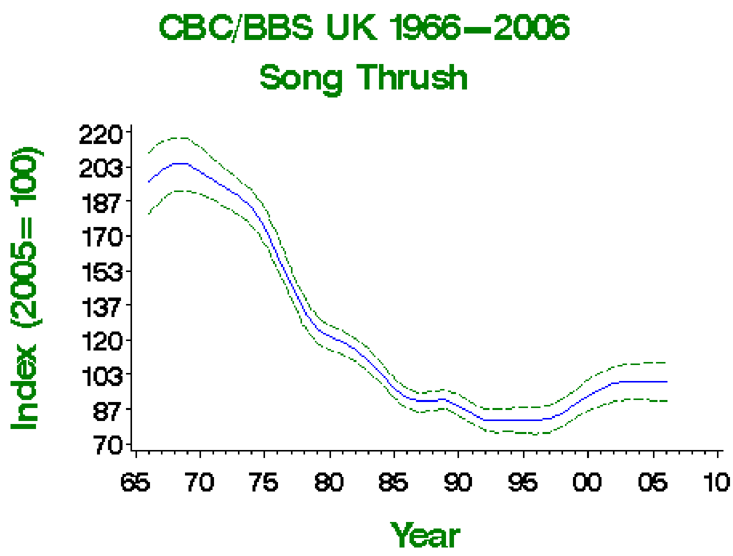
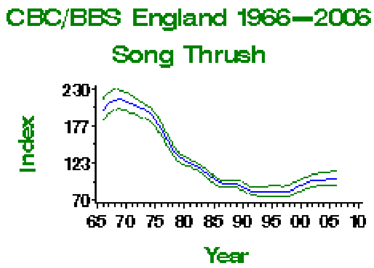


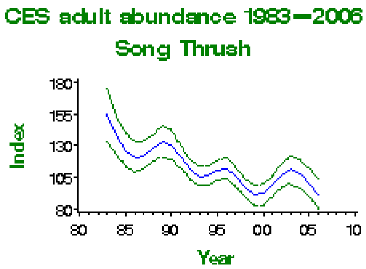
Table of population changes for Song Thrush

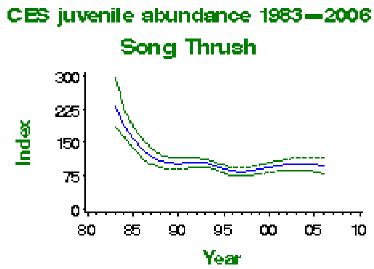
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	631	-50	-57	-43	>50	
	25	1980-2005	850	-18	-28	-5		
	10	1995-2005	1717	23	17	28		
	5	2000-2005	1837	7	4	11		
CBC/BBS England	38	1967-2005	502	-52	-60	-42	>50	
	25	1980-2005	669	-21	-31	-7		
	10	1995-2005	1335	21	16	25		
	5	2000-2005	1410	10	7	13		
CES adults	21	1984-2005	81	-27	-41	-9	>25	
	10	1995-2005	90	-9	-21	5		
	5	2000-2005	86	9	-3	26		
CES juveniles	21	1984-2005	66	-47	-65	-29	>25	
	10	1995-2005	75	9	-9	30		

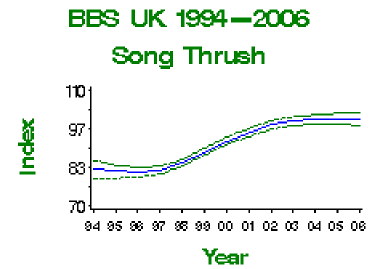
Source BBS UK	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2000-2005	1808	8	5	11		
BBS England	10	1995-2005	1243	19	13	25		
	5	2000-2005	1386	11	7	14		
BBS Scotland	10	1995-2005	143	25	9	43		
	5	2000-2005	150	5	-6	14		
BBS Wales	10	1995-2005	150	35	22	50		
	5	2000-2005	181	6	-3	14		
BBS N.Ireland	10	1995-2005	65	49	17	88		
	5	2000-2005	81	4	-11	21		

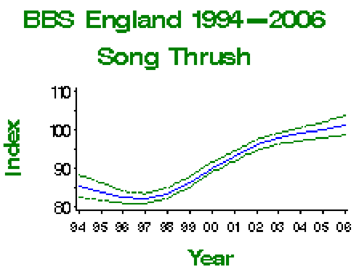
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

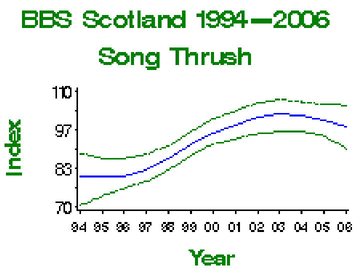


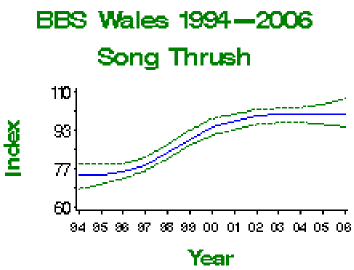


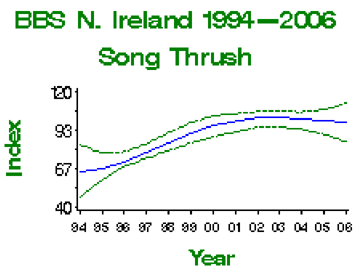










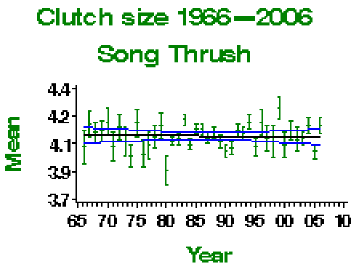


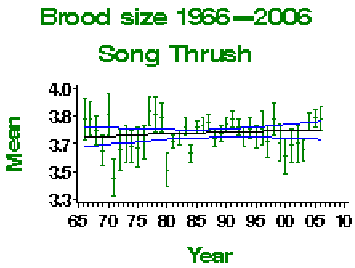
Productivity trends

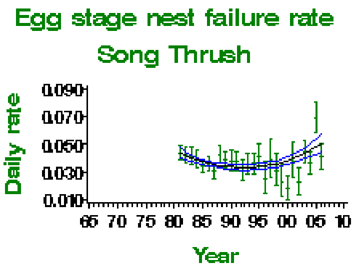
Table of productivity changes for Song Thrush

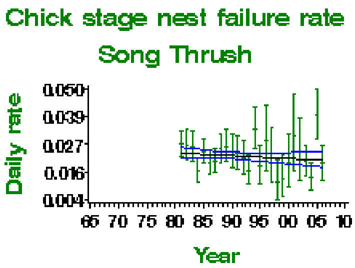
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment

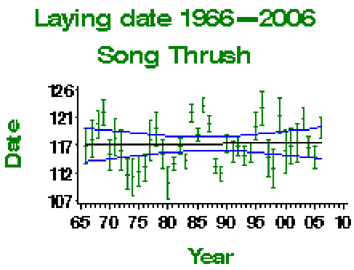
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Daily failure rate (eggs)	24	1981-2005	321	Curvilinear	4.41% nests/day	4.79% nests/day	8.6%	
Daily failure rate (chicks)	24	1981-2005	241	None				
Laying date	37	1968-2005	191	None				
Juvenile to Adult ratio (CES)	21	1984-2005	89	Smoothed trend	142 Index value	100 Index value	-29%	
Juvenile to Adult ratio (CES)	10	1995-2005	100	Smoothed trend	80 Index value	100 Index value	25%	
Juvenile to Adult ratio (CES)	5	2000-2005	97	Smoothed trend	103 Index value	100 Index value	-3%	

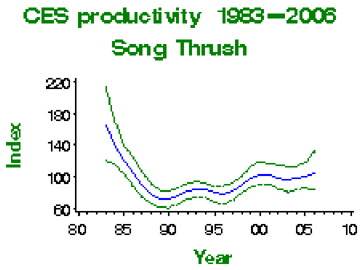












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

MISTLE THRUSH
Turdus viscivorus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: amber (25–50% population decline)

Long-term trend

UK, England: moderate decline

UK population size

222,500 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Like those of **Song Thrush** and **Blackbird**, Mistle Thrush populations have declined significantly since the mid 1970s, especially on farmland. The species was recently moved from the green to the amber list because of population decline, and recent BBS data suggest that this decline is continuing. The Scottish BBS trend, in contrast to those elsewhere in the UK, is of strong increase since the late 1990s. There have been no trends in breeding performance, other than a minor increase in clutch size, and the decline is likely to have been driven by reduced annual survival (**Siriwardena *et al.* 1998**). Numbers have fallen widely in Europe since 1980 (**PECBM 2006**).

Population changes

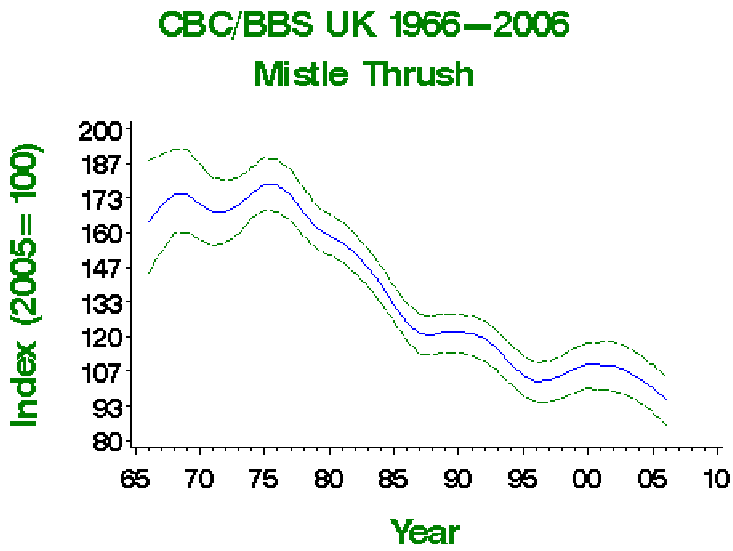
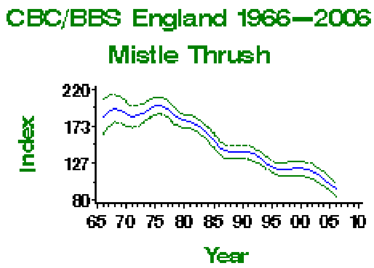
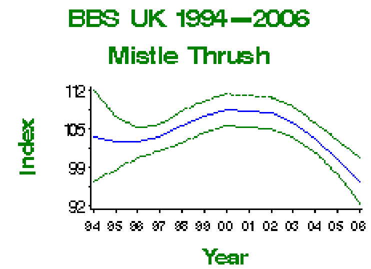


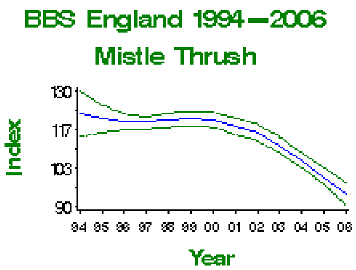
Table of population changes for Mistle Thrush

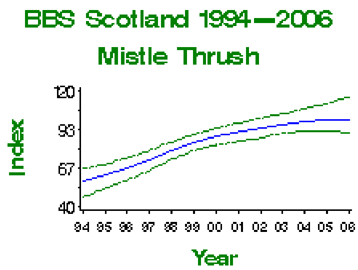
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	422	-41	-52	-28	>25	
	25	1980-2005	567	-37	-45	-29	>25	
	10	1995-2005	1128	-5	-12	4		
	5	2000-2005	1162	-8	-12	-3		
CBC/BBS England	38	1967-2005	348	-48	-55	-38	>25	
	25	1980-2005	463	-45	-51	-37	>25	
	10	1995-2005	907	-18	-24	-13		
	5	2000-2005	914	-17	-21	-13		
BBS UK	10	1995-2005	1059	-3	-10	6		
	5	2000-2005	1145	-8	-12	-3		
BBS England	10	1995-2005	846	-17	-22	-10		
	5	2000-2005	898	-17	-20	-13		
BBS Scotland	10	1995-2005	64	62	32	115		
	5	2000-2005	68	13	0	33		
BBS Wales	10	1995-2005	93	2	-16	25		
	5	2000-2005	109	-3	-16	12		
BBS N.Ireland	10	1995-2005	52	26	-42	121		
	5	2000-2005	66	6	-13	30		

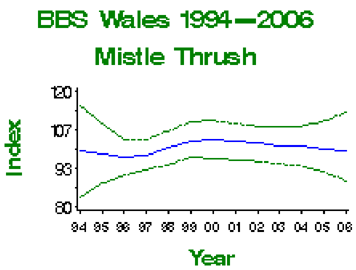
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

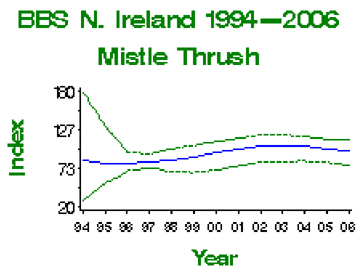








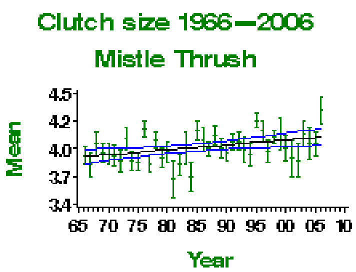


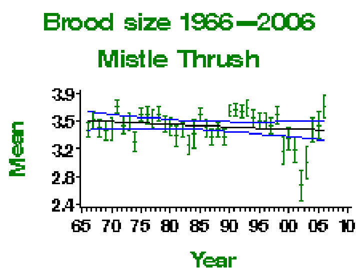


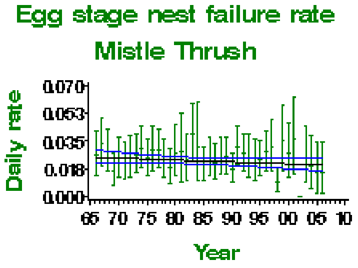
Productivity trends

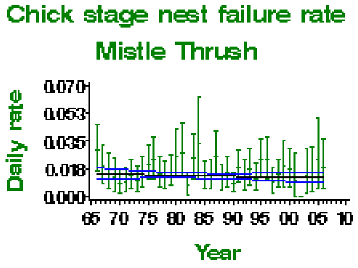
Table of productivity changes for Mistle Thrush

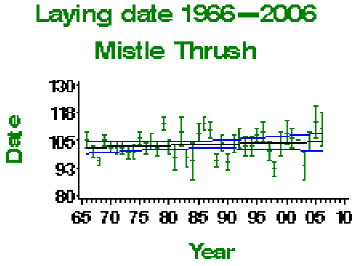
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	35	Linear increase	3.88 eggs	4.07 eggs	4.7%	
Brood size	37	1968-2005	67	None				
Daily failure rate (eggs)	37	1968-2005	58	None				
Daily failure rate (chicks)	37	1968-2005	60	None				
Laying date	37	1968-2005	29	None				Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

CETTI'S WARBLER
Cettia cetti

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

England, Wales: rapid increase

UK population size

534 pairs in 1997–2001 (RBBP data: **BiE04**); mean of 645 pairs in 1998–2002 (RBBP data: **APEP06**); at least 1,137 singing males in 2004 (**Holling & RBBP 2007a**)

Status summary

Cetti's Warblers were first recorded in Britain as recently as 1961. Colonisation, which began in Kent in 1972 or 1973, continues to be monitored annually by **RBBP**. Numbers and breeding range increased spectacularly during the first 12 years, with Norfolk and Dorset gradually overtaking Kent as the main host counties (**Gibbons *et al.* 1993**, **Wotton *et al.* 1998**). Severe winters after 1978 led to the temporary extinction of the Kent population in 1988. Populations in milder regions continued to grow, but overall the UK population fell by over a third between 1984 and 1986. In the absence of severe winters since 1986, increase and range expansion have gathered pace. For 2004, RBBP has received reports of 1,137 singing males in 29 counties as far north as Anglesey and Norfolk (**Holling & RBBP 2007a**). Much constant-effort ringing takes place in prime Cetti's Warbler habitat; despite the comparative rarity of this species, therefore, CES population and productivity indices are already available (**Robinson *et al.* 2007**). CES data confirm the species' sensitivity to cold winters, which appears to have become more evident as the breeding range has expanded into more testing climates. There is no indication of any change in productivity. Numbers have risen widely in Europe since 1990 (**PECBM 2006**).

Population changes

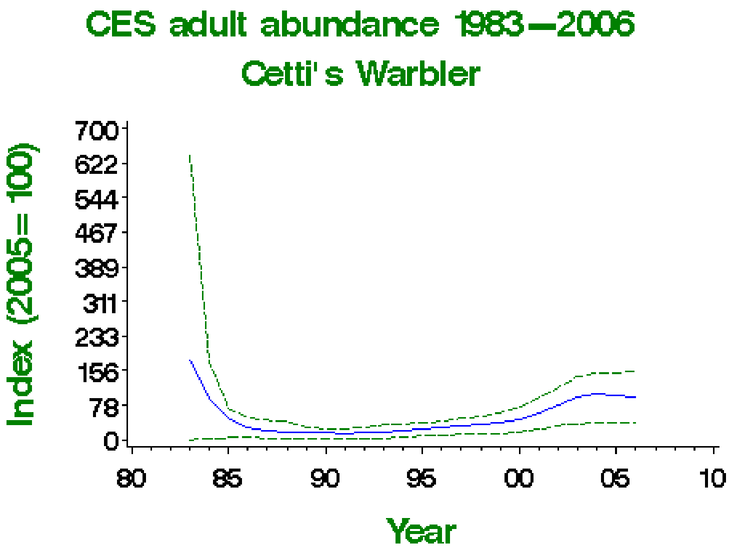
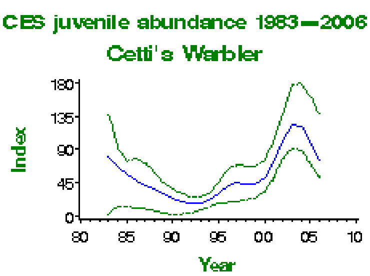


Table of population changes for Cetti's Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CES adults	5	2000-2005	10	117	26	346		Small sample
CES juveniles	5	2000-2005	11	94	2	436		Small sample



Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

GRASSHOPPER WARBLER
Locustella naevia

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: red (>50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

UK: rapid decline

UK population size

11,750 pairs in 1990 (1988–91 Atlas: **APEP06**); 12,300 pairs in 2000 (updated using BBS trend: **BiE04**)

Status summary

Grasshopper Warbler was previously amber-listed because of a contraction in range during the period preceding the 1988–91 Atlas, reportedly due to habitat loss (**Gibbons *et al.* 1993**). The CBC index suffered from small and severely dwindling sample sizes, but the available data indicate a rapid population decline between the mid 1960s and mid 1980s, when numbers became too small for annual monitoring (**Marchant *et al.* 1990**). On this basis, the species is now red-listed. The BBS shows wide fluctuations in abundance since 1994, and currently an overall moderate increase. Given suitable habitat and conditions, the species has high reproductive potential, as demonstrated by analysis of nest record data (**Glue 1990**).

Population changes

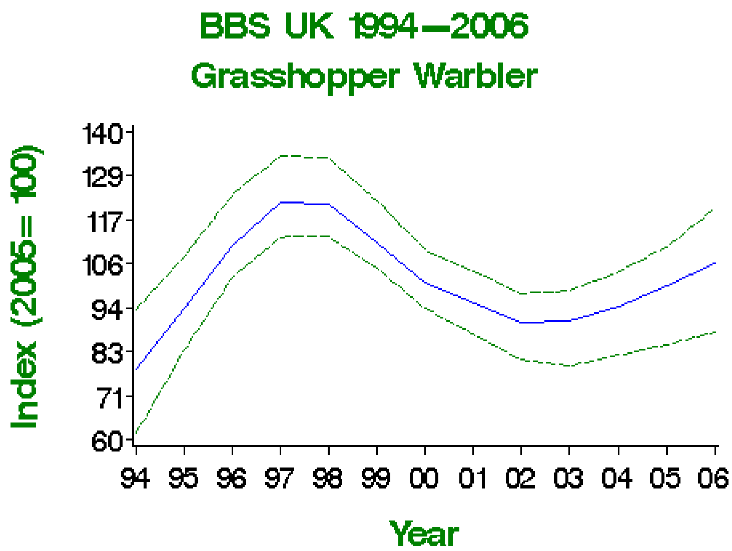


Table of population changes for Grasshopper Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	65	6	-22	33		
	5	2000-2005	64	-1	-21	16		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

Productivity trends

No productivity information available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

SEDGE WARBLER
Acrocephalus schoenobaenus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK: fluctuating, with no long-term trend

UK population size

321,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

The trend in England is apparently of moderate decline, but this is uncertain because the long-term changes are partly obscured by shorter fluctuations in numbers. Detailed analysis of BTO data sets has shown that much of the year-to-year variation in population size is driven by changes in adult survival rates which, in turn, are related to changes in rainfall on their wintering grounds, just south of the Sahara Desert, in the West African Sahel (**Peach *et al.* 1991**). The smoothed CBC/BBS and WBS trends show four troughs in population, related to years of poor West African rainfall, with a low point in 1984–85. The CES, which provides the biggest Sedge Warbler sample, shows the most recent three of the same troughs and also illustrates the large year-to-year fluctuations that occur in this species. Daily nest failure rates at the egg stage have almost halved. CES productivity data show a steep fall in the 1980s, followed by further shallow decrease.

Population changes

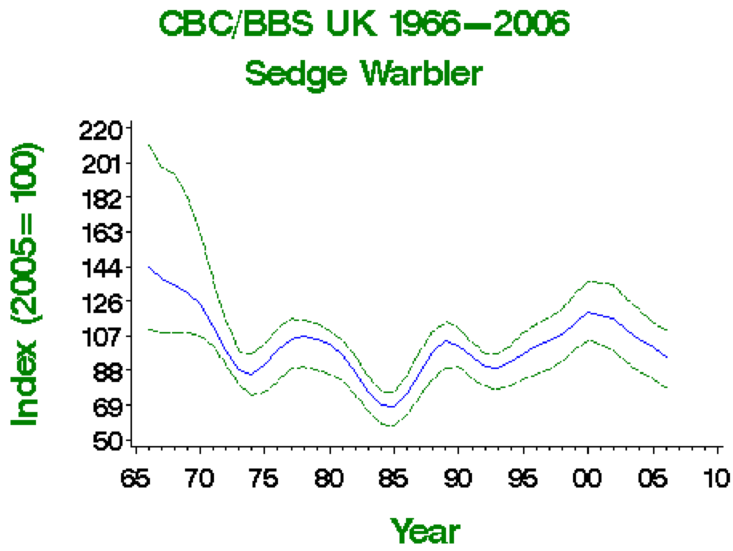
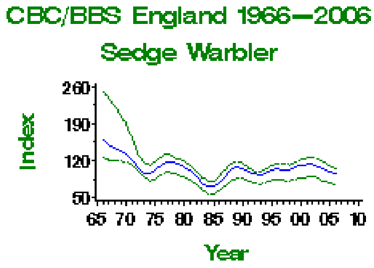


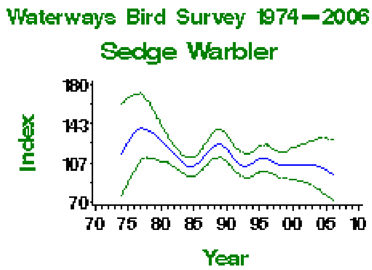
Table of population changes for Sedge Warbler

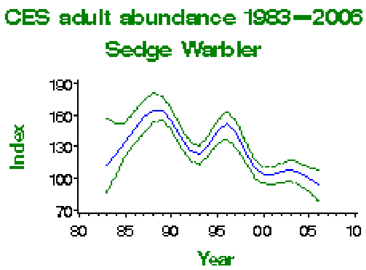
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	113	-28	-62	3		
	25	1980-2005	147	-2	-23	31		
	10	1995-2005	286	3	-9	18		
	5	2000-2005	278	-17	-25	-8		
CBC/BBS England	38	1967-2005	77	-33	-68	-8	>25	
	25	1980-2005	97	-8	-30	20		
	10	1995-2005	184	-1	-14	14		
	5	2000-2005	177	-11	-20	-2		
WBS waterways	30	1975-2005	43	-20	-54	47		
	25	1980-2005	46	-21	-45	25		
	10	1995-2005	49	-9	-31	26		
	5	2000-2005	38	-5	-20	16		
CES adults	21	1984-2005	64	-19	-42	7		
	10	1995-2005	76	-31	-42	-18	>25	
	5	2000-2005	68	-4	-15	10		

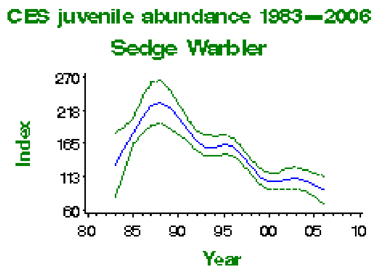
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2000-2005	67	-5	-22	13		
BBS UK	10	1995-2005	263	1	-12	20		
	5	2000-2005	273	-16	-25	-9		
BBS England	10	1995-2005	166	-5	-17	14		
	5	2000-2005	174	-9	-18	1		
BBS Scotland	10	1995-2005	49	11	-15	45		
	5	2000-2005	45	-22	-42	-7		

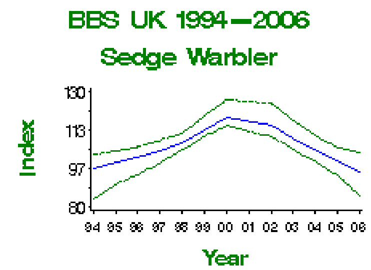
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

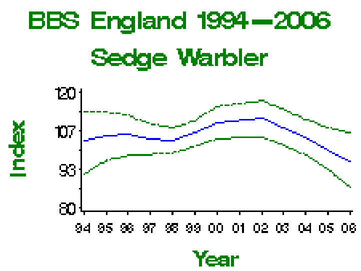


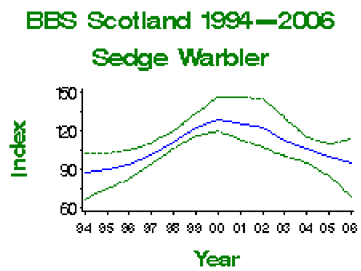










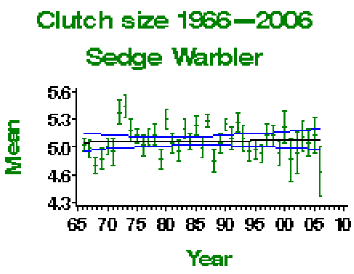


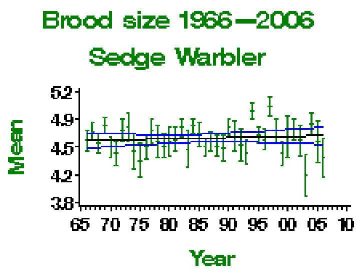
Productivity trends

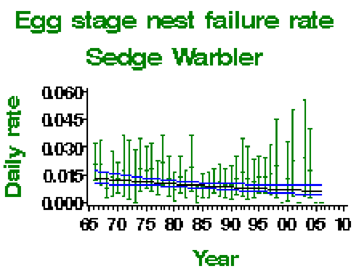
Table of productivity changes for Sedge Warbler

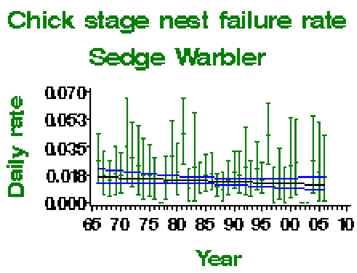
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	37	None				
Brood size	37	1968-	58	None				

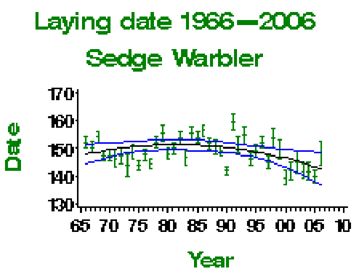
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Daily failure rate (eggs)								
Daily failure rate (chicks)								
		2005						
Laying date	37	1968-2005	50	Curvilinear	May 29	May 24	-5 days	
Juvenile to Adult ratio (CES)	21	1984-2005	69	Smoothed trend	241 Index value	100 Index value	-59% >50	
Juvenile to Adult ratio (CES)	10	1995-2005	82	Smoothed trend	130 Index value	100 Index value	-23%	
Juvenile to Adult ratio (CES)	5	2000-2005	75	Smoothed trend	109 Index value	100 Index value	-8%	

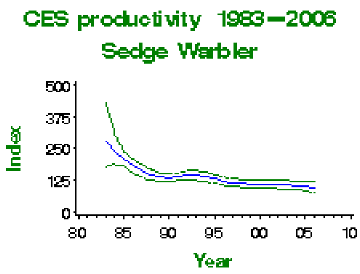












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

REED WARBLER
Acrocephalus scirpaceus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK: uncertain

UK population size

60,800–122,000 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

This species has an unusually clumped distribution, with very high breeding concentrations in *Phragmites* reedbeds, where numbers are very hard to census. Because of this, CES, which has many sites in reedbeds, may be a better measure of population change than either CBC/BBS or WBS, where the species is encountered mainly at low density or in linear habitats. CES shows a decline from 1983 until the early 1990s, followed by a partial recovery, and another, much more recent decline. Both CBC/BBS and WBS show progressive moderate increases, perhaps linked to increasingly sensitive management of small and linear wetland sites and to the range expansion the species has achieved since the 1960s. Breeding performance as measured by brood size and failure rates has improved slightly, and a small improvement is apparent in CES productivity. The trend towards earlier laying can be partly explained by recent climate change (Crick & Sparks 1999).

Population changes

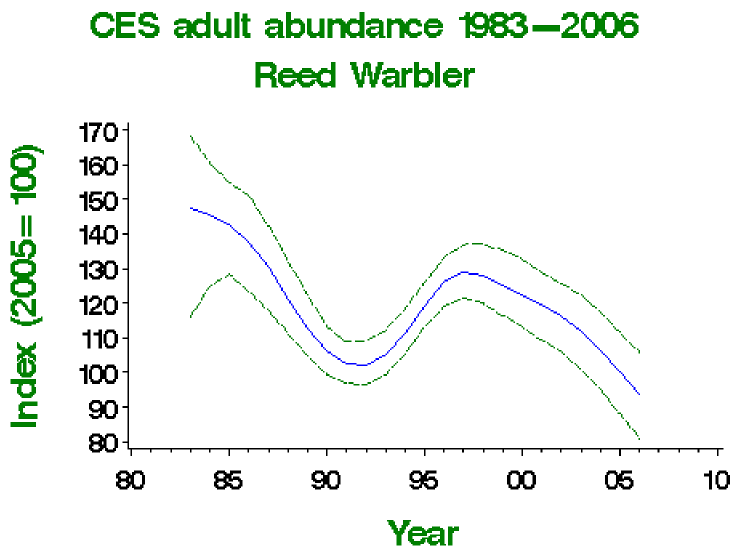
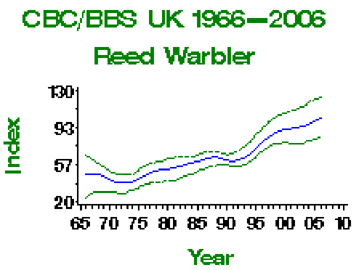


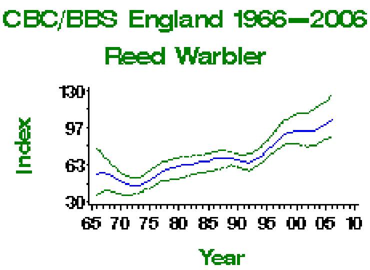
Table of population changes for Reed Warbler

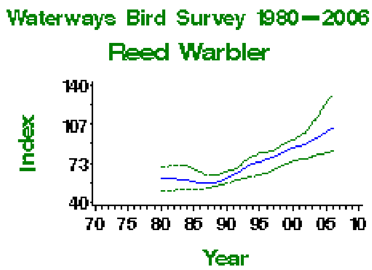
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	49	108	33	362		
	25	1980-2005	64	90	29	227		
	10	1995-2005	118	37	14	61		
	5	2000-2005	117	9	-4	23		
CBC/BBS England	38	1967-2005	47	80	16	236		
	25	1980-2005	61	63	22	154		
	10	1995-2005	113	31	11	56		
	5	2000-2005	112	7	-5	22		
WBS waterways	24	1981-2005	22	66	17	147		
	10	1995-2005	26	34	0	98		
	5	2000-2005	22	16	-5	51		
CES adults	21	1984-2005	53	-31	-46	-10	>25	
	10	1995-2005	61	-16	-28	-3		
	5	2000-2005	56	-18	-28	-8		
CES juveniles	21	1984-2005	54	-22	-37	7		
	10	1995-2005	64	-5	-21	16		
	5	2000-2005	57	-24	-36	-5		

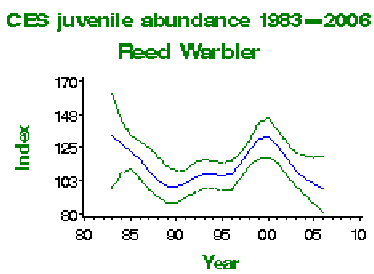
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS England	10	1995-2005	97	24	2	57		
	5	2000-2005	107	10	-3	25		

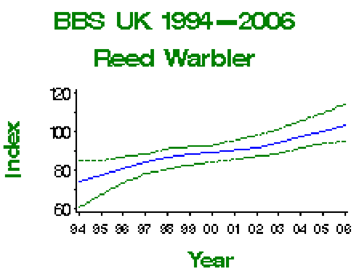
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

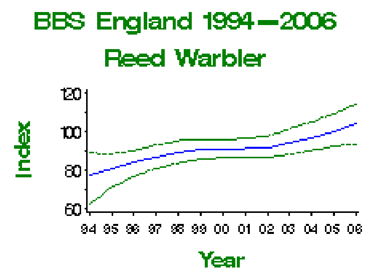








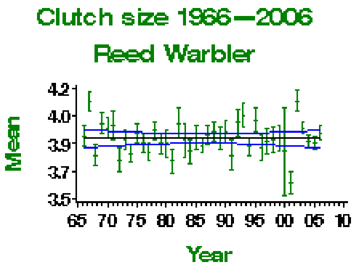


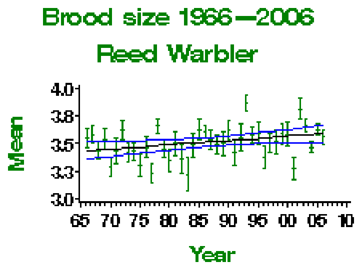


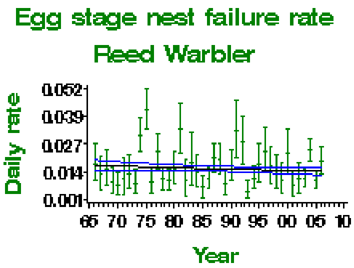
Productivity trends

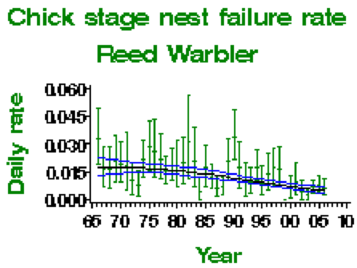
Table of productivity changes for Reed Warbler

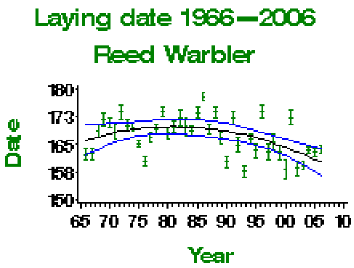
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	111	None				
Brood size	37	1968-2005	127	Linear increase	3.45 chicks	3.59 chicks	4.1%	
Daily failure rate (eggs)	37	1968-2005	144	None				
Daily failure rate (chicks)	37	1968-2005	109	Curvilinear	1.74% nests/day	0.53% nests/day	-69.5%	
Laying date	37	1968-2005	159	Curvilinear	Jun 16	Jun 10	-6 days	
Juvenile to Adult ratio (CES)	21	1984-2005	59	Smoothed trend	76 Index value	100 Index value	31%	
Juvenile to Adult ratio (CES)	10	1995-2005	69	Smoothed trend	99 Index value	100 Index value	1%	
Juvenile to Adult ratio (CES)	5	2000-2005	61	Smoothed trend	100 Index value	100 Index value	0%	

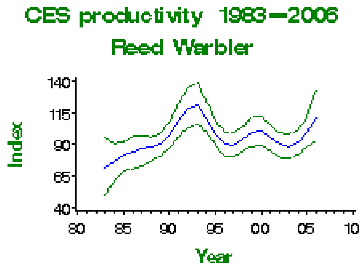












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

BLACKCAP
Sylvia atricapilla

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK, England: rapid increase

UK population size

932,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Blackcap abundance has increased consistently since the late 1970s, a trend common to all habitats and evident from both the CBC/BBS and the CES indices, although the causes remain unknown. There have been no clear accompanying trends in productivity. The trend towards earlier laying may be a response to recent climate change (**Crick & Sparks 1999**). The more rapid increase in Scotland indicated by BBS suggests that climatic warming may be allowing this species to spread its range northwards. Numbers have risen widely in Europe since 1980 (**PECBM 2006**).

Population changes

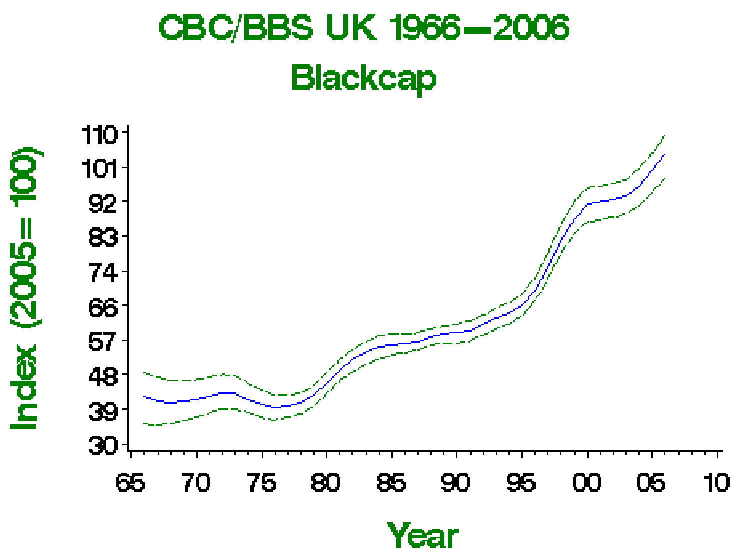
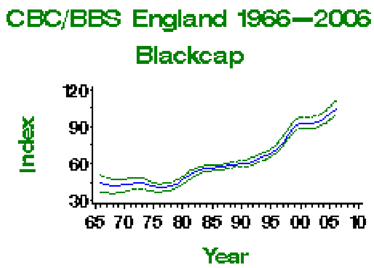


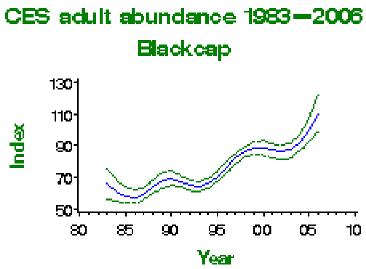
Table of population changes for Blackcap

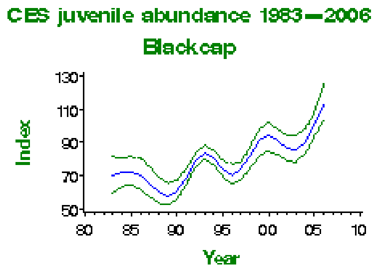
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	480	144	100	200		
	25	1980-2005	663	119	96	144		
	10	1995-2005	1335	52	46	58		
	5	2000-2005	1436	9	6	13		
CBC/BBS England	38	1967-2005	422	134	91	195		
	25	1980-2005	579	113	90	141		
	10	1995-2005	1157	47	40	53		
	5	2000-2005	1225	8	4	12		
CES adults	21	1984-2005	86	63	37	97		
	10	1995-2005	99	42	26	57		
	5	2000-2005	94	13	3	23		
CES juveniles	21	1984-2005	88	40	13	72		
	10	1995-2005	102	35	23	51		
	5	2000-2005	96	6	-4	21		
BBS UK	10	1995-2005	1229	52	45	60		
	5	2000-2005	1408	11	7	15		
BBS England	10	1995-2005	1062	46	39	53		
	5	2000-2005	1200	10	6	14		
BBS Scotland	10	1995-2005	35	142	75	209		

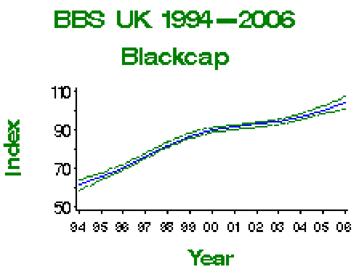
Source BBS Wales	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2000-2005	127	9	1	20		

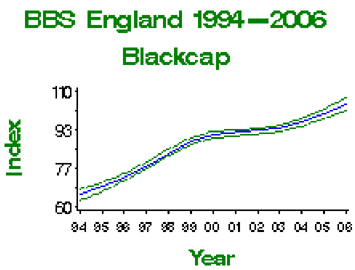
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

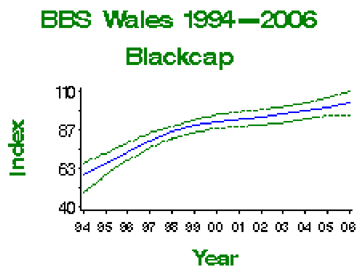








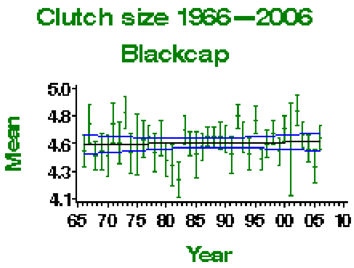


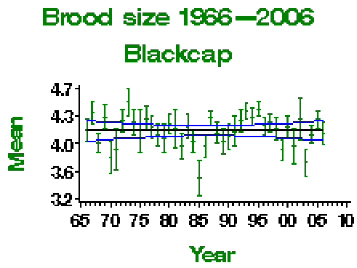


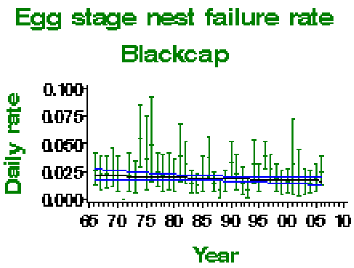
Productivity trends

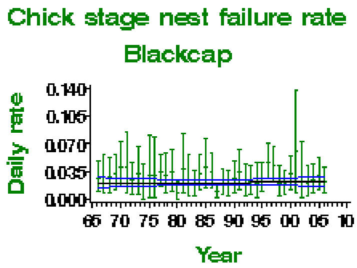
Table of productivity changes for Blackcap

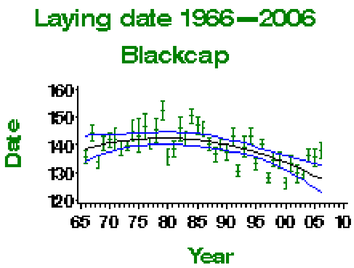
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	35	None				
Brood size	37	1968-2005	41	None				
Daily failure rate (eggs)	37	1968-2005	46	None				
Daily failure rate (chicks)	37	1968-2005	36	None				
Laying date	37	1968-2005	36	Curvilinear	May 20	May 9	-11 days	
Juvenile to Adult ratio (CES)	21	1984-2005	94	Smoothed trend	122 Index value	100 Index value	-18%	
Juvenile to Adult ratio (CES)	10	1995-2005	107	Smoothed trend	102 Index value	100 Index value	-2%	
Juvenile to Adult ratio (CES)	5	2000-2005	101	Smoothed trend	89 Index value	100 Index value	13%	

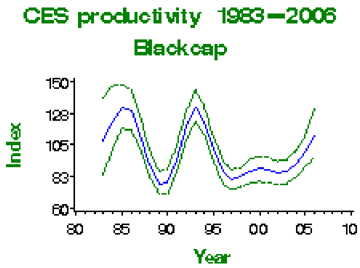












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

GARDEN WARBLER
Sylvia borin

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK, England: shallow decline

UK population size

190,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Garden Warbler abundance has varied alongside that of other trans-Saharan migrant warblers (**Siriwardena *et al.* 1998b**), probably reflecting the influence of changes in their winter environment. Despite large short-term fluctuations in abundance, the CBC/BBS and CES now both suggest the population is in long-term decline. There has been a substantial increase in nest losses at the chick stage, and post-fledging productivity, as measured by the CES, has declined sharply since 1983, raising BTO alerts.

Population changes

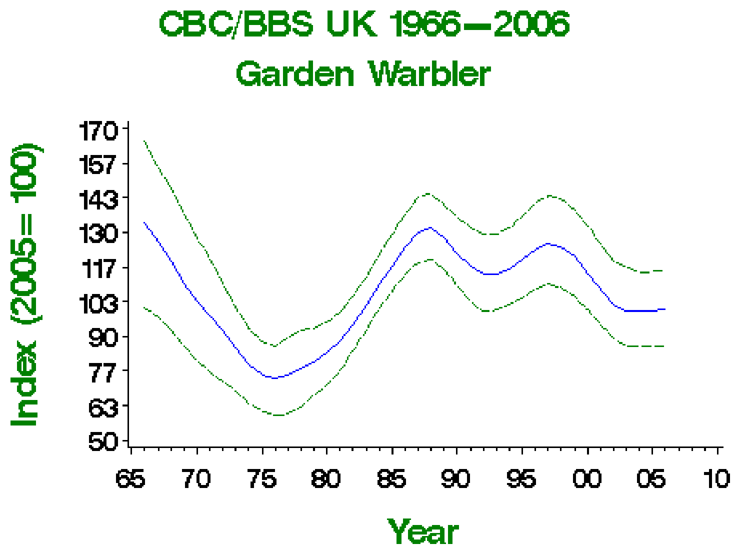
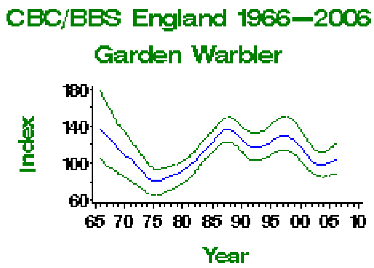
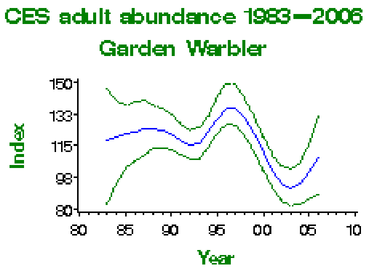


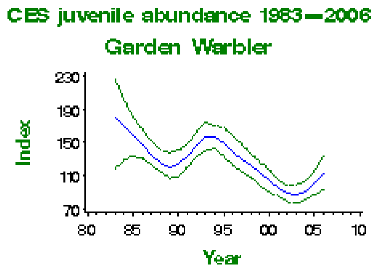
Table of population changes for Garden Warbler

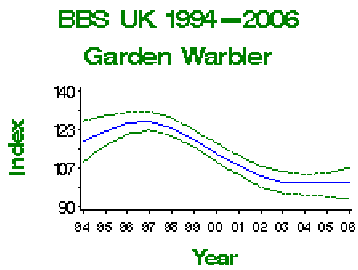
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	187	-21	-42	19		
	25	1980-2005	247	20	-9	59		
	10	1995-2005	453	-16	-25	-8		
	5	2000-2005	416	-12	-21	-6		
CBC/BBS England	38	1967-2005	158	-23	-49	19		
	25	1980-2005	208	9	-14	46		
	10	1995-2005	373	-18	-27	-11		
	5	2000-2005	339	-14	-21	-9		
CES adults	21	1984-2005	64	-17	-39	23		
	10	1995-2005	70	-23	-37	-6		
	5	2000-2005	59	-10	-22	7		
CES juveniles	21	1984-2005	63	-41	-55	-7	>25	
	10	1995-2005	69	-33	-43	-21	>25	
	5	2000-2005	63	-4	-20	23		
BBS UK	10	1995-2005	396	-19	-28	-10		
	5	2000-2005	400	-11	-19	-5		
BBS England	10	1995-2005	323	-20	-27	-10		
	5	2000-2005	325	-13	-22	-7		
BBS Wales	10	1995-2005	54	-29	-46	-8	>25	
	5	2000-2005	55	-17	-31	-2		

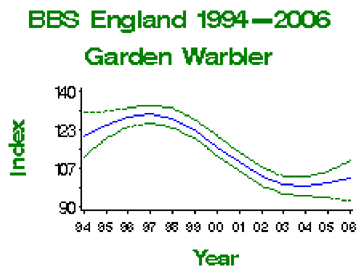
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

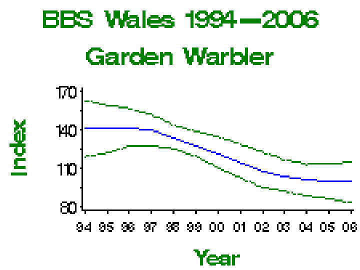








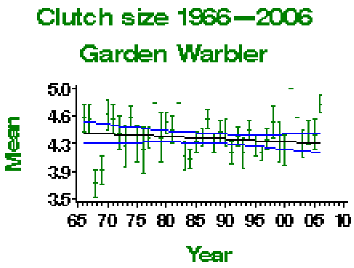


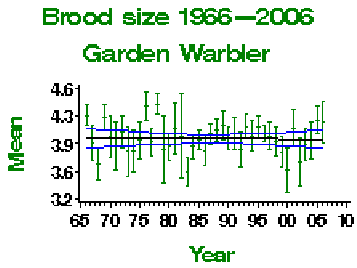


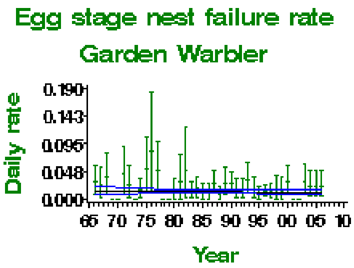
Productivity trends

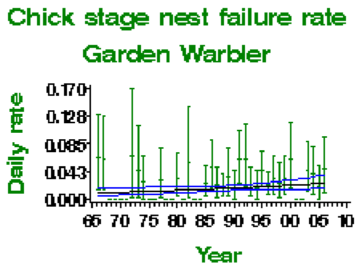
Table of productivity changes for Garden Warbler

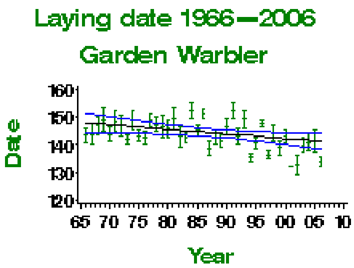
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	16	None				Small sample
Brood size	37	1968-2005	24	None				Small sample
Daily failure rate (eggs)	37	1968-2005	22	None				Small sample
Daily failure rate (chicks)	37	1968-2005	19	None				Small sample
Laying date	37	1968-2005	21	Linear decline	May 28	May 21	-7 days	Small sample
Juvenile to Adult ratio (CES)	21	1984-2005	77	Smoothed trend	140 Index value	100 Index value	-29%	
Juvenile to Adult ratio (CES)	10	1995-2005	84	Smoothed trend	92 Index value	100 Index value	9%	
Juvenile to Adult ratio (CES)	5	2000-2005	75	Smoothed trend	78 Index value	100 Index value	29%	

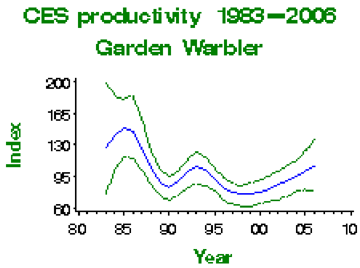












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

LESSER WHITETHROAT
Sylvia curruca

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK, England: moderate decline

UK population size

64,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Lesser Whitethroat abundance was roughly stable (albeit with short-term fluctuations) from the 1960s until the late 1980s, but the CBC/BBS and CES trends provide evidence for a subsequent moderate decline. These changes were statistically significant, and large enough over the relevant periods to trigger BTO alerts. The species would now meet the amber-list criterion of moderate decline. Wide fluctuations in productivity have been recorded by CES ringers, and may be influencing population change, but pressures during migration and in winter are the most likely causes of decline (**Fuller *et al.* 2005**).

Population changes

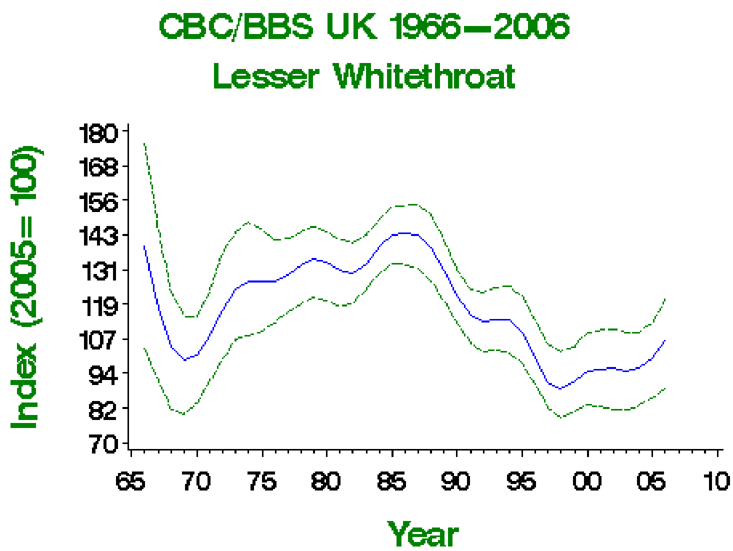
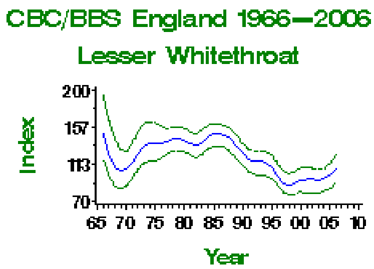
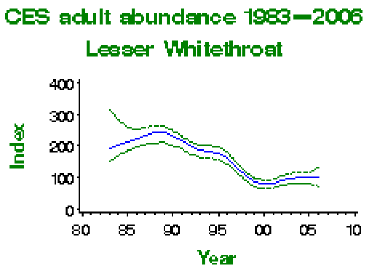


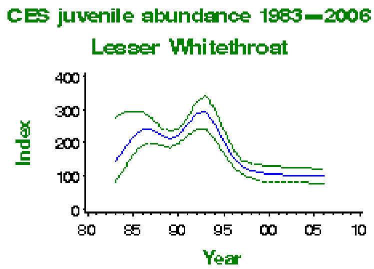
Table of population changes for Lesser Whitethroat

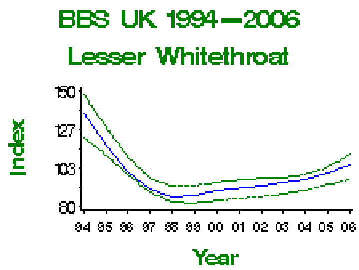
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	111	-15	-41	28		
	25	1980-2005	144	-25	-41	-8	>25	
	10	1995-2005	245	-8	-20	3		
	5	2000-2005	244	5	-5	15		
CBC/BBS England	38	1967-2005	106	-20	-48	14		
	25	1980-2005	137	-29	-45	-11	>25	
	10	1995-2005	233	-9	-22	3		
	5	2000-2005	232	6	-5	19		
CES adults	21	1984-2005	41	-50	-73	-28	>50	
	10	1995-2005	39	-44	-57	-31	>25	
	5	2000-2005	33	29	4	56		
CES juveniles	21	1984-2005	44	-44	-73	10		
	10	1995-2005	45	-51	-60	-39	>50	
	5	2000-2005	43	-5	-20	19		
BBS UK	10	1995-2005	217	-14	-27	-6		
	5	2000-2005	236	12	-1	23		
BBS England	10	1995-2005	207	-15	-29	-3		
	5	2000-2005	224	12	1	23		

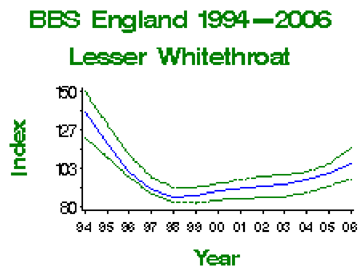
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB











Productivity trends

Table of productivity changes for Lesser Whitethroat

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Juvenile to Adult ratio (CES)	21	1984-2005	55	Smoothed trend	78 Index value	100 Index value	27%	
Juvenile to Adult ratio (CES)	10	1995-2005	56	Smoothed trend	87 Index value	100 Index value	15%	
Juvenile to Adult ratio (CES)	5	2000-2005	51	Smoothed trend	110 Index value	100 Index value	-9%	

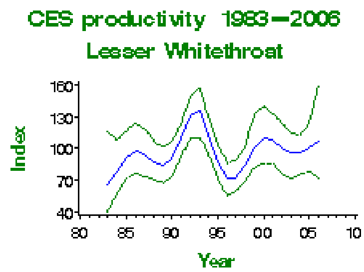
Insufficient data on clutch size available for this species

Insufficient data on brood size available for this species

Insufficient data on nest failure available for this species

Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

WHITETHROAT
Sylvia communis

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK, England: rapid decline, followed by shallow increase

UK population size

945,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Whitethroat populations had been stable for a few years up to 1968 but, after a normal autumn departure for West Africa, crashed by around 70% between the 1968 and 1969 breeding seasons. They fluctuated around their lower level until the mid 1980s, since when they have sustained a consistent shallow recovery. Recovery has been most apparent along linear waterways. In a pioneering study, **Winstanley *et al.* (1974)** linked the 1969 crash to droughts in the Whitethroat's wintering grounds in the western Sahel, just south of the Sahara Desert. Annual fluctuations in abundance, which are not shown in the smoothed trends, correlate to those in overwinter survival (**Baillie & Peach 1992**). Other trans-Saharan migrant warblers have shared similarly timed population changes in abundance (**Siriwardena *et al.* 1998b**). Productivity, as measured by CES, rose during the 1980s and has since fluctuated. It seems likely that habitat loss since the 1960s, particularly on farmland, will eventually limit the degree of recovery. Numbers have risen widely in Europe since 1980 (**PECBM 2006**).

Population changes

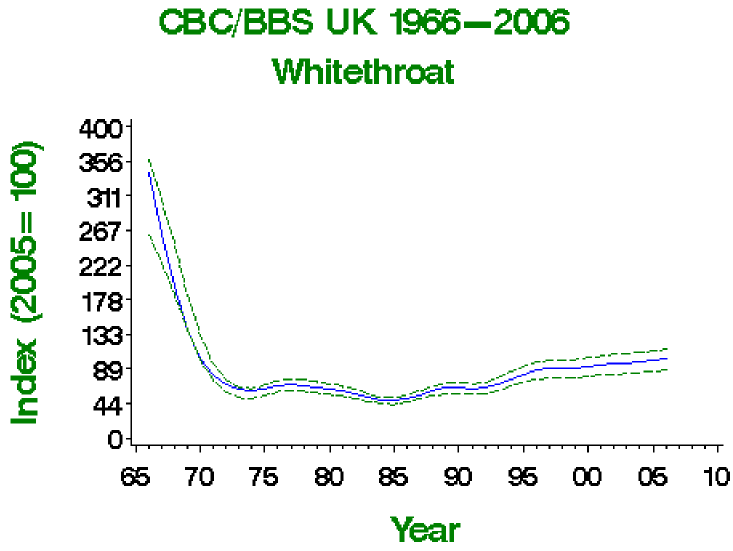
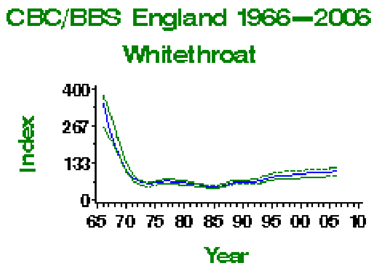


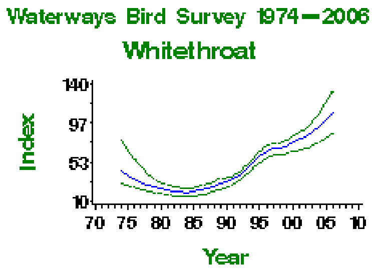
Table of population changes for Whitethroat

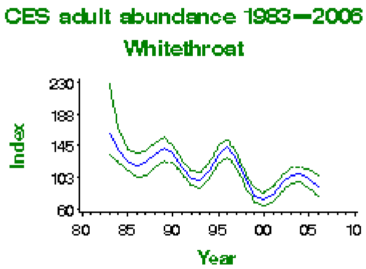
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	415	-62	-73	-49	>50	
	25	1980-2005	566	58	24	100		
	10	1995-2005	1178	22	15	28		
	5	2000-2005	1225	9	4	14		
CBC/BBS England	38	1967-2005	361	-63	-74	-48	>50	
	25	1980-2005	490	61	29	110		
	10	1995-2005	1018	20	13	24		
	5	2000-2005	1051	8	4	11		
WBS waterways	30	1975-2005	41	154	9	369		
	25	1980-2005	44	321	159	571		
	10	1995-2005	55	67	32	108		
	5	2000-2005	46	33	15	51		
CES adults	21	1984-2005	59	-28	-48	-9	>25	
	10	1995-2005	70	-25	-37	-12		
	5	2000-2005	63	39	21	63		

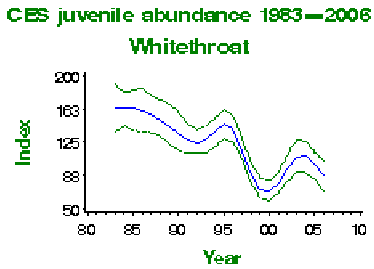
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2000-2005	68	46	14	70		
BBS UK	10	1995-2005	1108	19	11	26		
	5	2000-2005	1207	9	5	14		
BBS England	10	1995-2005	956	18	11	24		
	5	2000-2005	1035	8	4	11		
BBS Scotland	10	1995-2005	63	89	42	165		
	5	2000-2005	69	34	14	63		
BBS Wales	10	1995-2005	72	-28	-44	-14	>25	
	5	2000-2005	82	-18	-31	-6		

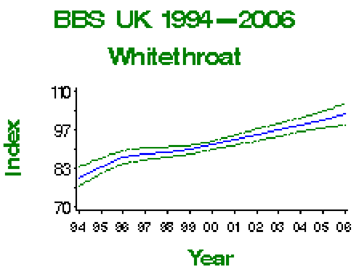
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

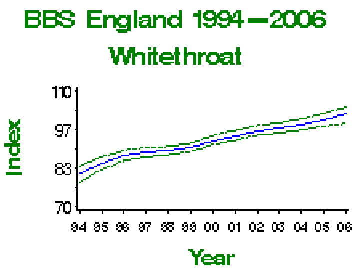


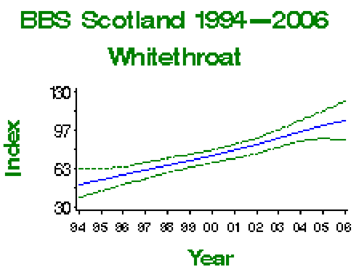


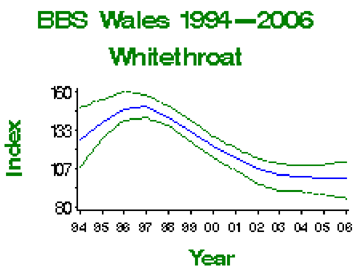










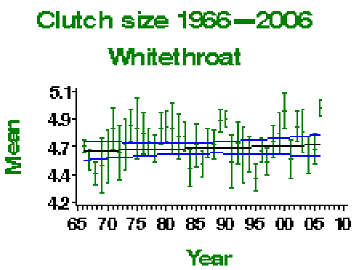


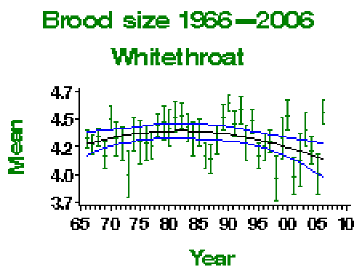
Productivity trends

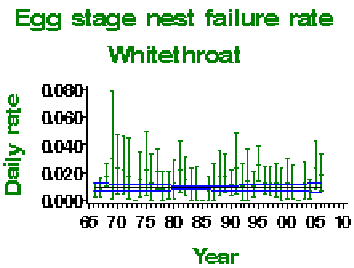
Table of productivity changes for Whitethroat

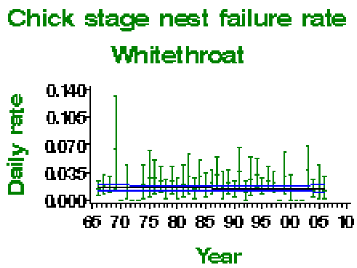
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment

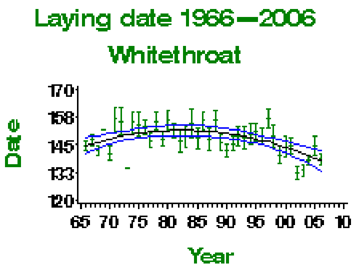
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Daily failure rate (eggs)	37	1968-2005	41	None				
Daily failure rate (chicks)	37	1968-2005	48	None				
Laying date	37	1968-2005	18	Curvilinear	May 26	May 19	-7 days	Small sample
Juvenile to Adult ratio (CES)	21	1984-2005	74	Smoothed trend	101 Index value	100 Index value	-1%	
Juvenile to Adult ratio (CES)	10	1995-2005	86	Smoothed trend	133 Index value	100 Index value	-25%	
Juvenile to Adult ratio (CES)	5	2000-2005	77	Smoothed trend	138 Index value	100 Index value	-27% >25	

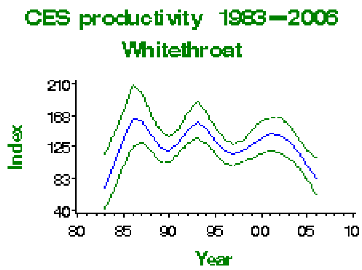












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

WOOD WARBLER
Phylloscopus sibilatrix

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2 (declining)
UK: amber (25–50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

UK: decline

UK population size

17,200 (15,830–18,570) males in 1984–85 (**Bibby 1989**: **APEP06**); 9,000–10,500 pairs in 2000 (updated using BBS trend: **BiE04**)

Status summary

Wood Warblers, which have a westerly distribution in Britain, were covered relatively poorly until BBS began. Little change was apparent at the few CBC plots on which the species occurred (**Marchant *et al.* 1990**, **Crick *et al.* 1998**). The species' breeding range varied little between the two atlas periods (**Gibbons *et al.* 1993**), but has subsequently retreated heavily from lowland England. BBS shows a rapid and significant decline since 1994, and accordingly the species has been moved from the green to the amber list. Nest success has apparently improved considerably at the egg stage, although nest record samples are small. With declines evident across northern and western Europe, this previously 'secure' species is now provisionally categorised as 'declining' (**BirdLife International 2004**).

Population changes

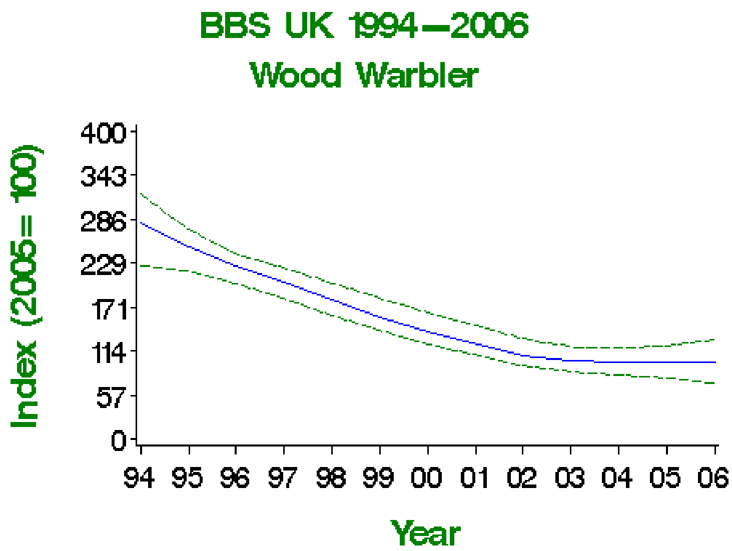


Table of population changes for Wood Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	52	-60	-72	-45	>50	
	5	2000-2005	45	-29	-48	-1	>25	

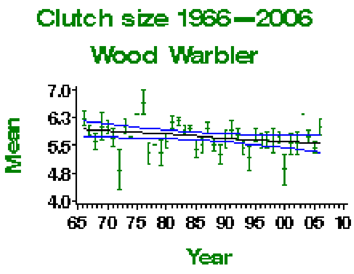
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

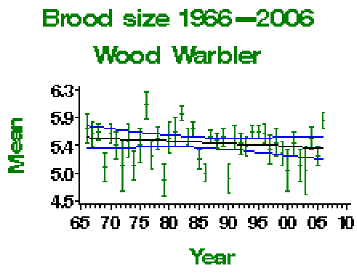
Productivity trends

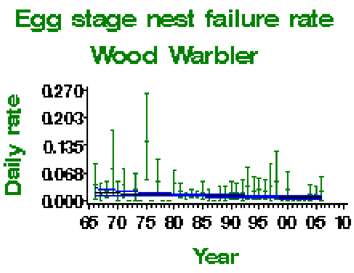
Table of productivity changes for Wood Warbler

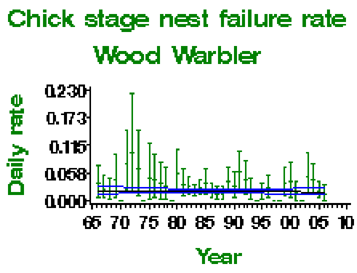
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	16	None				Small sample
Brood size	37	1968-2005	36	None				
Daily failure rate (eggs)	37	1968-2005	21	Linear decline	1.92% nests/day	0.8% nests/day	-58.3%	Small sample
Daily failure rate	37	1968-	27	None				Small

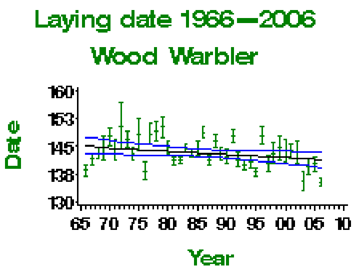
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

CHIFFCHAFF
Phylloscopus collybita

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK, England: shallow increase

UK population size

807,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Chiffchaff abundance crashed in the late 1960s/early 1970s in common with that of other trans-Saharan warblers (**Siriwardena *et al.* 1998a**). After remaining stable for a decade, the population recovered strongly, and has continued to increase. This recovery is evident from both CBC/BBS and CES data. Climate change may partially explain the trend towards earlier laying (**Crick & Sparks 1999**). Overwinter survival may be the critical factor responsible for changes in abundance, as it is for **Whitethroat** and **Sedge Warbler**. Productivity has decreased as the population has risen. Numbers have risen widely in Europe since 1980 (**PECBM 2006**).

Population changes

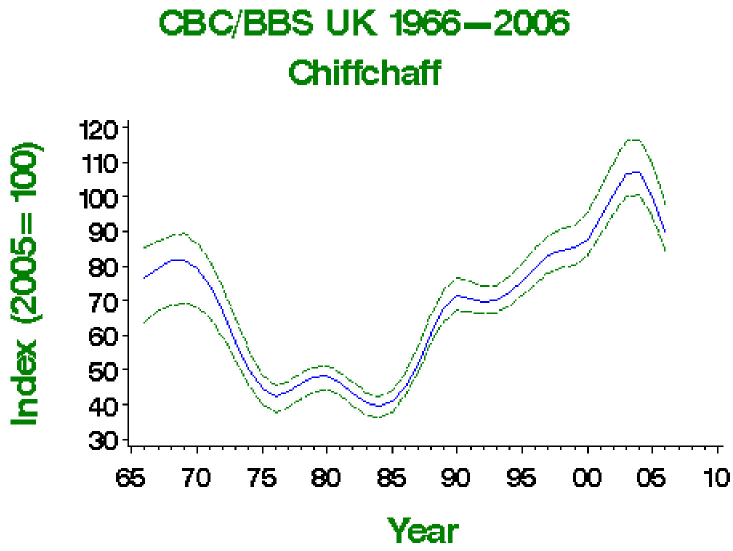
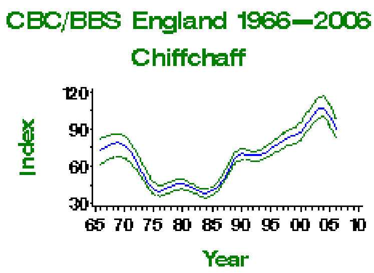


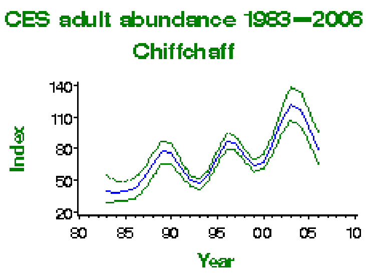
Table of population changes for Chiffchaff

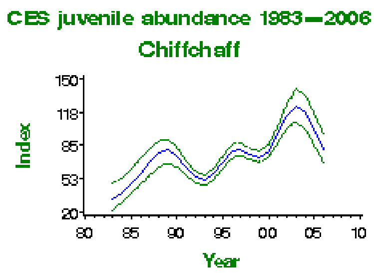
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	434	26	7	65		
	25	1980-2005	600	107	85	147		
	10	1995-2005	1235	32	28	41		
	5	2000-2005	1350	14	10	19		
CBC/BBS England	38	1967-2005	372	32	10	75		
	25	1980-2005	511	118	89	163		
	10	1995-2005	1045	35	31	43		
	5	2000-2005	1128	15	11	19		
CES adults	21	1984-2005	67	159	68	284		
	10	1995-2005	80	39	8	79		
	5	2000-2005	80	48	28	74		
CES juveniles	21	1984-2005	77	157	61	301		
	10	1995-2005	93	45	18	82		
	5	2000-2005	88	26	8	49		
BBS UK	10	1995-2005	1139	27	22	36		
	5	2000-2005	1324	13	9	18		
BBS England	10	1995-2005	959	31	27	40		
	5	2000-2005	1106	14	11	18		
BBS Wales	10	1995-2005	119	10	-2	29		

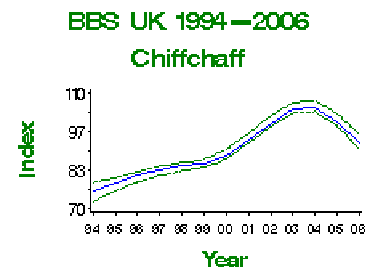
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

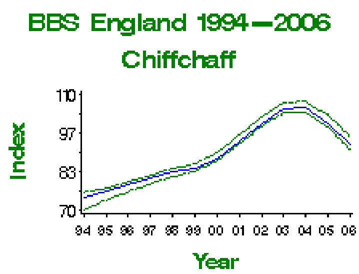
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

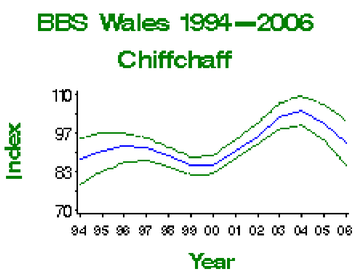








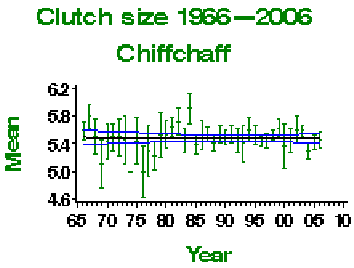


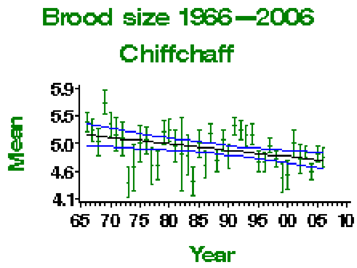


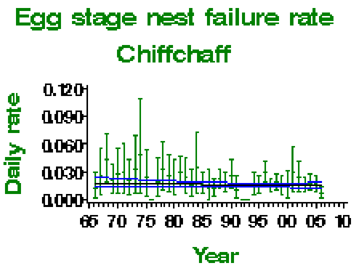
Productivity trends

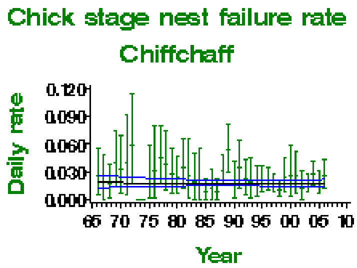
Table of productivity changes for Chiffchaff

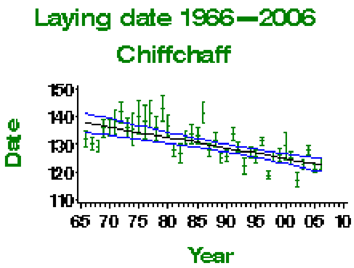
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	29	None				Small sample
Brood size	37	1968-2005	32	Linear decline	5.12 chicks	4.75 chicks	-7.4%	
Daily failure rate (eggs)	37	1968-2005	37	None				
Daily failure rate (chicks)	37	1968-2005	34	None				
Laying date	37	1968-2005	43	Linear decline	May 17	May 3	-14 days	
Juvenile to Adult ratio (CES)	21	1984-2005	85	Smoothed trend	144 Index value	100 Index value	-31%	
Juvenile to Adult ratio (CES)	10	1995-2005	100	Smoothed trend	152 Index value	100 Index value	-34% >25	
Juvenile to Adult ratio (CES)	5	2000-2005	94	Smoothed trend	151 Index value	100 Index value	-34% >25	

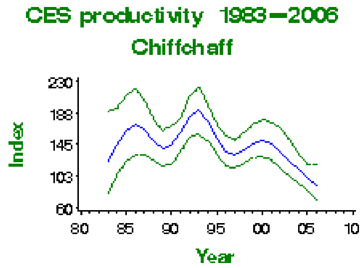












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

WILLOW WARBLER
Phylloscopus trochilus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: amber (25–50% population decline)

Long-term trend

England: rapid decline

UK population size

2,125,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Willow Warbler abundance has apparently shown different trends at different UK latitudes. The overall CBC/BBS trend shows a rapid decline during the 1980s and early 1990s, after 20 years of relative stability, and, on the strength of a 31% decline on CBC plots between 1974 and 1999, the species has been moved from the green to the amber list. This decline occurred mainly in the south of the UK, however, accompanied by a fall in survival rates there (**Peach *et al.* 1995a**), with Scottish populations remaining unaffected. BBS figures since 1994 indicate a stark contrast between strong increase in Scotland and in Northern Ireland, and further severe decreases in England and in Wales. Pressures on migration and in the winter are likely to be affecting the population, as is a reduction in habitat quality on the breeding grounds (**Fuller *et al.* 2005**). The recent population decline is associated with a moderate decline in productivity as measured by CES and a substantial increase in failure rates at the egg stage. Average laying dates have become a week earlier, perhaps in response to recent climatic warming (**Crick & Sparks 1999**). Numbers have fallen widely in Europe since 1980 (**PECBM 2006**).

Population changes

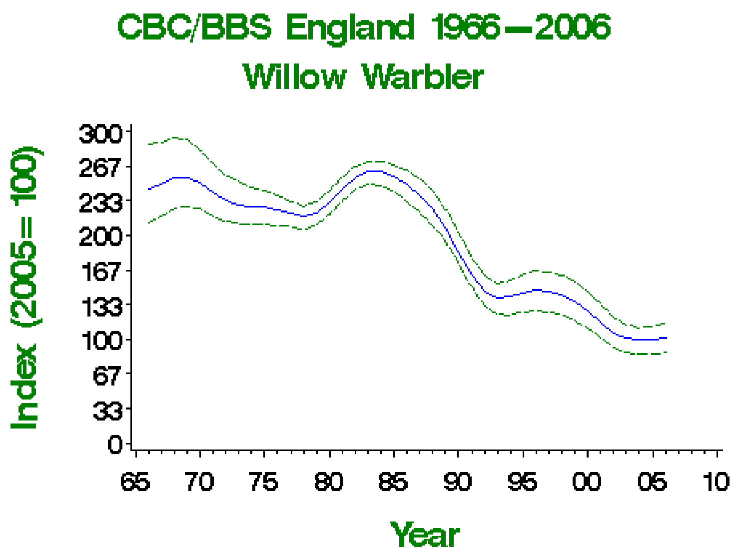
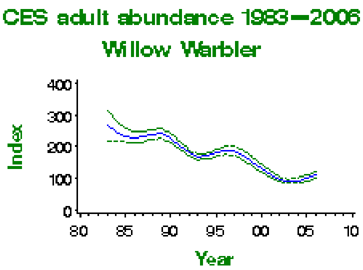


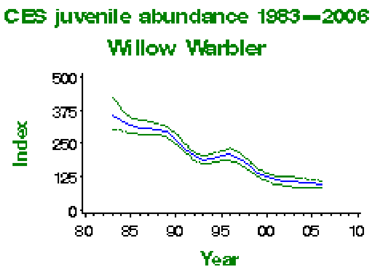
Table of population changes for Willow Warbler

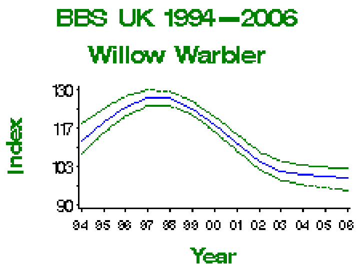
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	383	-60	-71	-48	>50	
	25	1980-2005	499	-57	-65	-49	>50	
	10	1995-2005	931	-31	-35	-26	>25	
	5	2000-2005	816	-21	-26	-19		
CES adults	21	1984-2005	88	-60	-68	-50	>50	
	10	1995-2005	95	-45	-51	-39	>25	
	5	2000-2005	82	-24	-30	-16		
CES juveniles	21	1984-2005	90	-70	-77	-62	>50	
	10	1995-2005	100	-51	-61	-42	>50	
	5	2000-2005	90	-19	-31	-9		
BBS UK	10	1995-2005	1251	-16	-22	-10		
	5	2000-2005	1221	-15	-20	-11		
BBS England	10	1995-2005	850	-34	-39	-30	>25	
	5	2000-2005	797	-21	-26	-17		
BBS Scotland	10	1995-2005	179	5	-10	18		

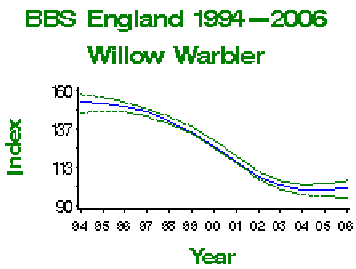
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales								
	5	2000-2005	166	-18	-26	-12		
BBS N.Ireland	10	1995-2005	68	28	-3	47		
	5	2000-2005	83	-14	-26	-3		

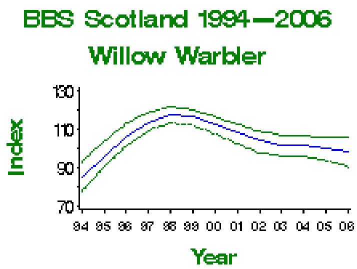
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

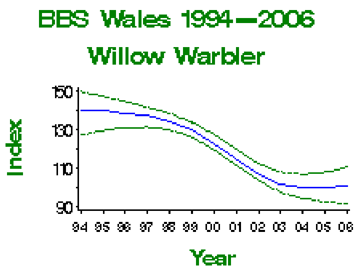


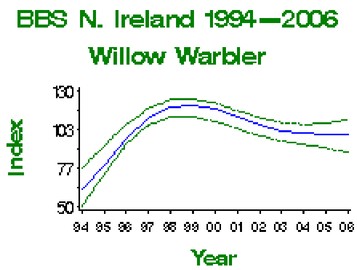








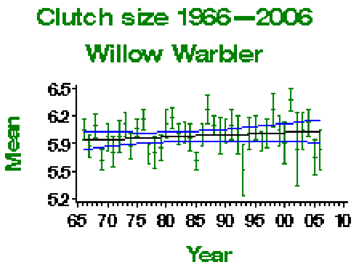


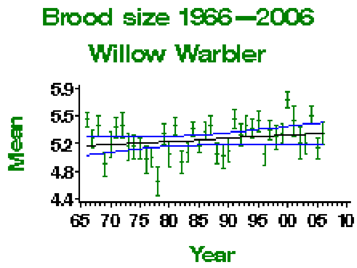


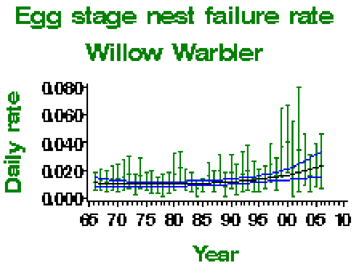
Productivity trends

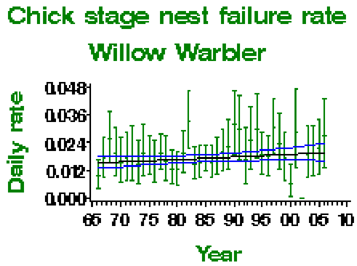
Table of productivity changes for Willow Warbler

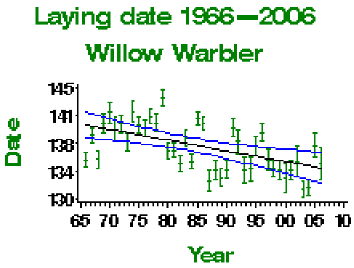
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	49	None				
Brood size	37	1968-2005	132	None				
Daily failure rate (eggs)	37	1968-2005	69	Curvilinear	1.08% nests/day	2.15% nests/day	99.1%	
Daily failure rate (chicks)	37	1968-2005	121	None				
Laying date	37	1968-2005	84	Linear decline	May 20	May 14	-6 days	
Juvenile to Adult ratio (CES)	21	1984-2005	96	Smoothed trend	162 Index value	100 Index value	-38% >25	
Juvenile to Adult ratio (CES)	10	1995-2005	106	Smoothed trend	122 Index value	100 Index value	-18%	
Juvenile to Adult ratio (CES)	5	2000-2005	95	Smoothed trend	110 Index value	100 Index value	-9%	

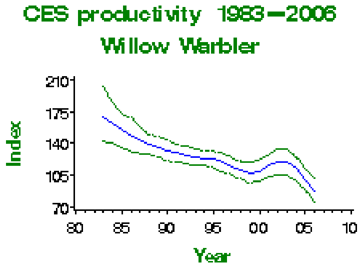












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

GOLDCREST
Regulus regulus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: amber (>50% population decline, but data possibly unrepresentative)

Long-term trend

England: fluctuating, with no long-term trend

UK population size

842,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

Goldcrest abundance is affected strongly by winter weather, and the strong increase in the species' CBC/BBS index up to the mid 1970s can be interpreted as recovery from the cold winters of the early 1960s. The subsequent decline has resulted in the recent addition of the species to the amber list, although it only meets the criterion because 1975, the start of the relevant 25-year period, was the peak year of the population index. Trends over longer and shorter periods all suggest population increase, and the long-term trend looks very much like what would be obtained had a series of damped oscillations followed an earlier perturbation. The high amplitude of year-to-year change reflects the species high breeding potential, and its sensitivity to cold winter weather. BBS has recorded substantial increases in all UK countries except Wales, where a significant decline has been registered. CBC had relatively poor coverage of conifer plantations, in which Goldcrests occur at increasing densities as the trees mature. The increase in area of such prime habitat has therefore been poorly reflected in the long-term trend.

Population changes

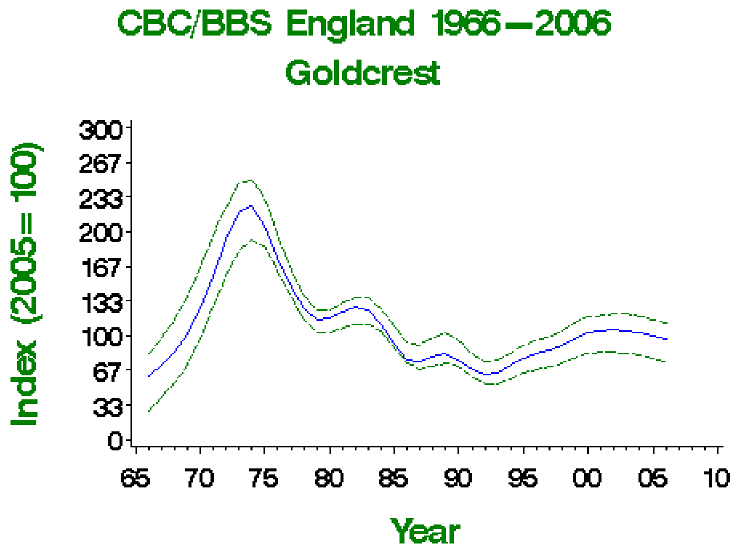
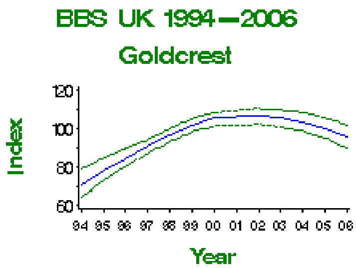
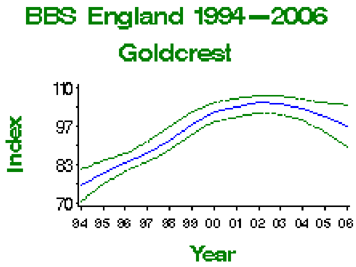


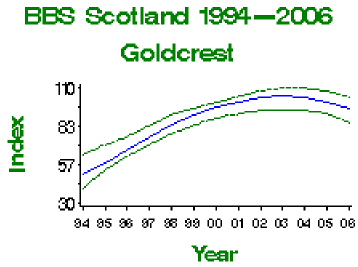
Table of population changes for Goldcrest

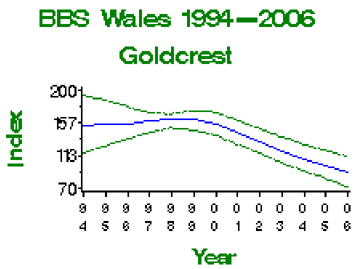
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	193	40	-22	202		
	25	1980-2005	253	-14	-34	9		
	10	1995-2005	496	28	14	41		
	5	2000-2005	555	-2	-10	6		
BBS UK	10	1995-2005	647	29	10	46		
	5	2000-2005	761	-5	-12	4		
BBS England	10	1995-2005	449	24	12	37		
	5	2000-2005	542	-2	-10	7		
BBS Scotland	10	1995-2005	77	73	30	103		
	5	2000-2005	79	4	-8	18		
BBS Wales	10	1995-2005	78	-35	-56	-1	>25	
	5	2000-2005	90	-35	-47	-20	>25	
BBS N.Ireland	10	1995-2005	37	62	9	114		
	5	2000-2005	43	-7	-25	25		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB









Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**
- **Garden BirdWatch results**

SPOTTED FLYCATCHER
Muscicapa striata

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3, declining
UK: red (>50% population decline)
UK Biodiversity Action Plan: click here

Long-term trend

UK, England: rapid decline

UK population size

63,700 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: BiE04, APEP06)

Status summary

Spotted Flycatchers have declined rapidly and consistently since the 1960s and the CBC/BBS decline is also reflected in the trend revealed by CES. Productivity measures indicate greater nest losses at the chick stage, and a decrease overall in the ratio of juveniles to adults. Demographic modelling shows that decreases in the annual survival rates of birds in their first year of life are most likely to have driven the decline (**Freeman & Crick 2003**). Decreasing survival rates may have been caused by deteriorations in woodland habitats, particularly leading to declines in large flying insects, or by conditions either on the wintering grounds or along migration routes (**Fuller *et al.* 2005**). Since trends have been similar across UK regions and habitats, however, it is more likely that the decline has been driven by factors operating outside the UK. A predator 'control' experiment has suggested that the abundance of the introduced grey squirrel and other nest predators may be determining the breeding success of Spotted Flycatchers, especially in woodland, where nest success was lower overall than in gardens (**Stoate & Szczur 2006**).

Population changes

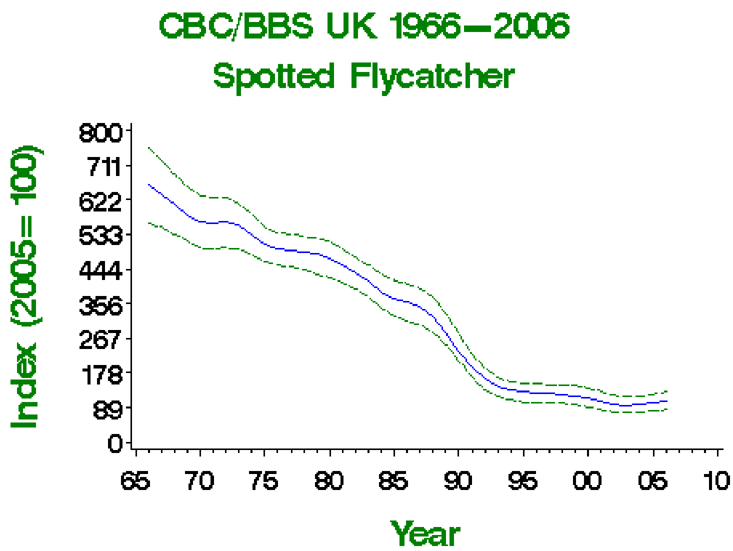
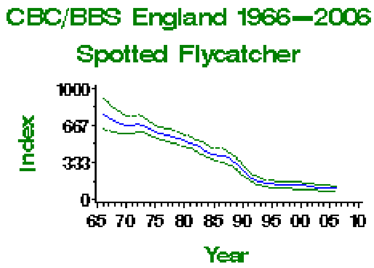


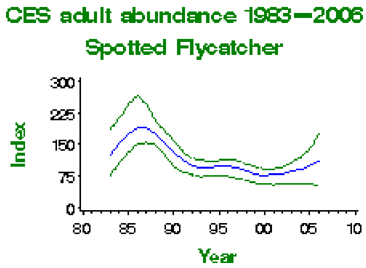
Table of population changes for Spotted Flycatcher

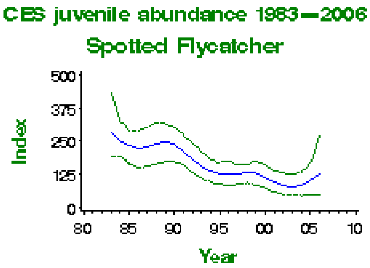
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	118	-84	-89	-78	>50	
	25	1980-2005	136	-79	-84	-72	>50	
	10	1995-2005	219	-23	-31	-9		
	5	2000-2005	200	-10	-22	1		
CBC/BBS England	38	1967-2005	91	-87	-91	-80	>50	
	25	1980-2005	102	-81	-87	-74	>50	
	10	1995-2005	158	-29	-39	-15	>25	
	5	2000-2005	140	-20	-31	-9		
CES adults	21	1984-2005	15	-34	-80	27		Small sample
	10	1995-2005	13	2	-46	62		Small sample
	5	2000-2005	12	30	-30	125		Small sample
CES juveniles	21	1984-2005	11	-61	-84	-13	>50	Small sample
BBS UK	10	1995-2005	199	-27	-38	-12	>25	
	5	2000-2005	194	-9	-23	4		

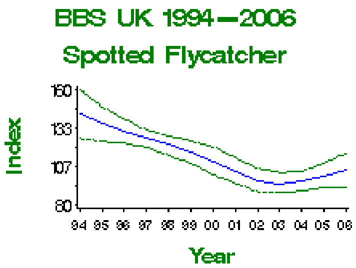
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

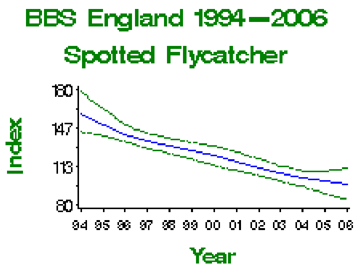
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







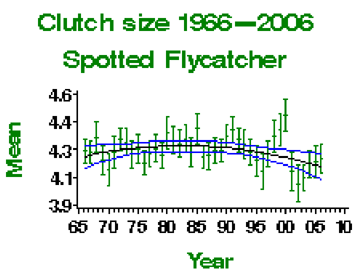


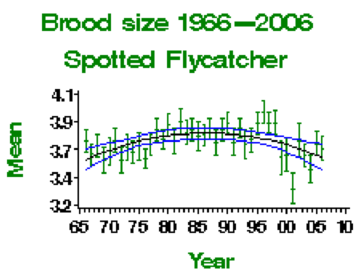


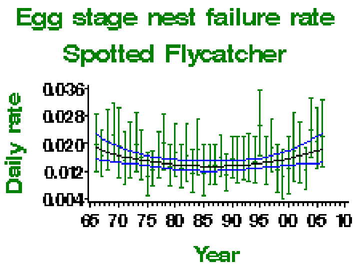
Productivity trends

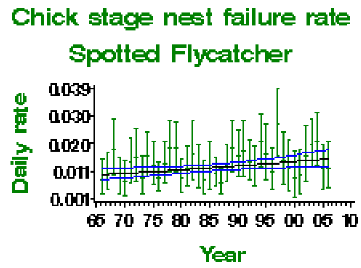
Table of productivity changes for Spotted Flycatcher

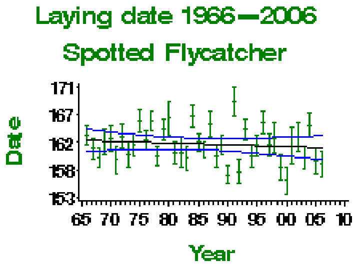
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	82	Curvilinear	4.22 eggs	4.16 eggs	-1.6%	
Brood size	37	1968-2005	132	Curvilinear	3.61 chicks	3.61 chicks	-0.1%	
Daily failure rate (eggs)	37	1968-2005	123	Curvilinear	1.77% nests/day	1.78% nests/day	0.6%	
Daily failure rate (chicks)	37	1968-2005	110	Linear increase	0.96% nests/day	1.47% nests/day	53.1%	
Laying date	37	1968-2005	73	None				
Juvenile to Adult ratio (CES)	21	1984-2005	21	Smoothed trend	102 Index value	100 Index value	-2%	
Juvenile to Adult ratio (CES)	10	1995-2005	18	Smoothed trend	80 Index value	100 Index value	25%	Small sample
Juvenile to Adult ratio (CES)	5	2000-2005	16	Smoothed trend	134 Index value	100 Index value	-26%	Small sample

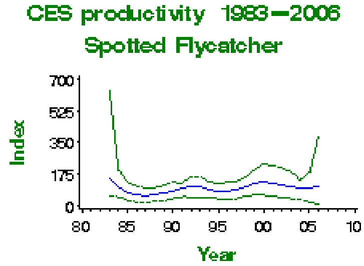












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

PIED FLYCATCHER
Ficedula hypoleuca

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK: uncertain

UK population size

35,000–40,000 pairs in 1990 (1988–91 Atlas: **APEP06**); 29,500–33,800 pairs in 2000 (updated using BBS trend: **BiE04**)

Status summary

Pied Flycatchers are restricted to upland deciduous woods in parts of western and northern Britain. The proportions of CBC plots occupied rose during the 1980s, but the species was never numerous enough for trends to be estimated (**Marchant *et al.* 1990**). The 1988–91 breeding atlas revealed a small expansion in range since 1968–72, aided by the provision of nest boxes in new areas (**Gibbons *et al.* 1993**). BBS suggests that abundance has decreased steeply since 1994, provisionally raising a BTO alert. Percentage nestbox occupancy has also fallen over a similar period at a number of sites monitored as **RAS** projects. Numbers have fallen widely in Europe since 1980 (**PECBM 2006**). The reasons for this decline are unknown. In the Netherlands, climate change may have brought about decline in Pied Flycatchers by advancing the peak period of food availability for this species in deciduous forests – the birds being unable so far to compensate for this change by breeding earlier (**Both 2002**, **Both *et al.* 2006**).

Population changes

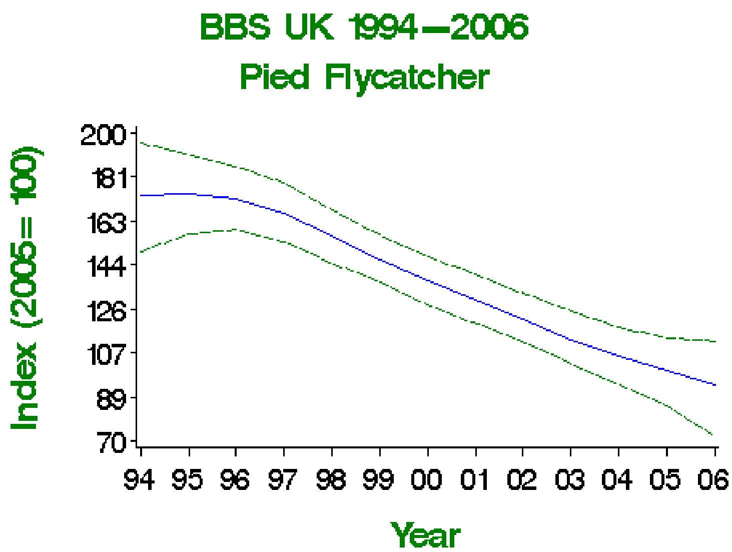


Table of population changes for Pied Flycatcher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	41	-43	-56	-29	>25	

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

Productivity trends

Information on productivity not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

LONG-TAILED TIT
Aegithalos caudatus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

England: moderate increase

UK population size

273,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

This species undergoes wide fluctuations in numbers, suffering heavy mortality when winters are severe, but able to recover quickly by virtue of its high breeding potential. Numbers were low after the severe winters of the early 1960s and again during a series of relatively cold winters beginning in the late 1970s. The starting years of the 25-year and longest monitoring periods coincided with troughs in population, thus exaggerating the long-term trend. Both CBC/BBS and CES index trends show progressive increases in Long-tailed Tit abundance beginning in the mid 1980s, but tailing off in recent years. Clutch and brood sizes have become smaller since the 1960s and, curiously, nest losses have switched from the egg to the chick stage. The marked trend towards earlier laying may be explained by recent climatic changes (**Crick & Sparks 1999**). Numbers have risen widely in Europe since 1980 (**PECBM 2006**).

Population changes

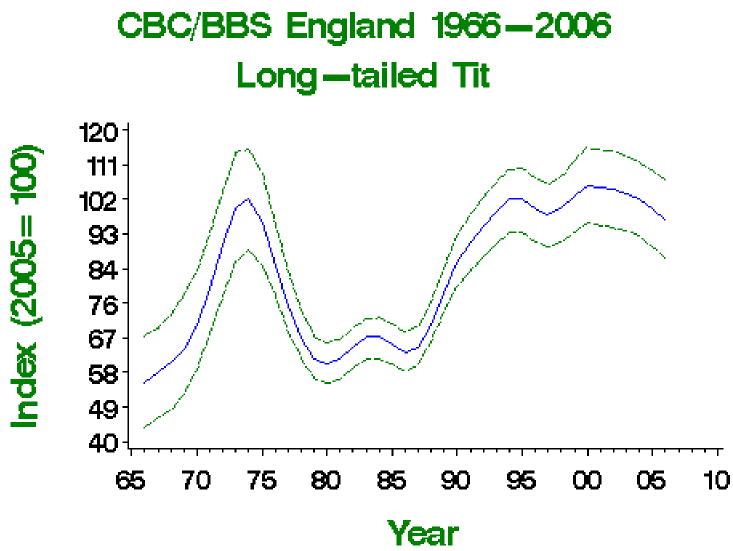
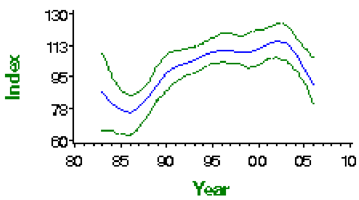


Table of population changes for Long-tailed Tit

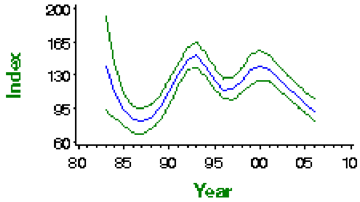
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	283	73	31	138		
	25	1980-2005	378	67	38	96		
	10	1995-2005	724	-2	-9	5		
	5	2000-2005	761	-6	-12	0		
CES adults	21	1984-2005	77	24	-4	67		
	10	1995-2005	91	-8	-18	6		
	5	2000-2005	86	-10	-19	3		
CES juveniles	21	1984-2005	69	-11	-33	30		
	10	1995-2005	86	-20	-32	-8		
	5	2000-2005	81	-29	-38	-14	>25	
BBS UK	10	1995-2005	735	0	-8	9		
	5	2000-2005	843	-7	-14	0		
BBS England	10	1995-2005	645	-4	-11	4		
	5	2000-2005	740	-4	-11	2		
BBS Wales	10	1995-2005	53	-5	-25	24		
	5	2000-2005	61	-7	-22	17		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

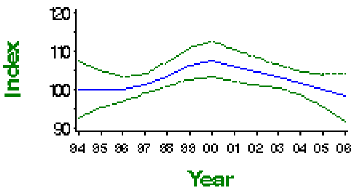
CES adult abundance 1983–2006
Long–tailed Tit



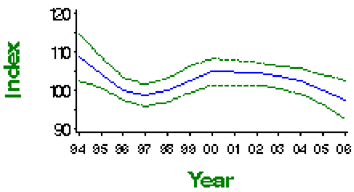
CES juvenile abundance 1983–2006
Long–tailed Tit



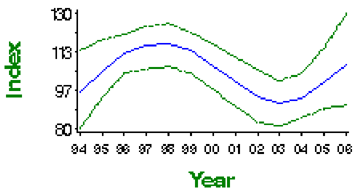
BBS UK 1994–2006
Long–tailed Tit



BBS England 1994–2006
Long–tailed Tit



BBS Wales 1994–2006
Long–tailed Tit

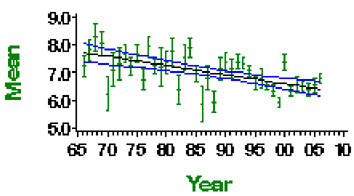


Productivity trends

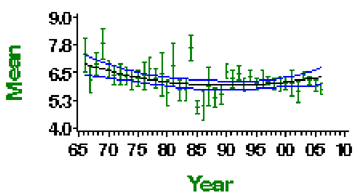
Table of productivity changes for Long-tailed Tit

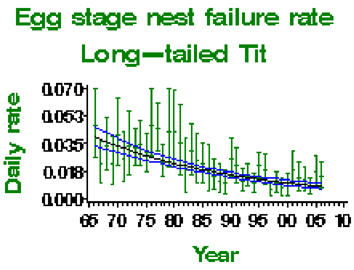
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	33	Linear decline	7.65 eggs	6.44 eggs	-15.8%	
Brood size	37	1968-2005	27	Curvilinear	6.72 chicks	6.28 chicks	-6.6%	Small sample
Daily failure rate (eggs)	37	1968-2005	52	Linear decline	3.62% nests/day	0.84% nests/day	-76.8%	
Daily failure rate (chicks)	37	1968-2005	36	Linear increase	0.83% nests/day	1.59% nests/day	91.6%	
Laying date	37	1968-2005	43	Linear decline	Apr 21	Apr 6	-15 days	
Juvenile to Adult ratio (CES)	21	1984-2005	83	Smoothed trend	125 Index value	100 Index value	-20%	
Juvenile to Adult ratio (CES)	10	1995-2005	98	Smoothed trend	104 Index value	100 Index value	-4%	
Juvenile to Adult ratio (CES)	5	2000-2005	94	Smoothed trend	128 Index value	100 Index value	-22%	

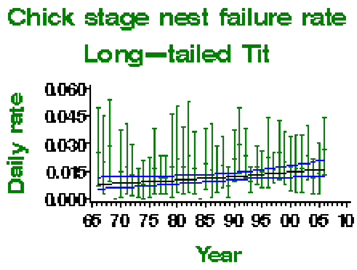
Clutch size 1966–2006
Long–tailed Tit

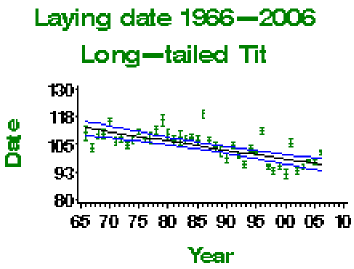


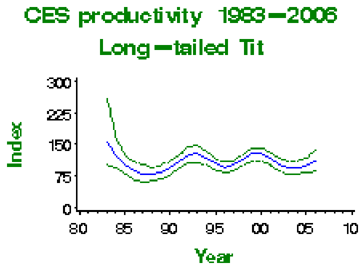
Brood size 1966–2006
Long–tailed Tit











Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**
- **Garden BirdWatch results**

BLUE TIT
Cyanistes caeruleus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK, England: shallow increase

UK population size

3,535,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Blue Tit populations have increased in abundance, in parallel with those of **Great Tits**, with brief pauses in the long-term upward trend. The recent years of the CBC/BBS index show fluctuations but no clear trend. Food provision in gardens during winter and availability of nest boxes, which may reduce egg and nestling predation, have both increased and may have contributed to the rise in population. Decreasing clutch and brood sizes, and a substantial decline in the proportion of young birds in early autumn, have accompanied the population increase. Numbers have risen widely in Europe since 1980 (**PECBM 2006**).

Population changes

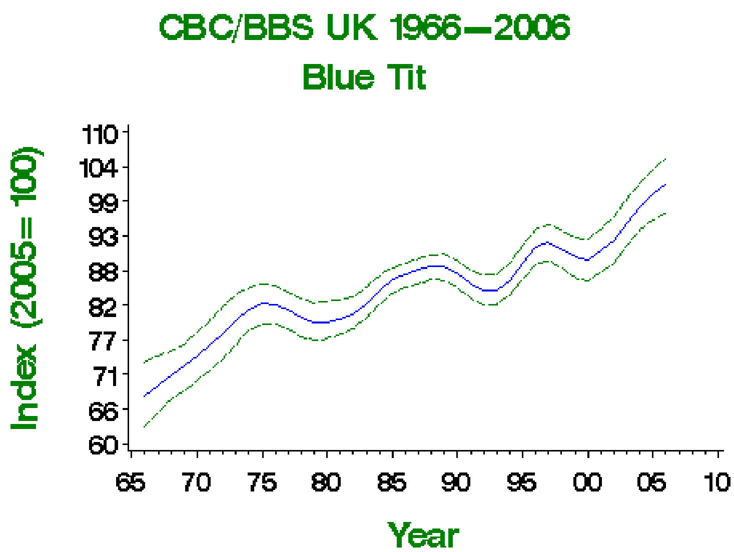
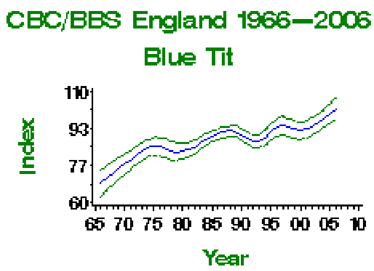


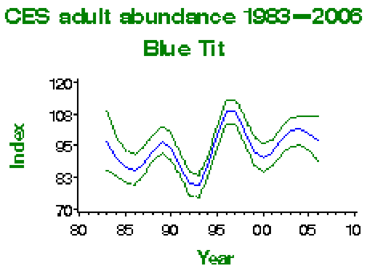
Table of population changes for Blue Tit

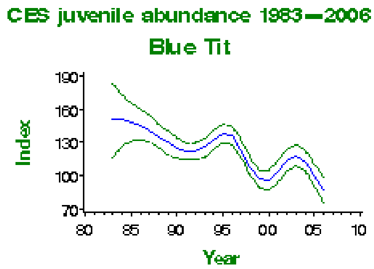
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	726	44	32	59		
	25	1980-2005	996	26	15	36		
	10	1995-2005	2036	12	9	16		
	5	2000-2005	2116	12	9	15		
CBC/BBS England	38	1967-2005	598	41	24	58		
	25	1980-2005	815	21	10	32		
	10	1995-2005	1652	9	6	12		
	5	2000-2005	1694	8	6	11		
CES adults	21	1984-2005	95	11	-6	26		
	10	1995-2005	107	1	-7	12		
	5	2000-2005	99	11	0	23		
CES juveniles	21	1984-2005	95	-34	-48	-13	>25	
	10	1995-2005	108	-28	-36	-18	>25	
	5	2000-2005	101	5	-7	18		
BBS UK	10	1995-2005	1913	12	8	15		
	5	2000-2005	2085	11	8	13		
BBS England	10	1995-2005	1545	9	6	12		
	5	2000-2005	1667	8	5	10		

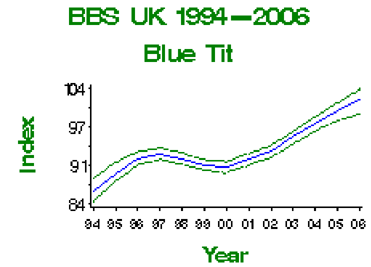
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales	10	1995-2005	161	22	10	36		
	5	2000-2005	191	18	11	28		
BBS N.Ireland	10	1995-2005	65	31	-5	66		
	5	2000-2005	80	17	8	33		

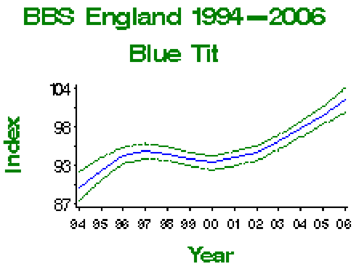
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

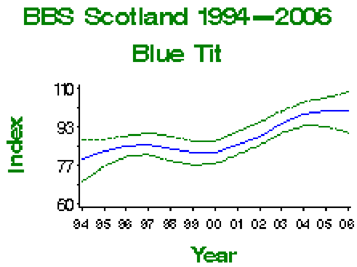


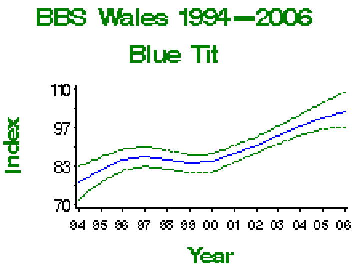


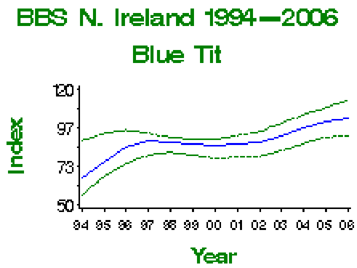










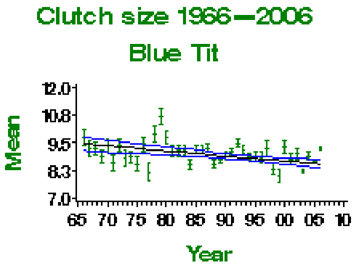


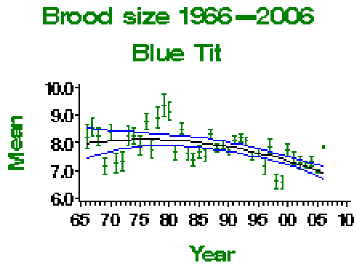
Productivity trends

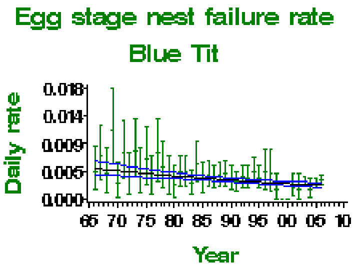
Table of productivity changes for Blue Tit

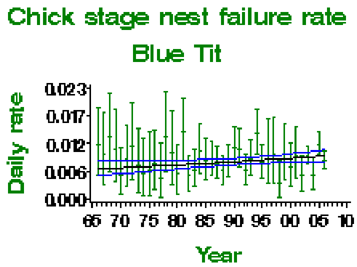
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	131	Linear decline	9.41 eggs	8.57 eggs	-8.9%	
Brood size	37	1968-2005	220	Curvilinear	8.04 chicks	7.01 chicks	-12.7%	
Daily failure rate (eggs)	37	1968-2005	215	Linear decline	0.48% nests/day	0.23% nests/day	-52.1%	
Daily failure rate (chicks)	37	1968-	165	Linear	0.64%	0.89%	39.1%	

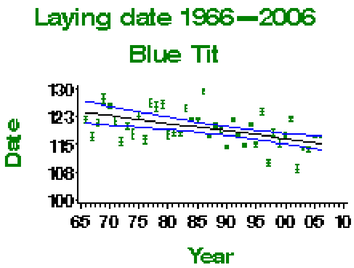
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Laying date								
Juvenile to Adult ratio (CES)		2005		trend	value	value		
Juvenile to Adult ratio (CES)	10	1995-2005	112	Smoothed trend	145 Index value	100 Index value	-31% >25	
Juvenile to Adult ratio (CES)	5	2000-2005	104	Smoothed trend	100 Index value	100 Index value	0%	

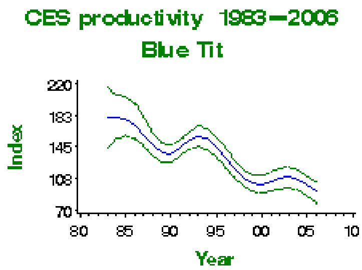












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

GREAT TIT
Parus major

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK, England: moderate increase

UK population size

2,074,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Great Tits have increased steadily since the 1960s, with the exception of two brief periods of stability or shallow decline during the mid 1970s and late 1980s. Recent CBC/BBS and BBS results suggest that this increase is continuing, in all UK countries. More food provision in gardens during winter is one possible explanation for the increase. Changes in different aspects of breeding performance are contradictory: CES productivity has fluctuated, brood size has decreased, and nest success at the egg stage has improved. Laying date has advanced by about a week in the UK, in line with climatic change. In a Dutch study population, however, the breeding period did not advance during 1973–95 and became increasingly mistimed with respect to the peak of insect abundance (**Visser *et al.* 1998**).

Population changes

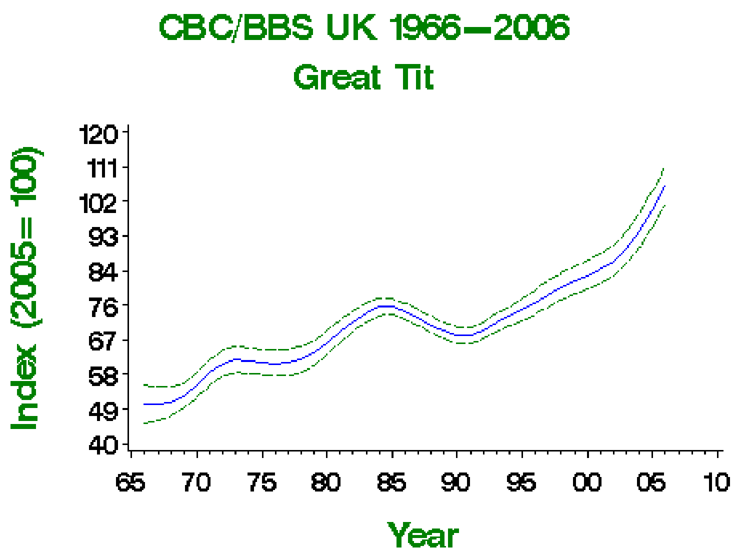
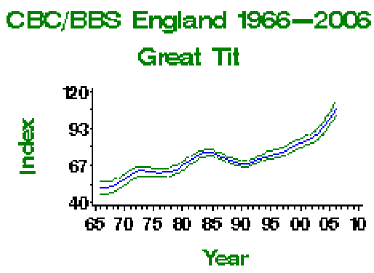


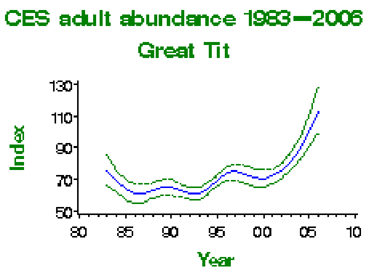
Table of population changes for Great Tit

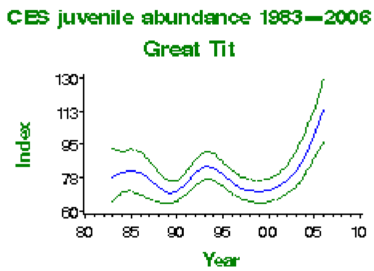
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	681	100	75	127		
	25	1980-2005	932	52	37	67		
	10	1995-2005	1893	35	30	39		
	5	2000-2005	1999	20	17	24		
CBC/BBS England	38	1967-2005	562	96	76	132		
	25	1980-2005	765	50	37	67		
	10	1995-2005	1538	35	31	40		
	5	2000-2005	1602	21	18	25		
CES adults	21	1984-2005	89	46	22	80		
	10	1995-2005	102	44	21	66		
	5	2000-2005	96	42	23	65		
CES juveniles	21	1984-2005	91	25	-2	61		
	10	1995-2005	105	27	3	50		
	5	2000-2005	100	41	21	65		
BBS UK	10	1995-2005	1772	37	32	42		
	5	2000-2005	1968	20	17	24		
BBS England	10	1995-2005	1433	36	31	41		
	5	2000-2005	1575	21	19	25		

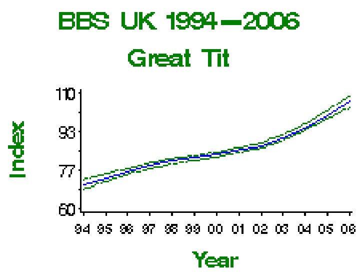
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales	10	1995-2005	153	34	18	49		
	5	2000-2005	182	18	9	27		
BBS N.Ireland	10	1995-2005	58	101	52	124		
	5	2000-2005	73	13	4	30		

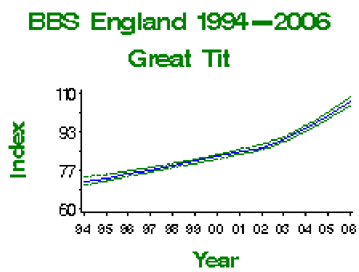
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

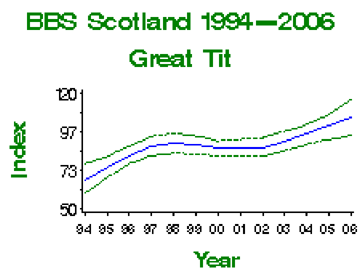


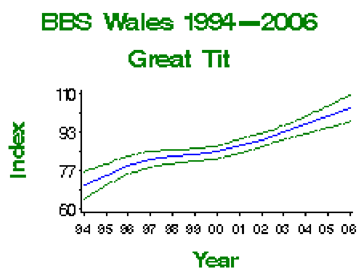


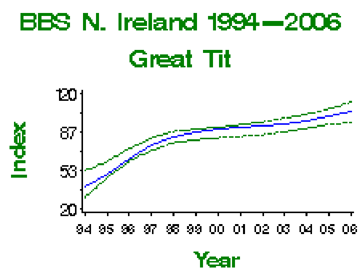










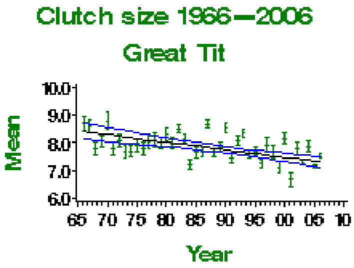


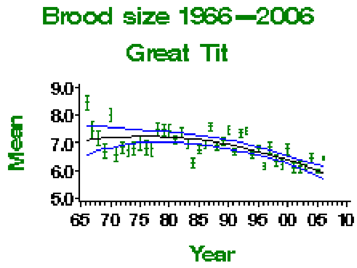
Productivity trends

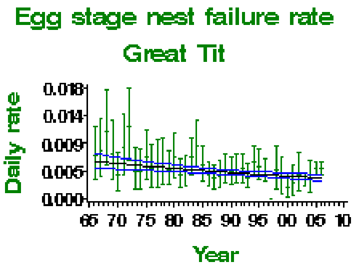
Table of productivity changes for Great Tit

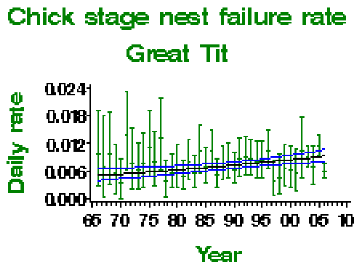
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	131	Linear decline	8.36 eggs	7.34 eggs	-12.1%	
Brood size	37	1968-2005	236	Curvilinear	7.15 chicks	6.01 chicks	-15.9%	
Daily failure rate (eggs)	37	1968-2005	221	Linear decline	0.59% nests/day	0.35% nests/day	-40.7%	
Daily failure rate (chicks)	37	1968-	168	Linear	0.53%	0.91%	71.7%	

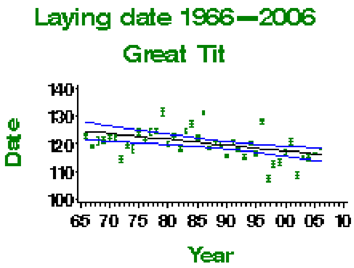
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
(CES)		2005		trend	value	value		
Juvenile to Adult ratio (CES)	10	1995-2005	110	Smoothed trend	113 Index value	100 Index value	-11%	
Juvenile to Adult ratio (CES)	5	2000-2005	104	Smoothed trend	99 Index value	100 Index value	1%	

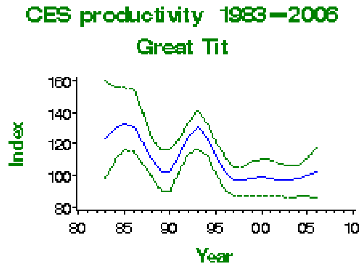












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

COAL TIT
Periparus ater

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

England: probable moderate increase

UK population size

653,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

While other common tit species have increased, the UK Coal Tit population has been rather stable since the mid 1970s, following earlier rapid increase. The ratios of Coal Tit to **Blue** and **Great Tits** caught for ringing have both shown a sustained increase since 1960 (**Perrins 2003**), however, although in these figures population change may be confounded to some degree with changes in behaviour among birds and bird ringers. Confidence intervals are wide, but BBS shows large changes in population sizes that have varied geographically across the UK. This pattern suggests that Coal Tit abundance in the UK may be controlled by a complex range of factors.

Population changes

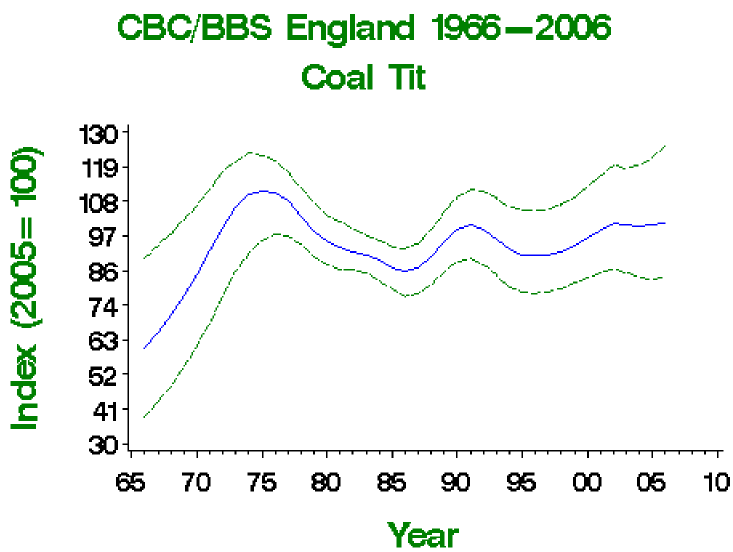
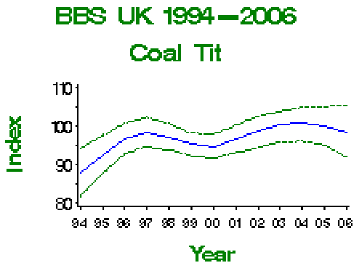
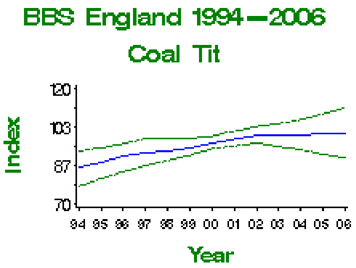


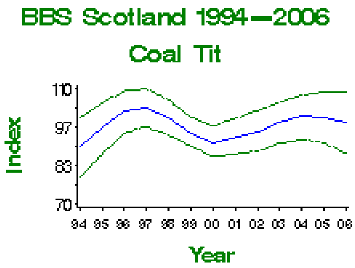
Table of population changes for Coal Tit

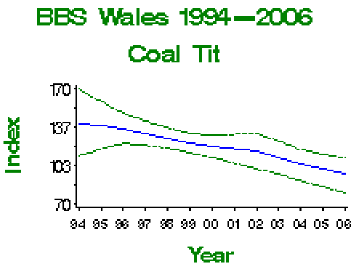
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	194	52	-12	182		
	25	1980-2005	252	5	-22	42		
	10	1995-2005	461	10	-5	29		
	5	2000-2005	488	4	-6	15		
BBS UK	10	1995-2005	634	8	-2	20		
	5	2000-2005	723	6	-3	15		
BBS England	10	1995-2005	411	14	-4	40		
	5	2000-2005	475	4	-9	17		
BBS Scotland	10	1995-2005	102	4	-13	26		
	5	2000-2005	102	10	-5	24		
BBS Wales	10	1995-2005	66	-27	-46	-2	>25	
	5	2000-2005	79	-16	-30	-2		
BBS N.Ireland	10	1995-2005	52	66	22	98		
	5	2000-2005	64	4	-9	20		

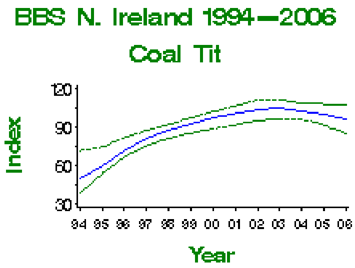
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB











Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**
- **Garden BirdWatch results**

WILLOW TIT
Poecile montana

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: red (>50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

UK, England: rapid decline

UK population size

8,500 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Willow Tits have been in decline since the mid 1970s, and have become extinct in an ever-growing number of former haunts. The continuing decline in the CBC/BBS index through the 1990s, following a brief period of stability during the 1980s, is replicated in the CES abundance trend. The UK conservation listing has recently been upgraded from amber to red. Numbers have changed least in the wet woodlands that the species prefers (**Siriwardena 2004**). Farmland is now only rarely occupied. The most likely causes of decline are competition with other tit species, increasing nest predation by Great Spotted Woodpeckers, and deterioration in the quality of woodland as feeding habitat for Willow Tits through canopy closure and increased browsing by deer (**Perrins 2003**, **Siriwardena 2004**, **Fuller *et al.* 2005**). Numbers have fallen widely in Europe since 1980 (**PECBM 2006**).

Population changes

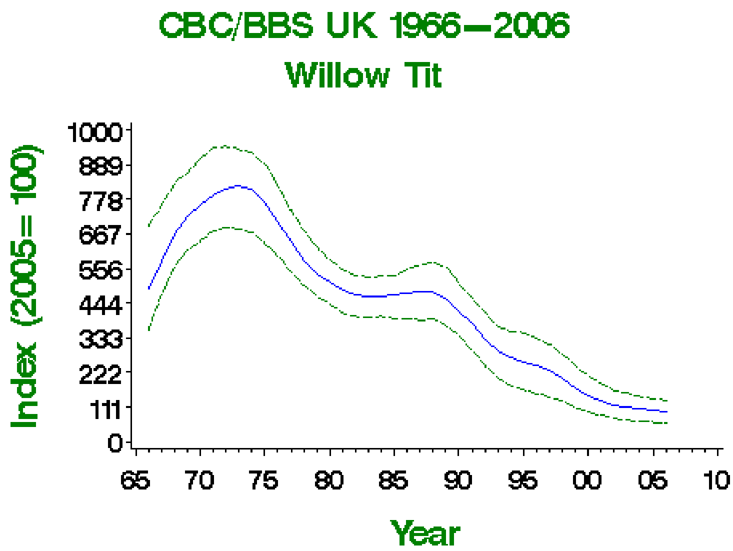
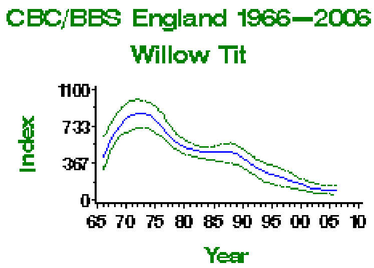
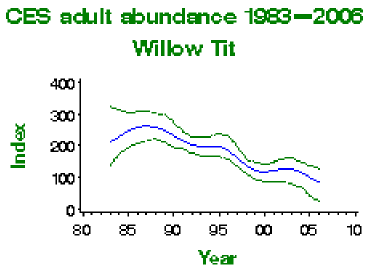


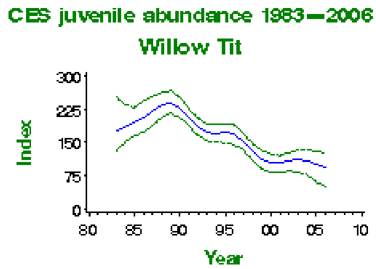
Table of population changes for Willow Tit

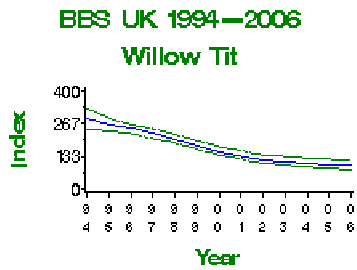
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	42	-83	-91	-71	>50	
	25	1980-2005	44	-80	-89	-70	>50	
	10	1995-2005	62	-61	-70	-47	>50	
	5	2000-2005	46	-32	-49	-16	>25	
CBC/BBS England	38	1967-2005	39	-82	-91	-69	>50	
	25	1980-2005	40	-81	-91	-70	>50	
	10	1995-2005	55	-61	-71	-50	>50	
	5	2000-2005	39	-35	-52	-18	>25	
CES adults	21	1984-2005	20	-56	-87	-21	>50	
	10	1995-2005	17	-50	-82	-22	>25	Small sample
CES juveniles	21	1984-2005	29	-46	-72	-12	>25	
	10	1995-2005	24	-42	-69	-20	>25	
	5	2000-2005	15	-5	-41	31		Small sample
BBS UK	10	1995-2005	53	-62	-70	-47	>50	
	5	2000-2005	44	-34	-51	-18	>25	
BBS England	10	1995-2005	46	-63	-72	-49	>50	
	5	2000-2005	38	-36	-51	-18	>25	

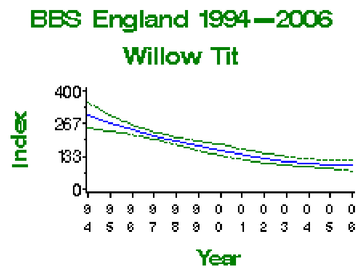
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB











Productivity trends

Table of productivity changes for Willow Tit

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Juvenile to Adult ratio (CES)	21	1984-2005	32	Smoothed trend	102 Index value	100 Index value	-2%	
Juvenile to Adult ratio (CES)	10	1995-2005	27	Smoothed trend	79 Index value	100 Index value	27%	
Juvenile to Adult ratio (CES)	5	2000-2005	17	Smoothed trend	84 Index value	100 Index value	18%	Small sample

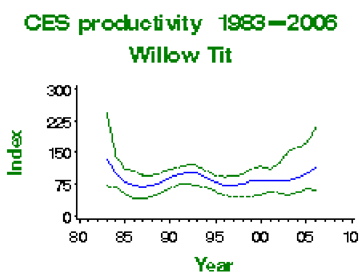
Insufficient data on clutch size available for this species

Insufficient data on brood size available for this species

Insufficient data on nest failure available for this species

Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology

- BirdTrack results
- Garden BirdWatch results

MARSH TIT
Poecile palustris

• **Population changes** • **Productivity trends** • **Additional information**

Conservation listings

Europe: SPEC category 3, declining
UK: red (>50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

UK, England: rapid decline

UK population size

52,800 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP2**)

Status summary

Marsh Tit abundance has declined almost constantly since BTO monitoring began.. The species' UK conservation listing has recently been upgraded from amber to red. Detailed demographic work suggests that the decline may have been driven by low annual survival and that neither increased predation nor interspecific competition is responsible (**Siriwardena 2006**). Nest failure rates have fallen during the period of decline. Marsh Tits nest in woods as small as half a hectare (**Hinsley *et al.* 1995**), but there is evidence from CBC that declines are steeper on smaller plots (G.M. Siriwardena, unpubl.). Reductions in the structural and floristic diversity of woodland, resulting partly from increased browsing by deer, are likely to have caused the decline (**Perrins 2003**, **Fuller *et al.* 2005**). Following declines elsewhere in western Europe during the 1990s, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

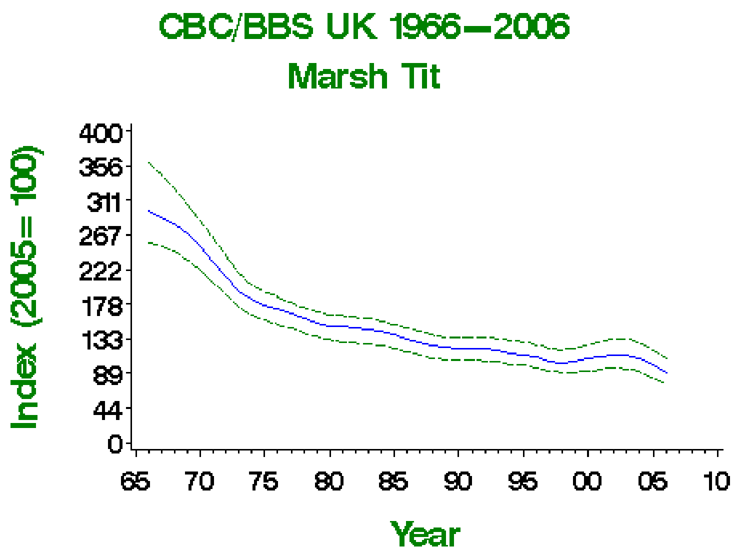
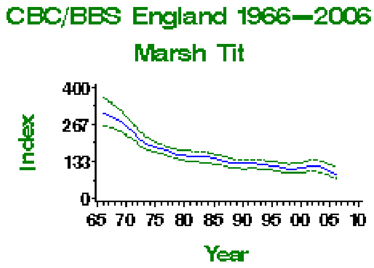
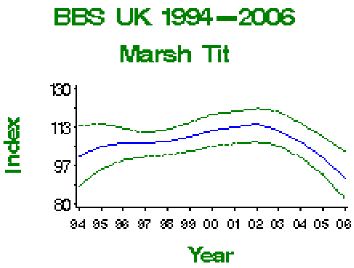


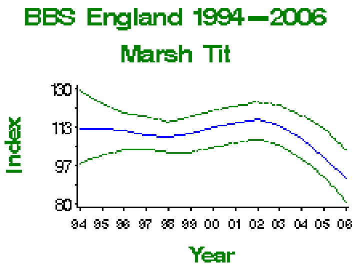
Table of population changes for Marsh Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	86	-66	-75	-54	>50	
	25	1980-2005	102	-33	-48	-12	>25	
	10	1995-2005	162	-11	-22	2		
	5	2000-2005	153	-7	-18	9		
CBC/BBS England	38	1967-2005	80	-67	-76	-51	>50	
	25	1980-2005	93	-36	-51	-13	>25	
	10	1995-2005	147	-15	-27	1		
	5	2000-2005	137	-10	-24	10		
BBS UK	10	1995-2005	134	-4	-19	16		
	5	2000-2005	146	-11	-21	3		
BBS England	10	1995-2005	119	-11	-27	11		
	5	2000-2005	130	-12	-24	6		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



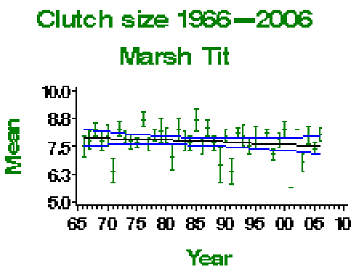


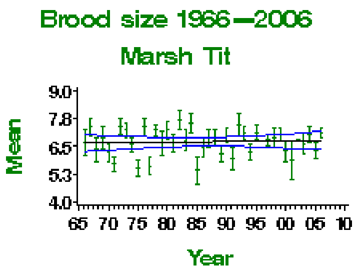


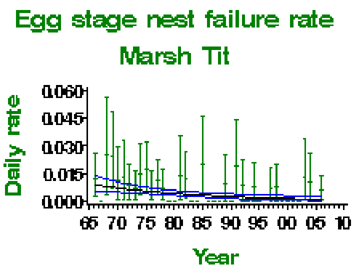
Productivity trends

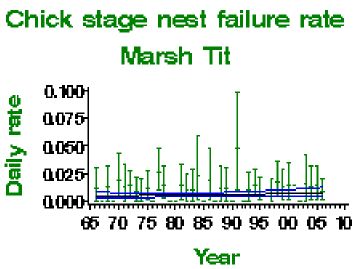
Table of productivity changes for Marsh Tit

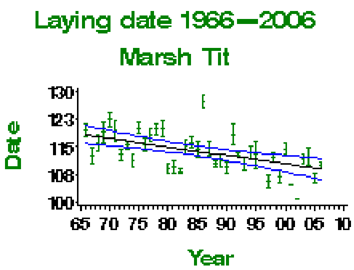
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	13	None				Small sample
Brood size	37	1968-2005	22	None				Small sample
Daily failure rate (eggs)	37	1968-2005	19	Linear decline	0.8% nests/day	0.12% nests/day	-85%	Small sample
Daily failure rate (chicks)	37	1968-2005	19	None				Small sample
Laying date	37	1968-2005	13	Linear decline	Apr 28	Apr 19	-9 days	Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

- **Garden BirdWatch results**

NUTHATCH
Sitta europaea

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK, England: rapid increase

UK population size

144,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Nuthatch abundance has increased rapidly since the mid 1970s. Despite minor setbacks during the 1990s, there is no indication yet of a halt to the upward trend. This increase has been accompanied by a range expansion into northern England (**Gibbons *et al.* 1993**) and has been associated with a large increase in brood size. The reasons for these changes are unknown. A trend towards earlier laying, perhaps as a result of climate change (**Crick *et al.* 1997**), has also been identified. Numbers have risen widely in Europe since 1980 (**PECBM 2006**).

Population changes

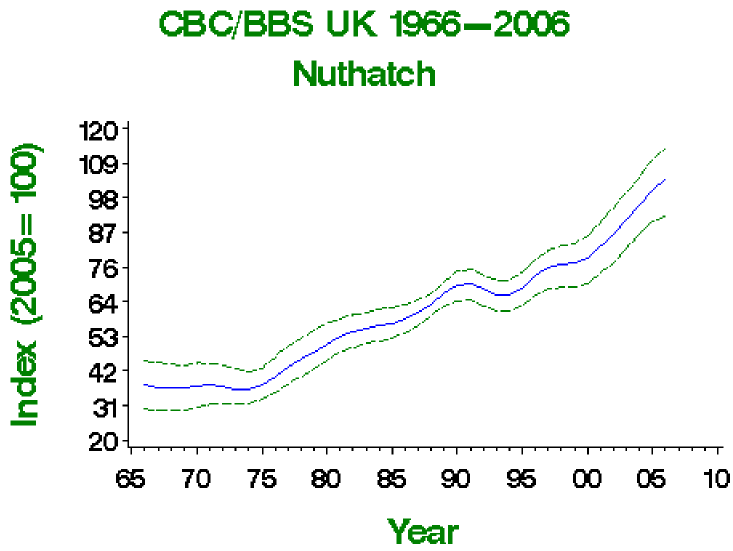
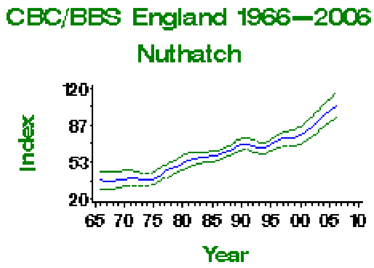
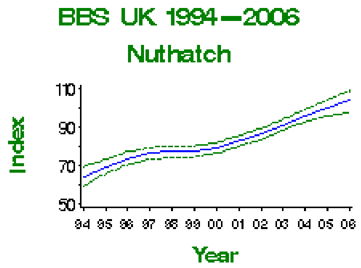


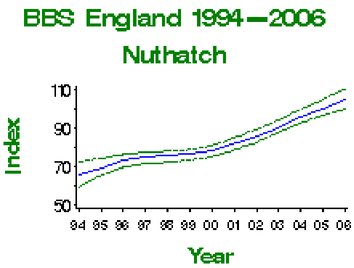
Table of population changes for Nuthatch

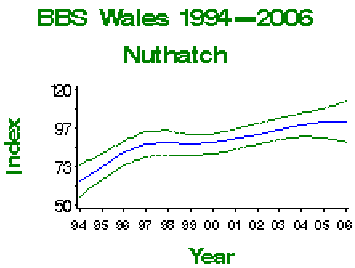
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	157	170	104	267		
	25	1980-2005	214	97	54	139		
	10	1995-2005	405	45	32	61		
	5	2000-2005	440	28	19	37		
CBC/BBS England	38	1967-2005	135	172	99	281		
	25	1980-2005	182	91	54	140		
	10	1995-2005	338	45	33	59		
	5	2000-2005	363	29	20	39		
BBS UK	10	1995-2005	360	45	30	60		
	5	2000-2005	428	27	17	36		
BBS England	10	1995-2005	296	44	30	60		
	5	2000-2005	352	28	20	38		
BBS Wales	10	1995-2005	63	37	11	68		
	5	2000-2005	75	14	-1	34		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





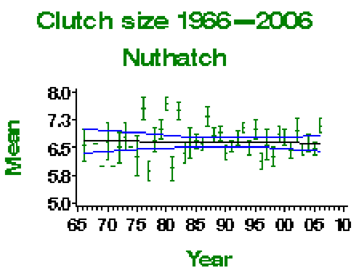


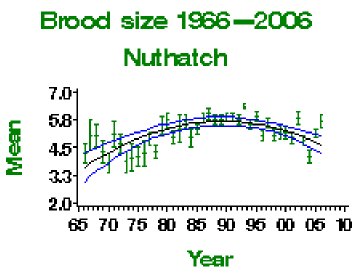


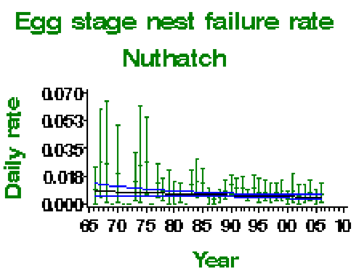
Productivity trends

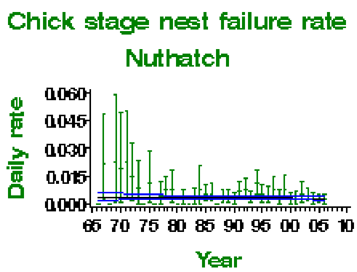
Table of productivity changes for Nuthatch

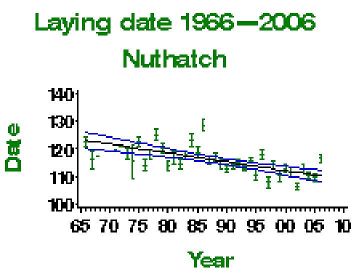
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	26	None				Small sample
Brood size	37	1968-2005	60	Curvilinear	3.96 chicks	4.76 chicks	20%	
Daily failure rate (eggs)	37	1968-2005	46	None				
Daily failure rate (chicks)	37	1968-2005	51	None				
Laying date	37	1968-2005	26	Linear decline	May 2	Apr 21	-11 days	Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

TREECREEPER
Certhia familiaris

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK, England: fluctuating, with no long-term trend

UK population size

214,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

The UK Treecreeper population peaked in the mid 1970s, but has been roughly stable since about 1980. . Intensive study has shown that Treecreeper numbers and survival rates are reduced by wet winter weather (**Peach *et al.* 1995b**). The influence of cold weather is also evident in the low start to the index and the trough around 1980. CBC/BBS data suggest a minor decline has occurred since the early 1980s, but CES adult captures have increased for much of this period. Productivity, calculated using CES data, shows fluctuations around a long-term shallow increase. There has been a significant fall in nest failure rates at the egg stage (18 days, comprising 14 days incubation and 4 days laying).

Population changes

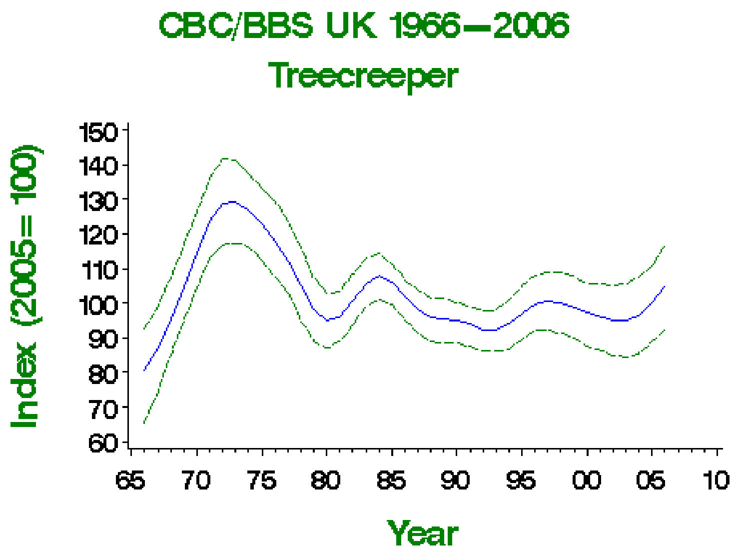
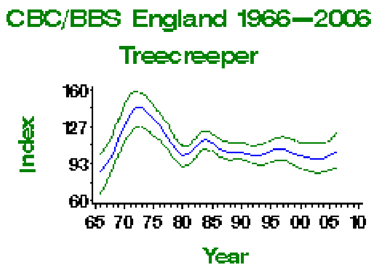


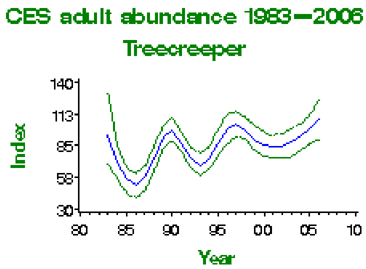
Table of population changes for Treecreeper

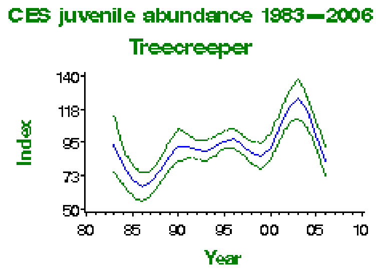
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	171	15	-9	47		
	25	1980-2005	213	6	-14	28		
	10	1995-2005	351	3	-9	17		
	5	2000-2005	324	3	-8	14		
CBC/BBS England	38	1967-2005	136	8	-18	43		
	25	1980-2005	166	-1	-19	25		
	10	1995-2005	265	-4	-15	9		
	5	2000-2005	239	0	-10	10		
CES adults	21	1984-2005	38	43	1	102		
	10	1995-2005	44	15	-8	41		
	5	2000-2005	41	17	-5	42		
CES juveniles	21	1984-2005	59	27	2	76		
	10	1995-2005	68	4	-9	16		
	5	2000-2005	68	10	-3	24		
BBS UK	10	1995-2005	293	6	-8	23		
	5	2000-2005	310	2	-9	15		
BBS England	10	1995-2005	216	-3	-16	12		

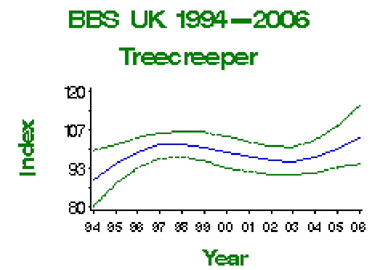
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales								
	5	2000-2005	44	-25	-43	-1		

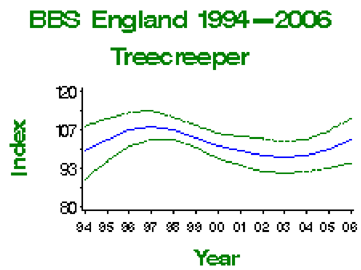
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

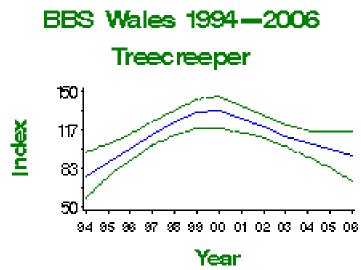








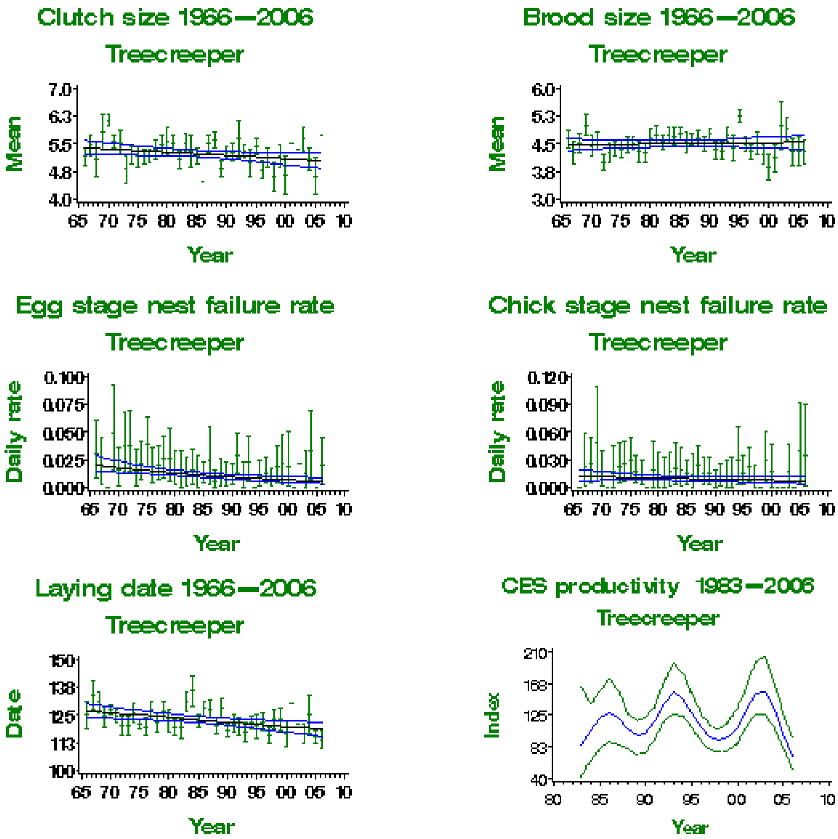




Productivity trends

Table of productivity changes for Treecreeper

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	13	Linear decline	5.39 eggs	5.06 eggs	-6.2%	Small sample
Brood size	37	1968-2005	27	None				Small sample
Daily failure rate (eggs)	37	1968-2005	22	Linear decline	1.94% nests/day	0.61% nests/day	-68.6%	Small sample
Daily failure rate (chicks)	37	1968-2005	23	None				Small sample
Laying date	37	1968-2005	13	Linear decline	May 7	Apr 29	-8 days	Small sample
Juvenile to Adult ratio (CES)	21	1984-2005	66	Smoothed trend	104 Index value	100 Index value	-4%	
Juvenile to Adult ratio (CES)	10	1995-2005	76	Smoothed trend	128 Index value	100 Index value	-22%	
Juvenile to Adult ratio (CES)	5	2000-2005	75	Smoothed trend	109 Index value	100 Index value	-8%	



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

JAY
Garrulus glandarius

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK, England: fluctuating, with no long-term trend

UK population size

160,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

The UK Jay population remained stable in the species' preferred woodland habitat until the late 1980s, after which the population began to decline. This decrease followed an earlier decline on farmland CBC plots (**Gregory & Marchant 1996**). Long-term trends are stable overall, and the CBC/BBS index has recorded some increase in the recent five-year period. Nest record sample sizes are small, but nest failure rates at the egg stage (21 days, comprising 16 days incubation and 5 days laying) appear to have fallen considerably.

Population changes

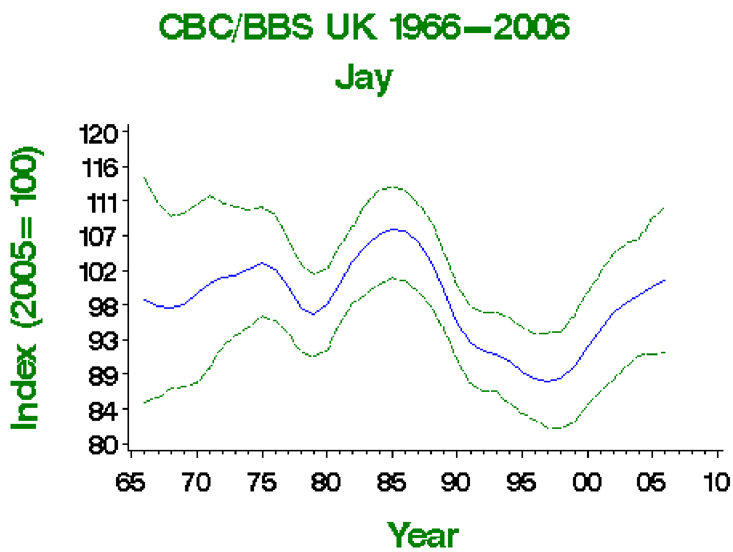
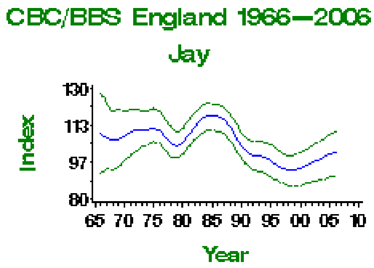
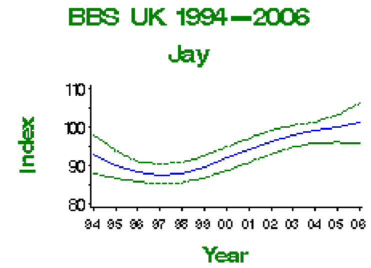


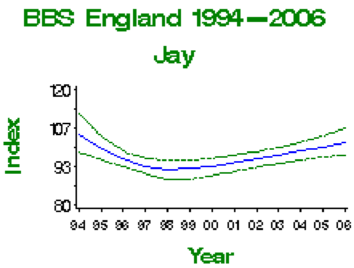
Table of population changes for Jay

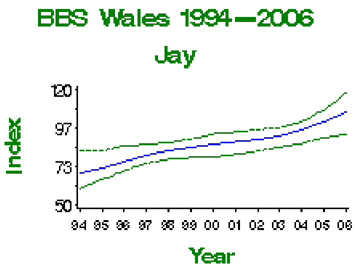
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	266	2	-20	25		
	25	1980-2005	354	2	-10	16		
	10	1995-2005	659	12	4	21		
	5	2000-2005	703	8	0	15		
CBC/BBS England	38	1967-2005	236	-7	-26	16		
	25	1980-2005	311	-5	-20	10		
	10	1995-2005	574	3	-5	12		
	5	2000-2005	601	6	-2	13		
BBS UK	10	1995-2005	596	11	3	18		
	5	2000-2005	686	9	1	17		
BBS England	10	1995-2005	514	1	-7	8		
	5	2000-2005	585	7	1	15		
BBS Wales	10	1995-2005	62	39	8	67		
	5	2000-2005	75	15	0	36		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







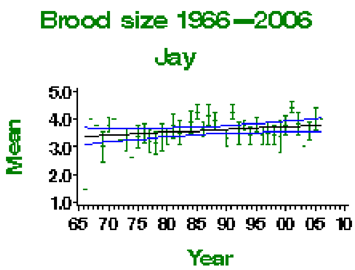


Productivity trends

Table of productivity changes for Jay

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Brood size	37	1968-2005	10	None				Small sample

Insufficient data on clutch size available for this species



Insufficient data on egg stage failure available for this species

Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

MAGPIE
Pica pica

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK, England: rapid increase

UK population size

650,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

The remarkable adaptability of Magpies has enabled them to colonise many new urban and suburban localities since the 1960s. Magpies increased steadily until the late 1980s, when abundance stabilised (**Gregory & Marchant 1996**). Minor decrease has been recorded in the UK during the last five years. The declines in nest failure rates, during both the egg and the chick stages, have been substantial, perhaps as human persecution of nests has diminished. Larsen traps, introduced to the UK in the late 1980s, are now widely used by gamekeepers as a control measure. Clutch sizes, however, have decreased. A strong trend towards earlier laying has also been identified and may be partly explained by recent climate change (**Crick & Sparks 1999**).

Population changes

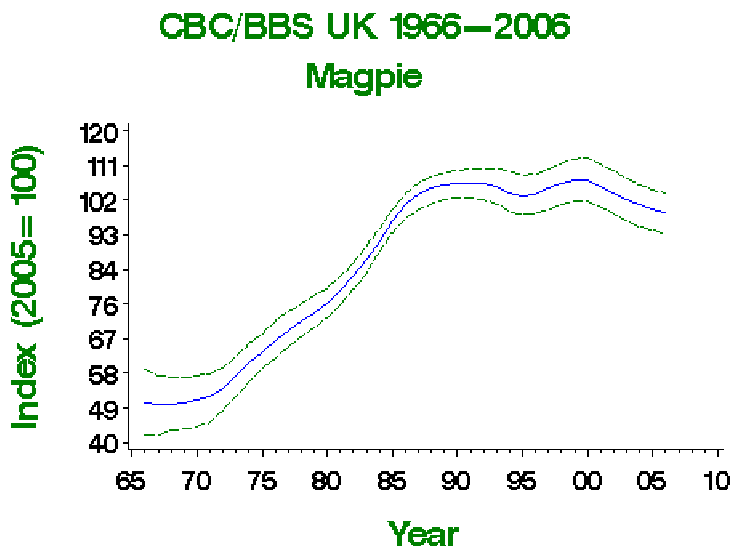
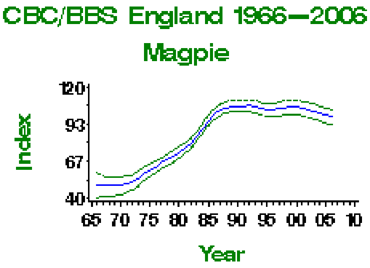


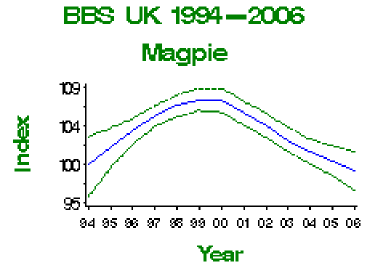
Table of population changes for Magpie

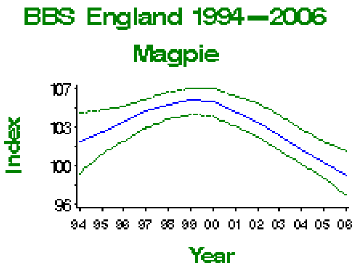
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	581	102	67	158		
	25	1980-2005	814	32	18	45		
	10	1995-2005	1676	-3	-7	0		
	5	2000-2005	1749	-7	-10	-4		
CBC/BBS England	38	1967-2005	493	105	64	157		
	25	1980-2005	687	37	24	52		
	10	1995-2005	1400	-4	-7	0		
	5	2000-2005	1434	-6	-8	-3		
BBS UK	10	1995-2005	1584	-2	-6	3		
	5	2000-2005	1727	-7	-9	-4		
BBS England	10	1995-2005	1315	-3	-6	2		
	5	2000-2005	1414	-5	-8	-3		
BBS Scotland	10	1995-2005	37	23	-5	61		
	5	2000-2005	42	2	-14	20		
BBS Wales	10	1995-2005	150	-16	-25	-8		

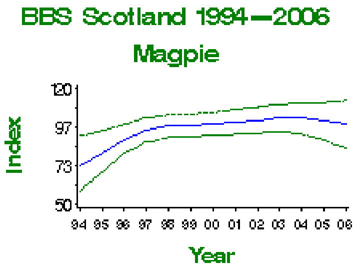
Source BBS N.Ireland	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2000-2005	86	-6	-17	5		

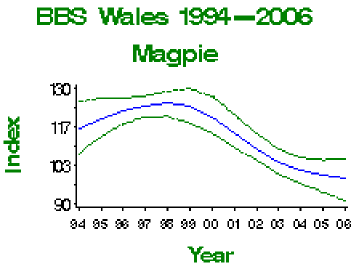
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

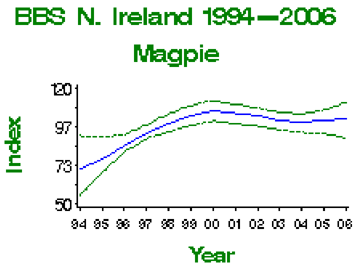








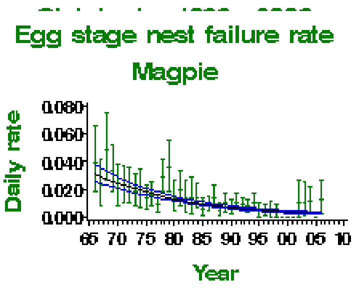


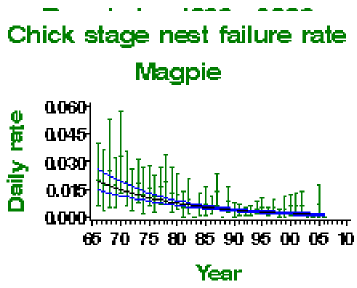


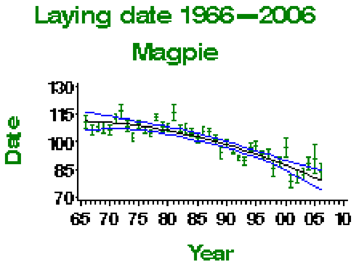
Productivity trends

Table of productivity changes for Magpie

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	46	Curvilinear	5.59 eggs	4.52 eggs	-19.1%	
Brood size	37	1968-2005	80	Curvilinear	3.05 chicks	2.81 chicks	-7.9%	
Daily failure rate (eggs)	37	1968-2005	52	Linear decline	2.77% nests/day	0.29% nests/day	-89.5%	
Daily failure rate (chicks)	37	1968-2005	51	Linear decline	1.72% nests/day	0.14% nests/day	-91.9%	
Laying date	37	1968-2005	36	Curvilinear	Apr 21	Mar 22	-30 days	







Insufficient data on CES
available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**
- **Garden BirdWatch results**

JACKDAW
Corvus monedula

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK, England: moderate increase

UK population size

555,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Jackdaws have increased in abundance since the 1960s (**Gregory & Marchant 1996**), and more recent BBS data suggest the increase is continuing, except perhaps in Northern Ireland. As with **Magpie**, **Rook** and **Carrion Crow**, the increase has been associated with improvements in breeding performance and probably reflects the species' generalist feeding habits, which allow it to exploit diverse and ephemeral food resources. A minor decrease in average brood size has been countered by substantial declines in nest failure rates during the egg and chick stages. Overall, from egg-laying to fledging, the proportion of nests that fail has fallen by about two-thirds. Typically in this species, the younger chicks of a brood perish quickly if food becomes limited. Increases in fledging success are therefore likely to be due to improved parental provisioning success (**Henderson & Hart 1993**).

Population changes

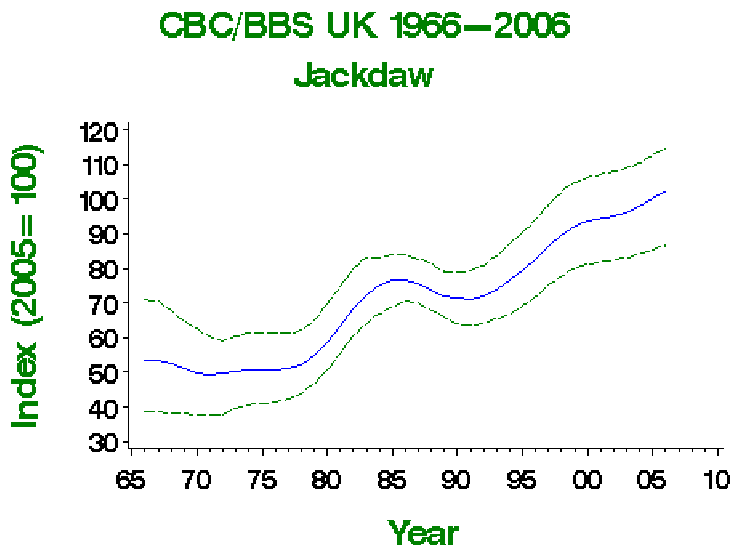
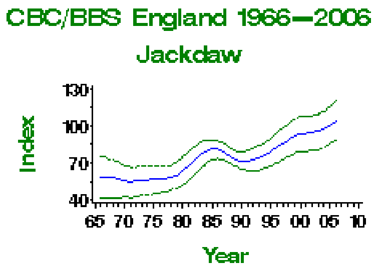


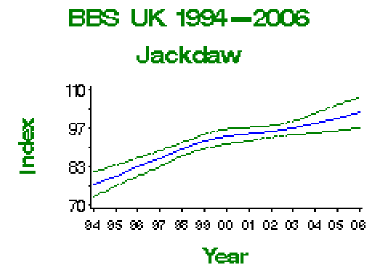
Table of population changes for Jackdaw

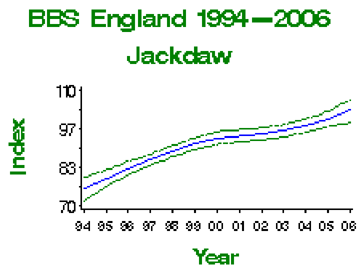
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	447	87	23	200		
	25	1980-2005	648	71	23	128		
	10	1995-2005	1408	26	14	38		
	5	2000-2005	1531	7	-1	15		
CBC/BBS England	38	1967-2005	355	71	13	185		
	25	1980-2005	512	58	11	124		
	10	1995-2005	1111	26	19	35		
	5	2000-2005	1200	7	2	12		
BBS UK	10	1995-2005	1361	25	14	37		
	5	2000-2005	1517	7	0	15		
BBS England	10	1995-2005	1071	26	18	34		
	5	2000-2005	1189	7	2	12		
BBS Scotland	10	1995-2005	96	6	-17	36		
	5	2000-2005	97	-4	-26	23		
BBS Wales	10	1995-2005	127	40	-16	146		
	5	2000-2005	150	17	-11	57		
BBS N.Ireland	10	1995-2005	63	49	8	78		

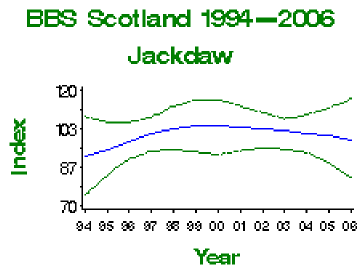
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

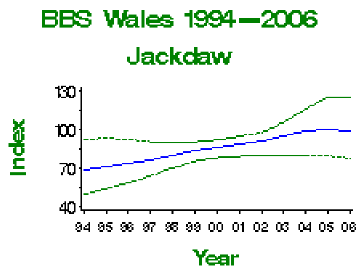
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

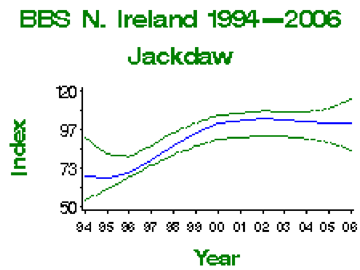








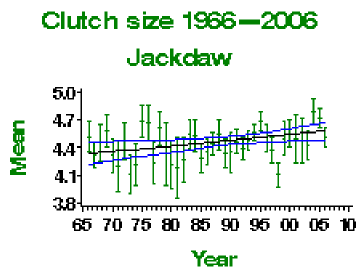


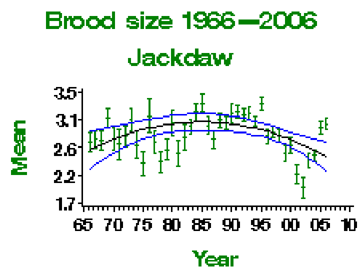


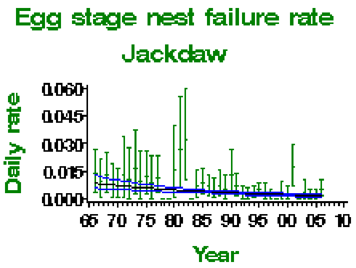
Productivity trends

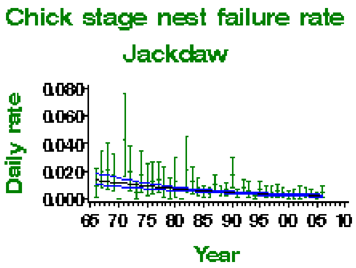
Table of productivity changes for Jackdaw

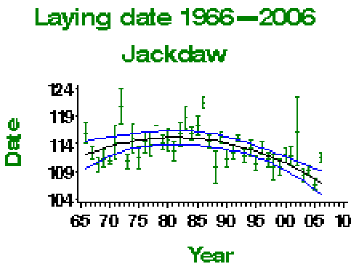
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	42	Linear increase	4.35 eggs	4.57 eggs	5.1%	
Brood size	37	1968-2005	87	Curvilinear	2.65 chicks	2.51 chicks	-5.3%	
Daily failure rate (eggs)	37	1968-2005	53	Linear decline	0.8% nests/day	0.18% nests/day	-77.5%	
Daily failure rate (chicks)	37	1968-2005	51	Linear decline	1.29% nests/day	0.23% nests/day	-82.2%	
Laying date	37	1968-2005	22	Curvilinear	Apr 23	Apr 18	-5 days	Small sample











Insufficient data for CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

ROOK
Corvus frugilegus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: moderate increase

UK population size

1,120,000–1,430,000 pairs in 1996 (**Marchant & Gregory 1999**: **BiE04**); 1,130,000–1,440,000 pairs in 2000 (1996 estimate updated using BBS trend: **APEP06**)

Status summary

Relatively few rookeries fell within CBC plots, but an index calculated from the available nest counts showed a shallow, long-term increase (**Wilson *et al.* 1998**). The trend is confirmed by the results of the most recent BTO rookeries survey, which identified a 40% increase in abundance between 1975 and 1996 (**Marchant & Gregory 1999**). This increase probably reflects the species' considerable adaptability in the face of agricultural change. BBS indices, which are drawn from sightings, suggest possible decrease in the UK since 1999; BBS also holds data from nest counts, but no indices from these are available. There has been minor increase since the 1960s in nest failure rates at the egg stage.

Population changes

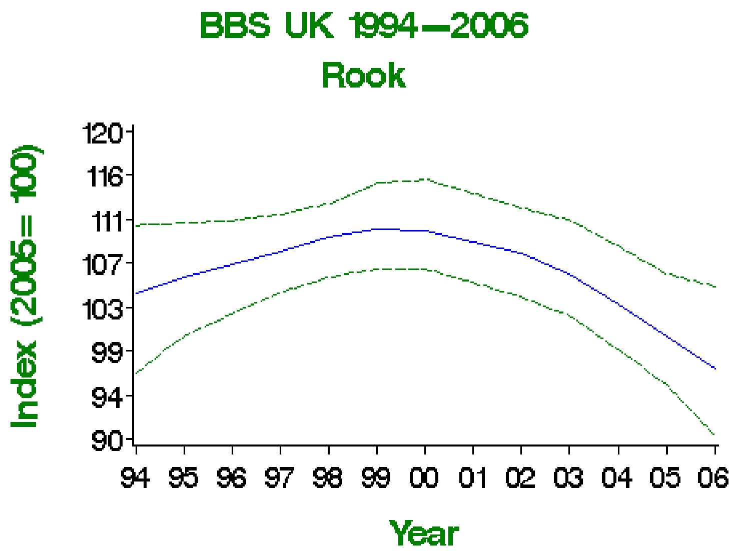
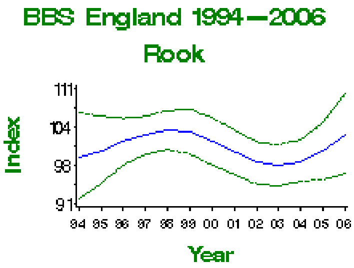
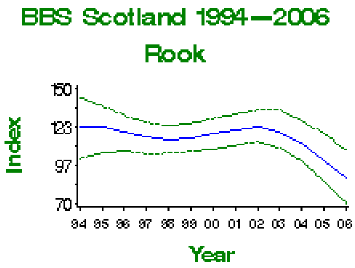


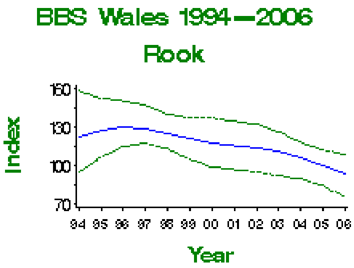
Table of population changes for Rook

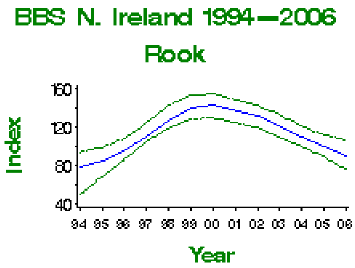
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	1101	-5	-15	6		
	5	2000-2005	1160	-9	-16	0		
BBS England	10	1995-2005	861	0	-10	10		
	5	2000-2005	897	-2	-9	6		
BBS Scotland	10	1995-2005	100	-18	-39	14		
	5	2000-2005	96	-16	-34	8		
BBS Wales	10	1995-2005	74	-21	-45	2		
	5	2000-2005	85	-14	-36	10		
BBS N.Ireland	10	1995-2005	64	18	-11	59		
	5	2000-2005	80	-30	-42	-14	>25	

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





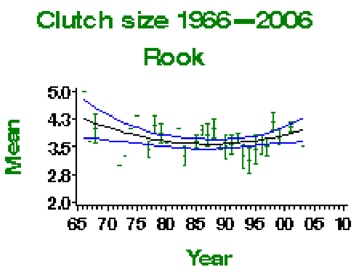


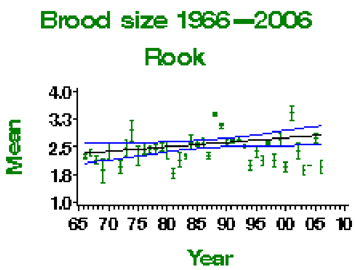


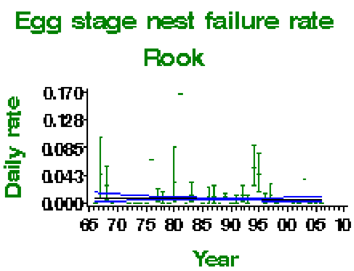
Productivity trends

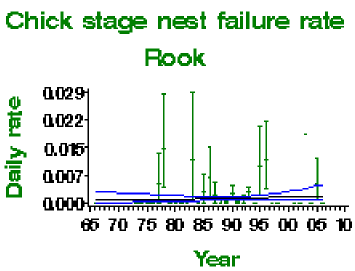
Table of productivity changes for Rook

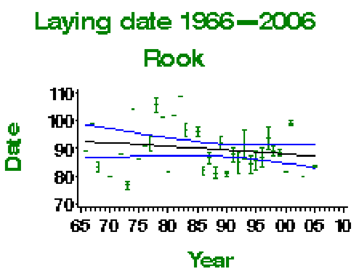
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	13	Curvilinear	4.15 eggs	4.06 eggs	-2%	Small sample
Brood size	37	1968-2005	85	None				
Daily failure rate (eggs)	37	1968-2005	33	None				
Daily failure rate (chicks)	37	1968-2005	51	None				
Laying date	37	1968-2005	12	None				Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

CARRION CROW
Corvus corone

• Population changes • Productivity trends • Additional information

Conservation listings

Europe (*C. corone/cornix*): no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK (*C. corone/cornix*): green

Long-term trend

England: rapid increase

UK population size

790,000 territories in 1990 (1988–91 Atlas: APEP06);
987,500 pairs in 2000 (updated using CBC/BBS trend)

Status summary

Carrion Crows have increased steadily since the 1960s (Gregory & Marchant 1996) and both the CBC and the BBS indicate that the increase is continuing. This trend has been associated with increases in nesting success and earlier laying (perhaps an effect of climate change: Crick *et al.* 1997) and probably reflects the species' adaptability to changing habitats and the exploitation of ephemeral food resources in intensive agriculture. Reduced control activities by gamekeepers may also have contributed (Marchant *et al.* 1990), as may an increase in roadside carrion.

Population changes

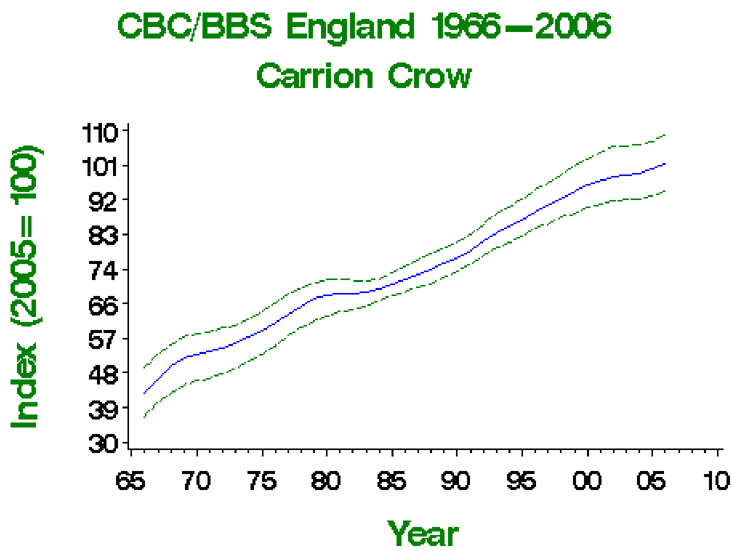
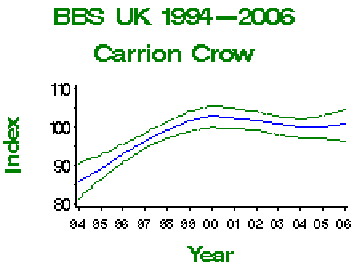
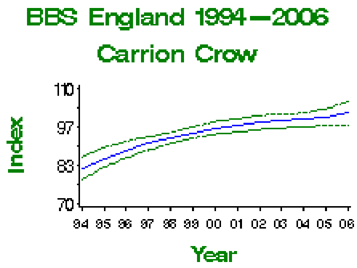


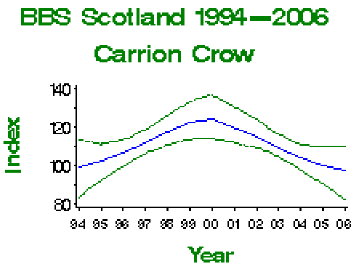
Table of population changes for Carrion Crow

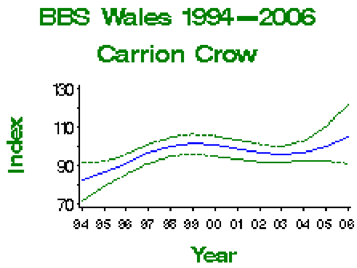
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	568	116	76	174		Includes Hooded Crow
	25	1980-2005	797	48	29	73		Includes Hooded Crow
	10	1995-2005	1662	15	7	24		Includes Hooded Crow
	5	2000-2005	1729	4	-1	10		Includes Hooded Crow
BBS UK	10	1995-2005	1929	12	5	18		
	5	2000-2005	2099	-3	-8	3		
BBS England	10	1995-2005	1575	17	8	25		
	5	2000-2005	1707	4	-1	8		
BBS Scotland	10	1995-2005	159	-2	-16	18		
	5	2000-2005	162	-19	-35	-4		
BBS Wales	10	1995-2005	184	16	0	40		
	5	2000-2005	218	0	-13	19		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





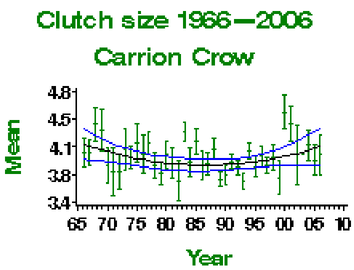


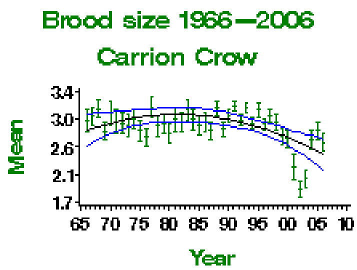


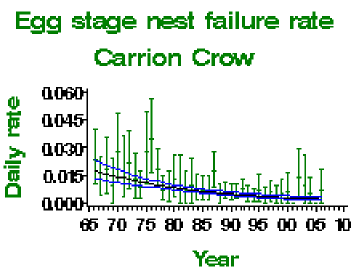
Productivity trends

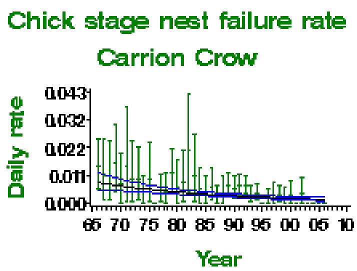
Table of productivity changes for Carrion Crow

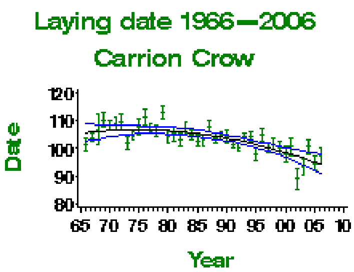
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	34	Curvilinear	4.08 eggs	4.08 eggs	-0.1%	
Brood size	37	1968-2005	80	Curvilinear	2.87 chicks	2.49 chicks	-13.3%	
Daily failure rate (eggs)	37	1968-2005	51	Linear decline	1.59% nests/day	0.23% nests/day	-85.5%	
Daily failure rate (chicks)	37	1968-2005	43	Linear decline	0.73% nests/day	0.16% nests/day	-78.1%	
Laying date	37	1968-2005	32	Curvilinear	Apr 16	Apr 5	-11 days	











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

HOODED CROW
Corvus cornix

• Population changes • Productivity trends • Additional information

Conservation listings

Europe (*C. corone/cornix*): no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK (*C. corone/cornix*): green

Long-term trend

UK: uncertain

UK population size

213,900 territories in 1990 (1988–91 Atlas: **APEP06**)

Status summary

The BOU Records Committee took the decision in 2002 to treat Hooded Crow and **Carrion Crow** as separate species (**Parkin *et al.* 2003**). This split is not yet recognised in conservation listings. In the UK, Hooded Crows occur in Northern Ireland, the Isle of Man, and Scotland, mainly west and north of the Great Glen. Retrospective analysis of BBS trends is simple because observers record Hooded Crows (coded HC) separately from Carrion Crows and from intermediates (coded HB). Intermediate forms between Carrion and Hooded, which predominate in a band across western Scotland and occur less frequently elsewhere in the UK, are not included in either BBS index. BBS data suggest that some decrease in Hooded Crows may have occurred in Scotland, large enough to raise an alert, but that this has been countered by increase in Northern Ireland. Hooded Crows have increased markedly in Ireland since 1924 (**Hutchinson 1989**).

Population changes

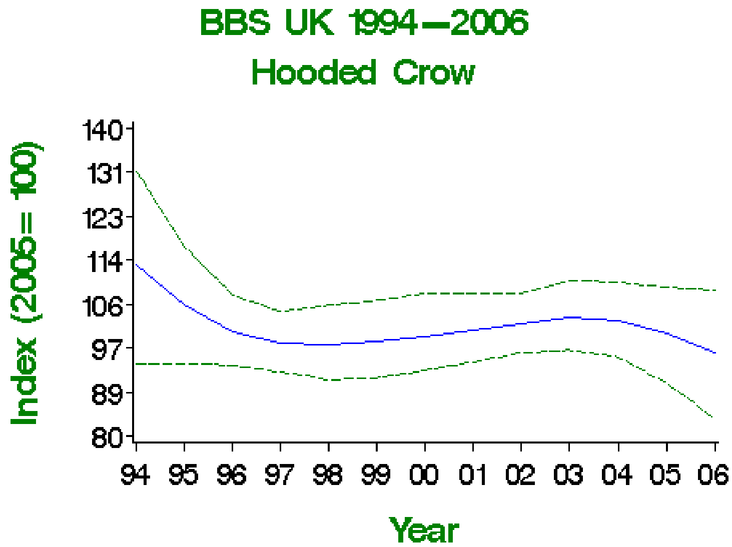
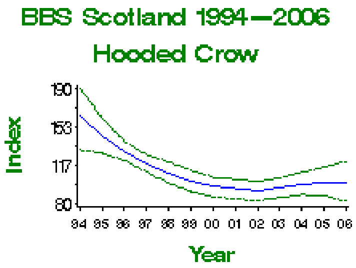
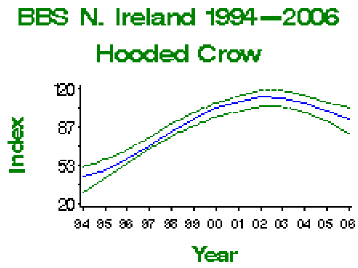


Table of population changes for Hooded Crow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	123	-5	-23	16		
	5	2000-2005	135	1	-16	14		
BBS Scotland	10	1995-2005	50	-31	-47	-8	>25	
	5	2000-2005	43	4	-17	29		
BBS N.Ireland	10	1995-2005	69	103	54	161		
	5	2000-2005	88	-2	-15	13		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**

RAVEN
Corvus corax

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

UK: uncertain

UK population size

12,900 pairs in 2000 (1988–91 Atlas estimate updated using BBS trend: **BiE04**, **APEP06**)

Status summary

Between the two atlas periods, the Raven's range contracted from some areas of Scotland and northern England. Declines in southern Scotland and northern England were associated with large-scale afforestation (**Marquiss *et al.* 1978**), while closer sheep husbandry and conversion of pasture to arable were also implicated (**Mearns 1983**). More recently, Ravens have increased along the English–Welsh border and in parts of lowland England, helping to balance the local declines in northern Britain (**Cross 2002**). BBS indicates steep increase in England, Scotland and Wales since 1994. Brood size, however, has fallen.

Population changes

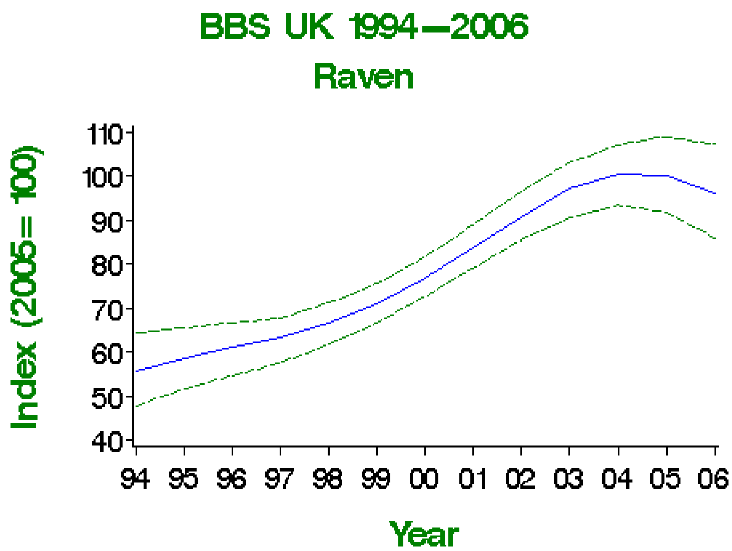
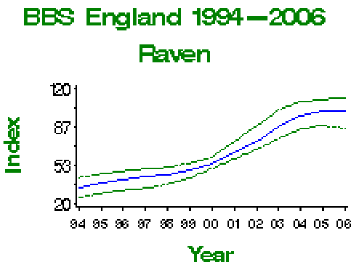
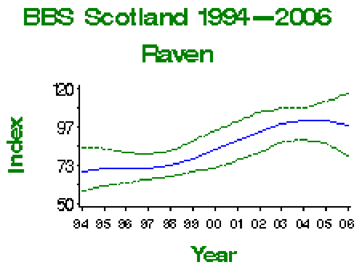


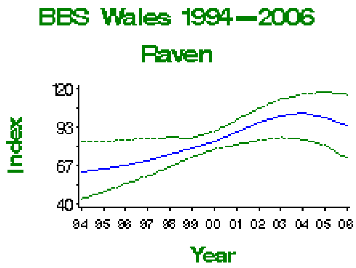
Table of population changes for Raven

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	202	70	37	117		
	5	2000-2005	242	30	10	52		
BBS England	10	1995-2005	64	163	82	304		
	5	2000-2005	84	85	42	119		
BBS Scotland	10	1995-2005	38	40	6	81		
	5	2000-2005	34	21	-8	52		
BBS Wales	10	1995-2005	79	56	-5	153		
	5	2000-2005	97	20	-5	49		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB



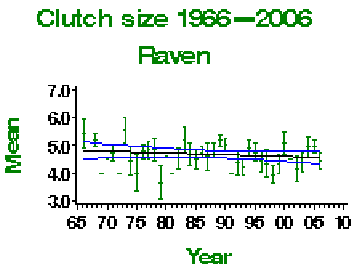


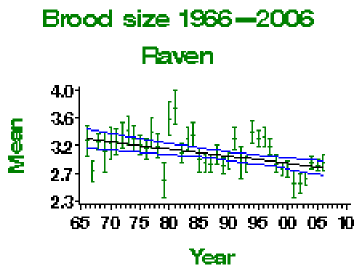


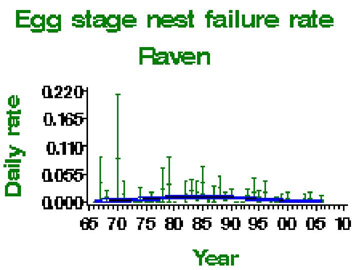
Productivity trends

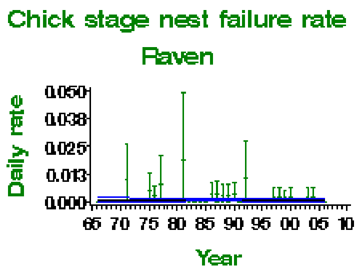
Table of productivity changes for Raven

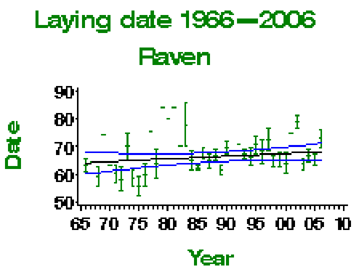
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	13	None				Small sample
Brood size	37	1968-2005	64	Linear decline	3.23 chicks	2.83 chicks	-12.5%	
Daily failure rate (eggs)	37	1968-2005	21	Curvilinear	0.2% nests/day	0.1% nests/day	-50%	Small sample
Daily failure rate (chicks)	37	1968-2005	28	None				Small sample
Laying date	37	1968-2005	11	None				Small sample











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

STARLING
Sturnus vulgaris

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: red (>50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

England: rapid decline

UK population size

804,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**); 8,500,000 birds in Britain in 1994–2000 (**Robinson *et al.* 2005a**)

Status summary

The abundance of breeding Starlings in the UK has fallen rapidly, particularly since the early 1980s, and especially in woodland (**Robinson *et al.* 2002**, **2005a**). The declines have been greatest in the south and west of Britain; recent BBS data suggest that populations have increased in Scotland and Northern Ireland, but the overall UK trend continues to be strongly downward. The species' UK conservation listing has been upgraded from amber to red as the decline has become more severe. Strong improvements have occurred in breeding performance, suggesting that decreasing survival rates, particularly of young birds, may be responsible for the observed decline (**Freeman *et al.* 2002**, **2007b**). Loss of permanent pasture, which is the species' preferred feeding habitat, and general intensification of livestock rearing are likely to be having adverse effects on rural populations, but other causes should be sought in urban areas (**Robinson *et al.* 2002**, **2005a**). Widespread declines in northern Europe during the 1990s outweighed increases in the south, and the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

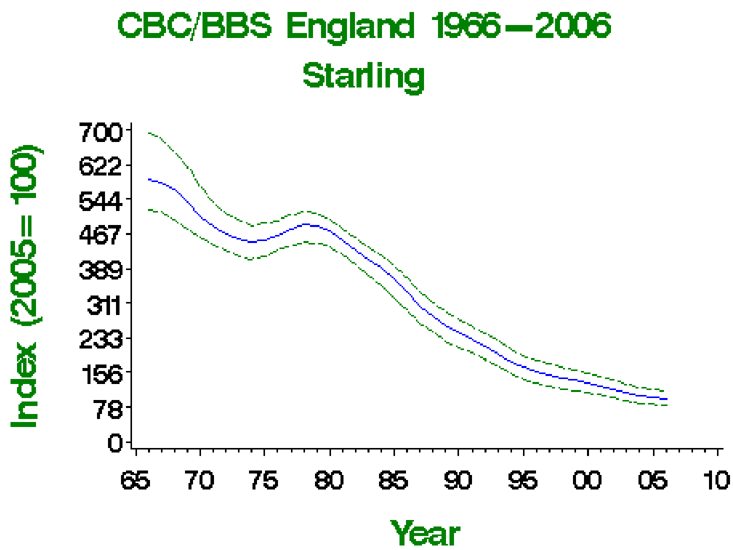
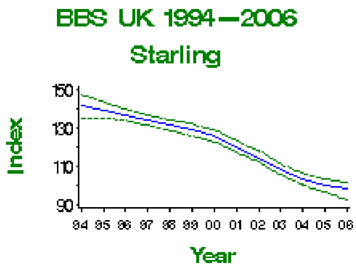
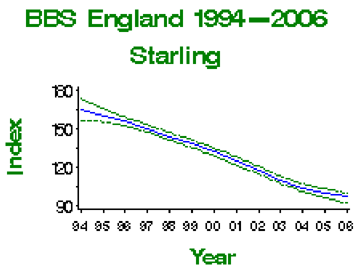


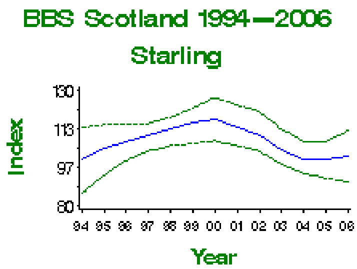
Table of population changes for Starling

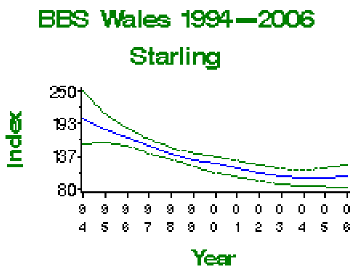
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	460	-83	-88	-77	>50	
	25	1980-2005	640	-79	-83	-73	>50	
	10	1995-2005	1343	-40	-44	-36	>25	
	5	2000-2005	1350	-24	-28	-20		
BBS UK	10	1995-2005	1588	-28	-33	-23	>25	
	5	2000-2005	1659	-20	-25	-17		
BBS England	10	1995-2005	1299	-38	-42	-34	>25	
	5	2000-2005	1340	-24	-28	-21		
BBS Scotland	10	1995-2005	131	-4	-20	14		
	5	2000-2005	136	-15	-25	-1		
BBS Wales	10	1995-2005	82	-45	-62	-24	>25	
	5	2000-2005	89	-19	-33	0		
BBS N.Ireland	10	1995-2005	67	86	32	158		
	5	2000-2005	84	-10	-32	16		

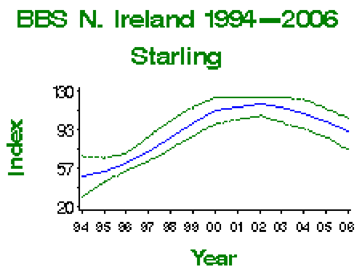
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







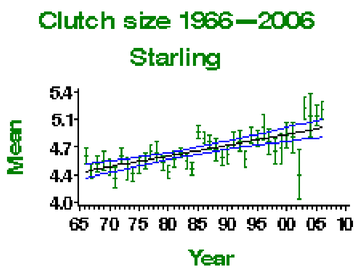


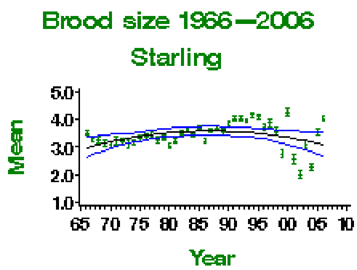


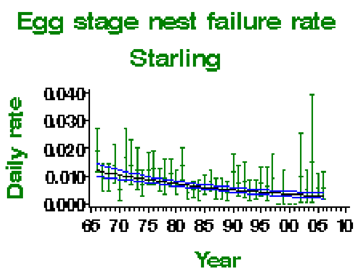
Productivity trends

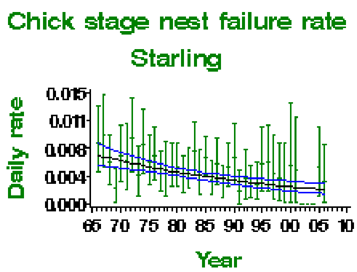
Table of productivity changes for Starling

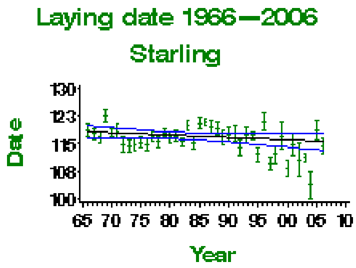
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	77	Linear increase	4.43 eggs	4.93 eggs	11.4%	
Brood size	37	1968-2005	206	Curvilinear	3.1 chicks	3.15 chicks	1.6%	
Daily failure rate (eggs)	37	1968-2005	118	Linear decline	1.13% nests/day	0.3% nests/day	-73.5%	
Daily failure rate (chicks)	37	1968-2005	138	Linear decline	0.62% nests/day	0.2% nests/day	-67.7%	
Laying date	37	1968-2005	83	None				











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

HOUSE SPARROW
Passer domesticus

- Population changes
- Productivity trends
- Additional information

Conservation listings

Europe: SPEC category 3, declining
UK: red (>50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

England: rapid decline

UK population size

2,100,000–3,675,000 pairs in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**); about 6 million pairs in Britain (**Robinson *et al.* 2005b**)

Status summary

CBC sample sizes did not allow monitoring of House Sparrows until 1976; previously, there had been many farmland plots with high populations that could not be properly quantified without better access to farm buildings and housing. CBC/BBS data indicate a rapid decline in abundance over the last 25 years, as does the BTO's Garden Bird Feeding Survey (**Siriwardena *et al.* 2002**, **Robinson *et al.* 2005b**). These results are supported by many other data and anecdotal reports, and have generated great conservation concern (see **Summers-Smith 2003**). A change in the listing criteria has resulted in the admission of the species, green-listed until 2002, to the red list. A temporary drop in first-year survival coincided with the steepest decline, but changes in breeding performance, especially nest failure rates at the chick stage, have also helped drive population change (**Freeman & Crick 2002**). Possible explanations include a general reduction in food supply, less grain being spilt during agricultural operations, tighter hygiene regulations, increases in predation, and toxic additives to unleaded petrol (**Siriwardena *et al.* 2002**, **Robinson *et al.* 2005b**, **Summers-Smith 2007**). The overall national decline since the 1970s masks much heterogeneity by region and habitat, and population processes may be relatively fine-grained: overall, populations in rural areas had declined by 47% by 2000, and those in urban and suburban areas by about 60% (CBC data: **Robinson *et al.* 2005b**). BBS suggests increases recently in Scotland and Wales. Overall, brood size has decreased, but nest success has improved markedly. Following widespread declines across Europe during the 1990s, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

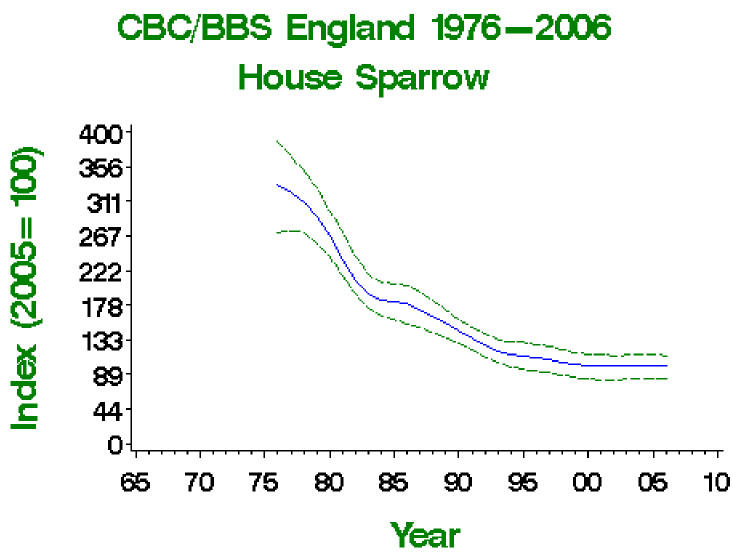
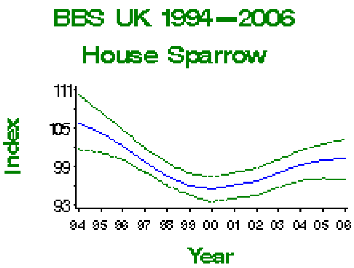


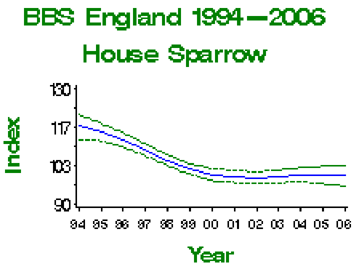
Table of population changes for House Sparrow

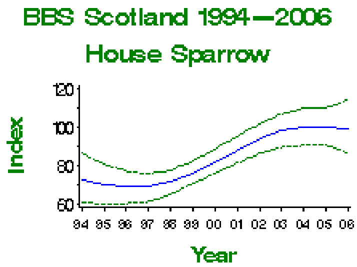
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	28	1977-2005	473	-69	-77	-60	>50	
	25	1980-2005	525	-62	-73	-51	>50	
	10	1995-2005	1160	-12	-17	-6		
	5	2000-2005	1193	0	-5	5		
BBS UK	10	1995-2005	1367	-4	-9	2		
	5	2000-2005	1461	5	-1	8		
BBS England	10	1995-2005	1127	-13	-18	-7		

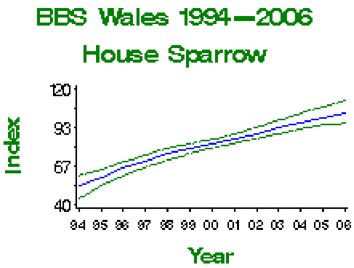
Source BBS Scotland	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2000-2005	78	22	2	42		
BBS Wales	10	1995-2005	109	70	45	103		
	5	2000-2005	132	21	13	36		
BBS N.Ireland	10	1995-2005	44	44	-18	107		
	5	2000-2005	55	23	-3	44		

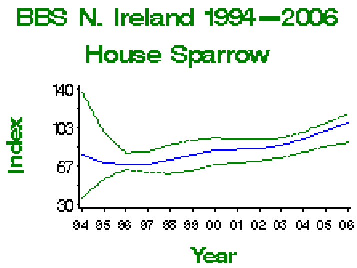
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







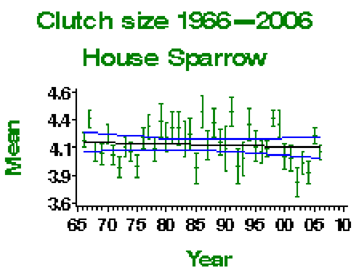


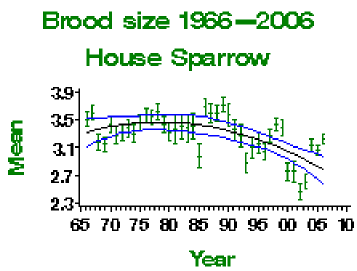


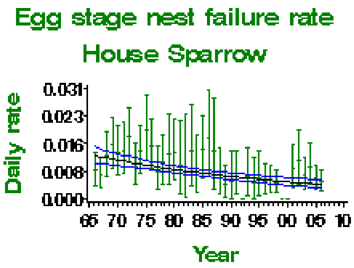
Productivity trends

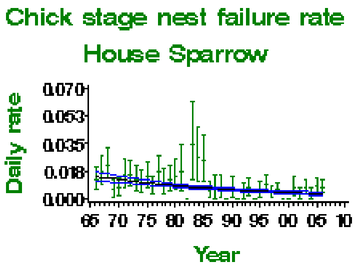
Table of productivity changes for House Sparrow

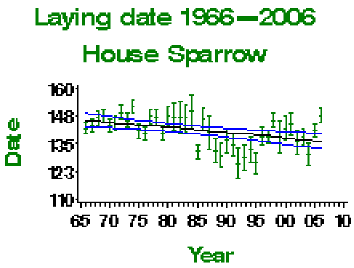
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	64	None				
Brood size	37	1968-2005	107	Curvilinear	3.37 chicks	2.83 chicks	-15.8%	
Daily failure rate (eggs)	37	1968-2005	89	Linear decline	1.15% nests/day	0.42% nests/day	-63.5%	
Daily failure rate (chicks)	37	1968-2005	85	Linear decline	1.33% nests/day	0.34% nests/day	-74.4%	
Laying date	37	1968-2005	50	Linear decline	May 25	May 17	-8 days	











Insufficient data for CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

TREE SPARROW
Passer montanus

• **Population changes** • **Productivity trends** • **Additional information**

Conservation listings

Europe: SPEC category 3 (declining)
UK: red (>50% population decline)
UK Biodiversity Action Plan: click here

Long-term trend

England: rapid decline

UK population size

68,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Tree Sparrow abundance crashed spectacularly in the UK between the late 1970s and the early 1990s. BBS data indicate significant increase since 1994, but it should be remembered that, for every Tree Sparrow today there were around 30 in the 1970s, and any recovery therefore has a very long way to go. Clear range contractions occurred between the two breeding atlas periods (**Gibbons *et al.* 1993**), and have continued subsequently, with many local extinctions occurring during the 1990s. Components of agricultural intensification, such as reductions in winter stubble, are likely to be implicated in the decline. Breeding performance has improved substantially as population sizes have decreased, suggesting that decreases in productivity were not responsible for the decline. It is more likely that survival was the critical demographic measure, although ring-recovery analyses have produced equivocal results because of small sample sizes (**Siriwardena *et al.* 1998b**, **2000b**). Following declines across western and northwestern Europe during the 1990s, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

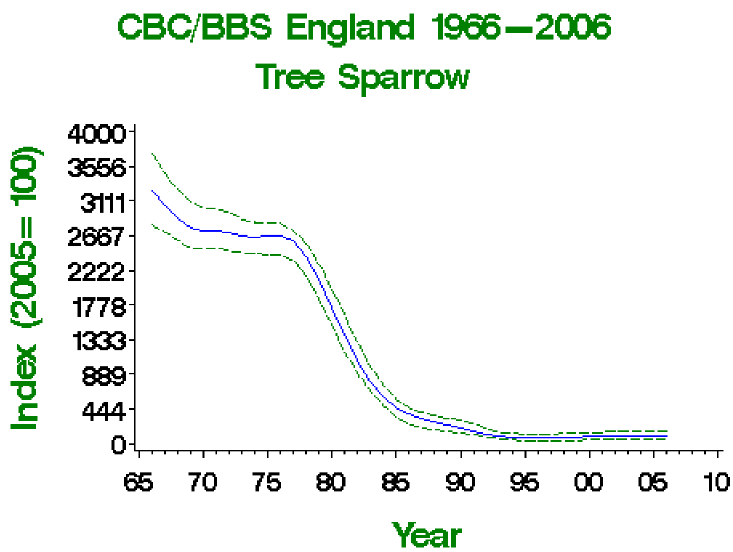
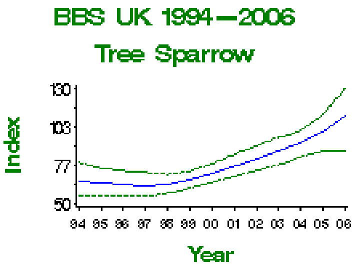
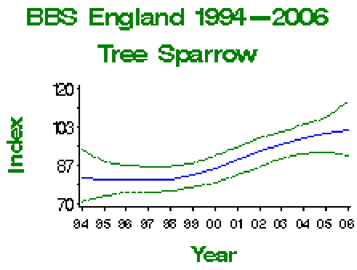


Table of population changes for Tree Sparrow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	81	-97	-99	-94	>50	
	25	1980-2005	77	-94	-97	-90	>50	
	10	1995-2005	123	29	7	58		
	5	2000-2005	117	17	-2	38		
BBS UK	10	1995-2005	141	55	13	101		
	5	2000-2005	143	42	12	73		
BBS England	10	1995-2005	117	24	4	47		
	5	2000-2005	116	17	2	37		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

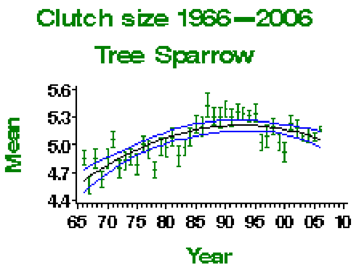


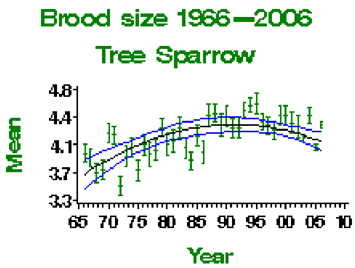


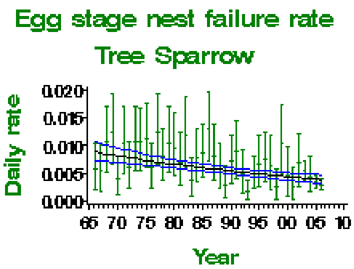
Productivity trends

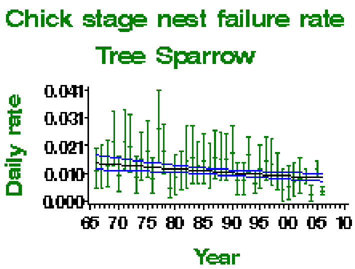
Table of productivity changes for Tree Sparrow

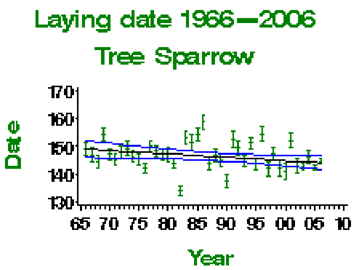
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	135	Curvilinear	4.69 eggs	5.08 eggs	8.3%	
Brood size	37	1968-2005	165	Curvilinear	3.75 chicks	4.13 chicks	10%	
Daily failure rate (eggs)	37	1968-2005	179	Linear decline	0.85% nests/day	0.4% nests/day	-52.9%	
Daily failure rate (chicks)	37	1968-2005	130	Linear decline	1.38% nests/day	0.88% nests/day	-36.2%	
Laying date	37	1968-2005	148	Linear decline	May 29	May 24	-5 days	











Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

CHAFFINCH
Fringilla coelebs

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK, England: shallow increase

UK population size

5,974,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Chaffinch abundance increased rapidly during the 1970s and 1980s, according to CBC/BBS and CES, but numbers seemed to stabilise during the1990s. The recent relative stability has been associated with a reduction in annual survival, which could be density-dependent (**Siriwardena *et al.* 1999**). There was also some evidence of improved breeding performance during the early years of population increase, with larger brood sizes and fewer egg-stage nest failures. The trend towards earlier laying may be partly explained by recent climate change (**Crick & Sparks 1999**). Chaffinches are well adapted to suburban and garden habitats, as well as to highly fragmented woodland and hedgerows, occurring less in the open-field, arable habitats that have been affected most by agricultural intensification, so may have benefited by environmental changes from which other seed-eating passerines have suffered.

Population changes

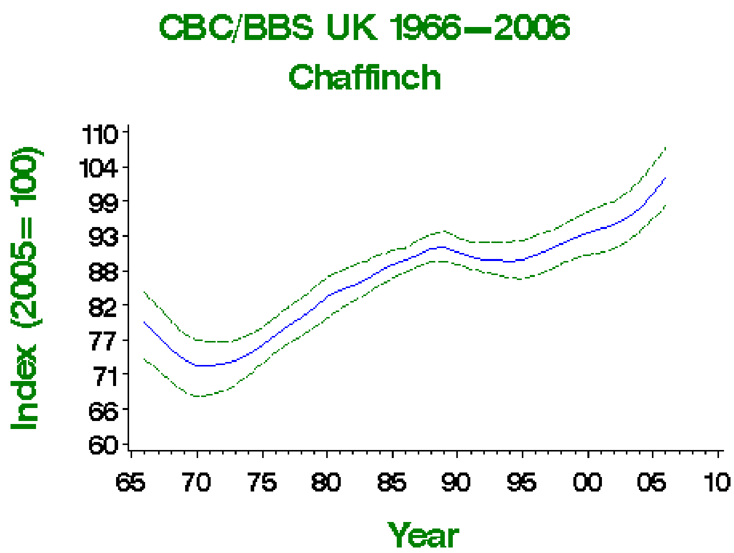
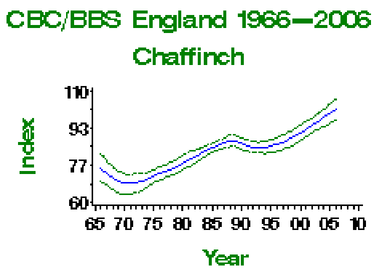


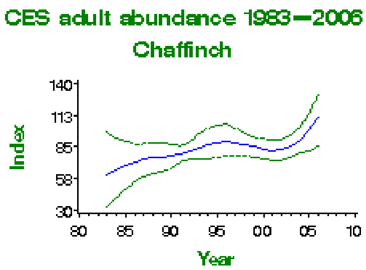
Table of population changes for Chaffinch

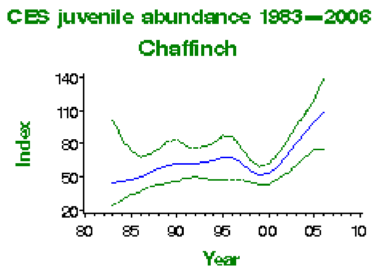
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	763	30	17	46		
	25	1980-2005	1054	20	10	30		
	10	1995-2005	2164	12	8	16		
	5	2000-2005	2253	7	4	10		
CBC/BBS England	38	1967-2005	605	37	21	54		
	25	1980-2005	828	29	18	40		
	10	1995-2005	1682	17	14	21		
	5	2000-2005	1735	9	7	12		
CES adults	21	1984-2005	79	55	-12	205		
	10	1995-2005	90	13	-12	37		
	5	2000-2005	86	21	-1	39		
CES juveniles	21	1984-2005	59	119	-14	285		
	10	1995-2005	70	47	-8	127		
	5	2000-2005	69	88	44	122		
BBS UK	10	1995-2005	2041	12	8	17		
	5	2000-2005	2221	7	4	9		
BBS England	10	1995-2005	1575	18	14	23		

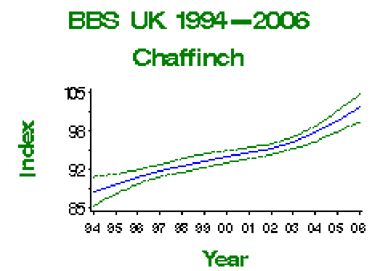
Source	Period	Years	Plots	Change	Lower	Upper	Alert	Comment
BBS Scotland	(yrs)		(n)	(%)	limit	limit		
	5	2000-2005	196	4	-4	11		
BBS Wales	10	1995-2005	179	0	-12	16		
	5	2000-2005	213	11	2	24		
BBS N.Ireland	10	1995-2005	77	31	2	47		
	5	2000-2005	93	-11	-23	3		

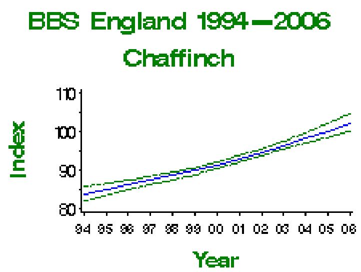
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

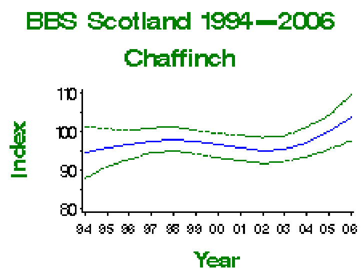


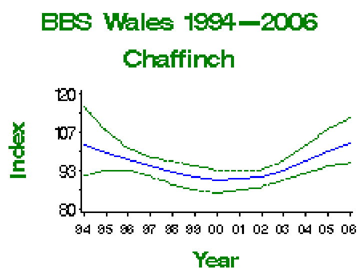


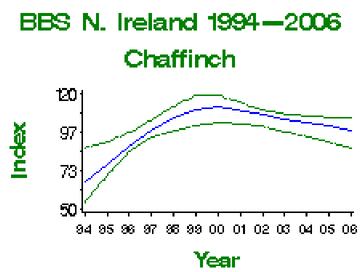










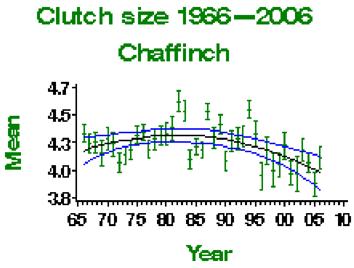


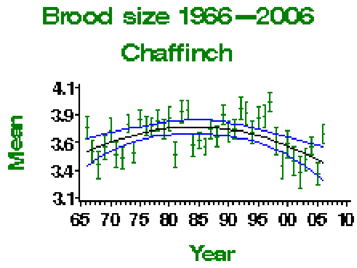
Productivity trends

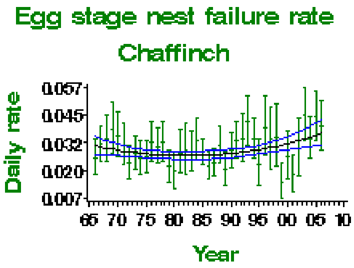
Table of productivity changes for Chaffinch

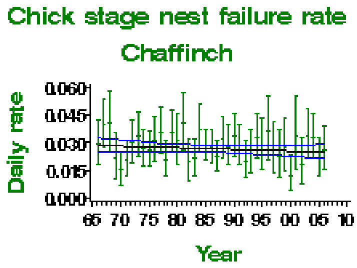
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	86	Curvilinear	4.21 eggs	4.03 eggs	-4.3%	
Brood size	37	1968-2005	136	Curvilinear	3.56 chicks	3.44 chicks	-3.3%	
Daily failure rate (eggs)	37	1968-2005	165	Curvilinear	2.97% nests/day	3.56% nests/day	19.9%	

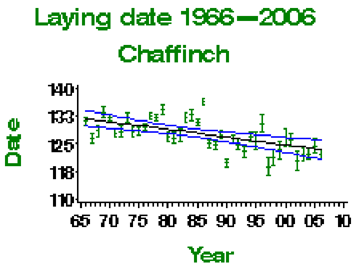
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Juvenile to Adult ratio (CES)	21	1984-2005	84	Smoothed trend	51 Index value	100 Index value	95%	
Juvenile to Adult ratio (CES)	10	1995-2005	97	Smoothed trend	86 Index value	100 Index value	17%	
Juvenile to Adult ratio (CES)	5	2000-2005	93	Smoothed trend	79 Index value	100 Index value	27%	

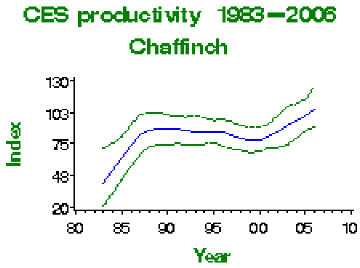












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

GREENFINCH
Carduelis chloris

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK, England: shallow increase

UK population size

734,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Greenfinch abundance varied little up to the mid 1990s, and there was little change in either survival or breeding performance during this period (**Siriwardena *et al.* 1998b**, **2000b**). More recent CBC/BBS data indicate population increases widely across the UK. Productivity data have become more complex, with a substantial reduction in brood size and increased nest survival at the egg stage. Possibly these recent changes are linked to the species' regular year-round use of gardens for feeding. The trend towards earlier laying may be explained by recent climate change (**Crick & Sparks 1999**).

Population changes

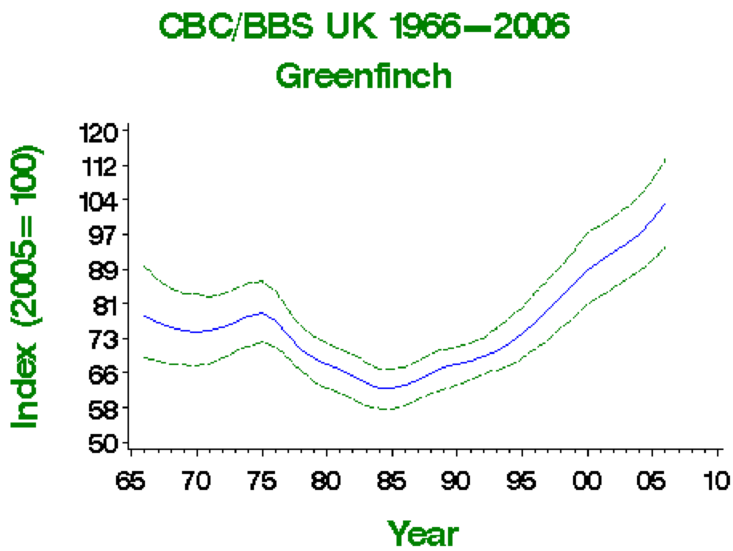
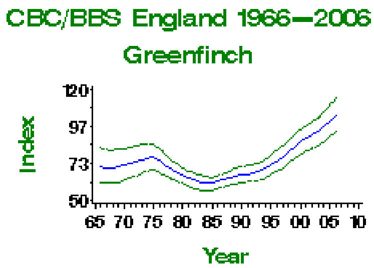


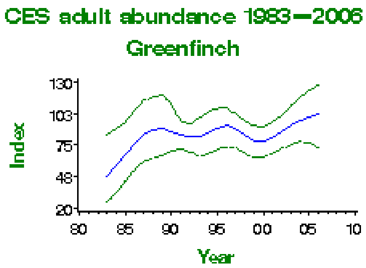
Table of population changes for Greenfinch

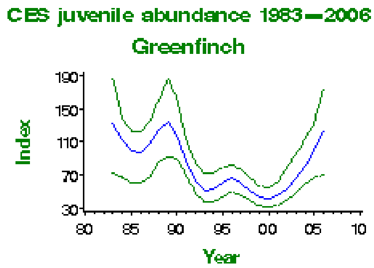
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	548	30	5	60		
	25	1980-2005	757	48	24	74		
	10	1995-2005	1589	35	27	40		
	5	2000-2005	1723	13	8	17		
CBC/BBS England	38	1967-2005	465	42	8	77		
	25	1980-2005	639	51	26	83		
	10	1995-2005	1337	38	31	45		
	5	2000-2005	1435	15	11	19		
CES adults	21	1984-2005	43	75	-11	305		
	10	1995-2005	49	11	-18	48		
	5	2000-2005	48	27	-1	59		
CES juveniles	21	1984-2005	27	-11	-53	126		
	10	1995-2005	34	67	6	159		
	5	2000-2005	37	148	71	234		
BBS UK	10	1995-2005	1514	36	29	42		
	5	2000-2005	1703	13	8	16		
BBS England	10	1995-2005	1271	38	32	45		

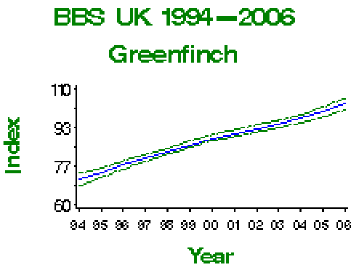
Source	Period	Years	Plots	Change	Lower	Upper	Alert	Comment
BBS Scotland	(yrs)		(n)	(%)	limit	limit		
	5	2000-2005	94	0	-17	18		
BBS Wales	10	1995-2005	101	34	9	69		
	5	2000-2005	124	8	-5	24		
BBS N.Ireland	10	1995-2005	42	111	28	223		
	5	2000-2005	56	20	-6	43		

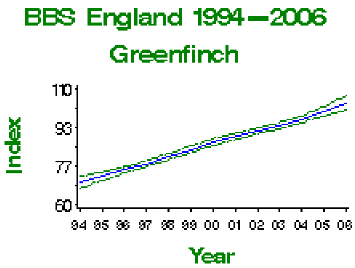
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

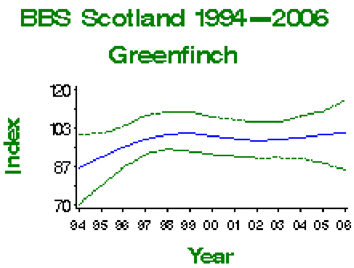


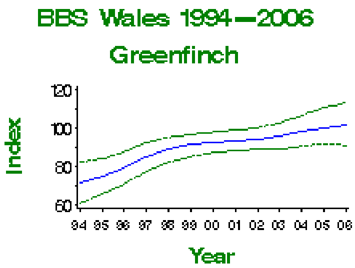












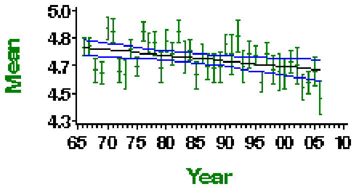
Productivity trends

Table of productivity changes for Greenfinch

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	95	Linear decline	4.76 eggs	4.62 eggs	-2.8%	
Brood size	37	1968-2005	116	Curvilinear	4.03 chicks	3.62 chicks	-10.2%	
Daily failure rate (eggs)	37	1968-2005	133	Linear decline	2.48% nests/day	1.81% nests/day	-27%	
Daily failure rate (chicks)	37	1968-2005	99	None				
Laying date	37	1968-2005	96	Linear decline	May 25	May 11	-14 days	
Juvenile to Adult ratio (CES)	21	1984-2005	47	Smoothed trend	99 Index value	100 Index value	1%	
Juvenile to Adult ratio (CES)	10	1995-2005	55	Smoothed trend	70 Index value	100 Index value	43%	
Juvenile to Adult ratio (CES)	5	2000-2005	54	Smoothed trend	59 Index value	100 Index value	69%	

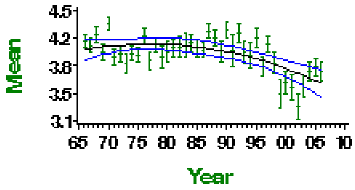
Clutch size 1966—2006

Greenfinch



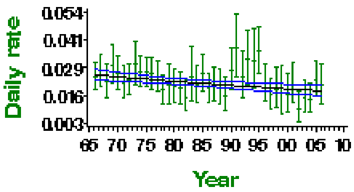
Brood size 1966—2006

Greenfinch



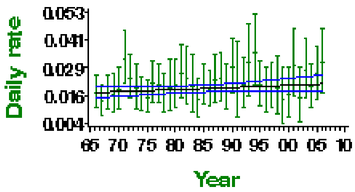
Egg stage nest failure rate

Greenfinch



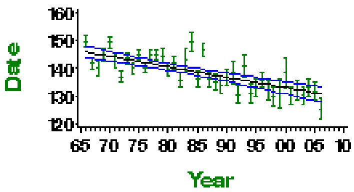
Chick stage nest failure rate

Greenfinch



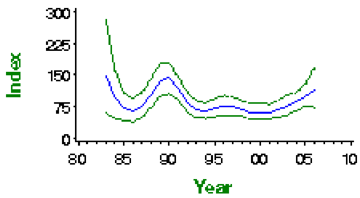
Laying date 1966—2006

Greenfinch



CES productivity 1983—2006

Greenfinch



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

GOLDFINCH
Carduelis carduelis

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: green

Long-term trend

England: fluctuating, with no long-term trend

UK population size

313,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Goldfinch abundance fell sharply from the mid 1970s until the mid 1980s, but the decline was both preceded and followed by significant population increases. The recent upturn has lifted the species from the amber list into the green category, and has been accompanied by an increase in its use of gardens for winter feeding. These population changes can be explained almost entirely by changes in annual survival rates, which may have resulted from a reduction in the availability of weed seeds, due to agricultural intensification, and subsequent increased use of other food sources such as garden bird tables. Alternatively, the effects of environmental change or increased hunting pressure in the Franco-Iberian wintering grounds of the migrant majority of the population may have temporarily reduced survival rates (**Siriwardena *et al.* 1999**). There has been some long-term reduction in productivity as measured by CES.

Population changes

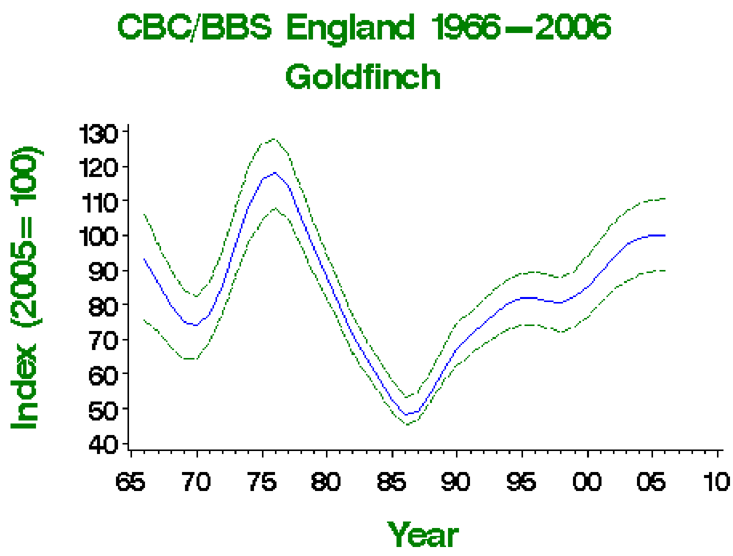
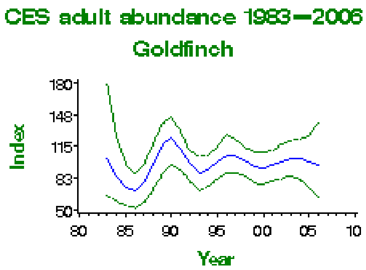


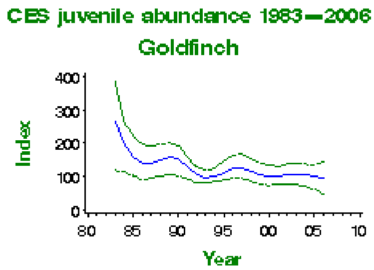
Table of population changes for Goldfinch

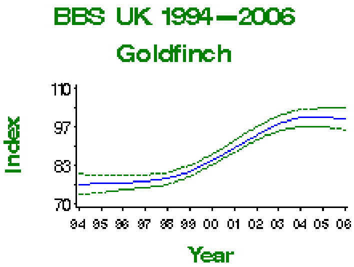
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	351	16	-9	57		
	25	1980-2005	486	13	-4	37		
	10	1995-2005	1031	22	15	31		
	5	2000-2005	1122	17	12	23		
CES adults	21	1984-2005	32	20	-42	106		
	10	1995-2005	40	1	-29	45		
	5	2000-2005	39	8	-27	54		
CES juveniles	21	1984-2005	19	-50	-75	20		Small sample
	10	1995-2005	23	-10	-51	29		
	5	2000-2005	22	1	-45	63		
BBS UK	10	1995-2005	1208	30	21	40		
	5	2000-2005	1387	18	12	23		
BBS England	10	1995-2005	985	21	12	28		
	5	2000-2005	1111	17	12	22		
BBS Scotland	10	1995-2005	71	46	7	109		
	5	2000-2005	80	13	-11	38		

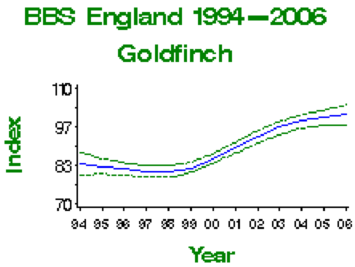
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS N.Ireland	10	1995-2005	32	459	.	.		
	5	2000-2005	48	90	.	.		

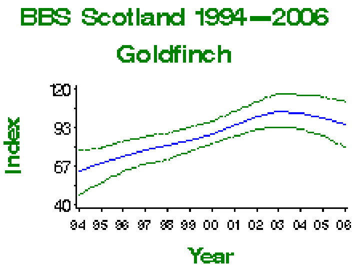
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

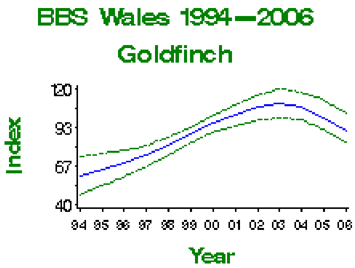








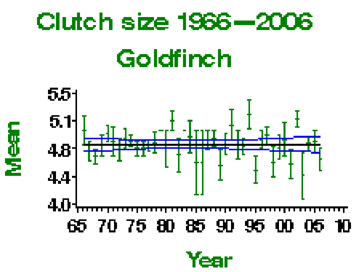


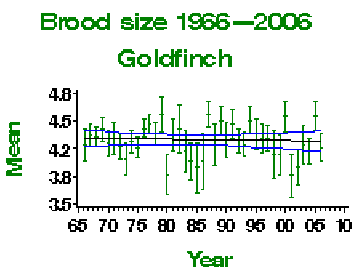


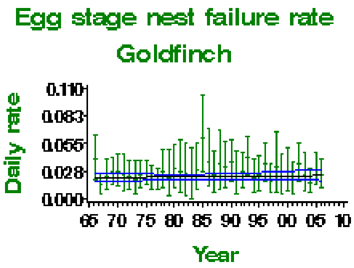
Productivity trends

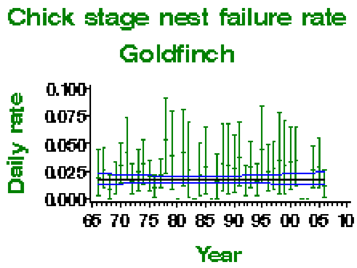
Table of productivity changes for Goldfinch

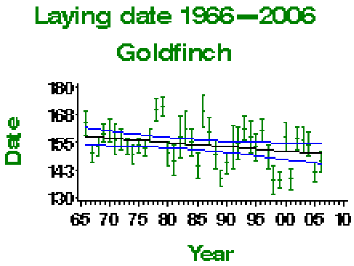
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	19	None				Small sample
Brood size	37	1968-2005	32	None				
Daily failure rate (eggs)	37	1968-2005	34	None				
Daily failure rate (chicks)	37	1968-2005	28	None				Small sample
Laying date	37	1968-2005	22	Linear decline	Jun 6	May 30	-7 days	Small sample
Juvenile to Adult ratio (CES)	21	1984-2005	38	Smoothed trend	264 Index value	100 Index value	-62% >50	
Juvenile to Adult ratio (CES)	10	1995-2005	46	Smoothed trend	165 Index value	100 Index value	-39%	
Juvenile to Adult ratio (CES)	5	2000-2005	46	Smoothed trend	169 Index value	100 Index value	-41% >25	

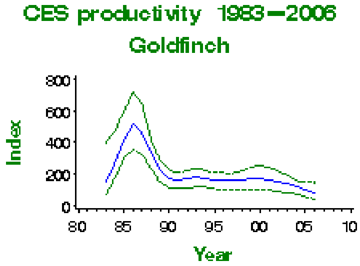












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

SISKIN
Carduelis spinus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: green

Long-term trend

UK: increase

UK population size

369,000 pairs in 2000 (1988–91 Atlas estimate updated using BBS trend: BiE04, APEP06)

Status summary

The maturing of new conifer plantations has aided the spread of breeding Siskins throughout the UK, from their previous stronghold in the Scottish Highlands, since about 1950. A habit of using garden feeders, especially in late winter, has developed since the 1960s and, despite many of the birds involved migrating to the Baltic region to breed, may also have helped promote the UK breeding population. The 1988–91 Breeding Atlas identified a considerable expansion of the breeding range into southern Britain (Gibbons *et al.* 1993). More CBC plots became occupied during the 1970s and 1980s, but annual monitoring was not possible before the inception of BBS. Results since 1994 show extraordinary fluctuations, in both England and Scotland, which have largely been in parallel. To some extent, this may reflect occasional continental influxes affecting numbers on a broad UK scale.

Population changes

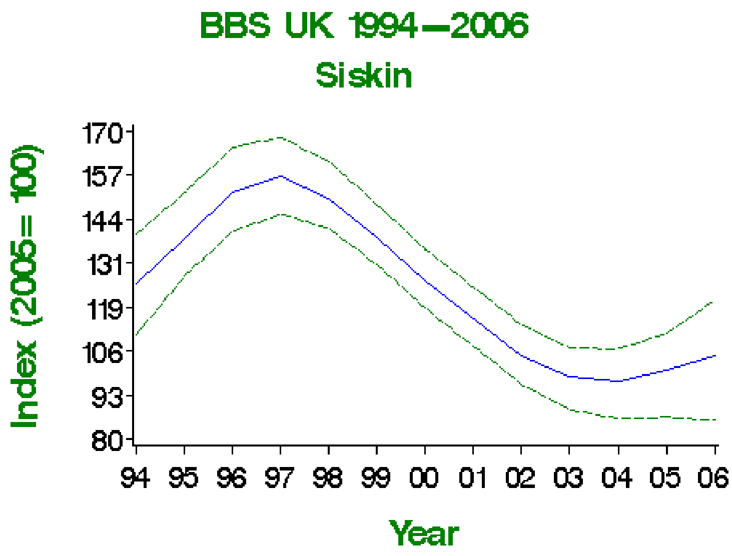
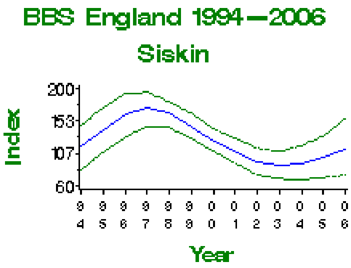
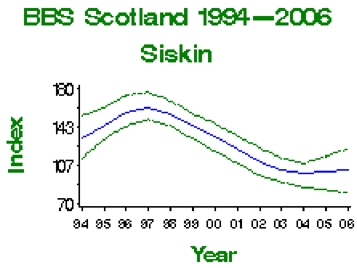


Table of population changes for Siskin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1995-2005	115	-28	-43	-11	>25	
	5	2000-2005	114	-21	-35	-8		
BBS England	10	1995-2005	34	-29	-59	23		
	5	2000-2005	34	-19	-48	18		
BBS Scotland	10	1995-2005	54	-31	-49	-12	>25	
	5	2000-2005	49	-25	-43	-5		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





Productivity trends

Productivity information is not currently available for this species

Additional information

- **Maps and statistics from British and Irish atlases**
- **BirdFacts page on species biology**
- **BirdTrack results**
- **Garden BirdWatch results**

LINNET
Carduelis cannabina

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2, declining
UK: red (>50% population decline)
UK Biodiversity Action Plan: click here

Long-term trend

England: rapid decline

UK population size

556,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Linnet abundance fell rapidly in the UK between the mid 1970s and mid 1980s. Numbers have subsequently changed little overall, although with further decrease in England and some suggestion of recovery in Scotland and in Wales. CES has shown declines continuing strongly in recent years. Nest failure rates rose during the principal period of population decline, and this represents the most likely demographic mechanism driving the observed decreases in abundance (**Siriwardena *et al.* 1999**, **2000b**). CES and nest record results suggest that low productivity is still a problem for the species, possibly due to reductions in hedgerow quality leaving nests more exposed and therefore at greater risk of predation. Nestling diet incorporates a high proportion of oilseed rape seeds, suggesting that the inclusion of this crop in arable rotations may be important in maintaining Linnet populations (**Moorcroft *et al.* 2006**). Following widespread declines across Europe during the 1990s, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

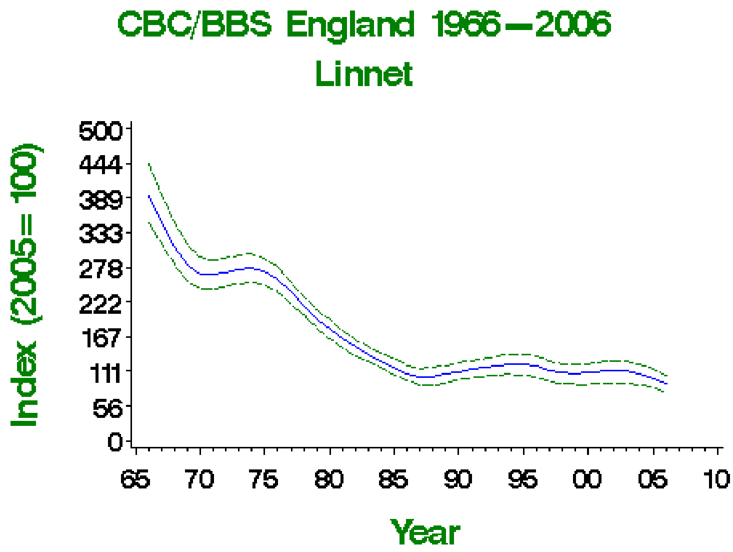
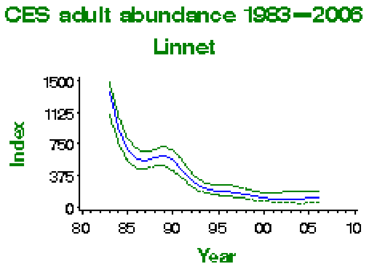


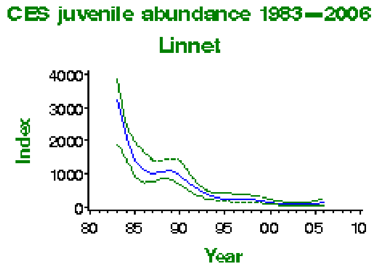
Table of population changes for Linnet

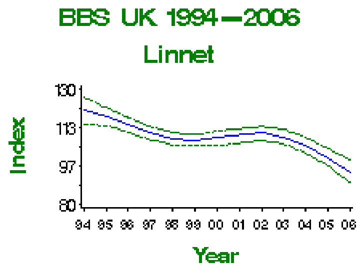
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	38	1967-2005	349	-71	-78	-63	>50	
	25	1980-2005	465	-44	-57	-32	>25	
	10	1995-2005	947	-18	-25	-12		
	5	2000-2005	935	-8	-13	-2		
CES adults	21	1984-2005	20	-89	-96	-74	>50	
	10	1995-2005	19	-48	-82	0		Small sample
	5	2000-2005	14	-9	-55	51		Small sample
CES juveniles	21	1984-2005	14	-95	-99	-88	>50	Small sample
	10	1995-2005	14	-60	-88	-32	>50	Small sample
	5	2000-2005	12	-32	-67	11		Small sample
BBS UK	10	1995-2005	1104	-15	-22	-8		
	5	2000-2005	1158	-8	-13	-1		
BBS England	10	1995-2005	894	-20	-26	-14		
	5	2000-2005	923	-7	-12	-1		
BBS Scotland	10	1995-2005	84	1	-23	27		
	5	2000-2005	87	-7	-24	10		

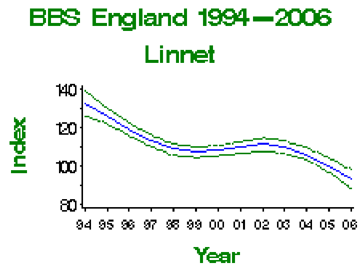
BBS W Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

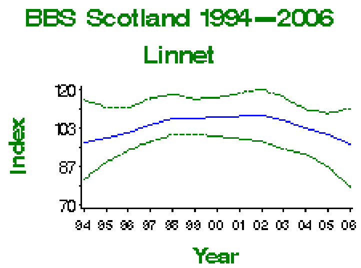
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

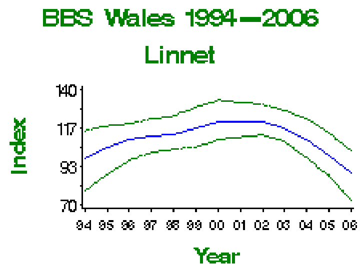








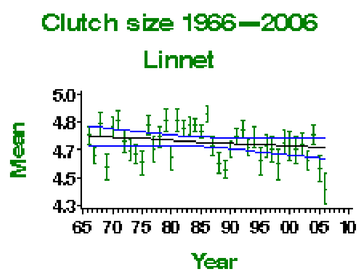


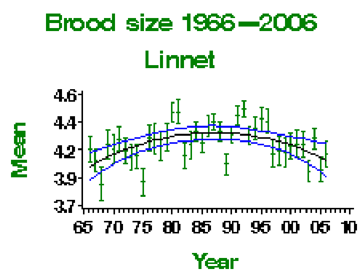


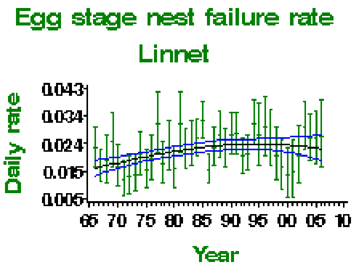
Productivity trends

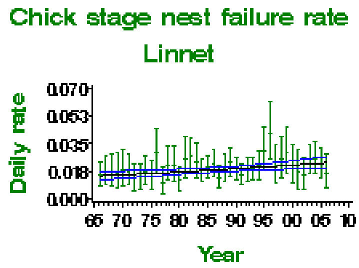
Table of productivity changes for Linnet

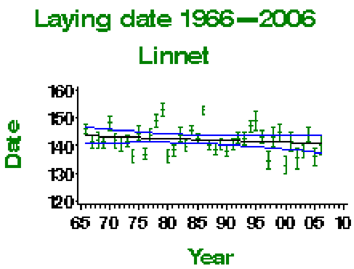
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	109	None				
Brood size	37	1968-2005	123	Curvilinear	4.06 chicks	4.09 chicks	0.6%	
Daily failure rate (eggs)	37	1968-2005	155	Curvilinear	1.65% nests/day	2.26% nests/day	37%	
Daily failure rate (chicks)	37	1968-2005	111	Linear increase	1.5% nests/day	2.27% nests/day	51.3%	
Laying date	37	1968-2005	110	None				
Juvenile to Adult ratio (CES)	21	1984-2005	23	Smoothed trend	458 Index value	100 Index value	-78% >50	
Juvenile to Adult ratio (CES)	10	1995-2005	23	Smoothed trend	113 Index value	100 Index value	-12%	
Juvenile to Adult ratio (CES)	5	2000-2005	19	Smoothed trend	203 Index value	100 Index value	-51% >50	Small sample

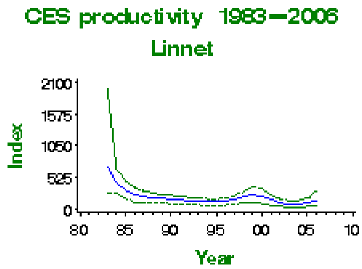












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

BULLFINCH
Pyrrhula pyrrhula

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: red (>50% population decline)
UK Biodiversity Action Plan: **click here**

Long-term trend

UK, England: moderate decline

UK population size

166,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

The UK Bullfinch population entered a long period of decline in the mid 1970s, following a period of relative stability. The decline was initially very steep, and more so in farmland than in wooded habitats, but has been shallower since the early 1980s. CES and CBC/BBS both suggest a minor upturn in the last few seasons. The demographic mechanism of decline remains unclear (**Siriwardena *et al.* 1999**, **2000b**, **2001**), although agricultural intensification and a reduction in the structural and floristic diversity of woodland are suspected to have played a part through losses of food resources and nesting cover (**Fuller *et al.* 2005**). Alongside these factors, **Proffitt *et al.* (2004)** and **Marquiss (2007)** mention the constraints on survival outside the breeding season and the possible role of increasing Sparrowhawk populations on the ability of Bullfinches to exploit resources in some habitats. Nest failure at the egg stage has become more frequent in recent seasons. Numbers have fallen widely in Europe since 1980 (**PECBM 2006**).

Population changes

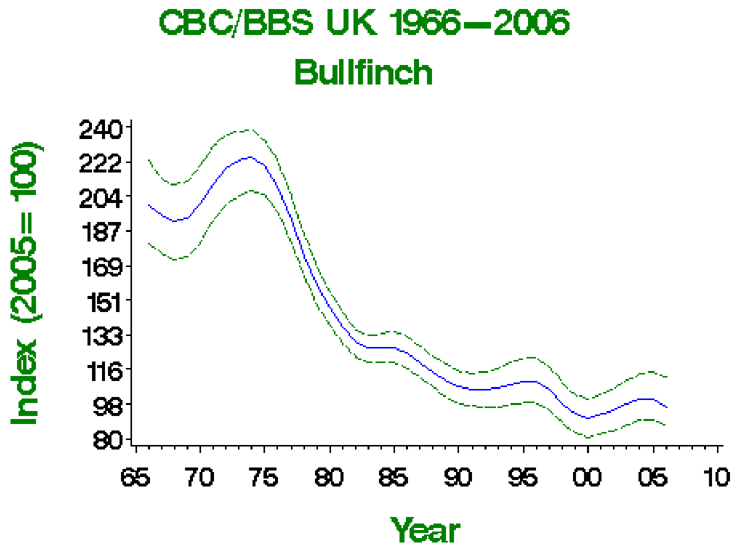
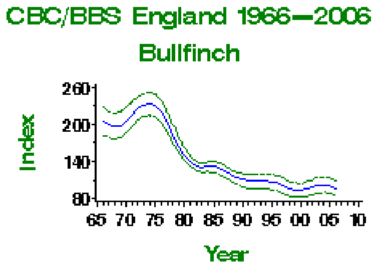


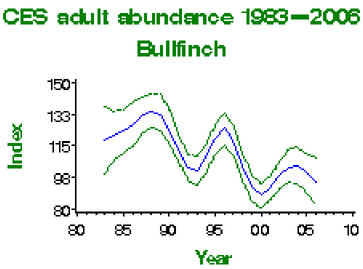
Table of population changes for Bullfinch

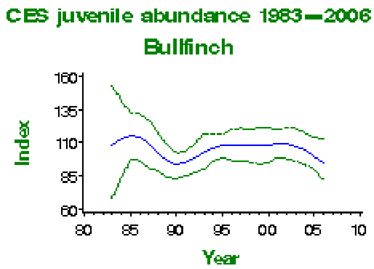
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	261	-49	-58	-36	>25	
	25	1980-2005	322	-32	-40	-17	>25	
	10	1995-2005	568	-9	-16	0		
	5	2000-2005	566	10	3	20		
CBC/BBS England	38	1967-2005	214	-50	-61	-38	>50	
	25	1980-2005	258	-34	-46	-22	>25	
	10	1995-2005	443	-7	-14	1		
	5	2000-2005	433	7	0	16		
CES adults	21	1984-2005	80	-17	-33	7		
	10	1995-2005	87	-16	-27	-2		
	5	2000-2005	80	14	-3	34		
CES juveniles	21	1984-2005	63	-11	-37	41		
	10	1995-2005	69	-7	-20	10		
	5	2000-2005	64	-8	-20	5		

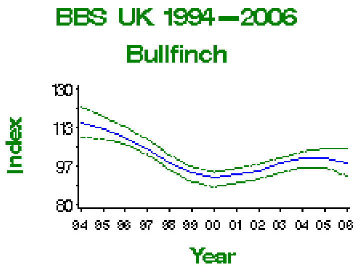
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS England	10	1995-2005	387	-10	-18	-2		
	5	2000-2005	420	7	0	15		
BBS Scotland	10	1995-2005	31	-13	-42	7		
	5	2000-2005	30	-10	-28	8		
BBS Wales	10	1995-2005	59	2	-15	29		
	5	2000-2005	73	31	16	58		

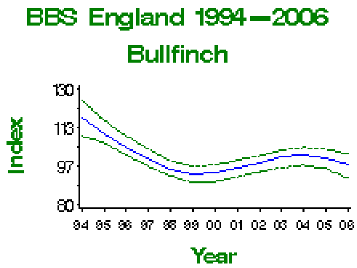
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

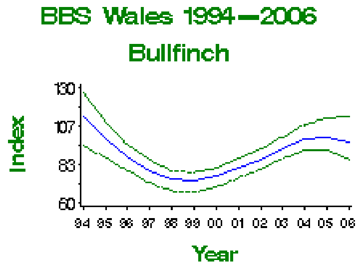












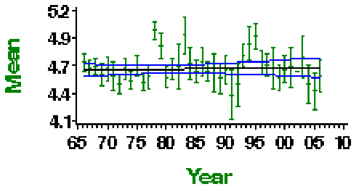
Productivity trends

Table of productivity changes for Bullfinch

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	35	None				
Brood size	37	1968-2005	37	Linear decline	4.17 chicks	3.96 chicks	-4.9%	
Daily failure rate (eggs)	37	1968-2005	51	Curvilinear	3.36% nests/day	4.29% nests/day	27.7%	
Daily failure rate (chicks)	37	1968-2005	34	Curvilinear	3.37% nests/day	3.9% nests/day	15.7%	
Laying date	37	1968-2005	33	None				
Juvenile to Adult ratio (CES)	21	1984-2005	84	Smoothed trend	95 Index value	100 Index value	6%	
Juvenile to Adult ratio (CES)	10	1995-2005	91	Smoothed trend	82 Index value	100 Index value	22%	
Juvenile to Adult ratio (CES)	5	2000-2005	84	Smoothed trend	105 Index value	100 Index value	-5%	

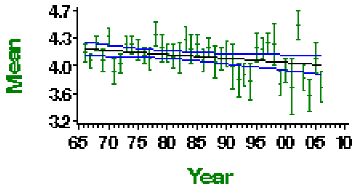
Clutch size 1966—2006

Bullfinch



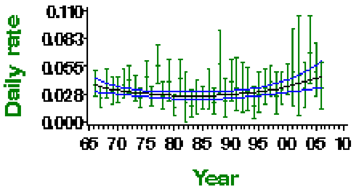
Brood size 1966—2006

Bullfinch



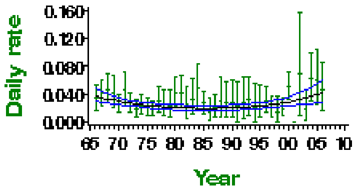
Egg stage nest failure rate

Bullfinch



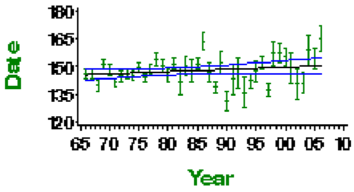
Chick stage nest failure rate

Bullfinch



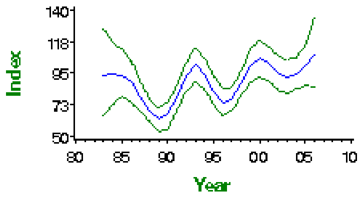
Laying date 1966—2006

Bullfinch



CES productivity 1983—2006

Bullfinch



Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

Page not foun[redacted]

Terribly sorry...

The page you are looking for could not be found.

- Try searching using the search bar (top right)
- Navigate to the area you are looking for using the main menu (above)
- Return to our homepage
- Email us about what you are trying to find, or to tell us about a broken link - info@bto.org

Related content

EVENT

Northern Ireland Seabird Report Launch

The NI Seabird Report is unique in the UK, presenting the most up-to-date seabird monitoring data collected by volunteers, NGOs and NIEA from around Northern Ireland. Each March we present freshly produced hard copies...

ARTICLE

Bird tracking - a masterclass

Phil Atkinson explains the technology behind tracking.

BLOG

Widening BTO's appeal

Andy Clements, BTO's Chief Executive, looks at how BTO can engage new audiences.

YELLOWHAMMER
Emberiza citrinella

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (concentrated in Europe, conservation status favourable)
UK: red (>50% population decline)
UK Biodiversity Action Plan: in preparation

Long-term trend

UK, England: rapid decline

UK population size

792,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Yellowhammer abundance began to decline on farmland in the mid 1980s and, except in Scotland, the decline has continued ever since. The species, listed as green in 1996, now qualifies for the red list. While there is some evidence that survival rates have decreased during the period of decline, Yellowhammer breeding performance has tended to improve (**Siriwardena *et al.* 1998b**, **2000b**). However, recent declines in brood size and nest success are potentially of concern. Overall nest failure rates are relatively high, probably because later nests, which tend to be more successful (**Kyrkos 1997**), are under-represented in the NRS data set, but this is unlikely to affect overall trends. Reductions in winter seed food availability as a result of agricultural intensification (for example, the loss of winter stubbles and a reduction in weed densities) are widely believed to have contributed to the population decline. The local availability of winter setaside is a good predictor of sites chosen for breeding territories the next year (**Whittingham *et al.* 2005**). Numbers have fallen widely in Europe since 1980 (**PECBM 2006**).

Population changes

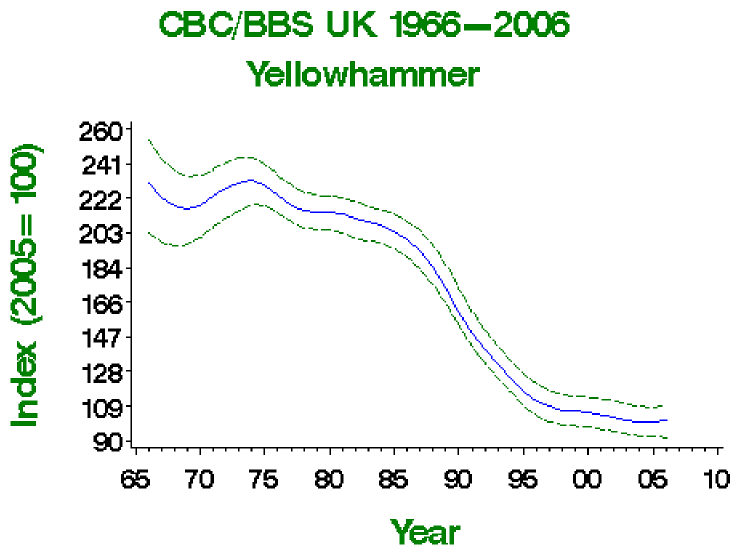
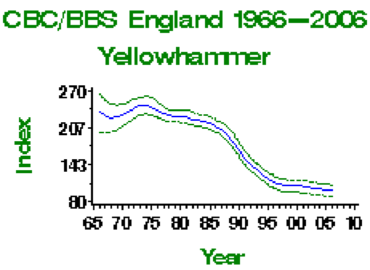


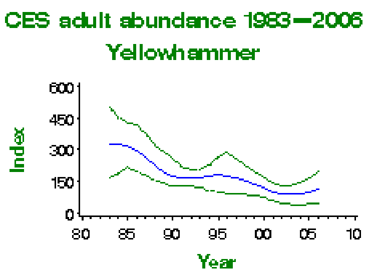
Table of population changes for Yellowhammer

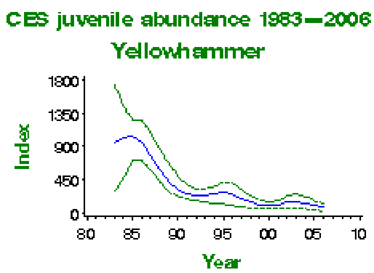
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	416	-55	-62	-46	>50	
	25	1980-2005	556	-53	-58	-48	>50	
	10	1995-2005	1111	-15	-19	-10		
	5	2000-2005	1079	-5	-9	-1		
CBC/BBS England	38	1967-2005	363	-56	-65	-45	>50	
	25	1980-2005	486	-56	-63	-49	>50	
	10	1995-2005	970	-17	-20	-13		
	5	2000-2005	945	-7	-10	-4		
CES adults	21	1984-2005	18	-69	-90	-23	>50	Small sample
	10	1995-2005	14	-44	-82	24		Small sample
	5	2000-2005	10	-15	-62	60		Small sample
CES juveniles	21	1984-2005	10	-90	-98	-71	>50	Small sample
BBS UK	10	1995-2005	1054	-13	-19	-8		
	5	2000-2005	1065	-5	-8	-2		
BBS England	10	1995-2005	918	-16	-20	-12		

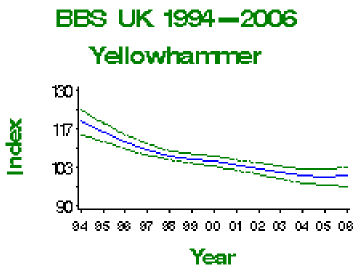
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Scotland								
	5	2000-2005	89	1	-9	11		
BBS Wales	10	1995-2005	37	-37	-53	-20	>25	
	5	2000-2005	37	-11	-30	7		

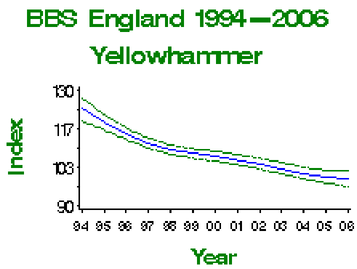
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

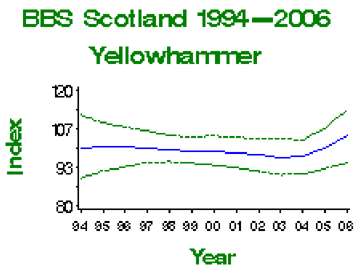


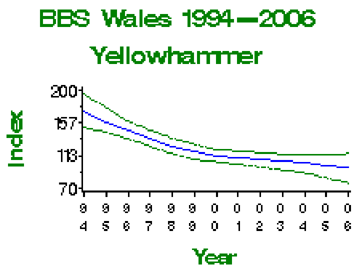








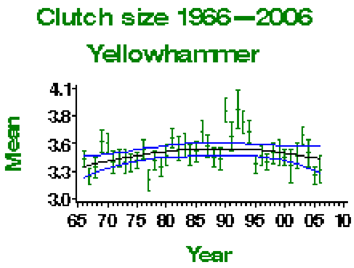


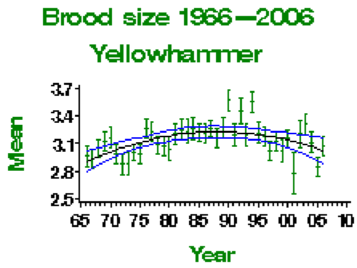


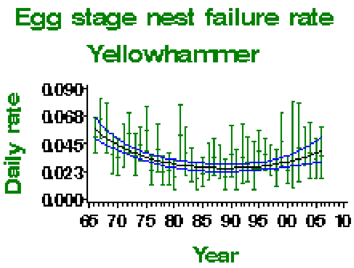
Productivity trends

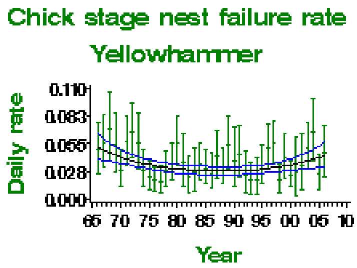
Table of productivity changes for Yellowhammer

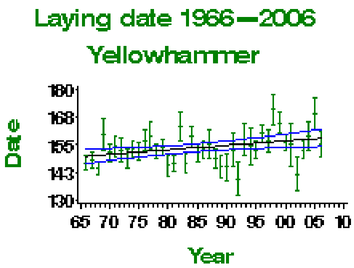
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	44	Curvilinear	3.35 eggs	3.41 eggs	1.9%	
Brood size	37	1968-2005	67	Curvilinear	2.96 chicks	3.05 chicks	3%	
Daily failure rate (eggs)	37	1968-2005	66	Curvilinear	5.01% nests/day	3.74% nests/day	-25.3%	
Daily failure rate (chicks)	37	1968-2005	51	Curvilinear	4.63% nests/day	4.11% nests/day	-11.2%	
Laying date	37	1968-2005	27	Linear increase	May 30	Jun 7	8 days	Small sample
Juvenile to Adult ratio (CES)	21	1984-2005	20	Smoothed trend	95 Index value	100 Index value	5%	
Juvenile to Adult ratio (CES)	10	1995-2005	16	Smoothed trend	143 Index value	100 Index value	-30%	Small sample
Juvenile to Adult ratio (CES)	5	2000-2005	12	Smoothed trend	103 Index value	100 Index value	-2%	Small sample

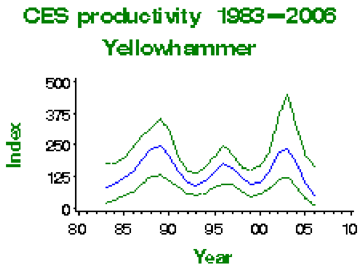












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

REED BUNTING
Emberiza schoeniclus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK: red (>50% population decline)
UK Biodiversity Action Plan: **click here**

Long-term trend

UK, England: moderate decline

UK population size

192,000–211,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS and WBS trends: **BiE04**, **APEP06**)

Status summary

Red-listing for this species is based on a 62% decline on CBC plots between 1974 and 1999. Both CBC/BBS and WBS indices declined rapidly during the 1970s, but Reed Bunting abundance subsequently remained remarkably stable. The early increase in the CBC index was associated with a gradual spread into drier habitats, especially farmland, and it is likely that the subsequent decline was related to agricultural intensification. Detailed demographic analyses suggest that the decline was driven by decreasing survival rates and that a subsequent population recovery may have been prevented by increased nest losses (**Peach *et al.* 1999**). This is supported by a moderate decline in CES productivity and a significant increase in failure rates at the egg stage. In recent years, BBS results indicate significant population increase. Farmland densities are four times higher in oilseed rape than in cereals or setaside and this crop is crucial in reducing the dependency of the species on wetlands (**Gruar *et al.* 2006**). Numbers have fallen widely in Europe since 1980 (**PECBM 2006**).

Population changes

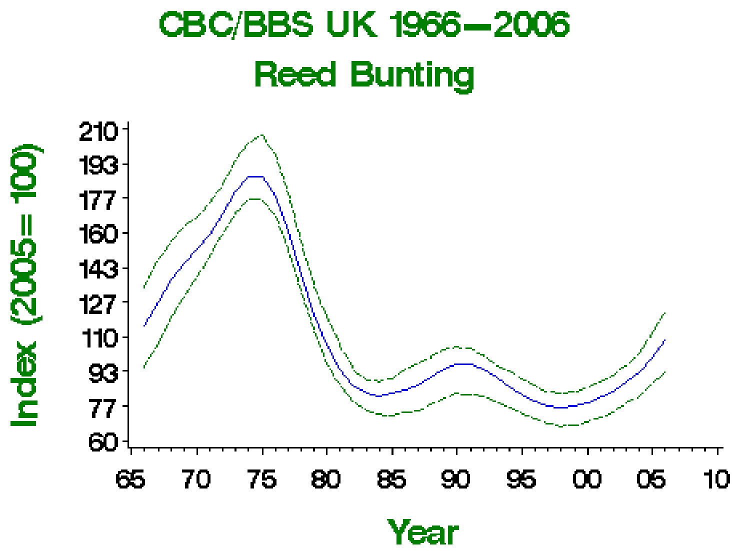
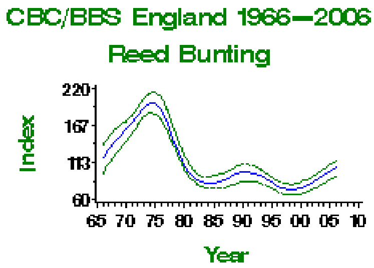


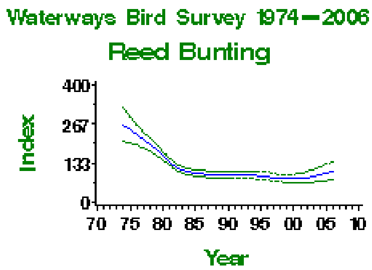
Table of population changes for Reed Bunting

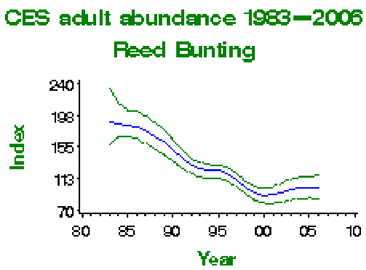
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	182	-21	-40	1		
	25	1980-2005	221	-5	-27	15		
	10	1995-2005	414	22	11	33		
	5	2000-2005	428	27	16	42		
CBC/BBS England	38	1967-2005	144	-25	-42	-1		
	25	1980-2005	172	-9	-28	9		
	10	1995-2005	313	18	7	29		
	5	2000-2005	314	30	20	39		
WBS waterways	30	1975-2005	52	-59	-75	-36	>50	
	25	1980-2005	53	-37	-58	-8	>25	
	10	1995-2005	54	11	-17	51		
	5	2000-2005	44	23	6	46		
CES adults	21	1984-2005	59	-47	-60	-33	>25	
	10	1995-2005	69	-18	-30	-1		
	5	2000-2005	62	12	0	31		

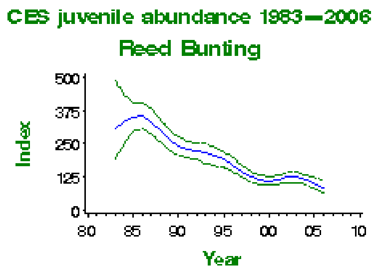
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2000-2005	45	-9	-25	10		
BBS UK	10	1995-2005	382	25	13	39		
	5	2000-2005	420	26	17	40		
BBS England	10	1995-2005	284	20	6	32		
	5	2000-2005	307	28	19	41		
BBS Scotland	10	1995-2005	44	43	14	81		
	5	2000-2005	48	21	-6	55		

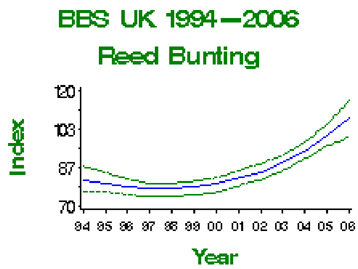
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

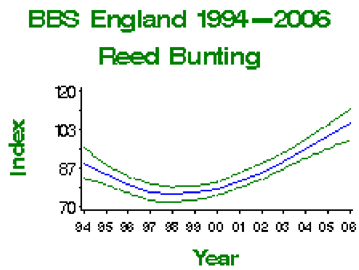


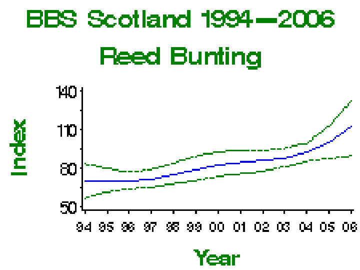










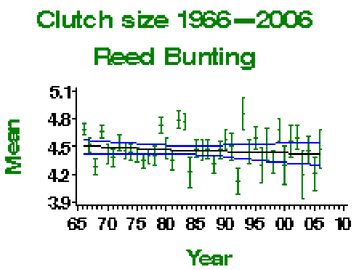


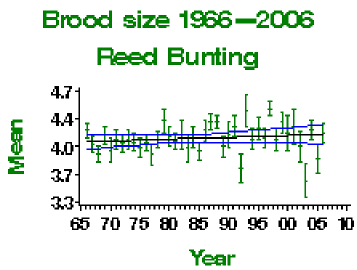
Productivity trends

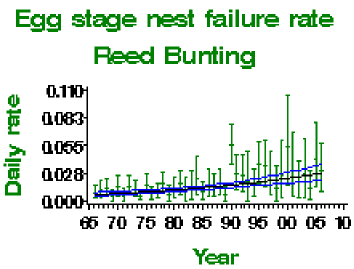
Table of productivity changes for Reed Bunting

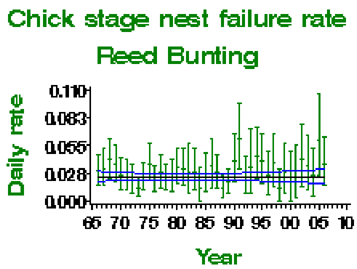
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Clutch size	37	1968-2005	44	None				
Brood size	37	1968-	61	None				

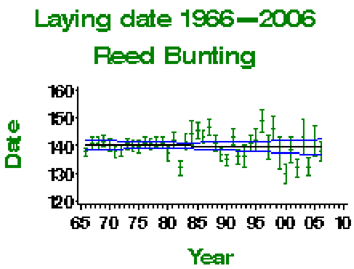
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Daily failure rate (eggs)								
Daily failure rate (chicks)								
		2005						
Laying date	37	1968-2005	49	None				
Juvenile to Adult ratio (CES)	21	1984-2005	62	Smoothed trend	212 Index value	100 Index value	-53% >50	
Juvenile to Adult ratio (CES)	10	1995-2005	73	Smoothed trend	180 Index value	100 Index value	-44% >25	
Juvenile to Adult ratio (CES)	5	2000-2005	65	Smoothed trend	111 Index value	100 Index value	-10%	

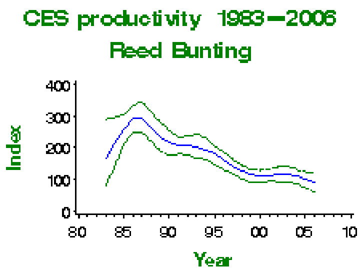












Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results
- Garden BirdWatch results

CORN BUNTING
Emberiza calandra

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2 (declining)
UK: red (>50% population decline, historical decline)
UK Biodiversity Action Plan: **click here**

Long-term trend

UK, England: rapid decline

UK population size

8,500–12,200 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Following an earlier, historical decrease, Corn Buntings declined very steeply between the mid 1970s and mid 1980s, with local extinctions across large sections of their former range. Subsequently the decline has continued, but at a much-reduced rate. Breeding performance per nesting attempt has increased considerably over this period (**Crick 1997**), but it is also reported that fewer birds now raise a second brood, thus reducing productivity overall (**Brickle & Harper 2002**). Ring-recovery sample sizes do not permit an analysis of survival rates (**Siriwardena *et al.* 1998b**, **2000b**). Any decrease there has been in survival rates is probably a result of the deleterious effects of agricultural intensification on seed availability in winter (**Donald 1997**). The isolated Corn Bunting population on the Western Isles is still declining rapidly, probably because agricultural change has reduced the supply of winter grain (**Wilson *et al.* 2007**). Targeted restoration of lower-intensity cultivation, but without hedgerows, might help prevent further local extinctions (**Mason & Macdonald 2006**). With declines across much of its European range, this previously 'secure' species is now provisionally evaluated as 'declining' (**BirdLife International 2004**).

Population changes

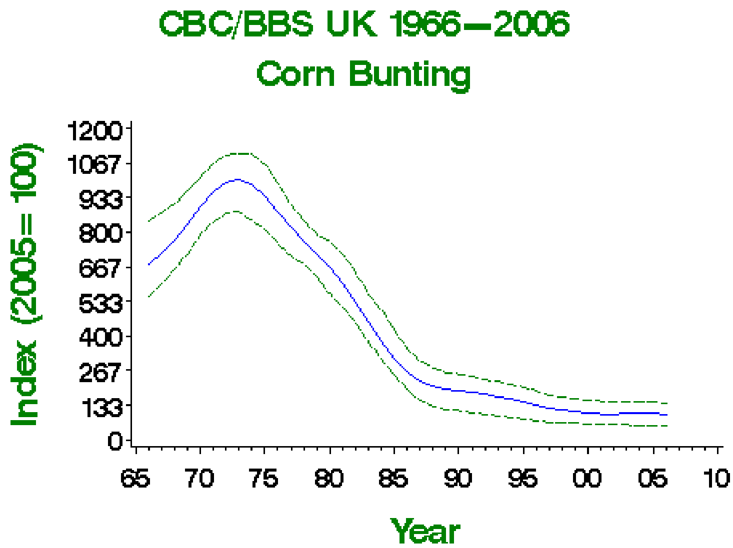
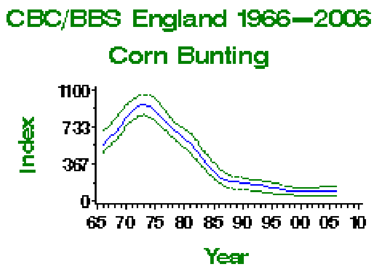
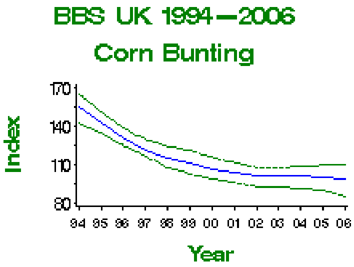


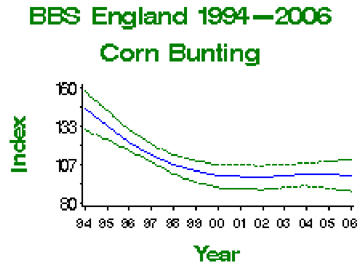
Table of population changes for Corn Bunting

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	38	1967-2005	61	-86	-94	-76	>50	
	25	1980-2005	74	-85	-93	-75	>50	Small CBC sample
	10	1995-2005	144	-30	-42	-16	>25	
	5	2000-2005	120	-5	-22	14		
CBC/BBS England	38	1967-2005	58	-84	-92	-73	>50	
	25	1980-2005	71	-84	-93	-74	>50	Small CBC sample
	10	1995-2005	138	-25	-38	-12	>25	
	5	2000-2005	115	3	-14	23		
BBS UK	10	1995-2005	136	-30	-41	-19	>25	
	5	2000-2005	119	-6	-23	13		
BBS England	10	1995-2005	130	-25	-38	-13		
	5	2000-2005	114	1	-13	21		

The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB





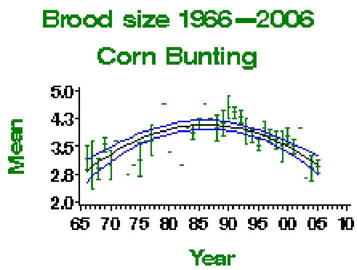


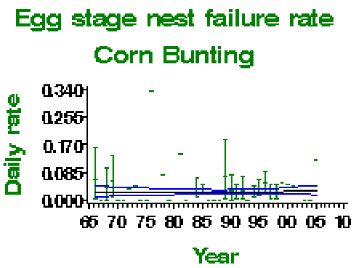
Productivity trends

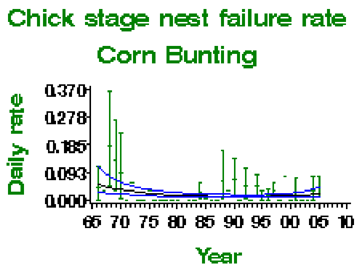
Table of productivity changes for Corn Bunting

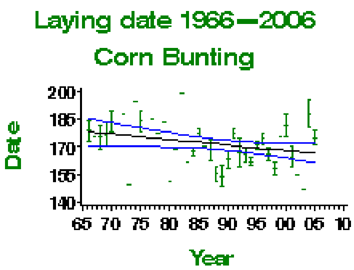
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2005	Change	Comment
Brood size	37	1968-2005	12	Curvilinear	3.07 chicks	3.01 chicks	-2%	Small sample
Daily failure rate (eggs)	37	1968-2005	11	None				Small sample
Daily failure rate (chicks)	37	1968-2005	11	Curvilinear	4.5% nests/day	2.09% nests/day	-53.6%	Small sample
Laying date	37	1968-2005	14	None				Small sample

Insufficient data on clutch size available for this species









Insufficient data on CES available for this species

Additional information

- Maps and statistics from British and Irish atlases
- BirdFacts page on species biology
- BirdTrack results

3. Help on species accounts

The species in this report can be accessed in any order, but the species index and drop-down list use the taxonomic sequence established by the British Ornithologists' Union in its **British List**. The vernacular and scientific names we use are also drawn from that list. Given this report's limited geographical scope, we have used the British rather than the international English names. Depending on the availability of data (not every species is covered by each scheme), the following will be found beneath each species heading:

1) ***Conservation listings:*** First, the European conservation category is given, according to current listings by BirdLife International in ***Birds in Europe*** (**BirdLife International 2004**). These update the original listings of **Tucker & Heath (1994)**. For SPECs (Species of European Conservation Concern), the European Threat Status is also given. The current SPEC categories are as follows:

SPEC 1	Species of global conservation concern, according to the latest assessments by BirdLife International (**www.birdlife.org/datazone/species/index.html**)
SPEC 2	Species with an unfavourable European conservation status, and with more than half of the global breeding or wintering population concentrated in Europe
SPEC 3	Species with an unfavourable European conservation status, but with less than half of the global breeding or wintering population within Europe

Other species, not considered to be of European conservation concern, and assessed as 'secure', have no SPEC category but are placed into two further groupings:

- Species with a favourable European conservation status, and with less than half of the breeding or wintering population within Europe (**Non-SPEC**)
- Species with a favourable European conservation status, but with more than half of the global breeding or wintering population concentrated in Europe (**Non-SPEC^{E}**)

The UK conservation listing, given next, is taken from *The Population Status of Birds in the UK* (**Gregory *et al.* 2002**; see **PSoB** pages). These supersede the previous *Birds of Conservation Concern* listings (**Gibbons *et al.* 1996**), and cover the period 2002–07. There are three categories, as follows:

Red	high conservation concern
Amber	medium conservation concern
Green	all other species (except introduced species, which are not classified)

The main reason or reasons for listing as red or amber are also given. NB:

- SPEC 1 (globally threatened) species are automatically red listed, and SPEC 2 or 3 species are amber listed (unless they are introduced or a red-list criterion applies)
- Red or amber listing may stem from decline, localisation or importance of non-breeding as well as breeding populations in the UK
- Rates of population decline used to assess red and amber listing are generally derived from CBC results for the 25-year period 1974–99
- Range declines are generally calculated from the numbers of 10-km squares occupied in the two published **breeding atlases** (**Gibbons *et al.* 1993**)
- Historical decline (in UK over the period 1800–1995) is assessed by literature review

Following the signing of the Convention on Biological Diversity at the 'Earth Summit' in Rio de Janeiro in 1992, the statutory conservation bodies in the UK compiled **Biodiversity Action Plans** (**BAPs**) for 26 rare or threatened bird species, of which 12 are covered by this report. A **BAP review** published in 2007 has concluded that 56 UK bird species now qualify for BAPs and has recommended that certain subspecies (e.g. Fair Isle and St Kilda Wrens) should now be included. This report covers 31 of those species.

Where a UK BAP exists, we give the link to the latest available version. You will find onward links, for example to local BAPs for that species. For species newly nominated, we record that a BAP is 'in preparation'.

2) ***Long-term trend:*** This summarises the trend in population size since 1975 from WBS data, 1984 from CES data, or 1967 from CBC/BBS, with reference to any CBC/BBS, WBS or CES data that may be tabulated. If there are no data available from these schemes, any assessment of trends covers the period since about the mid 1960s, but may also take historical data into account. Increases and declines that are qualified as 'shallow', 'moderate' or 'rapid' are generally statistically significant. The following terms are used:

- **Rapid decline:** >50% population decline from CBC/BBS, WBS or CES
- **Moderate decline:** 25–50% population decline from CBC/BBS, WBS or CES
- **Shallow decline:** 10–25% population decline from CBC/BBS, WBS or CES
- **Decline/Increase:** information has been derived from other sources
- **Probable/Possible increase/decline:** as above, but the information is not as certain - see the status summary for reasons
- **Stable/Fluctuating, with no long-term trend:** no overall change, or change <10%
- **Uncertain:** where the information from two monitoring schemes conflicts or if the data are

unrepresentative of the species' total UK population

- **Unknown:** no information on the UK population trend is available
- **Shallow increase:** 10–50% population increase from CBC/BBS, WBS or CES
- **Moderate increase:** 50–100% population increase from CBC/BBS, WBS or CES
- **Rapid increase:** >100% population increase from CBC/BBS, WBS or CES

3) ***UK population size:*** Periodic reports on population sizes of birds in Britain and in the UK, for the breeding season and for winter, are agreed by the Avian Population Estimates Panel (APEP), on which BTO, GCT, JNCC, RSPB and WWT are repesented. Extracts from the Panel's second report (**Baker *et al.* 2006**) are given for each of our species, with a shortened reference (APEP06). The second edition of ***Birds in Europe*** (**BirdLife International 2004**) was published while APEP06 was in preparation. Their figures are also given, referenced as BiE04. The units and reference year (or period) is given for each estimate, and where possible its derivation is also described briefly or referenced. BiE04 and APEP06 estimates are usually identical, but may differ because:

- one or other is updated to a new reference year
- the two publications apply different rules for inclusion of introduced species
- BiE04 figures include the Channel Islands (but for most species this has no effect on the estimate)
- different methods of rounding or range estimation have been applied to the same original data
- sources used for BiE04, but not APEP06, included papers in preparation

Information too recent to have been included in either of these publications is also given, pending ratification by APEP. Readers should note that the wide ranges given for many species reflect the considerable uncertainty that applies to all but a few of the current estimates. The application of distance sampling methods to BBS data (**Newson *et al.* 2005**), or future surveys, including the current **2007–11 Atlas**, may well result in substantial challenge to the presently accepted figures.

4) ***Status summary:*** This section provides a brief summary of the trends detailed for the species and indicates why such changes might have occurred, with reference to any published information, if this is known.

5) ***Population trend graphs:*** The first, large graph shows the most representative long-term trend in abundance for the species, and is followed after the table by further graphs from other schemes, including BBS graphs for separate UK countries, as available. If no suitable long-term trend is available then the BBS trend for the UK is shown. **Methods (Section 2)** provides details about how the trend data are calculated for each scheme. For BBS, CBC/BBS, CBC, WBS and CES, the graphs show a smoothed line (in blue) and its 85% confidence limits (in green); for the Heronries Census, annual estimates are shown in blue, 85% confidence limits in green, and a smoothed trend in red.

6) ***Population trends table:*** This table provides details of summarised percentage changes in population size, over the maximum period from each source, and from the past 25 years, 10 years and 5 years, where these figures are available. Further columns indicate the years included, the average number of census plots included in the analysis for each year, the percentage change (an increase if presented with no sign) and the upper and lower 90% confidence limits of that change. Where the confidence interval does not include zero change, population declines are regarded as statistically significant. The '**Alert**' column indicates where a statistically significant population decline is estimated to be of 50% or more (>50) or between 25% and 50% (>25) (see **Alerts, Section 2.8** for further details). The '**Comment**' column lists any caveats that must be considered when interpreting the estimates. The caveats include:

- **Small sample:** For CBC, WBS and CES data, a mean sample size of less than 20 (but more than 10) census plots was available; for BBS data from individual countries, a mean sample of less than 40 (but more than 30) plots was available.

- **Unrepresentative?:** Where joint CBC/BBS trends are reported, the trends are always considered to be representative for the region concerned.The CBC data may inadequately represent the population as a whole. This judgment was made either because the species' average abundance in 10-km squares containing CBC plots was less than that in other occupied 10-km squares, as measured by Breeding Atlas timed counts or frequency indices (**Gibbons *et al.* 1993**), or, where these figures could not be calculated, on expert opinion.

7) ***Productivity graphs:*** Graphs from Constant Effort Sites Scheme or Nest Record Scheme data illustrate trends in productivity. For NRS data, annual means (averages) are shown in green, with error bars to denote �1 standard error; quadratic or linear regression lines (in black) and the upper and lower 95% confidence limits of these lines (in blue) are also shown. For CES data, the smoothed trends are plotted (in blue) with their 85% confidence limits (in green) (see **Section 2.6** for details).

8) ***Productivity trends table:*** This provides details of changes in productivity since 1968 (or a more recent year, depending on the availability of data). It lists the period of years concerned, the mean annual sample, the type of trend ('curvilinear' is for a significant quadradic trend, 'linear' is for a significant linear trend, 'none' is where the linear trend is not significantly different from horizontal), the modelled values (from the appropriate regression) for the first and last years and their difference (where the trend is significant), and any caveats that must be considered when interpreting the data. Changes are presented either in the units given or as percentages, and are increases unless a minus sign is shown. The caveat '**Small sample**' is given when the mean number of nest record cards contributing annually was in the range 10–30, or when the mean annual number of CES plots recording the species was less than 20 (but more than 10).

9) ***Additional information:*** Provides links to atlas maps and tables from previous atlas surveys, and the relevant pages of BirdFacts, BirdTrack and Garden BirdWatch, as available, from the BTO web site. Atlas maps from earlier surveys are not yet available online for Red-throated Diver, Goosander, Hen Harrier, Buzzard, Hobby and Peregrine, for which some of the original data were confidential (see **previous atlases species help**).

Tip: use the 'Species quick links' box at top of each page to navigate the species pages

Section 4 – Discussion

Back to Contents

4. Discussion

Return to Contents

4.1 The alert system

This report uses a system of 'alerts' that has been agreed between the providers and users of population monitoring information in the UK.�The system provides alerts to population declines of 25–50% and of >50% over short, medium and longer terms (5 years, 10 years and 25+ years respectively). These help to highlight the scale and timing of declines, and act as an aid to interpreting the trend graphs presented.�Our main emphasis is on long-term declines measured over the longest period available (usually 38 years) and over 25 years, which is the period that is normally used to determine red and amber listing (**Gregory *et al.* 2002**). Alerts triggered over the short term for individual species should be considered as early warnings, indicating that conservation issues may be developing for these species. However, it is possible that such declines may be due to chance fluctuations in abundance from which the population is able to recover without assistance. The rapid, short-term decline of a suite of similar species should be considered as a stronger indication that potential problems may be developing. Details of the alerts and methodology used in this report are given in the **methods section**.

These alerts are therefore important for the conservation practitioners who need to set priorities for conservation action, but we also hope that they will prove of more general use to other readers of the report.� Similar **alerts for wetland birds** are now provided by the Wetland Bird Survey (**Maclean & Austin 2006**).

In this discussion we:

1) Review the latest population change measures and alerts for species that are currently on the **Population Status of Birds** (PSOB) **red** or **amber** lists (declines only) for the UK (**Gregory *et al.* 2002**).

2) Identify species that are not currently on these PSOB lists that have raised alerts on account of long-term declines, and also those species on the list where recovery may be sufficient to downgrade their listing status in the future.

3) Briefly review declines along waterways and in scrub and wetland habitats as shown by the WBS and CES schemes.

4) Review trends over the last 10 years in species that have shown long-term declines, to identify the extent of ongoing declines and any evidence of recovery.

5) Identify those species that have shown rapid long-term population increases.

6) Discuss patterns of changes in breeding performance and relationships between trends in abundance and breeding performance.

7) Summarise the overall patterns found.

Except where otherwise indicated our discussion is based on the best long-term trend that is available for each species. These are the trends presented as the main trend graph for each species. Details of estimating and comparing trends are given in the **methods section**. Full details of all trends available for each species are given on the **species pages**. Summary tables of all alerts raised by each scheme are presented in the **appendices**.

It should be noted that a number of species included in the PSOB lists are not covered by this report. Thus tables relating to PSOB list status do not include every species on the relevant PSOB list.

Return to previous page

Next page – 4.2 Latest long-term alerts

4.2 Latest long-term alerts

4.2.1 Long-term trends of PSoB red-listed species

The species considered here were red-listed due to long-term declines of more than 50% over 25 years. The latest long-term population changes and alerts over the maximum period available (usually 38 years) and over 25 years are shown in Table 4.2.1. As expected the results confirm the decline status of all of the 16 species concerned. All changes fire alerts except for the 25-year change for **Song Thrush**, both changes for **Reed Bunting** and the 31-year change for **Lesser Spotted Woodpecker**. The latter measure has very wide confidence limits and is thus not statistically significant. **Linnet**, **Marsh Tit** and **Song Thrush** now show declines of less than 50% over 25 years, partly reflecting the fact that their long-term declines started more than 25 years ago. **Bullfinch** and **Reed Bunting** now have both long-term and 25-year declines of below 50%. Populations of both species increased between the late 1960s and the mid 1970s before the rapid declines that gave rise to their current conservation listing.

Table 4.2.1 Latest trends for red-listed species

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Tree Sparrow	38	CBC/BBS England	-97	-99	-94	>50	
Tree Sparrow	25	CBC/BBS England	-94	-97	-90	>50	
Grey Partridge	38	CBC/BBS UK	-87	-92	-82	>50	
Grey Partridge	25	CBC/BBS UK	-82	-88	-78	>50	
Corn Bunting	38	CBC/BBS UK	-86	-94	-76	>50	
Corn Bunting	25	CBC/BBS UK	-85	-93	-75	>50	
Spotted Flycatcher	38	CBC/BBS UK	-84	-89	-78	>50	
Spotted Flycatcher	25	CBC/BBS UK	-79	-84	-72	>50	
Willow Tit	38	CBC/BBS UK	-83	-91	-71	>50	
Willow Tit	25	CBC/BBS UK	-80	-89	-70	>50	
Starling	38	CBC/BBS England	-83	-88	-77	>50	
Starling	25	CBC/BBS England	-79	-83	-73	>50	
Turtle Dove	38	CBC/BBS UK	-82	-88	-74	>50	
Turtle Dove	25	CBC/BBS UK	-80	-86	-72	>50	
Linnet	38	CBC/BBS England	-71	-78	-63	>50	
Linnet	25	CBC/BBS England	-44	-57	-32	>25	
House Sparrow	28	CBC/BBS England	-69	-77	-60	>50	
House Sparrow	25	CBC/BBS England	-62	-73	-51	>50	
Marsh Tit	38	CBC/BBS UK	-66	-75	-54	>50	
Marsh Tit	25	CBC/BBS UK	-33	-48	-12	>25	
Lesser Spotted Woodpecker	31	CBC to 1999	-60	-81	40		Small sample
Lesser Spotted Woodpecker	25	CBC to 1999	-73	-86	-31	>50	Small sample
Skylark	38	CBC/BBS England	-59	-66	-51	>50	
Skylark	25	CBC/BBS England	-51	-58	-45	>50	
Yellowhammer	38	CBC/BBS UK	-55	-62	-46	>50	
Yellowhammer	25	CBC/BBS UK	-53	-58	-48	>50	
Song Thrush	38	CBC/BBS UK	-50	-57	-43	>50	
Song Thrush	25	CBC/BBS UK	-18	-28	-5		
Bullfinch	38	CBC/BBS UK	-49	-58	-36	>25	

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Reed Bunting	25	CBC/BBS UK	-5	-27	15		

See **Help** for information on category definitions.

4.2.2 Long-term trends of PSoB amber-listed species

The species considered here were **amber-listed** due to long-term declines of between 25% and 49% over 25 years. The amber list category also included a number of species where the best trend estimates show declines of more that 50% but the trend data are sparse or may be unrepresentative. The latest long-term population changes and alerts over the maximum period available (usually 38 years) and over 25 years are shown in Table 4.2.2. As expected the results confirm the decline status of most of the 15 species concerned.

Table 4.2.2 Latest trends for declining amber-listed species

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Redpoll	38	CBC/BBS England	-89	-96	-76	>50	
Lesser Redpoll	25	CBC/BBS England	-96	-98	-92	>50	
Tree Pipit	38	CBC/BBS England	-83	-91	-69	>50	
Tree Pipit	25	CBC/BBS England	-82	-90	-71	>50	
Woodcock	31	CBC to 1999	-74	-88	-49	>50	Small sample
Woodcock	25	CBC to 1999	-76	-88	-51	>50	Small sample
Yellow Wagtail	38	CBC/BBS UK	-70	-86	-39	>50	
Yellow Wagtail	25	CBC/BBS UK	-67	-81	-47	>50	
Willow Warbler	38	CBC/BBS England	-60	-71	-48	>50	
Willow Warbler	25	CBC/BBS England	-57	-65	-49	>50	
Cuckoo	38	CBC/BBS England	-59	-70	-44	>50	
Cuckoo	25	CBC/BBS England	-59	-67	-51	>50	
House Martin	38	CBC/BBS England	-53	-86	72		
House Martin	25	CBC/BBS England	-57	-86	97		
Redshank	30	WBS waterways	-45	-79	-2	>25	Small sample
Redshank	25	WBS waterways	-43	-76	-21	>25	Small sample
Meadow Pipit	38	CBC/BBS England	-44	-74	-13	>25	
Meadow Pipit	25	CBC/BBS England	-44	-62	-32	>25	
Mistle Thrush	38	CBC/BBS UK	-41	-52	-28	>25	
Mistle Thrush	25	CBC/BBS UK	-37	-45	-29	>25	
Dunnock	38	CBC/BBS UK	-34	-44	-21	>25	
Dunnock	25	CBC/BBS UK	-12	-21	-1		
Lapwing	38	CBC/BBS UK	-33	-63	-3	>25	
Lapwing	25	CBC/BBS UK	-53	-64	-37	>50	
Grey Wagtail	30	WBS waterways	-22	-44	3		
Grey Wagtail	25	WBS waterways	28	0	47		
Kestrel	38	CBC/BBS England	10	-23	53		
Kestrel	25	CBC/BBS England	-21	-39	-2		
Goldcrest	38	CBC/BBS England	40	-22	202		
Goldcrest	25	CBC/BBS England	-14	-34	9		

See **Help** for information on category definitions.

Six species show significant declines of greater than 50% and could thus be candidates for future red listing. Three of these, **Lesser Redpoll**, **Tree Pipit** and **Woodcock**, are amber listed as a result of data limitations, and there has been no substantial change in the information available on their declines. Three others, **Yellow Wagtail**, **Willow Warbler** and **Cuckoo**, have been subject to ongoing declines that have now passed the 50% threshold, although it should be noted that for the latter two species the long-term trend data are from England only. The serious nature of the **Yellow Wagtail** decline is supported by data from both WBS (-96% over 30 years) and BBS (-37% over 10 years). BBS data indicate that in England and Wales **Willow Warblers** and **Cuckoos** have continued to decline over the last ten years, but both species have remained stable in Scotland.

Our best estimate of long-term change in the English **House Martin** population now also shows a decline of over 53% but it is not significantly different from no change. Thus no alerts are raised for this species. It is probably best to regard it as being data deficient rather than as a potential candidate for red listing. BBS data indicate that **House Martin** numbers have been stable or increasing since 1994.

Grey Wagtails have been increasing since the late 1990s, and as a result of this their 25-year change is now

+28%, while the decline over the longest period for which we can measure changes in their populations (30 years) is down to 22%. If the positive trend continues they might be removed from the amber list at a future revision. **Kestrel** and **Lapwing** show an opposite pattern to**Grey Wagtail**, with smaller declines over 38 years than 25 years, reflecting modest increases prior to the declines that are now a cause of concern. Indeed the 25-year decline for **Lapwing** now exceeds 50% which could make it a candidate for future red-listing, and it has already been added to the latest edition of the UK Biodiversity Action Plan list. **Goldcrest** is a difficult species for status assessments because its populations show wide fluctuations and may not have been well monitored prior to the start of the BBS. Numbers actually increased by 40% over 38 years and declined by only 14% over 25 years. More recently BBS data show that numbers have increase by 29% over the last 10 years and it is doubtful that the status of this species should be of particular concern.

4.2.3 Long-term declines of species that are not currently red- or amber-listed (for declines)

We identified only eight species that are currently showing long-term declines of greater than 25% but are not currently included on either the red or amber lists (Table 4.2.3). Two species of owls, **Tawny Owl** and **Little Owl**, appear on this list for the first time. Evidence for the **Little Owl** decline has been developing for some time but has now reached the point where it is statistically significant for both the 38 and 25-year period. **Tawny Owls** have shown a very slow decline since the early 1970s, which became more rapid around 1999. These figures must be treated with some caution because CBC and BBS census techniques are not good for this species. While the current decline of 27% over 25 years is fairly modest this is certainly a species to watch.

Two species, **Little Grebe** and **Whitethroat**, appear to have experienced declines of greater than 50%. The **Little Grebe** data should be treated with caution as they are based on a small sample from linear waterways. WBS shows an ongoing decline over the last ten years while BBS shows an increase for the UK as a whole. The long-term **Whitethroat** decline results from the well-documented crash between 1968 and 1969 (**Winstanley *et al.* 1974**), from which numbers have shown only a limited recovery over the last 25 years. **Reed Warbler** shows a decline of 31% over 21 years in its core habitats based on CES data. However, it should be noted that the CBC/BBS shows an increase of 49% over the last 10 years. Further investigation of how the populations of this species are changing in different habitats is required.

Table 4.2.3 Long-term trends for declining species not on the red or amber list (for declines)

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Little Grebe	30	WBS waterways	-71	-88	-38	>50	Small sample
Little Grebe	25	WBS waterways	-78	-89	-52	>50	Small sample
Whitethroat	38	CBC/BBS UK	-62	-73	-49	>50	
Whitethroat	25	CBC/BBS UK	58	24	100		
Little Owl	38	CBC/BBS UK	-41	-64	-2	>25	
Little Owl	25	CBC/BBS UK	-37	-57	-10	>25	
Reed Warbler	21	CES adults	-31	-46	-10	>25	
Common Sandpiper	30	WBS waterways	-22	-45	-3		
Common Sandpiper	25	WBS waterways	-26	-46	-11	>25	
Red-legged Partridge	38	CBC/BBS UK	-16	-46	25		
Red-legged Partridge	25	CBC/BBS UK	-30	-56	-8	>25	
Lesser Whitethroat	38	CBC/BBS UK	-15	-41	28		
Lesser Whitethroat	25	CBC/BBS UK	-25	-41	-8	>25	
Tawny Owl	38	CBC/BBS UK	-9	-41	31		
Tawny Owl	25	CBC/BBS UK	-27	-42	-6	>25	

See **Help** for information on category definitions.

Two other species, **Common Sandpiper** and **Lesser Whitethroat**, could be candidates for future inclusion on the amber list. **Lesser Whitethroat** should be of particular concern because the 25% decline from CBC/BBS over the last 25 years is consistent with a 50% decline on CES sites over the last 21 years and a 14% decline measured by the BBS over the last 10 years. **Red-legged Partridge** declined by 30% over the last 25 years but would not be a candidate for amber listing because the species is not native to the UK.

4.2.4 Declines on WBS plots

The **Waterways Bird Survey** supplements the results from more broadly based schemes, such as CBC and BBS, by measuring trends in the bird populations of linear waterways. For a few waterways habitat specialists such as **Grey Wagtail** and **Common Sandpiper** WBS provides our best information on population trends but for several others it provides supplementary information from this sensitive habitat. Long-term declines of greater than 25% recorded from WBS plots are listed in Table 4.2.4.

Table 4.2.4 Population declines of greater than 25% recorded by the Waterways Bird Survey between 1975 and 2005

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	30	WBS waterways	-96	-99	-93	>50	Small sample
Little Grebe	30	WBS waterways	-71	-88	-38	>50	Small sample
Reed Bunting	30	WBS waterways	-59	-75	-36	>50	

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Pied Wagtail	30	WBS waterways	-52	-63	-40	>50	
Redshank	30	WBS waterways	-45	-79	-2	>25	Small sample

See **Help** for information on category definitions.

The trends for **Little Grebe**, **Redshank** and **Common Sandpiper** have already been discussed above while those for **Yellow Wagtail** and **Reed Bunting** are consistent with those reported from CBC/BBS. The **Pied Wagtail** decline of 52% is interesting because in contrasts markedly with the position in the rest of the country where populations have recently been increasing. Over the 25-year period 1980 to 2005 **Pied Wagtails** declined by 39% on linear waterways compared with no change in the UK, as shown by the CBC/BBS trend. The cause of the decline on waterways is currently unknown.

4.2.5 Declines on CES plots

The **Constant Effort Sites Scheme** provides trends from standardised ringing in scrub and wetland habitats. It is our best scheme for monitoring bird populations inhabiting reed beds but its main objective is to collect integrated data on relative abundance, productivity and survival for a suite of species. The longest trends currently available from the CES cover a period of 21 years (Table 4.2.5).

Table 4.2.5 Population declines of greater than 25% recorded by the Constant Effort Sites Scheme between 1984 and 2005

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Linnet	21	CES adults	-89	-96	-74	>50	
Lesser Redpoll	21	CES adults	-88	-96	-71	>50	Small sample
Yellowhammer	21	CES adults	-69	-90	-23	>50	Small sample
Willow Warbler	21	CES adults	-60	-68	-50	>50	
Willow Tit	21	CES adults	-56	-87	-21	>50	
Lesser Whitethroat	21	CES adults	-50	-73	-28	>50	
Reed Bunting	21	CES adults	-47	-60	-33	>25	
Reed Warbler	21	CES adults	-31	-46	-10	>25	
Whitethroat	21	CES adults	-28	-48	-9	>25	
Song Thrush	21	CES adults	-27	-41	-9	>25	

See **Help** for information on category definitions.

Most of the species that are declining on CES sites also show similar trends from CBC/BBS data. **Linnet**, **Yellowhammer**, **Willow Tit**, **Reed Bunting** and **Song Thrush** are already red listed while **Lesser Redpoll** and **Willow Warbler** are amber listed. The declines of **Lesser Whitethroat** and **Whitethroat** have also been discussed above (**section 4.2.3**). Both species are doing less well on CES sites than in the UK as a whole. Over the ten-year period 1995 to 2005 **Whitethroats** increased by 22% in the UK but decreased by 25% at CES sites. Similarly **Lesser Whitethroats** declined by only 8% in the UK as a whole but by 44% on CES sites. Longer-term comparisons show a similar picture. Numbers of juveniles captured at CES sites show very similar patterns of decline to adult captures for both species. It is unclear why these two species are doing so poorly on CES sites as many of these are located in the good-quality scrub habitats that are preferred by these species.

Return to previous page

Next page – 4.3 Ten-year trends and evidence of species recovery

4.3 Ten-year trends and evidence for species recovery

If the status of species that have shown long-term declines were now improving, we would expect to find more positive trends in recent years compared with the earlier part of the time series. To examine this we list here the best change estimates over the most recent ten-year period for which we have data (1995–2005) for all of the declining species listed in the previous section of this report (Table 4.3.1). The table also includes four species, **Wood Warbler** (amber listed), **Red Grouse** (amber listed), **Grasshopper Warbler** (red listed) and **Snipe** (amber listed) for which we are able to report 10-year trends but lack reliable data covering longer periods.

Table 4.3.1 Ten year trends for species that have shown long-term declines

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	10	CBC/BBS UK	-61	-70	-47	>50	
Wood Warbler	10	BBS UK	-60	-72	-45	>50	
Little Grebe	10	WBS waterways	-53	-74	-27	>50	Small sample
Turtle Dove	10	CBC/BBS UK	-52	-58	-45	>50	
Lesser Spotted Woodpecker	10	CBC to 1999	-51	-75	-22	>50	Small sample
Cuckoo	10	CBC/BBS England	-46	-51	-42	>25	
Woodcock	10	CBC to 1999	-40	-62	-11	>25	Small sample
Starling	10	CBC/BBS England	-40	-44	-36	>25	
Grey Partridge	10	CBC/BBS UK	-39	-46	-30	>25	
Tree Pipit	10	CBC/BBS England	-38	-54	-18	>25	
Lesser Redpoll	10	CBC/BBS England	-35	-56	0	>25	
Yellow Wagtail	10	CBC/BBS UK	-33	-44	-23	>25	
Willow Warbler	10	CBC/BBS England	-31	-35	-26	>25	
Redshank	10	WBS waterways	-31	-44	-3	>25	Small sample
Corn Bunting	10	CBC/BBS UK	-30	-42	-16	>25	
Spotted Flycatcher	10	CBC/BBS UK	-23	-31	-9		
Tawny Owl	10	CBC/BBS UK	-19	-31	2		
Linnet	10	CBC/BBS England	-18	-25	-12		
Reed Warbler	10	CES adults	-16	-28	-3		
Red Grouse	10	BBS UK	-15	-27	-2		
Skylark	10	CBC/BBS England	-15	-18	-11		
Yellowhammer	10	CBC/BBS UK	-15	-19	-10		
House Sparrow	10	CBC/BBS England	-12	-17	-6		
Little Owl	10	CBC/BBS UK	-12	-23	6		
Lapwing	10	CBC/BBS UK	-11	-22	0		
Marsh Tit	10	CBC/BBS UK	-11	-22	2		
Common Sandpiper	10	WBS waterways	-11	-31	6		
Meadow Pipit	10	CBC/BBS England	-10	-21	0		
Bullfinch	10	CBC/BBS UK	-9	-16	0		
Lesser Whitethroat	10	CBC/BBS UK	-8	-20	3		
Mistle Thrush	10	CBC/BBS UK	-5	-12	4		
Kestrel	10	CBC/BBS England	4	-2	13		

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Grasshopper Warbler	10	BBS UK	6	-22	33		
House Martin	10	CBC/BBS England	7	-4	20		
Dunnock	10	CBC/BBS UK	21	17	27		
Whitethroat	10	CBC/BBS UK	22	15	28		
Reed Bunting	10	CBC/BBS UK	22	11	33		
Song Thrush	10	CBC/BBS UK	23	17	28		
Red-legged Partridge	10	CBC/BBS UK	26	13	39		
Goldcrest	10	CBC/BBS England	28	14	41		
Snipe	10	BBS UK	29	13	44		
Tree Sparrow	10	CBC/BBS England	29	7	58		
Grey Wagtail	10	WBS waterways	30	8	48		

Note: Based on smoothed trends using data to 2006, but last year truncated as it is less reliable (see **Methods**).

See **Help** for information on what the categories mean

The 43 species listed include 17 from the red list, 18 declining species that are amber listed on account of population declines and eight species that are not formally listed as declining. Nine species, **Dunnock**, **Whitethroat**, **Reed Bunting**, **Nightingale**, **Song Thrush**, **Red-legged Partridge**, **Goldcrest**, **Snipe**, **Tree Sparrow** and **Grey Wagtail**, show clear positive trends over the last ten years. The increases in the red-listed **Song Thrush** and **Reed Bunting** are particularly encouraging, as are the positive trends for amber-listed **Dunnock** and **Grey Wagtail**. However, the most recent figures for **Song Thrush** and **Grey Wagtail** suggest that their recoveries may be levelling off well short of their previous population levels. Similarly while the BBS shows a 29% increase in **Snipe** over the last 10 years, the population has been declining again since 2003. **Whitethroat** numbers have increased steadily since the mid-1980s but are still far below the population level prior to the 1968/69 crash. The increase in **Tree Sparrow** numbers is very welcome but is coming from such a low level that numbers remain far below those of the mid-1970s, with the population trend graph still showing little sign of a clear recovery.

The rate of decline of 25% over 25 years that is used as a threshold for amber listing is equivalent to a decline of 10.9% over ten years (assuming both have the same annual rate of change). A further 10 species, **Lapwing**, **Marsh Tit**, **Common Sandpiper**, **Meadow Pipit**, **Bullfinch**, **Lesser Whitethroat**, **Mistle Thrush**, **Kestrel**, **Grasshopper Warbler** and **House Martin** have population changes of between +11% and -11% over the last 10 years. None of these changes are statistically significant and these populations are best regarded as stable. Thus our data suggest that the declines of these species appear to be levelling off, although there is as yet no clear indication of recovery.

Ten-year changes for the remaining 24 species in Table 4.3 indicate ongoing declines, with rates equivalent to at least 25% over 25 years. Five species, **Willow Tit**, **Wood Warbler**, **Little Grebe**, **Turtle Dove** and **Lesser Spotted Woodpecker**, have declined by more than 50% over the last ten years alone. The ongoing declines of so many of the species listed in Table 4.3 must be a cause of serious conservation concern.

Return to previous page

Next page – 4.4 Increasing species

4.4��� Increasing species

Population changes of 25 species for which our best trend estimate from CBC/BBS (usually over 38 years) or from WBS (usually over 30 years) shows an increase of more than 50% are shown in Table 4.4.1. Four identifiable groups stand out: corvids - **Jackdaw**, **Carrion Crow** and **Magpie**; doves - **Woodpigeon**, **Stock Dove** and **Collared Dove**; insectivores; and some waterbirds. Corvids appear to have benefited from relaxation and decrease of gamekeeping activities in the countryside in recent years, and the increased use of *Brassica* crops (particularly oilseed rape) has probably been beneficial to the doves. Numbers of **Pheasants** have also increased but the index for this species is difficult to interpret because it may be influenced by releases of captive-reared birds.

The majority of increasing insectivores are species that are associated with woodland but also common in gardens: **Great Spotted Woodpecker**, **Green Woodpecker**, **Nuthatch**, **Blackcap**, **Wren**, **Long-tailed Tit**, **Great Tit** and **Coal Tit**. The reasons for these increases are presently unclear. **Pied Wagtail** has increased in numbers by 87% on CBC/BBS plots over 38 years, but declined by 52% on WBS plots over the past 30 years. The former survey is likely to be more representative of the UK population as a whole.

Table 4.4.1 Long-term population increases of greater that 50% from CBC/WBS (1967-2005) or WBS (1975-2005) using the best survey for each species

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Collared Dove	33	CBC/BBS UK	428	247	667		
Buzzard	38	CBC/BBS UK	422	259	1244		
Great Spotted Woodpecker	38	CBC/BBS UK	317	204	582		
Shelduck	31	CBC to 1999	300	94	787		Small sample
Mute Swan	38	CBC/BBS UK	216	60	632		
Green Woodpecker	38	CBC/BBS England	211	137	355		
Stock Dove	38	CBC/BBS England	181	98	329		
Sparrowhawk	30	CBC/BBS England	179	77	339		
Nuthatch	38	CBC/BBS UK	170	104	267		
Mallard	38	CBC/BBS UK	167	107	240		
Goosander	24	WBS waterways	146	36	338		
Blackcap	38	CBC/BBS UK	144	100	200		
Woodpigeon	38	CBC/BBS UK	143	30	428		
Oystercatcher	30	WBS waterways	122	78	213		
Carrion Crow	38	CBC/BBS England	116	76	174		Includes Hooded Crow
Canada Goose	24	WBS waterways	109	7	797		
Magpie	38	CBC/BBS UK	102	67	158		
Great Tit	38	CBC/BBS UK	100	75	127		
Pheasant	38	CBC/BBS England	96	61	176		
Wren	38	CBC/BBS UK	95	69	120		
Pied Wagtail	38	CBC/BBS UK	87	38	172		
Jackdaw	38	CBC/BBS UK	87	23	200		
Long-tailed Tit	38	CBC/BBS England	73	31	138		
Coot	30	WBS waterways	54	-29	257		
Coal Tit	38	CBC/BBS England	52	-12	182		

See **Help** for information on category definitions.

A number of species associated with freshwater habitats are also becoming more abundant, although differences between their ecological requirements make it unlikely that a common causal factor is involved.�The CBC and WBS cannot be said to provide monitoring of a representative portion of the population for most of these species but these results are interesting indicators of changes that may nevertheless be affecting the whole population.� We can be confident that **Mallard** populations have increased greatly as CBC/BBS recorded a 167% increase over 38 years while WBS recorded a 166% increase over 30 years. The growth of this population is still continuing with CBC/BBS recording an 18% increase over the last ten years. The increases recorded for **Mute Swan** on both CBC/BBS and WBS plots are likely to be the result of banning the use of lead weights by anglers. **Oystercatchers** have increased by 122% on WBS plots over the last 30 years. This finding is consistent with the results of the **Survey of Breeding Waders of Lowland Wet Meadows** which found that numbers of Oystercatchers using these habitats in England and Wales increased by 51% between 1982 and 2002. **Grey Heron** is not listed in Table 4.4.1 because it is covered by a separate survey that spans a much longer period. The population of this species is probably not increasing quite as fast as the species listed in the table, with only a 17% increase over the last 25 years. Nevertheless this population has undergone a sustained increase of 63% over the last 76 years (1929–2005).

Two widespread raptors have shown strong recoveries from low population levels caused by pesticides, and perhaps also persecution, in the 1950s and 1960s. **Buzzards** increased by a remarkable 422% between 1967 and 2005, with a rapid increase of 51% over the last 10 years alone. **Sparrowhawks** showed a 179% increase over the 30-year period from 1975 to 2005. However, their recovery appears to have been completed earlier than for **Buzzard**, with the population having been relatively stable since the early 1990s.

Return to previous page

Next page – 4.5 Changes in breeding performance

4.5������ Changes in breeding performance

Changes in a range of aspects of breeding performance can be measured under the Nest Record Scheme and the Constant Effort Sites scheme.�The former provides information on components of breeding performance *per nesting attempt*. The latter provides an index of breeding performance accrued over *all* nesting attempts in a particular year, combined with the effect of changes in the survival of fledglings once they have left the nest but before they are caught as juveniles � a period when losses of young can be high.

Breeding performance may be influenced by a variety of factors, including food availability, predation pressure and weather conditions. Variation in breeding performance may help to influence a population, and may even be the main demographic factor responsible for determining its size. Conversely, the breeding performance of a population may be negatively related to its size, with productivity decreasing as the number of individuals increases, and vice versa. This relationship may be due to the action of density-dependent factors, such as competition for resources: as numbers increase, competition for resources is likely to increase, possibly resulting in a reduction in productivity. Alternatively, increases in abundance may result from range expansion into new, suboptimal habitats where breeding performance is poorer and the average productivity of the population is thus lowered, whilst declines may result from the loss of individuals from these suboptimal habitats, leading to a subsequent increase in average productivity.

4.5.1 Changes in clutch and brood size

Those species exhibiting statistically significant trends in clutch and brood size over the past 36 years (1968–2004) are shown in Tables 4.5.1.1 and 4.5.1.2. More species showed decreases than increases in clutch size (18 decreases, 12 increases) while equal numbers of species showed increases and decreases in brood size (19 each).

Table 4.5.1.1

Significant trends in Clutch size measured between 1968-2005

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Long-tailed Tit	37	33	Linear decline	7.65 eggs	6.44 eggs	-1.21 eggs	
Magpie	37	48	Curvilinear	5.59 eggs	4.52 eggs	-1.07 eggs	
Great Tit	37	105	Linear decline	8.36 eggs	7.34 eggs	-1.02 eggs	
Blue Tit	37	102	Linear decline	9.41 eggs	8.57 eggs	-0.84 eggs	
Hen Harrier	37	13	Curvilinear	5.54 eggs	4.78 eggs	-0.76 eggs	Small sample
Moorhen	37	92	Linear decline	6.52 eggs	5.97 eggs	-0.55 eggs	
Peregrine	37	16	Linear decline	3.59 eggs	3.09 eggs	-0.5 eggs	Small sample
Treecreeper	37	14	Linear decline	5.39 eggs	5.06 eggs	-0.33 eggs	Small sample
Twite	37	12	Curvilinear	5.43 eggs	5.14 eggs	-0.29 eggs	Small sample
Pied Wagtail	37	60	Linear decline	5.12 eggs	4.93 eggs	-0.19 eggs	
Common Sandpiper	37	12	Linear decline	3.93 eggs	3.75 eggs	-0.18 eggs	Small sample
Nightjar	37	16	Curvilinear	1.94 eggs	1.76 eggs	-0.18 eggs	Small sample
Chaffinch	37	85	Curvilinear	4.21 eggs	4.03 eggs	-0.18 eggs	
Greenfinch	37	92	Linear decline	4.76 eggs	4.62 eggs	-0.14 eggs	
Rook	37	14	Curvilinear	4.15 eggs	4.06 eggs	-0.09 eggs	Small sample
Spotted Flycatcher	37	82	Curvilinear	4.22 eggs	4.16 eggs	-0.06 eggs	
Grey Wagtail	37	40	Curvilinear	4.66 eggs	4.63 eggs	-0.03 eggs	
Blackbird	37	99	Curvilinear	3.8 eggs	3.78 eggs	-0.02 eggs	
Stock Dove	37	71	Curvilinear	2.07 eggs	2.07 eggs	0 eggs	
Carrion Crow	37	35	Curvilinear	4.08 eggs	4.08 eggs	0 eggs	Includes Hooded Crow
Dipper	37	73	Curvilinear	4.48 eggs	4.5 eggs	0.02 eggs	
Buzzard	37	31	Curvilinear	2.2 eggs	2.24 eggs	0.04 eggs	
Yellowhammer	37	43	Curvilinear	3.35 eggs	3.41 eggs	0.06 eggs	
Lapwing	37	125	Linear increase	3.69 eggs	3.82 eggs	0.13 eggs	
Stonechat	37	29	Curvilinear	4.95 eggs	5.14 eggs	0.19 eggs	Small sample
Mistle Thrush	37	36	Linear increase	3.88 eggs	4.07 eggs	0.19 eggs	
Jackdaw	37	40	Linear increase	4.35 eggs	4.57 eggs	0.22 eggs	
Dunnock	37	100	Linear increase	3.93 eggs	4.2 eggs	0.27 eggs	
Sand Martin	37	30	Curvilinear	4.68 eggs	4.98 eggs	0.3 eggs	Small sample
Skylark	37	38	Linear increase	3.37 eggs	3.68 eggs	0.31 eggs	
Redstart	37	49	Curvilinear	5.88 eggs	6.21 eggs	0.33 eggs	
Tree Sparrow	37	104	Curvilinear	4.69 eggs	5.08 eggs	0.39 eggs	
Starling	37	76	Linear increase	4.43 eggs	4.93 eggs	0.5 eggs	
Barn Owl	37	16	Linear increase	4.48 eggs	5.19 eggs	0.71 eggs	Small sample

See **Help** for information on category meanings.

Eleven species (**Yellow Wagtail, Pied Wagtail**, **Blackbird, Spotted Flycatcher, Long-tailed Tit**, **Blue Tit**, **Great Tit**, **Magpie**, **Crow**, **Chaffinch** and **Greenfinch**) exhibited decreases in both clutch size and brood size over the period, whilst another eight species (**Barn Owl**, **Skylark**, **Grey Wagtail**, **Dipper**, **Dunnock**, **Redstart**, **Tree Sparrow** and **Yellowhammer**) exhibited increases in both clutch size and brood size. **Moorhen** showed a decline in average clutch size and an increase in average brood size, while **Starling** showed the opposite pattern.

Table 4.5.1.2

Significant trends in Brood size measured between 1968-2005

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Great Tit	37	183	Curvilinear	7.15 chicks	6.01 chicks	-1.14 chicks	
Blue Tit	37	167	Curvilinear	8.04 chicks	7.01 chicks	-1.03 chicks	
House Sparrow	37	98	Curvilinear	3.37 chicks	2.83 chicks	-0.54 chicks	
Yellow Wagtail	37	12	Linear decline	4.83 chicks	4.35 chicks	-0.48 chicks	Small sample
Long-tailed Tit	37	27	Curvilinear	6.72 chicks	6.28 chicks	-0.44 chicks	Small sample
Greenfinch	37	112	Curvilinear	4.03 chicks	3.62 chicks	-0.41 chicks	
Raven	37	61	Linear decline	3.23 chicks	2.83 chicks	-0.4 chicks	
Carrion Crow	37	82	Curvilinear	2.87 chicks	2.49 chicks	-0.38 chicks	Includes Hooded Crow
Chiffchaff	37	31	Linear decline	5.12 chicks	4.75 chicks	-0.37 chicks	
Magpie	37	84	Curvilinear	3.05 chicks	2.81 chicks	-0.24 chicks	
Pied Wagtail	37	112	Linear decline	4.54 chicks	4.33 chicks	-0.21 chicks	
Bullfinch	37	36	Linear decline	4.17 chicks	3.96 chicks	-0.21 chicks	
Whitethroat	37	60	Curvilinear	4.25 chicks	4.1 chicks	-0.15 chicks	
Jackdaw	37	83	Curvilinear	2.65 chicks	2.51 chicks	-0.14 chicks	
Chaffinch	37	136	Curvilinear	3.56 chicks	3.44 chicks	-0.12 chicks	
Nightjar	37	24	Curvilinear	1.82 chicks	1.73 chicks	-0.09 chicks	Small sample
Corn Bunting	37	12	Curvilinear	3.07 chicks	3.01 chicks	-0.06 chicks	Small sample
Grey Wagtail	37	84	Curvilinear	3.93 chicks	3.93 chicks	0 chicks	
Spotted Flycatcher	37	131	Curvilinear	3.61 chicks	3.61 chicks	0 chicks	
Blackbird	37	125	Curvilinear	3.33 chicks	3.36 chicks	0.03 chicks	
Linnet	37	123	Curvilinear	4.06 chicks	4.09 chicks	0.03 chicks	
Starling	37	206	Curvilinear	3.1 chicks	3.15 chicks	0.05 chicks	
Swallow	37	300	Curvilinear	4.07 chicks	4.14 chicks	0.07 chicks	
Collared Dove	37	70	Linear increase	1.76 chicks	1.84 chicks	0.08 chicks	
Yellowhammer	37	67	Curvilinear	2.96 chicks	3.05 chicks	0.09 chicks	
Buzzard	37	89	Curvilinear	1.87 chicks	1.97 chicks	0.1 chicks	
Reed Warbler	37	121	Linear increase	3.45 chicks	3.59 chicks	0.14 chicks	
Kestrel	37	113	Curvilinear	3.76 chicks	3.93 chicks	0.17 chicks	
Dunnock	37	106	Linear increase	3.47 chicks	3.65 chicks	0.18 chicks	
Skylark	37	69	Curvilinear	3.1 chicks	3.31 chicks	0.21 chicks	
Merlin	37	58	Linear increase	3.5 chicks	3.8 chicks	0.3 chicks	
Dipper	37	140	Curvilinear	3.39 chicks	3.71 chicks	0.32 chicks	
Redstart	37	87	Curvilinear	5.08 chicks	5.42 chicks	0.34 chicks	
Tree Pipit	37	29	Linear increase	4.37 chicks	4.74 chicks	0.37 chicks	Small sample
Sparrowhawk	37	76	Curvilinear	3.1 chicks	3.48 chicks	0.38 chicks	
Tree Sparrow	37	118	Curvilinear	3.75 chicks	4.13 chicks	0.38 chicks	
Nuthatch	37	60	Curvilinear	3.96 chicks	4.76 chicks	0.8 chicks	
Moorhen	37	77	Curvilinear	3.13 chicks	4.25 chicks	1.12 chicks	

See **Help** for information on category meanings.

Long-term changes in clutch or brood size are associated with long-term population trends in a number of species. Here we highlight those changes that are both statistically significant and likely to be of biological importance.

Declines in population size and brood size were recorded for **Yellow Wagtail** and **House Sparrow**. Both species show reductions of about half a chick per nesting attempt. In the case of the **House Sparrow**, population modelling based on BTO data has shown that declines in rural areas were caused by reduced survival rates but that these declines were mainly halted due to improvements in breeding performance (**Crick *et al.* 2002**). The apparently accelerating reduction in brood size is therefore of some concern. Work by Kate Vincent at the University of Leicester has suggested that insect food for the chicks may be limited in certain situations and recent brood size reductions may be a manifestation of this at a wider scale. However, it should be noted that over the long term some of the reduction in brood size may have been compensated for by reduced nest failure rates at the egg and chick stages.

Several increasing species show increasing brood sizes, particularly **Sparrowhawk**, **Collared Dove, Wren** and **Nuthatch**. The return of **Sparrowhawks** into eastern areas of the UK, where populations of songbird prey are greater, may be a factor in this increase. The UK **Nuthatch** population, which has been expanding northwards and has increased considerably in size, has exhibited an increase in average brood size of more than one extra young per nesting attempt. It would seem likely that this has helped to drive the population increase of this species.

Inverse associations between clutch or brood size and population trend are found in some 23 species. Such relationships may arise through density-dependent processes where increased competition leads to reduced clutch or brood sizes at higher population densities. Totals of ten increasing species and 13 decreasing ones show such associations. Notable examples amongst increasing species include **Mute Swan** (clutch size), **Great Tit** (clutch and brood size), **Long-tailed Tit** (clutch and brood size) and **Magpie** (clutch and brood size). Amongst declining species the examples include **Barn Owl** (clutch and brood size), **Skylark** (clutch and brood size), **Tree Sparrow** (clutch and brood size) and **Corn Bunting** (brood size).

4.5.2 Changes in nest failure rates

Statistically significant trends in the daily nest failure rates at the egg and chick stages over the past 36 years (1968–2004) are shown in Tables 4.5.2.1 and 4.5.2.2. The number of species exhibiting declines in failure rates at the chick stage (24) was more than treble the number exhibiting increases (9), as was the number of species exhibiting declines in failure rates at the egg stage (39 vs. 13).� Thus the general picture is one of improving nesting success.

Table 4.5.2.1

Significant trends in Daily failure rate (eggs) measured between 1968-2005

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Long-tailed Tit	37	51	Linear decline	0.0362 nests/day	0.0084 nests/day	-0.0278 nests/day	
Magpie	37	55	Linear decline	0.0277 nests/day	0.0029 nests/day	-0.0248 nests/day	
Tree Pipit	37	13	Linear decline	0.0368 nests/day	0.0131 nests/day	-0.0237 nests/day	Small sample
Redshank	37	35	Linear decline	0.0397 nests/day	0.0174 nests/day	-0.0223 nests/day	
Dipper	37	103	Curvilinear	0.0254 nests/day	0.0032 nests/day	-0.0222 nests/day	
Snipe	37	17	Linear decline	0.033 nests/day	0.014 nests/day	-0.019 nests/day	Small sample
Robin	37	179	Curvilinear	0.0247 nests/day	0.0107 nests/day	-0.014 nests/day	
Carrion Crow	37	53	Linear decline	0.0159 nests/day	0.0023 nests/day	-0.0136 nests/day	Includes Hooded Crow
Treecreeper	37	23	Linear decline	0.0194 nests/day	0.0061 nests/day	-0.0133 nests/day	Small sample
Yellowhammer	37	63	Curvilinear	0.0501 nests/day	0.0374 nests/day	-0.0127 nests/day	
Sand Martin	37	17	Linear decline	0.0127 nests/day	0.0001 nests/day	-0.0126 nests/day	Small sample
Wood Warbler	37	21	Linear decline	0.0192 nests/day	0.008 nests/day	-0.0112 nests/day	Small sample
Redstart	37	75	Linear decline	0.0118 nests/day	0.0031 nests/day	-0.0087 nests/day	
Pied Wagtail	37	82	Curvilinear	0.0146 nests/day	0.006 nests/day	-0.0086 nests/day	
Starling	37	118	Linear decline	0.0113 nests/day	0.003 nests/day	-0.0083 nests/day	
Stock Dove	37	69	Curvilinear	0.0113 nests/day	0.0033 nests/day	-0.008 nests/day	
Tawny Owl	37	53	Linear decline	0.0095 nests/day	0.0019 nests/day	-0.0076 nests/day	Nocturnal species
House Sparrow	37	79	Linear decline	0.0115 nests/day	0.0042 nests/day	-0.0073 nests/day	
Wheatear	37	20	Curvilinear	0.0082 nests/day	0.0011 nests/day	-0.0071 nests/day	Small sample
Marsh Tit	37	19	Linear decline	0.008 nests/day	0.0012 nests/day	-0.0068 nests/day	Small sample
Greenfinch	37	128	Linear decline	0.0248 nests/day	0.0181 nests/day	-0.0067 nests/day	
Sedge Warbler	37	44	Linear decline	0.0129 nests/day	0.0064 nests/day	-0.0065 nests/day	
Jackdaw	37	51	Linear decline	0.008 nests/day	0.0018 nests/day	-0.0062 nests/day	
Buzzard	37	25	Linear decline	0.0068 nests/day	0.0013 nests/day	-0.0055 nests/day	Small sample
Kestrel	37	40	Linear decline	0.0056 nests/day	0.0009 nests/day	-0.0047 nests/day	
Tree Sparrow	37	135	Linear decline	0.0085 nests/day	0.004 nests/day	-0.0045 nests/day	
Barn Owl	37	13	Curvilinear	0.0047 nests/day	0.0004 nests/day	-0.0043 nests/day	Small sample
Wren	37	142	Linear decline	0.0184 nests/day	0.0143 nests/day	-0.0041 nests/day	
Blue Tit	37	164	Linear decline	0.0048 nests/day	0.0023 nests/day	-0.0025 nests/day	
Great Tit	37	173	Linear decline	0.0059 nests/day	0.0035 nests/day	-0.0024 nests/day	
Sparrowhawk	37	36	Curvilinear	0.0025 nests/day	0.0002 nests/day	-0.0023 nests/day	
Stonechat	37	33	Curvilinear	0.0051 nests/day	0.0029 nests/day	-0.0022 nests/day	
Raven	37	20	Curvilinear	0.002 nests/day	0.001 nests/day	-0.001 nests/day	Small sample
Spotted Flycatcher	37	122	Curvilinear	0.0177 nests/day	0.0178 nests/day	0.0001 nests/day	
Lapwing	37	136	Curvilinear	0.0164 nests/day	0.022 nests/day	0.0056 nests/day	
Chaffinch	37	163	Curvilinear	0.0297 nests/day	0.0356 nests/day	0.0059 nests/day	
Linnet	37	154	Curvilinear	0.0165 nests/day	0.0226 nests/day	0.0061 nests/day	
Ringed Plover	37	126	Linear increase	0.0228 nests/day	0.0301 nests/day	0.0073 nests/day	
Moorhen	37	109	Curvilinear	0.0137 nests/day	0.0216 nests/day	0.0079 nests/day	
Blackbird	37	144	Curvilinear	0.0253 nests/day	0.0333 nests/day	0.008 nests/day	
Mute Swan	37	26	Curvilinear	0.0062 nests/day	0.0152 nests/day	0.009 nests/day	Small sample
Bullfinch	37	49	Curvilinear	0.0336 nests/day	0.0429 nests/day	0.0093 nests/day	
Oystercatcher	37	110	Linear increase	0.0125 nests/day	0.0229 nests/day	0.0104 nests/day	
Willow Warbler	37	67	Curvilinear	0.0108 nests/day	0.0215 nests/day	0.0107 nests/day	
Whinchat	37	16	Linear increase	0.0065 nests/day	0.0211 nests/day	0.0146 nests/day	Small sample
Nightjar	37	21	Linear increase	0.0142 nests/day	0.0333 nests/day	0.0191 nests/day	Small sample
Reed Bunting	37	51	Linear increase	0.0073 nests/day	0.027 nests/day	0.0197 nests/day	

See **Help** for information on category meanings.

The changes in egg-stage and chick-stage failure rates were both positive for **Nightjar, Linnet** and **Bullfinch**. For a further 16 species (**Stock Dove**, **Collared Dove**, **Barn Owl**, **Tawny Owl**, **Sand Martin**, **Robin**, **Redstart**, **Stonechat**, **Song Thrush**, **Magpie**, **Jackdaw**, **Carrion Crow**, **Starling**, **House Sparrow**, **Tree Sparrow** and **Yellowhammer**), egg-stage and chick-stage failure rates both decreased. For a further six species (**Woodlark**, **Skylark**, **Tree Pipit**, **Whinchat**, **Spotted Flycatcher** and **Long-tailed Tit**), declines in the failure rate at one stage were partially cancelled out by increases in failure rates at the other, suggesting that different factors may influence productivity at egg and chick stages.

Table 4.5.2.2

Significant trends in Daily failure rate (chicks) measured between 1968-2005

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Grey Heron	37	28	Linear decline	0.0578 nests/day	0.0004 nests/day	-0.0574 nests/day	Non-breeders include
Sand Martin	37	23	Linear decline	0.026 nests/day	0.0004 nests/day	-0.0256 nests/day	Small sample
Corn Bunting	37	11	Curvilinear	0.045 nests/day	0.0209 nests/day	-0.0241 nests/day	Small sample
Meadow Pipit	37	65	Linear decline	0.0273 nests/day	0.0108 nests/day	-0.0165 nests/day	
Magpie	37	54	Linear decline	0.0172 nests/day	0.0014 nests/day	-0.0158 nests/day	
Reed Warbler	37	101	Curvilinear	0.0174 nests/day	0.0053 nests/day	-0.0121 nests/day	
Grey Wagtail	37	60	Linear decline	0.0211 nests/day	0.0095 nests/day	-0.0116 nests/day	
Jackdaw	37	50	Linear decline	0.0129 nests/day	0.0023 nests/day	-0.0106 nests/day	
Blackbird	37	122	Linear decline	0.0299 nests/day	0.0199 nests/day	-0.01 nests/day	

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
[illegible]row	[illegible]	[illegible]	Linear decline	[illegible] nests/day	[illegible] nests/day	[illegible] nests/day	
Collared Dove	37	55	Linear decline	0.0184 nests/day	0.0106 nests/day	-0.0078 nests/day	
Redstart	37	53	Linear decline	0.012 nests/day	0.0043 nests/day	-0.0077 nests/day	
Stonechat	37	50	Curvilinear	0.0116 nests/day	0.0043 nests/day	-0.0073 nests/day	
Robin	37	151	Curvilinear	0.0249 nests/day	0.0185 nests/day	-0.0064 nests/day	
Merlin	37	30	Linear decline	0.0089 nests/day	0.0027 nests/day	-0.0062 nests/day	Small sample
Carrion Crow	37	44	Linear decline	0.0073 nests/day	0.0016 nests/day	-0.0057 nests/day	Includes Hooded Crow
Stock Dove	37	52	Linear decline	0.0122 nests/day	0.0069 nests/day	-0.0053 nests/day	
Yellowhammer	37	51	Curvilinear	0.0463 nests/day	0.0411 nests/day	-0.0052 nests/day	
Tree Sparrow	37	99	Linear decline	0.0138 nests/day	0.0088 nests/day	-0.005 nests/day	
Pied Wagtail	37	90	Linear decline	0.0128 nests/day	0.0084 nests/day	-0.0044 nests/day	
Starling	37	140	Linear decline	0.0062 nests/day	0.002 nests/day	-0.0042 nests/day	
Great Spotted Woodpecker	37	28	Linear decline	0.0035 nests/day	0.0003 nests/day	-0.0032 nests/day	Small sample
Barn Owl	37	48	Linear decline	0.0022 nests/day	0.0003 nests/day	-0.0019 nests/day	
Tawny Owl	37	80	Curvilinear	0.003 nests/day	0.0012 nests/day	-0.0018 nests/day	Nocturnal species
Twite	37	13	Curvilinear	0.006 nests/day	0.0072 nests/day	0.0012 nests/day	Small sample
Dunnock	37	114	Curvilinear	0.0247 nests/day	0.0272 nests/day	0.0025 nests/day	
Blue Tit	37	134	Linear increase	0.0064 nests/day	0.0089 nests/day	0.0025 nests/day	
Great Tit	37	137	Linear increase	0.0053 nests/day	0.0091 nests/day	0.0038 nests/day	
Tree Pipit	37	20	Curvilinear	0.0336 nests/day	0.0374 nests/day	0.0038 nests/day	Small sample
Nightjar	37	20	Curvilinear	0.0003 nests/day	0.0052 nests/day	0.0049 nests/day	Small sample
Spotted Flycatcher	37	110	Linear increase	0.0096 nests/day	0.0147 nests/day	0.0051 nests/day	
Bullfinch	37	33	Curvilinear	0.0337 nests/day	0.039 nests/day	0.0053 nests/day	
Long-tailed Tit	37	36	Linear increase	0.0083 nests/day	0.0159 nests/day	0.0076 nests/day	
Linnet	37	110	Linear increase	0.015 nests/day	0.0227 nests/day	0.0077 nests/day	

See **Help** for information on category meanings.

Long-term changes in egg-stage or chick-stage nest failure rates are associated with long-term population trends in a number of species. Here we highlight those changes that are both statistically significant and likely to be of biological importance.

Increased nest failure rates were associated with negative long-term trends in population size for seven species, and may have contributed to the observed population declines. These species were **Nightjar** (both stages), **Skylark** (egg stage), **Willow Warbler** (egg stage), **Spotted Flycatcher** (nestling stage), **Linnet** (both stages), **Bullfinch** (both stages) and **Reed Bunting** (egg stage). Although **Nightjar** is included in this list of declining species on account of its red-listed status, it should be noted that recent surveys show a population increase. Reductions in breeding performance at the egg stage have been implicated in a detailed analyses of the population declines of the **Linnet** (**Siriwardena *et al.* 2000b**). It has also been suggested that poor breeding performance may be preventing the recovery of Reed Bunting populations (**Peach *et al.* 1999**). However, the increasing trend in chick-stage failure rates of Spotted Flycatchers has only just become significant and previous work suggested that other demographic factors were more important in the decline of this species (**Freeman & Crick 2003**).

Thirteen species showed clear associations between long-term increases in abundance and long-term reductions in nest failure rates. **Sparrowhawk**, **Buzzard**, **Pied Wagtail**, **Wren**, **Blue Tit** and **Great Tit** experienced reduced nest failure rates at the egg stage, while only **Grey Heron** showed reduced failure rates at the chick stage. The remaining six species, **Stock Dove**, Collared Dove, **Robin**, **Magpie**, **Jackdaw** and **Carrion Crow**, showed reduced failure rates at both the egg and chick stages. A reduction in the egg-stage failure rates of **Long-tailed Tits** may have contributed to their population increase, but this is partly offby an increase in chick-stage failure rates. Corvids, such as **Magpie**, **Carrion Crow** and **Jackdaw**, appear to have benefited from improvements in nesting success at the egg stage, as have raptors such as **Sparrowhawk** and **Buzzard**. Decreased persecution and reduction in the use of pesticides are likely to have been important factors in the recovery of these species. The improvements in the nesting success of **Stock Dove** could have a major impact on the size of the population, given the high number of breeding attempts made by this species each year. **Grey Heron** populations have increased over the last 70 years, and improvements in chick-stage nest survival may have played a part in this increase, perhaps aided by the declining impact of organochlorine pesticides and improvements in water quality of riverine and standing water bodies. Decreased egg-stage and chick-stage failure rates of **Collared Doves** may have aided the rapid growth of the UK population over the last 36 years, particularly as this species makes a relatively large number of breeding attempts per year.

Inverse associations between changes in egg- or chick-stage nest survival and population trend are found in some 17 species, while **Woodlark**, **Skylark**, **Tree Pipit**, **Spotted Flycatcher** and **Long-tailed Tit** (above) showed such a relationship at one stage but a compensatory one at the other stage. Such relationships may arise through density-dependent processes where increased competition leads to increased failure rates at higher population densities. Two increasing species (**Mute Swan** and **Oystercatcher**) showed long-term increases in egg-stage failure rates. Some 14 declining species showed evidence of improving nesting success. **Snipe**, **Redshank**, **Dunnock**, **Wood Warbler** and **Marsh Tit** showed decreased failure at the egg stage while **Merlin**, **Meadow Pipit** and **Corn Bunting** showed decreased chick-stage failure rates. The remaining six species, **Barn Owl**, **Song Thrush**, **Starling**, **House Sparrow**, **Tree Sparrow** and **Yellowhammer** show decreased failure rates at both stages.

4.5.3 Changes in productivity from CES

The CES results start in 1984, so the changes in productivity shown in Table 4.5.3 cover roughly half the time period of the Nest Record Scheme results. The proportion of juveniles in the CES catch provides a relative measure of annual variation in productivity that integrates the effects of fledglings produced per attempt, number of nesting attempts and immediate post-fledging survival. The CES is unique in providing relative measures of adult abundance and productivity from the same set of sites in wetland and scrub habitats. Overall, ten species exhibit significant declines in the proportion of juveniles while only **Chaffinch** shows an increase in this measure.

Four species, **Nightingale**, **Linnet**, **Lesser Redpoll** and **Sedge Warbler**, all show greater than 50% declines in the proportion of juveniles captured over the last 20 years, although it should be noted that two of these occur on a relatively small number of plots. A further six species show reductions in relative productivity of between 25% and 50%. Five of the nine species showing these large productivity declines (**Linnet**, **Lesser Redpoll**, **Reed Bunting**, **Song Thrush** and **Willow Warbler**) have experienced significant population declines both on CES sites and more widely (based on CBC/BBS figures). For **Linnet** there is good evidence that variation in productivity has been important in driving the decline (**Siriwardena *et al.* 2000b**), but for **Song Thrush** and **Willow Warbler** other work indicates that variation in survival rates is likely to have been a more important contributor to population changes (**Peach *et al.* 1995a**, **Robinson *et al.* 2004**). The large decline in **Nightingale** productivity may have contributed to the complex changes in its distribution shown by the **1999 survey**, which identified decreases in abundance over large parts of the species' range. The four other species (**Sedge Warbler**, **Blue Tit**, **Blackbird** and **Blackcap**) with marked reductions in productivity on CES sites have not experienced related declines in abundance, either on CES sites or more widely. The causes and consequences of the productivity declines observed in these species are unclear and warrant further investigation.

Three species with long-term declines in abundance of greater than 50% on CES sites, **Willow Tit**, **Spotted Flycatcher** and **Lesser Whitethroat**, all show stable or slightly increased productivity over the last 20 years.

Taking the CES data set as a whole, 21 species show some decline in productivity over the last 20 years while only six show increases. The strong preponderance in trends towards lower productivity requires urgent and more detailed investigation.

Table 4.5.3

Changes in productivity indices (percentage juveniles) for CES 1984-2005 (21 years) calculated from smoothed trend

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Comment
Nightingale	21	11	-90	-99	-70	Small sample
Linnet	21	23	-78	-95	-36	
Goldfinch	21	38	-62	-89	-19	
Sedge Warbler	21	69	-59	-73	-38	
Reed Bunting	21	62	-53	-76	-11	
Blue Tit	21	99	-44	-58	-30	
Willow Warbler	21	96	-38	-52	-20	
Reed Warbler	21	59	31	0	78	
Chaffinch	21	84	95	11	255	

See **Help** for information on category meanings.

4.5.4 Changes in average laying dates

Over the past 25 years many species have exhibited a trend towards progressively earlier clutch initiation (**Crick *et al.* 1997**) with laying dates showing curvilinear responses over the past 50 years as spring temperatures have cooled and then warmed (**Crick & Sparks 1999**).�Table 4.5.4 confirms that over the past 36 years the majority of species exhibiting significant trends show an advancement of laying dates rather than a delay.�Thus 34 species are laying between 30 days and 4 days earlier, on average, than they were 36 years ago.�Two species, **Kestrel** and **Starling**, are added to the list of earlier layers published in the previous report in this series while **Turtle Dove** is removed from the list. There are no taxonomic or ecological associations between the species showing such changes, and they seem to occur across a wide range of species (**Crick *et al.* 1997**). Only three species show significant changes towards later laying, all of which suffer from small sample sizes. It is likely that the laying dates of the majority of those species that do not show a significant trend in timing of laying are related to some aspect of weather, but that those aspects do not show any trend over time (**Crick & Sparks 1999**).

The significance of the changes in phenology for breeding performance and productivity is currently unknown and needs to be investigated. Earlier average laying may be beneficial for birds because earlier fledging is often related to improved survival to the following year.�However, several studies are beginning to show that birds are unable to advance their phenology sufficiently to match phenological changes in their food supply, such that later nesting birds are suffering from poorer productivity.�Early nesting parents have an increased chance of having their offspring recruited into the next generation (**Visser *et al.* 1998**).�The conservation significance of factors such as these needs to be assessed urgently.

Table 4.5.4

Significant trends in Laying date measured between 1968-2005

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Magpie	37	37	Curvilinear	Apr 21	Mar 22	-30 days	
Grey Heron	37	29	Linear decline	Apr 8	Mar 11	-28 days	Non-breeders include
Long-tailed Tit	37	43	Linear decline	Apr 21	Apr 6	-15 days	
Chiffchaff	37	42	Linear decline	May 17	May 3	-14 days	
Greenfinch	37	93	Linear decline	May 25	May 11	-14 days	
Redstart	37	63	Curvilinear	May 21	May 10	-11 days	
Blackcap	37	36	Curvilinear	May 20	May 9	-11 days	
Nuthatch	37	26	Linear decline	May 2	Apr 21	-11 days	Small sample
Carrion Crow	37	34	Curvilinear	Apr 16	Apr 5	-11 days	Includes Hooded Crow
Tree Pipit	37	19	Linear decline	May 25	May 16	-9 days	Small sample
Marsh Tit	37	13	Linear decline	Apr 28	Apr 19	-9 days	Small sample
Ring Ouzel	37	25	Linear decline	May 15	May 7	-8 days	Small sample
Great Tit	37	125	Linear decline	May 4	Apr 26	-8 days	
Treecreeper	37	14	Linear decline	May 7	Apr 29	-8 days	Small sample
House Sparrow	37	45	Linear decline	May 25	May 17	-8 days	
Oystercatcher	37	46	Linear decline	May 17	May 10	-7 days	
Tawny Owl	37	13	Linear decline	Mar 29	Mar 22	-7 days	Nocturnal species
Swallow	37	91	Curvilinear	Jun 20	Jun 13	-7 days	
Dipper	37	61	Linear decline	Apr 17	Apr 10	-7 days	
Robin	37	116	Linear decline	Apr 28	Apr 21	-7 days	
Whitethroat	37	17	Curvilinear	May 26	May 19	-7 days	Small sample
Garden Warbler	37	21	Linear decline	May 28	May 21	-7 days	Small sample
Blue Tit	37	136	Linear decline	May 3	Apr 26	-7 days	
Chaffinch	37	108	Linear decline	May 11	May 4	-7 days	
Goldfinch	37	21	Linear decline	Jun 6	May 30	-7 days	Small sample
Kestrel	37	21	Linear decline	May 4	Apr 28	-6 days	Small sample
Reed Warbler	37	153	Curvilinear	Jun 16	Jun 10	-6 days	
Willow Warbler	37	84	Linear decline	May 20	May 14	-6 days	
Meadow Pipit	37	40	Linear decline	May 17	May 12	-5 days	
Wren	37	86	Linear decline	May 14	May 9	-5 days	
Dunnock	37	80	Linear decline	May 4	Apr 29	-5 days	
Whinchat	37	30	Curvilinear	May 28	May 23	-5 days	Small sample
Stonechat	37	33	Curvilinear	May 3	Apr 28	-5 days	
Sedge Warbler	37	51	Curvilinear	May 29	May 24	-5 days	
Jackdaw	37	21	Curvilinear	Apr 23	Apr 18	-5 days	Small sample
Tree Sparrow	37	116	Linear decline	May 29	May 24	-5 days	
Lesser Redpoll	37	11	Curvilinear	May 26	May 21	-5 days	Small sample
Skylark	37	21	Curvilinear	May 25	May 31	6 days	Small sample
Yellowhammer	37	26	Linear increase	May 30	Jun 7	8 days	Small sample
Stock Dove	37	14	Linear increase	May 30	Jun 13	14 days	Small sample

See **Help** for information on category meanings.

Return to previous page

Next page – 4.6 Conclusion

4.6������Conclusion

We hope that this report will be useful both as a ready source of information for conservation practitioners and as a source of information for those involved in more strategic conservation policy making. The information presented here is very much the 'tip of the iceberg' of information held by the BTO, providing a concise overview of the way in which populations are changing and suggesting areas where further research and conservation action needs to be taken.

Alerts are raised as a result of declines in the population sizes of a considerable number of species. These alerts will help conservation organisations to prioritise future conservation action, alongside the Population Status of Birds list (**Gregory *et al.* 2002**) and other information.

The information concerning demographic factors contained in this report will also help conservation organisations to target their resources more effectively. For declining species of conservation importance, declines in breeding performance may indicate that conservation action should be targeted at the breeding season; although such responses may sometimes be masked by density-dependent improvements in breeding success (**Green 1999**). The lack of a decline in breeding performance may suggest that factors other than nesting success, such as loss of habitat or changes in survival rates are more likely to be influencing observed population declines. A report of this kind can only provide an initial summary of such information, and a full assessment of the population dynamics of a declining species will generally require more detailed investigations (e.g. **Peach *et al.* 1999**, **Freeman & Crick 2003**, **Robinson *et al.* 2004**).

Finally, we hope that users of this report will provide feedback on how the report can be improved in the future. We welcome comments on more general aspects of this report as they will help us to produce a better and more useful product in the next edition.

Email your comments

Next section – 5. Acknowledgements

Return to Discussion index

5. Acknowledgements

Volunteer fieldwork

Our biggest thankyou is to the volunteers who collected the data on which this website is based. The population trends and other results that we present rely on the sustained, long-term fieldwork of many thousands of BTO volunteers. Our knowledge of the conservation status of the UK's bird populations is only possible as a result of their dedication and enthusiasm. The conservation community owes them an enormous debt of gratitude for their work. We are also very grateful to the many farmers, land managers and landowners who permitted census work, nest recording and ringing to take place on their land.

Report production and analysis

This website presents the latest in a series of reports, prepared within the partnership between the British Trust for Ornithology (BTO) and the Joint Nature Conservation Committee (JNCC) (on behalf of Natural England, Scottish Natural Heritage, the Countryside Council for Wales and the Environment & Heritage Service of Northern Ireland), as part of its programme of research into nature conservation.

Mr and Mrs J A Pye's Charitable Settlement provided additional support towards the development of the website.

This report includes results from the Breeding Bird Survey, which is funded jointly by BTO, JNCC and RSPB. The BBS partners are very grateful to the Environment and Heritage Service in Northern Ireland and to the Royal Society for the Protection of Birds in Scotland for supporting professional surveys in areas that would otherwise be difficult to cover.

Iain Downie and Susan Waghorn put in a huge amount of skill and effort in designing and building the website, and in creating the programs that produce the figures and tables.

Helen Baker and Ian McLean of JNCC provided helpful discussions, comments and support during the production of the report. David Stroud, Rowena Langston, David Gibbons, Jacquie Clark, Nigel Clark, Jeremy Greenwood and Malcolm Vincent provided helpful comments on earlier editions of this publication.

The analyses would not have been possible without the hard work of many BTO staff who organise schemes and collate data sets: Sue Adams, Mandy Andrews, Jeremy Blackburn, Jacquie Clark, Mark Collier, Mark Grantham, Bridget Griffin, Brenda Read, Anne Trewhitt and Jane Waters. The work is also heavily dependent on the BTO's computer and database systems operated by Peter Lack and Karen Wright.

We are very grateful to all of the above organisations and individuals for their contributions to this report.

Section 6 – References

Back to Contents

REFERENCES

Clicking on the short form of any reference in the text of this report will bring you to its full details in this section: the reference sought will be at the very top of your view. Where possible, we provide an onward link either to an abstract or, where it is freely available, to the full text. Alternatively, a web search will often take you to a summary of an article and the opportunity to purchase the text in full.

Most of the listed publications are available in printed form to BTO members and other bona fide researchers through the **Chris Mead Library** at BTO headquarters in Thetford.

Aebischer, N.J. (1999) Multi-way comparisons and generalised linear models of nest success: extensions of the Mayfield method. *Bird Study* 46: S22–S31.

Aebischer, N.J. & Ewald, J.A. (2004) Managing the UK Grey Partridge *Perdix perdix* recovery: population change, reproduction, habitat and shooting. *Ibis* 146 (S2): 181–191.

Aebischer, N.J., Evans, A.D., Grice, P.V. & Vickery, J.A. (2000) *The Ecology and Conservation of Lowland Farmland Birds.* British Ornithologists' Union, Tring.

Amar, A. & Redpath, S.M. (2005) Habitat use by Hen Harriers *Circus cyaneus* on Orkney: implications of land-use change for this declining population. *Ibis* 147: 37–47.

Amar, A., Picozzi, N., Meek, E.R., Redpath, S.M. & Lambin, X. (2005) Decline of the Orkney Hen Harrier *Circus cyaneus* population: do changes to demographic parameters and mating system fit a declining food hypothesis? *Bird Study* 52: 18–24.

Anganuzzi, A.A. (1993) A comparison of tests for detecting trends in abundance indices of dolphins. *Fishery Bulletin* 91: 183–194.

Anonymous (1995) *Biodiversity: the UK Steering Group report. Vol. 1: Meeting the Rio Challenge*. *Vol. 2: Action Plans.* HMSO, London.

Anonymous (1998) *UK Biodiversity Group Tranche 2 Action Plans. Vol. 1: Vertebrates & Vascular Plants*. English Nature, Peterborough.

Austin, G.E, Rehfisch, M.M., Allan, J.R. & Holloway, S.J. (2007) Population size and differential population growth of introduced Greater Canada Geese *Branta canadensis* and re-established Greylag Geese *Anser anser* across habitats in Great Britain in the year 2000. *Bird Study* 54: 343–352.

Baillie, S.R. (1990) Integrated population monitoring of breeding birds in Britain and Ireland. *Ibis* 132: 151–166.

Baillie, S.R. (1991) Monitoring terrestrial breeding bird populations. *In* Goldsmith, F.B. (ed.) *Monitoring for Conservation and Ecology*: 112–132. Chapman & Hall, London.

Baillie, S.R. & Peach, W.J. (1992) Population limitation in Palaearctic–African migrant passerines. *Ibis* 134 Suppl. 1: 120–132.

Baillie, S.R. & Rehfisch, M.M. (eds) (2006) *National and site-based alert systems for UK birds.* Research Report 226. BTO, Thetford. **Abstract/Full text**

Baillie, S.R., Crick, H.Q.P., Balmer, D.E., Beaven, L.P., Downie, I.S., Freeman, S.N., Leech, D.I., Marchant, J.H., Noble, D.G., Raven, M.J., Simpkin, A.P., Thewlis, R.M. & Wernham, C.V. (2002) *Breeding Birds in the Wider Countryside: their conservation status 2001.* Research Report 278. BTO, Thetford. (**www.bto.org/birdtrends2001**)

Baker, H., Stroud, D.A., Aebischer, N.J., Cranswick, P.A., Gregory, R.D., McSorley, C.A., Noble, D.G. & Rehfisch, M.M. (2006) Population estimates of birds in Great Britain and the United Kingdom. *British Birds* 99: 25–44. (APEP06) **Full text**

Balmer, D.E., Adams, S.Y. & Crick H.Q.P. (2000) Report on Barn Owl Release Scheme: Monitoring Project Phase II. Research Report 250. BTO, Thetford. **Abstract/Full text**

Banks, A.N., Coombes, R.H. & Crick, H.Q.P. (2003) *The Peregrine Falcon breeding population of the UK & Isle of Man in 2002.* Research Report 330. BTO, Thetford. **Abstract**

Banks, A.N., Collier, M.P., Austin, G.E., Hearn, R.D. & Musgrove, A.J. (2006) *Waterbirds in the UK 2004/05: the Wetland Bird Survey.* BTO/WWT/RSPB/JNCC, Thetford. **Full text**

Beale, C.M., Burfield, I.J., Sim, I.M.W., Rebecca, G.W., Pearce-Higgins, J.W. & Grant, M.C. (2006) Climate change may account for the decline in British ring ouzels *Turdus torquatus*. *Journal of Animal Ecology* 75: 826–835.

Besbeas, P., Freeman, S.N., Morgan, B.J.T. & Catchpole, E.A. (2002) Integrating mark–recapture–recovery and census data to estimate animal abundance and demographic parameters. *Biometrics* 58:

540–547.

Bibby, C.J. (1989) A survey of breeding Wood Warblers *Phylloscopus sibilatrix*, in Britain 1984–85. *Bird Study* 36: 56–72.

Bibby, C.J. & Etheridge, B. (1993) Status of the Hen Harrier *Circus cyaneus* in Scotland in 1988–89. *Bird Study* 40: 1–11.

BirdLife International (2004) *Birds in Europe: population estimates, trends and conservation status.* BirdLife Conservation Series No. 12. BirdLife International, Cambridge. (BiE04) (**www.birdlife.org/action/science/species/birds_in_europe/species_search.html**)

Bolton, M., Tyler, G., Smith, K. & Bamford, R. (2007) The impact of predator control on lapwing *Vanellus vanellus* breeding success on wet grassland nature reserves. *Journal of Applied Ecology* 44: 534–544.

Both, C. (2002) Nemen Bonte Vliegenvangers *Ficedula hypoleuca* af door klimaatsverandering? [Decrease of European Pied Flycatchers due to climate change?] *Limosa* 75: 73–78.

Both, C., Bouwhuis, S., Lessells, C.M. & Visser, M.E. (2006) Climate change and population declines in a long-distance migratory bird. *Nature* 441 (4): 81–83.

Brickle, N.W. & Harper, D.G. (2002) Agricultural intensification and the timing of breeding of Corn Buntings *Miliaria calandra*. *Bird Study* 49: 219–228.

Brindley, E., Norris, K., Cook, T., Babbs, S., Forster-Browne, C. & Yaxley, R. (1998) The abundance and conservation status of redshank (*Tringa totanus*) nesting on saltmarshes in Great Britain. *Biological Conservation* 86: 289–297.

Brooke, M. de L. & Davies, N.B. (1987) Recent changes in host usage by cuckoos *Cuculus canorus* in Britain. *Journal of Animal Ecology* 56: 873–883.

Brown, A.F., Crick, H.Q.P. & Stillman, R.A. (1995) The distribution, numbers and breeding ecology of Twite *Acanthis flavirostris* in the south Pennines of England. *Bird Study* 42: 107–121.

Browne, S.J. & Aebischer, N.J. (2004) Temporal changes in the breeding ecology of European Turtle Doves *Streptopelia turtur* in Britain, and implications for conservation. *Ibis* 146: 125–137.

Browne, S. & Aebischer, N. (2005) Studies of West Palearctic birds: Turtle Dove. *British Birds* 98: 58–72.

Browne, S., Vickery, J.A. & Chamberlain, D.E. (2000). Densities and population estimates of breeding Skylarks *Alauda arvensis* in Britain in 1997. *Bird Study* 47: 52–65. **Abstract**

Browne, S.J., Aebischer, N.J. & Crick, H.Q.P. (2005) The breeding ecology of Turtle Doves *Streptopelia turtur* in Britain during the period 1941 to 2000: an analysis of BTO Nest Record Cards. *Bird Study* 52: 1–9. **Abstract**

Buchanan, G.M., Pearce-Higgins, J.W., Wotton, S.R., Grant, M.C. & Whitfield, D.P. (2003) Correlates of the change in Ring Ouzel *Turdus torquatus* abundance in Scotland from 1988–91 to 1999. *Bird Study* 50: 97–105.

Buckland, S.T., Cattanach, K.L. & Anganuzzi, A.A. (1992) Estimating trends in abundance of dolphins associated with tuna in the eastern tropical Pacific Ocean, using sightings data collected on commercial tuna vessels. *Fishery Bulletin* 90: 1–20.

Burfield, I.J. & Brooke, M. de L. (2005) The decline of the Ring Ouzel *Turdus torquatus* in Britain: evidence from bird observatory data. *Ringing & Migration* 22: 199–204.

Butler, C. (2002) Breeding parrots in Britain. *British Birds* 95: 345–348.

Butler, C.J. (2003) Population biology of the introduced Rose-ringed Parakeet *Psittacula krameri* in the UK. PhD thesis, University of Oxford. **Full text**

Catchpole, E.A., Morgan, B.J.T., Freeman, S.N. & Peach, W.J. (1999) Modelling the survival of British Lapwings *Vanellus vanellus* using ring-recovery data and weather covariates. *Bird Study* 46 (suppl.): 5–13.

Chamberlain, D.E. & Crick, H.Q.P. (1999) Population declines and reproductive performance of skylarks *Alauda arvensis* in different regions and habitats of Great Britain. *Ibis* 141: 38–51.

Chamberlain, D.E. & Crick, H.Q.P. (2003) Temporal and spatial associations in aspects of reproductive performance of Lapwings *Vanellus vanellus* in the United Kingdom, 1962–99. *Ardea* 91: 183–196. **Abstract**

Chamberlain, D.E. & Siriwardena, G.M. (2000) The effects of agricultural intensification on Skylarks *Alauda arvensis*: evidence from monitoring studies in Great Britain. *Environmental Reviews* 8: 95–113.

Clements, R. (2001) The Hobby in Britain: a new population estimate. *British Birds* 94: 402–408.

Clements, R. (2002) The Common Buzzard in Britain: a new population estimate. *British Birds* 95: 377–383.

Conway, G., Wotton, S., Henderson, I., Langston, R., Drewitt, A. & Currie, F. (2007) Status and distribution of European Nightjars *Caprimulgus europaeus* in the UK in 2004. *Bird Study* 54: 98–111.

Cowley E. & Siriwardena, G.M. (2005) Long-term variation in survival rates of Sand Martins *Riparia riparia*: dependence on breeding and wintering ground weather, age and sex, and their population consequences. *Bird Study* 52: 237–251. **Abstract**

Crawley, M.J. (1993) *GLIM for Ecologists*. Blackwell Science, Oxford, UK.

Crick, H.Q.P. (1992) *Trends in the breeding performance of Golden Plover in Britain.* Research Report 76. BTO, Thetford.

Crick, H.Q.P. (1993) Trends in breeding success of Merlins (*Falco columbarius*) in Britain from 1937–1989. In Nicholls, M.K. & Clarke, R. (eds.) *Biology and Conservation of Small Falcons*, pp 30–38. Hawk & Owl Trust, London.

Crick, H.Q.P. (1997) Long-term trends in Corn Bunting *Miliaria calandra* productivity in Britain. In Donald, P.F. & Aebischer, N.J. (eds.) *The Ecology and Conservation of Corn Buntings* Miliaria calandra: 52–64. UK Nature Conservation No. 13. JNCC, Peterborough.

Crick, H.Q.P. (1998) Decline in clutch size of Hen Harriers: reply. *BTO News* 218: 23.

Crick, H.Q.P. & Ratcliffe, D.A. (1995) The Peregrine *Falco peregrinus* population of the United Kingdom in 1991. *Bird Study* 42: 1–19.

Crick, H.Q.P. & Sparks, T.H. (1999) Climate change related to egg-laying trends. *Nature* 399: 423–424.

Crick, H.Q.P., Dudley, C. & Glue, D.E. (1993) Breeding birds in 1991. *BTO News* 185: 15–18.

Crick, H.Q.P., Dudley, C., Evans, A.D. & Smith, K.W. (1994) Causes of nest failure among buntings in the UK. *Bird Study* 41: 88–94.

Crick, H.Q.P., Dudley, C., Glue, D.E. & Thomson, D.L. (1997) UK birds are laying eggs earlier. *Nature* 388: 526.

Crick, H.Q.P., Baillie, S.R., Balmer, D.E., Bashford, R.I., Beaven, L.P., Dudley, C., Glue, D.E., Gregory, R.D., Marchant, J.H., Peach, W.J. & Wilson, A.M. (1998) *Breeding birds in the wider countryside: their conservation status (1972–1996)*. Research Report 198. BTO, Thetford.

Crick, H.Q.P., Robinson, R.A., Appleton, G.F., Clark, N.A. & Rickard, A.D. (eds) (2002) *Investigations into the causes of the decline of Starlings and House Sparrows in Great Britain.* BTO Research Report 290. 305 pp. DEFRA, Bristol. **Full text**

Crick, H.Q.P., Baillie, S.R. & Leech, D.I. (2003) The UK Nest Record Scheme: its value for science and conservation. *Bird Study* 50: 254–270.

Cross, T. (2002) Common Raven (Raven) *Corvus corax*. In *The Migration Atlas: movements of the birds of Britain and Ireland* (eds C.V. Wernham, M.P. Toms, J.H. Marchant, J.A. Clark, G.M. Siriwardena & S.R. Baillie), pp 626–628. T. & A.D. Poyser, London.

Delany, S., Greenwood, J.J.D. & Kirby, J. (1992) *National Mute Swan Survey 1990.* Report to the Joint Nature Conservation Committee. Wildfowl & Wetlands Trust, Slimbridge.

Dobson, A.P. & Hudson, P.J. (1992) Regulation and stability of a free-living host–parasite system *Trichostrongylus tenuis* in Red Grouse. II Population models. *Journal of Animal Ecology* 61: 487–500.

Dolton, C.S. & Brooke M. de L. (1999) Changes in the biomass of birds breeding in Great Britain, 1968–88. *Bird Study* 46: 274–278.

Donald, P.F. (1997) The Corn Bunting *Miliaria calandra* in Britain: a review of current status, patterns of decline and possible causes. *In* Donald, P.F. & Aebischer, N.J. (eds.) *The Ecology and Conservation of Corn Buntings* Miliaria calandra: 11–26. UK Nature Conservation No. 13. Joint Nature Conservation Committee, Peterborough.

Donald, P.F. & Morris, T.J. (2005) Saving the Sky Lark: new solutions for a declining farmland bird. *British Birds* 98: 570–578.

Donald, P.F. & Vickery, J.A. (2000) The importance of cereal fields to breeding and wintering skylarks *Alauda arvensis* in the UK. In *Proceedings of the 1999 BOU Spring Conference: Ecology and Conservation of Lowland Farmland Birds* (eds N.J. Aebischer, A.D. Evans, P.V. Grice & J.A. Vickery), pp 140–150. British Orinthologists' Union, Tring.

Donald, P.F. & Vickery, J.A. (2001) *The ecology and conservation of Skylarks.* RSPB, Sandy.

Dougall, T.W., Holland, P.K. & Yalden, D.W. (2004) A revised estimate of the breeding population of Common Sandpipers *Actitis hypoleucos* in Great Britain and Ireland. *Wader Study Group Bulletin* 105: 42–49.

Elliott, G.R. & Avery, M.I. (1991) A review of reports of buzzard persecution 1975–1989. *Bird Study* 38: 52–56.

Etheridge, B., Summers, R.W. & Green, R.E. (1997) The effects of illegal killing and destruction of nests by humans on the population dynamics of the hen harrier *Circus cyaneus* in Scotland. *Journal of Applied Ecology* 34: 1081–1105.

Evans, K.L. & Robinson, R.A. (2004) Barn Swallows and agriculture. *British Birds* 97: 218–230.

Fewster, R.M., Buckland, S.T., Siriwardena, G.M., Baillie, S.R. & Wilson, J.D. (2000) Analysis of population trends for farmland birds using generalized additive models. *Ecology* 81: 1970–1984.

Freeman, S.N. & Crick, H.Q.P. (2002) Population dynamics of House Sparrows *Passer domesticus* breeding in Britain: an integrated analysis. pp 193–211 in Crick, H.Q.P., Robinson, R.A., Appleton, G.F., Clark, N.A. & Rickard, A.D. (eds) *Investigation into the causes of the decline of starlings and house sparrows in Great Britain*. Research Report 290. BTO, Thetford. **Full text**

Freeman, S.N. & Crick, H.Q.P. (2003) The decline of the Spotted Flycatcher *Muscicapa striata* in the UK: an integrated population model. *Ibis* 145: 400–412.

Freeman, S.N., Wernham, C.V. & Balmer, D.E. (2001) *Long-term changes in the productivity of common songbirds in Britain and Ireland from constant effort ringing.* Unpublished. BTO, Thetford.

Freeman, S.N., Robinson, R.A., Clark, J.A., Griffin, B.M. & Adams, S.Y. (2002) Population dynamics of Starling *Sturnus vulgaris* breeding in Britain: an integrated analysis. Pp 121–139 in Crick, H.Q.P., Robinson, R.A., Appleton, G.F., Clark, N.A. & Rickard, A.D. (eds) *Investigation into the causes of the decline of starlings and house sparrows in Great Britain*. Research Report 290. BTO, Thetford. **Full text**

Freeman, S.N., Noble, D.G., Newson, S.E. & Baillie, S.R. (2003) *Modelling bird population changes using data from the Common Birds Census and the Breeding Bird Survey.* Research Report 303. BTO, Thetford. **Abstract**

Freeman, S.N., Noble, D.G., Newson, S.E. & Baillie, S.R. (2007a) Modelling bird population changes using data from different surveys: the Common Birds Census and the Breeding Bird Survey. *Bird Study* 54: 61–72.

Freeman, S.N., Robinson, R.A., Clark, J.A., Griffin, B.M. & Adams, S.Y. (2007b) Changing demography and population decline in the Common Starling *Sturnus vulgaris*: a multisite approach to Integrated Population Monitoring. *Ibis* 149: 587–596.

Fuller, R.J. (1996) *Relationships between grazing and birds with particular reference to sheep in the British uplands.* Research Report 164. BTO, Thetford.

Fuller, R. & Hoodless, A. (2004) Breeding Woodcock Survey, 2003. *BTO News* 253: 4–5.

Fuller, R.J., Marchant, J.H. & Morgan, R.A. (1985) How representative of agricultural practice in Britain are Common Birds Census farmland plots? *Bird Study* 32: 56–70.

Fuller, R.J., Gregory, R.D., Gibbons, D.W., Marchant, J.H., Wilson, J.D., Baillie, S.R. & Carter, N. (1995) Population declines and range contractions among lowland farmland birds in Britain. *Conservation Biol*ogy 9: 1425–1441.

Fuller, R.J., Noble, D.G., Smith, K.W. & Vanhinsbergh, D. (2005) Recent declines in populations of woodland birds in Britain: a review of possible causes. *British Birds* 98: 116–143. **Abstract**

Furness, R.W. & Greenwood, J.J.D. (eds.) (1993) *Birds as Monitors of Environmental Change.* Chapman & Hall, London.

Gibbons, D.W., Reid, J.B. & Chapman, R.A. (1993) *The New Atlas of Breeding Birds in Britain and Ireland: 1988–1991.* T. & A.D. Poyser, London.

Gibbons, D.W., Avery, M.I., Baillie, S.R., Gregory, R.D., Kirby, J., Porter, R.F., Tucker, G.M. & Williams, G. (1996) Bird species of conservation concern in the United Kingdom, Channel Islands and Isle of Man: revising the Red Data List. *RSPB Conservation Review* 10: 7–18.

Gibbons, D.W., Bainbridge, I.P., Mudge, G.P., Tharme, A.P. & Ellis, P.M. (1997) The status and distribution of the Red-throated Diver *Gavia stellata* in Britain in 1994. *Bird Study* 44: 194–205.

Gillings, S., Newson, S. & Sellers, R.M. (2007) Breeding population estimates for Northern Wheatear in Britain. *British Birds* 100: 179–181.

Glue, D.E. (1990) Breeding biology of the Grasshopper Warbler in Britain. *British Birds* 83: 131–145.

Glue, D.E. (2006) Cuckoos in crisis? *BTO News* 263: 22–23.

Goss-Custard, J.C. (1993) The effect of migration and scale on the study of bird populations: 1991 Witherby Lecture. *Bird Study* 40: 81–96.

Green, R.E. (1999) Applications of large-scale studies of demographic rates to bird conservation. *Bird Study* 46 (Suppl.): S279–S288.

Greenwood, J.J.D. (2000). How BTO's monitoring of birds contributes to conservation. In *European Monitoring for Nature Conservation, Bonn-Bad Godesberg (Bundesamt fur Naturschutz)*, ed. by C. Bischoff & R. Droschmeister. *Schriftenreiche fur Landschaftspflege und Naturschutz* 62: 105–117.

Gregory, R.D. & Marchant, J.H. (1996) Population trends of Jays, Magpies, Jackdaws and Carrion Crows in the United Kingdom. *Bird Study* 43: 28–37.

Gregory, R.D., Carter, S.P. & Baillie, S.R. (1997) Abundance, distribution and habitat use of breeding Goosanders *Mergus merganser* and Red-breasted Mergansers *Mergus serrator* on British rivers. *Bird Study* 44: 1–12.

Gregory, R.D., Wilkinson, N.I., Noble, D.G., Robinson, J.A., Brown, A.F., Hughes, J., Procter, D., Gibbons, D.W. & Galbraith, C.A. (2002) The population status of birds in the United Kingdom, Channel Islands and Isle of Man: an analysis of conservation concern 2002–2007. *British Birds* 95: 410–448.

Gregory, R.D., Noble, D.G. & Custance, J. (2004) The state of play of farmland birds: population trends and conservation status of lowland farmland birds in the United Kingdom. *Ibis* 146 (suppl. 2): 1–13.

Gruar, D., Barritt, D. & Peach, W.J. (2006) Summer utilization of Oilseed Rape by Reed Buntings *Emberiza schoeniclus* and other farmland birds. *Bird Study* 53: 47–54.

Hardey, J., Crick, H.Q.P., Wernham, C.V., Riley, H.T., Etheridge, B. & Thompson, D.B.A. (2006) *Raptors: a field guide to survey and monitoring.* The Stationery Office, Edinburgh.

Hastie, T.J. & Tibshirani, R.J. (1990) *Generalized additive models*. Chapman & Hall, London.

Henderson, I.G. & Hart, P.J.B. (1993) Provisioning, parental investment and reproductive success in Jackdaws *Corvus monedula*. *Ornis Scandinavica* 24: 142–148.

Henderson, I.G., Wilson, A.M., Steele, D. & Vickery, J.A. (2002) Population estimates, trends and habitat associations of breeding Lapwing *Vanellus vanellus*, Curlew *Numenius arquata* and Snipe *Gallinago gallinago* in Northern Ireland in 1999. *Bird Study* 49: 17–25. **Abstract**

Henderson, I., Holt, C. & Vickery, J. (2007) National and regional patterns of habitat association with foraging Barn Swallows *Hirundo rustica* in the UK. *Bird Study* 54: 371–377.

Hinsley, S.A., Bellamy, P.E., Newton, I. & Sparks, T.H. (1995) Habitat and landscape factors influencing the presence of individual breeding bird species in woodland fragments. *Journal of Avian Biology* 26: 94–104.

Holland, P.K. & Yalden, D.W. (2002) Population dynamics of Common Sandpipers *Actitis hypoleucos* in the Peak District of Derbyshire – a different decade: a report of the failure of a population to recover from a catastrophic snow storm. *Bird Study* 49: 131–138.

Holling, M. & the Rare Breeding Birds Panel (2007a) Rare breeding birds in the United Kingdom in 2003 and 2004. *British Birds* 100: 321–367.

Holling, M. & the Rare Breeding Birds Panel (2007b) Non-native breeding birds in the United Kingdom in 2003, 2004 and 2005. *British Birds* 100: 638–649.

Holloway, S. (1996) *The Historical Atlas of Breeding Birds in Britain and Ireland 1875–1900.* T. & A.D. Poyser, London.

Hudson, P.J. (1992) *Grouse in space and time.* Game Conservancy Trust, Fordingbridge.

Hudson, R. (1972) Collared Doves in Britain and Ireland during 1965–70. *British Birds* 65: 139–155.

Hudson, R., Tucker, G.M. & Fuller, R.J. (1994) Lapwing *Vanellus vanellus* populations in relation to agricultural changes: a review. *In* Tucker, G.M., Davies, S.M. & Fuller, R.J. (eds) *The Ecology and Conservation of Lapwings* Vanellus vanellus*:* 1–33. UK Nature Conservation No 9. JNCC, Peterborough.

Hughes, S.W.M., Bacon, P., & Flegg, J.J.M. (1979) The 1975 census of the Great Crested Grebe in Britain. *Bird Study* 26: 213–226.

Hutchinson, C.D. (1989) *Birds in Ireland*. T. & A.D. Poyser, Calton.

Jackson, D.B., Fuller, R.J. & Campbell, S.T. (2004) Long-term population changes among breeding shorebirds in the Outer Hebrides, Scotland, in relation to introduced hedgehogs (*Erinaceus europaeus*). *Biological Conservation* 117: 151–166.

JNCC (1996) *Birds of Conservation Importance.* Press release (31 May 1996). Joint Nature Conservation Committee, Peterborough.

Johnson, D.H. (1979) Estimating nest success: The Mayfield method and an alternative. *Auk* 96: 651–661.

Joys, A.C., Noble, D.G. & Baillie, S.R. (2003) *Evaluation of species coverage and precision using the BBS indexing method.* Research Report 317. BTO, Thetford. **Abstract**

Krebs, J.R., Wilson, J.D., Bradbury R.B. & Siriwardena, G.M. (1999) The second silent spring? *Nature* 400: 611–612.

Kyrkos, A. (1997) *Behavioural and demographic responses of yellowhammers to variation in agricultural practices.* D.Phil. thesis, University of Oxford.

Langston, R.H.W., Liley, D., Murison, G., Woodfield, E. & Clarke, R.T. (2007) What effects do walkers and dogs have on the distribution and productivity of breeding European Nightjar *Caprimulgus europaeus*? *Ibis* 149, supplement 1: 27–36.

Leech, D. & Crick, H. (2005) Nest Record Scheme breeding trends – latest results. *BTO News* 261: 18–19.

Leech, D.I., Crick, H.Q.P. & Shawyer, C.R. (2005) *The BTO Barn Owl Monitoring Programme: fourth year 2003.* Research Report 411. BTO, Thetford. **Abstract**

Leech, D., Crick, H. & Shawyer, C. (2006a) Barn Owls and winter weather. *BTO News* 262: 8–9.

Leech, D., Barimore, C. & Crick, H. (2006b) NRS Concern List – five new species added. *BTO News* 267: 4–5.

Leech, D., Barimore, C. & Crick, H. (2007) Volunteer boom. *BTO News* 273: 18–19.

Liley, D. & Sutherland, W.J. (2007) Predicting the population consequences of human disturbance for Ringed Plovers *Charadrius hiaticula*: a game theory approach. *Ibis* 149, supplement 1: 82–94.

Maclean, I.M.D.& Austin, G.E. (2006) *Wetland Bird Survey Alerts 2004/05: Changes in numbers of wintering waterbirds in the constituent countries of the United Kingdom, Special Protection Areas (SPA's) and Sites of Special Scientific Interest (SSSI's)*. Research Report 458. BTO, Thetford. **Abstract/Full text**

Manly, B.F.J. (1991) *Randomisation and Monte Carlo Methods in Biology*. Chapman & Hall, London.

Marchant, J.H. & Gregory, R.D. (1999) Numbers of nesting Rooks *Corvus frugilegus* in the United Kingdom in 1996. *Bird Study* 46: 258–273. **Full text**

Marchant, J.H., Hudson, R., Carter, S.P. & Whittington, P.A. (1990) *Population Trends in British Breeding Birds*. BTO, Tring.

Marchant, J.H., Freeman, S.N., Crick, H.Q.P. & Beaven, L.P. (2004) The BTO Heronries Census of England and Wales 1928–2000: new indices and a comparison of analytical methods. *Ibis* 146: 323–334. **Abstract**

Marquiss, M. (2007) Seasonal pattern in hawk predation on Common Bullfinches *Pyrrhula pyrrhula*: evidence of an interaction with habitat affecting food availability. *Bird Study* 54: 1–11.

Marquiss, M., Newton, I. & Ratcliffe, D.A. (1978) The decline of the Raven *Corvus corax* in relation to afforestation in southern Scotland and northern England. *Journal of Applied Ecology* 15: 129–144.

Mason, C.F. & Macdonald, S.M. (2006) Recent marked decline in Corn Bunting numbers in northeast Essex. *British Birds* 99: 206–214.

Mavor, R.A., Parsons, M., Heubeck, M., Pickerell, G. & Schmitt, S. (2003) *Seabirds numbers and breeding success in Britain and Ireland, 2002*. UK Nature Conservation no. 27. JNCC, Peterborough. **Abstract/Full text**

Mavor, R.A., Parsons, M., Heubeck, M. & Schmitt, S. (2004) *Seabird numbers and breeding success in Britain and Ireland, 2003*. UK Nature Conservation no. 28. JNCC, Peterborough. **Abstract/Full text**

Mavor, R.A., Parsons, M., Heubeck, M. & Schmitt, S. (2006) *Seabird numbers and breeding success in Britain and Ireland, 2005*. UK Nature Conservation no. 30. JNCC, Peterborough. **Abstract/Full text**

Mayfield, H. (1961) Nesting success calculated from exposure. *Wilson Bulletin* 73: 255–261.

Mayfield, H. (1975) Suggestions for calculating nest success. *Wilson Bulletin* 87: 456–466.

Mearns, R. (1983) The status of the Raven in southern Scotland and Northumbria. *Scottish Birds* 12: 211–218.

Messenger, A. & Roome, M. (2007) The breeding population of the Hobby in Derbyshire. *British Birds* 100: 594–608.

Milsom, T.P. (2005) Decline of Northern Lapwing *Vanellus vanellus* breeding on arable farmland in relation to loss of spring tillage. *Bird Study* 52: 297–306.

Mitchell, C., Patterson, D., Boyer, P., Cunningham, P., McDonald, R., Meek, E., Okill, J.D. & Symonds, F. (2000) The summer status and distribution of Greylag Geese in north and west Scotland. *Scottish Birds* 21: 69–77.

Mitchell, C., King, R. & Cook, T. (2002) Mallard *Anas platyrhynchos*. In *The Migration Atlas: movements of the birds of Britain and Ireland* (eds C.V. Wernham, M.P. Toms, J.H. Marchant, J.A. Clark, G.M. Siriwardena & S.R. Baillie), pp 193–195. T. & A.D. Poyser, London.

Mitchell, P.I., Newton, S.F., Ratcliffe, N. & Dunn, T.E. (2004) *Seabird Populations of Britain and Ireland*. T. & A.D. Poyser, London. **Summary**

Monaghan, P., Uttley, J.D., Burns, M.D., Thaine, C.& Blackwood, J. (1989) The relationship between food supply, reproductive effort and breeding success in Arctic Terns *Sterna paradisaea. Journal of Animal Ecology* 58: 261–274.

Monaghan, P., Uttley, J.D. & Burns, M.D. (1992) Effect of changes in food availability on reproductive effort in Arctic terns *Sterna paradisaea*. *Ardea* 80: 71–81. **Abstract**

Moorcroft, D., Wilson, J.D. & Bradbury, R.B. (2006) The diet of nestling Linnets *Carduelis cannabina* on lowland farmland before and after agricultural intensification. *Bird Study* 53: 156–162.

Morris, A., Burges, D., Fuller, R.J., Evans, A.D. & Smith, K.W. (1994) The status and distribution of Nightjars *Caprimulgus europaeus* in Britain in 1992. *Bird Study* 41: 181–191.

Moss, D. & Moss, G.M. (1993) Breeding biology of the Little Grebe *Tachybaptus ruficollis* in Britain and Ireland. *Bird Study* 40: 107–114.

Mountford, M.D. (1982) Estimation of population fluctuations with application to the Common Birds Census. *Applied Statistics* 31: 135–143.

Mountford, M.D. (1985) An index of population change with an application to the Common Birds Census. *In* Morgan, B.J.T. & North, P.M. (eds) *Statistics in Ornithology*: 121–132. Springer-Verlag, Berlin.

Nelson, S.H., Court, I., Vickery, J.A., Watts, P.N. & Bradbury, R.B. (2003) The status and ecology of the Yellow Wagtail in Britain. *British Wildlife* 14: 270–274.

Newson, S.E., Woodburn, R.J.W., Noble, D.G., Baillie, S.R. & Gregory, R.D. (2005) Evaluating the Breeding Bird Survey for producing national population size and density estimates. *Bird Study* 52: 42–54. **Abstract**

Newson, S.E., Ekins, G.R., Marchant, J.H., Rehfisch, M.M. & Sellers, R.M. (2006) *The status of inland and coastal breeding Great Cormorants* Phalacrocorax carbo *in England*. Research Report 433. BTO, Thetford. **Abstract**

Newson, S.E., Marchant, J.H., Ekins, G.R. & Sellers, R.M. (2007) The status of inland-breeding Great Cormorants in England. *British Birds* 100: 289–299.

Newton, I. (1986) *The Sparrowhawk*. T. & A.D. Poyser, Calton.

Newton, I. (2004) The recent declines of farmland bird populations in Britain: an appraisal of causal factors and conservation actions. *Ibis* 146: 579–600.

O'Brien, M. (2005) Estimating the number of farmland waders breeding in the United Kingdom. *International Wader Studies* 14: 135–139.

O'Connor, R.J. & Marchant, J.H. (1981) *A field validation of some Common Birds Census techniques.* Research Report 4. BTO, Tring.

O'Connor, R.J. & Mead, C.J. (1984) The Stock Dove in Britain, 1930–1980. *British Birds* 77: 181–201.

O'Connor, R.J. & Shrubb, M. (1986) *Farming and Birds*. Cambridge University Press, Cambridge.

Ormerod, S.J. & Tyler, S.J. (1989) Long-term change in the suitability of Welsh streams for Dippers *Cinclus cinclus* as a result of acidification and recovery: a modelling study. *Environmental Pollution* 62: 171–182.

Ormerod, S.J. & Tyler, S.J. (1990) Environmental pollutants in the eggs of Welsh Dippers *Cinclus cinclus*: a potential monitor of organochlorine and mercury contamination in upland rivers. *Bird Study* 37: 171–176.

Owen, M., Atkinson-Willes, G.L. & Salmon, D.G. (1986) *Wildfowl in Great Britain.* Cambridge University Press, Cambridge.

Pannekoek, J. & van Strien, A. (1996) *TRIM (TRends and Indices for Monitoring data)*. Research paper 9634. Statistics Netherlands, Voorburg.

Parkin, D.T., Collinson, M., Helbig, A.J., Knox, A.G. & Sangster, G. (2003) The taxonomic status of Carrion and Hooded Crows. *British Birds* 96: 274–290.

Parr, S.J. (1994) Changes in the population size and nest sites of Merlins *Falco columbarius* in Wales between 1970 and 1991. *Bird Study* 41: 42–47.

Peach, W.J. (1993) Combining mark recapture data sets for small passerines. In *Marked Individuals in the Study of Bird Populations* (eds J.-D. Lebreton & P.M. North), pp. 107–122. Birkhauser Verlag, Basel, Switzerland.

Peach, W.J. & Baillie, S.R. (1994) Implementation of the Mountford indexing method for the Common Birds Census. *In* Hagemeijer, W. & Verstrael, T. (eds.) *Bird Numbers 1992.* Distribution, Monitoring and Ecological Aspects: 653–662. Proc. 12th Int. Conf. International Bird Census Council and European Ornithological Atlas Committee. SOVON, Beek-Ubbergen.

Peach, W.J., Baillie, S.R. & Underhill, L. (1991) Survival of British Sedge Warblers *Acrocephalus schoenobaenus* in relation to west African rainfall. *Ibis* 133: 300–305.

Peach, W.J., Thompson, P.S. & Coulson, J.C. (1994) Annual and long-term variation in the survival rates of British lapwings *Vanellus vanellus*. *Journal of Animal Ecology* 63: 60–70.

Peach, W.J., Crick, H.Q.P. & Marchant, J.H. (1995a) The demography of the decline in the British Willow Warbler population. *Journal of Applied Statistics* 22: 905–922.

Peach, W.J., du Feu, C. & McMeeking, J. (1995b) Site tenacity and survival rates of Wrens *Troglodytes troglodytes* and Treecreepers *Certhia familiaris* in a Nottinghamshire wood. *Ibis* 137: 497–507.

Peach, W.J., Buckland, S.T. & Baillie, S.R. (1996) The use of constant effort mist-netting to measure between-year changes in the abundance and productivity of common passerines. *Bird Study* 43: 142–156.

Peach, W.J., Baillie, S.R & Balmer, D.E. (1998) Long-term changes in the abundance of passerines in Britain and Ireland as measured by constant effort mist-netting. *Bird Study* 45: 257–275.

Peach, W.J., Siriwardena, G.M. & Gregory, R.D. (1999) Long-term changes in the abundance and demography of British reed buntings *Emberiza schoeniclus*. *Journal of Applied Ecology* 36: 798–811. **Abstract/Full text**

Peach, W.J., Robinson, R.A. & Murray, K.A. (2004) Demographic and environmental causes of the decline of rural Song Thrushes *Turdus philomelos* in lowland Britain. *Ibis* 146 (Suppl. 2): 50–59. **Abstract**

Pearce-Higgins, J.W., Yalden, D.W. & Whittingham, M.J. (2005) Warmer springs advance the breeding phenology of golden plovers *Pluvialis apricaria* and their prey (Tipulidae). *Oecologia* 143: 470–476.

PECBM (2006) *The State of Europe's Common Birds, 2005*. CSO/RSPB, Prague. (**www.ebcc.info**)

Percival, S.M. (1990) *Population trends in British Barn Owls,* Tyto alba*, and Tawny Owls,* Strix aluco*, in relation to environmental change.* Research Report 57. BTO, Tring.

Perrins, C. (2003) The status of Marsh and Willow Tits in the UK. *British Birds* 96: 418–426.

Pienkowski, M.W. (1991) Using long-term ornithological studies in setting targets for conservation in Britain. *Ibis* 133 (Suppl. 1): 62–75.

Potts, G.R. (1986) *The Partridge: pesticides, predation and conservation.* Collins, London.

Prater, A.J. (1989) Ringed Plover *Charadrius hiaticula* breeding population of the United Kingdom in 1984. *Bird Study* 36: 154–159.

Prince, P. & Clarke, R. (1993) The hobby's breeding range in Britain. *British Wildlife* 4: 341–346.

Proffitt, F.M., Newton, I., Wilson, J.D. & Siriwardena, G.M. (2004) Bullfinch *Pyrrhula pyrrhula* breeding ecology in lowland farmland and woodland: comparisons across time and habitat. *Ibis* 146 (Suppl. 2): 78–86. **Abstract**

Ratcliffe, D.A. (1993) *The Peregrine Falcon*. Second Edition. T. & A.D. Poyser, London.

Rebecca, G.W. & Bainbridge, I.P. (1998) The breeding status of the Merlin *Falco columbarius* in Britain in 1993–94. *Bird Study* 45: 172–187.

Redpath, S. & Thirgood, S. (1997) *Birds of Prey and Red Grouse* . HMSO, London.

Reed, T. (1985) Estimates of British breeding wader populations. *Wader Study Group Bulletin* 45: 11–12.

Rehfisch, M.M., Wernham, C.V. & Marchant, J.H. (eds) (1999) *Population, distribution, movements and survival of fish-eating birds in Great Britain.* DETR, London.

Rehfisch, M.M, Austin, G.E., Holloway, S.J., Allan, J.R. & O'Connell, M. (2002) An approach to the assessment of change in the numbers of Canada Geese *Branta canadensis* and Greylag Geese *Anser anser* in southern Britain. *Bird Study* 49: 50–59.

Robertson, P.A., Woodburn, M.I.A., Tapper, S.C. & Stoate, C. (1989) *Estimating game densities in Britain from land-use maps.* Institute of Terrestrial Ecology, Grange-over-Sands.

Robinson, R.A., Siriwardena, G.M. & Crick, H.Q.P. (2002) Status and population trends of the Starling *Sturnus vulgaris* in Great Britain. Pp 11–32. in Crick, H.Q.P., Robinson, R.A., Appleton, G.F. Clark, N.A. & Rickard, A.D. (eds) *Investigation into the causes of the decline of starlings and house sparrows in Great Britain.* Research Report 290. BTO, Thetford. **Full text**

Robinson, R.A., Crick, H.Q.P. & Peach, W.J. (2003) Population trends of Swallows *Hirundo rustica* breeding in Britain. *Bird Study* 50: 1–7. **Abstract**

Robinson, R.A., Green, R.E., Baillie, S.R., Peach, W.J. & Thomson, D.L. (2004) Demographic mechanisms of the population decline of the song thrush *Turdus philomelos* in Britain. *Journal of Animal Ecology* 73: 670–682. **Abstract**

Robinson, R.A., Siriwardena, G.M. & Crick, H.Q.P. (2005a) Status and population trends of Starling *Sturnus vulgaris* in Great Britain. *Bird Study* 52: 252–260. **Abstract**

Robinson, R.A., Siriwardena, G.M. & Crick, H.Q.P. (2005b) Size and trends of the House Sparrow *Passer domesticus* population in Great Britain. *Ibis* 147: 552–562. **Abstract**

Robinson, R.A., Freeman, S.N., Balmer, D.E. & Grantham, M.J. (2007) Cetti's Warbler *Cettia cetti*: analysis of an expanding population. *Bird Study* 54: 230–235.

Rowell, H.E. & Spray, C.J. (2004) *The Mute Swan* Cygnus olor *(Britain and Ireland populations) in Britain and Northern Ireland 1960/61 – 2000/01.* Waterbird Review Series, The Wildfowl & Wetlands Trust/Joint Nature Conservation Committee, Slimbridge. **Abstract/Full text**

Sanderson, F.J., Donald, P.F., Pain, D.J., Burfield, I.J. & van Bommel, F.P.J. (2006) Long-term population declines in Afro–Palearctic migrant birds. *Biological Conservation* 131: 93–105.

SAS Institute Inc. (1990) *SAS Language: Reference, Version 6, First Edition*. SAS Inst. Inc., Cary, NC.

Sellers, R.M. (2006) Breeding population estimate for Northern Wheatear in Britain. *British Birds* 99: 533–535.

Sim, I.M.W., Gibbons, D.W., Bainbridge, I.P. & Mattingley, W.A. (2001) Status of the Hen Harrier *Circus cyaneus* in the UK and the Isle of Man in 1998. *Bird Study* 48: 341–353.

Sim, I.M.W., Dillon, I.A., Eaton, M.A., Etheridge, B., Lindley, P., Riley, H., Saunders, R., Sharpe, C. & Tickner, M. (2007a) Status of the Hen Harrier *Circus cyaneus* in the UK and Isle of Man in 2004, and a comparison with the 1988/89 and 1998 surveys. *Bird Study* 54: 256–267.

Sim, I.M.W., Burfield, I.J., Grant, M.C., Pearce-Higgins, J.W. & Brooke, M. de L. (2007b) The role of habitat composition in determining breeding site occupancy in a declining Ring Ouzel *Turdus torquatus* population. *Ibis* 149: 374–385.

Siriwardena, G.M. (2004) Possible roles of habitat, competition and avian nest predation in the decline of the Willow Tit *Parus montanus* in Britain. *Bird Study* 51: 193–202. **Abstract**

Siriwardena, G.M. (2006) Avian nest predation, competition and the decline of British Marsh Tits *Parus palustris*. *Ibis* 148: 255–265. **Abstract**

Siriwardena, G.M., Baillie, S.R. & Wilson, J.D. (1998a). Variation in the survival rates of British farmland passerines with respect to their population trends. *Bird Study* 45: 276–292.

Siriwardena, G.M., Baillie, S.R., Buckland, S.T., Fewster, R.M., Marchant, J.H. & Wilson, J.D. (1998b) Trends in the abundance of farmland birds: a quantitative comparison of smoothed Common Birds Census indices. *Journal of Applied Ecology* 35: 24–43. **Abstract/Full text**

Siriwardena, G.M., Baillie, S.R. & Wilson, J.D. (1999) Temporal variation in the annual survival rates of six granivorous birds with contrasting population trends. *Ibis* 141: 621–636.

Siriwardena, G.M., Baillie, S.R., Crick, H.Q.P., Wilson, J.D. & Gates S. (2000a) The demography of lowland farmland birds. In *Proceedings of the 1999 BOU Spring Conference: Ecology and Conservation of Lowland Farmland Birds* (eds. N.J. Aebischer, A.D. Evans, P.V. Grice & J.A. Vickery), pp 117–133. British Ornithologists' Union, Tring.

Siriwardena, G.M., Baillie, S.R., Crick, H.Q.P. & Wilson, J.D. (2000b) The importance of variation in the breeding performance of seed-eating birds for their population trends on farmland. *Journal of Applied Ecology* 37: 128–148. **Abstract/Full text**

Siriwardena, G.M., Freeman, S.N. & Crick, H.Q.P. (2001) The decline of the Bullfinch *Pyrrhula pyrrhula* in Britain: is the mechanism known? *Acta Ornithologica* 36: 143–152.

Siriwardena, G.M., Robinson, R.A. & Crick, H.Q.P. (2002) Status and population trends of the house sparrow *Passer domesticus* in Great Britain. Pp 33–52 in Crick, H.Q.P., Robinson, R.A., Appleton, G.F., Clark, N.A. & Rickard, A.D. (eds) *Investigation into the causes of the decline of starlings and house sparrows in Great Britain.* Research Report 290. BTO, Thetford. **Full text**

Sitters, H.P., Fuller, R.J., Hoblyn, R.A., Wright, M.T., Cowie, N. & Bowden, C.G.R. (1996) The Woodlark *Lullula arborea* in Britain: population trends, distribution and habitat occupancy. *Bird Study* 43: 172–187.

Smith, K.W. (2005) Has the reduction in nest-site competition from Starlings *Sturnus vulgaris* been a factor in the recent increase of Great Spotted Woodpecker *Dendrocopos major* numbers in Britain? *Bird Study* 52: 307–313.

Smith, K.W. (2006) The implications of nest site competition from starlings *Sturnus vulgaris* and the effect of spring temperatures on the timing and breeding performance of great spotted woodpeckers *Dendrocopos major* in southern England. *Annales Zoologici Fennici* 43: 177–185. **Full text**

Snow, D.W. (1965) The relationship between census results and the breeding population of birds on farmland. *Bird Study* 12: 287–304.

Stoate, C. & Szczur, J. (2006) Potential influence of habitat and predation on local breeding success and population in Spotted Flycatchers *Muscicapa striata. Bird Study* 53: 328–330.

Stone, B.H., Sears, J., Cranswick, P.A., Gregory, R.D., Gibbons, D.W., Rehfisch, M.M., Aebischer, N.J. & Reid, J.B. (1997) Population estimates of birds in Britain and in the United Kingdom. *British Birds* 90: 1–22.

Stroud, D.A., Reed, T.M., Pienkowski, M.W. & Lindsay, R.A. (1987) *Birds, Bogs and Forestry.* Nature Conservancy Council, Peterborough.

Summers, R. (1998) The decline in clutch size of Hen Harriers. *BTO News* 218: 23.

Summers-Smith, J.D. (2003) The decline of the House Sparrow: a review. *British Birds* 96: 439–446.

Summers-Smith, J.D. (2007) Is unleaded petrol a factor in urban House Sparrow decline? *British Birds* 100: 558–559.

Szép, T. (1995) Relationship between west African rainfall and the survival of central European Sand Martins *Riparia riparia*. *Ibis* 137: 162–168.

Tapper, S. (1999) *A question of balance: game animals and their role in the British countryside.* The Game Conservancy Trust, Hampshire, UK.

Temple, S.A. & Wiens, J.A. (1989) Bird populations and environmental changes: can birds be bio-indicators? *American Birds* 43: 260–270.

Thomas, G.E. (1993) Estimating annual total heron population counts. *Applied Statistics* 42: 473–486.

Thomson, D.L., Baillie, S.R. & Peach, W.J. (1997) The demography and age-specific annual survival of British song thrushes *Turdus philomelos* during periods of population stability and decline. *Journal of Animal Ecology* 66: 414–424.

Toms, M.P., Crick, H.Q.P. & Shawyer, C.R. (2000) *Project Barn Owl Final Report.* BTO Research Report 197/ HOT Research Report 98/1. BTO/Hawk & Owl Trust, Thetford.

Toms, M.P., Crick, H.Q.P. & Shawyer, C.R. (2001) The status of breeding Barn Owls *Tyto alba* in the United Kingdom 1995–97. *Bird Study* 48: 23–37.

Tryjanowski, P., Sparks, T.H. & Crick, H.Q.P. (2006) Red-backed Shrike (*Lanius collurio*) nest performance in a declining British population: a comparison with a stable population in Poland. *Ornis Fennica* 83: 181–186.

Tucker, G.M. & Heath, M.F. (1994) *Birds in Europe: their conservation status.* Conservation Series no. 3. BirdLife International, Cambridge.

Vickery, J.A., Bradbury, R.B., Henderson, I.G., Eaton, M.A. & Grice, P.V. (2004) The role of agri-environment schemes and farm management practices in reversing the decline of farmland birds in England. *Biological Conservation* 119: 19–39.

Visser, M.E., van Noordwijk, A.J., Tinbergen, J.M. & Lessells, C.M. (1998) Warmer springs lead to mistimed reproduction in Great Tits (*Parus major*). *Proceedings of the Royal Society B, Biological Sciences* 265: 1867–1870. **Full text**

Wanless, S., Harris, M.P., Redman, P.& Speakman, J.R. (2005) Low energy values of fish as a probable cause of a major seabird breeding failure in the North Sea. *Marine Ecology Progress Series* 294: 1–8.

Watson, M., Aebischer, N.J., Potts, G.R. & Ewald, J.A. (2007) The relative effects of raptor predation and shooting on overwinter mortality of grey partridges in the United Kingdom. *Journal of Applied Ecology* 44: 972–982.

Whittingham, M.J., Swetnam, R.D., Wilson, J.D., Chamberlain, D.E. & Freckleton, R.P. (2005) Habitat selection by yellowhammers *Emberiza citrinella* on lowland farmland at two spatial scales: implications for conservation management. *Journal of Applied Ecology* 42: 270–290. **Abstract/Full text**

Wilson, A.M., Marchant, J.H., Gregory, R.D., Siriwardena, G.M. & Baillie, S.R. (1998) *Enhancements for monitoring of opportunistic bird populations.* Research Report 200. BTO, Thetford.

Wilson, A.M., Vickery, J.A. & Browne, S.J. (2001) Numbers and distribution of Northern Lapwings *Vanellus vanellus* breeding in England and Wales in 1998. *Bird Study* 48: 2–17.

Wilson, A.M., Henderson, A.C.B. & Fuller, R.J. (2002) Status of the Common Nightingale *Luscinia megarhynchos* in England at the end of the 20th century with particular reference to climate change. *Bird Study* 49: 193–204. **Abstract**

Wilson, A.M., Vickery, J.A., Brown, A., Langston, R.H.W., Smallshire, D., Wotton, S. & Vanhinsbergh, D. (2005) Changes in the numbers of breeding waders on lowland wet grasslands in England and Wales between 1982 and 2002. *Bird Study* 52: 55–69. **Abstract**

Wilson, J.D., Evans, J., Browne, S.J., & King, J.R. (1997) Territory distribution and breeding success of skylarks *Alauda arvensis* on organic and intensive farmland in Southern England. *Journal of Applied Ecology* 34: 1462–1478. **Abstract**

Wilson, J.D., Boyle, J., Jackson, D.B., Lowe, B. & Wilkinson, N.I. (2007) Effect of cereal harvesting method on a recent population decline of Corn Buntings *Emberiza calandra* on the Western Isles of Scotland. *Bird Study* 54: 362–370.

Winstanley, D., Spencer, R. & Williamson, K. (1974) Where have all the Whitethroats gone? *Bird Study* 21: 1–14.

Wotton, S.R. & Gillings, S. (2000) The status of breeding Woodlarks *Lullula arborea* in Britain in 1997. *Bird Study* 47: 212–224. **Abstract**

Wotton, S., Gibbons, D.W., Dilger, M. & Grice, P.V. (1998) Cetti's Warblers in the United Kingdom and the Channel Islands in 1996. *British Birds* 91: 77–89.

Wotton, S.R., Langston, R.H.W. & Gregory, R.D. (2002) The breeding status of the Ring Ouzel *Turdus torquatus* in the UK in 1999. *Bird Study* 49: 26–34.

Wright, L.J., Hoblyn, R.A., Sutherland, W.J. & Dolman, P.M. (2007) Reproductive success of Woodlarks *Lullula arborea* in traditional and recently colonized habitats. *Bird Study* 54: 315–323.

Wright, P.M. (2005) *Merlins of the south-east Yorkshire Dales.* Tarnmoor, Skipton.

Section 7 – Appendix

Back to Contents

7. Appendix – Summary tables of changes in population size and breeding performance

Back to top

Return to Contents

BBWC Home > Contents > Appendix > Tables of alerts and population increases from CBC/BBS

7.1 Tables of alerts and population increases from CBC/BBS

1a. Table of population alerts for CBC/BBS UK 1967-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Grey Partridge	38	115	-87	-92	-82	>50	
Corn Bunting	38	61	-86	-94	-76	>50	
Spotted Flycatcher	38	118	-84	-89	-78	>50	
Willow Tit	38	42	-83	-91	-71	>50	
Turtle Dove	38	105	-82	-88	-74	>50	
Yellow Wagtail	38	68	-70	-86	-39	>50	
Marsh Tit	38	86	-66	-75	-54	>50	
Whitethroat	38	415	-62	-73	-49	>50	
Yellowhammer	38	416	-55	-62	-46	>50	
Song Thrush	38	631	-50	-57	-43	>50	
Bullfinch	38	261	-49	-58	-36	>25	
Little Owl	38	52	-41	-64	-2	>25	
Mistle Thrush	38	422	-41	-52	-28	>25	
Dunnock	38	655	-34	-44	-21	>25	
Lapwing	38	215	-33	-63	-3	>25	

1b. Table of population alerts for CBC/BBS England 1967-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Tree Sparrow	38	81	-97	-99	-94	>50	
Lesser Redpoll	38	42	-89	-96	-76	>50	
Grey Partridge	38	103	-87	-91	-82	>50	
Spotted Flycatcher	38	91	-87	-91	-80	>50	
Corn Bunting	38	58	-84	-92	-73	>50	
Tree Pipit	38	43	-83	-91	-69	>50	
Starling	38	460	-83	-88	-77	>50	
Turtle Dove	38	104	-82	-89	-73	>50	
Willow Tit	38	39	-82	-91	-69	>50	
Linnet	38	349	-71	-78	-63	>50	
Yellow Wagtail	38	66	-68	-84	-40	>50	
Marsh Tit	38	80	-67	-76	-51	>50	
Whitethroat	38	361	-63	-74	-48	>50	
Willow Warbler	38	383	-60	-71	-48	>50	
Cuckoo	38	250	-59	-70	-44	>50	
Skylark	38	423	-59	-66	-51	>50	
Yellowhammer	38	363	-56	-65	-45	>50	

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Bullfinch	38	214	-50	-61	-38	>50	
Mistle Thrush	38	348	-48	-55	-38	>25	
Meadow Pipit	38	126	-44	-74	-13	>25	
Dunnock	38	542	-38	-46	-29	>25	
Sedge Warbler	38	77	-33	-68	-8	>25	

2a. Table of population alerts for CBC/BBS UK 1980-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Corn Bunting	25	74	-85	-93	-75	>50	
Grey Partridge	25	133	-82	-88	-78	>50	
Turtle Dove	25	121	-80	-86	-72	>50	
Willow Tit	25	44	-80	-89	-70	>50	
Spotted Flycatcher	25	136	-79	-84	-72	>50	
Yellow Wagtail	25	86	-67	-81	-47	>50	
Lapwing	25	294	-53	-64	-37	>50	
Yellowhammer	25	556	-53	-58	-48	>50	
Little Owl	25	65	-37	-57	-10	>25	
Mistle Thrush	25	567	-37	-45	-29	>25	
Marsh Tit	25	102	-33	-48	-12	>25	
Bullfinch	25	322	-32	-40	-17	>25	
Red-legged Partridge	25	217	-30	-56	-8	>25	
Tawny Owl	25	87	-27	-42	-6	>25	
Lesser Whitethroat	25	144	-25	-41	-8	>25	

2b. Table of population alerts for CBC/BBS England 1980-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Redpoll	25	38	-96	-98	-92	>50	
Tree Sparrow	25	77	-94	-97	-90	>50	
Corn Bunting	25	71	-84	-93	-74	>50	
Grey Partridge	25	119	-82	-87	-78	>50	
Tree Pipit	25	47	-82	-90	-71	>50	
Spotted Flycatcher	25	102	-81	-87	-74	>50	
Willow Tit	25	40	-81	-91	-70	>50	
Turtle Dove	25	120	-80	-87	-72	>50	
Starling	25	640	-79	-83	-73	>50	
Yellow Wagtail	25	84	-65	-79	-44	>50	
House Sparrow	25	525	-62	-73	-51	>50	
Cuckoo	25	331	-59	-67	-51	>50	
Willow Warbler	25	499	-57	-65	-49	>50	
Yellowhammer	25	486	-56	-63	-49	>50	
Skylark	25	582	-51	-58	-45	>50	
Mistle Thrush	25	463	-45	-51	-37	>25	
Meadow Pipit	25	172	-44	-62	-32	>25	
Linnet	25	465	-44	-57	-32	>25	
Lapwing	25	241	-43	-59	-27	>25	
Marsh Tit	25	93	-36	-51	-13	>25	
Bullfinch	25	258	-34	-46	-22	>25	
Red-legged Partridge	25	213	-32	-53	-7	>25	
Lesser Whitethroat	25	137	-29	-45	-11	>25	

3a. Table of population alerts for CBC/BBS UK 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	10	62	-61	-70	-47	>50	
Turtle Dove	10	205	-52	-58	-45	>50	
Grey Partridge	10	241	-39	-46	-30	>25	
Yellow Wagtail	10	164	-33	-44	-23	>25	
Corn Bunting	10	144	-30	-42	-16	>25	

3b. Table of population alerts for CBC/BBS England 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	10	55	-61	-71	-50	>50	
Turtle Dove	10	202	-52	-59	-44	>50	
Cuckoo	10	621	-46	-51	-42	>25	
Starling	10	1343	-40	-44	-36	>25	
Tree Pipit	10	73	-38	-54	-18	>25	
Lesser Redpoll	10	52	-35	-56	0	>25	
Grey Partridge	10	214	-33	-40	-25	>25	
Yellow Wagtail	10	161	-32	-45	-19	>25	
Willow Warbler	10	931	-31	-35	-26	>25	
Spotted Flycatcher	10	158	-29	-39	-15	>25	
Corn Bunting	10	138	-25	-38	-12	>25	

4a. Table of population alerts for CBC/BBS UK 2000-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Turtle Dove	5	174	-35	-42	-25	>25	
Willow Tit	5	46	-32	-49	-16	>25	

4b. Table of population alerts for CBC/BBS England 2000-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Turtle Dove	5	171	-35	-43	-27	>25	
Willow Tit	5	39	-35	-52	-18	>25	

Back to top

Appendix 7.1 Tables 5a and 5b

7.1 Tables of alerts and population increases from CBC/BBS

5a. Table of population increases of >50% for UK CBC/BBS 1967-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Pied Wagtail	38	380	87	38	172		
Jackdaw	38	447	87	23	200		
Wren	38	762	95	69	120		
Great Tit	38	681	100	75	127		
Magpie	38	581	102	67	158		
Reed Warbler	38	49	108	33	362		
Woodpigeon	38	663	143	30	428		
Blackcap	38	480	144	100	200		
Mallard	38	396	167	107	240		
Nuthatch	38	157	170	104	267		
Mute Swan	38	74	216	60	632		
Coot	38	89	227	121	593		
Great Spotted Woodpecker	38	293	317	204	582		
Buzzard	38	190	422	259	1244		

5b. Table of population increases of >50% for England CBC/BBS 1967-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Jackdaw	38	355	71	13	185		
Long-tailed Tit	38	283	73	31	138		
Reed Warbler	38	47	80	16	236		
Wren	38	607	88	58	115		
Pied Wagtail	38	293	92	40	174		
Pheasant	38	437	96	61	176		
Great Tit	38	562	96	76	132		
Magpie	38	493	105	64	157		
Carrion Crow	38	568	116	76	174		Includes Hooded Crow
Blackcap	38	422	134	91	195		
Woodpigeon	38	532	162	31	485		
Nuthatch	38	135	172	99	281		
Stock Dove	38	232	181	98	329		
Mute Swan	38	64	193	29	548		
Mallard	38	333	202	126	271		
Green Woodpecker	38	232	211	137	355		
Coot	38	81	224	110	723		
Great Spotted Woodpecker	38	263	306	197	535		

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Buzzard	38	113	455	267	1145		

Back to top

Appendix 7.2

7.2 Tables of alerts and population increases from WBS

1. Table of alerts for WBS waterways 1975-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	30	21	-96	-99	-93	>50	
Little Grebe	30	17	-71	-88	-38	>50	Small sample
Reed Bunting	30	52	-59	-75	-36	>50	
Pied Wagtail	30	64	-52	-63	-40	>50	
Redshank	30	18	-45	-79	-2	>25	Small sample

2. Table of alerts for WBS waterways 1980-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	25	20	-96	-99	-94	>50	
Little Grebe	25	17	-78	-89	-52	>50	Small sample
Redshank	25	19	-43	-76	-21	>25	Small sample
Pied Wagtail	25	65	-39	-52	-23	>25	
Reed Bunting	25	53	-37	-58	-8	>25	
Common Sandpiper	25	26	-26	-46	-11	>25	

3. Table of alerts for WBS waterways 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	10	15	-87	-92	-81	>50	Small sample
Little Grebe	10	14	-53	-74	-27	>50	Small sample
Sand Martin	10	23	-46	-61	-18	>25	
Redshank	10	16	-31	-44	-3	>25	Small sample

4. Table of population increases for WBS waterways 1975-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Mute Swan	30	44	56	2	134		
Oystercatcher	30	23	122	78	213		
Whitethroat	30	41	154	9	369		
Mallard	30	61	166	93	281		

Back to top

Appendix 7.3

7.3 Tables of alerts and population increases from CES

1. Table of alerts for CES adults 1984-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Linnet	21	20	-89	-96	-74	>50	
Lesser Redpoll	21	17	-88	-96	-71	>50	Small sample
Yellowhammer	21	18	-69	-90	-23	>50	Small sample
Willow Warbler	21	88	-60	-68	-50	>50	
Willow Tit	21	20	-56	-87	-21	>50	
Lesser Whitethroat	21	41	-50	-73	-28	>50	
Reed Bunting	21	59	-47	-60	-33	>25	
Reed Warbler	21	53	-31	-46	-10	>25	
Whitethroat	21	59	-28	-48	-9	>25	
Song Thrush	21	81	-27	-41	-9	>25	

2. Table of alerts for CES adults 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Redpoll	10	14	-66	-88	-30	>50	Small sample
Willow Tit	10	17	-50	-82	-22	>25	Small sample
Willow Warbler	10	95	-45	-51	-39	>25	
Lesser Whitethroat	10	39	-44	-57	-31	>25	
Sedge Warbler	10	76	-31	-42	-18	>25	

3. Table of alerts for CES adults 2000-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Redpoll	5	10	-51	-83	-16	>50	Small sample

4. Table of population increases for CES adults 1984-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Wren	21	95	55	30	84		
Blackcap	21	86	63	37	97		
Chiffchaff	21	67	159	68	284		

Back to top

Appendix 7.4

7.4 Tables of population declines and increases from BBS

1. Table of declines >25% for BBS UK 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	10	53	-62	-70	-47	>50	
Wood Warbler	10	52	-60	-72	-45	>50	
Turtle Dove	10	186	-53	-60	-45	>50	
Pied Flycatcher	10	41	-43	-56	-29	>25	
Grey Partridge	10	221	-39	-47	-30	>25	
Yellow Wagtail	10	155	-37	-48	-26	>25	
Curlew	10	447	-36	-41	-32	>25	
Whinchat	10	74	-34	-48	-19	>25	
Cuckoo	10	723	-30	-36	-25	>25	
Corn Bunting	10	136	-30	-41	-19	>25	
Starling	10	1588	-28	-33	-23	>25	
Siskin	10	115	-28	-43	-11	>25	
Spotted Flycatcher	10	199	-27	-38	-12	>25	

This table does not use formal alerts methods due to the small number of years of data.
Population changes are based on an annual population index with no smoothing or truncation of end points.

2. Table of declines >25% for BBS England 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	10	46	-63	-72	-49	>50	
Turtle Dove	10	183	-53	-58	-44	>50	
Cuckoo	10	579	-47	-50	-43	>25	
Starling	10	1299	-38	-42	-34	>25	
Yellow Wagtail	10	152	-36	-49	-25	>25	
Grey Partridge	10	195	-35	-42	-26	>25	
Tree Pipit	10	65	-34	-50	-11	>25	
Willow Warbler	10	850	-34	-39	-30	>25	
Spotted Flycatcher	10	142	-33	-46	-22	>25	
Lesser Redpoll	10	50	-31	-55	0	>25	

This table does not use formal alerts methods due to the small number of years of data.
Population changes are based on an annual population index with no smoothing or truncation of end points.

3. Table of declines >25% for BBS Scotland 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Black-headed Gull	10	72	-68	-83	-48	>50	
Curlew	10	121	-48	-54	-42	>25	
Lapwing	10	85	-40	-54	-27	>25	

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Swift	10	45	-38	-55	-18	>25	
Kestrel	10	42	-36	-50	-13	>25	
Hooded Crow	10	50	-31	-47	-8	>25	
Siskin	10	54	-31	-49	-12	>25	

This table does not use formal alerts methods due to the small number of years of data.
Population changes are based on an annual population index with no smoothing or truncation of end points.

4. Table of declines >25% for BBS Wales 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Curlew	10	39	-47	-57	-34	>25	
Starling	10	82	-45	-62	-24	>25	
Yellowhammer	10	37	-37	-53	-20	>25	
Goldcrest	10	78	-35	-56	-1	>25	
Garden Warbler	10	54	-29	-46	-8	>25	
Whitethroat	10	72	-28	-44	-14	>25	
Willow Warbler	10	150	-28	-38	-16	>25	
Coal Tit	10	66	-27	-46	-2	>25	

This table does not use formal alerts methods due to the small number of years of data.
Population changes are based on an annual population index with no smoothing or truncation of end points.

Back to top

Appendix 7.4 continued

7.4 Tables of population declines and increases from BBS

5. Table of population increases for BBS UK 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Blackcap	10	1229	52	45	60		
Tree Sparrow	10	141	55	13	101		
Raven	10	202	70	37	117		
Great Spotted Woodpecker	10	751	97	85	106		
Canada Goose	10	369	106	66	159		
Greylag Goose	10	115	124	12	281		
Stonechat	10	112	161	106	224		

This table does not use formal alerts methods due to the small number of years of data.
Population changes are based on an annual population index with no smoothing or truncation of end points.

6. Table of population increases for BBS England 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Coot	10	202	51	27	84		
Grey Wagtail	10	119	51	24	82		
Green Woodpecker	10	600	54	43	65		
Buzzard	10	361	82	62	107		
Great Spotted Woodpecker	10	666	93	81	104		
Canada Goose	10	346	96	50	147		
Greylag Goose	10	93	105	46	230		
Stonechat	10	43	159	79	264		
Raven	10	64	163	82	304		
Ring-necked Parakeet	10	29	418	.	.		

This table does not use formal alerts methods due to the small number of years of data.
Population changes are based on an annual population index with no smoothing or truncation of end points.

7. Table of population increases for BBS Scotland 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Wren	10	188	62	41	81		
Mistle Thrush	10	64	62	32	115		
Goldcrest	10	77	73	30	103		
House Martin	10	50	81	25	128		
Whitethroat	10	63	89	42	165		
Blackcap	10	35	142	75	209		

This table does not use formal alerts methods due to the small number of years of data.
Population changes are based on an annual population index with no smoothing or truncation of end points.

8. Table of population increases for BBS Wales 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Collared Dove	10	61	51	5	100		
Blackcap	10	105	52	30	79		
Goldfinch	10	113	55	22	113		
Great Spotted Woodpecker	10	58	67	38	122		
House Sparrow	10	109	70	45	103		
Herring Gull	10	72	147	26	303		
Stonechat	10	31	200	.	.		

This table does not use formal alerts methods due to the small number of years of data.
Population changes are based on an annual population index with no smoothing or truncation of end points.

9. Table of population increases for BBS Northern Ireland 1995-2005

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Meadow Pipit	10	59	52	19	108		
Wren	10	79	54	20	91		
Goldcrest	10	37	62	9	114		
Woodpigeon	10	70	64	28	107		
Coal Tit	10	52	66	22	98		
House Martin	10	34	79	16	156		
Starling	10	67	86	32	158		
Dunnock	10	59	91	29	134		
Great Tit	10	58	101	52	124		
Hooded Crow	10	69	103	54	161		
Greenfinch	10	42	111	28	223		
Goldfinch	10	32	459	.	.		

This table does not use formal alerts methods due to the small number of years of data.
Population changes are based on an annual population index with no smoothing or truncation of end points.

Back to top

Back to Contents

Images: Tree Pipit, by Graham Catley / BTO; Lapwing, by Sarah Kelman / BTO

Breeding Birds in the Wider Countryside: their conservation status 2007

This report is a "one-stop-shop" for information about the population status of our common terrestrial birds. With one page per species, readers can quickly find all the key information about trends in population size and breeding performance as measured by BTO monitoring schemes. It provides an overview of trends for the period 1966–2006.

This report is the third in a series, prepared within the Partnership between the British Trust for Ornithology (BTO) and the Joint Nature Conservation Committee (JNCC) (on behalf of Natural England, Scottish Natural Heritage, Countryside Council for Wales and the Environment & Heritage Service of Northern Ireland) as part of its programme of research into nature conservation.

It is the result of the sustained long-term fieldwork efforts of many thousands of the BTO's volunteer supporters. Without their enthusiasm for collecting these hard-won facts, the cause of conservation in the UK would be very much the poorer.

Baillie, S., Marchant, J., Crick, H., Noble, D., Balmer, D., Barimore, C., Coombes, R., Downie, I., Freeman, S., Joys, A., Leech, D., Raven, M., Robinson, R. & Thewlis, R. 2008. Breeding Birds in the Wider Countryside: their conservation status 2007. *BTO Research Report*, BTO, Thetford, UK.

Birds
Science
People