Breeding Birds in the Wider Countryside: their conservation status 2008

Trends in numbers and breeding performance for UK birds

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Spotted Flycatchers, among the long-distance migrants that are of conservation concern, have decreased by 81% over the past 25 years: nest losses have increased greatly

Using this web site

This web site 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 web page per species, users can quickly find all the key information about trends in population size and breeding performance over the period 1967–2007, 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 39 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)
- 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 the maximum period available (usually 39 years).

Other pages provide 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**. A detailed **references** section lists almost 300 of the most relevant recent publications, with onward links to abstracts or full text where available, and is a valuable key to recent scientific work by BTO and other researchers.

You can navigate your way around the site using links from the **contents page**, from the **species index**, and between sections. Alternatively, use the drop-down menus accessible from the menu bar at the top of each page. 'Species quick links', on the right-hand side of the menu bar, provides a drop-down list (in taxonomic order) with quick access to the species accounts.

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.* 2008**), and rare species that are included in the reports of the **Rare Breeding Birds Panel** (e.g. **Holling & RBBP 2007b**, **2008**).

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, David Leech, Andrew Joys, David Noble, Carl Barimore, Mark Grantham, Kate Risely and Rob Robinson. 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 39 years) provide alerts to population declines of greater than 50% 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**, **Willow Tit**, **Marsh Tit**, **Starling**, **House Sparrow**, **Tree Sparrow**, **Linnet**, **Lesser Redpoll**, **Yellowhammer** and **Corn Bunting**. In addition, **Lapwing** has declined by 53% in the last 25 years, although its 39-year decline is measured at 34%.

Corn Buntings have declined by 87% over the last 39 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 from only a subset of its breeding habitats. Apart from these two, all these rapidly declining species are already red or amber listed on the Population Status of Birds (**PSoB**) list (**Gregory *et al.* 2002**).

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. **Lesser Redpoll**, **Tree Pipit** and **Woodcock**, in particular, have limited data.

A further ten species trigger alerts as a result of long-term declines of between 25% and 50% over periods of 22 to 39 years. These are **Common Sandpiper**, **Redshank**, **Little Owl**, **Meadow Pipit**, **Dunnock**, **Mistle Thrush**, **Sedge Warbler**, **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

Yellow Wagtails have declined by 70% over the last 25 years

We draw special attention to the alerts for four species that have recently crossed the 50% decline threshold in the 25-year period. These are **Yellow Wagtail** (-70%), **Cuckoo** (-61%), **Willow Warbler** (-58%), and **Lapwing** (-53%). These species, all currently amber listed, may be candidates for addition to the red list at the next PSoB revision. Lapwing is an addition to this set of species this year; no species has fallen out.

We also identify three species that may be candidates to join the amber list (from green) owing to declines of between 25% and 50%. These are **Common Sandpiper** (-28% over 25 years), **Sedge Warbler** (-33% over 22 years) and **Lesser Whitethroat** (-59% over 22 years). **Sedge Warbler** is an addition to this set of species this year; one species, **Tawny Owl**, has fallen out because its decline no longer meets alert thresholds. **Little Owl** has also decreased strongly (-46% over 25 years) but is not eligible for amber listing because it is not native to the UK.

The alerts for **Sedge Warbler** and **Lesser Whitethroat** are raised by CES data, with census results showing shallower, non-significant declines. In addition, a CES decline of 33% in **Reed Warbler** may warrant investigation, although CBC, BBS and WBS results indicate that the species has increased.

Bullfinch is a currently red-listed species, but its long-term population decline is now marginally under the red-list threshold, at -50% over 39 years, due to a population increase of 7% over the past five years. Unless the decrease resumes, this species may be a candidate for changing from the red to the amber list. Similarly the red-listed **Reed Bunting** now shows only a 19% decline over the last 39 years, with a significant upturn recorded over the past ten years. It is now questionable whether conservation listing is still warranted for this species.

Three currently amber-listed species, **Kestrel**, **Grey Wagtail** and **Goldcrest**, would no longer meet the population change criterion for amber listing, although **Kestrel** is also amber listed for reasons to do with its European status.

Positive changes

Only a few of those species that have declined previously show evidence of improvements in status, with eight formerly declining species showing clear positive trends over the last ten years. These are **Snipe**, **Grey Wagtail**, **Dunnock**, **Song Thrush**, **Whitethroat**, **Goldcrest**, **Tree Sparrow** and **Reed Bunting**.

Reed Buntings have begun to recover from their long-term decline

The increases in the red-listed **Reed Bunting** and **Song Thrush** are particularly encouraging, as are the positive trends for the amber-listed **Grey Wagtail** and **Dunnock**. 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 ten years, much of the former range across lowland Britain lost since the 1960s remains unoccupied, and moreover the population has been declining again since 2003.

Seventeen species have more than doubled over the longest time period for which data are available (usually 39 years). These are **Mute Swan**, **Shelduck**, **Mallard**, **Goosander**, **Oystercatcher**, **Sparrowhawk**, **Buzzard**, **Stock Dove**, **Collared Dove**, **Woodpigeon**, **Green Woodpecker**, **Great Spotted Woodpecker**, **Nuthatch**, **Blackcap**, **Great Tit**, **Magpie** and **Carrion Crow**. **Canada Goose** has been lost to this group since the last report, WBS counts having levelled off, but BBS data indicate a continuing strong increase.

Reduced breeding success

Linnets 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 **Nightjar**, **Willow Warbler**, **Spotted Flycatcher**, **House Sparrow** and **Bullfinch** remain to be determined, as do the implications of the large reductions in CES productivity measures recorded for **Nightingale**, **Song Thrush**, **Sedge Warbler** and **Willow Warbler**. 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**, **Buzzard** and **Barn Owl**; the corvids **Jackdaw**, **Magpie**, **Carrion Crow** and **Raven**; the resident seed-eaters **Collared Dove**, **Stock Dove** and **Greenfinch**; the resident insectivores **Great Spotted Woodpecker**, **Robin**, **Stonechat**, **Wren**, **Nuthatch**; and one migrant, **Redstart**.

Breeding success is improving for Redstarts

Early breeding

Data from the Nest Record Scheme provide strong evidence of shifts towards earlier laying in a range of

On average, Grey Herons are now laying 28 days earlier than in 1968

species, linked to climate change (**Crick *et al.* 1997**, **Crick & Sparks 1999**). We have now identified 40 species that, on average, are laying up to 31 days earlier than they did 38 years earlier. The species involved represent a wide range of taxonomic and ecological groups, including raptors (**Kestrel** – 6 days), waterbirds (**Moorhen** – 5 days), waders (**Oystercatcher** – 7 days), owls (**Tawny Owl** – 7 days), migrant insectivores (**Willow Warbler** – 6 days), resident insectivores (**Blue Tit** – 7 days), corvids (**Magpie** – 31 days) and resident seed-eaters (**Chaffinch** – 8 days).

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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;

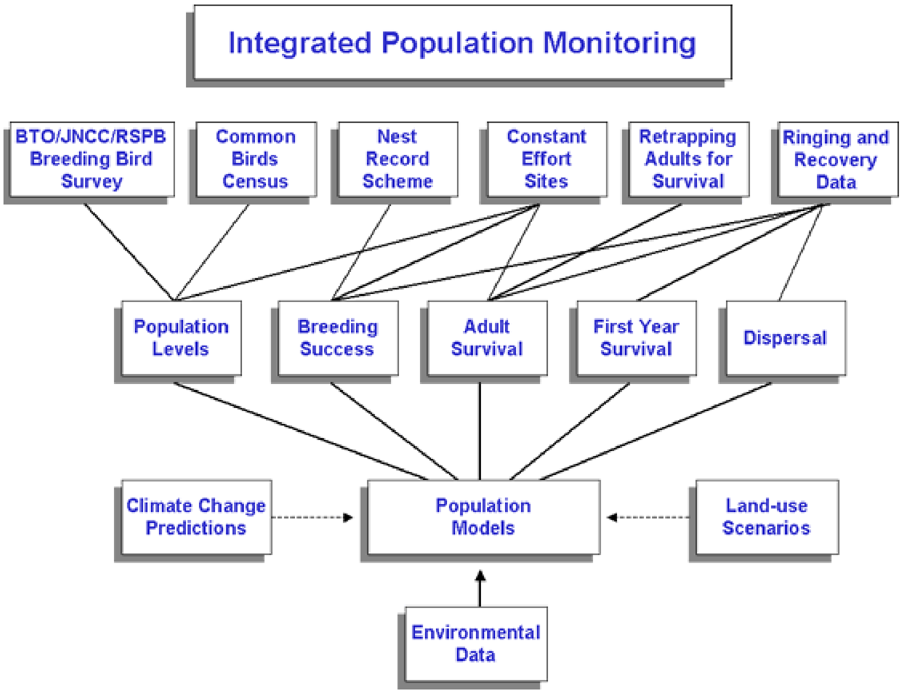
(c) to provide data that will assist in identifying the causes of such changes; and

(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 ran from 1974 to 2007. WBS observers mapped the territories of birds along rivers, streams and canals on 80–130 plots each year, each on average 4.5 km long. WBS has now been 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 from a high proportion of the UK's heronries every year 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.



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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.

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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.* 2008**), and the majority of species covered by the **Rare Breeding Birds Panel** (**Holling & RBBP 2007b**, **2008**), are not included here. Wintering populations of waterfowl are covered by the Wetland Bird Survey annual reports (e.g. **Austin *et al.* 2008**) and by the WeBS alerts system (**Maclean & Austin 2008**).

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

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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.

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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 species and of habitats.

The BBS uses line transects rather than the more intensive territory-mapping method that was 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, but an alternative, on-line method for submission of BBS data was introduced in 2003 is already used by the majority of observers – 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, 2,879 in 2005 and 3,295 in 2006. The sample soared to 3,604 in 2007 (**Risely *et al.* 2008**). 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 100 species, 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 allotted 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 **section 2.8.4** 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.

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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 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 dedicated 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 outline maps at a standard scale of 1:2,500. 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, through the linking of CBC with BBS, 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 changed little 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

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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 in 1962. Because observers chose their own plots, however, its coverage had always been uneven. Coverage was predominantly in lowland, southeastern Britain, where the numbers of potential volunteers are greatest, while coverage was more patchy in more sparsely populated regions and especially the uplands (**Marchant *et al.* 1990**). CBC plots were situated in a limited number of habitats, predominantly farmland and woodland. Within a large rectangle of southeastern Britain (England and Wales south and east from Seascale, Scarborough and Exeter), the plots are nevertheless believed to be broadly representative, at least of lowland land-classes (**Fuller *et al.* 1985**). For species such as Wood Warbler and Meadow Pipit that have the greater part of their numbers in northern or western Britain, however, the CBC may not have accurately reflected 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)**, 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, a 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 degrees of freedom about one third the number of years. 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 one of the recent 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. Note that positive and negative percentage changes are not directly equivalent: for example, a decrease of 20% would require an increase of 25% to restore the population to its former level. 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

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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 has been 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 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 has covered 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 closed 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

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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 24 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

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

CLICK HERE to visit the Little Egret 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 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, but will also include a small component of mortality during the immediate post-fledging period. Between-year recaptures of ringed birds can also be used to calculate annual survival rates of adult birds, although this requires specialised analytical techniques (e.g. **Peach 1993**) and is not considered further here. Further details of the CES Scheme are presented by **Peach *et al.* (1996)** and methods of analysis are detailed in **Peach *et al.* (1998)** for abundance measures and **Robinson *et al.* (2007)** for productivity measures.

The CES Scheme began in 1983 with 46 sites and now has around 120. 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 routinely monitors the populations of 25 species of passerines in scrub and wetland habitats.

Data analysis

Smoothed trends in the abundance of adults and young are separately assessed using a generalised additive model (GAM), with 85% confidence intervals calculated by bootstrapping (**Fewster *et al.* 2000**). 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 GAM (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 the most 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 (**Robinson *et al.* 2007**).

Data are presented graphically with the smoothed trend in blue and their 85% confidence limits in green. 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

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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 now 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 & Barimore 2008**) 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 a review).

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 ten per year, and are presented with a caveat for small sample sizes if the mean number of records contributing data was between ten and 30 per year.

Next section – 2.8 The alert system

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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 by **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 possibly 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 flag up clearly 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 it takes BTO 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 for year x (e.g. 2008) we have analyses of monitoring data up to year (x-1) (e.g. 2007). As we drop the final year of the smoothed time series, we report here on change measures up to year (x-2) (e.g. 2006).

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**). Joint CBC/BBS indices have been calculated using only the data from 1966 onwards, therefore, 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 index values for any two given years is statistically significant: if the index values for two given years are assumed to be 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 them 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 well separated.

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 present joint UK or England CBC/BBS trends only if there was no substantial or statistical difference between the trends from the two schemes over the period when they ran in parallel. Thus, since BBS results are drawn from a random sample, the trends are always considered to be 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 instead.

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 presented only where samples reach at least 40 plots.

Technical details available here

Next section – 2.9 Statistical methods used for alerts

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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 program TRIM (**Pannekoek & van Strien 1996**), which is widely used for population monitoring.

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 smoothing function of year. It was not straightforward to fit GAMs to the CBC/BBS or Heronries Census data and we have therefore fitted smooth curves with a similar degree of smoothing to the annual indices (details 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, whereas 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	1966–2007	43	13
Waterways Bird Survey	1974–2007	35	11
Constant Effort Sites	1983–2007	26	8
Heronries Census	1928–2007	81	24

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 the combined CBC and BBS 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. The overall result is a smoothed trend that is mathematically equivalent to that produced from a generalised additive model.

A similar method as employed for the joint CBC/BBS trend has been used for the BBS alone. This adopted 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 involving 199 bootstraps. 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

GAMs were fitted to the CES data for catches of adults and juveniles separately with the addition of an offset to correct for missing visits. 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, in a similar manner to that employed for the Waterways Bird Survey.

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**, **Ward *et al.* 2007**). 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 (**Austin *et al.* 2008**). 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

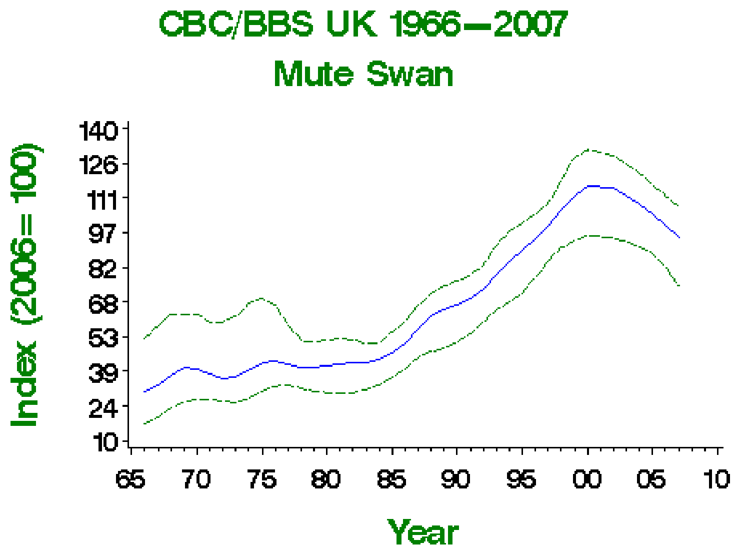


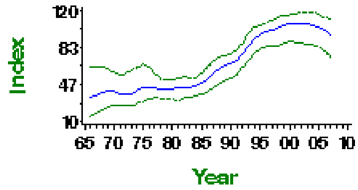
Table of population changes for Mute Swan

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	80	199	33	473		
	25	1981-2006	117	139	64	277		
	10	1996-2006	234	7	-9	25		
	5	2001-2006	254	-14	-25	-4		
CBC/BBS England	39	1967-2006	69	181	13	560		Small CBC sample
	25	1981-2006	100	132	56	255		Small CBC sample
	10	1996-2006	201	1	-15	18		
	5	2001-2006	215	-7	-17	9		
WBS waterways	31	1975-2006	45	52	-1	152		
	25	1981-2006	47	33	3	89		
	10	1996-2006	55	2	-13	23		
	5	2001-2006	48	-7	-17	6		
BBS UK	11	1995-2006	213	10	-7	40		
	10	1996-2006	221	6	-10	24		
	5	2001-2006	254	-12	-23	-2		
BBS England	11	1995-2006	182	1	-18	21		

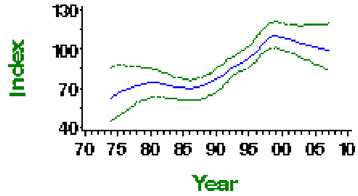
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

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

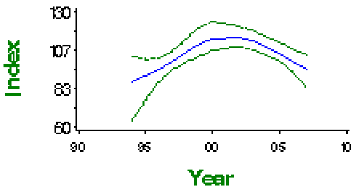
CBC/BBS England 1966—2007
Mute Swan



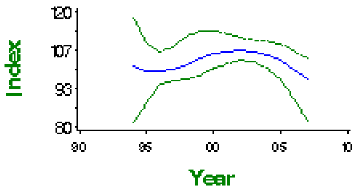
Waterways Bird Survey 1974—2007
Mute Swan



BBS UK 1994—2007
Mute Swan



BBS England 1994—2007
Mute Swan

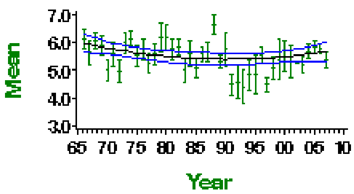


Productivity trends

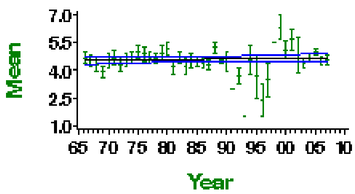
Table of productivity changes for Mute Swan

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	22	Curvilinear	5.89 eggs	5.64 eggs	-4.2%	Small sample
Brood size	38	1968-2006	38	None				
Daily failure rate (eggs)	38	1968-2006	30	Curvilinear	0.61% nests/day	1.41% nests/day	131.1%	Small sample
Daily failure rate (chicks)	38	1968-2006	25	None				Small sample
Laying date	38	1968-2006	13	None				Small sample

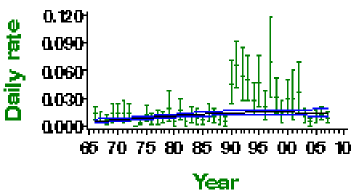
Clutch size 1966—2007
Mute Swan



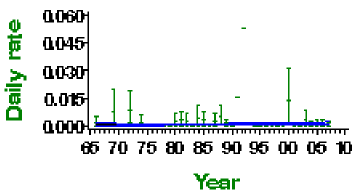
Brood size 1966—2007
Mute Swan

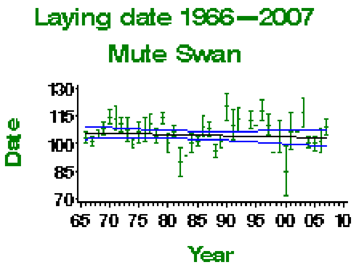


Egg stage nest failure rate
Mute Swan



Chick stage nest failure rate
Mute Swan





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 (**Austin *et al.* 2008**).

Population changes

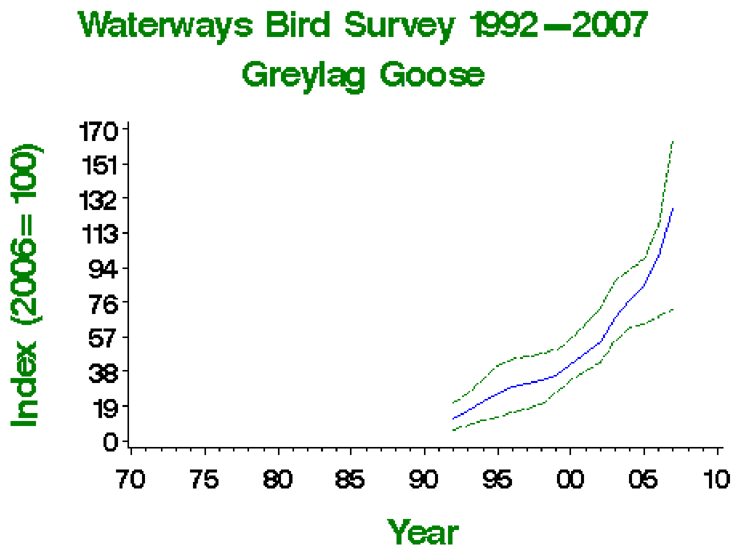


Table of population changes for Greylag Goose

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	13	1993-2006	10	507	106	1427		Small sample
	10	1996-2006	12	245	35	679		Small sample
	5	2001-2006	11	113	0	221		Small sample
BBS UK	11	1995-2006	127	120	21	281		
	10	1996-2006	133	116	33	235		
	5	2001-2006	173	58	23	89		
BBS England	11	1995-2006	103	126	64	257		
	10	1996-2006	109	116	56	215		
	5	2001-2006	142	39	16	66		

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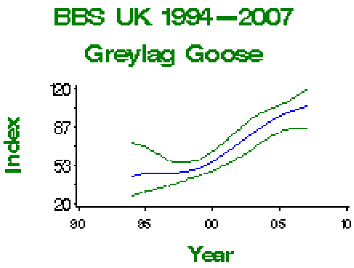

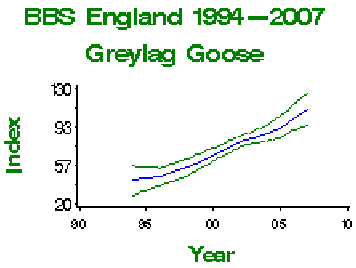

Productivity trends

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 slowing 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 (**Austin *et al.* 2008**).

Population changes

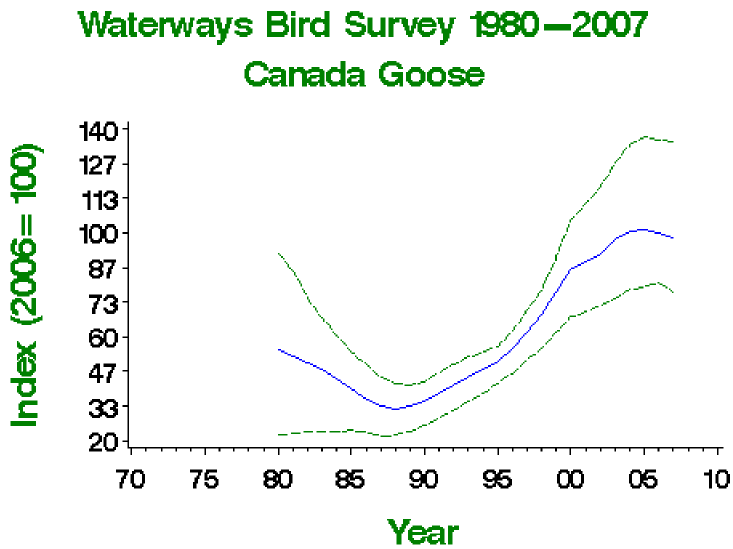

Table of population changes for Canada Goose

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	25	1981-2006	30	90	-9	698		
	10	1996-2006	38	80	41	169		
	5	2001-2006	36	12	-7	46		
BBS UK	11	1995-2006	393	115	72	159		
	10	1996-2006	409	103	64	141		
	5	2001-2006	490	46	25	64		
BBS England	11	1995-2006	367	102	58	152		
	10	1996-2006	382	92	52	141		
	5	2001-2006	453	41	17	57		

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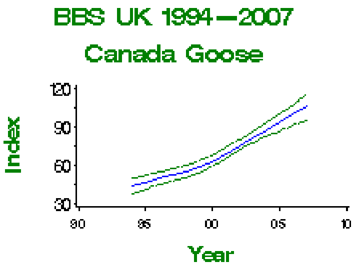

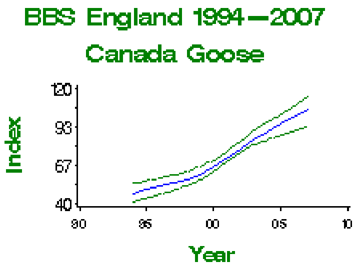

Productivity trends

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 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 (**Austin *et al.* 2008**). The BBS index is affected by occasional large counts, and therefore its confidence intervals are relatively wide. BBS results suggest an accelerating increase since 1994.

Population changes

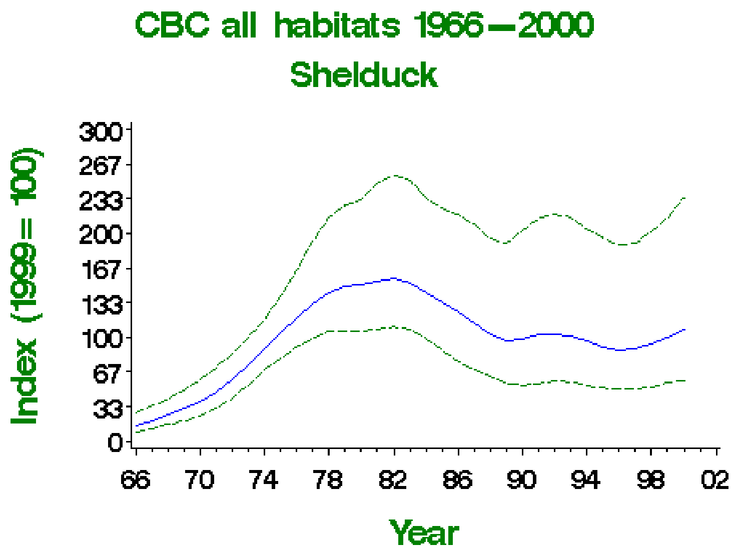

Table of population changes for Shelduck

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	11	1995-2006	131	-2	-30	35		
	10	1996-2006	135	8	-17	38		
	5	2001-2006	144	24	0	53		
BBS England	11	1995-2006	108	21	-11	48		
	10	1996-2006	111	25	-9	52		
	5	2001-2006	116	33	-2	65		

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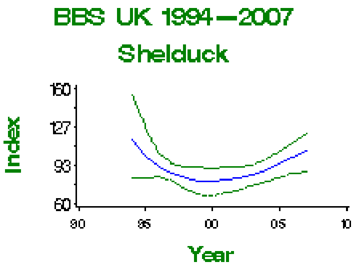

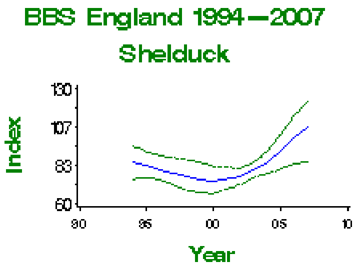

Productivity trends

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 at least the late 1980s (**Austin *et al.* 2008**), linked apparently to a decrease in continental immigration (**Mitchell *et al.* 2002**).

Population changes

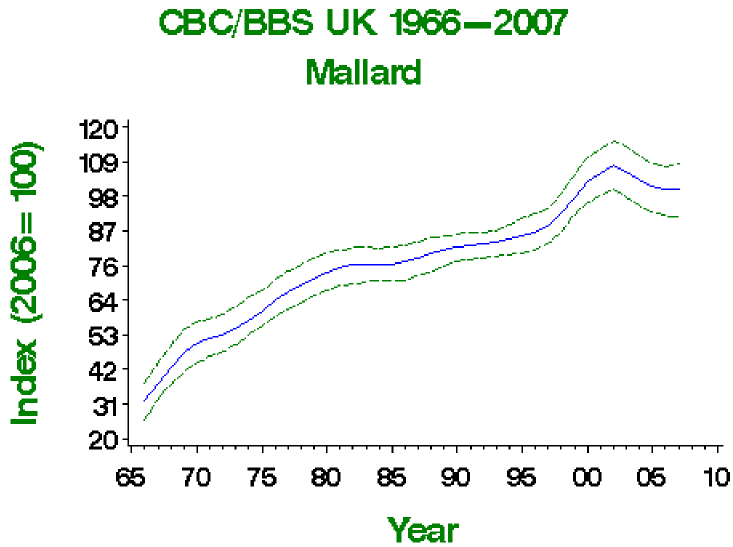

Table of population changes for Mallard

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	427	166	111	226		
	25	1981-2006	608	34	14	55		
	10	1996-2006	1204	16	7	24		
	5	2001-2006	1286	-5	-10	0		
CBC/BBS England	39	1967-2006	360	205	138	279		
	25	1981-2006	510	44	20	71		
	10	1996-2006	1009	27	18	36		
	5	2001-2006	1078	2	-4	6		
WBS waterways	31	1975-2006	92	165	88	258		
	25	1981-2006	97	105	45	166		
	10	1996-2006	96	-3	-13	8		
	5	2001-2006	84	-4	-12	4		
BBS UK	11	1995-2006	1115	19	10	28		
	10	1996-2006	1151	16	8	24		
	5	2001-2006	1286	-3	-8	2		
BBS England	11	1995-2006	932	30	22	41		
	10	1996-2006	963	27	20	36		
	5	2001-2006	1078	4	-2	8		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	96	-26	-37	-17	>25	
BBS Wales	11	1995-2006	62	-9	-45	50		
	10	1996-2006	65	-1	-37	50		
	5	2001-2006	75	25	2	54		

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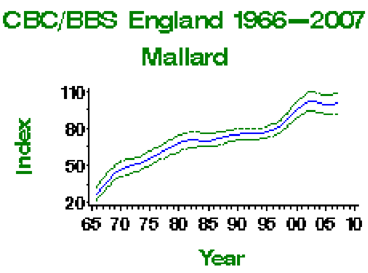

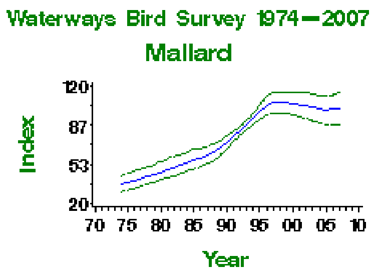

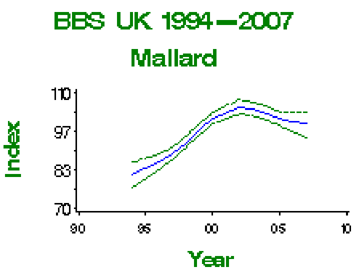

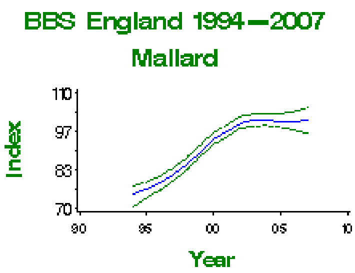

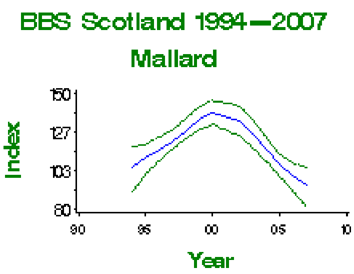

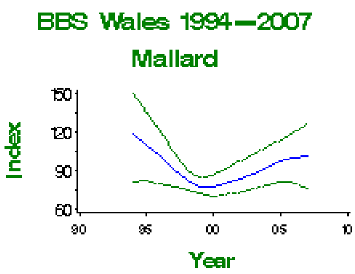

Productivity trends

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*, a non-native invasive species that 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 (**Austin *et al.* 2008**). In contrast, moderate recent declines elsewhere in northern Europe have resulted in reclassification as a species of conservation concern (**BirdLife International 2004**).

Population changes

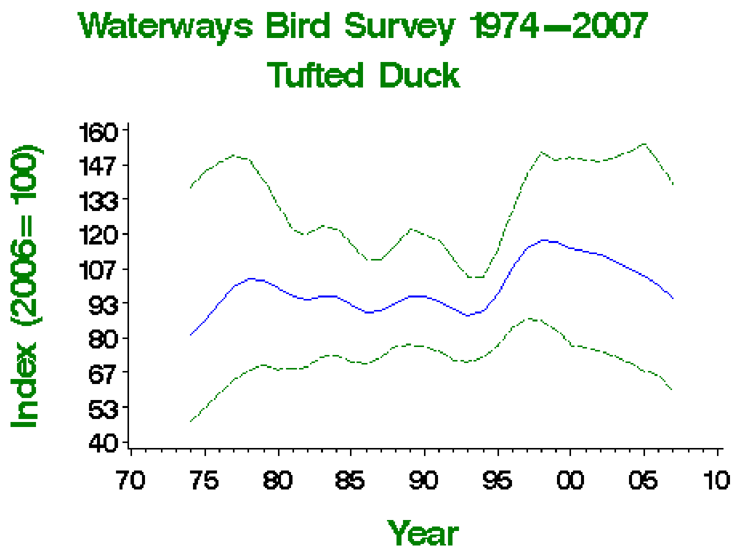

Table of population changes for Tufted Duck

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	31	1975-2006	23	15	-57	168		
	25	1981-2006	24	4	-53	127		
	10	1996-2006	25	-6	-42	56		
	5	2001-2006	17	-12	-36	23		Small sample
BBS UK	11	1995-2006	136	46	14	81		
	10	1996-2006	140	40	10	67		
	5	2001-2006	145	16	-8	39		
BBS England	11	1995-2006	117	27	-1	64		
	10	1996-2006	121	21	-3	54		
	5	2001-2006	125	11	-6	30		

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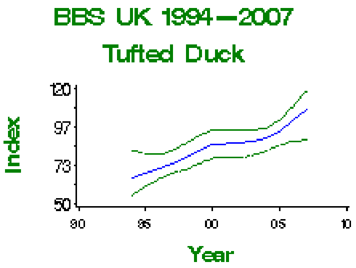

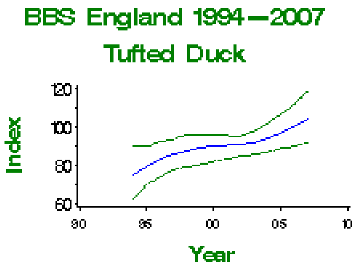

Productivity trends

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 subsequently began to decline (**Austin *et al.* 2008**).

Population changes

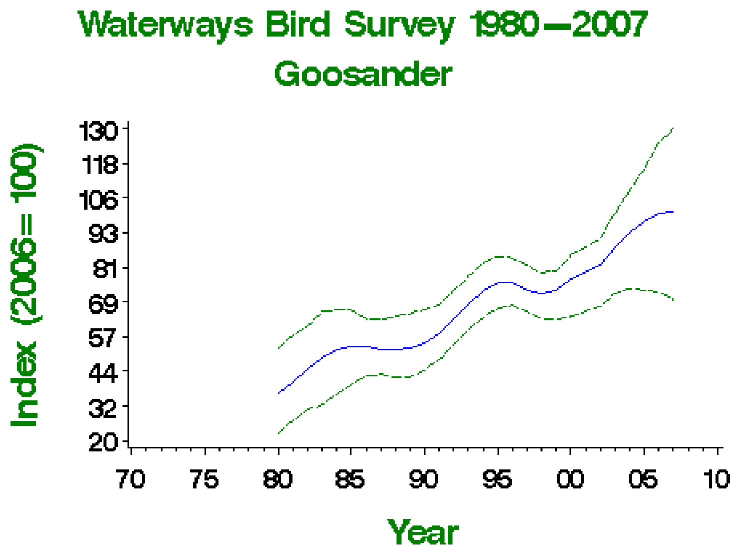

Table of population changes for Goosander

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	25	1981-2006	23	144	18	405		
	10	1996-2006	25	32	-12	88		
	5	2001-2006	24	26	-2	60		

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: priority species

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

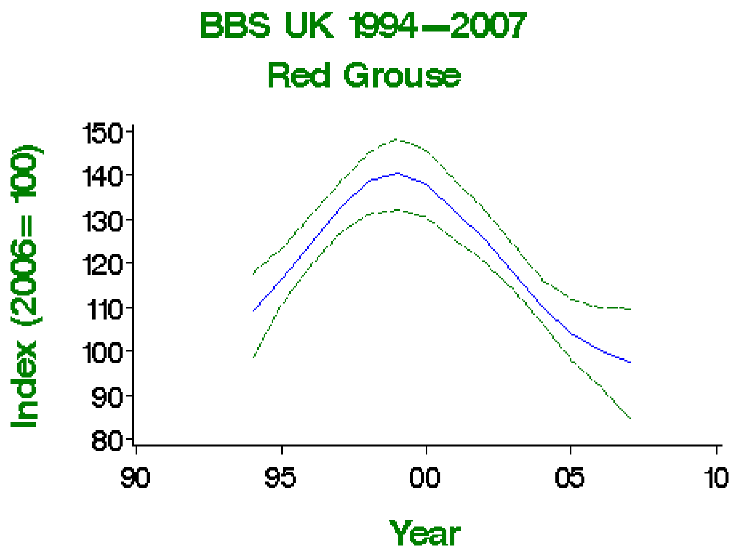

Table of population changes for Red Grouse

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	106	-14	-27	-2		
	10	1996-2006	108	-20	-31	-7		
	5	2001-2006	105	-24	-35	-12		
BBS England	11	1995-2006	48	-14	-30	3		
	10	1996-2006	50	-16	-31	-1		
	5	2001-2006	56	-19	-32	-7		
BBS Scotland	11	1995-2006	53	-15	-32	10		
	10	1996-2006	52	-22	-38	0		
	5	2001-2006	43	-26	-44	-6	>25	

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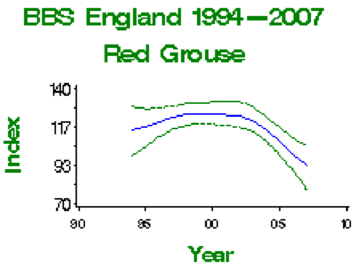

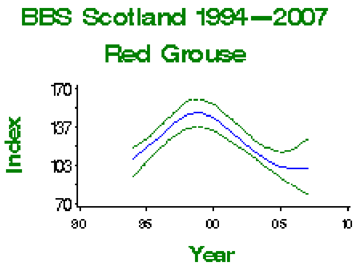

Productivity trends

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 for the purpose of being shot by hunters, its population decrease over the recent 25-year period raises no conservation concern. Moreover, BBS data indicate that significant increase has occurred in the UK since 1994. Game-bag data show that the numbers released per unit area onto shooting estates, and the numbers shot, have both increased by a remarkable eightfold since 1980. Around 2 million birds were being released each year during the 1990s (Tapper 1999). The effects of large-scale releases of this species and Pheasant on native fauna have been little 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

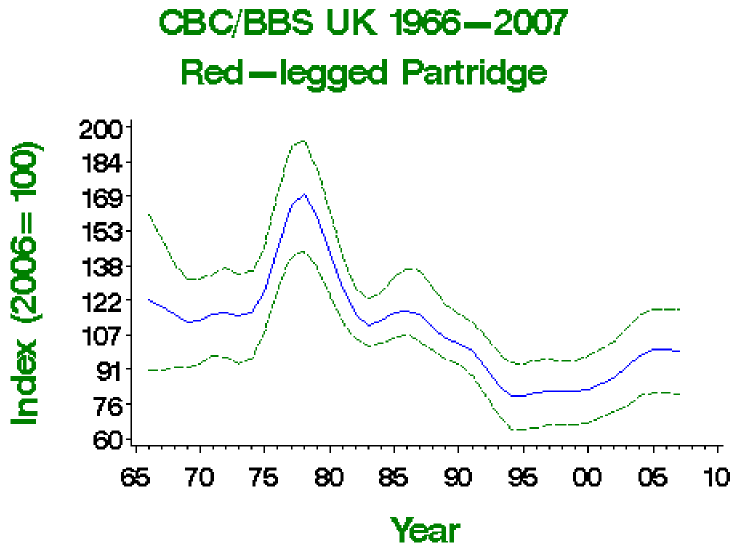

Table of population changes for Red-legged Partridge

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	167	-16	-46	35		
	25	1981-2006	243	-21	-45	7		
	10	1996-2006	497	24	13	35		
	5	2001-2006	549	18	10	25		
CBC/BBS England	39	1967-2006	164	-19	-47	18		
	25	1981-2006	238	-24	-44	-3		
	10	1996-2006	487	20	10	31		
	5	2001-2006	535	17	9	25		
BBS UK	11	1995-2006	465	29	17	42		
	10	1996-2006	481	24	14	36		
	5	2001-2006	549	16	9	22		
BBS England	11	1995-2006	456	24	13	36		
	10	1996-2006	472	21	10	32		
	5	2001-2006	535	14	8	20		

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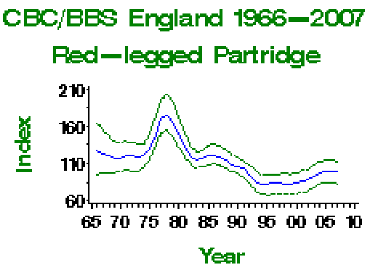

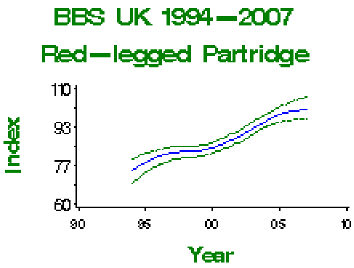

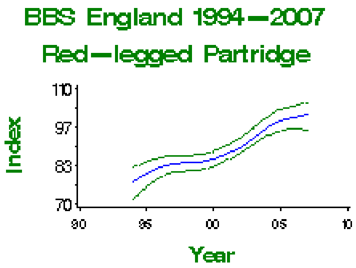

Productivity trends

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. Artificial rearing has increased since the mid 1980s, despite the failure of restocking as a means of restoring breeding numbers (see here), while releases of non-native gamebirds, which have increased greatly, can be detrimental to the native species. Infection with caecal nematodes from farm-reared Pheasants may be contributing to the decline of Grey Partridges in Britain (Tompkins *et al.* 2002).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. Grey Partridge is one of the most strongly declining bird species in Europe, having decreased at an annual rate of 7% during 1980–2005 (PECBMS 2007).

Population changes

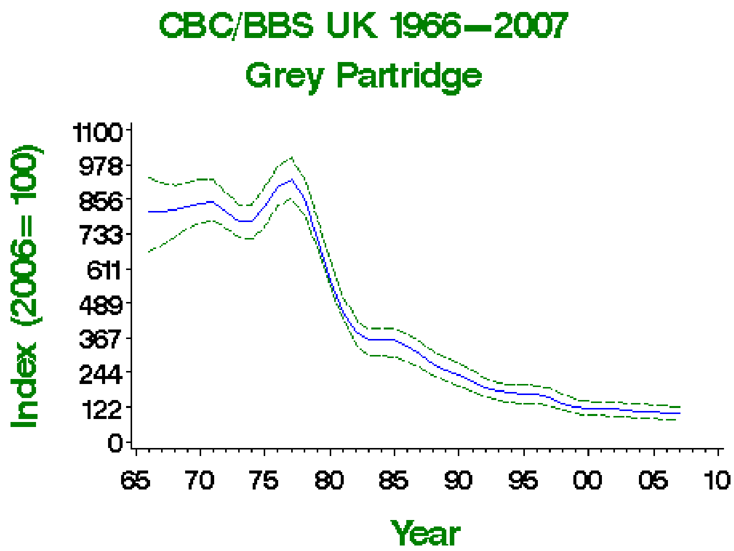

Table of population changes for Grey Partridge

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	119	-88	-91	-83	>50	
	25	1981-2006	142	-78	-85	-71	>50	
	10	1996-2006	245	-39	-48	-31	>25	
	5	2001-2006	222	-13	-24	-1		
CBC/BBS England	39	1967-2006	107	-88	-91	-82	>50	
	25	1981-2006	126	-78	-84	-71	>50	
	10	1996-2006	220	-33	-41	-25	>25	
	5	2001-2006	202	-4	-14	6		
BBS UK	11	1995-2006	227	-40	-49	-32	>25	
	10	1996-2006	230	-38	-47	-30	>25	
	5	2001-2006	222	-14	-25	-5		
BBS England	11	1995-2006	202	-35	-44	-26	>25	
	10	1996-2006	205	-31	-41	-23	>25	

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

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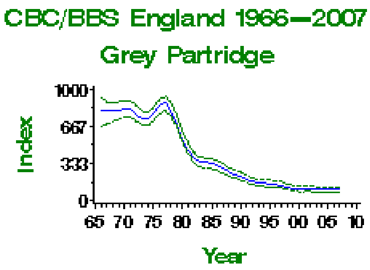

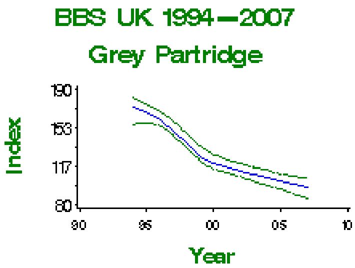

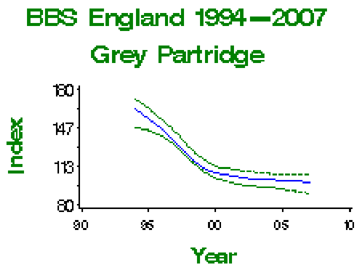

Productivity trends

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**; also **here**). 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**). Infection with caecal nematodes from farm-reared Pheasants may be contributing to the decline of **Grey Partridges** in Britain (**Tompkins *et al.* 2002**).

Population changes

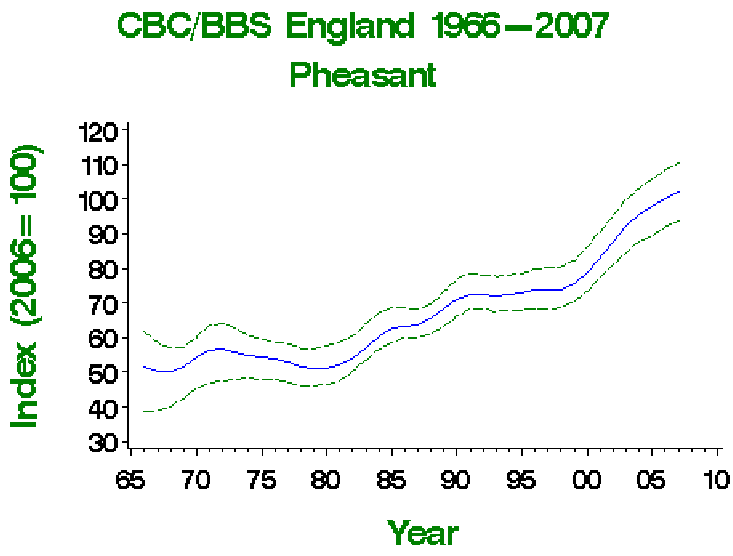

Table of population changes for Pheasant

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	475	99	53	187		
	25	1981-2006	686	92	58	130		
	10	1996-2006	1378	36	29	42		
	5	2001-2006	1484	20	16	24		
BBS UK	11	1995-2006	1511	36	28	43		
	10	1996-2006	1561	35	29	42		
	5	2001-2006	1764	19	15	23		
BBS England	11	1995-2006	1276	39	30	47		
	10	1996-2006	1317	37	29	43		
	5	2001-2006	1484	20	14	23		
BBS Scotland	11	1995-2006	114	6	-15	30		
	10	1996-2006	116	10	-8	33		
	5	2001-2006	125	8	-3	23		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	103	52	29	69		
BBS N.Ireland	11	1995-2006	30	148	46	239		
	10	1996-2006	33	111	40	167		
	5	2001-2006	40	41	12	75		

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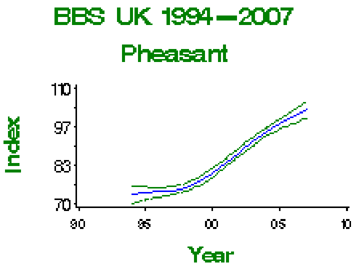
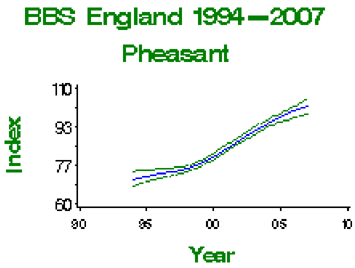
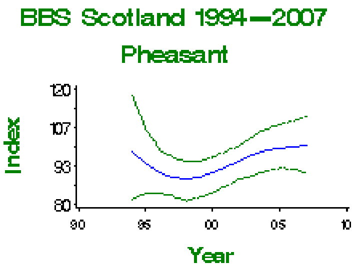
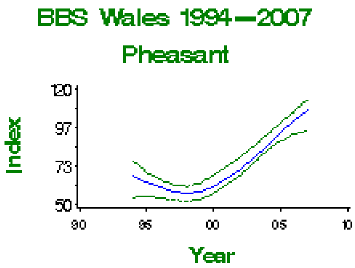








Productivity trends

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 breeding 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.* 2008**). 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.

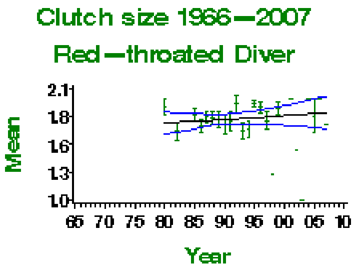
Population changes

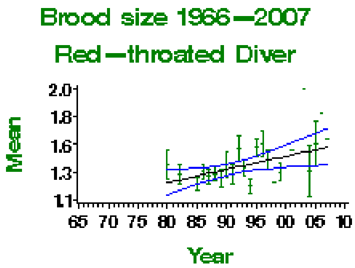
Annual breeding population changes are not currently monitored by BTO for this species

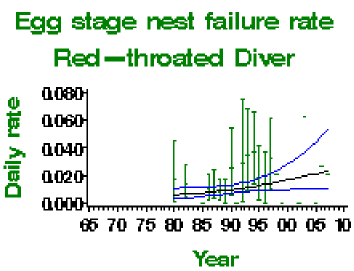
Productivity trends

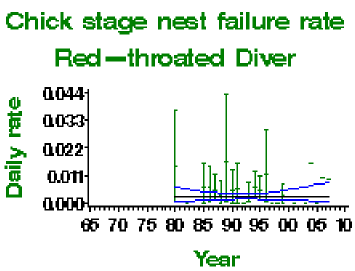
Table of productivity changes for Red-throated Diver

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	26	1980-2006	21	None				Small sample
Brood size	26	1980-2006	32	Linear increase	1.25 chicks	1.52 chicks	22.3%	
Daily failure rate (eggs)	26	1980-2006	12	Linear increase	0.59% nests/day	2.26% nests/day	283.1%	Small sample
Daily failure rate (chicks)	26	1980-2006	17	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 (**Austin *et al.* 2008**).

Population changes

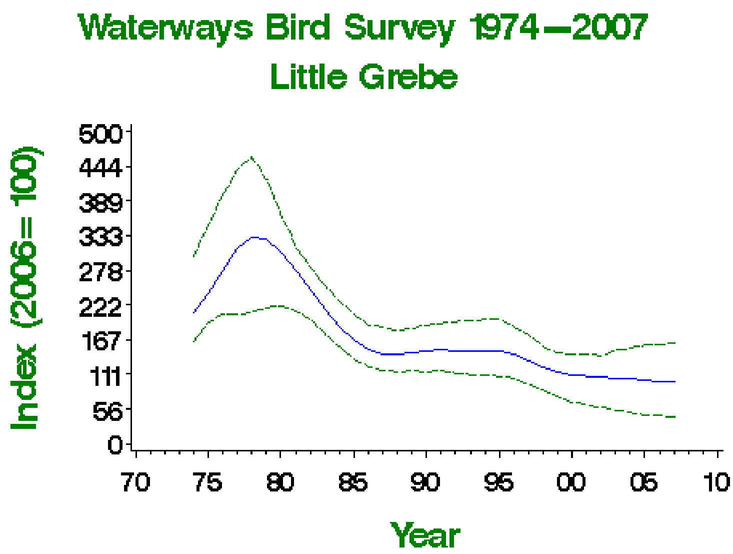
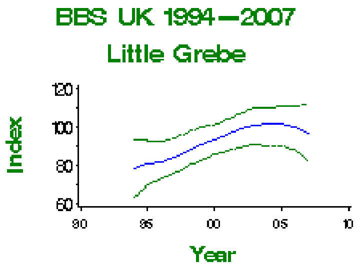
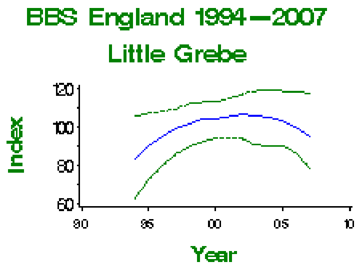


Table of population changes for Little Grebe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	31	1975-2006	16	-59	-87	-9	>50	Small sample
	25	1981-2006	15	-64	-87	-23	>50	Small sample
	10	1996-2006	11	-30	-72	22		Small sample
BBS UK	11	1995-2006	62	25	-4	61		
	10	1996-2006	65	22	-6	52		
	5	2001-2006	77	4	-13	24		
BBS England	11	1995-2006	51	12	-21	65		
	10	1996-2006	53	6	-22	51		
	5	2001-2006	62	-5	-23	23		

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





Productivity trends

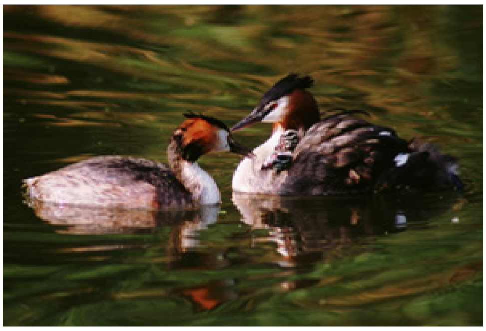
Productivity information is not currently available for this species

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 (**Austin *et al.* 2008**).

Population changes

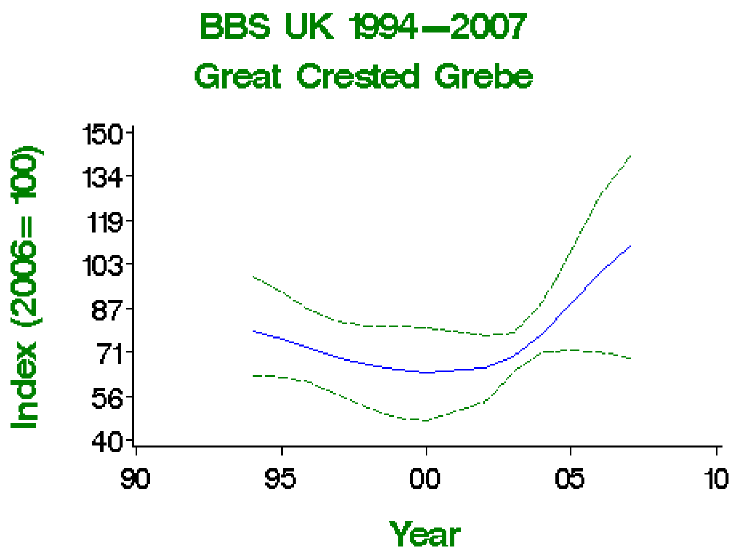
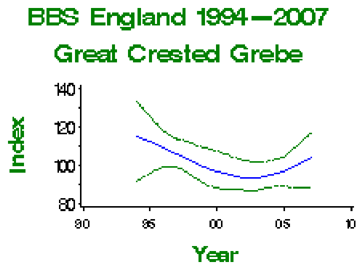


Table of population changes for Great Crested Grebe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	63	31	-23	112		
	10	1996-2006	65	38	-19	124		
	5	2001-2006	71	54	-8	160		
BBS England	11	1995-2006	58	-11	-27	15		
	10	1996-2006	58	-8	-25	13		
	5	2001-2006	65	5	-13	23		

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 pairs 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**). Trends during 1986–2005 show decreases in Scotland and in northeast and southwest England, 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.* 2008**). 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 but now appears more stable (**Austin *et al.* 2008**). The species has recently been moved from the green to the amber list, for reasons unconnected with its UK trend.

Population changes

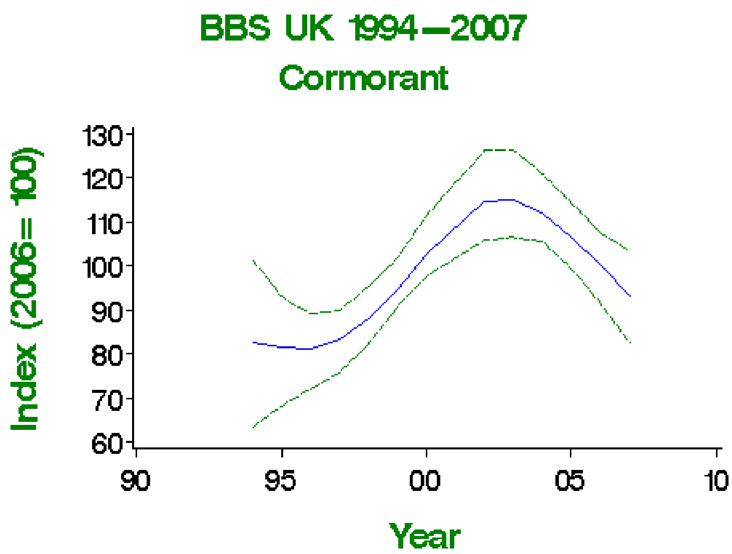


Table of population changes for Cormorant

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	201	23	-5	58		Non-breeders included
	10	1996-2006	209	23	2	52		Non-breeders included
	5	2001-2006	257	-8	-20	5		Non-breeders included
BBS England	11	1995-2006	165	22	1	49		Non-breeders included
	10	1996-2006	172	22	2	46		Non-breeders included
	5	2001-2006	213	5	-7	18		Non-breeders included

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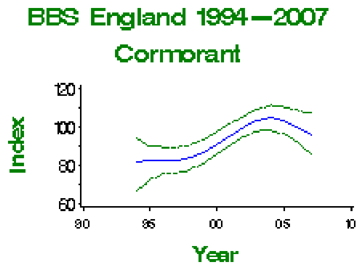

Productivity trends

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**

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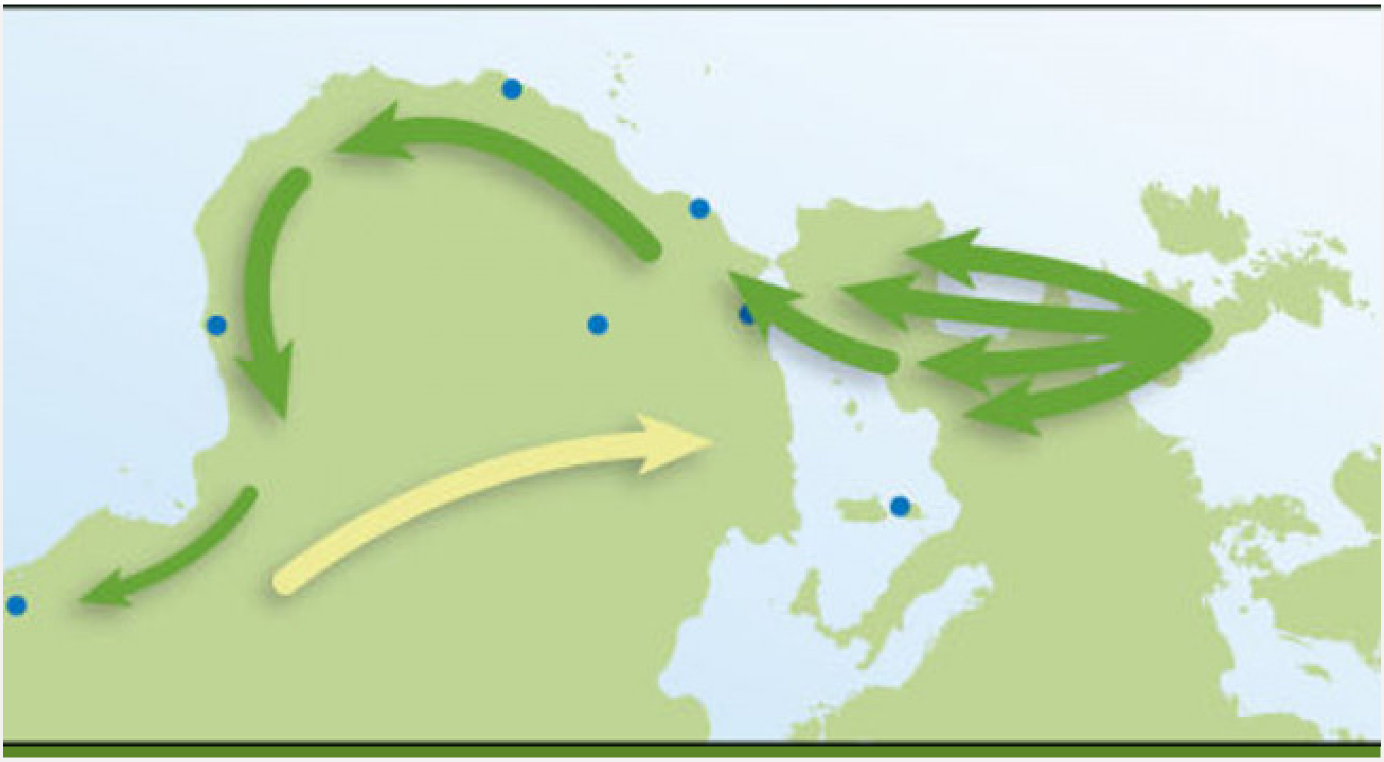
- Return to our homepage
- Email us about what you are trying to find, or to tell us about a broken link - info@bto.org

Related content



ARTICLE

Results

See live NBC results and watch the breeding season unfold

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...

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**). Although the Hen Harrier and other raptors have been protected under UK law since 1961, many are still killed unlawfully to protect **Red Grouse** stocks. 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**). Recent results confirm that rough grass is a critical habitat for Orkney Hen Harriers, providing the necessary food during the incubation period (**Amar *et al.* 2008**).

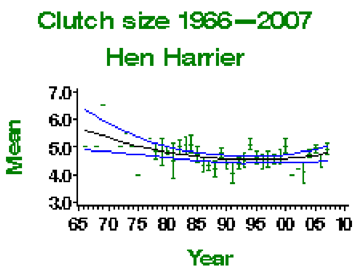
Population changes

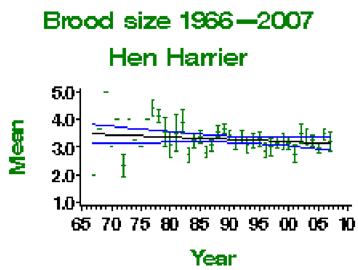
Annual breeding population changes for this species are not currently monitored by BTO

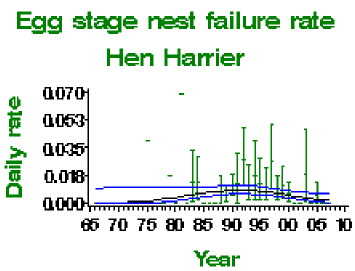
Productivity trends

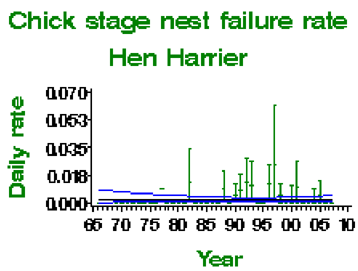
Table of productivity changes for Hen Harrier

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	13	Curvilinear	5.48 eggs	4.73 eggs	-13.6%	Small sample
Brood size	38	1968-2006	20	None				Small sample
Daily failure rate (eggs)	38	1968-2006	11	Curvilinear	0.03% nests/day	0.22% nests/day	633.3%	Small sample
Daily failure rate (chicks)	38	1968-2006	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 suffered a severe population crash caused by organochlorine pesticides in the 1950s and 1960s, when the species was extinguished from large areas of lowland Britain (**Newton 1986**). Following a ban on the use of organochlorines, the species increased and spread, and became common enough on CBC plots for annual monitoring in the early 1970s. Between then and the mid 1990s, the CBC charted a steep increase. 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 intraspecific competition, average brood size has begun to drop again.

Population changes

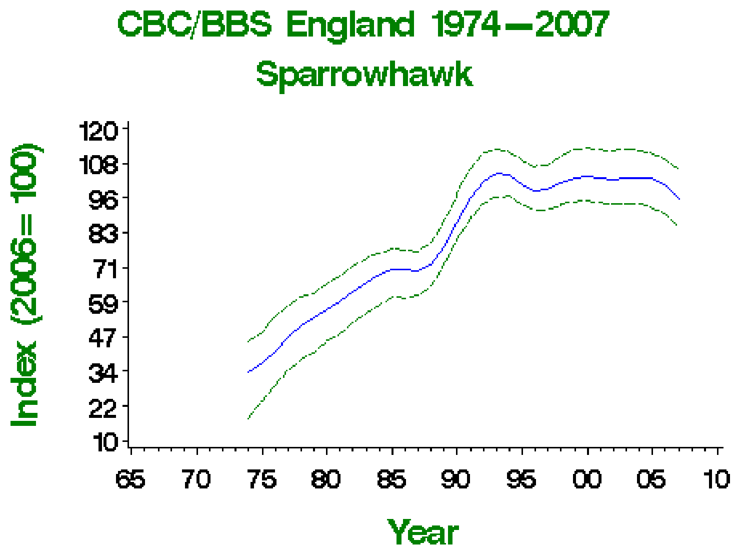
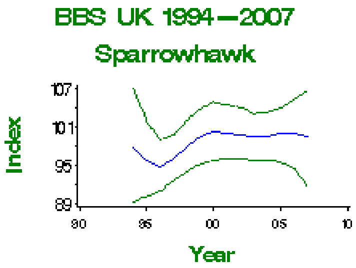
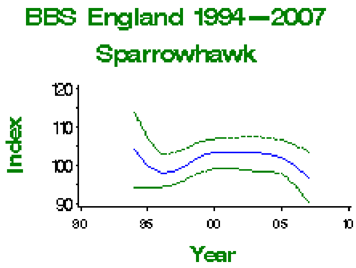


Table of population changes for Sparrowhawk

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	31	1975-2006	131	166	78	360		
	25	1981-2006	156	69	28	139		
	10	1996-2006	291	2	-8	12		
	5	2001-2006	300	-2	-10	7		
BBS UK	11	1995-2006	315	5	-7	16		
	10	1996-2006	325	5	-5	16		
	5	2001-2006	362	0	-9	10		
BBS England	11	1995-2006	262	0	-11	12		
	10	1996-2006	269	2	-8	12		
	5	2001-2006	300	-3	-10	5		

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

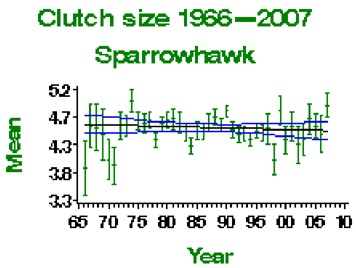


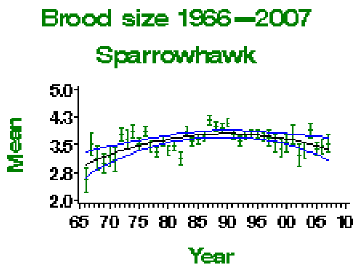


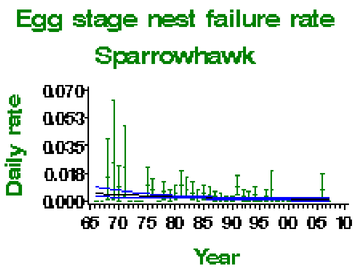
Productivity trends

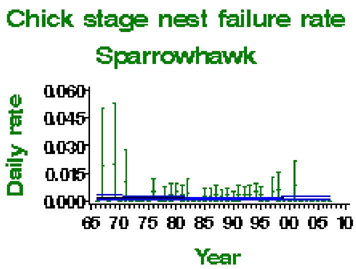
Table of productivity changes for Sparrowhawk

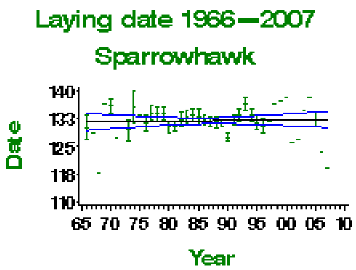
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	36	None				
Brood size	38	1968-2006	71	Curvilinear	3.11 chicks	3.45 chicks	10.9%	
Daily failure rate (eggs)	38	1968-2006	34	Linear decline	0.47% nests/day	0.09% nests/day	-80.9%	
Daily failure rate (chicks)	38	1968-2006	48	None				
Laying date	38	1968-2006	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. If anything, however, the upsurge has been ampified with 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**).

Population changes

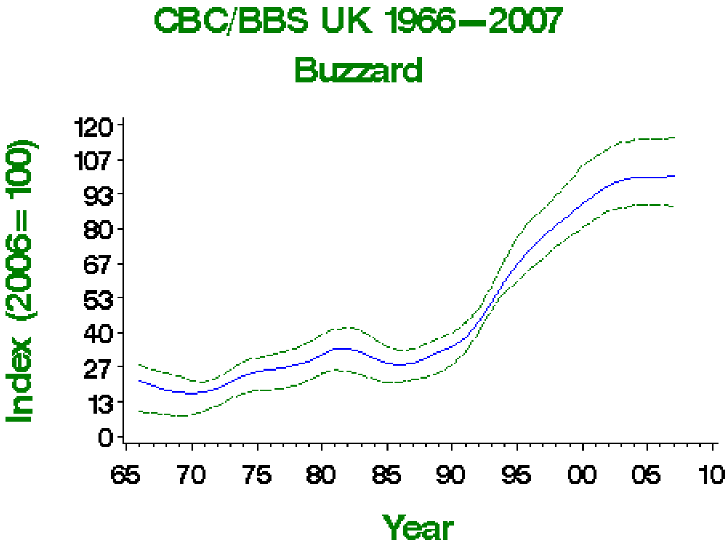


Table of population changes for Buzzard

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	216	419	251	1372		
	25	1981-2006	328	197	105	392		
	10	1996-2006	725	39	29	50		
	5	2001-2006	887	7	2	14		
CBC/BBS England	39	1967-2006	130	483	268	1367		Small CBC sample
	25	1981-2006	198	286	167	681		
	10	1996-2006	440	77	61	100		
	5	2001-2006	559	32	24	41		
BBS UK	11	1995-2006	669	47	37	60		
	10	1996-2006	703	39	31	50		
	5	2001-2006	887	9	3	16		
BBS England	11	1995-2006	400	90	68	117		
	10	1996-2006	424	78	58	96		
	5	2001-2006	559	32	24	40		
BBS Scotland	11	1995-2006	115	24	6	51		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales	11	1995-2006	132	5	-8	23		
	10	1996-2006	138	7	-4	22		
	5	2001-2006	161	2	-6	11		

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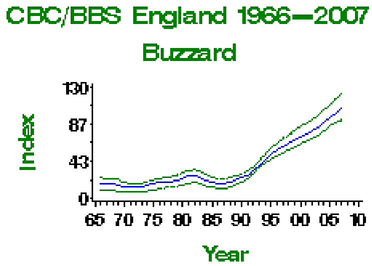
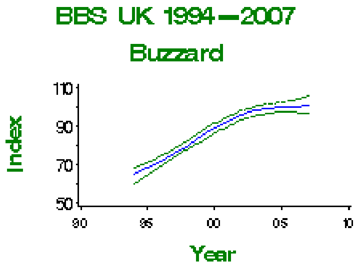
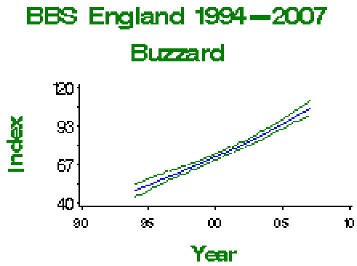
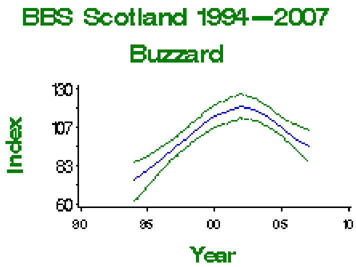
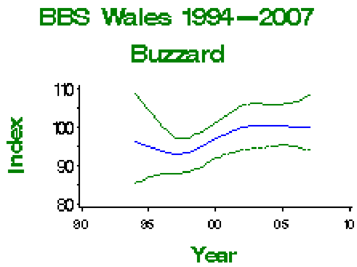






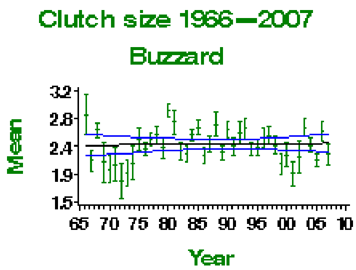


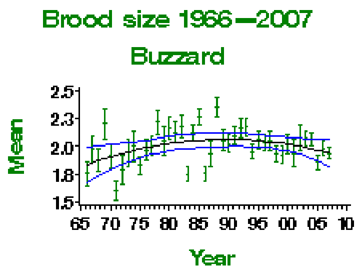


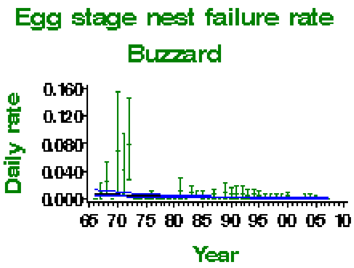
Productivity trends

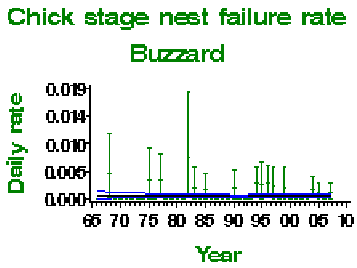
Table of productivity changes for Buzzard

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	31	None				
Brood size	38	1968-2006	94	Curvilinear	1.87 chicks	1.95 chicks	4.6%	
Daily failure rate (eggs)	38	1968-2006	26	Linear decline	0.7% nests/day	0.12% nests/day	-82.9%	Small sample
Daily failure rate (chicks)	38	1968-2006	47	None				









Insufficient data on laying dates
available for this species

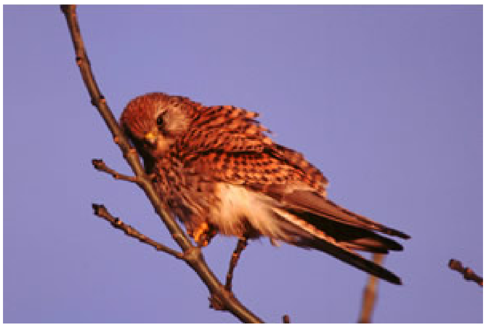
Insufficient data on CES
available for this species

Additional information

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

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: fluctuating, with no long-term trend

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**). Since the mid 1980s, the English population has fluctuated without a long-term trend being apparent. In Scotland, however, there has been a significant decline since 1994. 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 inclusion of Kestrel in the NRS concern list (**Leech & Barimore 2008**). Despite its decline since the mid 1970s, the Kestrel breeds at high density in mixed farmland across much of England, suggesting that the British population may number more than 50,000 pairs (**Clements 2008**).

Population changes

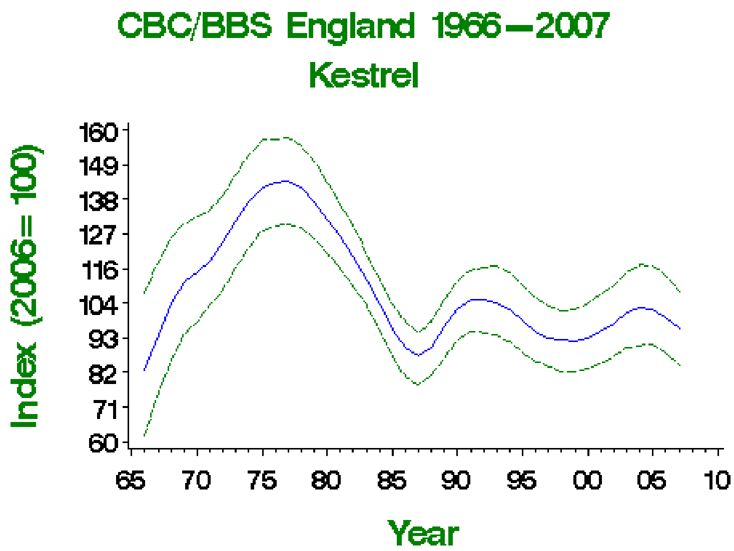
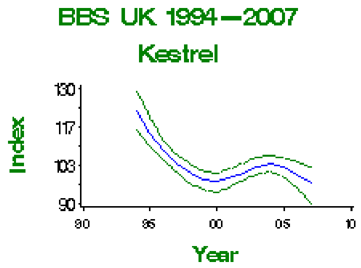
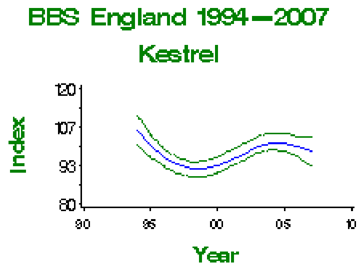


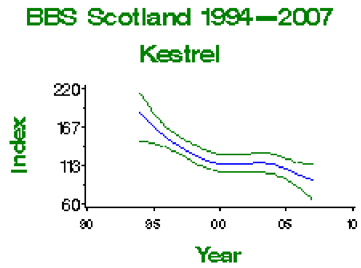
Table of population changes for Kestrel

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	216	6	-23	53		
	25	1981-2006	293	-21	-35	-1		
	10	1996-2006	548	5	-2	14		
	5	2001-2006	570	5	-2	11		
BBS UK	11	1995-2006	586	-12	-20	-5		
	10	1996-2006	599	-7	-16	0		
	5	2001-2006	657	1	-6	8		
BBS England	11	1995-2006	507	0	-8	8		
	10	1996-2006	517	4	-3	12		
	5	2001-2006	570	5	-1	10		
BBS Scotland	11	1995-2006	42	-40	-56	-17	>25	
	10	1996-2006	42	-34	-50	-12	>25	
	5	2001-2006	44	-13	-34	7		

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



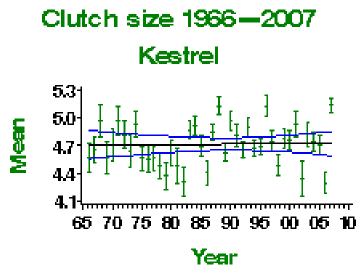


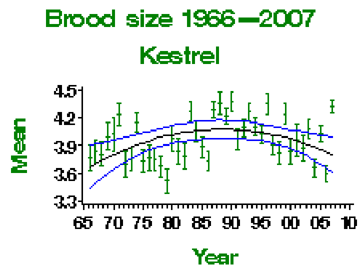


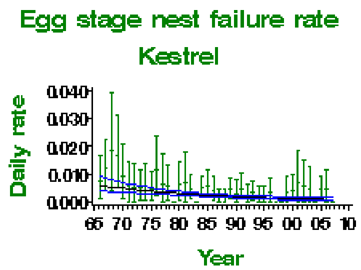
Productivity trends

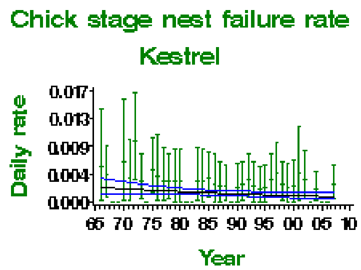
Table of productivity changes for Kestrel

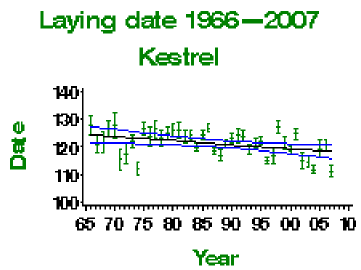
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	54	None				
Brood size	38	1968-2006	121	Curvilinear	3.74 chicks	3.83 chicks	2.5%	
Daily failure rate (eggs)	38	1968-2006	40	Linear decline	0.55% nests/day	0.09% nests/day	-83.6%	
Daily failure rate (chicks)	38	1968-2006	65	Linear decline	0.22% nests/day	0.09% nests/day	-59.1%	
Laying date	38	1968-2006	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**).

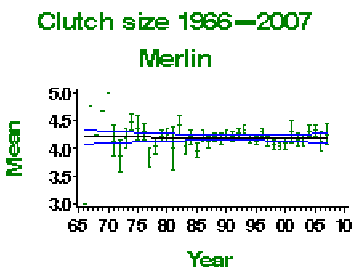
Population changes

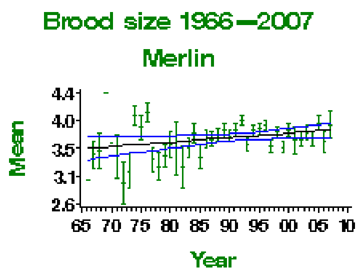
Annual breeding population changes for this species are not currently monitored by BTO

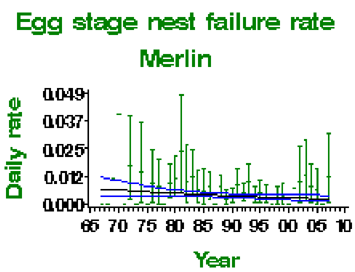
Productivity trends

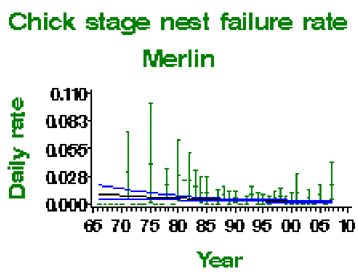
Table of productivity changes for Merlin

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	38	None				
Brood size	38	1968-2006	55	Linear increase	3.52 chicks	3.79 chicks	7.8%	
Daily failure rate (eggs)	38	1968-2006	26	Linear decline	0.67% nests/day	0.24% nests/day	-64.2%	Small sample
Daily failure rate (chicks)	38	1968-2006	29	Linear decline	0.94% nests/day	0.24% nests/day	-74.5%	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 2008**). 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

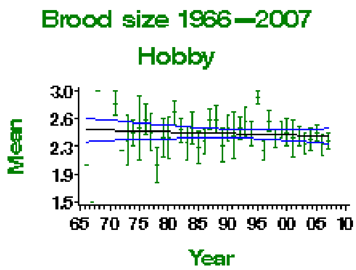
Annual breeding population changes for this species are not currently monitored by BTO

Productivity trends

Table of productivity changes for Hobby

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Brood size	38	1968-2006	18	None				Small sample
Daily failure rate (chicks)	38	1968-2006	12	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**); around 50 pairs were missed in Wales, however (**Dixon *et al.* 2008**). Similar increases across Europe have resulted in a downgrading of conservation listing from 'SPEC 3 (rare)' to 'secure' (**BirdLife International 2004**).

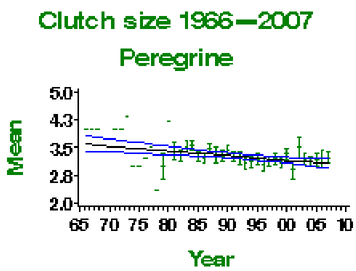
Population changes

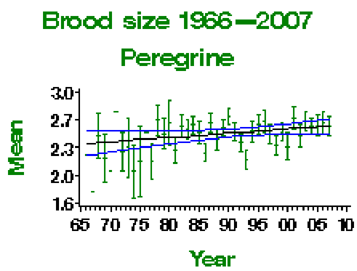
Annual population changes are not monitored for this species

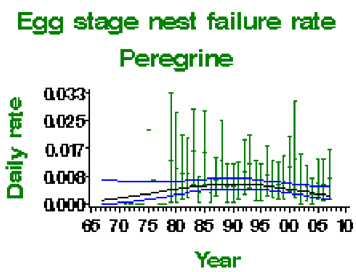
Productivity trends

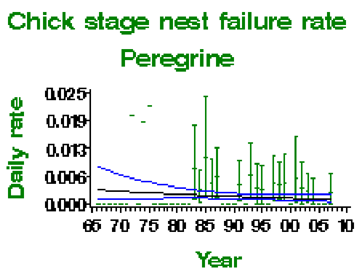
Table of productivity changes for Peregrine

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	16	Linear decline	3.58 eggs	3.09 eggs	-13.7%	Small sample
Brood size	38	1968-2006	41	None				
Daily failure rate (eggs)	38	1968-2006	21	Curvilinear	0.14% nests/day	0.28% nests/day	100%	Small sample
Daily failure rate (chicks)	38	1968-2006	23	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, earning the species a place on the NRS concern list (**Leech & Barimore 2008**). Average brood sizes have increased, however.

Population changes

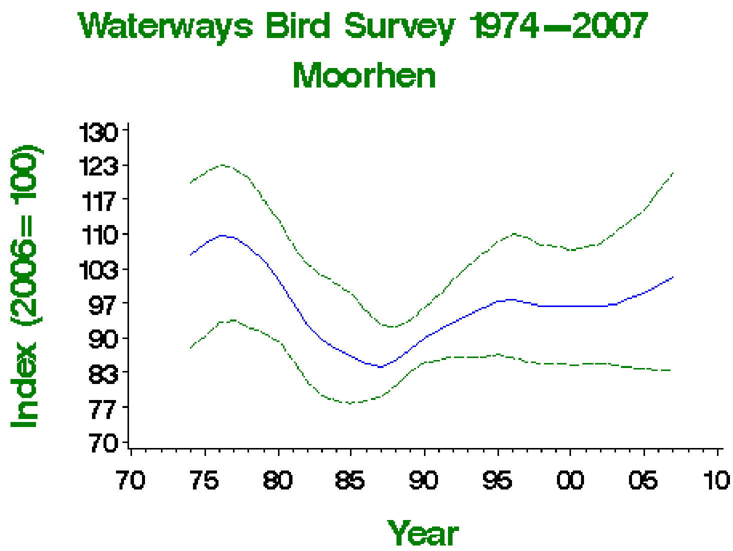
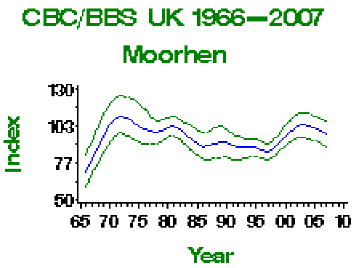


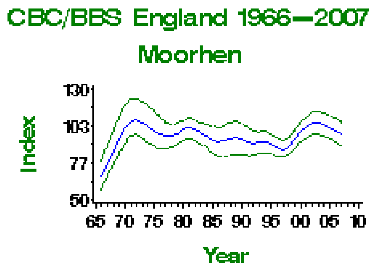
Table of population changes for Moorhen

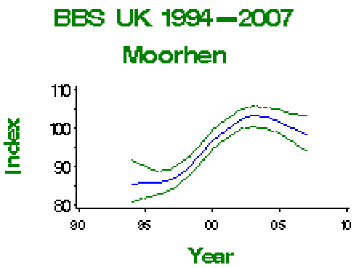
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	260	27	0	59		
	25	1981-2006	347	-3	-18	11		
	10	1996-2006	640	16	8	25		
	5	2001-2006	656	0	-6	5		
CBC/BBS England	39	1967-2006	237	31	2	62		
	25	1981-2006	318	-2	-14	16		
	10	1996-2006	587	14	6	23		
	5	2001-2006	605	-2	-8	3		
WBS waterways	31	1975-2006	78	-8	-32	31		
	25	1981-2006	81	3	-23	38		
	10	1996-2006	80	3	-16	24		
	5	2001-2006	69	4	-10	18		
BBS UK	11	1995-2006	586	17	8	26		
	10	1996-2006	599	17	9	25		
	5	2001-2006	656	1	-5	7		
BBS England	11	1995-2006	538	13	3	23		
	10	1996-2006	549	14	5	23		

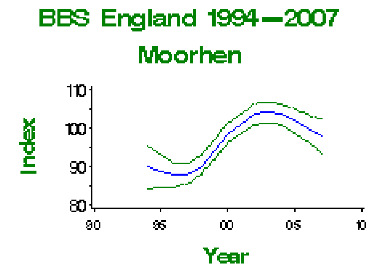
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

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





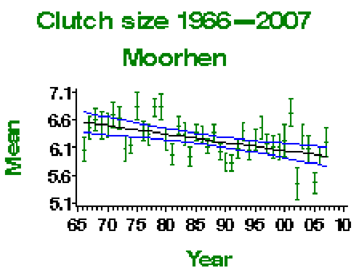


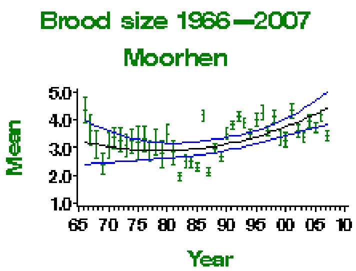


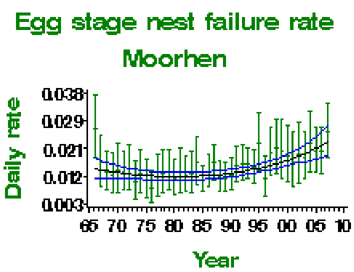
Productivity trends

Table of productivity changes for Moorhen

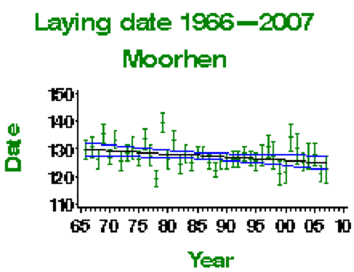
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	91	Linear decline	6.52 eggs	5.96 eggs	-8.6%	
Brood size	38	1968-2006	77	Curvilinear	3.12 chicks	4.3 chicks	38.1%	
Daily failure rate (eggs)	38	1968-2006	110	Curvilinear	1.35% nests/day	2.15% nests/day	59.3%	
Daily failure rate (chicks)	38	1968-2006	36	None				
Laying date	38	1968-2006	68	Linear decline	May 10	May 5	-5 days	







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: moderate 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, showed shallow increase from the mid 1980s to around 2000/01 but has since declined, especially in Northern Ireland (**Austin *et al.* 2008**).

Population changes

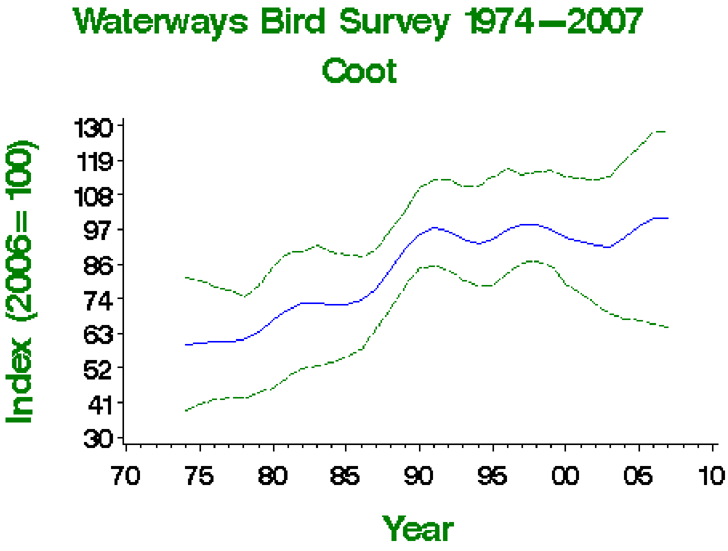
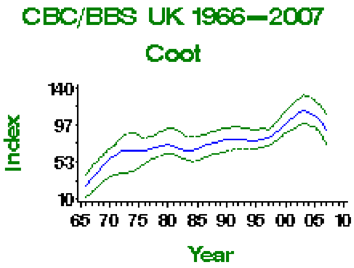
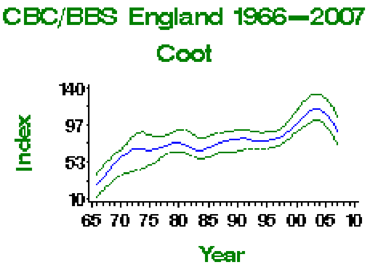


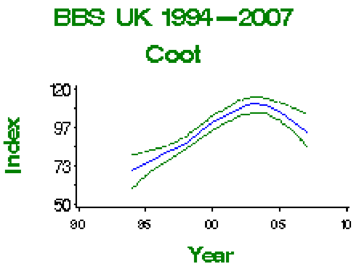
Table of population changes for Coot

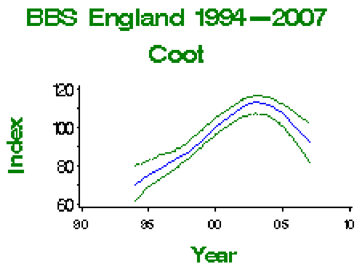
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	95	193	84	538		
	25	1981-2006	134	38	-6	89		
	10	1996-2006	259	26	6	52		
	5	2001-2006	274	-4	-15	11		
CBC/BBS England	39	1967-2006	87	186	86	484		
	25	1981-2006	121	36	-3	87		
	10	1996-2006	234	25	8	49		
	5	2001-2006	248	-5	-15	9		
WBS waterways	31	1975-2006	39	66	-16	223		
	25	1981-2006	42	40	-24	170		
	10	1996-2006	45	4	-42	41		
	5	2001-2006	36	8	-20	34		
BBS UK	11	1995-2006	235	34	15	64		
	10	1996-2006	243	27	11	52		
	5	2001-2006	274	-4	-11	8		
BBS England	11	1995-2006	212	34	11	56		
	10	1996-2006	219	27	8	46		
	5	2001-2006	248	-5	-16	7		

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 during 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 nest losses through 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

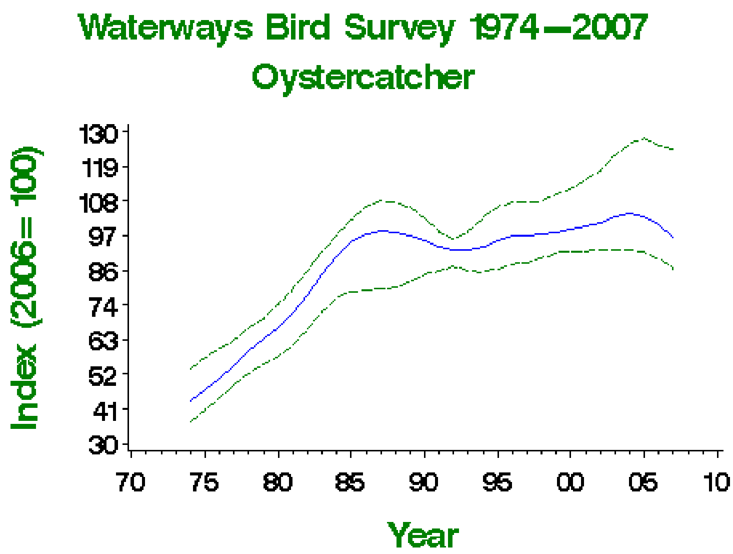
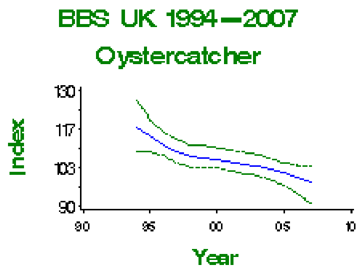
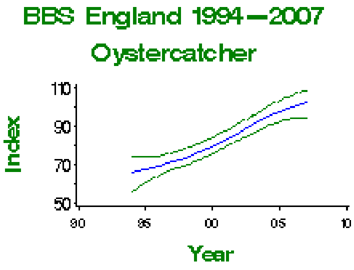


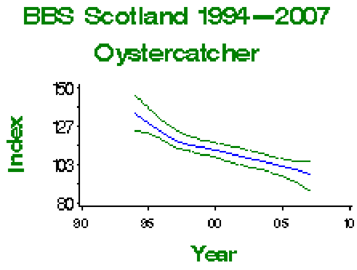
Table of population changes for Oystercatcher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	31	1975-2006	23	113	67	213		
	25	1981-2006	25	39	12	104		
	10	1996-2006	27	4	-9	42		
	5	2001-2006	24	0	-5	19		
BBS UK	11	1995-2006	274	-12	-22	-5		
	10	1996-2006	281	-10	-18	-3		
	5	2001-2006	309	-5	-13	1		
BBS England	11	1995-2006	137	48	26	79		
	10	1996-2006	143	44	26	67		
	5	2001-2006	169	21	9	30		
BBS Scotland	11	1995-2006	123	-22	-32	-14		
	10	1996-2006	123	-19	-29	-10		
	5	2001-2006	123	-9	-18	-1		

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



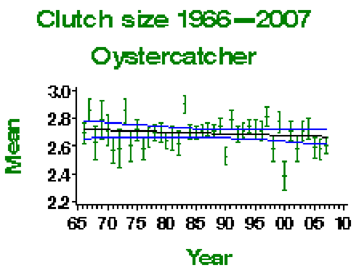




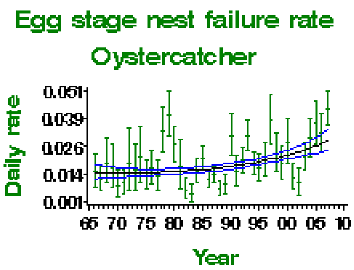
Productivity trends

Table of productivity changes for Oystercatcher

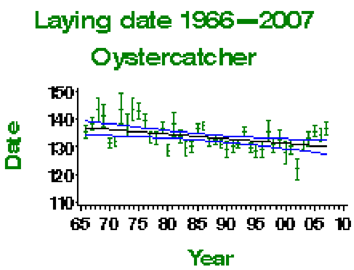
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	102	None				
Daily failure rate (eggs)	38	1968-2006	112	Curvilinear	1.43% nests/day	2.72% nests/day	90.2%	
Laying date	38	1968-2006	46	Linear decline	May 17	May 10	-7 days	



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: decline

UK population size

8,540 pairs in 1984 (**Prater 1989**: **APEP06**, rounded to 8,600 **BiE04**); 5,438 (5,257–5,622) pairs in 2007 (**Conway *et al.* 2008**)

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 (**Austin *et al.* 2008**) 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**) – a problem that appears increasingly severe (**Jackson 2007**). 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 BTO's repeat national survey in 2007 found an overall decrease in UK population of around 37% since 1984, with the greatest decreases in inland areas (**Burton & Conway 2008**, **Conway *et al.* 2008**, **Conway & Burton 2009**; click **here**). Ringed Plovers that choose beaches for nesting are especially vulnerable to disturbance, however, 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**). The marked increase in nest failures at the egg stage has earned Ringed Plover a place on the NRS concern list (**Leech & Barimore 2008**).

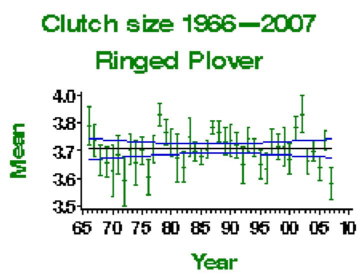
Population changes

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

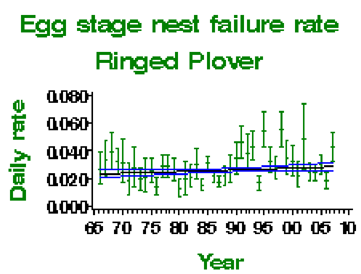
Productivity trends

Table of productivity changes for Ringed Plover

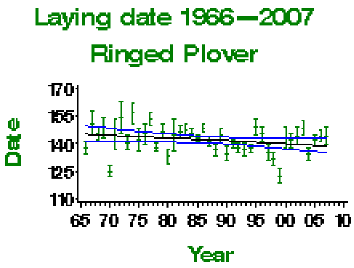
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	87	None				
Daily failure rate (eggs)	38	1968-2006	125	Linear increase	2.36% nests/day	2.85% nests/day	20.8%	
Laying date	38	1968-2006	39	None				



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 some increase in Scotland and the UK, but this is believed to follow an earlier decline (Gibbons *et al.* 1993). A detailed survey has confirmed a sharp decline in Wales since the 1980s, with just 36 pairs located in 2007 (Johnstone *et al.* 2008). 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, although mainly at coastal sites and omitting some big concentrations inland, have increased sharply in Britain since the mid 1980s (Austin *et al*. 2008); these birds are mainly of Fennoscandian or Russian origin.

Population changes

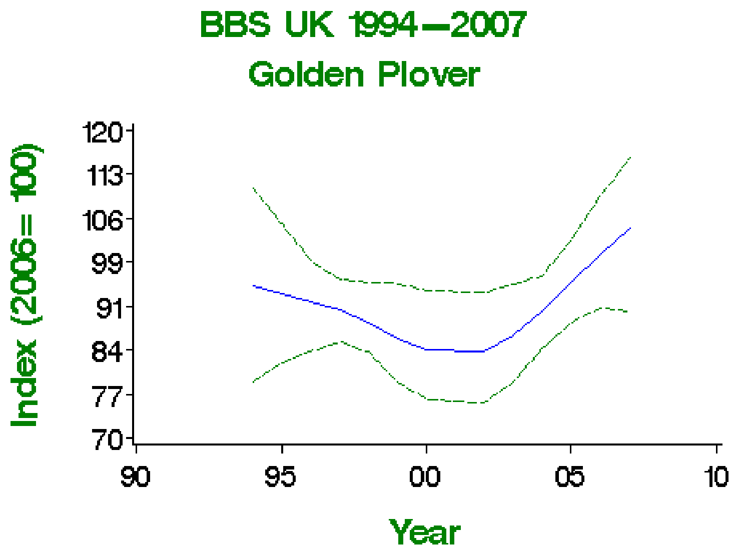


Table of population changes for Golden Plover

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	54	7	-12	28		
	10	1996-2006	53	9	-7	27		
	5	2001-2006	49	19	-3	45		
BBS Scotland	11	1995-2006	41	4	-16	26		
	10	1996-2006	40	7	-12	29		
	5	2001-2006	34	22	-7	53		

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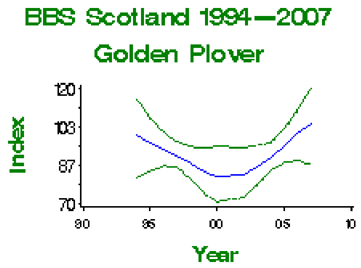
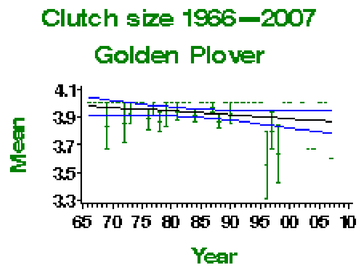


Productivity trends

Table of productivity changes for Golden Plover

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	13	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: priority species

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 (**Galbraith 1988**, **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, 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 & Barimore 2008**). A recent study has indicated that 88% of nest predations occurred during darkness, suggesting that nocturnal mammals were to blame (**Bolton *et al.* 2007**). Nests with close neighbours and furthest from field edges were most likely to survive (**MacDonald & Bolton 2008**). **Sharpe *et al.* (2008)**, however, conclude that chick mortality is the main determinant of poor Lapwing productivity and therefore of population decline.

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, increased in Britain during the 1980s and early 1990s and are now stable, but have decreased in Northern Ireland (**Austin *et al.* 2008**); these birds are mainly of continental origin. Lapwing is one of the most strongly declining bird species in Europe, having decreased at an annual rate of 4% during 1980–2005 (**PECBMS 2007**).

Population changes

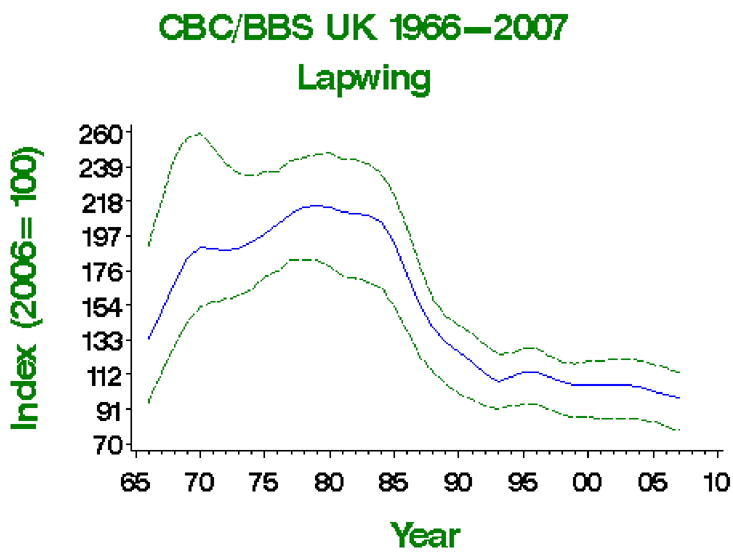


Table of population changes for Lapwing

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	231	-34	-64	-5	>25	
	25	1981-2006	324	-53	-65	-37	>50	
	10	1996-2006	642	-12	-23	-3		
	5	2001-2006	685	-6	-12	3		
CBC/BBS England	39	1967-2006	190	-11	-59	29		
	25	1981-2006	266	-43	-58	-16	>25	
	10	1996-2006	529	10	0	20		
	5	2001-2006	575	3	-4	10		
WBS waterways	26	1980-2006	37	-8	-58	69		
	25	1981-2006	38	-14	-59	53		
	10	1996-2006	34	-13	-46	41		
	5	2001-2006	29	-7	-32	36		
BBS UK	11	1995-2006	613	-16	-25	-7		
	10	1996-2006	625	-13	-22	-4		
	5	2001-2006	685	-5	-13	3		
BBS England	11	1995-2006	503	7	-3	16		
	10	1996-2006	514	9	-1	17		
	5	2001-2006	575	4	-3	9		
BBS Scotland	11	1995-2006	86	-38	-50	-25	>25	
	10	1996-2006	87	-34	-47	-20	>25	
	5	2001-2006	85	-15	-30	2		

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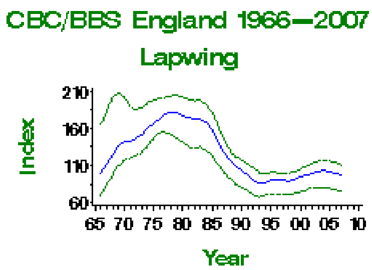
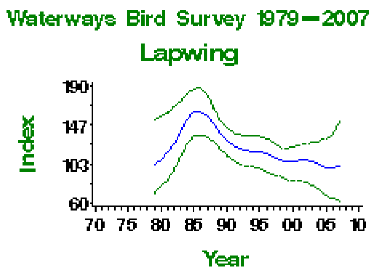
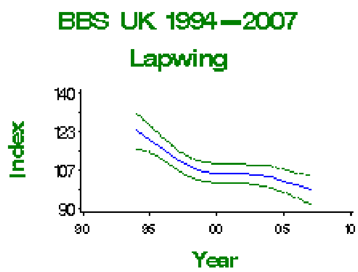
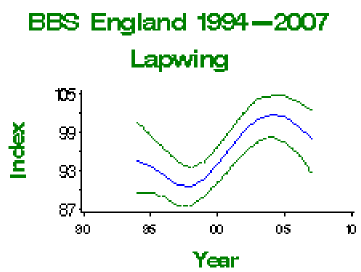
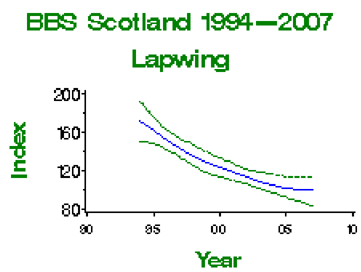






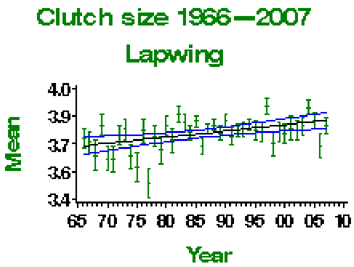




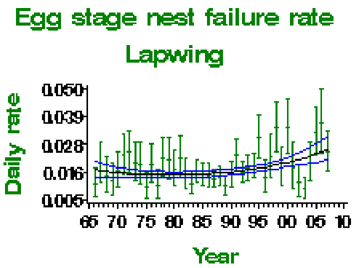
Productivity trends

Table of productivity changes for Lapwing

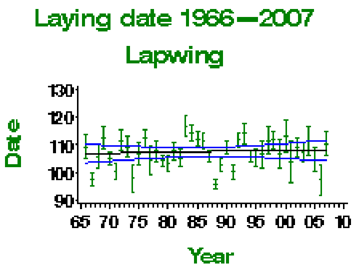
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	122	Linear increase	3.69 eggs	3.82 eggs	3.4%	
Daily failure rate (eggs)	38	1968-2006	133	Curvilinear	1.67% nests/day	2.45% nests/day	46.7%	
Laying date	38	1968-2006	30	None				Small sample



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 fell from the early 1970s until 1984, when the number of occupied plots became too small for further monitoring (**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**). Birds were more likely to persist where soils remained soft and wet; the fact that Snipe have continued to decline, despite soil conditions being improved for them at many lowland wetland reserves, suggests that other key aspects of habitat quality, such as prey abundance, are more likely to be driving the decline (**Smart *et al.* 2008**). 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 highly probable. The BBS shows increases in England and especially in Scotland since 1994, falling back in recent seasons. 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

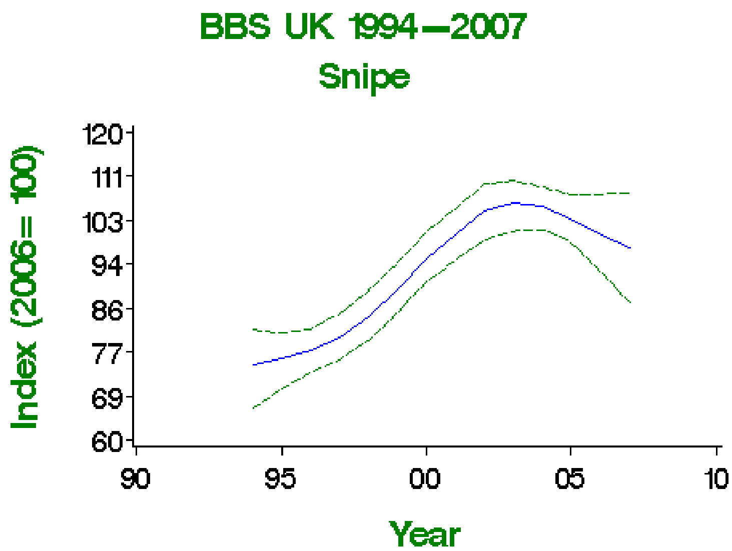
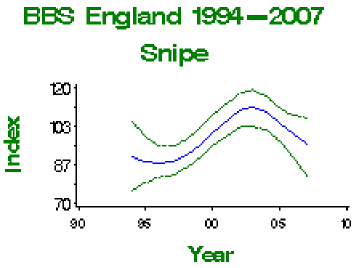
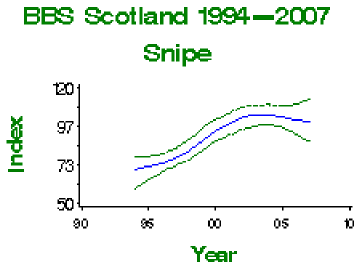


Table of population changes for Snipe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	132	31	17	51		
	10	1996-2006	134	29	14	47		
	5	2001-2006	147	0	-12	15		
BBS England	11	1995-2006	62	14	-8	36		
	10	1996-2006	63	15	-4	35		
	5	2001-2006	74	-5	-19	7		
BBS Scotland	11	1995-2006	53	39	21	68		
	10	1996-2006	52	35	18	61		
	5	2001-2006	52	2	-12	19		

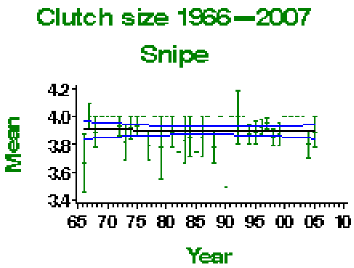




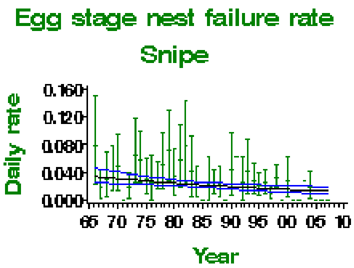
Productivity trends

Table of productivity changes for Snipe

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	13	None				Small sample
Daily failure rate (eggs)	38	1968-2006	16	Linear decline	3.3% nests/day	1.36% nests/day	-58.8%	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**); 78,000 pairs in 2003 (unpublished estimate from **GCT**)

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. 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, declining woodland management, 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 baseline for future monitoring (**Fuller & Hoodless 2004**; also, **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. The possible effects of hunting on breeding populations of Woodcock across Europe are little understood.

Population changes

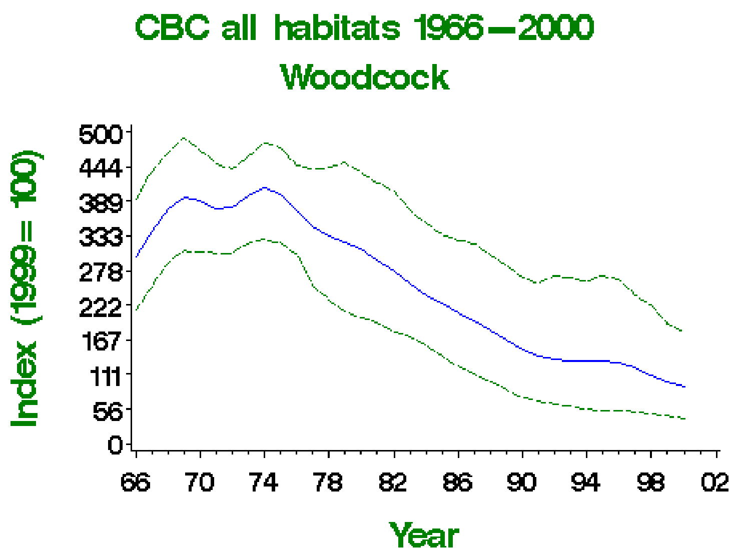


Table of population changes for Woodcock

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: priority species

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 of breeding birds in wet meadows in England and Wales revealed a decrease of 39% between 1982 and 2002 (**Wilson *et al.* 2005**). A 2006 survey highlighted the rapid decline of the species across all habitats in Wales, with low breeding success as a plausible mechanism (**Johnstone *et al.* 2007**). 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. Wintering Curlew abundance showed a shallow long-term increase to around 2000, but has since declined (**Austin *et al.* 2008**).

Population changes

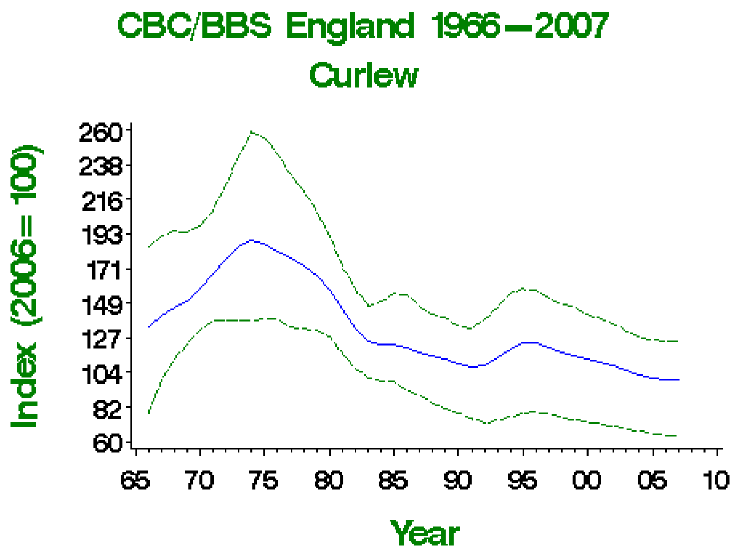
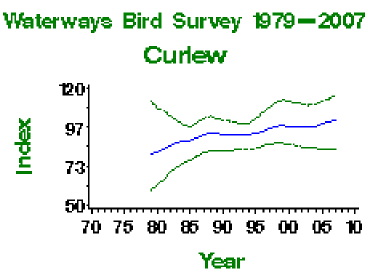


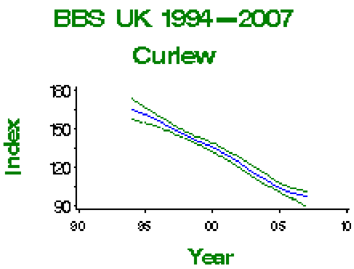
Table of population changes for Curlew

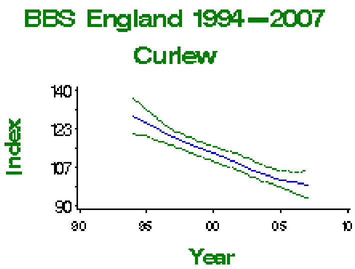
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	95	-29	-68	25		Small CBC sample
	25	1981-2006	139	-31	-66	10		Small CBC sample
	10	1996-2006	284	-19	-26	-12		
	5	2001-2006	285	-10	-16	-3		
WBS waterways	26	1980-2006	22	22	-23	85		
	25	1981-2006	22	19	-22	75		
	10	1996-2006	20	6	-14	29		
	5	2001-2006	15	3	-14	14		Small sample
BBS UK	11	1995-2006	453	-38	-43	-33	>25	
	10	1996-2006	460	-36	-40	-31	>25	
	5	2001-2006	455	-23	-28	-18		
BBS England	11	1995-2006	270	-21	-27	-12		
	10	1996-2006	275	-18	-25	-10		
	5	2001-2006	285	-9	-15	-3		
BBS Scotland	11	1995-2006	120	-50	-55	-44	>25	
	10	1996-2006	120	-47	-53	-41	>25	
	5	2001-2006	110	-31	-40	-24	>25	

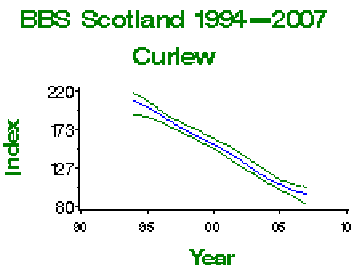
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	37	-26	-40	-10	>25	

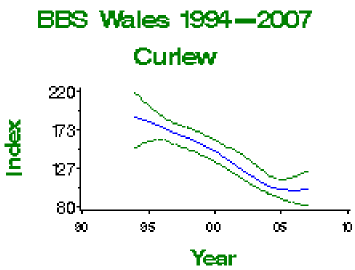
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB







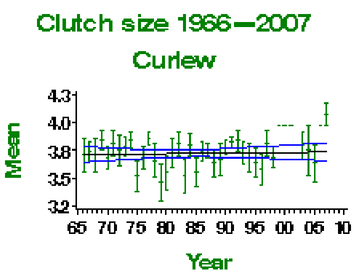




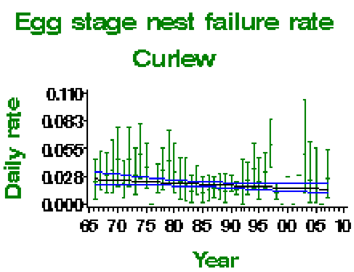
Productivity trends

Table of productivity changes for Curlew

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	21	None				Small sample
Daily failure rate (eggs)	38	1968-2006	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: shallow 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 the 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 appear to have shown a slight decline since the 1960s.

Population changes

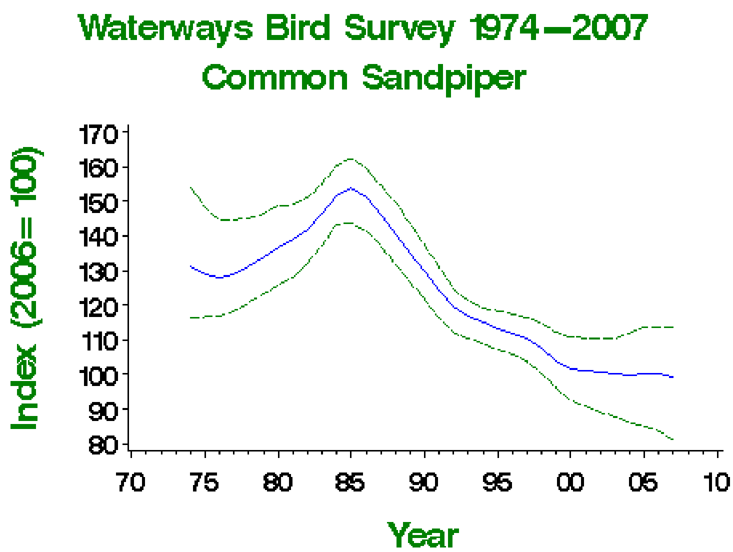


Table of population changes for Common Sandpiper

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	31	1975-2006	25	-22	-46	-3		
	25	1981-2006	26	-28	-44	-10	>25	
	10	1996-2006	21	-11	-28	5		
	5	2001-2006	18	-1	-16	13		Small sample
BBS UK	11	1995-2006	62	-19	-35	-4		
	10	1996-2006	63	-19	-34	-5		
	5	2001-2006	57	-7	-23	7		
BBS Scotland	11	1995-2006	32	-17	-32	4		
	10	1996-2006	33	-16	-33	4		

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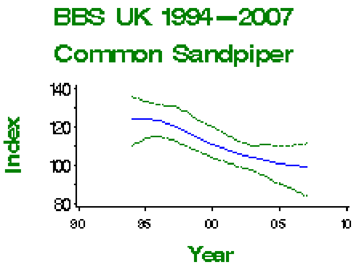
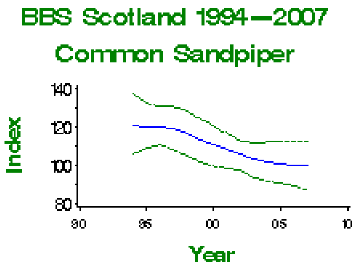
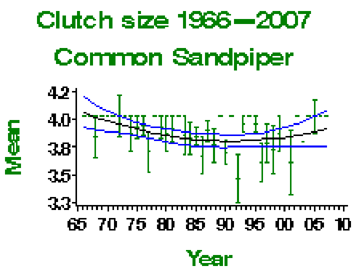




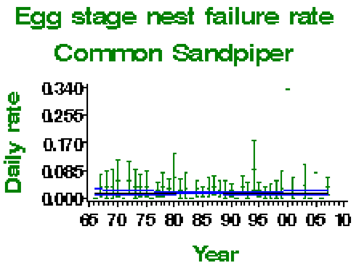
Productivity trends

Table of productivity changes for Common Sandpiper

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	11	Curvilinear	3.99 eggs	3.88 eggs	-2.7%	Small sample
Daily failure rate (eggs)	38	1968-2006	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 continuing overall 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, apparently as a result of increased grazing pressure (**Brindley *et al.* 1998**, **Norris *et al.* 1998**). Wintering populations (augmented by many Icelandic and some other northern European breeders) have been stable since the mid 1980s (**Austin *et al.* 2008**). The failure rate of nests at the egg stage has fallen steeply since the 1960s.

Population changes

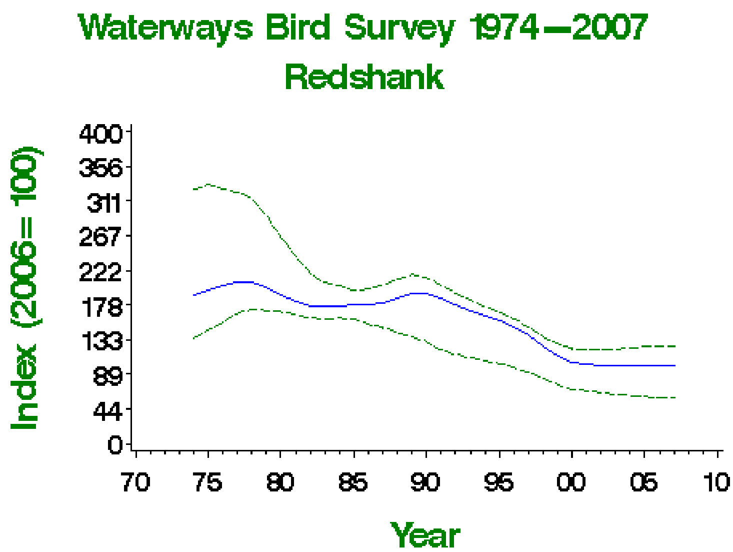


Table of population changes for Redshank

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	31	1975-2006	17	-49	-85	-16	>25	Small sample
	25	1981-2006	17	-45	-76	-22	>25	Small sample
	10	1996-2006	13	-33	-51	-12	>25	Small sample
	5	2001-2006	10	-2	-20	11		Small sample
BBS UK	11	1995-2006	76	-22	-39	-1		
	10	1996-2006	77	-21	-37	1		
	5	2001-2006	82	-6	-26	7		
BBS England	11	1995-2006	51	-16	-28	6		
	10	1996-2006	52	-20	-32	1		
	5	2001-2006	58	-27	-38	-7	>25	

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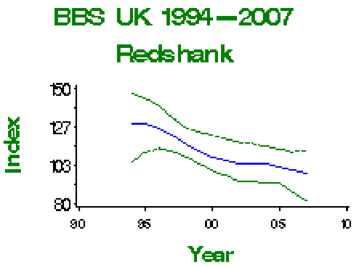
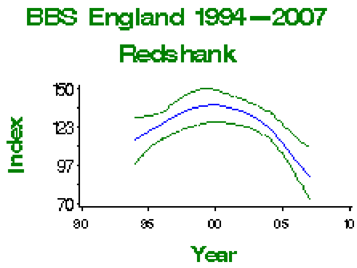
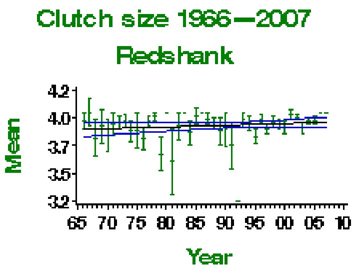




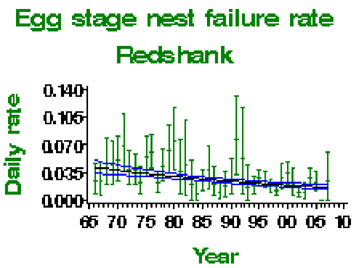
Productivity trends

Table of productivity changes for Redshank

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	30	None				
Daily failure rate (eggs)	38	1968-2006	33	Linear decline	3.98% nests/day	1.69% nests/day	-57.5%	



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 native Rock Doves, wild-nesting Feral Pigeons, semicaptive dovecote breeders, and passing racing pigeons, nor between adults and young of the year, and BBS counts are likely to include birds from all of these groups. BBS indices suggest that a minor decrease has occurred in the last five years.

Population changes

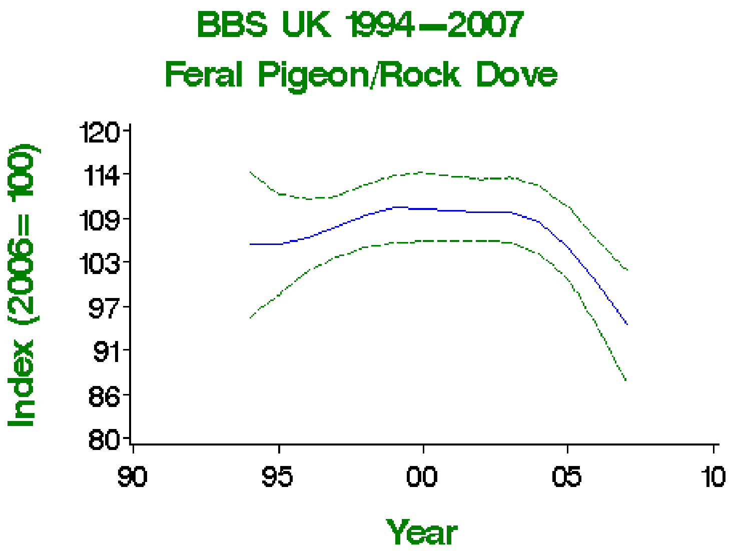


Table of population changes for Feral Pigeon/Rock Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	617	-5	-17	8		
	10	1996-2006	634	-6	-15	5		
	5	2001-2006	676	-9	-16	-1		
BBS England	11	1995-2006	517	-5	-16	6		
	10	1996-2006	531	-5	-15	5		
	5	2001-2006	562	-7	-16	-1		
BBS Scotland	11	1995-2006	55	-12	-43	32		
	10	1996-2006	56	-13	-40	24		
	5	2001-2006	58	-17	-34	5		
BBS Wales	11	1995-2006	31	43	-12	100		
	10	1996-2006	33	29	-12	70		
	5	2001-2006	37	-4	-24	19		

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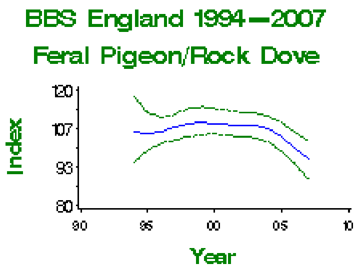

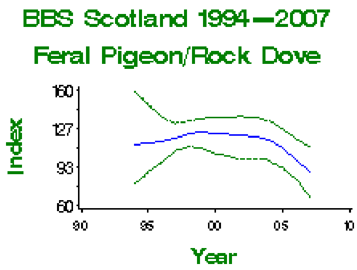

Productivity trends

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 indices suggest that numbers have fallen slightly. 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.

Population changes

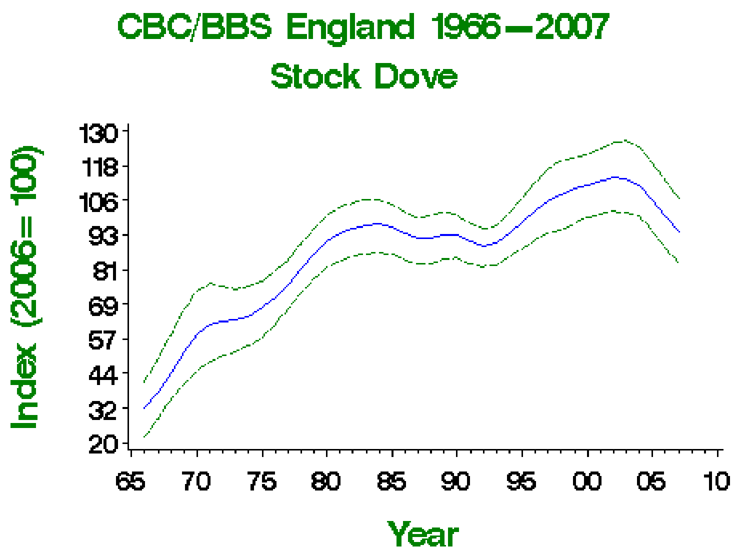

Table of population changes for Stock Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	248	163	79	293		
	25	1981-2006	353	7	-13	32		
	10	1996-2006	673	-2	-12	11		
	5	2001-2006	703	-11	-17	-3		
BBS UK	11	1995-2006	681	2	-7	13		
	10	1996-2006	696	0	-8	10		
	5	2001-2006	764	-7	-14	0		
BBS England	11	1995-2006	628	0	-11	11		
	10	1996-2006	641	-2	-12	9		
	5	2001-2006	703	-10	-16	-2		

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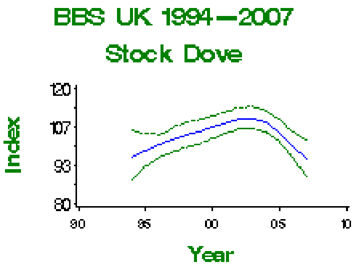
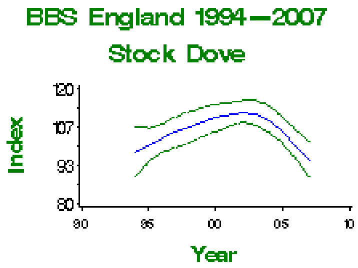
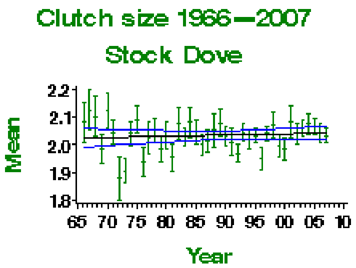


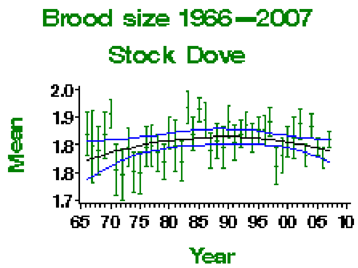


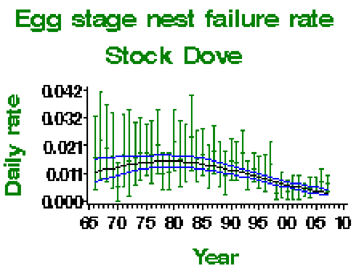
Productivity trends

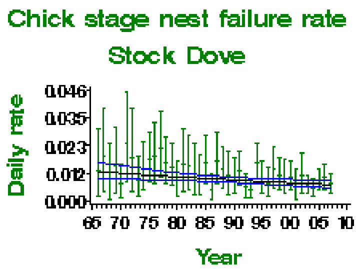
Table of productivity changes for Stock Dove

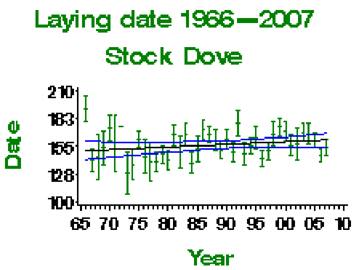
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	80	None				
Brood size	38	1968-2006	111	Curvilinear	1.82 chicks	1.84 chicks	1%	
Daily failure rate (eggs)	38	1968-2006	78	Curvilinear	1.2% nests/day	0.36% nests/day	-70%	
Daily failure rate (chicks)	38	1968-2006	57	Linear decline	1.2% nests/day	0.71% nests/day	-40.8%	
Laying date	38	1968-2006	16	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

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. A trend toward earlier nesting could have led CBC, with its fieldwork finishing in early July, to overestimate the rate of increase (**Marchant *et al.* 1990**). Numbers have risen widely in Europe since 1980 (**PECBMS 2007**).

Population changes

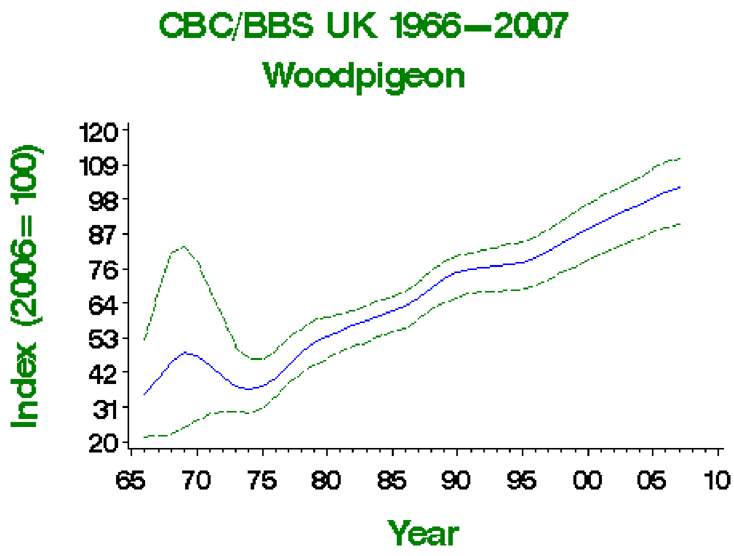


Table of population changes for Woodpigeon

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	724	146	22	445		
	25	1981-2006	1105	80	55	119		
	10	1996-2006	2280	27	23	32		
	5	2001-2006	2408	11	8	14		
CBC/BBS England	39	1967-2006	581	168	36	581		
	25	1981-2006	886	97	64	136		
	10	1996-2006	1817	33	29	38		
	5	2001-2006	1907	14	11	17		
BBS UK	11	1995-2006	2144	27	21	33		
	10	1996-2006	2204	26	21	31		
	5	2001-2006	2408	11	8	15		
BBS England	11	1995-2006	1709	34	27	40		
	10	1996-2006	1753	31	26	36		
	5	2001-2006	1907	14	11	18		
BBS Scotland	11	1995-2006	174	-5	-23	18		
	10	1996-2006	177	-3	-19	15		
	5	2001-2006	185	-5	-16	7		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	210	17	8	25		
BBS N.Ireland	11	1995-2006	73	64	28	103		
	10	1996-2006	79	49	19	75		
	5	2001-2006	92	8	-2	20		

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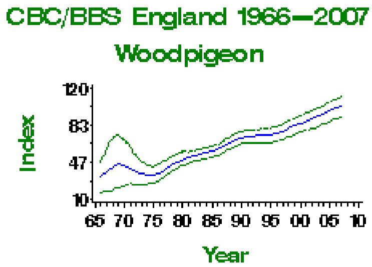
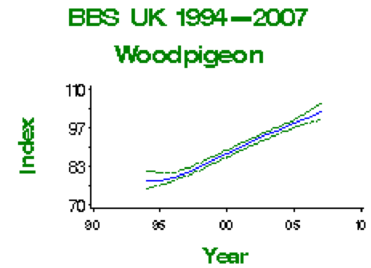
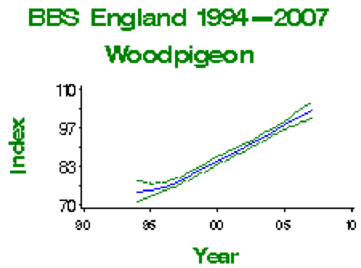
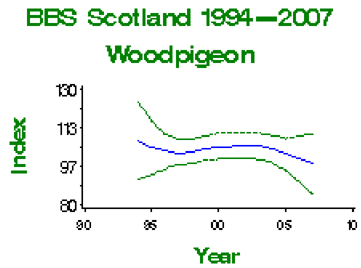
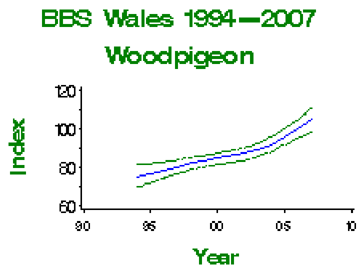
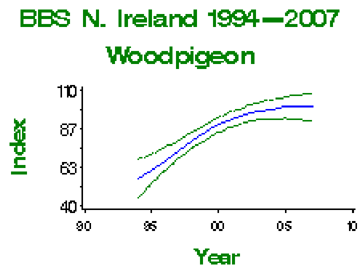












Productivity trends

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, breeding productivity has also increased, perhaps as the species has become better adapted to its new environment.

Population changes

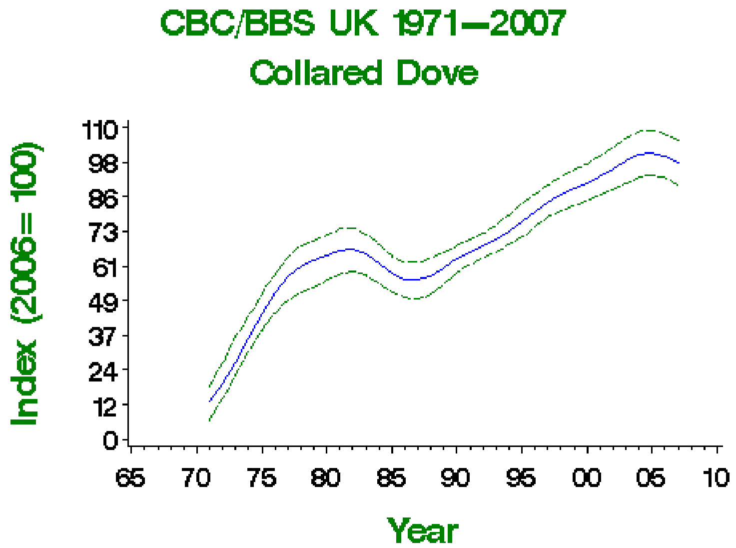


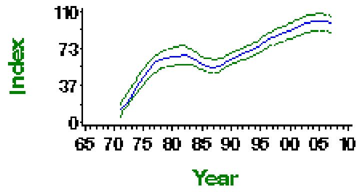
Table of population changes for Collared Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	34	1972-2006	469	415	236	646		
	25	1981-2006	611	50	23	90		
	10	1996-2006	1251	25	18	32		
	5	2001-2006	1354	8	3	12		
CBC/BBS England	34	1972-2006	413	440	252	666		
	25	1981-2006	539	52	18	95		
	10	1996-2006	1101	24	17	31		
	5	2001-2006	1178	7	2	11		
BBS UK	11	1995-2006	1181	29	23	37		
	10	1996-2006	1217	24	19	31		
	5	2001-2006	1354	7	3	11		
BBS England	11	1995-2006	1041	29	21	39		
	10	1996-2006	1071	24	17	32		
	5	2001-2006	1178	7	2	11		
BBS Scotland	11	1995-2006	42	-2	-28	33		
	10	1996-2006	43	4	-21	37		
	5	2001-2006	50	18	-4	41		
BBS Wales	11	1995-2006	64	49	7	92		
	10	1996-2006	67	40	7	70		
	5	2001-2006	78	15	2	30		

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

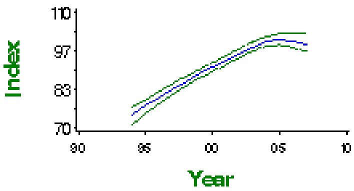
CBC/BBS England 1971—2007

Collared Dove



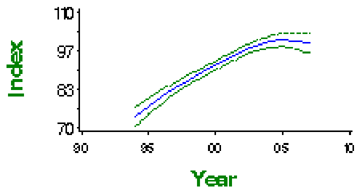
BBS UK 1994—2007

Collared Dove



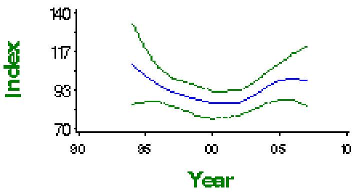
BBS England 1994—2007

Collared Dove



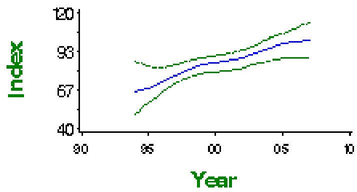
BBS Scotland 1994—2007

Collared Dove



BBS Wales 1994—2007

Collared Dove



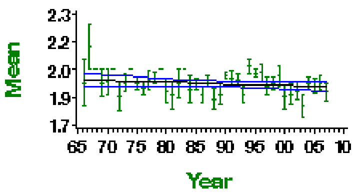
Productivity trends

Table of productivity changes for Collared Dove

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	43	None				
Brood size	38	1968-2006	70	Linear increase	1.76 chicks	1.85 chicks	4.7%	
Daily failure rate (eggs)	38	1968-2006	62	None				
Daily failure rate (chicks)	38	1968-2006	55	Linear decline	1.82% nests/day	1.06% nests/day	-41.8%	
Laying date	38	1968-2006	44	None				

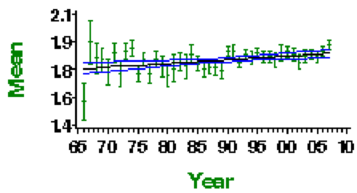
Clutch size 1966—2007

Collared Dove



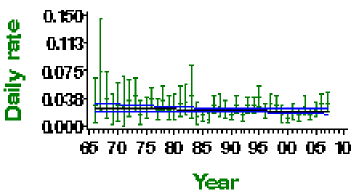
Brood size 1966—2007

Collared Dove



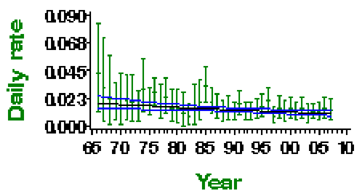
Egg stage nest failure rate

Collared Dove

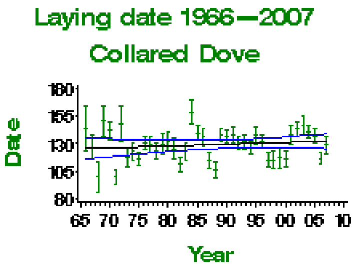


Chick stage nest failure rate

Collared Dove



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. 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 they did 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. Turtle Dove is one of the most strongly declining bird species in Europe, having decreased at an annual rate of 4% during 1980–2005 (**PECBMS 2007**). Conditions in winter may also be influencing trends: a recent study has demonstrated a positive correlation between survival rate among breeding adults in France and food supply in West Africa, as measured by cereal production (**Eraud *et al.* 2009**).

Population changes

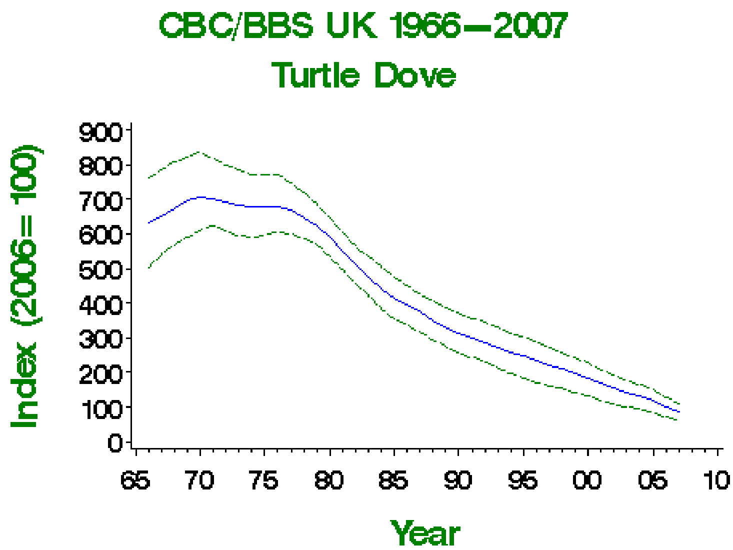
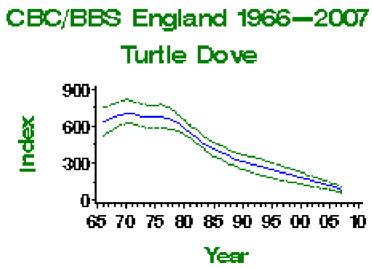
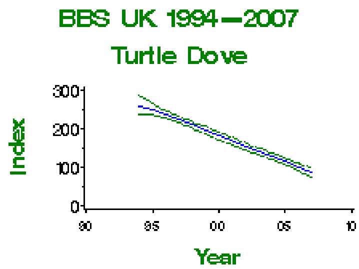


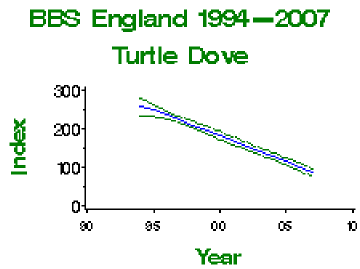
Table of population changes for Turtle Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	106	-85	-90	-76	>50	
	25	1981-2006	123	-82	-88	-75	>50	
	10	1996-2006	199	-58	-62	-51	>50	
	5	2001-2006	157	-40	-47	-31	>25	
CBC/BBS England	39	1967-2006	105	-85	-91	-76	>50	
	25	1981-2006	122	-82	-88	-74	>50	
	10	1996-2006	195	-57	-62	-51	>50	
	5	2001-2006	155	-40	-47	-30	>25	
BBS UK	11	1995-2006	182	-60	-66	-54	>50	
	10	1996-2006	184	-58	-63	-51	>50	
	5	2001-2006	157	-40	-46	-32	>25	
BBS England	11	1995-2006	179	-60	-65	-52	>50	
	10	1996-2006	181	-57	-63	-50	>50	
	5	2001-2006	155	-40	-48	-31	>25	

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



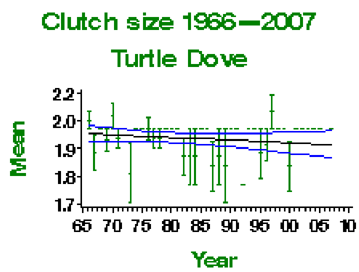


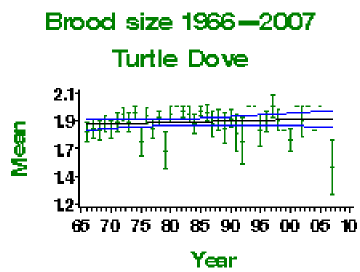


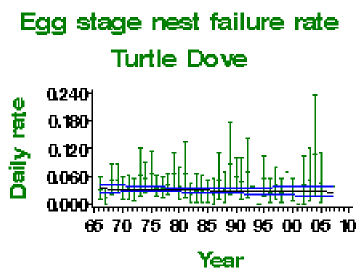
Productivity trends

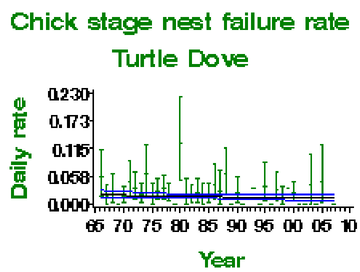
Table of productivity changes for Turtle Dove

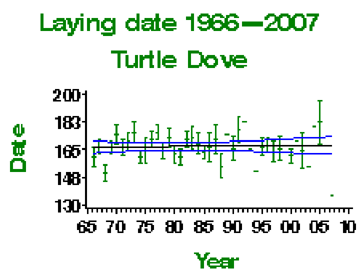
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	12	None				Small sample
Brood size	38	1968-2006	16	None				Small sample
Daily failure rate (eggs)	38	1968-2006	16	None				Small sample
Daily failure rate (chicks)	38	1968-2006	12	None				Small sample
Laying date	38	1968-2006	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 two 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**). A recent study in Belgium has identified negative effects on breeding **Nuthatch**, but not on other native hole-nesting species, such as **Starling** (**Strubbe & Matthysen 2007**).

Population changes

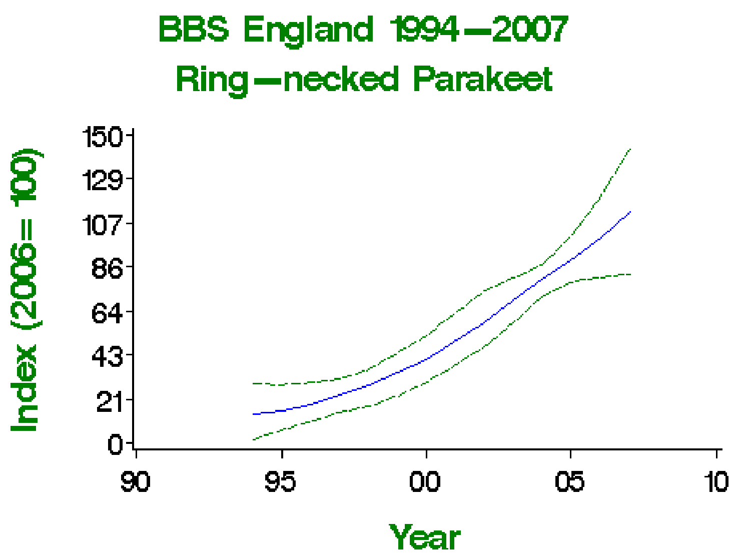


Table of population changes for Ring-necked Parakeet

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS England	11	1995-2006	34	522	202	1861		
	10	1996-2006	37	424	189	1174		
	5	2001-2006	61	104	21	215		

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: priority species

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 certain 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 (**PECBMS 2007**).

Population changes

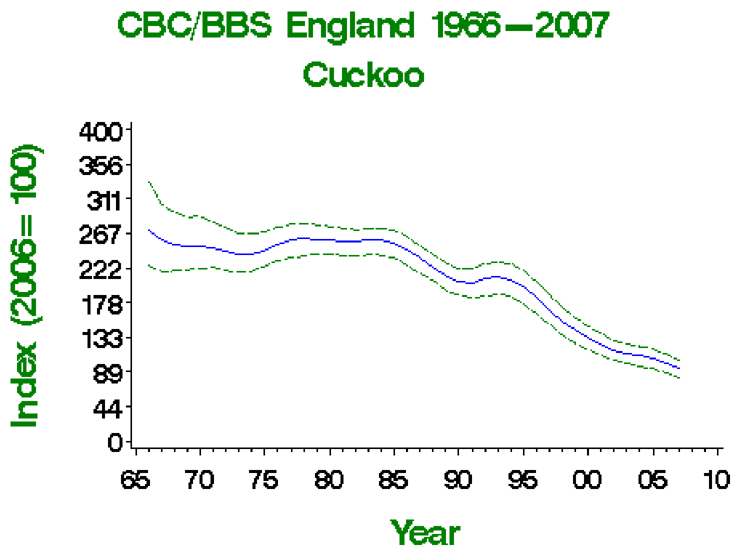
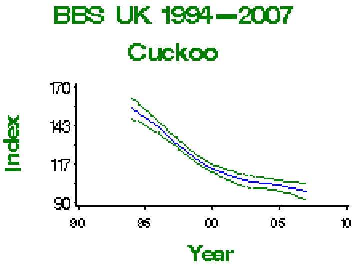
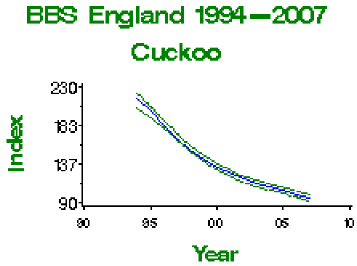


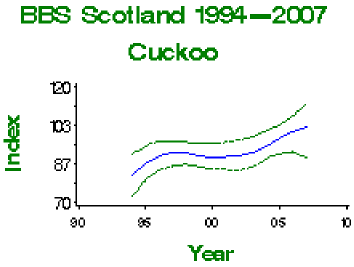
Table of population changes for Cuckoo

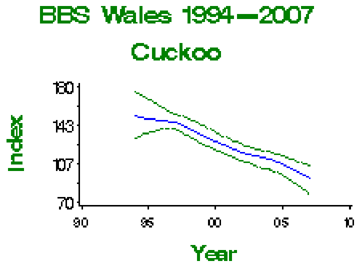
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	260	-61	-71	-48	>50	
	25	1981-2006	352	-61	-67	-54	>50	
	10	1996-2006	614	-46	-49	-43	>25	
	5	2001-2006	525	-20	-23	-14		
BBS UK	11	1995-2006	729	-33	-38	-27	>25	
	10	1996-2006	731	-29	-35	-24	>25	
	5	2001-2006	672	-9	-15	-4		
BBS England	11	1995-2006	584	-50	-53	-46	>25	
	10	1996-2006	582	-46	-49	-42	>25	
	5	2001-2006	525	-20	-24	-16		
BBS Scotland	11	1995-2006	66	16	-2	33		
	10	1996-2006	66	11	-6	29		
	5	2001-2006	62	12	-3	28		
BBS Wales	11	1995-2006	57	-33	-47	-19	>25	
	10	1996-2006	59	-32	-46	-21	>25	
	5	2001-2006	59	-19	-30	-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**

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**). In earlier decades, the plight of such a charismatic and popular bird led to extensive releasing of captive-bred birds in well-meaning attempts at restocking: 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, already 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. RBBP provide a county breakdown of 2005 nesting totals **here** (**Holling & RBBP 2008**).

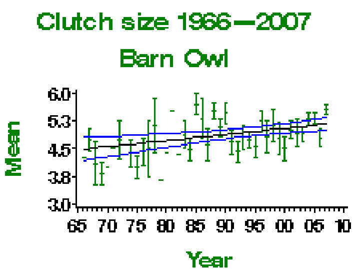
Population changes

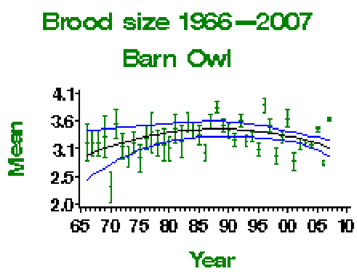
Annual breeding population changes for this species are not currently monitored by BTO

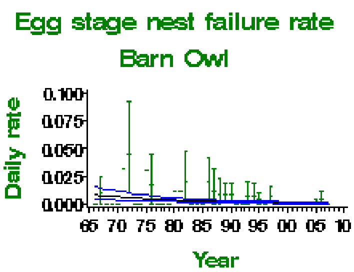
Productivity trends

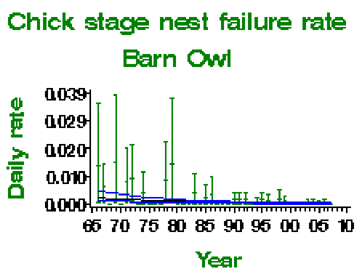
Table of productivity changes for Barn Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	22	Linear increase	4.53 eggs	5.15 eggs	13.8%	Small sample
Brood size	38	1968-2006	149	Curvilinear	3.01 chicks	3.12 chicks	3.4%	
Daily failure rate (eggs)	38	1968-2006	18	Linear decline	0.75% nests/day	0.1% nests/day	-86.7%	Small sample
Daily failure rate (chicks)	38	1968-2006	69	Linear decline	0.21% nests/day	0.03% nests/day	-85.7%	









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: probable 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 in the UK shows very wide variation, but a downturn in recent seasons suggests that a moderate long-term decline may lie behind the observed fluctuations. Trends are poorly known, however, because the species has large breeding territories and, being largely inactive during the day, 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

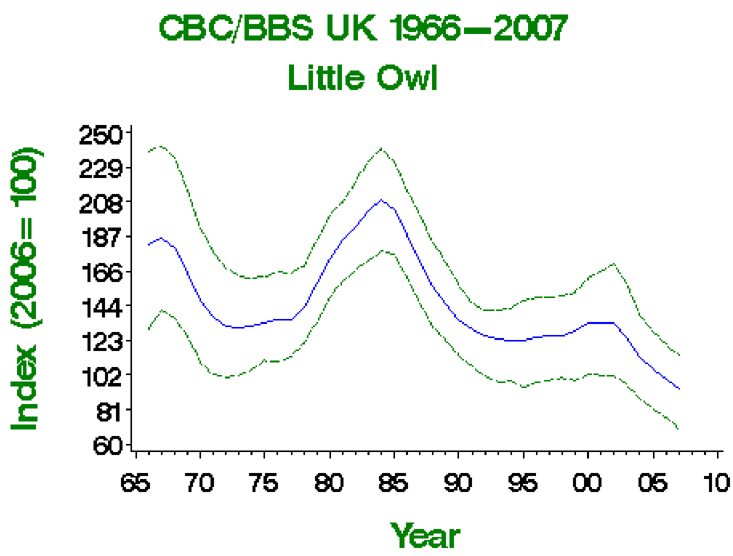
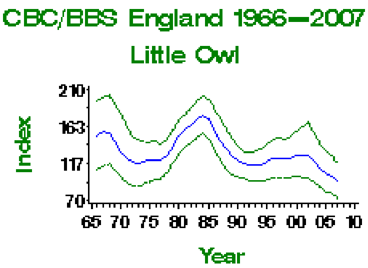
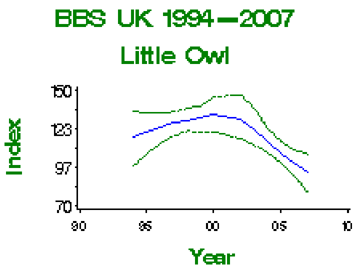


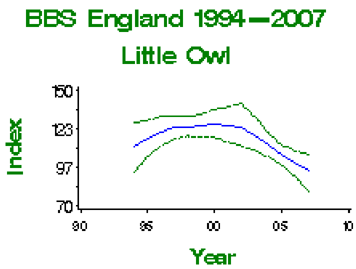
Table of population changes for Little Owl

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	54	-46	-68	-12	>25	
	25	1981-2006	69	-46	-63	-29	>25	
	10	1996-2006	113	-20	-33	-7		
	5	2001-2006	101	-25	-39	-13	>25	
CBC/BBS England	39	1967-2006	51	-36	-61	14		
	25	1981-2006	66	-37	-55	-8	>25	
	10	1996-2006	109	-18	-31	-2		
	5	2001-2006	99	-22	-36	-7		
BBS UK	11	1995-2006	98	-17	-31	-1		
	10	1996-2006	101	-20	-33	-7		
	5	2001-2006	101	-24	-36	-9		
BBS England	11	1995-2006	95	-14	-29	2		
	10	1996-2006	97	-17	-32	-4		
	5	2001-2006	99	-20	-34	-7		

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



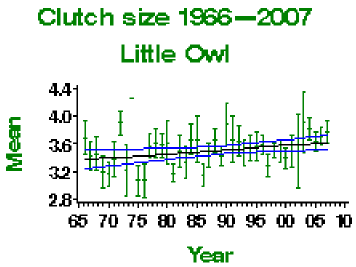


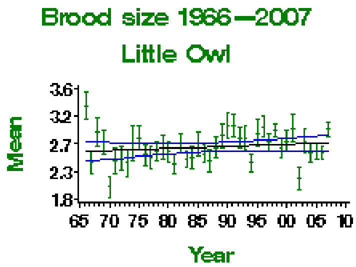


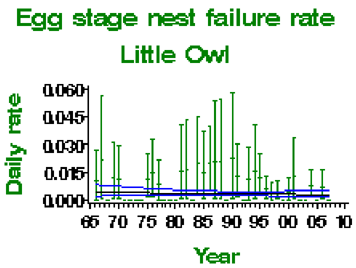
Productivity trends

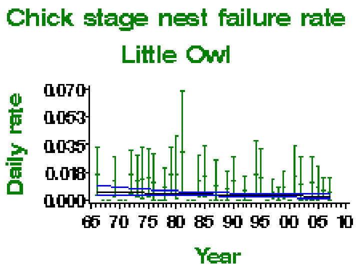
Table of productivity changes for Little Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	18	Linear increase	3.39 eggs	3.62 eggs	6.7%	Small sample
Brood size	38	1968-2006	38	None				
Daily failure rate (eggs)	38	1968-2006	16	None				Small sample
Daily failure rate (chicks)	38	1968-2006	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 covered relatively poorly 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 has been a shallow downward trend in the index since the early 1970s. It may be relevant to this possible long-term decline 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 early 1960s. Special post-breeding surveys of this species were conducted in autumn 2005 (click here), following methodology established by an earlier survey in 1989 (Percival 1990).

Population changes

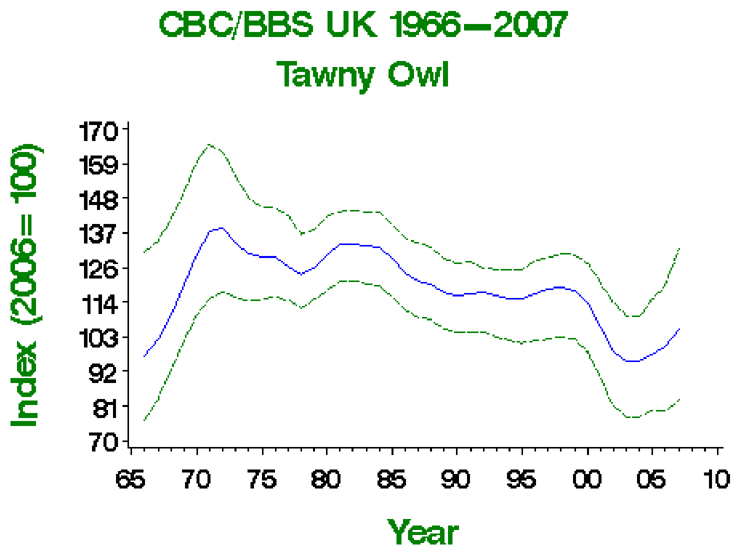


Table of population changes for Tawny Owl

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	75	-2	-40	42		
	25	1981-2006	87	-25	-43	-2		
	10	1996-2006	110	-15	-29	5		
	5	2001-2006	82	-6	-21	16		
CBC/BBS England	39	1967-2006	64	-1	-41	48		
	25	1981-2006	74	-19	-39	12		
	10	1996-2006	95	-9	-24	14		
	5	2001-2006	73	-10	-23	10		
BBS UK	11	1995-2006	82	-12	-27	11		Nocturnal species
	10	1996-2006	84	-12	-25	10		Nocturnal species
	5	2001-2006	82	-7	-22	11		Nocturnal species
BBS England	11	1995-2006	70	-5	-24	24		Nocturnal species
	10	1996-2006	72	-6	-24	19		Nocturnal species
	5	2001-2006	73	-10	-25	8		Nocturnal species

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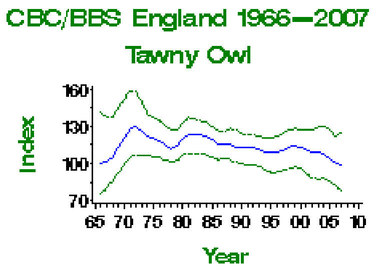
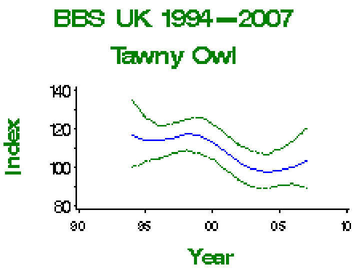
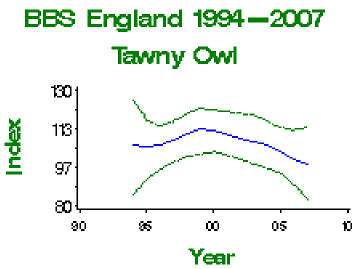


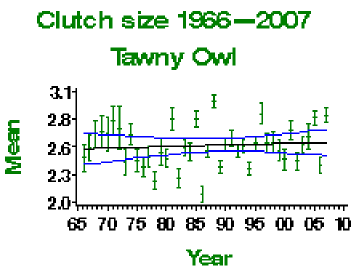


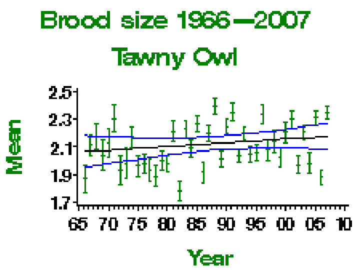


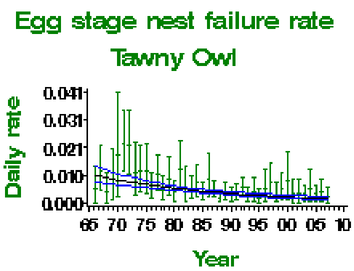
Productivity trends

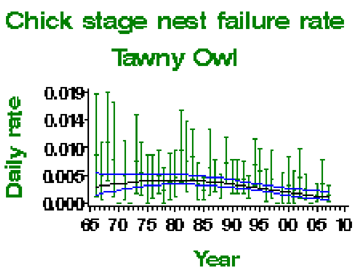
Table of productivity changes for Tawny Owl

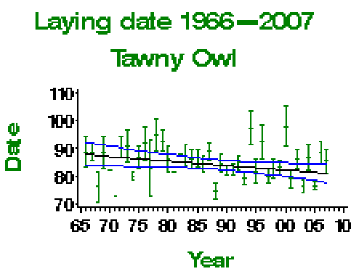
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	78	None				
Brood size	38	1968-2006	139	None				
Daily failure rate (eggs)	38	1968-2006	55	Linear decline	0.95% nests/day	0.18% nests/day	-81.1%	
Daily failure rate (chicks)	38	1968-2006	82	Curvilinear	0.31% nests/day	0.11% nests/day	-64.5%	
Laying date	38	1968-2006	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 the 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. Although annual nest record sample are very small, the increases in nest failure rates and decreases in clutch and brood sizes have resulted in the inclusion of Nightjar on the NRS concern list (**Leech & Barimore 2008**). A recent study suggests that nest failure is most likely in areas heavily frequented by walkers and dogs (**Langston *et al.* 2007**).

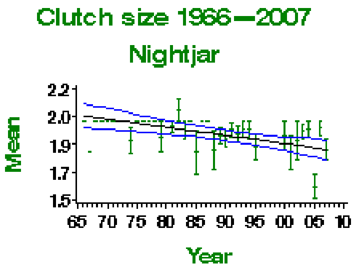
Population changes

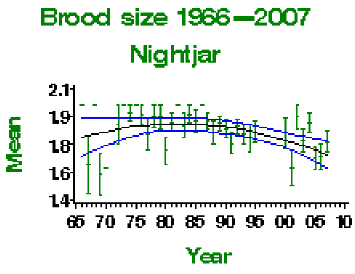
Annual population changes are not monitored for this species

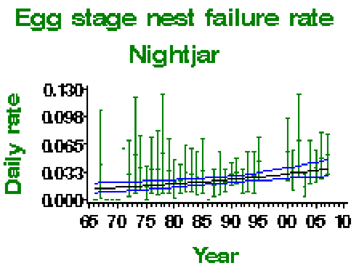
Productivity trends

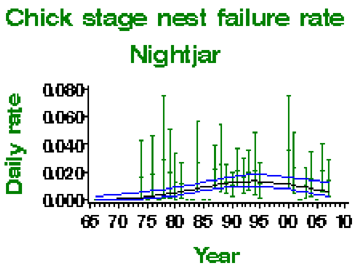
Table of productivity changes for Nightjar

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	17	Linear decline	2.02 eggs	1.82 eggs	-9.8%	Small sample
Brood size	38	1968-2006	24	Curvilinear	1.82 chicks	1.7 chicks	-6.2%	Small sample
Daily failure rate (eggs)	38	1968-2006	22	Linear increase	1.38% nests/day	3.55% nests/day	157.2%	Small sample
Daily failure rate (chicks)	38	1968-2006	21	Curvilinear	0.05% nests/day	0.67% nests/day	1240%	Small sample
Laying date	38	1968-2006	18	Curvilinear	Jun 17	Jun 16	-1 days	Small sample

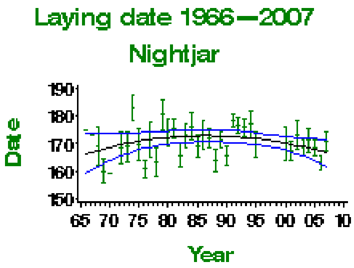








Insufficient data on CES available for this species



Additional information

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

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. Their monitoring is complicated by the difficulty of finding occupied nests, by the weather-dependent and sometimes extraordinary distances from the nest at which breeding 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 suggest steep declines in England, Scotland and Wales but the relationship between BBS transect counts and nesting numbers is not properly understood so far. **Concern for Swifts**, a small private organisation, 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 try to determine whether the species warrants a conservation concern listing.

Population changes

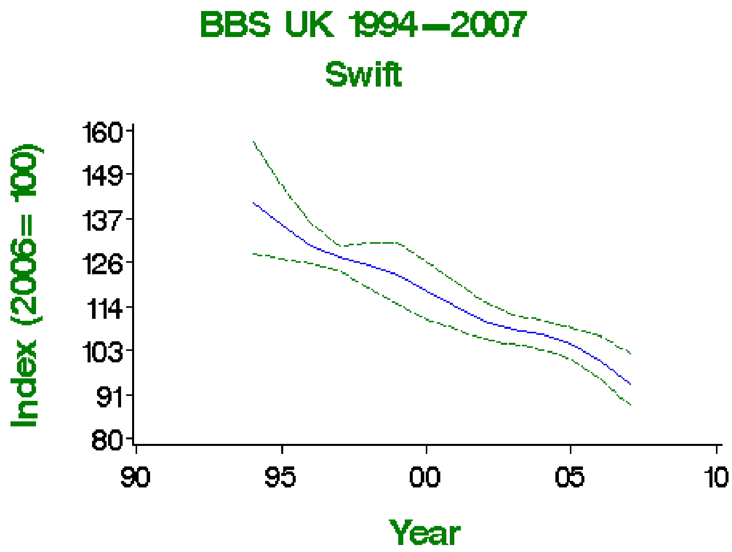


Table of population changes for Swift

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	961	-26	-33	-18	>25	
	10	1996-2006	980	-23	-29	-15		
	5	2001-2006	1053	-13	-20	-3		
BBS England	11	1995-2006	825	-28	-36	-18	>25	
	10	1996-2006	840	-25	-32	-19	>25	
	5	2001-2006	893	-16	-24	-8		
BBS Scotland	11	1995-2006	46	-42	-59	-18	>25	
	10	1996-2006	48	-33	-53	-13	>25	
	5	2001-2006	54	-2	-20	20		
BBS Wales	11	1995-2006	66	-31	-48	2		
	10	1996-2006	68	-30	-48	-4	>25	
	5	2001-2006	77	-26	-41	-11	>25	

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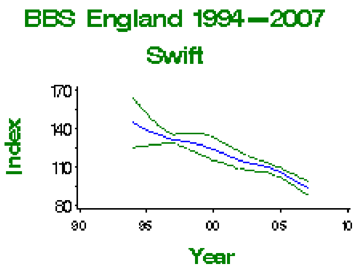

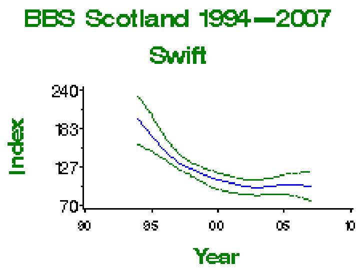

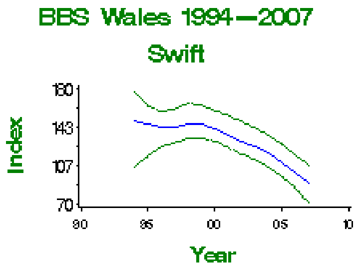

Productivity trends

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 population growth is unusually high. Amber listing of this species in the UK results from its 'depleted' status in Europe as a whole, following declines between 1970 and 1990 (BirdLife International 2004).

Population changes

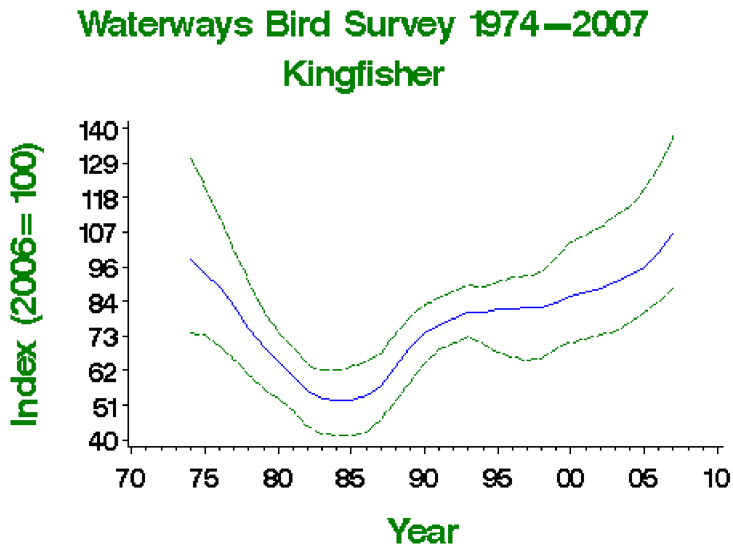

Table of population changes for Kingfisher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	31	1975-2006	32	7	-34	84		
	25	1981-2006	32	66	18	170		
	10	1996-2006	35	22	1	86		
	5	2001-2006	33	14	-1	44		
BBS UK	11	1995-2006	51	14	-13	44		
	10	1996-2006	52	21	-8	47		
	5	2001-2006	62	2	-22	26		
BBS England	11	1995-2006	44	17	-11	58		
	10	1996-2006	45	24	-5	58		
	5	2001-2006	54	15	-9	40		

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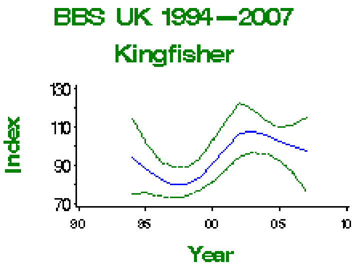

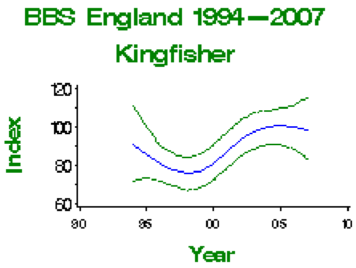

Productivity trends

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 (PECBMS 2007).

Population changes

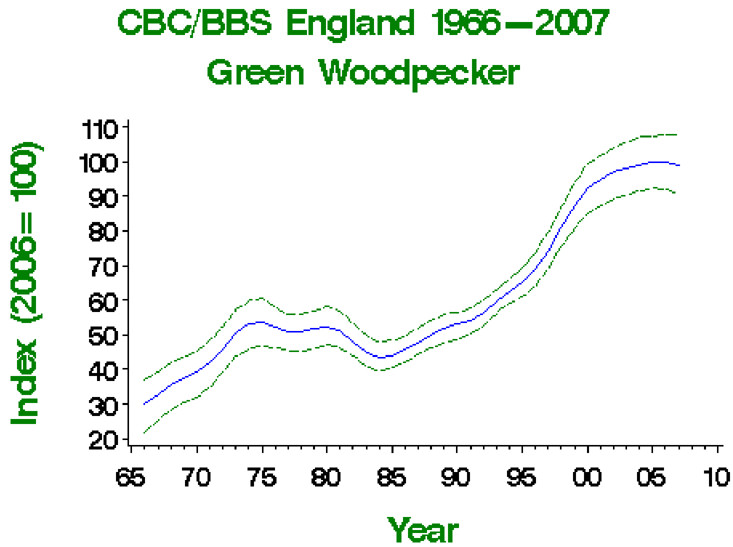

Table of population changes for Green Woodpecker

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	252	205	133	327		
	25	1981-2006	360	95	61	133		
	10	1996-2006	710	46	37	54		
	5	2001-2006	761	6	1	11		
BBS UK	11	1995-2006	688	43	31	55		
	10	1996-2006	716	37	28	46		
	5	2001-2006	820	8	3	13		
BBS England	11	1995-2006	636	51	42	62		
	10	1996-2006	663	43	35	51		
	5	2001-2006	761	7	3	11		
BBS Wales	11	1995-2006	45	4	-18	30		
	10	1996-2006	47	2	-19	23		
	5	2001-2006	51	11	-5	32		

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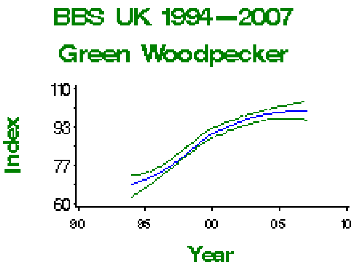

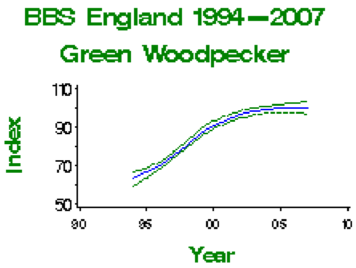

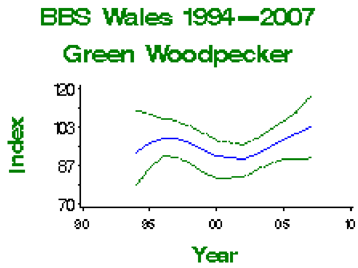

Productivity trends

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 increase that occurred during the 1970s (**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 more open, 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 (**PECBMS 2007**).

Population changes

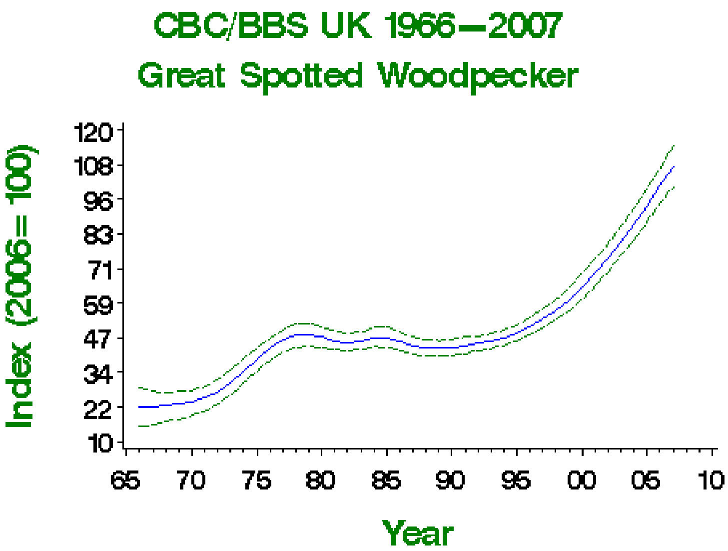

Table of population changes for Great Spotted Woodpecker

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	322	349	233	603		
	25	1981-2006	460	119	88	156		
	10	1996-2006	904	97	86	109		
	5	2001-2006	1036	44	37	52		
CBC/BBS England	39	1967-2006	289	332	211	556		
	25	1981-2006	412	115	85	157		
	10	1996-2006	805	91	81	102		
	5	2001-2006	916	38	31	44		
BBS UK	11	1995-2006	811	112	100	124		
	10	1996-2006	846	98	87	108		
	5	2001-2006	1036	43	37	49		
BBS England	11	1995-2006	721	105	94	119		
	10	1996-2006	752	92	81	104		
	5	2001-2006	916	38	31	42		
BBS Wales	11	1995-2006	61	98	62	148		
	10	1996-2006	63	89	59	132		

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

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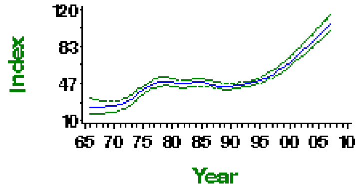
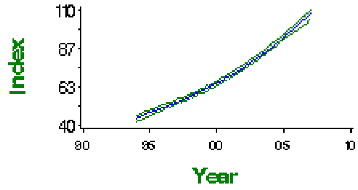
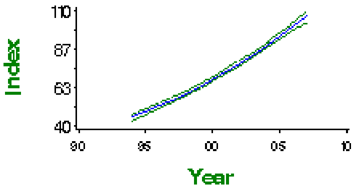
CBC/BBS England 1966—2007
Great Spotted Woodpecker



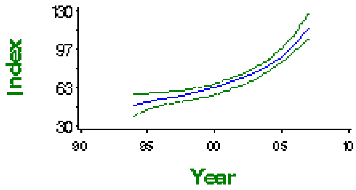
BBS UK 1994—2007
Great Spotted Woodpecker



BBS England 1994—2007
Great Spotted Woodpecker



BBS Wales 1994—2007
Great Spotted Woodpecker



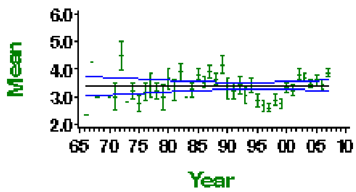
Productivity trends

Table of productivity changes for Great Spotted Woodpecker

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Brood size	38	1968-2006	24	None				Small sample
Daily failure rate (chicks)	38	1968-2006	31	Linear decline	0.37% nests/day	0.02% nests/day	-94.6%	

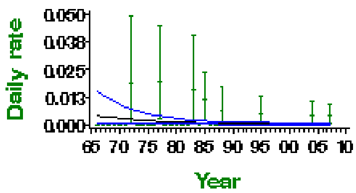
>Insufficient data on clutch size available for this species

Brood size 1966—2007
Great Spotted Woodpecker



Insufficient data on egg nest failure available for this species

Chick stage nest failure rate
Great Spotted Woodpecker



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: priority species

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 has become so rare that BBS observers have been unable to continue the annual monitoring that was possible until 2000 through CBC. The species qualifies easily for red listing. 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**). Lesser Spotted Woodpecker is one of the most strongly declining bird species in Europe, having decreased at an annual rate of 7% during 1980–2005 (**PECBMS 2007**).

Population changes

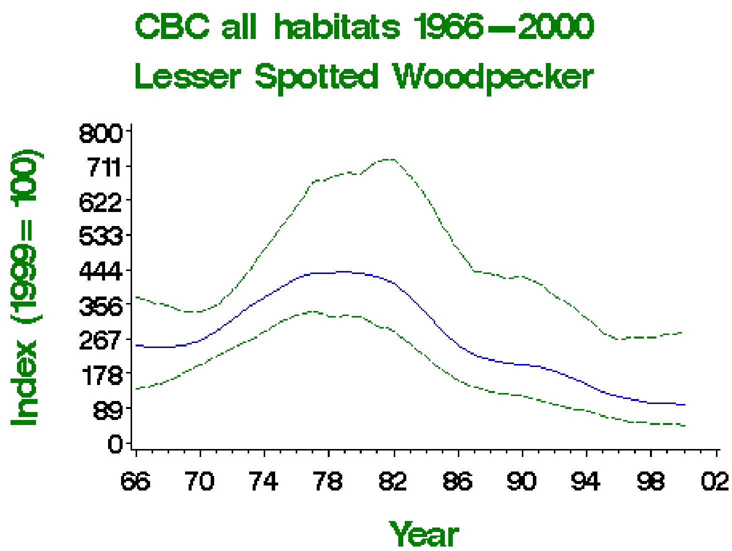


Table of population changes for Lesser Spotted Woodpecker

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 UK 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**). The small NRS sample suggests that nest failure rates have become less frequent at the egg stage. Human disturbance at heathland sites apparently reduces population density, but the effects are partly offset by higher breeding productivity at lower densities (**Mallord *et al.* 2007**). BTO conducted a new national survey in spring 2006 (for more information, click **here**).

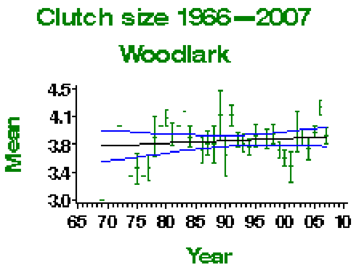
Population changes

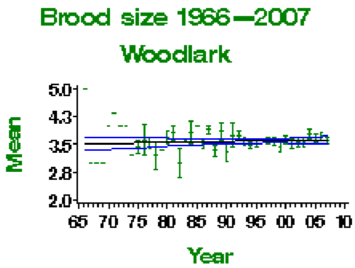
Annual breeding population changes for this species are not currently monitored by BTO

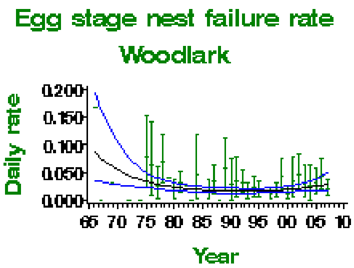
Productivity trends

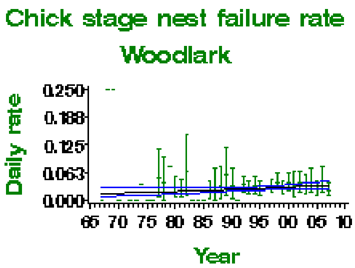
Table of productivity changes for Woodlark

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	16	None				Small sample
Brood size	38	1968-2006	27	None				Small sample
Daily failure rate (eggs)	38	1968-2006	20	Curvilinear	6.83% nests/day	2.75% nests/day	-59.7%	Small sample
Daily failure rate (chicks)	38	1968-2006	28	None				Small sample
Laying date	38	1968-2006	18	None				Small sample

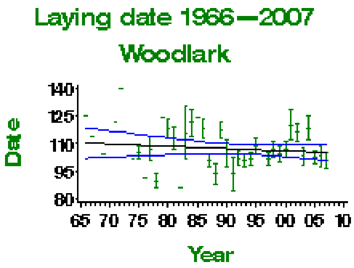








Insufficient data on CES available for this species



Additional information

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

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. More recently, **Gillings *et al.* (2005)** have identified better population performance in areas with extensive winter stubble, presumably because overwinter survival is relatively high. 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**). Numbers have fallen widely in Europe since 1980 (**PECBMS 2007**).

Population changes

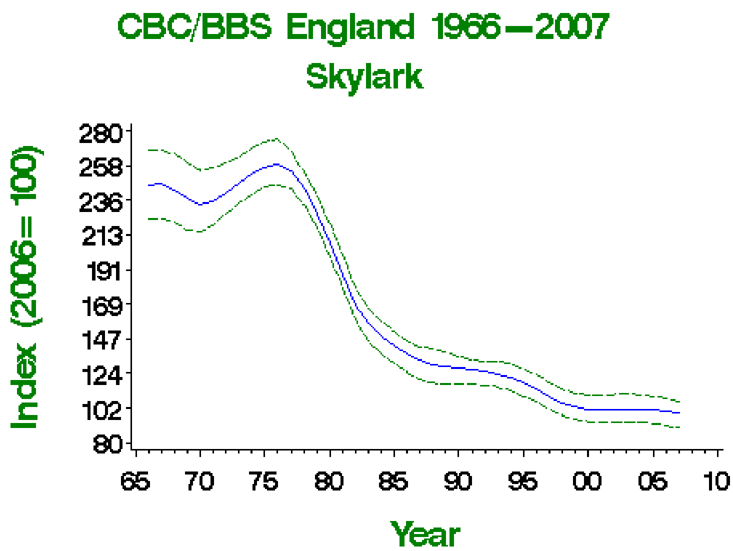
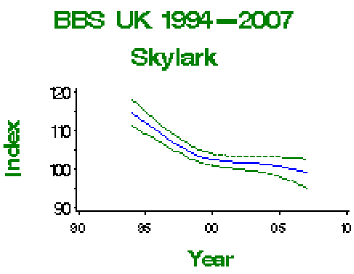


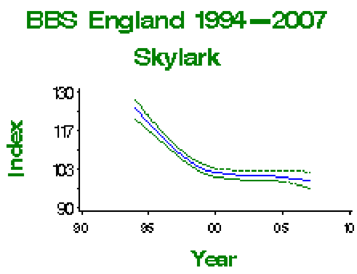
Table of population changes for Skylark

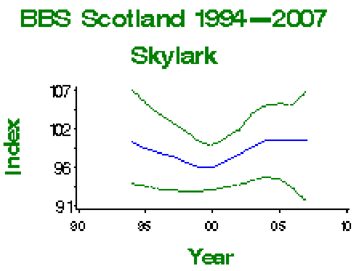
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	455	-59	-66	-51	>50	
	25	1981-2006	644	-47	-54	-40	>25	
	10	1996-2006	1278	-13	-17	-9		
	5	2001-2006	1307	-1	-5	2		
BBS UK	11	1995-2006	1538	-11	-16	-6		
	10	1996-2006	1568	-8	-14	-4		
	5	2001-2006	1643	-2	-6	2		
BBS England	11	1995-2006	1211	-16	-19	-12		
	10	1996-2006	1236	-12	-16	-8		
	5	2001-2006	1307	-1	-5	2		
BBS Scotland	11	1995-2006	192	1	-11	13		
	10	1996-2006	192	2	-10	14		

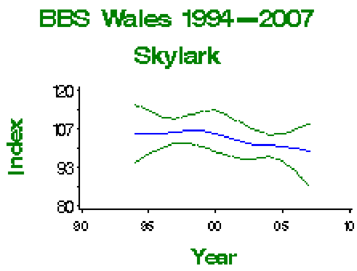
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales								
	10	1996-2006	103	-5	-16	5		
	5	2001-2006	111	-3	-18	9		
BBS N.Ireland	11	1995-2006	34	-30	-44	-16	>25	
	10	1996-2006	36	-35	-48	-24	>25	
	5	2001-2006	36	-38	-52	-33	>25	

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





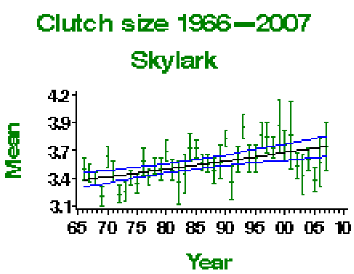


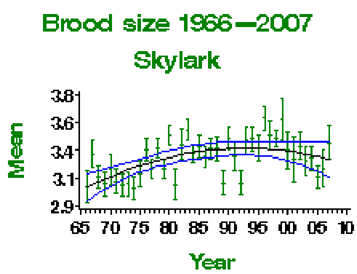


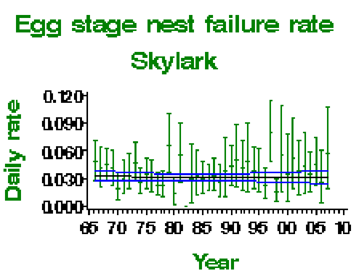
Productivity trends

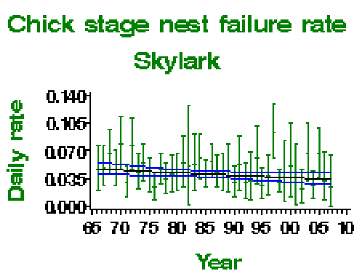
Table of productivity changes for Skylark

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	38	Linear increase	3.37 eggs	3.68 eggs	9%	
Brood size	38	1968-2006	67	Curvilinear	3.1 chicks	3.29 chicks	6.3%	
Daily failure rate (eggs)	38	1968-2006	47	None				
Daily failure rate (chicks)	38	1968-2006	55	None				
Laying date	38	1968-2006	20	Curvilinear	May 25	Jun 1	7 days	Small sample

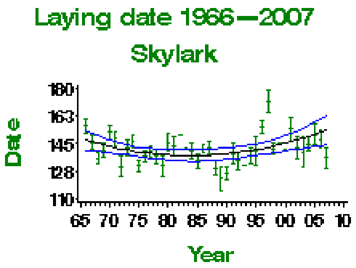








Insufficient data on CES available for this species



Additional information

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

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 unusually 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 along riverbanks, 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 promotes annual survival and thus abundance in the following breeding season (**Szép 1995**). Annual survival rates from RAS sites in the UK for 1990–2004 were correlated positively with minimum monthly rainfall during the wet season in West Africa (**Robinson *et al.* 2008**). 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

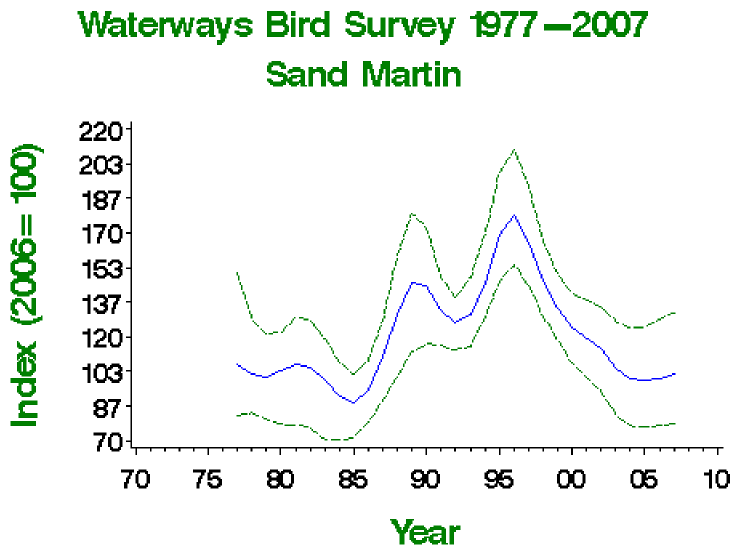


Table of population changes for Sand Martin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	28	1978-2006	19	-2	-39	55		Small sample
	25	1981-2006	20	-6	-42	76		
	10	1996-2006	22	-44	-59	-25	>25	
	5	2001-2006	18	-16	-27	4		Small sample
BBS UK	11	1995-2006	114	21	-36	122		
	10	1996-2006	117	16	-30	96		
	5	2001-2006	124	30	2	66		
BBS England	11	1995-2006	76	20	-19	53		
	10	1996-2006	77	10	-22	32		
	5	2001-2006	82	12	-9	36		

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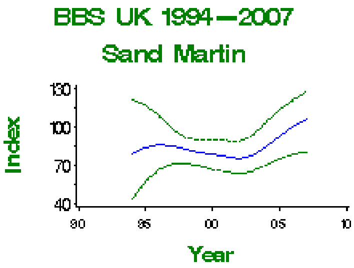
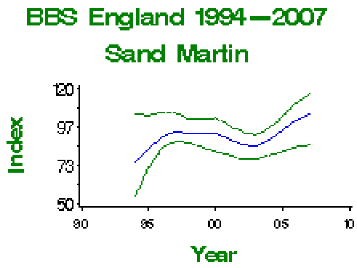
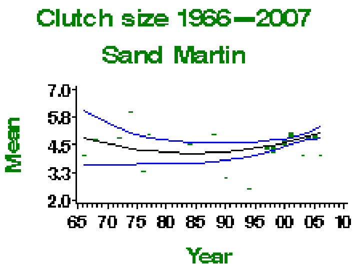


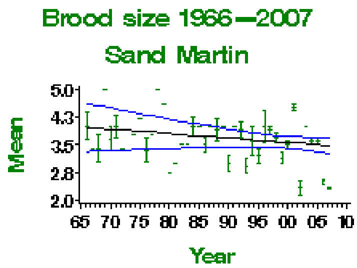


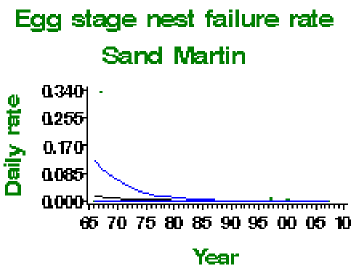
Productivity trends

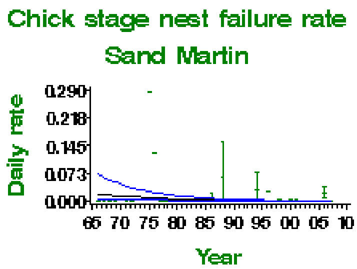
Table of productivity changes for Sand Martin

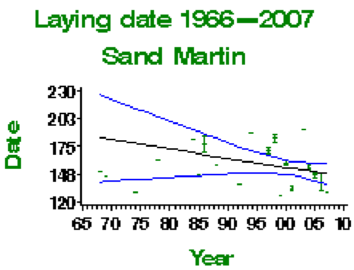
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	32	Curvilinear	4.68 eggs	5.06 eggs	8.2%	
Brood size	38	1968-2006	35	None				
Daily failure rate (eggs)	38	1968-2006	24	Linear decline	1.27% nests/day	0.01% nests/day	-99.2%	Small sample
Daily failure rate (chicks)	38	1968-2006	36	Linear decline	1.57% nests/day	0.08% nests/day	-94.9%	
Laying date	38	1968-2006	30	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

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**). BBS data suggest increases throughout the UK since 1994. Analysis has shown that the population fluctuations are most strongly related to variable losses on their wintering grounds (**Baillie & Peach 1992**). 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**). Annual survival rates from RAS sites in the UK for 1998–2004 were correlated positively with mean monthly rainfall during the early austral summer in southern Africa (**Robinson *et al.* 2008**). 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 apparently 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**). Brood sizes increased up to the late 1980s, and may now be falling again. Climatic warming is leading to both an earlier start and later finish to the breeding season for European Swallows, but there has been increased chick mortality in hot, dry summers and reduced post-fledging survival because of poor conditions for birds migrating through North Africa (**Turner 2009**).

Population changes

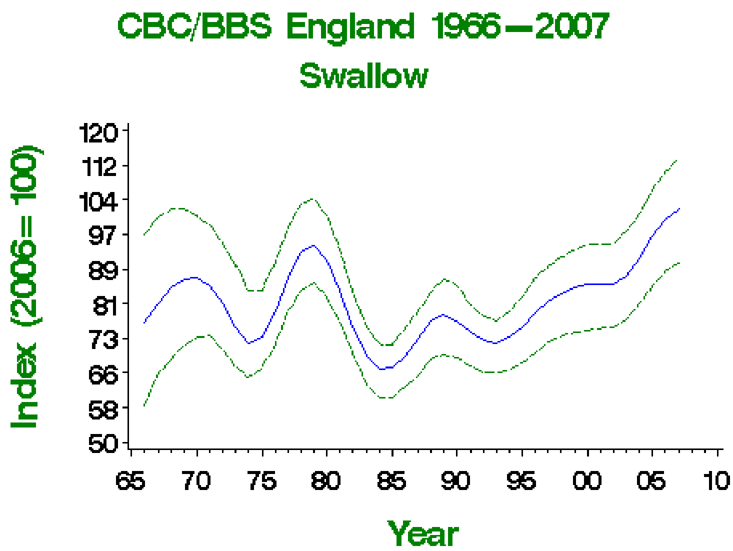


Table of population changes for Swallow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	439	23	-12	75		
	25	1981-2006	649	19	-4	46		
	10	1996-2006	1352	27	19	35		
	5	2001-2006	1444	17	11	24		
BBS UK	11	1995-2006	1679	32	26	39		
	10	1996-2006	1736	28	22	34		
	5	2001-2006	1901	13	9	17		
BBS England	11	1995-2006	1285	28	22	37		
	10	1996-2006	1323	25	19	33		
	5	2001-2006	1444	16	10	21		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	160	11	1	27		
BBS Wales	11	1995-2006	158	49	22	86		
	10	1996-2006	166	36	14	63		
	5	2001-2006	189	12	1	24		
BBS N.Ireland	11	1995-2006	75	39	8	74		
	10	1996-2006	81	33	8	56		
	5	2001-2006	93	7	-8	19		

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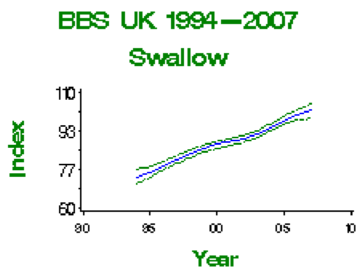
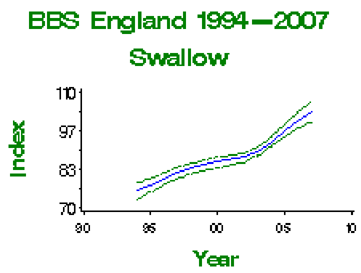
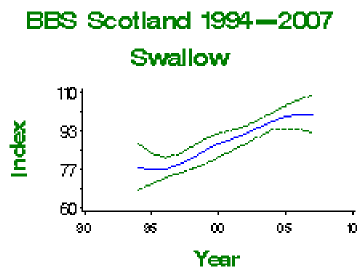
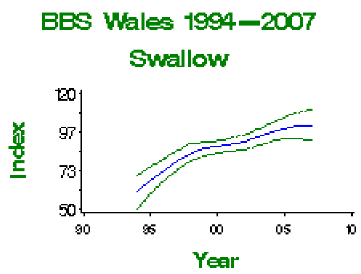
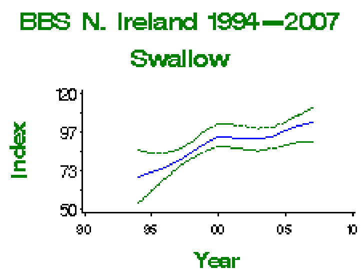






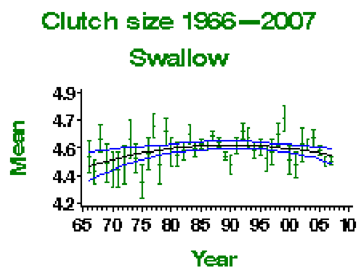


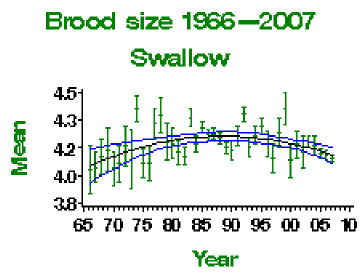


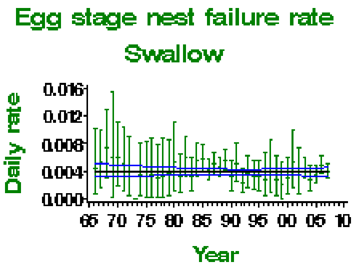
Productivity trends

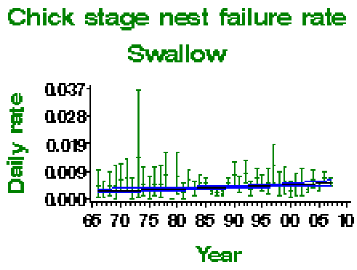
Table of productivity changes for Swallow

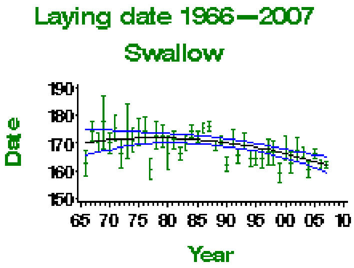
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	220	Curvilinear	4.46 eggs	4.51 eggs	1.2%	
Brood size	38	1968-2006	378	Curvilinear	4.07 chicks	4.12 chicks	1.3%	
Daily failure rate (eggs)	38	1968-2006	280	None				
Daily failure rate (chicks)	38	1968-2006	251	Linear increase	0.28% nests/day	0.53% nests/day	89.3%	
Laying date	38	1968-2006	105	Curvilinear	Jun 20	Jun 12	-8 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 overall increase since 1994. The species has 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**). Annual survival rates from RAS sites in the UK for 1994–2004 were correlated positively with maximum monthly rainfall in West Africa; some decline in survival rate is apparent over this period but does not correspond to the population decline (**Robinson *et al.* 2008**).

Population changes

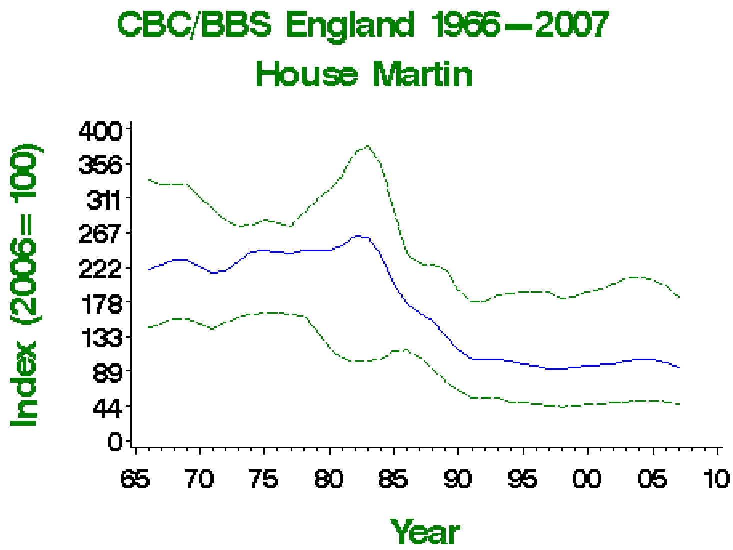


Table of population changes for House Martin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	218	-56	-86	42		Small CBC sample
	25	1981-2006	329	-60	-88	105		Small CBC sample
	10	1996-2006	701	5	-4	14		
	5	2001-2006	757	3	-4	10		
BBS UK	11	1995-2006	858	12	4	24		
	10	1996-2006	882	9	2	19		
	5	2001-2006	966	-3	-9	3		
BBS England	11	1995-2006	676	4	-4	15		
	10	1996-2006	692	5	-2	15		
	5	2001-2006	757	3	-4	11		
BBS Scotland	11	1995-2006	53	84	21	136		
	10	1996-2006	54	45	-9	73		
	5	2001-2006	60	-21	-42	-2		
BBS Wales	11	1995-2006	86	25	-12	63		
	10	1996-2006	89	14	-15	48		
	5	2001-2006	95	-9	-28	13		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	47	-4	-23	16		

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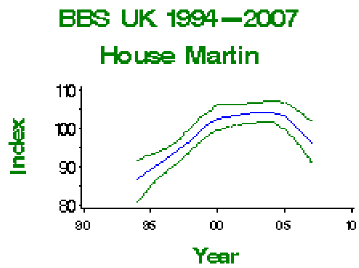

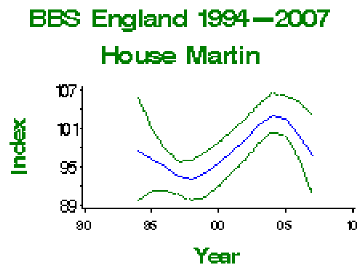

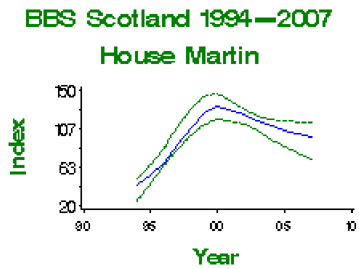

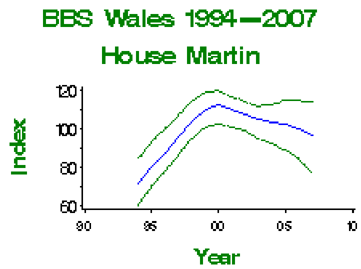

Productivity trends

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: priority species

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**). In Thetford Forest, Tree Pipits prefer large blocks of habitat and benefit from targeted management such as the retention of mature trees for use as songposts (**Burton 2007**). There has been an increase in brood size and a substantial decline in failure rates over the 17-day egg stage; the species is on the NRS concern list, however, because of an overall decrease in nest survival (**Leech & Barimore 2008**). Although the species has no European conservation listing as yet, numbers have fallen widely in Europe since 1980 (**PECBMS 2007**), and the mean change across all European countries during the 1990s was a significant decline (**Sanderson *et al.* 2006**).

Population changes

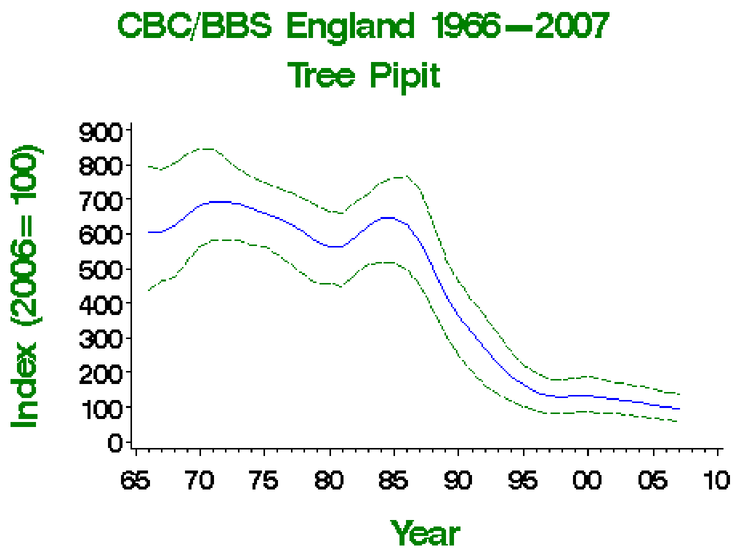

Table of population changes for Tree Pipit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	44	-83	-92	-71	>50	
	25	1981-2006	48	-82	-91	-69	>50	
	10	1996-2006	73	-30	-47	-7	>25	
	5	2001-2006	64	-21	-36	-3		
BBS UK	11	1995-2006	124	-14	-34	7		
	10	1996-2006	125	-17	-36	3		
	5	2001-2006	117	-22	-39	-7		
BBS England	11	1995-2006	67	-35	-51	-11	>25	
	10	1996-2006	67	-30	-47	-10	>25	
	5	2001-2006	64	-20	-35	1		
BBS Wales	11	1995-2006	32	-22	-55	17		
	10	1996-2006	33	-27	-56	8		
	5	2001-2006	32	-22	-43	-5		

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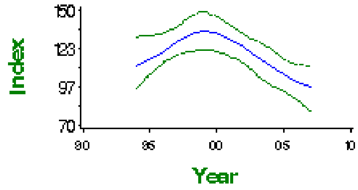
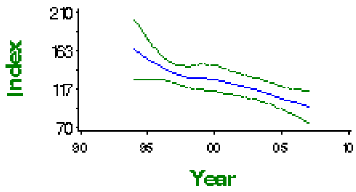
BBS UK 1994—2007

Tree Pipit



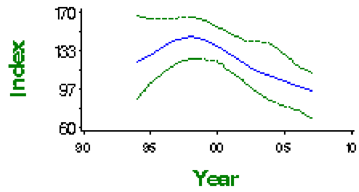
BBS England 1994—2007

Tree Pipit



BBS Wales 1994—2007

Tree Pipit



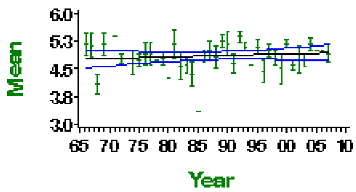
Productivity trends

Table of productivity changes for Tree Pipit

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	10	None				Small sample
Brood size	38	1968-2006	28	Linear increase	4.38 chicks	4.74 chicks	8.2%	Small sample
Daily failure rate (eggs)	38	1968-2006	12	Curvilinear	4.87% nests/day	3.12% nests/day	-35.9%	Small sample
Daily failure rate (chicks)	38	1968-2006	19	Curvilinear	3.37% nests/day	4.11% nests/day	22%	Small sample
Laying date	38	1968-2006	19	Linear decline	May 25	May 16	-9 days	Small sample

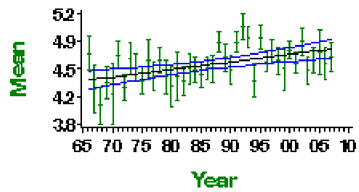
Clutch size 1966—2007

Tree Pipit



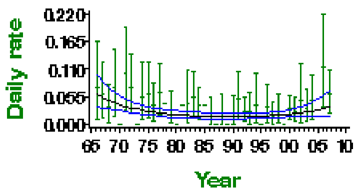
Brood size 1966—2007

Tree Pipit



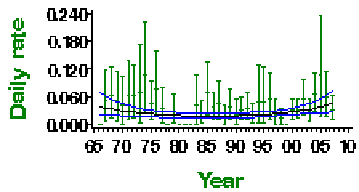
Egg stage nest failure rate

Tree Pipit



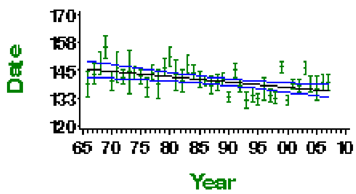
Chick stage nest failure rate

Tree Pipit



Laying date 1966—2007

Tree Pipit



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 and has enabled the species to move from the green to the amber list. Nest failure rates during 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**). Meadow Pipits are estimated to have declined by 57% across Europe during 1980–2005 (**PECBMS 2007**).

Population changes

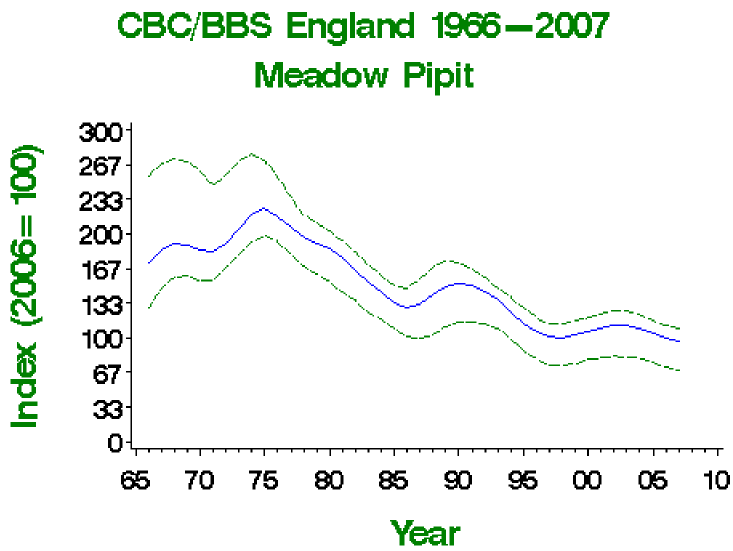


Table of population changes for Meadow Pipit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	136	-46	-74	-24	>25	
	25	1981-2006	192	-43	-61	-26	>25	
	10	1996-2006	381	-5	-15	6		
	5	2001-2006	411	-8	-16	1		
BBS UK	11	1995-2006	703	-13	-19	-6		
	10	1996-2006	718	-13	-18	-7		
	5	2001-2006	768	-13	-17	-8		
BBS England	11	1995-2006	360	-9	-18	1		
	10	1996-2006	369	-5	-14	5		
	5	2001-2006	411	-6	-13	1		
BBS Scotland	11	1995-2006	197	-23	-30	-13		
	10	1996-2006	195	-23	-30	-14		
	5	2001-2006	185	-17	-23	-11		
BBS Wales	11	1995-2006	84	4	-10	20		
	10	1996-2006	86	4	-12	19		
	5	2001-2006	96	-13	-21	-1		
BBS N.Ireland	11	1995-2006	59	51	21	101		

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

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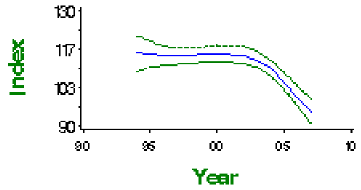
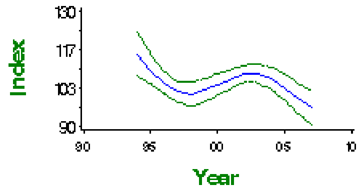
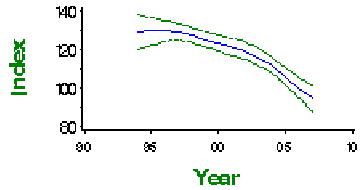
BBS UK 1994—2007
Meadow Pipit



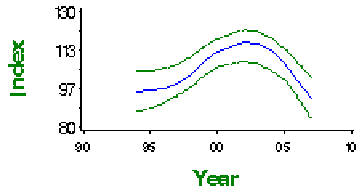
BBS England 1994—2007
Meadow Pipit



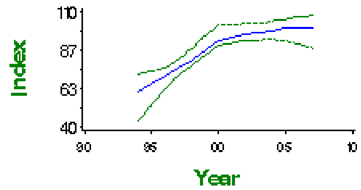
BBS Scotland 1994—2007
Meadow Pipit



BBS Wales 1994—2007
Meadow Pipit



BBS N. Ireland 1994—2007
Meadow Pipit

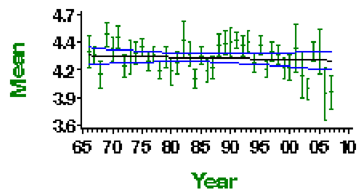


Productivity trends

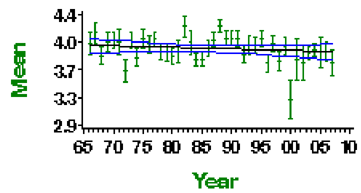
Table of productivity changes for Meadow Pipit

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	36	None				
Brood size	38	1968-2006	68	None				
Daily failure rate (eggs)	38	1968-2006	46	None				
Daily failure rate (chicks)	38	1968-2006	60	Linear decline	2.71% nests/day	1.08% nests/day	-60.1%	
Laying date	38	1968-2006	38	None				

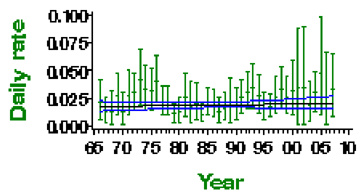
Clutch size 1966—2007
Meadow Pipit



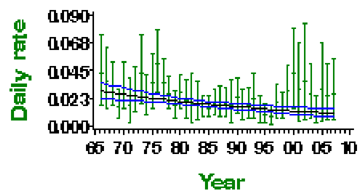
Brood size 1966—2007
Meadow Pipit

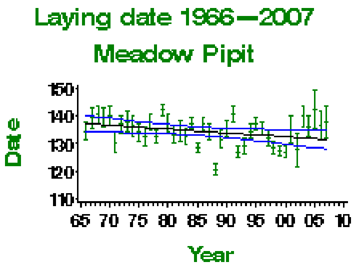


Egg stage nest failure rate
Meadow Pipit



Chick stage nest failure rate
Meadow Pipit





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: priority species

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 global conservation 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. **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, and the species is listed as of NRS concern (**Leech & Barimore 2008**). The European trend, which includes other races of the species, has also been downward since 1980 (**PECBMS 2007**).

Population changes

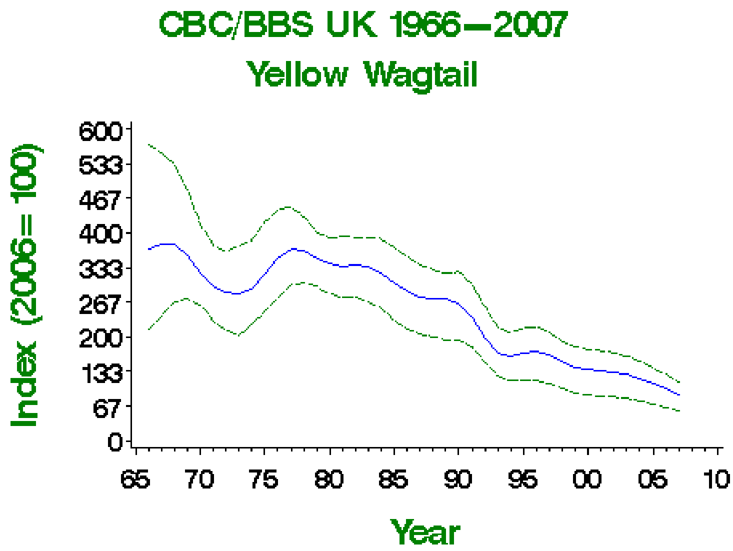


Table of population changes for Yellow Wagtail

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	71	-74	-88	-46	>50	
	25	1981-2006	91	-70	-82	-55	>50	
	10	1996-2006	164	-42	-53	-31	>25	
	5	2001-2006	149	-25	-35	-14	>25	
CBC/BBS England	39	1967-2006	69	-72	-85	-38	>50	
	25	1981-2006	89	-68	-81	-49	>50	
	10	1996-2006	160	-42	-49	-31	>25	
	5	2001-2006	146	-24	-31	-13		
WBS waterways	31	1975-2006	18	-97	-99	-93	>50	Small sample
	25	1981-2006	16	-97	-99	-95	>50	Small sample
BBS UK	11	1995-2006	158	-44	-53	-34	>25	
	10	1996-2006	157	-43	-52	-33	>25	
	5	2001-2006	149	-25	-31	-16		
BBS England	11	1995-2006	154	-43	-52	-33	>25	
	10	1996-2006	153	-42	-51	-32	>25	

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

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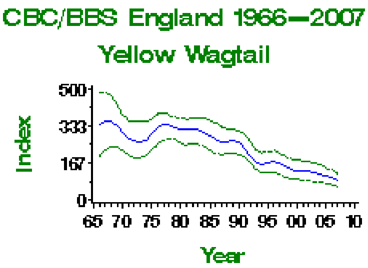
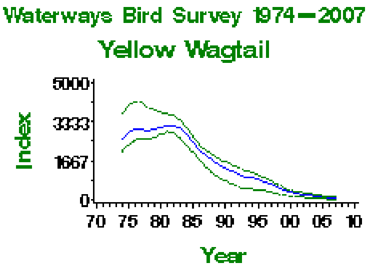
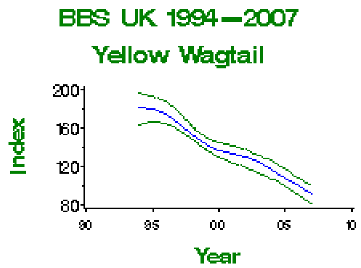
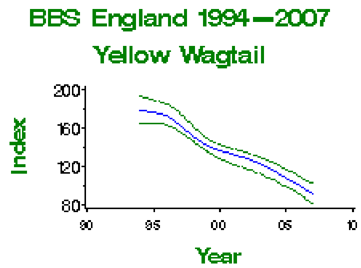






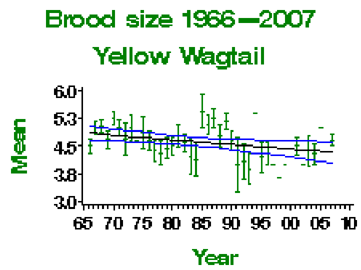


Productivity trends

Table of productivity changes for Yellow Wagtail

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Brood size	38	1968-2006	13	Linear decline	4.83 chicks	4.34 chicks	-10.1%	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, and some increase since the late 1990s. The species has recently been moved from the green to the amber list, because of a 41% decline recorded between 1975 and 1999. BBS figures showed an initial ten-year phase of increase, which has now stabilised. 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, raising NRS concern (**Leech & Barimore 2008**). Nest failure rates have dropped substantially. Grey Wagtails are estimated to have declined by 54% across Europe during 1982–2005 (**PECBMS 2007**).

Population changes

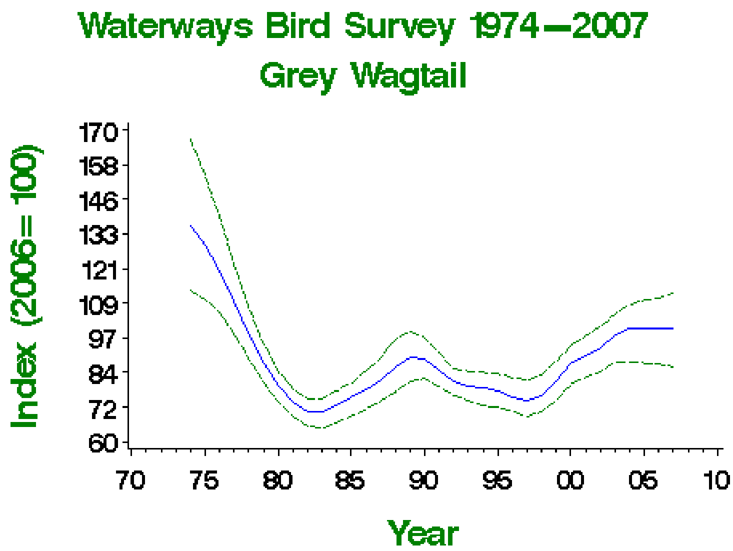


Table of population changes for Grey Wagtail

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	31	1975-2006	55	-23	-44	0		
	25	1981-2006	57	35	9	60		
	10	1996-2006	53	32	14	48		
	5	2001-2006	48	11	-3	22		
BBS UK	11	1995-2006	192	40	18	62		
	10	1996-2006	196	43	20	60		
	5	2001-2006	235	-5	-14	4		
BBS England	11	1995-2006	124	48	22	73		
	10	1996-2006	128	49	27	70		
	5	2001-2006	155	6	-4	14		

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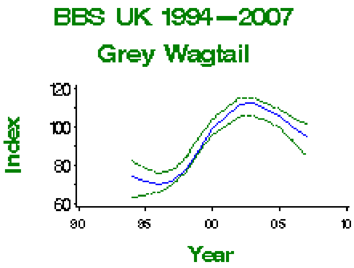
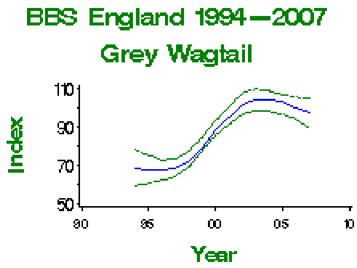
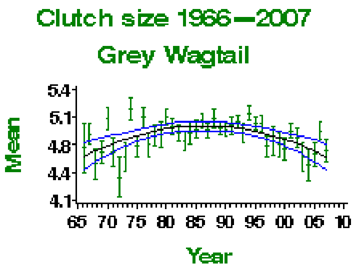


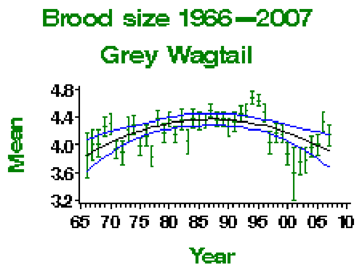


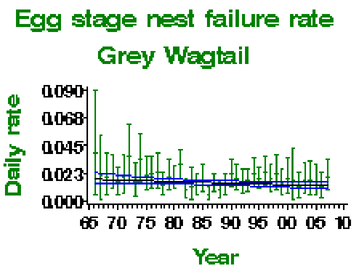
Productivity trends

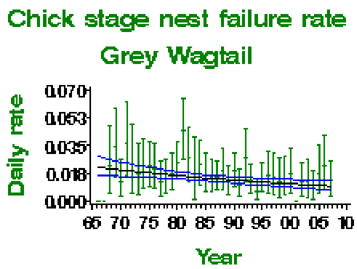
Table of productivity changes for Grey Wagtail

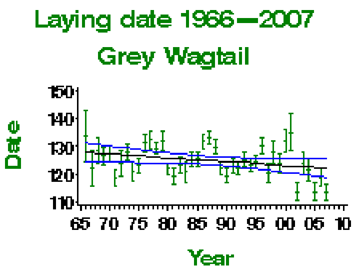
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	38	Curvilinear	4.68 eggs	4.65 eggs	-0.7%	
Brood size	38	1968-2006	80	Curvilinear	3.95 chicks	3.95 chicks	0.1%	
Daily failure rate (eggs)	38	1968-2006	59	None				
Daily failure rate (chicks)	38	1968-2006	58	Linear decline	2.06% nests/day	0.98% nests/day	-52.4%	
Laying date	38	1968-2006	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 global conservation 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, raising NRS concern (**Leech & Barimore 2008**), but this has been counteracted by a fall in nest failure rates.

Population changes

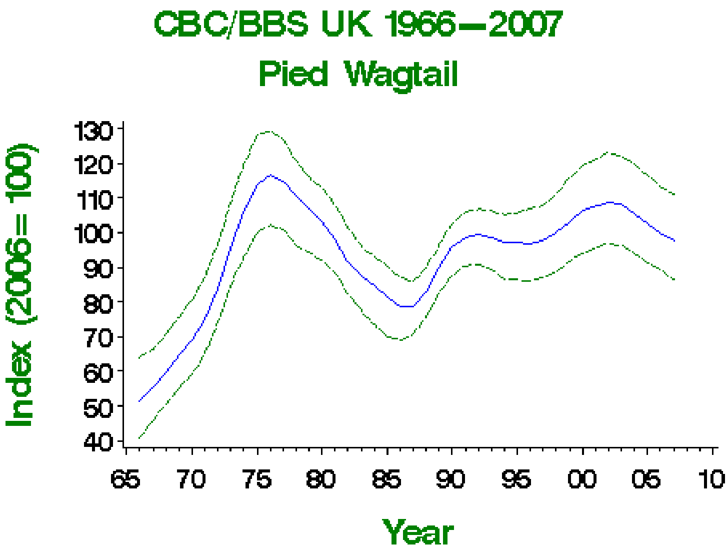


Table of population changes for Pied Wagtail

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	409	80	36	147		
	25	1981-2006	588	2	-17	31		
	10	1996-2006	1206	3	-3	9		
	5	2001-2006	1288	-7	-12	-3		
CBC/BBS England	39	1967-2006	315	86	32	163		
	25	1981-2006	449	5	-18	41		
	10	1996-2006	916	6	0	12		
	5	2001-2006	979	-7	-11	-3		
WBS waterways	31	1975-2006	64	-53	-66	-43	>50	
	25	1981-2006	64	-39	-53	-25	>25	
	10	1996-2006	58	-18	-32	-4		
	5	2001-2006	52	-10	-23	2		
BBS UK	11	1995-2006	1139	6	-1	12		
	10	1996-2006	1171	4	-3	10		
	5	2001-2006	1288	-6	-10	-2		
BBS England	11	1995-2006	865	9	1	16		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Scotland	11	1995-2006	123	-1	-17	17		
	10	1996-2006	124	-3	-17	13		
	5	2001-2006	123	-9	-20	-1		
BBS Wales	11	1995-2006	110	9	-10	32		
	10	1996-2006	114	8	-10	30		
	5	2001-2006	131	3	-8	14		
BBS N.Ireland	11	1995-2006	37	33	.	.		
	10	1996-2006	41	28	.	.		
	5	2001-2006	50	11	.	.		

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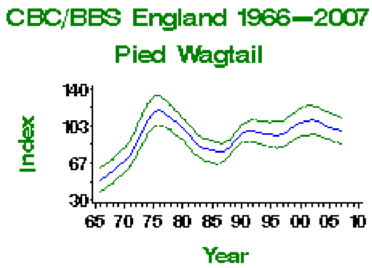
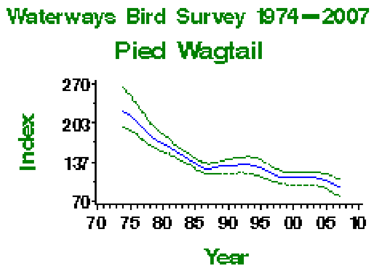
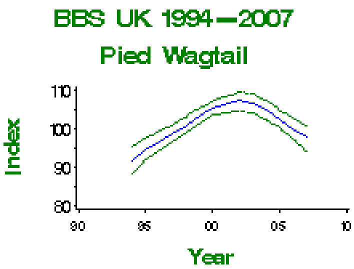
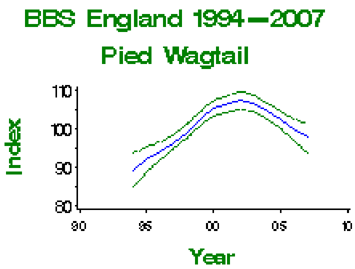
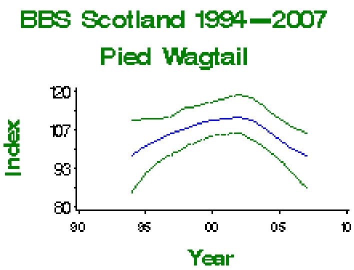
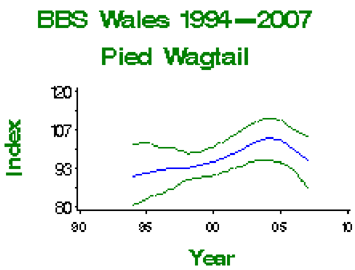








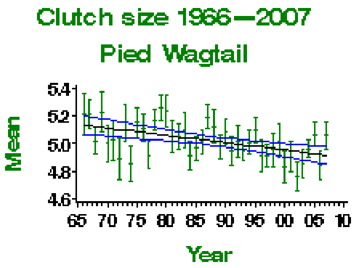


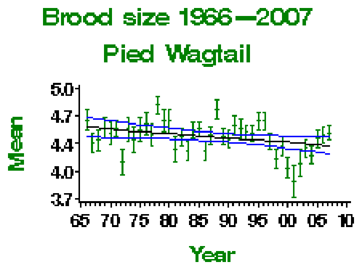


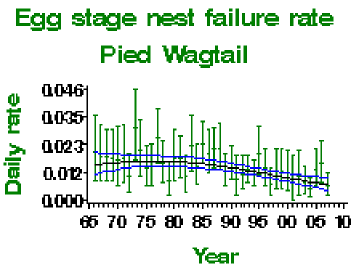
Productivity trends

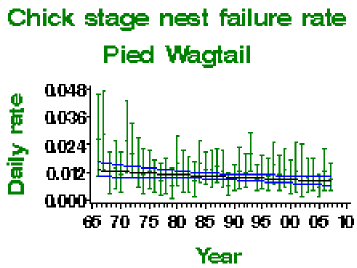
Table of productivity changes for Pied Wagtail

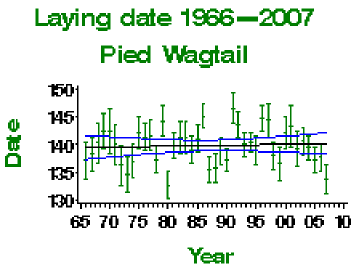
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	59	Linear decline	5.12 eggs	4.92 eggs	-3.9%	
Brood size	38	1968-2006	114	Linear decline	4.53 chicks	4.34 chicks	-4.3%	
Daily failure rate (eggs)	38	1968-2006	83	Curvilinear	1.52% nests/day	0.68% nests/day	-55.3%	
Daily failure rate (chicks)	38	1968-2006	91	Linear decline	1.27% nests/day	0.84% nests/day	-33.9%	
Laying date	38	1968-2006	79	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

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 unusually sensitive to acidity and other water pollution (Ormerod & Tyler 1989, 1990), with lower breeding densities and productivity on acidic than on more neutral streams (Ormerod *et al.* 1991, Vickery 1991, 1992). Breeding performance has improved strongly over time, and laying dates have shifted earlier, perhaps because of climate change (Crick & Sparks 1999). Broods now average larger than in the late 1960s and 1970s, and there has been substantial reduction in failure rates of nests at the egg stage.

Population changes

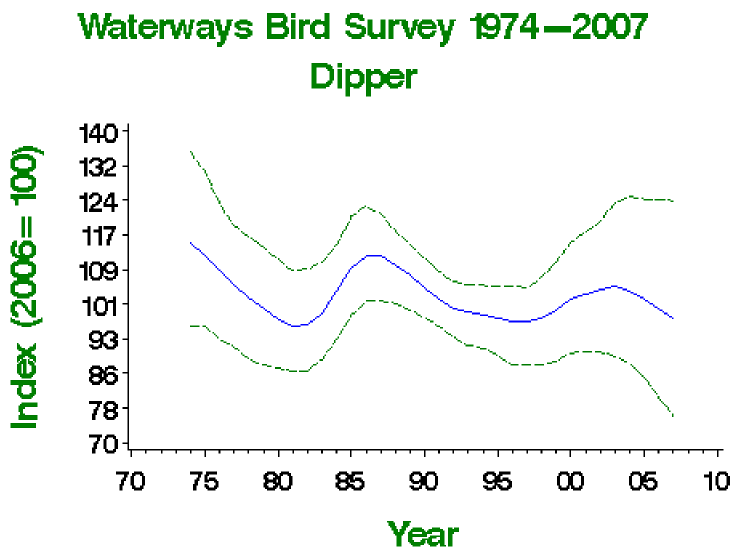


Table of population changes for Dipper

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	31	1975-2006	35	-11	-38	28		
	25	1981-2006	37	4	-28	49		
	10	1996-2006	31	3	-16	32		
	5	2001-2006	29	-3	-16	15		
BBS UK	11	1995-2006	51	0	-26	36		
	10	1996-2006	52	-2	-27	27		
	5	2001-2006	53	-7	-23	7		

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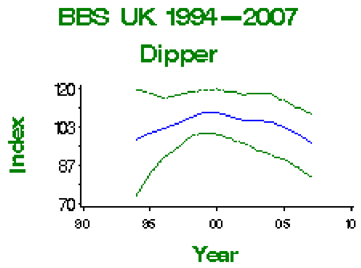
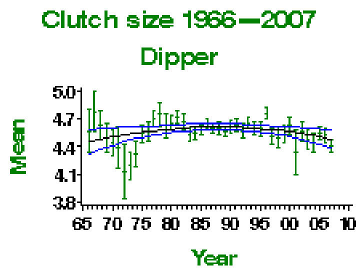
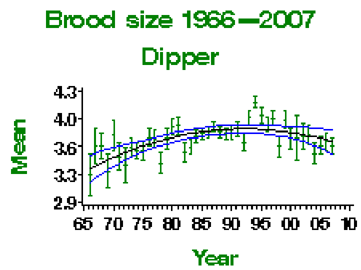


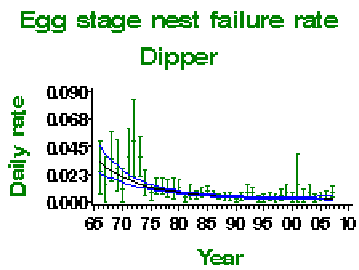
Productivity trends

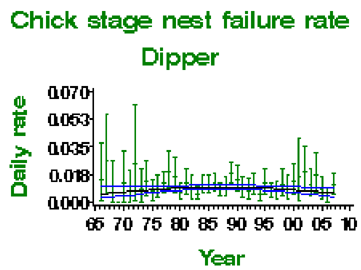
Table of productivity changes for Dipper

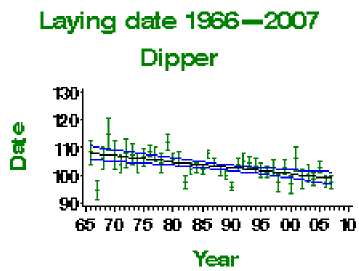
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	72	Curvilinear	4.48 eggs	4.5 eggs	0.4%	
Brood size	38	1968-2006	135	Curvilinear	3.4 chicks	3.69 chicks	8.6%	
Daily failure rate (eggs)	38	1968-2006	100	Curvilinear	2.57% nests/day	0.33% nests/day	-87.2%	
Daily failure rate (chicks)	38	1968-2006	78	Curvilinear	0.59% nests/day	0.62% nests/day	5.1%	
Laying date	38	1968-2006	59	Linear decline	Apr 18	Apr 9	-9 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: priority species (Fair Isle & St Kilda races only)

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, however, although this is not evident from the smoothed trends presented here. 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. Rather fewer nests are now failing at the egg stage. Numbers have risen widely in Europe since 1980 (**PECBMS 2007**).

Population changes

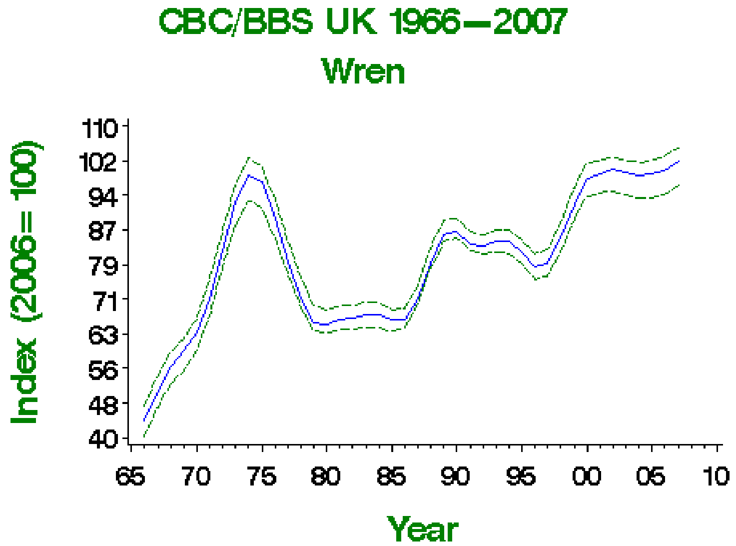


Table of population changes for Wren

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	818	98	74	120		
	25	1981-2006	1155	51	36	60		
	10	1996-2006	2265	28	22	30		
	5	2001-2006	2392	1	-2	3		
CBC/BBS England	39	1967-2006	651	90	65	118		
	25	1981-2006	910	42	28	55		
	10	1996-2006	1764	22	17	24		
	5	2001-2006	1847	-2	-4	0		
CES adults	22	1984-2006	95	58	35	87		
	10	1996-2006	107	-1	-9	7		
	5	2001-2006	98	-11	-18	-4		
CES juveniles	22	1984-2006	94	30	6	61		
	10	1996-2006	106	-5	-15	5		
	5	2001-2006	99	-16	-23	-11		
BBS UK	11	1995-2006	2107	24	18	27		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS England	11	1995-2006	1634	16	11	18		
	10	1996-2006	1676	20	15	22		
	5	2001-2006	1847	2	-1	3		
BBS Scotland	11	1995-2006	194	66	43	80		
	10	1996-2006	195	56	34	66		
	5	2001-2006	205	11	2	21		
BBS Wales	11	1995-2006	185	17	4	25		
	10	1996-2006	192	21	8	28		
	5	2001-2006	223	0	-5	6		
BBS N.Ireland	11	1995-2006	82	62	21	95		
	10	1996-2006	88	40	13	56		
	5	2001-2006	102	3	-5	12		

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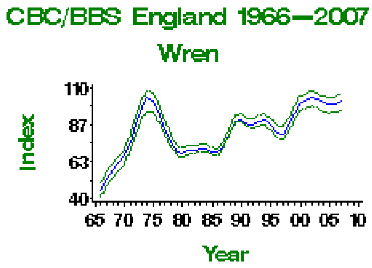
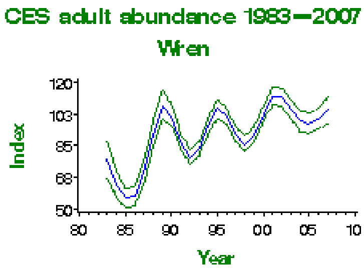
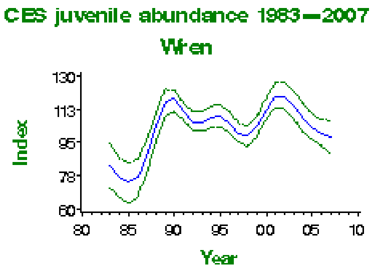
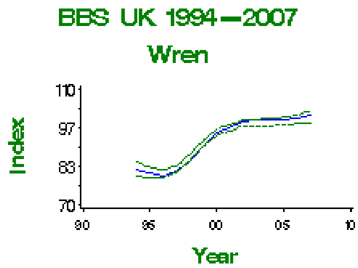
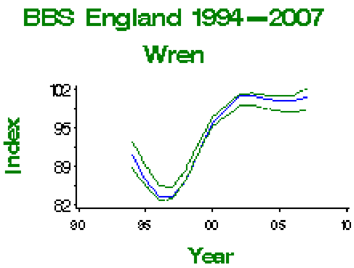
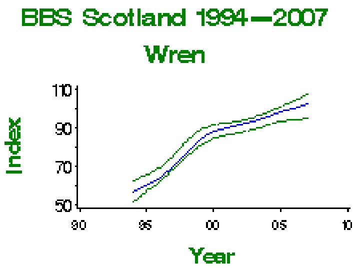


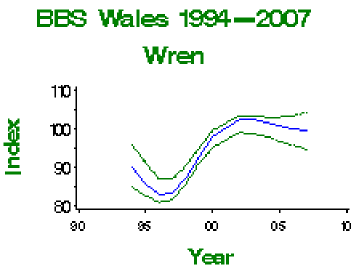


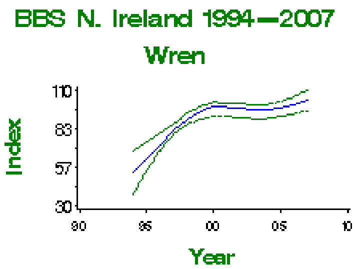








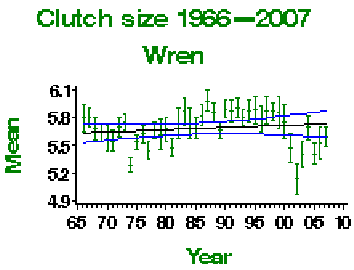


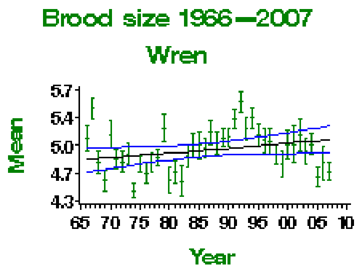


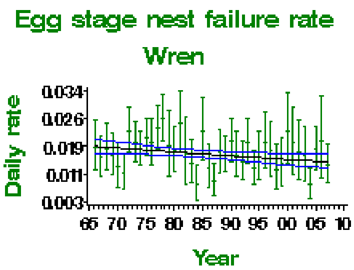
Productivity trends

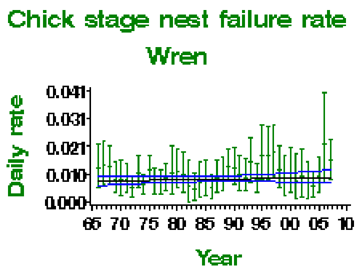
Table of productivity changes for Wren

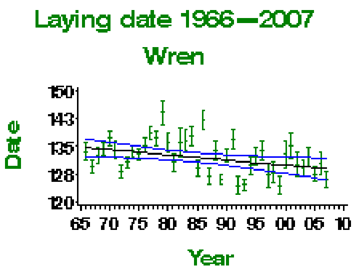
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	95	None				
Brood size	38	1968-2006	96	None				
Daily failure rate (eggs)	38	1968-2006	141	Linear decline	1.83% nests/day	1.43% nests/day	-21.9%	
Daily failure rate (chicks)	38	1968-2006	98	None				
Laying date	38	1968-2006	87	Linear decline	May 14	May 9	-5 days	
Juvenile to Adult ratio (CES)	22	1984-2006	98	Smoothed trend	114 Index value	100 Index value	-12%	
Juvenile to Adult ratio (CES)	10	1996-2006	109	Smoothed trend	105 Index value	100 Index value	-5%	
Juvenile to Adult ratio (CES)	5	2001-2006	100	Smoothed trend	106 Index value	100 Index value	-6%	

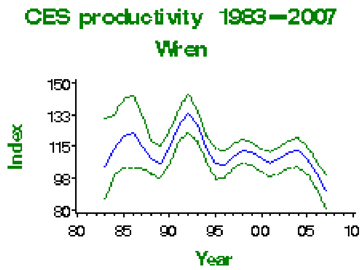












Additional information

- 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: priority species

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 amber listed. 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. Egg-stage nest faliure rates are currently increasing, and are of NRS concern (**Leech & Barimore 2008**). Numbers have fallen widely in Europe since 1980 (**PECBMS 2007**).

Population changes

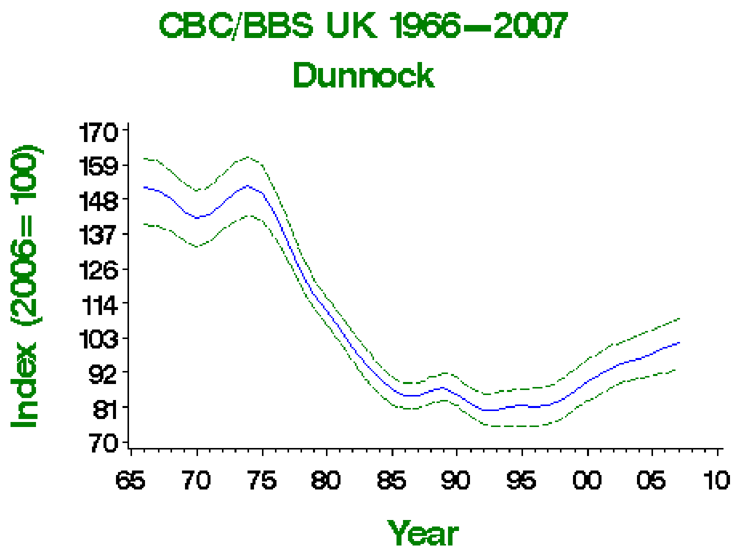


Table of population changes for Dunnock

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	703	-33	-42	-22	>25	
	25	1981-2006	978	-6	-17	5		
	10	1996-2006	1910	23	18	28		
	5	2001-2006	2024	9	6	12		
CBC/BBS England	39	1967-2006	582	-37	-46	-26	>25	
	25	1981-2006	805	-10	-22	0		
	10	1996-2006	1555	20	16	24		
	5	2001-2006	1632	8	6	12		
CES adults	22	1984-2006	94	-1	-16	14		
	10	1996-2006	105	2	-6	10		
	5	2001-2006	95	-2	-9	7		
CES juveniles	22	1984-2006	91	-19	-37	4		
	10	1996-2006	103	-8	-17	0		
	5	2001-2006	95	-12	-20	-5		
BBS UK	11	1995-2006	1769	23	18	28		
	10	1996-2006	1822	22	18	27		
	5	2001-2006	2024	10	7	13		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	1632	10	7	12		
BBS Scotland	11	1995-2006	115	39	14	64		
	10	1996-2006	119	33	10	53		
	5	2001-2006	128	10	-7	24		
BBS Wales	11	1995-2006	140	40	19	68		
	10	1996-2006	146	36	19	59		
	5	2001-2006	170	16	6	26		
BBS N.Ireland	11	1995-2006	62	90	37	136		
	10	1996-2006	68	51	19	76		
	5	2001-2006	82	0	-9	13		

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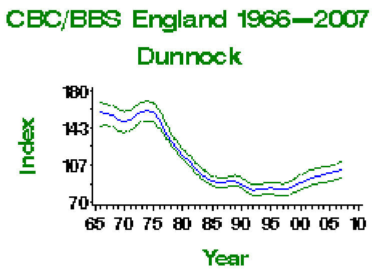
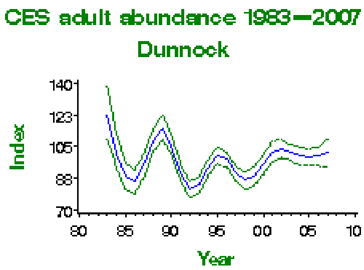
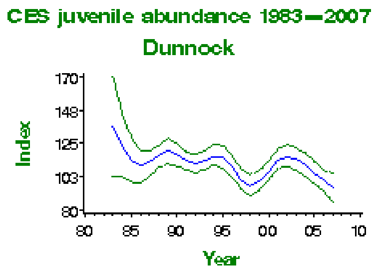
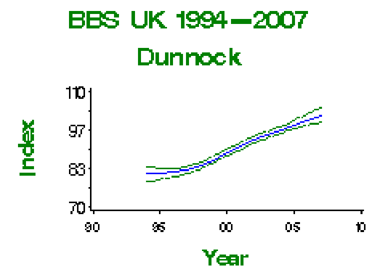
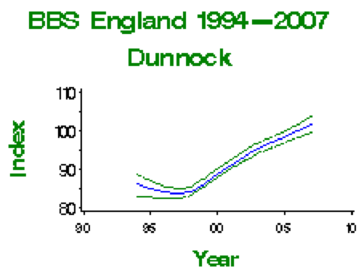
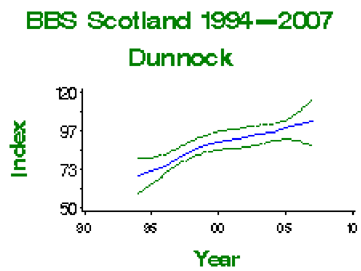


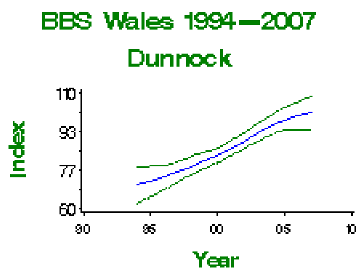


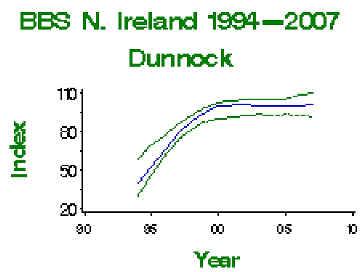








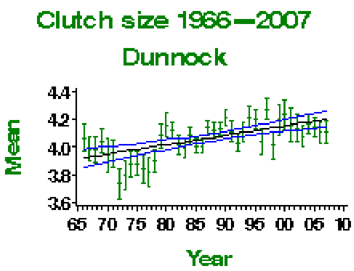


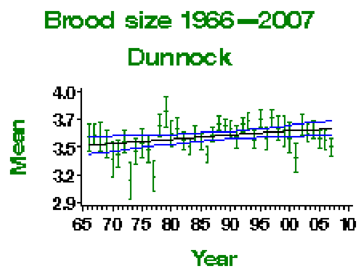


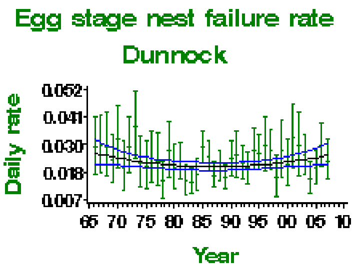
Productivity trends

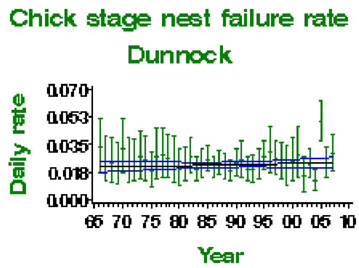
Table of productivity changes for Dunnock

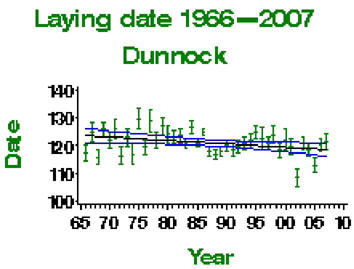
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	99	Linear increase	3.94 eggs	4.2 eggs	6.6%	
Brood size	38	1968-2006	106	Linear increase	3.48 chicks	3.63 chicks	4.5%	
Daily failure rate (eggs)	38	1968-2006	143	Curvilinear	2.51% nests/day	2.48% nests/day	-1.2%	
Daily failure rate (chicks)	38	1968-2006	117	None				
Laying date	38	1968-2006	79	Linear decline	May 3	Apr 29	-4 days	
Juvenile to Adult ratio (CES)	22	1984-2006	98	Smoothed trend	115 Index value	100 Index value	-13%	
Juvenile to Adult ratio (CES)	10	1996-2006	109	Smoothed trend	114 Index value	100 Index value	-13%	
Juvenile to Adult ratio (CES)	5	2001-2006	99	Smoothed trend	122 Index value	100 Index value	-18%	

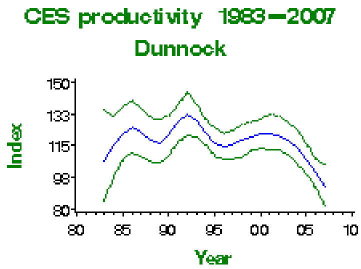












Additional information

- 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 data show that marked and significant annual fluctuations occur, perhaps in response to winter weather, although these are not evident in the smoothed trends that are presented. Laying dates have advanced by almost a week since the 1960s. Numbers have risen widely in Europe since 1980 (**PECBMS 2007**).

Population changes

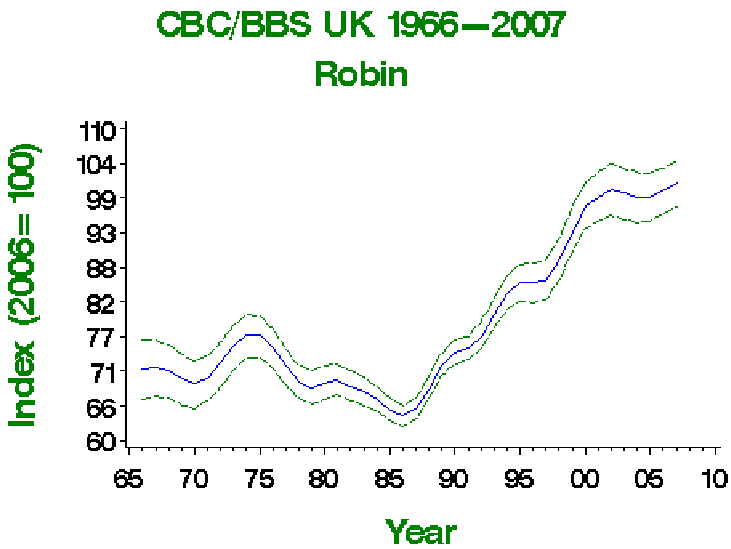


Table of population changes for Robin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	794	39	25	56		
	25	1981-2006	1118	44	34	55		
	10	1996-2006	2195	17	14	20		
	5	2001-2006	2310	1	-1	3		
CBC/BBS England	39	1967-2006	637	49	32	65		
	25	1981-2006	891	52	39	62		
	10	1996-2006	1730	20	17	23		
	5	2001-2006	1808	3	0	4		
CES adults	22	1984-2006	89	63	40	87		
	10	1996-2006	101	9	0	18		
	5	2001-2006	94	-3	-13	7		
CES juveniles	22	1984-2006	94	26	9	51		
	10	1996-2006	107	2	-5	10		
	5	2001-2006	98	-5	-11	1		
BBS UK	11	1995-2006	2037	17	13	20		
	10	1996-2006	2096	16	13	20		
	5	2001-2006	2310	3	0	5		
BBS England	11	1995-2006	1600	20	18	24		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Scotland	11	1995-2006	166	16	1	28		
	10	1996-2006	168	18	4	27		
	5	2001-2006	175	4	-5	12		
BBS Wales	11	1995-2006	181	12	3	20		
	10	1996-2006	189	14	6	21		
	5	2001-2006	218	-1	-6	4		
BBS N.Ireland	11	1995-2006	78	11	-9	28		
	10	1996-2006	84	3	-11	15		
	5	2001-2006	96	-5	-13	4		

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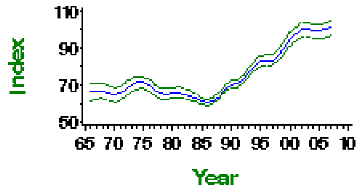
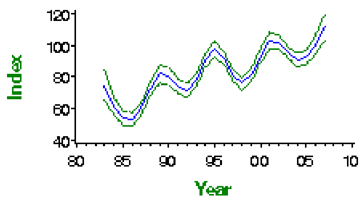
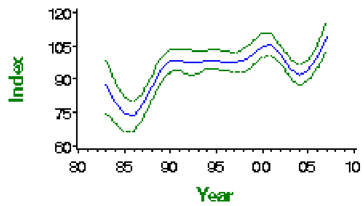
CBC/BBS England 1966—2007
Robin



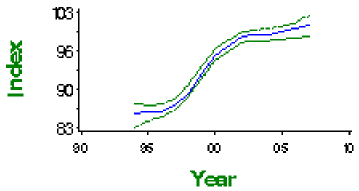
CES adult abundance 1983—2007
Robin



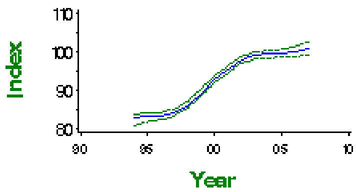
CES juvenile abundance 1983—2007
Robin



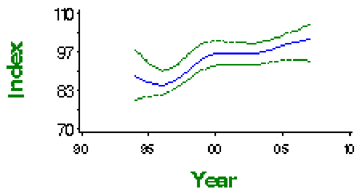
BBS UK 1994—2007
Robin



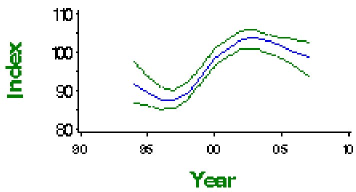
BBS England 1994—2007
Robin



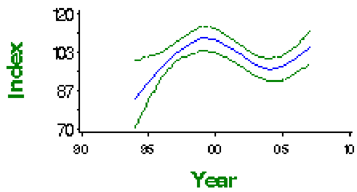
BBS Scotland 1994—2007
Robin



BBS Wales 1994—2007
Robin



BBS N. Ireland 1994—2007
Robin

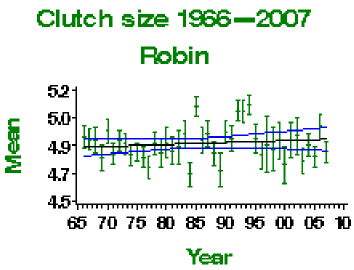


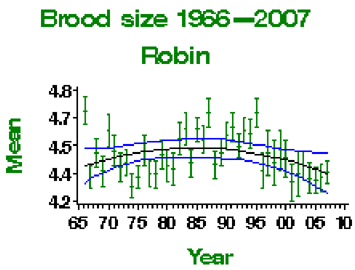
Productivity trends

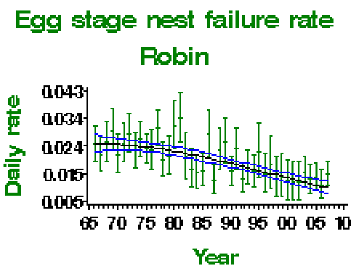
Table of productivity changes for Robin

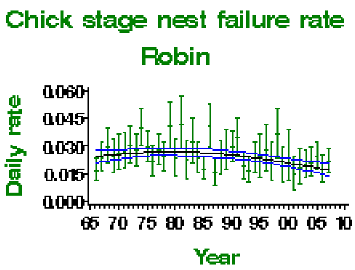
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment

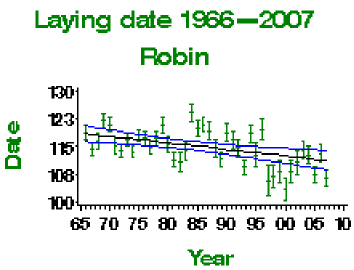
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Daily failure rate (eggs)	38	1968-2006	188	Curvilinear	2.47% nests/day	1.03% nests/day	-58.3%	
Daily failure rate (chicks)	38	1968-2006	162	Curvilinear	2.49% nests/day	1.77% nests/day	-28.9%	
Laying date	38	1968-2006	120	Linear decline	Apr 28	Apr 22	-6 days	
Juvenile to Adult ratio (CES)	22	1984-2006	98	Smoothed trend	113 Index value	100 Index value	-12%	
Juvenile to Adult ratio (CES)	10	1996-2006	110	Smoothed trend	105 Index value	100 Index value	-5%	
Juvenile to Adult ratio (CES)	5	2001-2006	100	Smoothed trend	97 Index value	100 Index value	3%	

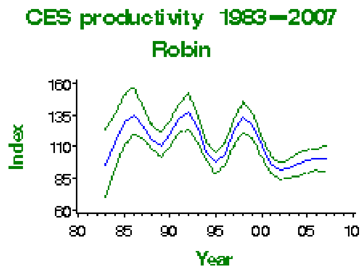












Additional information

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

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

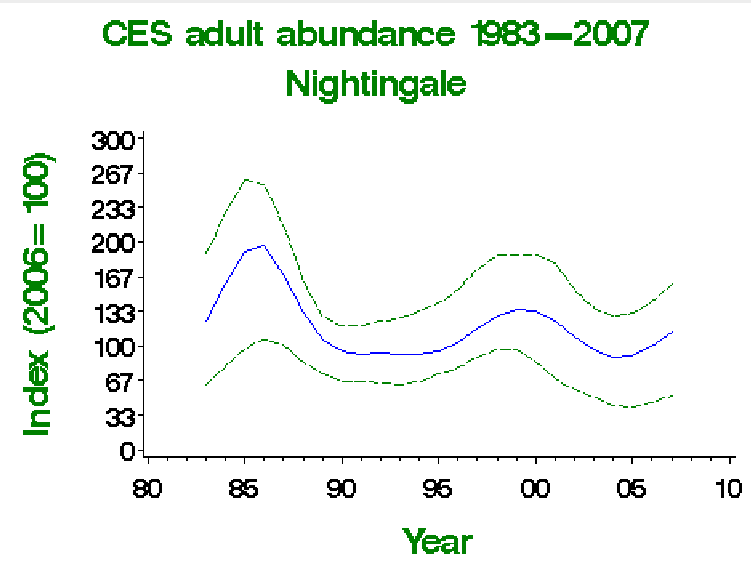
UK population size

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 in Britain. The increasing intensity of browsing by deer is known to reduce habitat quality for this species (**Gill & Fuller 2007**). CES indicates a sharp decline in productivity during the 1980s, perhaps because Nightingale nesting success may be adversely affected by cold and wet springs. Nightingale is one of the most strongly declining bird species in Europe, having decreased at an annual rate of 4% during 1980–2005 ; this overall figure masks a contrast between severe decreases in southern and western Europe and strong increases in the east of the range (**PECBMS 2007**).

Population changes



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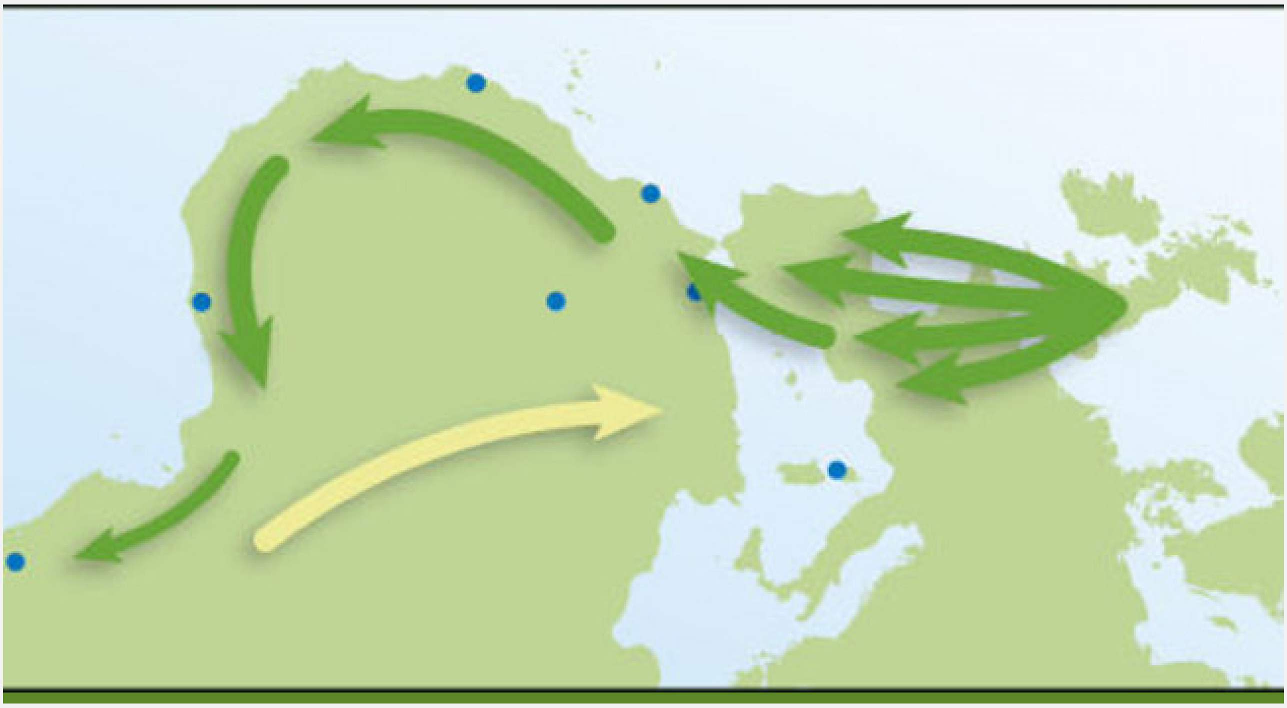

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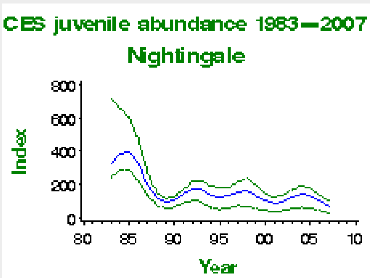
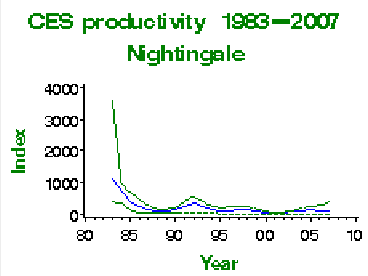


Productivity trends

Table of productivity changes for Nightingale

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Juvenile to Adult ratio (CES)	22	1984-2006	11	Smoothed trend	684 Index value	100 Index value	-85% >50	Small sample
Juvenile to Adult ratio (CES)	10	1996-2006	10	Smoothed trend	112 Index value	100 Index value	-11%	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: shallow decline

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

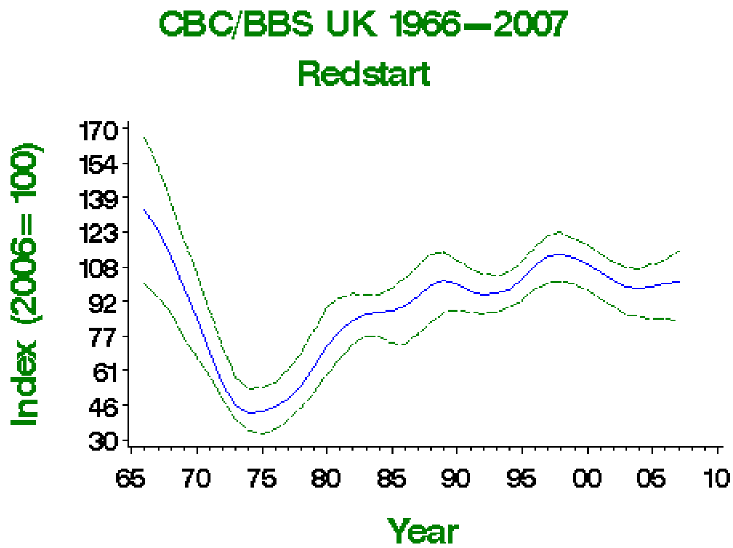


Table of population changes for Redstart

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	63	-19	-44	23		
	25	1981-2006	86	27	-8	60		
	10	1996-2006	156	-7	-22	4		
	5	2001-2006	144	-5	-15	5		
CBC/BBS England	39	1967-2006	38	-18	-42	37		Small CBC sample
	25	1981-2006	51	27	-8	62		Small CBC sample
	10	1996-2006	87	-11	-23	4		
	5	2001-2006	77	-9	-20	2		
BBS UK	11	1995-2006	142	0	-14	12		
	10	1996-2006	145	-7	-18	4		
	5	2001-2006	144	-6	-14	2		
BBS England	11	1995-2006	76	-1	-18	15		
	10	1996-2006	77	-10	-23	4		
	5	2001-2006	77	-10	-18	1		
BBS Wales	11	1995-2006	54	-8	-27	15		
	10	1996-2006	55	-10	-28	12		
	5	2001-2006	56	-8	-22	5		

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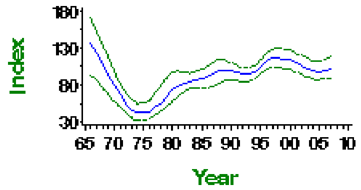
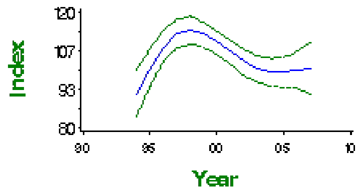
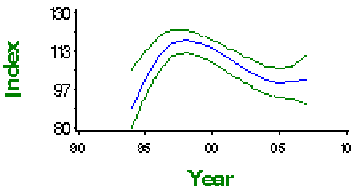
CBC/BBS England 1966—2007
Redstart



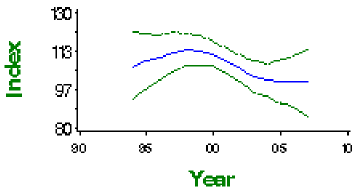
BBS UK 1994—2007
Redstart



BBS England 1994—2007
Redstart



BBS Wales 1994—2007
Redstart

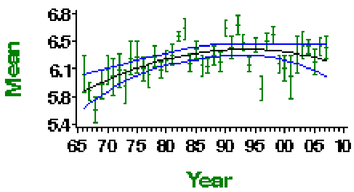


Productivity trends

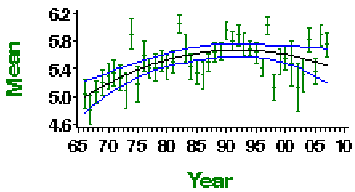
Table of productivity changes for Redstart

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	48	Curvilinear	5.89 eggs	6.23 eggs	5.8%	
Brood size	38	1968-2006	85	Curvilinear	5.1 chicks	5.48 chicks	7.4%	
Daily failure rate (eggs)	38	1968-2006	73	Linear decline	1.16% nests/day	0.31% nests/day	-73.3%	
Daily failure rate (chicks)	38	1968-2006	52	Linear decline	1.23% nests/day	0.39% nests/day	-68.3%	
Laying date	38	1968-2006	61	Curvilinear	May 21	May 9	-12 days	

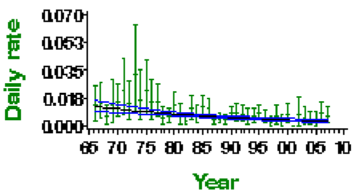
Clutch size 1966—2007
Redstart



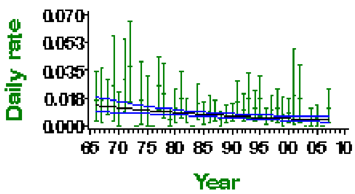
Brood size 1966—2007
Redstart



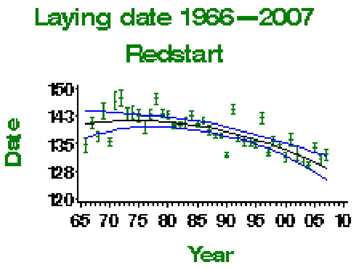
Egg stage nest failure rate
Redstart



Chick stage nest failure rate
Redstart



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 already 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 the remaining pockets of lowland breeders. BBS data indicate that further strong population decline took place during the 1990s, raising BTO alerts for the UK as a whole as well as for England. Nest record samples are small, but indicate substantial recent rises in nest losses at the egg and chick stages, which are of NRS concern (**Leech & Barimore 2008**). Whinchats are estimated to have declined by 55% across Europe during 1980–2005 (**PECBMS 2007**). Despite these changes, the species currently has no conservation listings.

Population changes

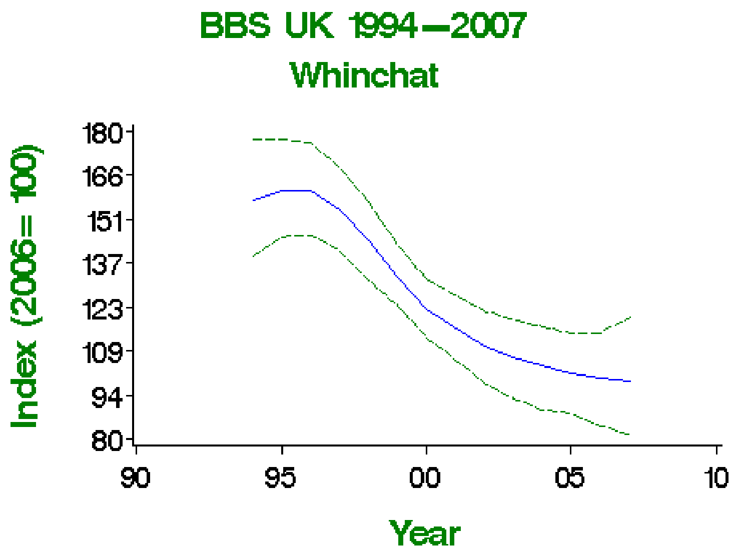


Table of population changes for Whinchat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	74	-38	-53	-18	>25	
	10	1996-2006	73	-38	-53	-18	>25	
	5	2001-2006	62	-14	-29	5		
BBS England	11	1995-2006	30	-34	-60	-9	>25	
	10	1996-2006	30	-32	-58	-9	>25	

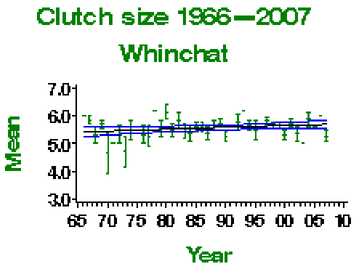
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

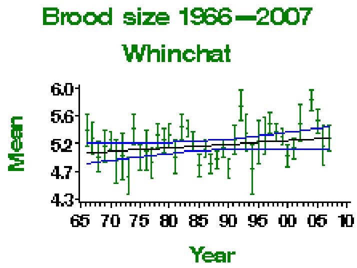
Productivity trends

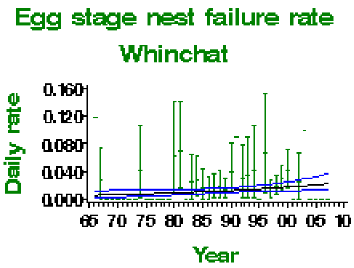
Table of productivity changes for Whinchat

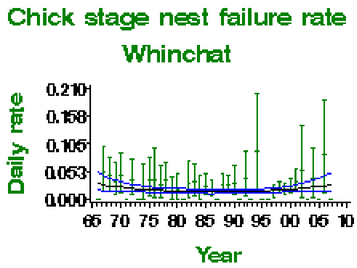
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	12	None				Small sample
Brood size	38	1968-	37	None				

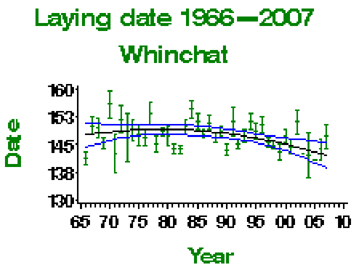
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Daily failure rate (eggs)								
Daily failure rate								
(chicks)		2006			nests/day	nests/day		sample
Laying date	38	1968-2006	27	Curvilinear	May 28	May 23	-5 days	Small sample











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

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 measured 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

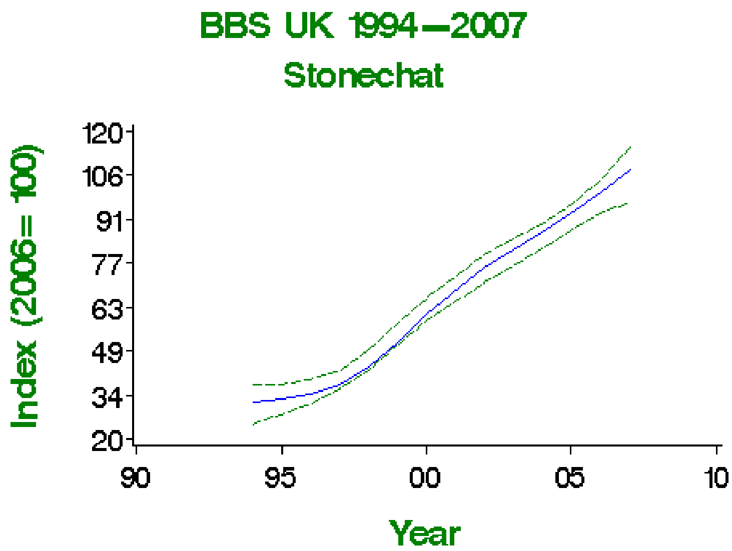


Table of population changes for Stonechat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	122	200	140	265		
	10	1996-2006	128	188	136	228		
	5	2001-2006	172	48	29	61		
BBS England	11	1995-2006	48	167	83	278		
	10	1996-2006	50	156	75	253		
	5	2001-2006	69	37	11	61		
BBS Scotland	5	2001-2006	38	79	40	109		
BBS Wales	11	1995-2006	33	207	117	360		
	10	1996-2006	35	158	81	247		
	5	2001-2006	47	24	-5	54		

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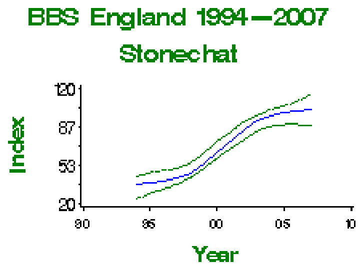
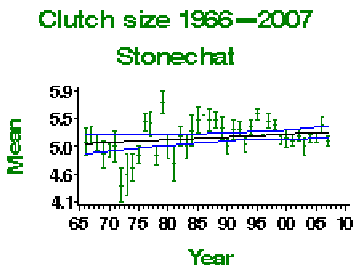
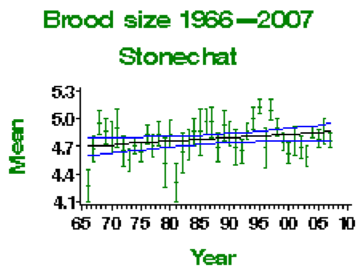


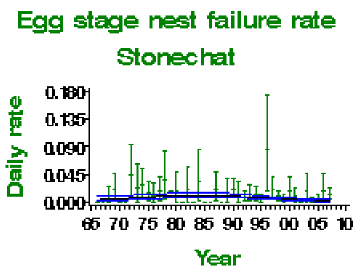
Productivity trends

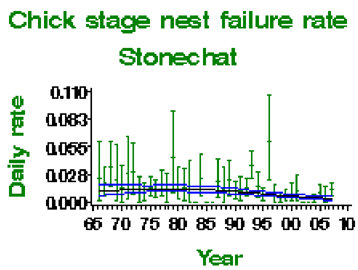
Table of productivity changes for Stonechat

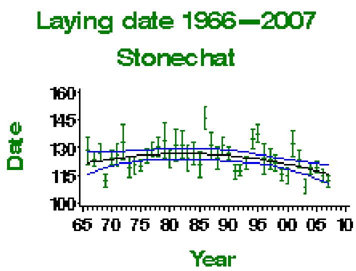
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	30	None				
Brood size	38	1968-2006	59	None				
Daily failure rate (eggs)	38	1968-2006	35	Curvilinear	0.52% nests/day	0.27% nests/day	-48.1%	
Daily failure rate (chicks)	38	1968-2006	54	Curvilinear	1.16% nests/day	0.4% nests/day	-65.5%	
Laying date	38	1968-2006	35	Curvilinear	May 3	Apr 27	-6 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 the UK scale until the BBS began in 1994. **Gibbons *et al.* (1993)** had by then identified range contractions from lowland Britain since 1968–72, perhaps due to losses of suitable grassland and declines in rabbit abundance. BBS shows wide fluctuations, with further decrease in England and Wales, but as yet no clear trend in abundance since 1994 in Scotland. BBS data indicate that the estimates of UK population made for the 1988–91 Atlas may have been far 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. Wheatear is one of the most strongly declining bird species in Europe, having decreased at an annual rate of 5% during 1980–2005 (**PECBMS 2007**). Following widespread declines across Europe during the 1990s, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

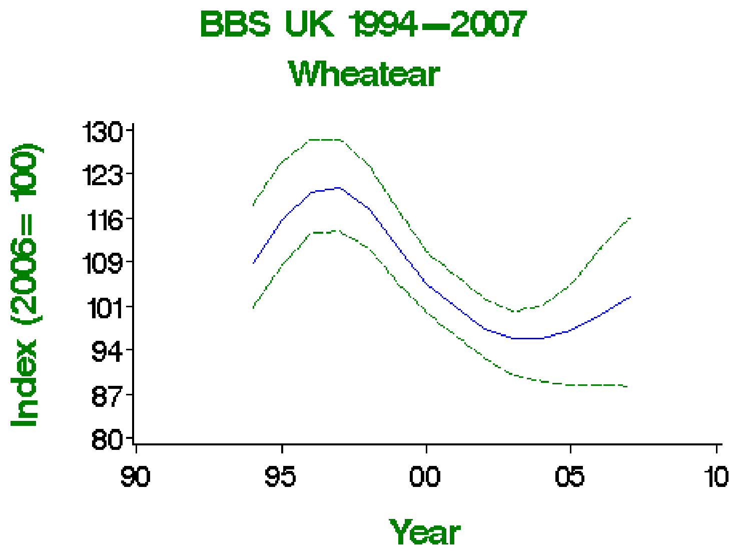


Table of population changes for Wheatear

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	269	-13	-28	4		
	10	1996-2006	273	-17	-31	1		
	5	2001-2006	293	-1	-16	14		
BBS England	11	1995-2006	133	-21	-35	1		
	10	1996-2006	135	-22	-35	-4		
	5	2001-2006	149	-13	-27	4		
BBS Scotland	11	1995-2006	75	-10	-34	27		
	10	1996-2006	74	-14	-38	21		
	5	2001-2006	71	4	-18	31		
BBS Wales	11	1995-2006	50	-25	-43	-8	>25	
	10	1996-2006	52	-24	-42	-9		
	5	2001-2006	59	-8	-20	6		

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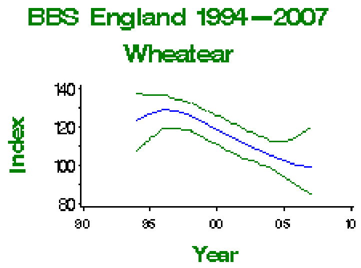
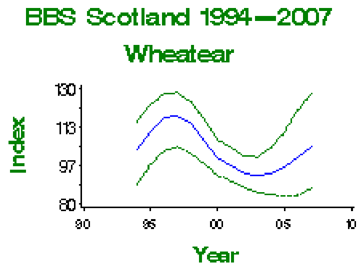
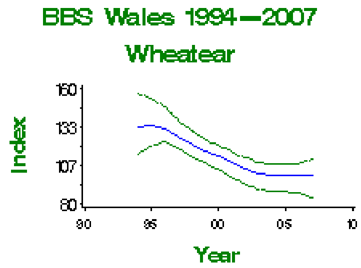


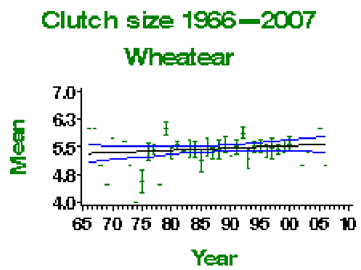


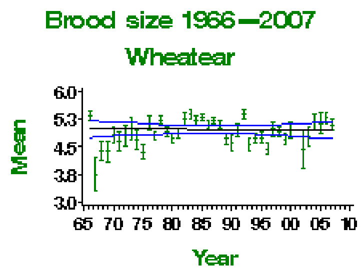


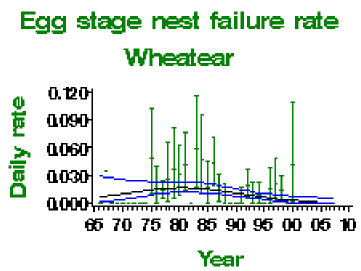
Productivity trends

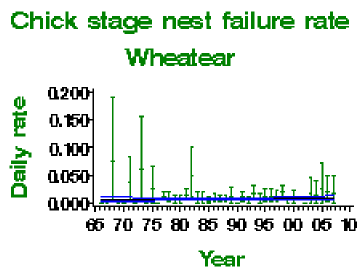
Table of productivity changes for Wheatear

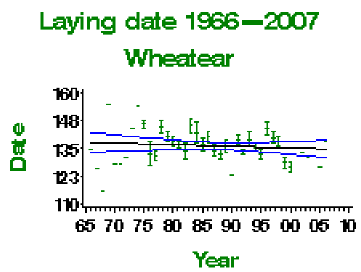
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	13	None				Small sample
Brood size	38	1968-2006	59	None				
Daily failure rate (eggs)	38	1968-2006	18	Curvilinear	0.82% nests/day	0.09% nests/day	-89%	Small sample
Daily failure rate (chicks)	38	1968-2006	40	None				
Laying date	38	1968-2006	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: priority species

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

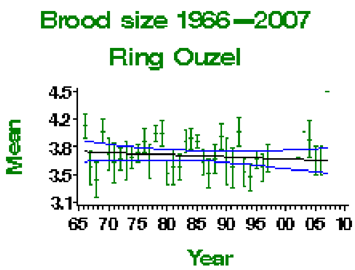
Annual breeding population changes for this species are not currently monitored by BTO

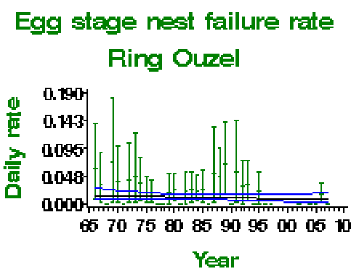
Productivity trends

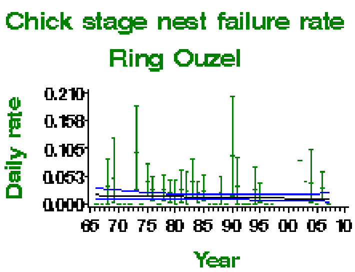
Table of productivity changes for Ring Ouzel

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Brood size	38	1968-2006	22	None				Small sample
Daily failure rate (eggs)	38	1968-2006	11	None				Small sample
Daily failure rate (chicks)	38	1968-2006	14	None				Small sample
Laying date	38	1968-2006	24	Linear decline	May 14	May 8	-6 days	Small sample

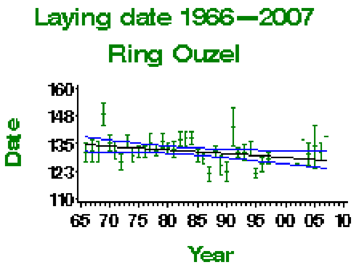
Insufficient data on clutch size available for this species







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 in the green category. 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

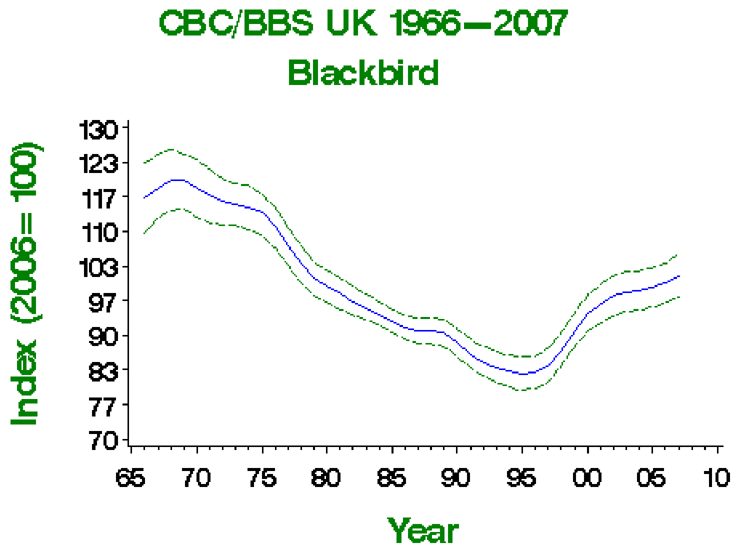


Table of population changes for Blackbird

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	828	-16	-23	-7		
	25	1981-2006	1166	2	-5	9		
	10	1996-2006	2292	21	18	24		
	5	2001-2006	2406	4	2	6		
CBC/BBS England	39	1967-2006	671	-18	-25	-10		
	25	1981-2006	938	-1	-9	6		
	10	1996-2006	1823	19	16	22		
	5	2001-2006	1893	3	2	5		
CES adults	22	1984-2006	96	-13	-25	0		
	10	1996-2006	107	-9	-15	0		
	5	2001-2006	97	-17	-23	-10		
CES juveniles	22	1984-2006	86	-25	-45	0	>25	
	10	1996-2006	97	8	-4	24		
	5	2001-2006	91	12	-7	35		
BBS UK	11	1995-2006	2128	22	19	26		
	10	1996-2006	2190	20	17	23		
	5	2001-2006	2406	5	4	7		
BBS England	11	1995-2006	1691	20	17	24		
	10	1996-2006	1735	18	16	21		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Scotland								
	10	1996-2006	168	28	14	46		
	5	2001-2006	180	12	2	21		
BBS Wales	11	1995-2006	183	40	29	50		
	10	1996-2006	191	37	27	45		
	5	2001-2006	223	17	12	21		
BBS N.Ireland	11	1995-2006	77	40	10	55		
	10	1996-2006	83	20	-1	27		
	5	2001-2006	95	-10	-17	-4		

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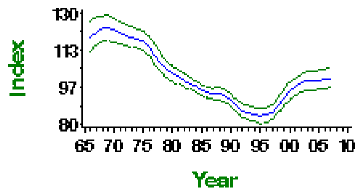
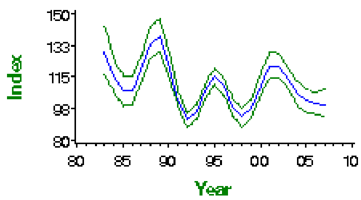
CBC/BBS England 1966—2007

Blackbird



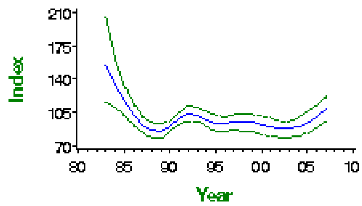
CES adult abundance 1983—2007

Blackbird



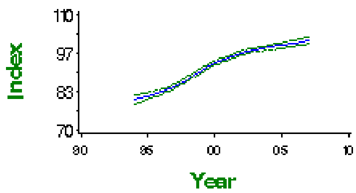
CES juvenile abundance 1983—2007

Blackbird



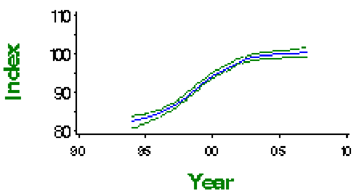
BBS UK 1994—2007

Blackbird



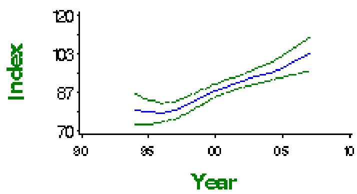
BBS England 1994—2007

Blackbird



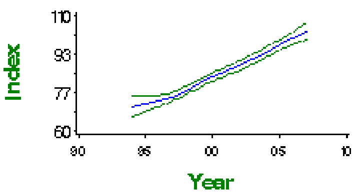
BBS Scotland 1994—2007

Blackbird



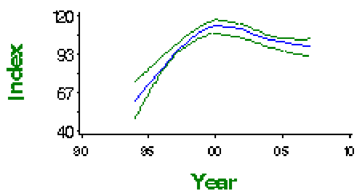
BBS Wales 1994—2007

Blackbird



BBS N. Ireland 1994—2007

Blackbird

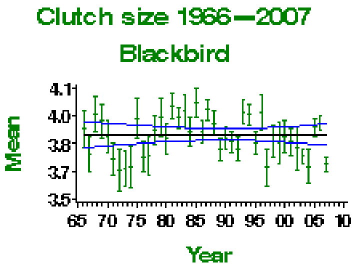


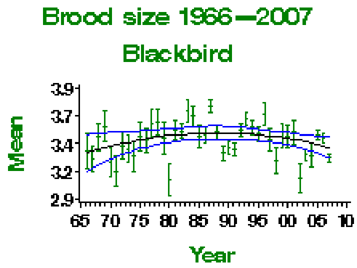
Productivity trends

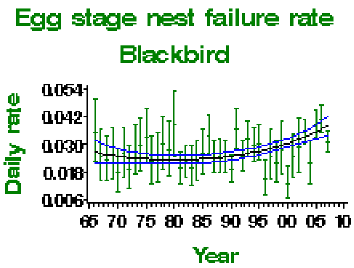
Table of productivity changes for Blackbird

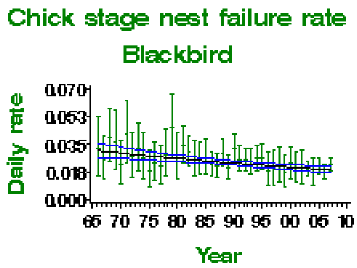
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-	118	None				

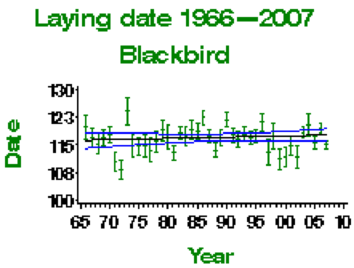
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Brood size								
Daily failure rate (eggs)	38	1968-2006	175	Curvilinear	2.37% nests/day	3.33% nests/day	42%	
Daily failure rate (chicks)	38	1968-2006	154	Linear decline	3.03% nests/day	1.92% nests/day	-36.6%	
Laying date	38	1968-2006	143	None				
Juvenile to Adult ratio (CES)	22	1984-2006	98	Smoothed trend	122 Index value	100 Index value	-18%	
Juvenile to Adult ratio (CES)	10	1996-2006	109	Smoothed trend	89 Index value	100 Index value	12%	
Juvenile to Adult ratio (CES)	5	2001-2006	100	Smoothed trend	77 Index value	100 Index value	30%	

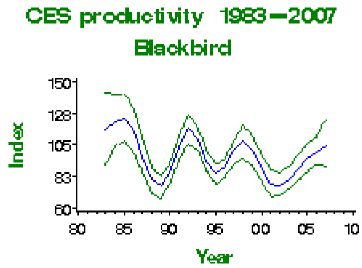












Additional information

- 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 possible contributors (**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 a general 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

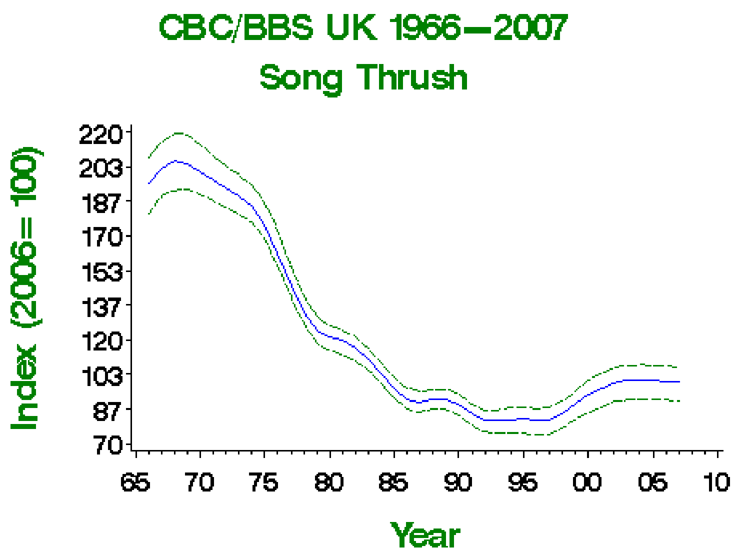


Table of population changes for Song Thrush

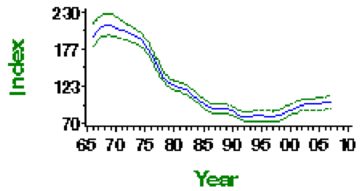
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	678	-51	-58	-43	>50	
	25	1981-2006	939	-16	-27	-5		
	10	1996-2006	1830	23	17	29		
	5	2001-2006	1975	4	0	6		
CBC/BBS England	39	1967-2006	540	-51	-60	-42	>50	
	25	1981-2006	740	-18	-30	-6		
	10	1996-2006	1422	24	19	29		
	5	2001-2006	1528	8	4	11		
CES adults	22	1984-2006	81	-17	-35	1		
	10	1996-2006	88	-2	-17	10		
	5	2001-2006	83	1	-12	12		
CES juveniles	22	1984-2006	66	-45	-59	-22	>25	
	10	1996-2006	75	20	0	38		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK								
	10	1996-2006	1743	22	17	27		
	5	2001-2006	1975	5	2	9		
BBS England	11	1995-2006	1310	22	17	28		
	10	1996-2006	1347	23	19	29		
	5	2001-2006	1528	10	7	12		
BBS Scotland	11	1995-2006	148	20	2	41		
	10	1996-2006	151	19	3	39		
	5	2001-2006	161	0	-11	11		
BBS Wales	11	1995-2006	156	32	18	50		
	10	1996-2006	162	30	17	45		
	5	2001-2006	191	2	-5	9		
BBS N.Ireland	11	1995-2006	67	47	16	76		
	10	1996-2006	73	37	15	54		
	5	2001-2006	85	0	-13	13		

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

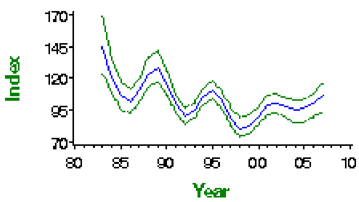
CBC/BBS England 1966—2007

Song Thrush



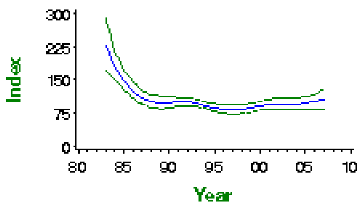
CES adult abundance 1983—2007

Song Thrush



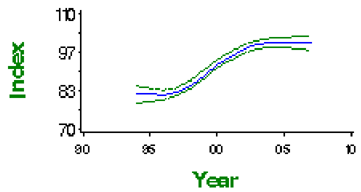
CES juvenile abundance 1983—2007

Song Thrush



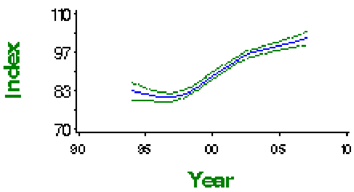
BBS UK 1994—2007

Song Thrush



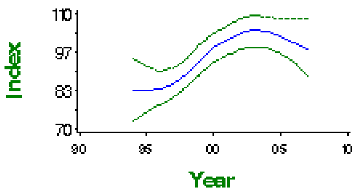
BBS England 1994—2007

Song Thrush



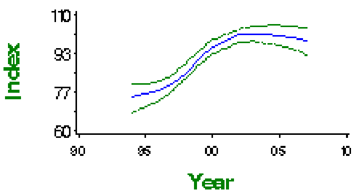
BBS Scotland 1994—2007

Song Thrush



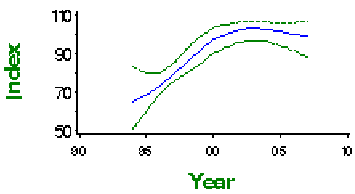
BBS Wales 1994—2007

Song Thrush



BBS N. Ireland 1994—2007

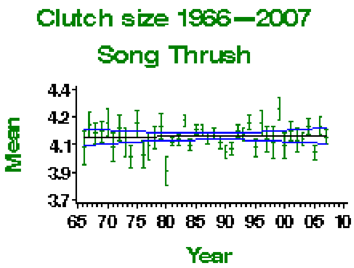
Song Thrush

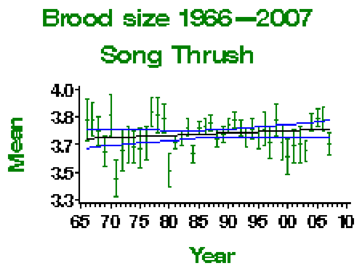


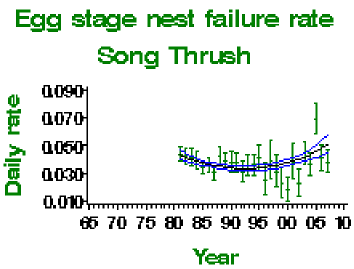
Productivity trends

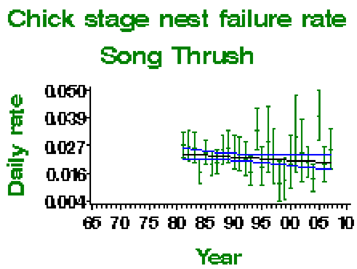
Table of productivity changes for Song Thrush

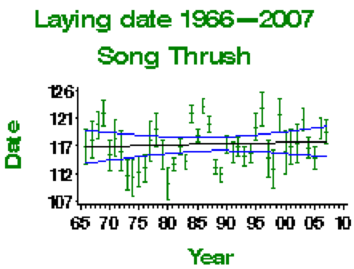
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	166	None				
Brood size	38	1968-2006	182	None				
Daily failure rate (eggs)	25	1981-2006	320	Curvilinear	4.37% nests/day	4.78% nests/day	9.4%	
Daily failure rate (chicks)	25	1981-2006	240	None				
Laying date	38	1968-2006	191	None				
Juvenile to Adult ratio (CES)	22	1984-2006	88	Smoothed trend	159 Index value	100 Index value	-37% >25	
Juvenile to Adult ratio (CES)	10	1996-2006	98	Smoothed trend	88 Index value	100 Index value	14%	
Juvenile to Adult ratio (CES)	5	2001-2006	93	Smoothed trend	99 Index value	100 Index value	1%	

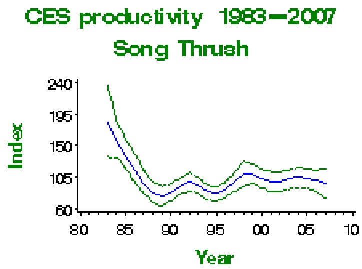












Additional information

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

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 (**PECBMS 2007**).

Population changes

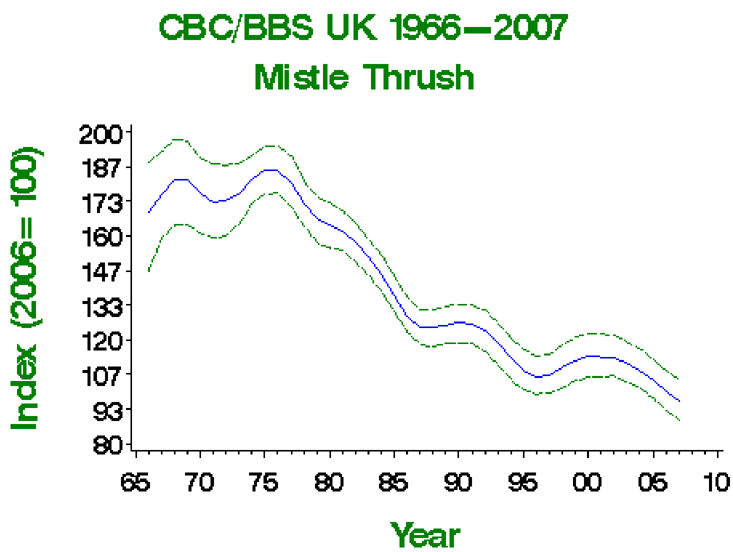
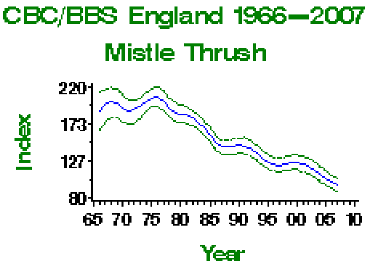


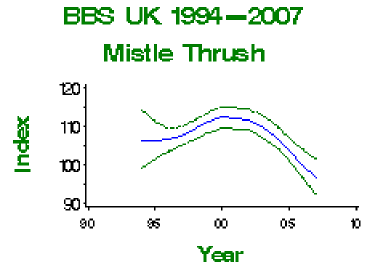
Table of population changes for Mistle Thrush

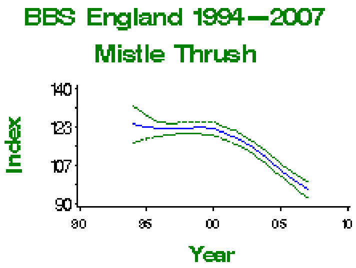
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	447	-43	-51	-31	>25	
	25	1981-2006	615	-38	-45	-31	>25	
	10	1996-2006	1175	-6	-11	2		
	5	2001-2006	1203	-12	-16	-7		
CBC/BBS England	39	1967-2006	367	-49	-57	-39	>25	
	25	1981-2006	500	-46	-52	-38	>25	
	10	1996-2006	939	-18	-22	-13		
	5	2001-2006	944	-18	-21	-14		
BBS UK	11	1995-2006	1088	-6	-13	2		
	10	1996-2006	1119	-6	-12	1		
	5	2001-2006	1203	-11	-14	-5		
BBS England	11	1995-2006	869	-19	-24	-13		
	10	1996-2006	890	-18	-22	-13		
	5	2001-2006	944	-17	-20	-13		
BBS Scotland	11	1995-2006	66	51	21	101		
	10	1996-2006	67	40	16	81		
	5	2001-2006	73	0	-12	18		
BBS Wales	11	1995-2006	95	2	-22	18		

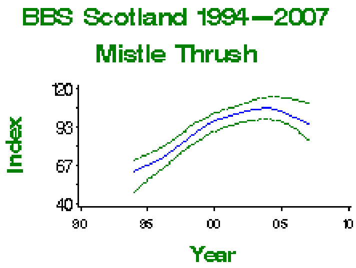
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS N.Ireland	11	1995-2006	54	23	-45	113		
	10	1996-2006	59	22	-25	60		
	5	2001-2006	70	-2	-19	18		

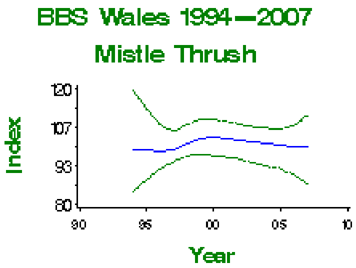
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

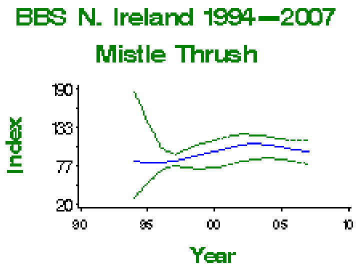








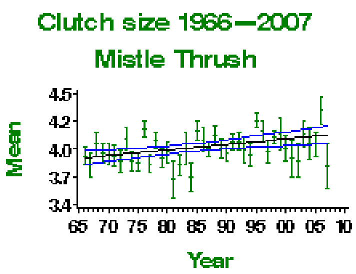


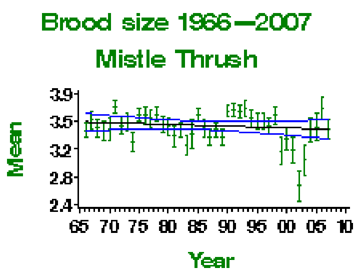


Productivity trends

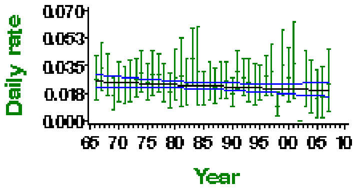
Table of productivity changes for Mistle Thrush

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	35	Linear increase	3.88 eggs	4.09 eggs	5.4%	
Brood size	38	1968-2006	67	None				
Daily failure rate (eggs)	38	1968-2006	57	None				
Daily failure rate (chicks)	38	1968-2006	60	None				
Laying date	38	1968-2006	29	None				Small sample

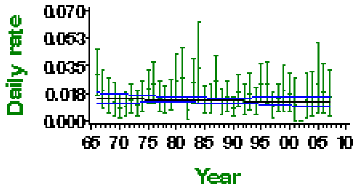




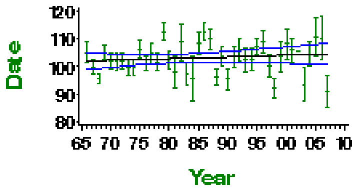
Egg stage nest failure rate
Mistle Thrush



Chick stage nest failure rate
Mistle Thrush



Laying date 1966—2007
Mistle Thrush



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 1,331 singing males in 2005 (**Holling & RBBP 2008**)

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 continued. For 2005, RBBP received reports of 1,331 singing males in 29 counties as far north as Anglesey and Norfolk (**Holling & RBBP 2008**). 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. Numbers have risen widely in Europe since 1990 (**PECBMS 2007**).

Population changes

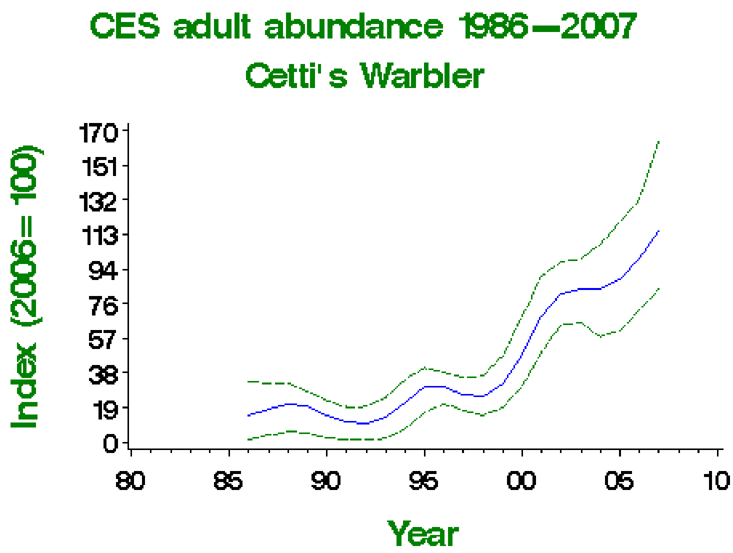
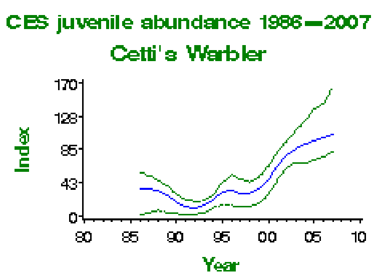


Table of population changes for Cetti's Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CES adults	5	2001-2006	10	46	-18	192		Small sample
CES juveniles	5	2001-2006	11	56	-3	231		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: priority species

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**). Numbers have fallen widely in Europe since 1980 (**PECBMS 2007**).

Population changes

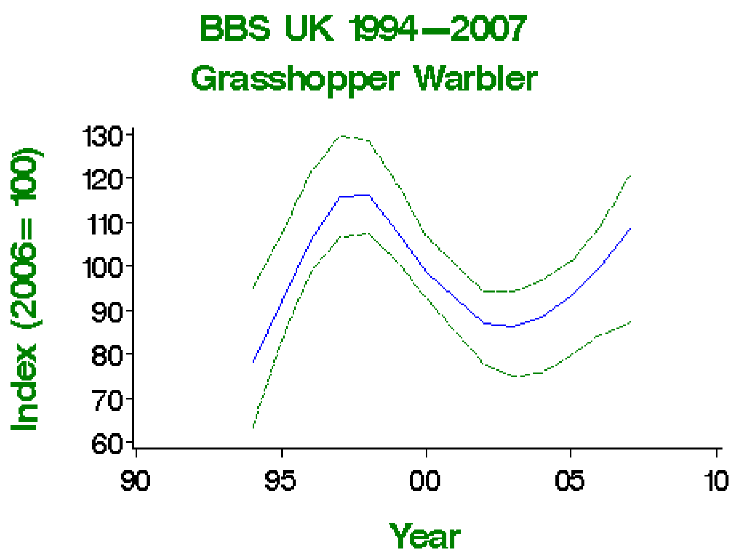


Table of population changes for Grasshopper Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	66	9	-23	35		
	10	1996-2006	68	-6	-32	13		
	5	2001-2006	68	8	-14	25		

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: moderate decline

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. Daily nest failure rates at the egg stage have halved. CES productivity data show a sustained decrease since the late 1980s. Sedge Warblers are estimated to have declined by 65% across Europe during 1980–2005 (**PECBMS 2007**).

Population changes

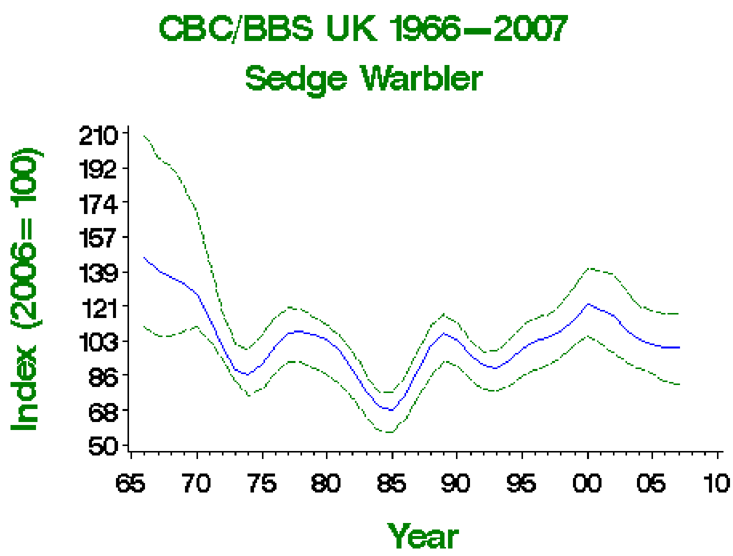
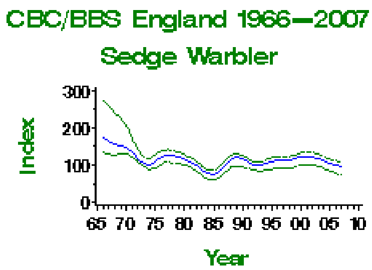


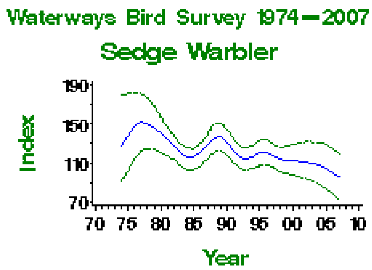
Table of population changes for Sedge Warbler

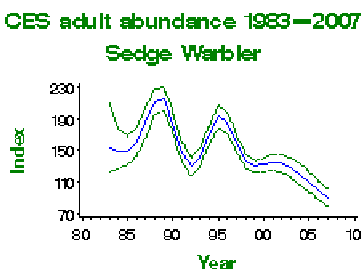
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	118	-28	-58	18		
	25	1981-2006	158	2	-20	38		
	10	1996-2006	297	-3	-18	11		
	5	2001-2006	283	-16	-29	-6		
CBC/BBS England	39	1967-2006	81	-39	-69	-13	>25	
	25	1981-2006	104	-10	-31	13		
	10	1996-2006	190	-12	-24	1		
	5	2001-2006	182	-19	-28	-11		
WBS waterways	31	1975-2006	43	-28	-56	24		
	25	1981-2006	46	-25	-47	10		
	10	1996-2006	47	-18	-37	8		
	5	2001-2006	36	-11	-24	4		
CES adults	22	1984-2006	64	-33	-49	-11	>25	
	10	1996-2006	74	-46	-54	-37	>25	
	5	2001-2006	64	-26	-34	-19	>25	

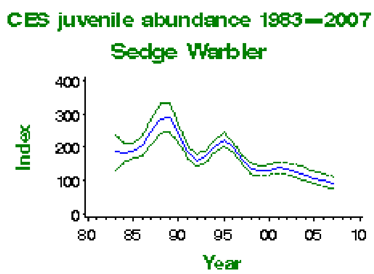
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	63	-27	-40	-11	>25	
BBS UK	11	1995-2006	270	-1	-17	15		
	10	1996-2006	278	-3	-18	10		
	5	2001-2006	283	-14	-26	-5		
BBS England	11	1995-2006	172	-12	-28	5		
	10	1996-2006	176	-13	-27	4		
	5	2001-2006	182	-16	-25	-6		
BBS Scotland	11	1995-2006	49	15	-19	57		
	10	1996-2006	49	9	-20	44		
	5	2001-2006	46	-14	-35	5		

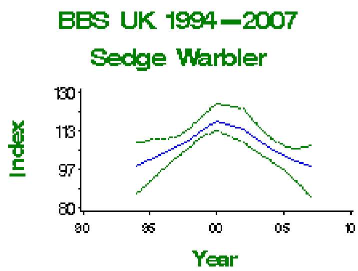
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

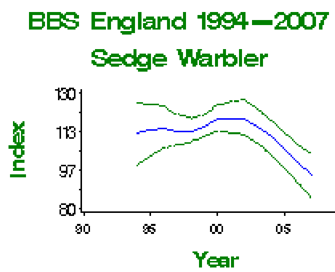


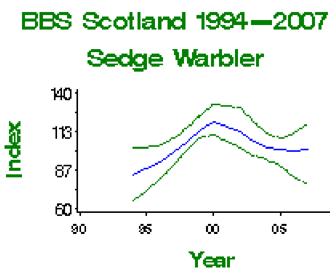








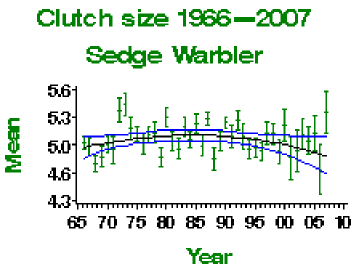


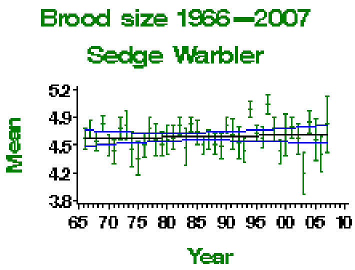


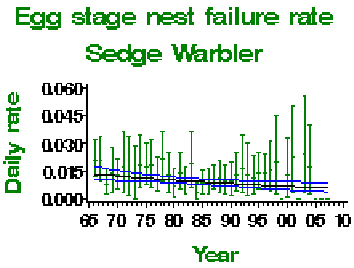
Productivity trends

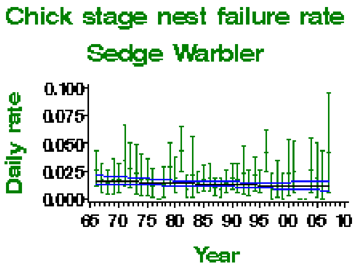
Table of productivity changes for Sedge Warbler

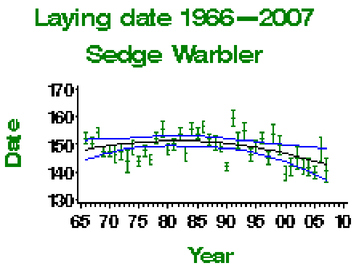
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	37	Curvilinear	4.95 eggs	4.85 eggs	-2%	
Brood size	38	1968-2006	57	None				
Daily failure rate (eggs)	38	1968-2006	44	Linear decline	1.3% nests/day	0.61% nests/day	-53.1%	
Daily failure rate (chicks)	38	1968-2006	49	None				
Laying date	38	1968-2006	49	Curvilinear	May 29	May 23	-6 days	
Juvenile to Adult ratio (CES)	22	1984-2006	69	Smoothed trend	221 Index value	100 Index value	-55% >50	
Juvenile to Adult ratio (CES)	10	1996-2006	80	Smoothed trend	121 Index value	100 Index value	-17%	
Juvenile to Adult ratio (CES)	5	2001-2006	70	Smoothed trend	101 Index value	100 Index value	-1%	

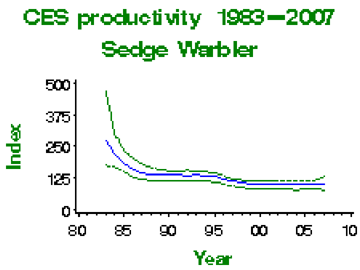












Additional information

- 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, should perhaps 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 more recent decline. Both CBC/BBS and WBS show progressive moderate increases, however, perhaps linked to increasingly sensitive management of small and linear wetland sites. Population increase, as indicated by the census work, accords with the remarkable range expansion the species has achieved since the 1960s. West Wales, northwest and northeast England were colonised, as was the east coast of Ireland, between 1968–72 and 1988–91 (**Gibbons *et al.* 1993**), and the species probably now breeds sporadically as far north as the Tay reedbeds (**Robertson 2003**). 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

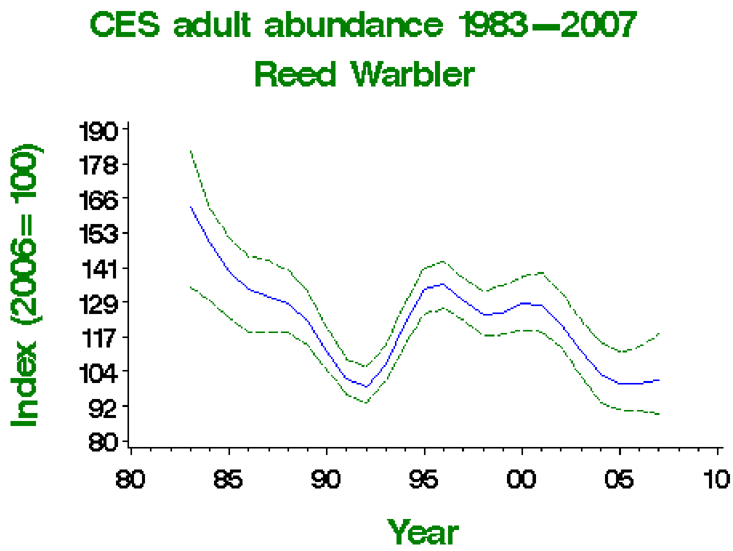
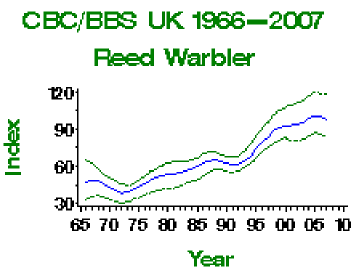


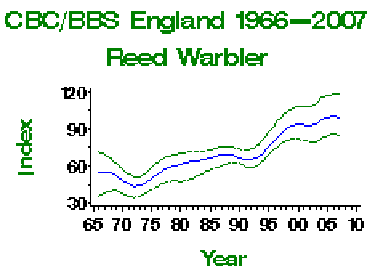
Table of population changes for Reed Warbler

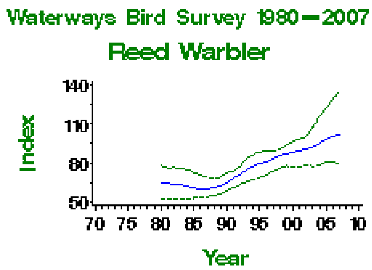
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	52	106	39	263		
	25	1981-2006	70	84	31	201		
	10	1996-2006	125	27	7	51		
	5	2001-2006	125	7	-6	20		
CBC/BBS England	39	1967-2006	50	80	22	202		
	25	1981-2006	67	60	20	150		
	10	1996-2006	120	24	7	42		
	5	2001-2006	119	7	-3	20		
WBS waterways	25	1981-2006	22	55	5	151		
	10	1996-2006	26	23	-11	83		
	5	2001-2006	22	12	-9	45		
CES adults	22	1984-2006	52	-33	-46	-10	>25	
	10	1996-2006	60	-26	-36	-13	>25	
	5	2001-2006	52	-22	-31	-11		
CES juveniles	22	1984-2006	54	-28	-45	-4	>25	

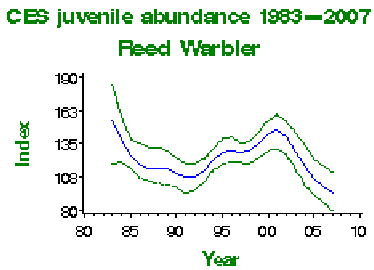
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	107	28	9	50		
	10	1996-2006	111	23	7	43		
	5	2001-2006	125	9	0	19		
BBS England	11	1995-2006	103	25	6	50		
	10	1996-2006	106	20	5	42		
	5	2001-2006	119	9	-1	20		

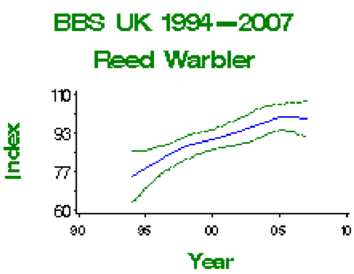
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

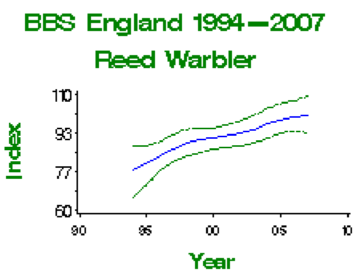








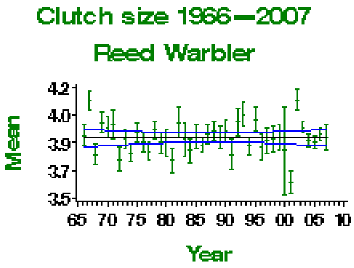


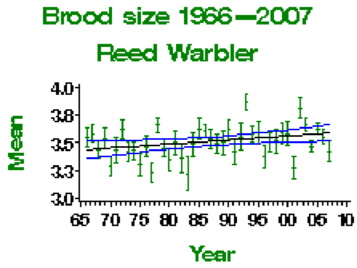


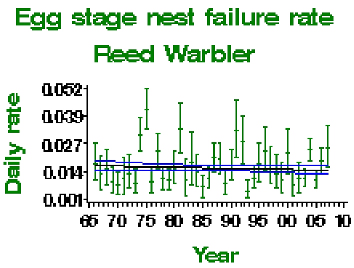
Productivity trends

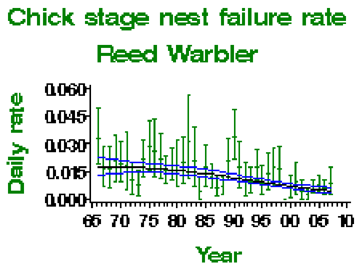
Table of productivity changes for Reed Warbler

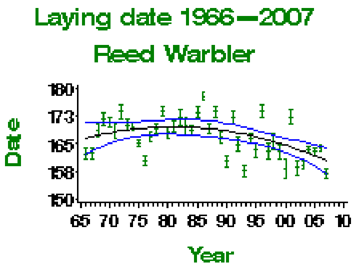
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	110	None				
Brood size	38	1968-2006	127	Linear increase	3.45 chicks	3.58 chicks	4%	
Daily failure rate (eggs)	38	1968-2006	144	None				
Daily failure rate (chicks)	38	1968-2006	110	Curvilinear	1.74% nests/day	0.5% nests/day	-71.3%	
Laying date	38	1968-2006	159	Curvilinear	Jun 16	Jun 10	-6 days	
Juvenile to Adult ratio (CES)	22	1984-2006	59	Smoothed trend	81 Index value	100 Index value	24%	
Juvenile to Adult ratio (CES)	10	1996-2006	67	Smoothed trend	108 Index value	100 Index value	-7%	
Juvenile to Adult ratio (CES)	5	2001-2006	58	Smoothed trend	109 Index value	100 Index value	-8%	

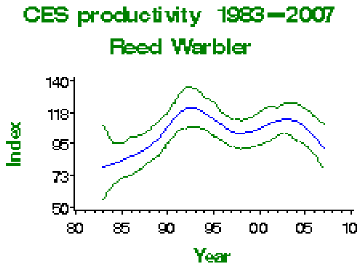












Additional information

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

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 (PECBMS 2007).

Population changes

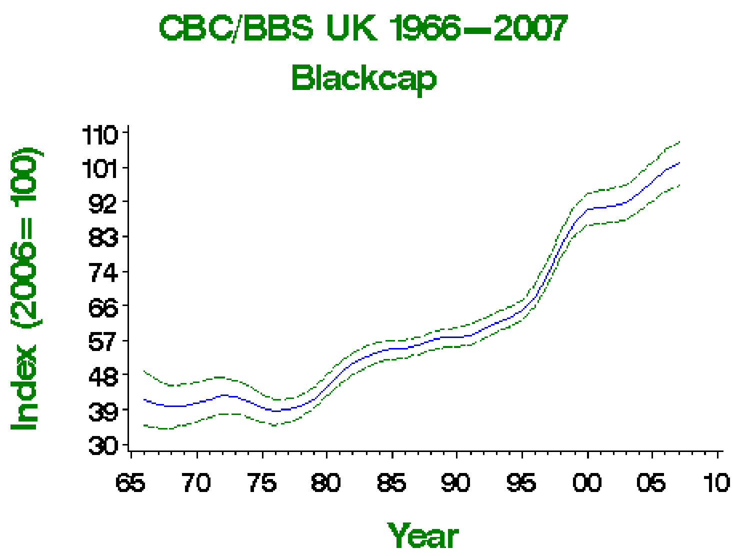


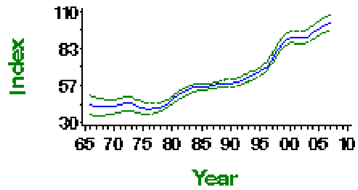
Table of population changes for Blackcap

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	518	149	104	213		
	25	1981-2006	734	108	86	130		
	10	1996-2006	1431	48	41	54		
	5	2001-2006	1532	10	6	14		
CBC/BBS England	39	1967-2006	454	139	97	205		
	25	1981-2006	640	102	81	128		
	10	1996-2006	1236	44	37	51		
	5	2001-2006	1306	9	6	13		
CES adults	22	1984-2006	86	69	39	112		
	10	1996-2006	98	33	17	54		
	5	2001-2006	90	22	10	33		
CES juveniles	22	1984-2006	88	26	4	54		
	10	1996-2006	100	28	13	44		
	5	2001-2006	92	16	6	30		
BBS UK	11	1995-2006	1293	55	48	64		
	10	1996-2006	1343	45	37	51		
	5	2001-2006	1532	11	7	15		
BBS England	11	1995-2006	1118	48	41	55		
	10	1996-2006	1157	40	33	45		

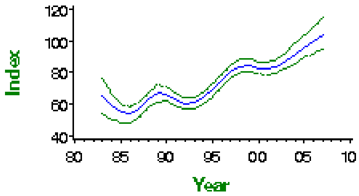
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Scotland								
	10	1996-2006	38	107	55	176		
	5	2001-2006	46	14	-3	42		
BBS Wales	11	1995-2006	109	56	30	83		
	10	1996-2006	115	41	21	63		
	5	2001-2006	134	11	2	22		

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

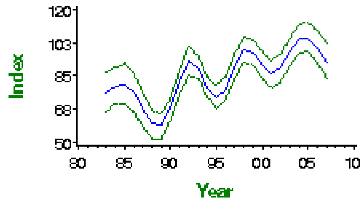
CBC/BBS England 1966—2007
Blackcap



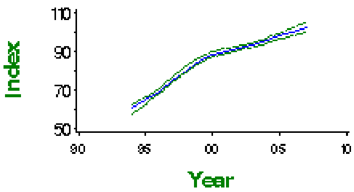
CES adult abundance 1983—2007
Blackcap



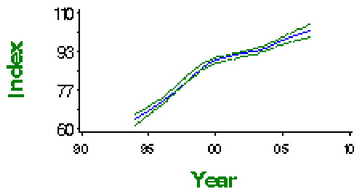
CES juvenile abundance 1983—2007
Blackcap



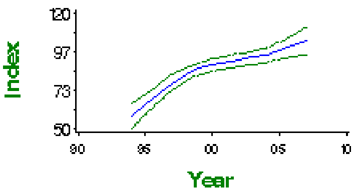
BBS UK 1994—2007
Blackcap



BBS England 1994—2007
Blackcap



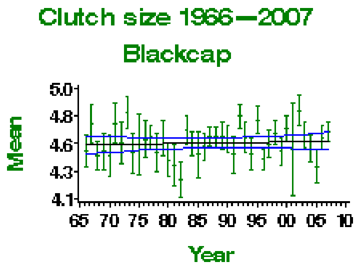
BBS Wales 1994—2007
Blackcap

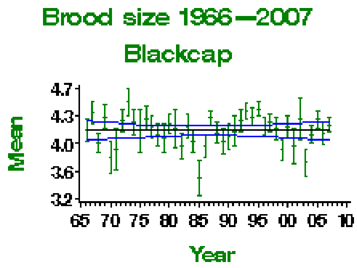


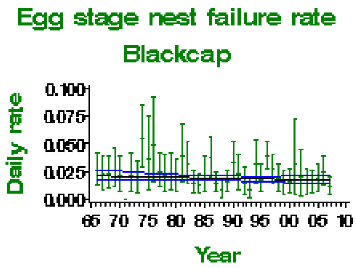
Productivity trends

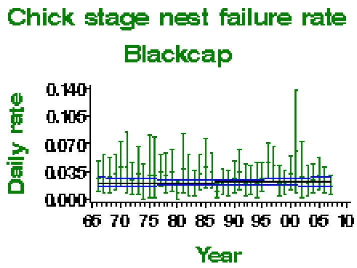
Table of productivity changes for Blackcap

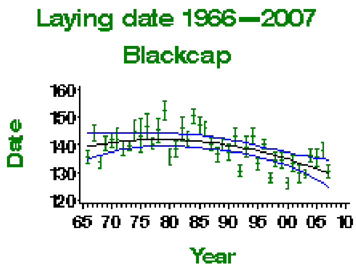
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	36	None				
Brood size	38	1968-2006	42	None				
Daily failure rate (eggs)	38	1968-2006	47	None				
Daily failure rate (chicks)	38	1968-2006	37	None				
Laying date	38	1968-2006	37	Curvilinear	May 20	May 11	-9 days	
Juvenile to Adult ratio (CES)	22	1984-2006	94	Smoothed trend	134 Index value	100 Index value	-25% >25	
Juvenile to Adult ratio (CES)	10	1996-2006	105	Smoothed trend	104 Index value	100 Index value	-3%	
Juvenile to Adult ratio (CES)	5	2001-2006	97	Smoothed trend	92 Index value	100 Index value	8%	

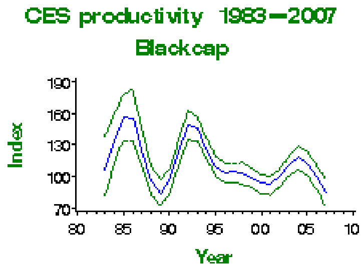












Additional information

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

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 that 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. Numbers have shown widespread moderate decline in Europe since 1980 (**PECBMS 2007**).

Population changes

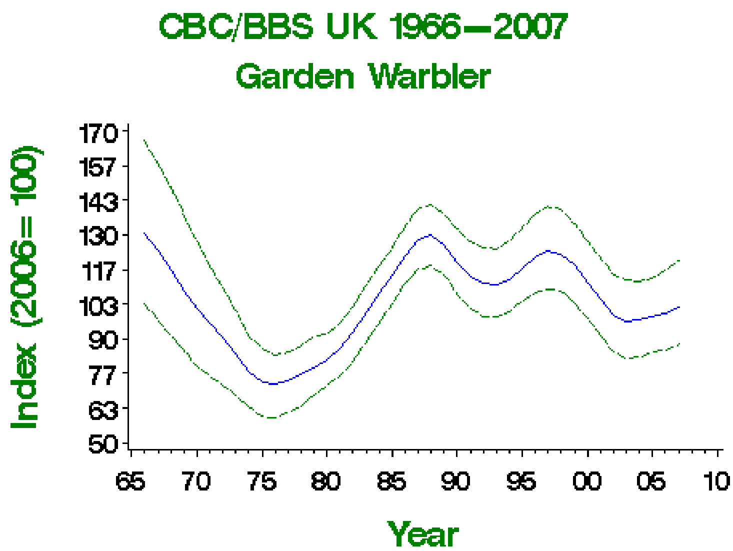
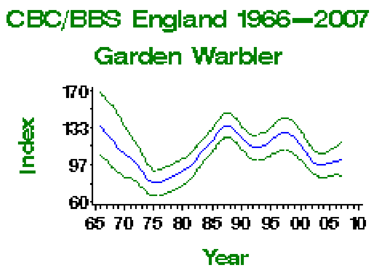


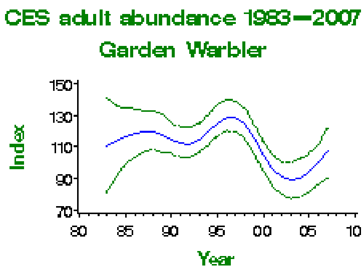
Table of population changes for Garden Warbler

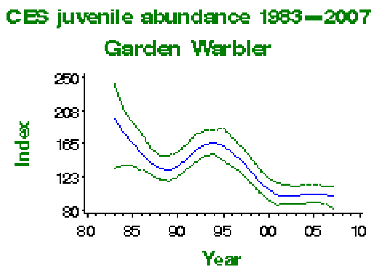
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	195	-19	-47	25		
	25	1981-2006	264	16	-9	55		
	10	1996-2006	463	-18	-26	-8		
	5	2001-2006	415	-5	-13	5		
CBC/BBS England	39	1967-2006	165	-21	-46	13		
	25	1981-2006	221	6	-19	39		
	10	1996-2006	382	-20	-28	-11		
	5	2001-2006	339	-7	-16	2		
CES adults	22	1984-2006	63	-12	-39	20		
	10	1996-2006	68	-22	-36	-9		
	5	2001-2006	57	4	-10	19		
CES juveniles	22	1984-2006	63	-45	-59	-19	>25	
	10	1996-2006	67	-35	-47	-21	>25	
	5	2001-2006	60	1	-16	19		
BBS UK	11	1995-2006	406	-17	-27	-7		
	10	1996-2006	415	-19	-28	-9		
	5	2001-2006	415	-5	-14	3		
BBS England	11	1995-2006	333	-19	-28	-11		
	10	1996-2006	340	-21	-29	-15		

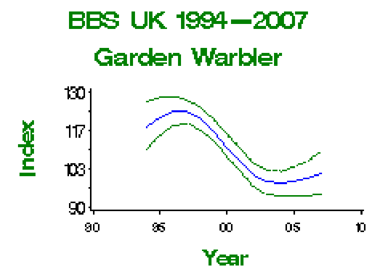
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales								
	10	1996-2006	55	-28	-45	-7	>25	
	5	2001-2006	55	-8	-27	6		

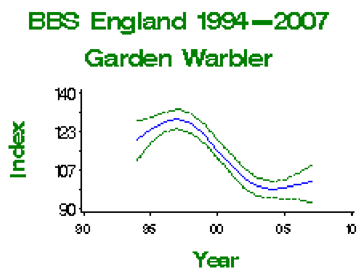
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

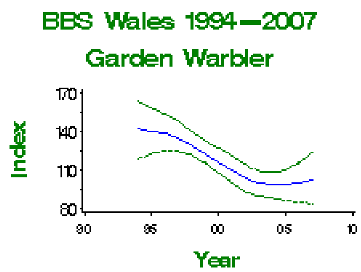








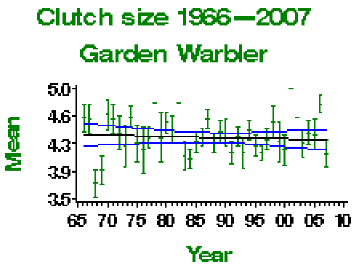


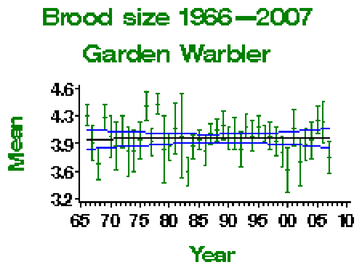


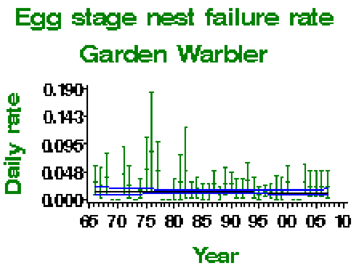
Productivity trends

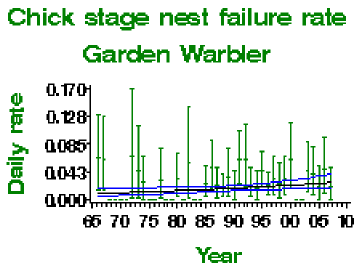
Table of productivity changes for Garden Warbler

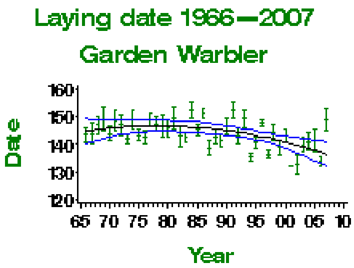
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	16	None				Small sample
Brood size	38	1968-2006	24	None				Small sample
Daily failure rate (eggs)	38	1968-2006	22	None				Small sample
Daily failure rate (chicks)	38	1968-2006	19	Linear increase	1.05% nests/day	2.57% nests/day	144.8%	Small sample
Laying date	38	1968-2006	21	Curvilinear	May 25	May 17	-8 days	Small sample
Juvenile to Adult ratio (CES)	22	1984-2006	76	Smoothed trend	168 Index value	100 Index value	-41%	
Juvenile to Adult ratio (CES)	10	1996-2006	81	Smoothed trend	107 Index value	100 Index value	-7%	
Juvenile to Adult ratio (CES)	5	2001-2006	72	Smoothed trend	88 Index value	100 Index value	14%	

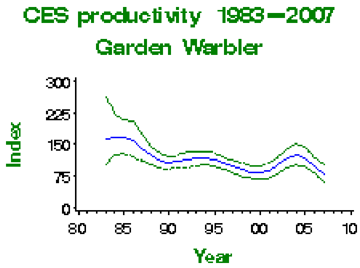












Additional information

- 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: fluctuating, with no long-term trend
England: shallow 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 that lasted into the late 1990s. These changes were statistically significant, and large enough over the relevant periods to trigger BTO alerts. BBS has subsequently shown a significant sharp upturn, but this contrasts strongly with the continued decrease recorded by CES ringers. 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

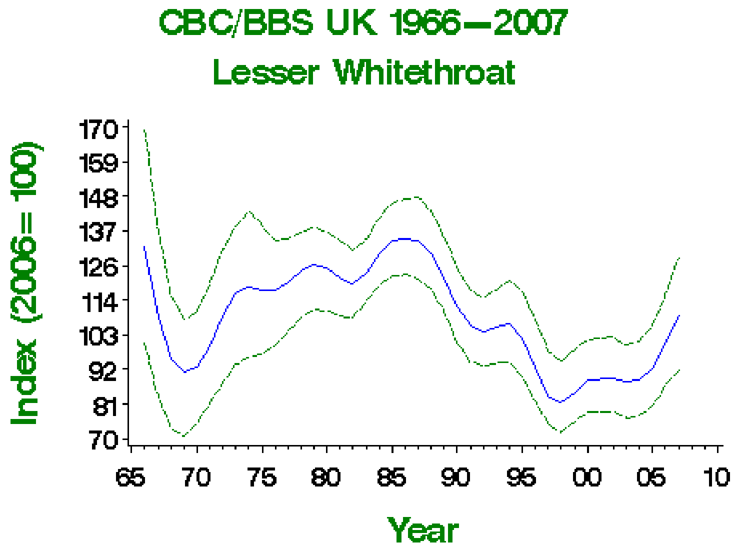


Table of population changes for Lesser Whitethroat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	117	-8	-37	37		
	25	1981-2006	155	-18	-35	4		
	10	1996-2006	256	8	-6	16		
	5	2001-2006	259	12	1	24		
CBC/BBS England	39	1967-2006	112	-14	-40	30		
	25	1981-2006	148	-22	-36	1		
	10	1996-2006	245	6	-8	15		
	5	2001-2006	247	11	1	23		
CES adults	22	1984-2006	40	-59	-78	-40	>50	
	10	1996-2006	37	-49	-61	-32	>25	
	5	2001-2006	33	-17	-35	1		
CES juveniles	22	1984-2006	44	-54	-78	-27	>50	
	10	1996-2006	42	-51	-62	-38	>50	
	5	2001-2006	40	-35	-46	-18	>25	
BBS UK	11	1995-2006	229	-8	-24	3		
	10	1996-2006	233	5	-12	15		
	5	2001-2006	259	19	8	33		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	247	17	8	29		

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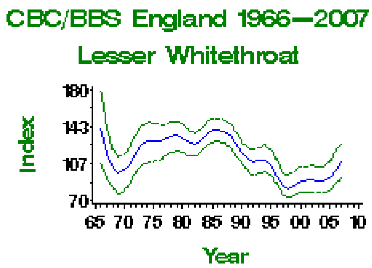
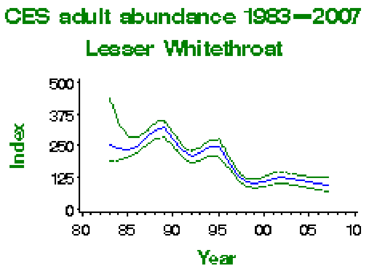
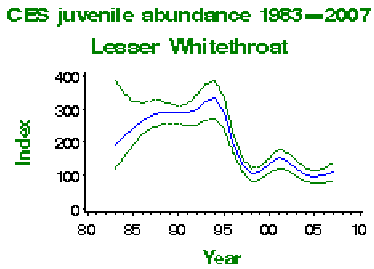
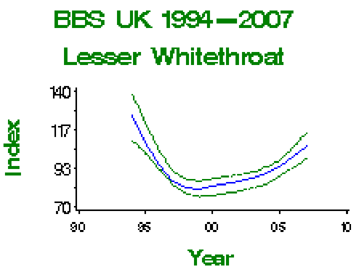
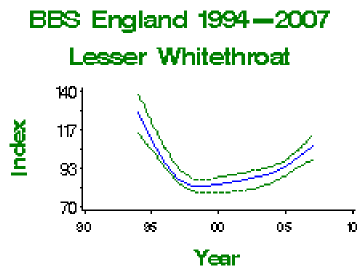










Productivity trends

Table of productivity changes for Lesser Whitethroat

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Juvenile to Adult ratio (CES)	22	1984-2006	55	Smoothed trend	74 Index value	100 Index value	36%	
Juvenile to Adult ratio (CES)	10	1996-2006	53	Smoothed trend	79 Index value	100 Index value	27%	
Juvenile to Adult ratio (CES)	5	2001-2006	49	Smoothed trend	113 Index value	100 Index value	-12%	

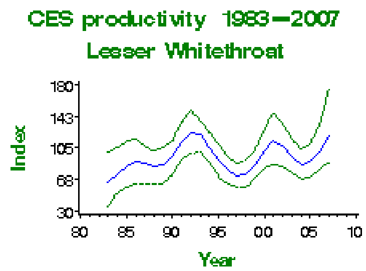
Insufficient data on clutch size available for this species

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, despite a normal departure for their wintering grounds in 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 changes in abundance (**Siriwardena *et al.* 1998b**). Productivity, as measured by CES, rose during the 1980s and has since fluctuated and fallen back. It seems likely that habitat loss since the 1960s, particularly on farmland, will eventually limit the degree of recovery. A shallow upturn has been detected widely in Europe since 1980 (**PECBMS 2007**).

Population changes

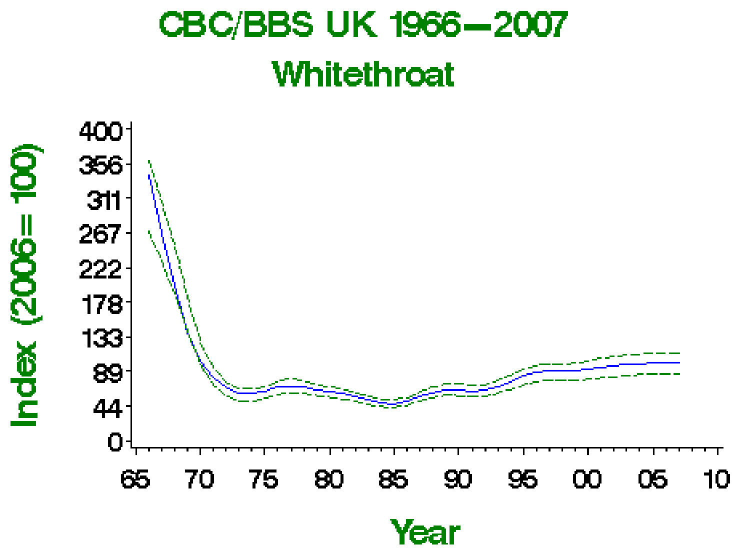


Table of population changes for Whitethroat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	447	-62	-73	-50	>50	
	25	1981-2006	627	65	30	110		
	10	1996-2006	1253	14	7	20		
	5	2001-2006	1304	7	2	10		
CBC/BBS England	39	1967-2006	388	-63	-73	-50	>50	
	25	1981-2006	543	66	32	113		
	10	1996-2006	1082	13	8	17		
	5	2001-2006	1120	4	1	7		
WBS waterways	31	1975-2006	41	171	15	367		
	25	1981-2006	45	375	169	613		
	10	1996-2006	53	60	17	96		
	5	2001-2006	43	32	11	50		
CES adults	22	1984-2006	59	-36	-57	-22	>25	
	10	1996-2006	68	-37	-46	-27	>25	
	5	2001-2006	61	-11	-22	4		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	65	-14	-28	0		
BBS UK	11	1995-2006	1158	19	11	26		
	10	1996-2006	1195	15	8	22		
	5	2001-2006	1304	7	2	10		
BBS England	11	1995-2006	1000	17	11	23		
	10	1996-2006	1032	14	8	19		
	5	2001-2006	1120	5	1	8		
BBS Scotland	11	1995-2006	66	87	41	155		
	10	1996-2006	68	74	32	122		
	5	2001-2006	76	26	7	51		
BBS Wales	11	1995-2006	74	-22	-38	-5		
	10	1996-2006	77	-26	-39	-12	>25	
	5	2001-2006	86	-5	-17	7		

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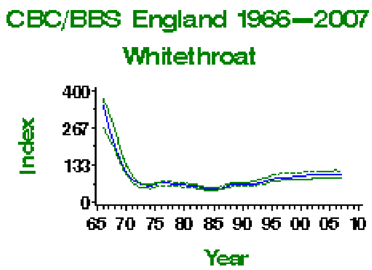
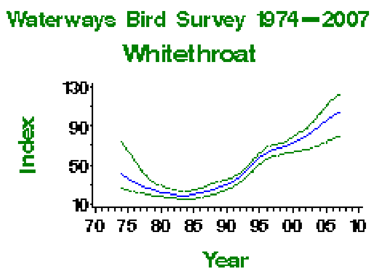
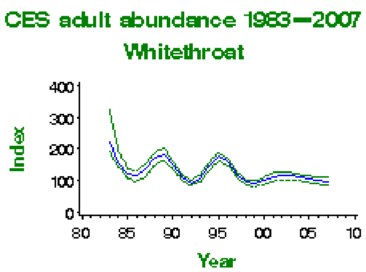
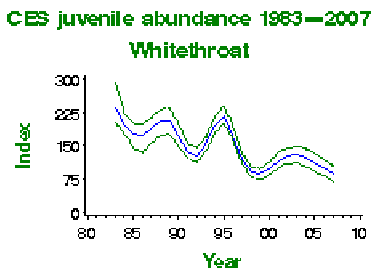
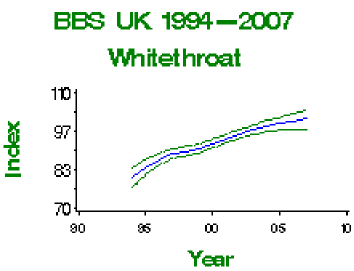
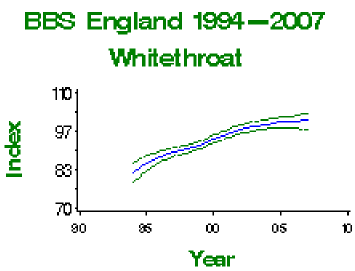


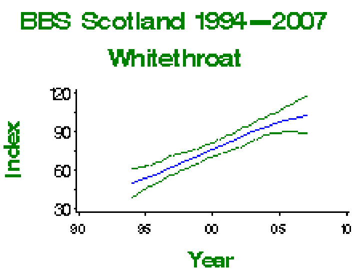


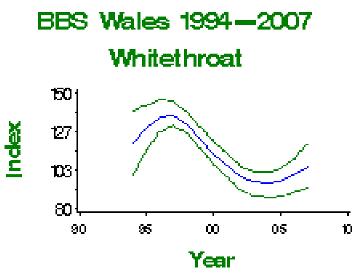








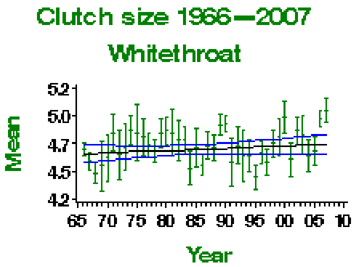


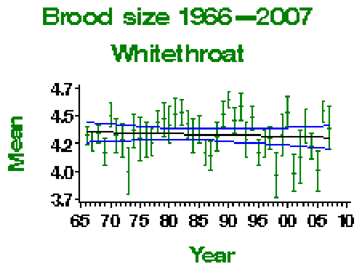


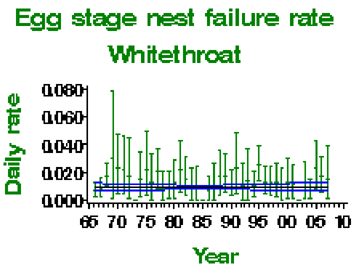
Productivity trends

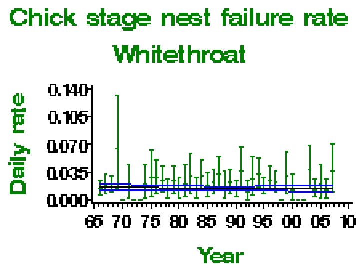
Table of productivity changes for Whitethroat

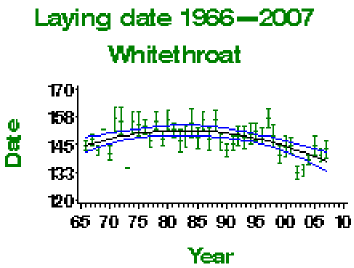
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	28	None				Small sample
Brood size	38	1968-2006	62	None				
Daily failure rate (eggs)	38	1968-2006	41	None				
Daily failure rate (chicks)	38	1968-2006	48	None				
Laying date	38	1968-2006	18	Curvilinear	May 26	May 19	-7 days	Small sample
Juvenile to Adult ratio (CES)	22	1984-2006	73	Smoothed trend	93 Index value	100 Index value	8%	
Juvenile to Adult ratio (CES)	10	1996-2006	83	Smoothed trend	133 Index value	100 Index value	-25%	
Juvenile to Adult ratio (CES)	5	2001-2006	73	Smoothed trend	139 Index value	100 Index value	-28%	

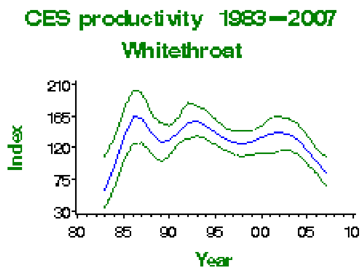












Additional information

- 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: priority species

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. Numbers have fallen widely in Europe since 1980 (**PECBMS 2007**). With declines evident across northern and western Europe, this previously 'secure' species is now provisionally categorised as 'declining' (**BirdLife International 2004**).

Population changes

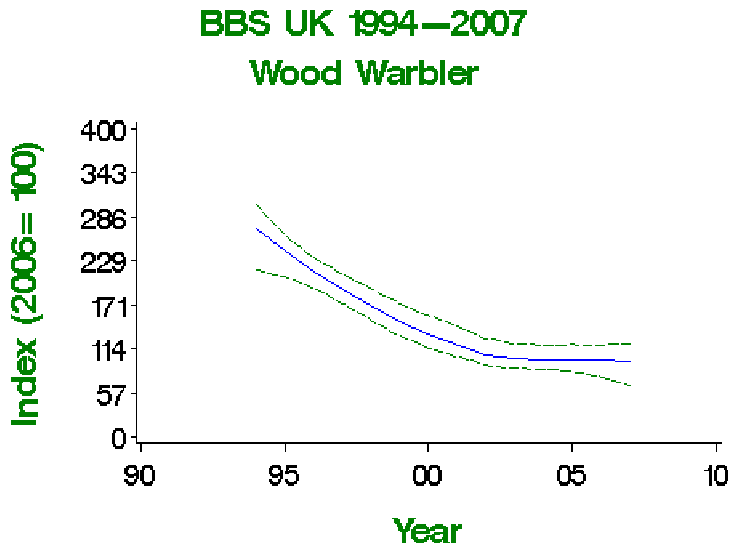


Table of population changes for Wood Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	53	-58	-70	-44	>50	
	10	1996-2006	53	-53	-67	-36	>50	
	5	2001-2006	47	-16	-44	13		

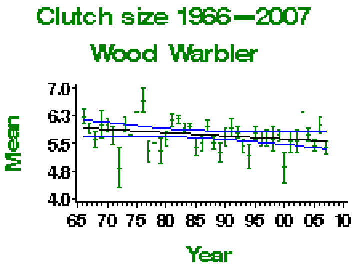
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

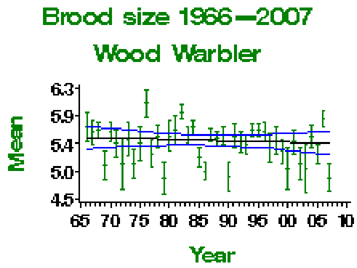
Productivity trends

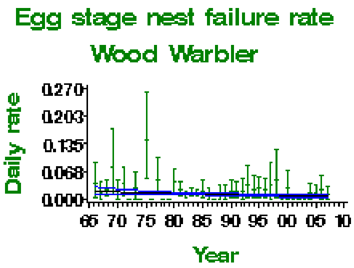
Table of productivity changes for Wood Warbler

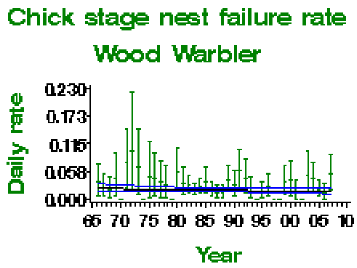
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	16	None				Small sample
Brood size	38	1968-	36	None				

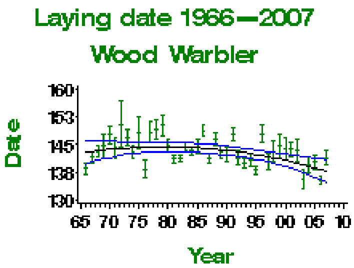
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Daily failure rate (eggs)								
Daily failure rate (chicks)		2006						sample
Laying date	38	1968-2006	31	Curvilinear	May 23	May 18	-5 days	











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

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 partly explain the strong 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 as measured by CES has decreased as the population has risen. Numbers have risen widely in Europe since 1980 (**PECBMS 2007**).

Population changes

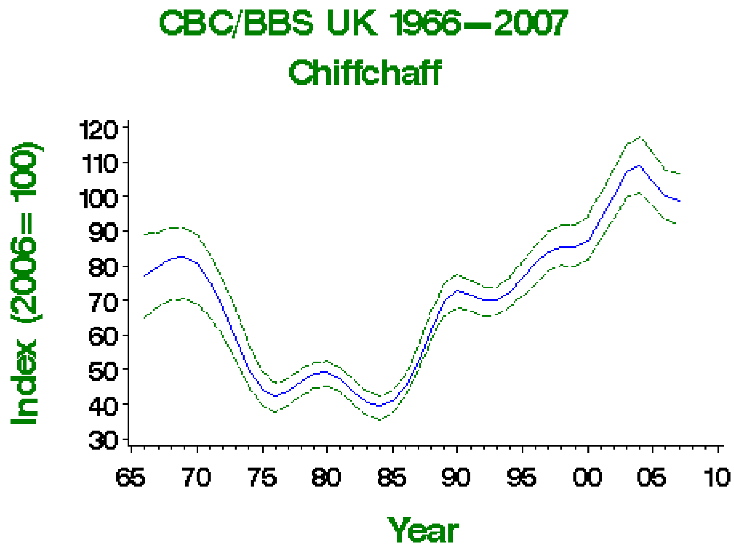


Table of population changes for Chiffchaff

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	464	25	4	65		
	25	1981-2006	659	112	86	149		
	10	1996-2006	1305	24	19	31		
	5	2001-2006	1425	7	3	11		
CBC/BBS England	39	1967-2006	397	31	4	72		
	25	1981-2006	560	120	95	160		
	10	1996-2006	1102	27	22	35		
	5	2001-2006	1192	6	3	10		
CES adults	22	1984-2006	67	161	75	304		
	10	1996-2006	81	25	2	64		
	5	2001-2006	79	21	5	39		
CES juveniles	22	1984-2006	77	137	59	292		
	10	1996-2006	91	19	-3	47		
	5	2001-2006	85	4	-7	17		
BBS UK	11	1995-2006	1182	29	24	37		
	10	1996-2006	1226	25	20	32		
	5	2001-2006	1425	9	4	12		
BBS England	11	1995-2006	997	32	26	40		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Scotland	10	1996-2006	31	130	50	257		
	5	2001-2006	39	23	-13	58		
BBS Wales	11	1995-2006	123	13	0	28		
	10	1996-2006	128	12	-1	24		
	5	2001-2006	154	13	4	20		

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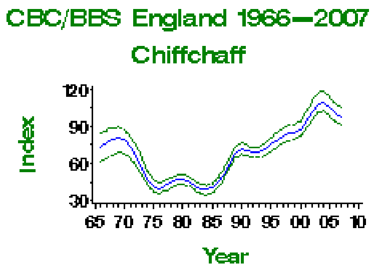
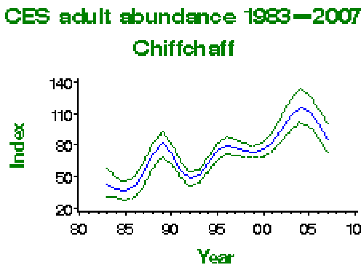
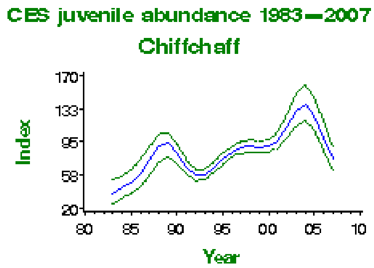
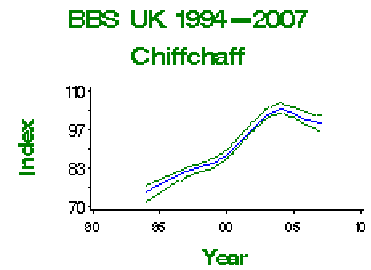
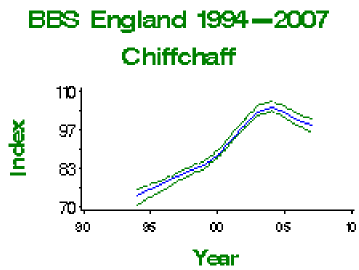
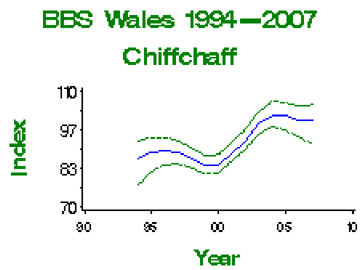








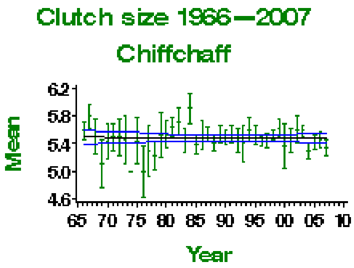


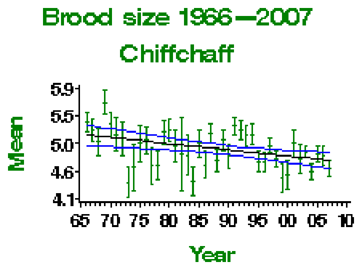


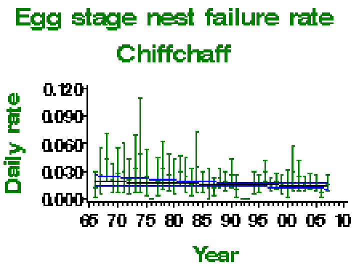
Productivity trends

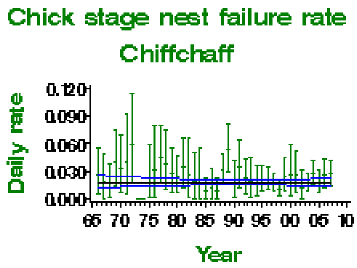
Table of productivity changes for Chiffchaff

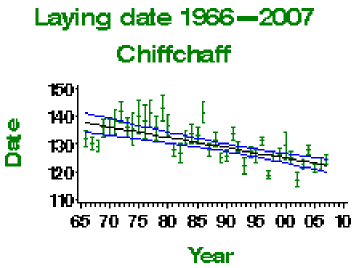
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	30	None				Small sample
Brood size	38	1968-2006	33	Linear decline	5.12 chicks	4.74 chicks	-7.4%	
Daily failure rate (eggs)	38	1968-2006	39	None				
Daily failure rate (chicks)	38	1968-2006	35	None				
Laying date	38	1968-2006	44	Linear decline	May 17	May 3	-14 days	
Juvenile to Adult ratio (CES)	22	1984-2006	85	Smoothed trend	131 Index value	100 Index value	-24%	
Juvenile to Adult ratio (CES)	10	1996-2006	98	Smoothed trend	140 Index value	100 Index value	-29% >25	
Juvenile to Adult ratio (CES)	5	2001-2006	90	Smoothed trend	130 Index value	100 Index value	-23%	

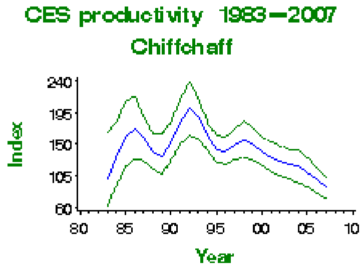












Additional information

- 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 was moved from the green to the amber list. This decline occurred mainly in southern Britain, 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 an initially upward trend in Scotland and in Northern Ireland, and continued 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 with a substantial increase in failure rates at the egg stage, which raises NRS concern (**Leech & Barimore 2008**). 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 (**PECBMS 2007**).

Population changes

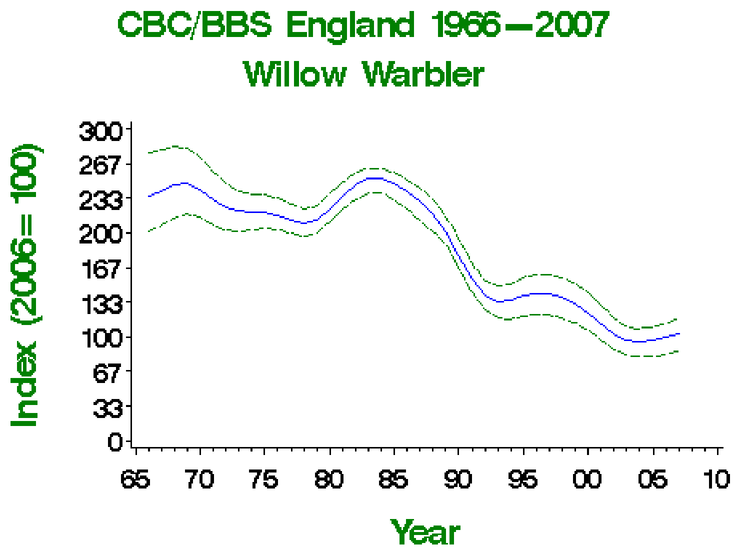


Table of population changes for Willow Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	399	-58	-70	-46	>50	
	25	1981-2006	532	-58	-67	-49	>50	
	10	1996-2006	938	-30	-36	-24	>25	
	5	2001-2006	820	-11	-18	-7		
CES adults	22	1984-2006	88	-61	-70	-52	>50	
	10	1996-2006	91	-48	-54	-42	>25	
	5	2001-2006	77	-7	-14	1		
CES juveniles	22	1984-2006	89	-72	-78	-63	>50	
	10	1996-2006	98	-53	-62	-45	>50	
	5	2001-2006	86	-10	-19	1		
BBS UK	11	1995-2006	1275	-14	-20	-7		
	10	1996-2006	1293	-17	-23	-10		
	5	2001-2006	1260	-8	-13	-5		
BBS England	11	1995-2006	866	-32	-37	-27	>25	
	10	1996-2006	873	-31	-36	-26	>25	

Source	Period	Years	Plots	Change	Lower	Upper	Alert	Comment
BBS Scotland	(yrs)		(n)	(%)	limit	limit		
	10	1996-2006	183	-5	-18	5		
	5	2001-2006	180	-7	-14	-1		
BBS Wales	11	1995-2006	152	-27	-37	-14	>25	
	10	1996-2006	157	-26	-36	-14	>25	
	5	2001-2006	170	-11	-19	-5		
BBS N.Ireland	11	1995-2006	70	36	5	56		
	10	1996-2006	76	12	-9	25		
	5	2001-2006	86	-4	-16	8		

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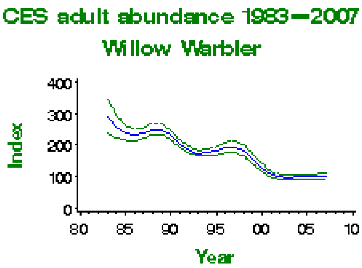
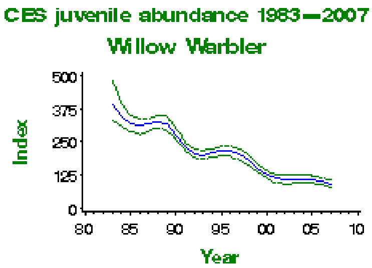
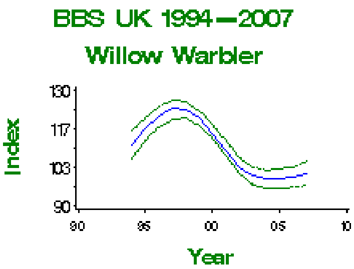
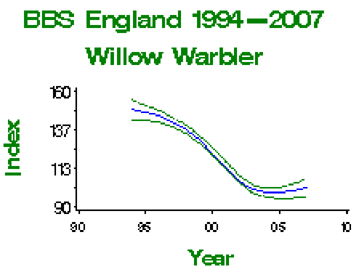
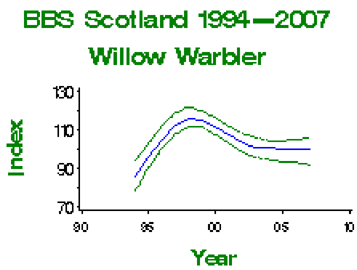
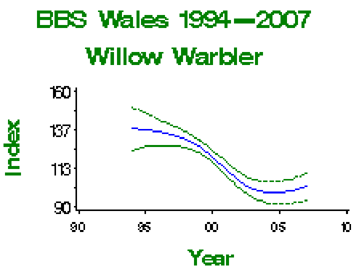


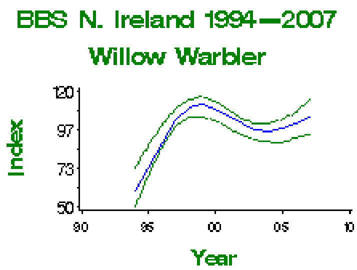










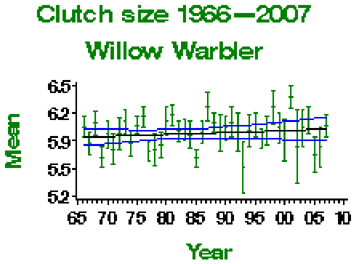


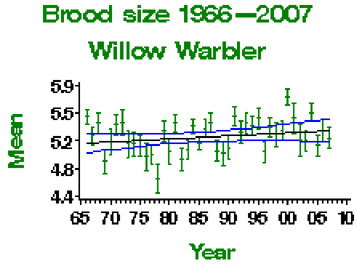
Productivity trends

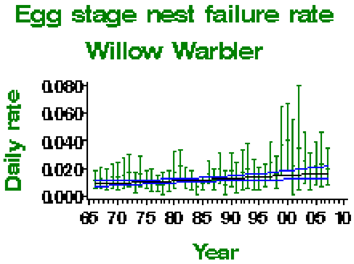
Table of productivity changes for Willow Warbler

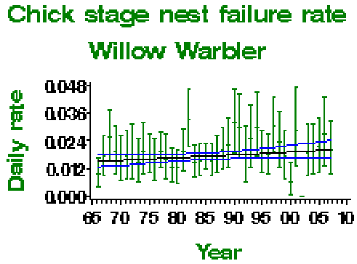
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	49	None				
Brood size	38	1968-2006	131	None				
Daily failure rate (eggs)	38	1968-2006	69	Linear increase	0.93% nests/day	1.66% nests/day	78.5%	
Daily failure rate (chicks)	38	1968-2006	120	None				
Laying date	38	1968-2006	84	Linear decline	May 20	May 14	-6 days	
Juvenile to Adult ratio (CES)	22	1984-2006	95	Smoothed trend	144 Index value	100 Index value	-31% >25	
Juvenile to Adult ratio (CES)	10	1996-2006	103	Smoothed trend	112 Index value	100 Index value	-11%	
Juvenile to Adult ratio	5	2001-	90	Smoothed	109 Index	100 Index	-8%	

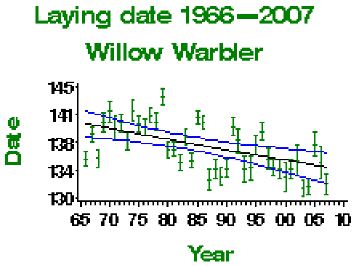
(CES) Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment

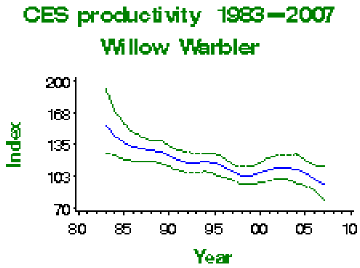












Additional information

- 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 unusually severely affected 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 meets the criterion only because 1975, at 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 a series of damped oscillations following the 1962/63 winter. 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 prime habitat has therefore been poorly reflected in the long-term trend.

Population changes

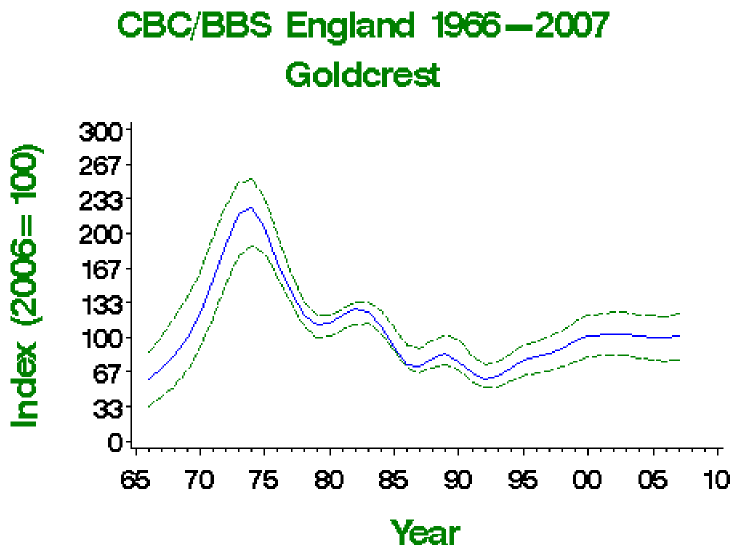


Table of population changes for Goldcrest

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	206	42	-20	197		
	25	1981-2006	278	-18	-38	14		
	10	1996-2006	528	22	11	35		
	5	2001-2006	588	-2	-11	6		
BBS UK	11	1995-2006	678	25	7	40		
	10	1996-2006	701	16	1	27		
	5	2001-2006	817	-8	-12	0		
BBS England	11	1995-2006	475	27	15	42		
	10	1996-2006	491	22	9	35		
	5	2001-2006	588	0	-10	8		
BBS Scotland	11	1995-2006	79	57	24	82		
	10	1996-2006	79	37	9	53		
	5	2001-2006	85	-8	-17	4		
BBS Wales	11	1995-2006	80	-38	-58	3		
	10	1996-2006	83	-38	-56	-7	>25	

Source	Period	Years	Plots	Change	Lower	Upper	Alert	Comment
BBS N.Ireland	(yrs)		(n)	(%)	limit	limit		
	10	1996-2006	42	45	3	64		
	5	2001-2006	45	7	-10	27		

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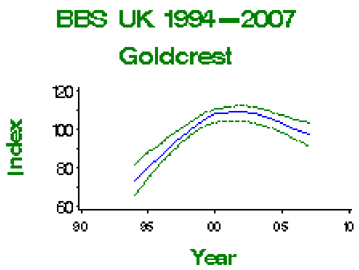

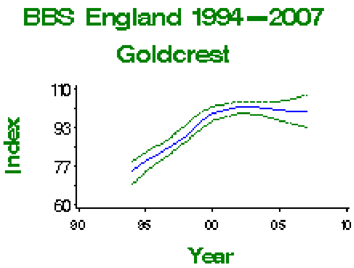

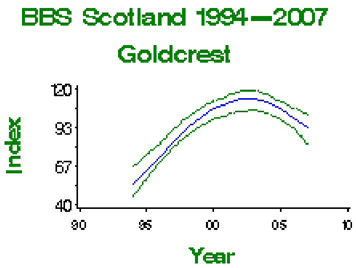

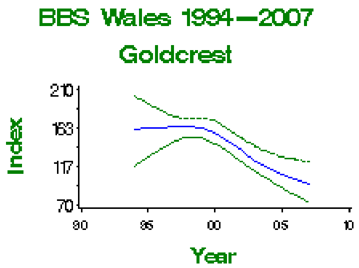

Productivity trends

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 according to census data, and the decline is also reflected in the trend revealed by CES. Productivity measures indicate lower clutch and brood sizes and greater nest losses at the egg and chick stages, which raise NRS concern (**Leech & Barimore 2008**), 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 quality, particularly leading to declines in the large flying insects that are food to the flycatcher, 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. Spotted Flycatchers are estimated to have declined by 59% across Europe during 1980–2005 (**PECBMS 2007**). A predator 'control' experiment has indicated that the abundance of 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**). Another study using nest cameras has identified avian predators, especially **Jays**, as responsible for most nest losses (**Stevens *et al.* 2008**).

Population changes

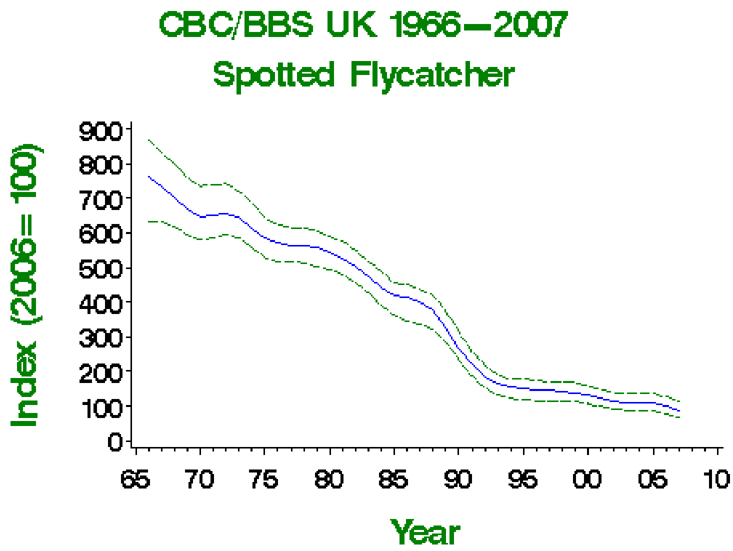

Table of population changes for Spotted Flycatcher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	121	-86	-90	-80	>50	
	25	1981-2006	142	-81	-86	-75	>50	
	10	1996-2006	222	-32	-38	-16	>25	
	5	2001-2006	196	-18	-27	-3		
CBC/BBS England	39	1967-2006	93	-87	-92	-82	>50	
	25	1981-2006	105	-82	-87	-75	>50	
	10	1996-2006	159	-32	-44	-16	>25	
	5	2001-2006	136	-23	-32	-10		
CES adults	22	1984-2006	15	-30	-75	32		Small sample
	10	1996-2006	13	13	-51	79		Small sample
	5	2001-2006	13	31	-24	94		Small sample
CES juveniles	22	1984-2006	11	-56	-86	-15	>50	Small sample

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	196	-20	-29	-2		
BBS England	11	1995-2006	144	-37	-48	-21	>25	
	10	1996-2006	146	-34	-44	-20	>25	
	5	2001-2006	136	-22	-32	-11		

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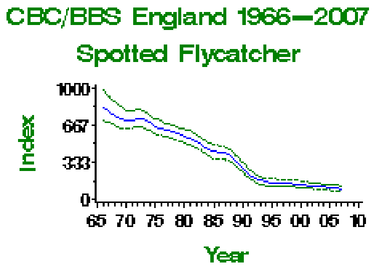
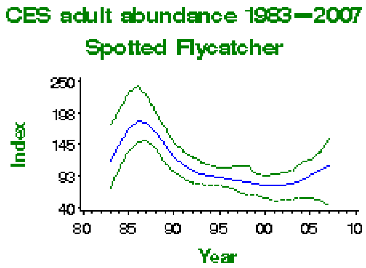
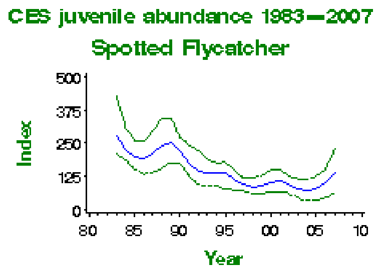
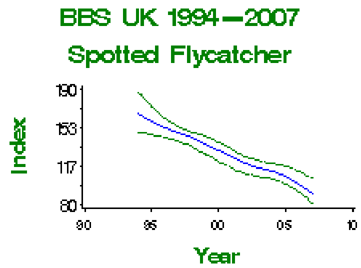
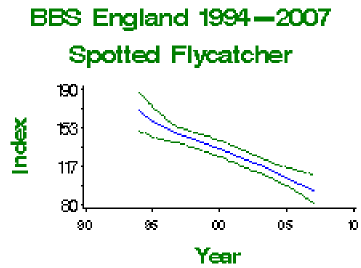






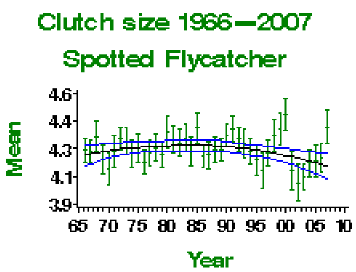


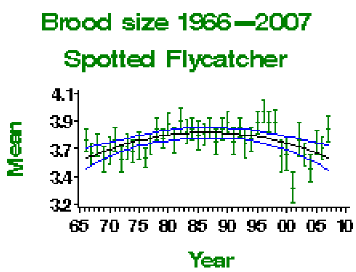


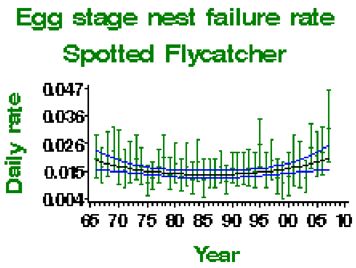
Productivity trends

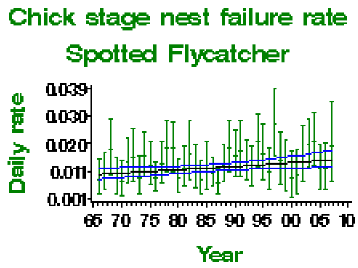
Table of productivity changes for Spotted Flycatcher

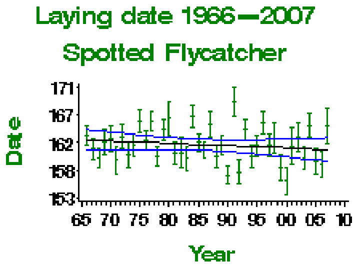
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	81	Curvilinear	4.22 eggs	4.15 eggs	-1.7%	
Brood size	38	1968-2006	130	Curvilinear	3.61 chicks	3.6 chicks	-0.3%	
Daily failure rate (eggs)	38	1968-2006	122	Curvilinear	1.77% nests/day	1.88% nests/day	6.2%	
Daily failure rate (chicks)	38	1968-2006	109	Linear increase	0.98% nests/day	1.43% nests/day	45.9%	
Laying date	38	1968-2006	72	None				
Juvenile to Adult ratio (CES)	22	1984-2006	21	Smoothed trend	133 Index value	100 Index value	-25%	
Juvenile to Adult ratio (CES)	10	1996-2006	18	Smoothed trend	119 Index value	100 Index value	-16%	Small sample
Juvenile to Adult ratio (CES)	5	2001-2006	16	Smoothed trend	149 Index value	100 Index value	-33%	Small sample

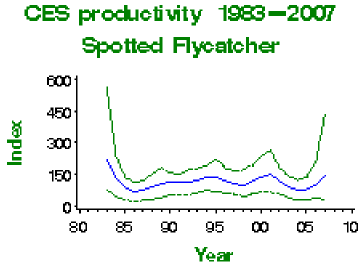












Additional information

- 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: possible decline

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, 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 (**PECBMS 2007**). 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 the change in food supply by breeding earlier (**Both 2002**, **Both *et al.* 2006**).

Population changes

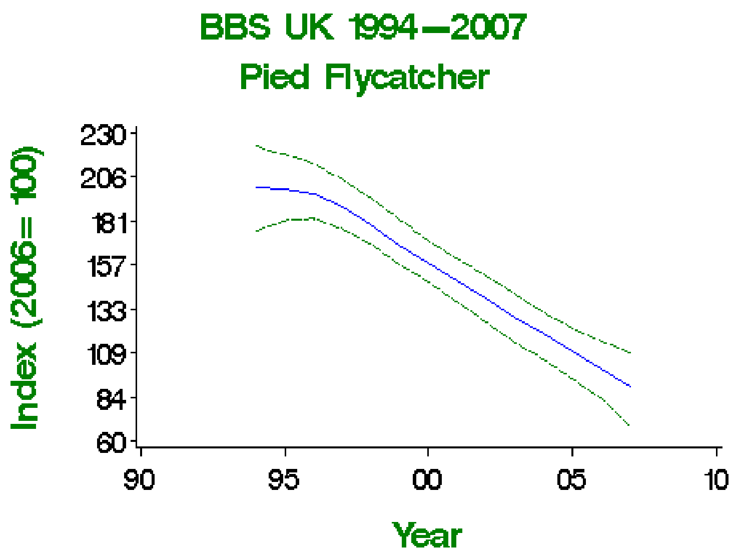


Table of population changes for Pied Flycatcher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	41	-50	-63	-38	>25	
	10	1996-2006	41	-49	-61	-37	>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 between breeding seasons, suffering heavy mortality when winters are severe, but is 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**).

Population changes

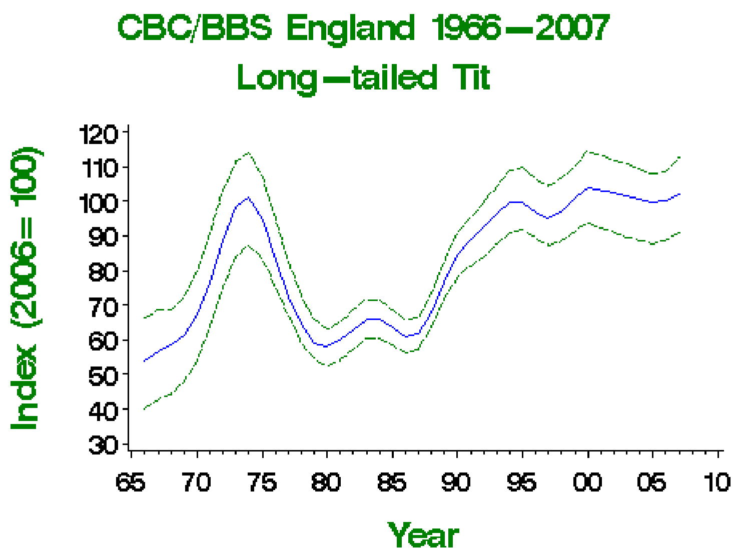


Table of population changes for Long-tailed Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	302	77	28	168		
	25	1981-2006	414	67	36	103		
	10	1996-2006	762	3	-4	10		
	5	2001-2006	795	-3	-8	3		
CES adults	22	1984-2006	76	26	1	75		
	10	1996-2006	89	-12	-23	-1		
	5	2001-2006	82	-14	-27	-2		
CES juveniles	22	1984-2006	69	11	-24	71		
	10	1996-2006	83	-2	-13	13		
	5	2001-2006	76	-17	-28	-4		
BBS UK	11	1995-2006	772	1	-7	9		
	10	1996-2006	795	1	-7	8		
	5	2001-2006	903	-4	-11	1		
BBS England	11	1995-2006	678	0	-9	6		
	10	1996-2006	698	3	-6	9		
	5	2001-2006	795	-1	-8	4		
BBS Wales	11	1995-2006	54	4	-19	28		

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

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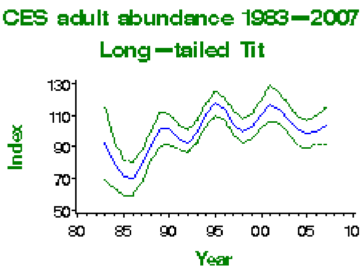
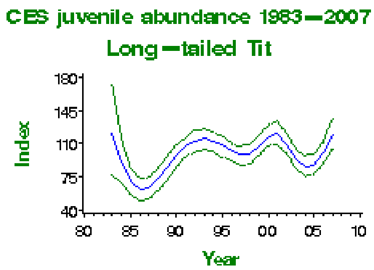
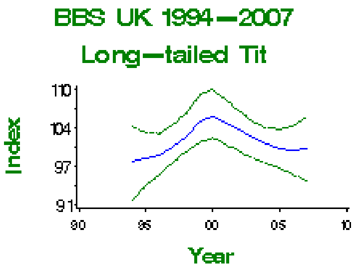
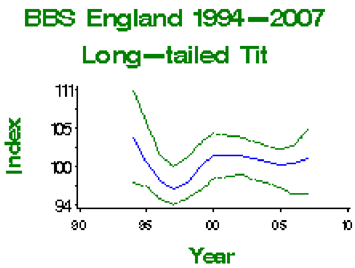
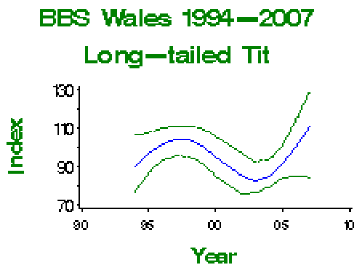






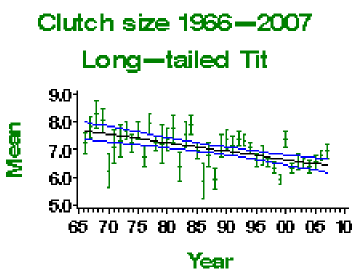


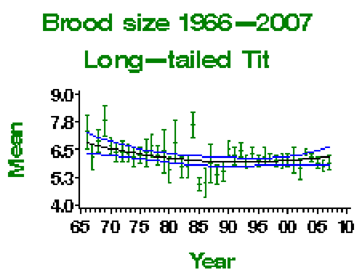


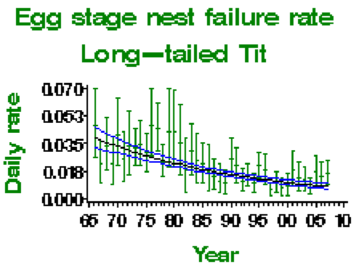
Productivity trends

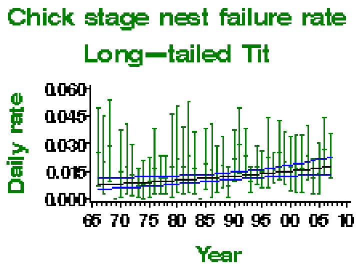
Table of productivity changes for Long-tailed Tit

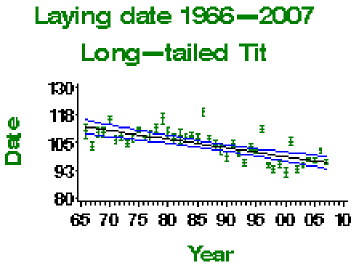
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	34	Linear decline	7.63 eggs	6.46 eggs	-15.3%	
Brood size	38	1968-2006	28	Curvilinear	6.68 chicks	6.17 chicks	-7.6%	Small sample
Daily failure rate (eggs)	38	1968-2006	52	Linear decline	3.58% nests/day	0.84% nests/day	-76.5%	
Daily failure rate (chicks)	38	1968-2006	37	Linear increase	0.8% nests/day	1.71% nests/day	113.8%	
Laying date	38	1968-2006	44	Linear decline	Apr 21	Apr 6	-15 days	
Juvenile to Adult ratio (CES)	22	1984-2006	83	Smoothed trend	105 Index value	100 Index value	-5%	
Juvenile to Adult ratio (CES)	10	1996-2006	97	Smoothed trend	86 Index value	100 Index value	16%	
Juvenile to Adult ratio (CES)	5	2001-2006	90	Smoothed trend	99 Index value	100 Index value	1%	

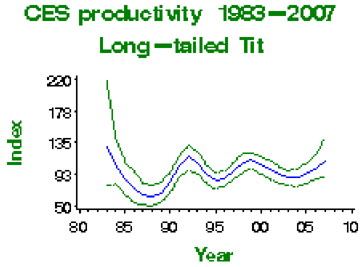












Additional information

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

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 the trend still appears to be upward. 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 (PECBMS 2007).

Population changes

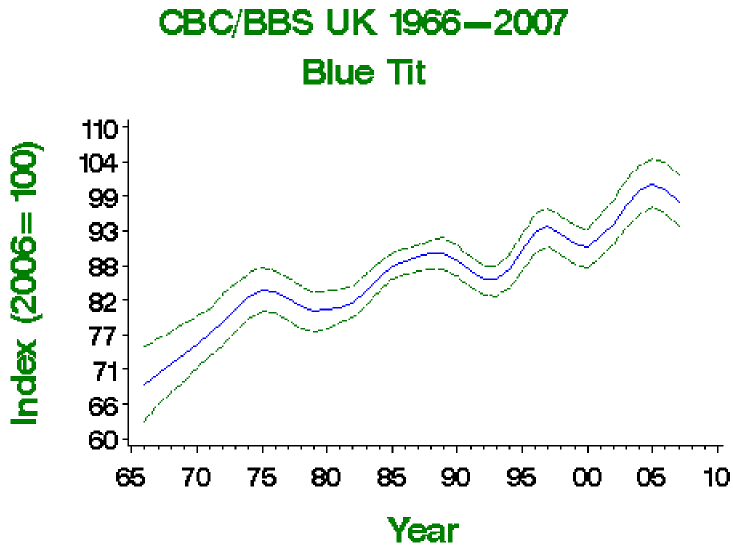


Table of population changes for Blue Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	780	42	27	60		
	25	1981-2006	1098	23	15	33		
	10	1996-2006	2157	7	4	11		
	5	2001-2006	2264	8	5	11		
CBC/BBS England	39	1967-2006	642	40	25	57		
	25	1981-2006	898	19	10	29		
	10	1996-2006	1746	6	2	8		
	5	2001-2006	1814	6	4	9		
CES adults	22	1984-2006	95	16	0	40		
	10	1996-2006	105	-2	-12	7		
	5	2001-2006	96	13	3	25		
CES juveniles	22	1984-2006	94	-42	-53	-23	>25	
	10	1996-2006	106	-35	-43	-25	>25	
	5	2001-2006	97	-15	-23	-2		
BBS UK	11	1995-2006	1995	11	7	14		
	10	1996-2006	2056	8	5	11		
	5	2001-2006	2264	6	4	9		
BBS England	11	1995-2006	1614	8	4	12		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Scotland	11	1995-2006	138	15	1	35		
	10	1996-2006	142	12	-1	26		
	5	2001-2006	151	10	-3	21		
BBS Wales	11	1995-2006	166	21	9	34		
	10	1996-2006	172	16	6	28		
	5	2001-2006	201	12	4	20		
BBS N.Ireland	11	1995-2006	68	34	-2	68		
	10	1996-2006	73	22	-2	47		
	5	2001-2006	86	15	5	29		

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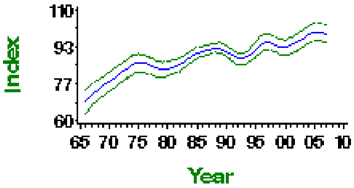
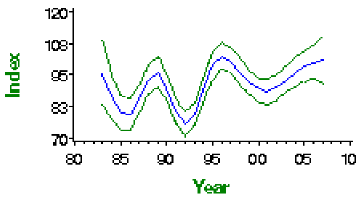
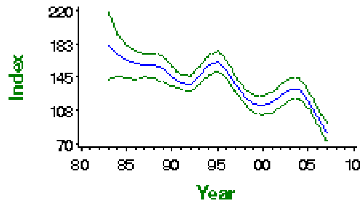
CBC/BBS England 1966—2007
Blue Tit



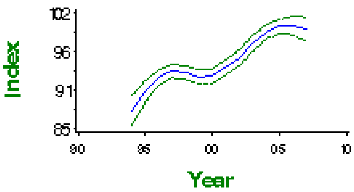
CES adult abundance 1983—2007
Blue Tit



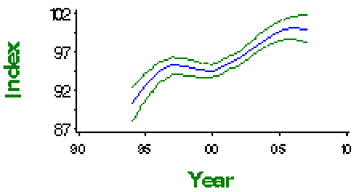
CES juvenile abundance 1983—2007
Blue Tit



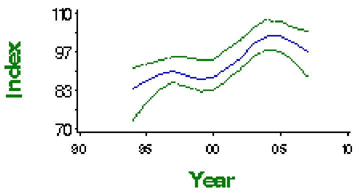
BBS UK 1994—2007
Blue Tit



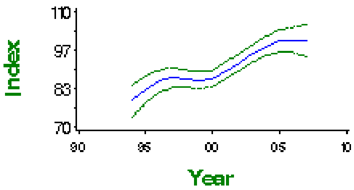
BBS England 1994—2007
Blue Tit



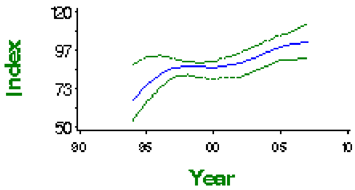
BBS Scotland 1994—2007
Blue Tit



BBS Wales 1994—2007
Blue Tit



BBS N. Ireland 1994—2007
Blue Tit

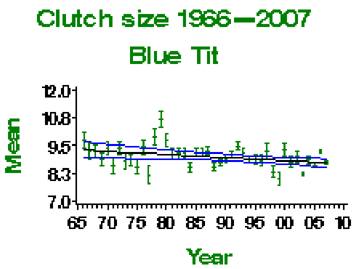


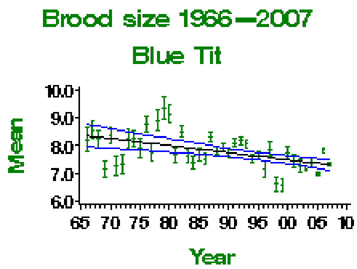
Productivity trends

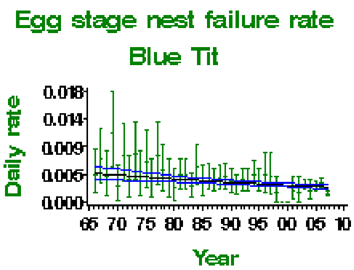
Table of productivity changes for Blue Tit

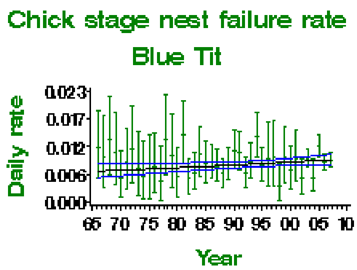
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment

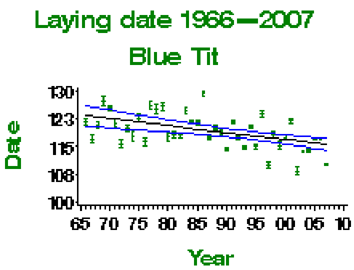
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Daily failure rate (eggs)	38	1968-2006	259	Linear decline	0.46% nests/day	0.25% nests/day	-45.7%	
Daily failure rate (chicks)	38	1968-2006	194	Linear increase	0.65% nests/day	0.87% nests/day	33.8%	
Laying date	38	1968-2006	197	Linear decline	May 3	Apr 26	-7 days	
Juvenile to Adult ratio (CES)	22	1984-2006	99	Smoothed trend	218 Index value	100 Index value	-54% >50	
Juvenile to Adult ratio (CES)	10	1996-2006	109	Smoothed trend	164 Index value	100 Index value	-39% >25	
Juvenile to Adult ratio (CES)	5	2001-2006	100	Smoothed trend	121 Index value	100 Index value	-18%	

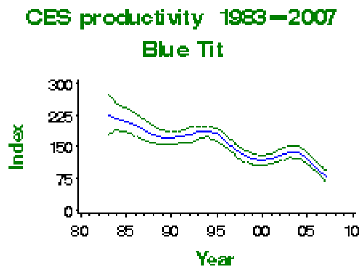












Additional information

- 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: rapid 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 widespread 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 has improved at the egg stage but decreased at the chick stage. 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

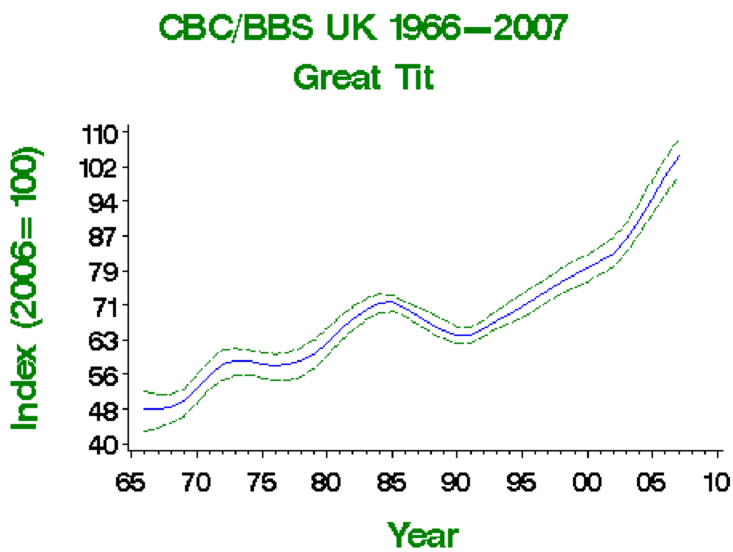


Table of population changes for Great Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	733	110	90	142		
	25	1981-2006	1031	53	40	67		
	10	1996-2006	2016	38	33	44		
	5	2001-2006	2146	23	21	27		
CBC/BBS England	39	1967-2006	605	104	76	130		
	25	1981-2006	845	49	34	61		
	10	1996-2006	1635	38	34	43		
	5	2001-2006	1724	22	20	26		
CES adults	22	1984-2006	89	40	11	72		
	10	1996-2006	101	34	16	51		
	5	2001-2006	94	43	26	61		
CES juveniles	22	1984-2006	91	4	-17	39		
	10	1996-2006	103	15	-2	36		
	5	2001-2006	96	30	18	44		
BBS UK	11	1995-2006	1858	43	38	48		
	10	1996-2006	1917	38	33	43		
	5	2001-2006	2146	22	19	25		
BBS England	11	1995-2006	1505	41	36	45		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Scotland	11	1995-2006	123	45	23	71		
	10	1996-2006	127	33	10	55		
	5	2001-2006	138	24	10	41		
BBS Wales	11	1995-2006	158	45	30	61		
	10	1996-2006	164	38	25	51		
	5	2001-2006	191	23	16	31		
BBS N.Ireland	11	1995-2006	61	124	71	160		
	10	1996-2006	66	80	48	99		
	5	2001-2006	80	23	15	38		

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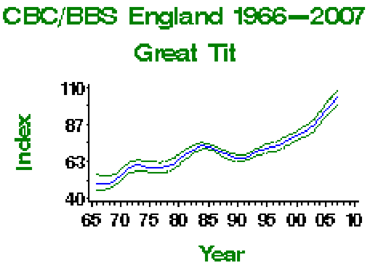
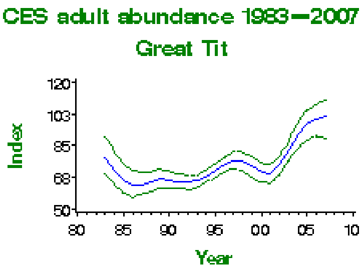
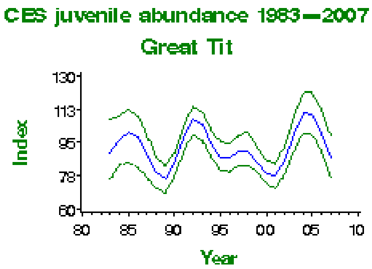
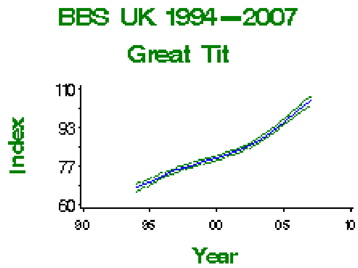
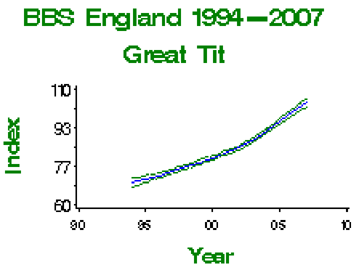
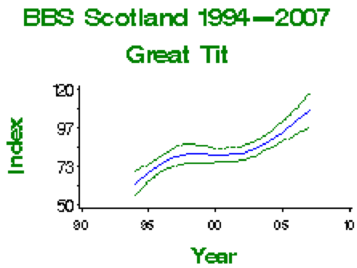


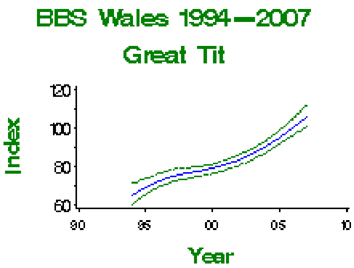


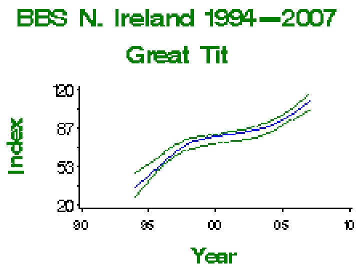










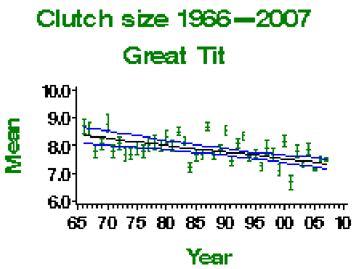


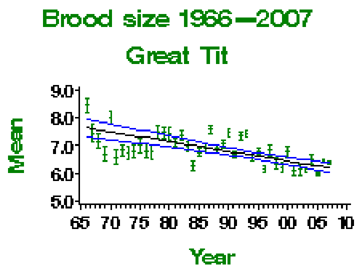
Productivity trends

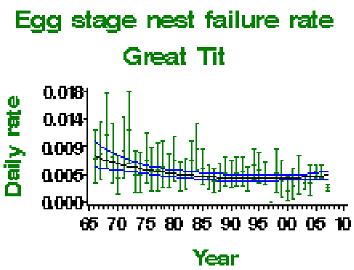
Table of productivity changes for Great Tit

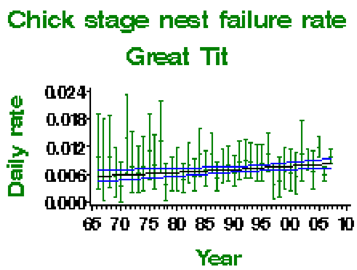
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment

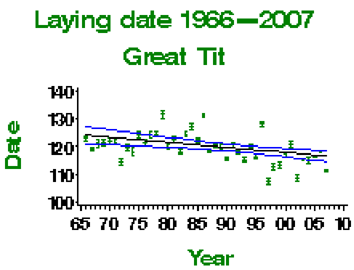
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Daily failure rate (eggs)	38	1968-2006	265	Curvilinear	0.68% nests/day	0.43% nests/day	-36.8%	
Daily failure rate (chicks)	38	1968-2006	197	Linear increase	0.57% nests/day	0.83% nests/day	45.6%	
Laying date	38	1968-2006	176	Linear decline	May 4	Apr 27	-7 days	
Juvenile to Adult ratio (CES)	22	1984-2006	97	Smoothed trend	146 Index value	100 Index value	-32% >25	
Juvenile to Adult ratio (CES)	10	1996-2006	109	Smoothed trend	119 Index value	100 Index value	-16%	
Juvenile to Adult ratio (CES)	5	2001-2006	100	Smoothed trend	102 Index value	100 Index value	-2%	

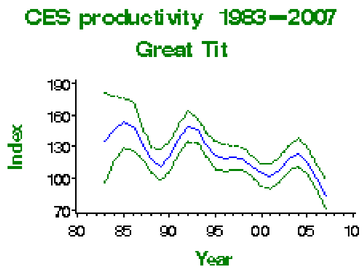












Additional information

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

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

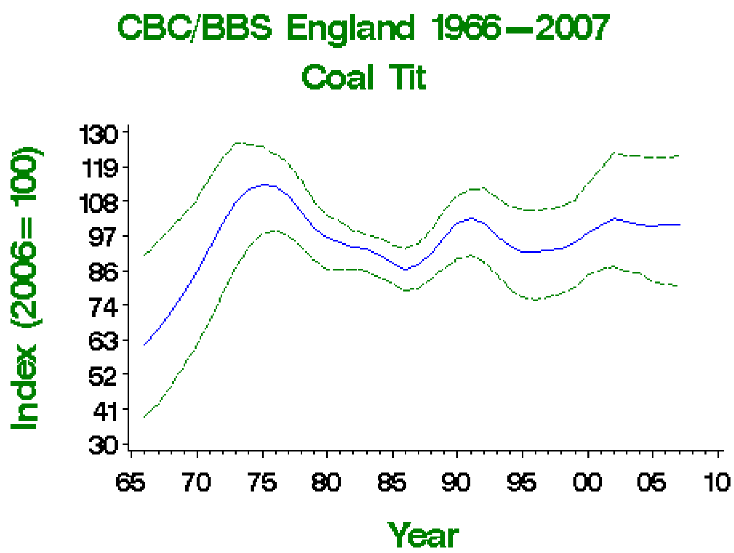


Table of population changes for Coal Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	207	50	-17	188		
	25	1981-2006	274	6	-20	44		
	10	1996-2006	491	9	-6	32		
	5	2001-2006	527	0	-10	11		
BBS UK	11	1995-2006	663	6	-5	18		
	10	1996-2006	687	2	-8	12		
	5	2001-2006	791	2	-5	8		
BBS England	11	1995-2006	435	12	-6	39		
	10	1996-2006	451	9	-8	31		
	5	2001-2006	527	1	-10	11		
BBS Scotland	11	1995-2006	105	-1	-18	15		
	10	1996-2006	105	-6	-22	10		
	5	2001-2006	112	3	-10	18		
BBS Wales	11	1995-2006	68	-26	-46	-1	>25	
	10	1996-2006	71	-24	-44	-3		
	5	2001-2006	82	-11	-29	5		
BBS N.Ireland	11	1995-2006	53	87	40	137		

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

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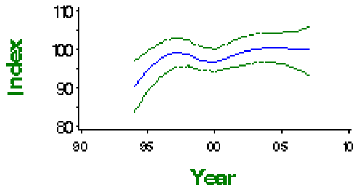
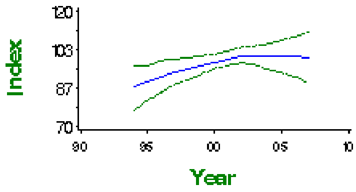
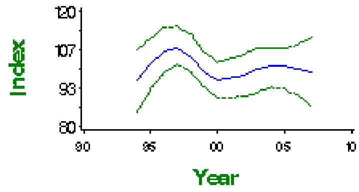
BBS UK 1994—2007
Coal Tit



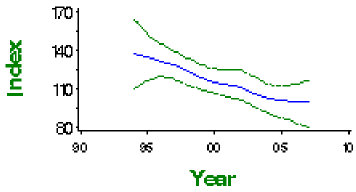
BBS England 1994—2007
Coal Tit



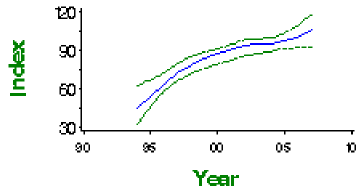
BBS Scotland 1994—2007
Coal Tit



BBS Wales 1994—2007
Coal Tit



BBS N. Ireland 1994—2007
Coal Tit



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: priority species

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**). A study of former CBC sites and other woods that were known to have held the species in the past found that the sites still holding Willow Tits tended to be wetter but did not differ in the density of potential nest predators or avian competitors (**Lewis *et al.* 2007**). Willow Tit is one of the most strongly declining bird species in Europe, having decreased at an annual rate of 4% during 1980–2005, but has declined to a lesser extent in central and east Europe than in the north, west and south (**PECBMS 2007**).

Population changes

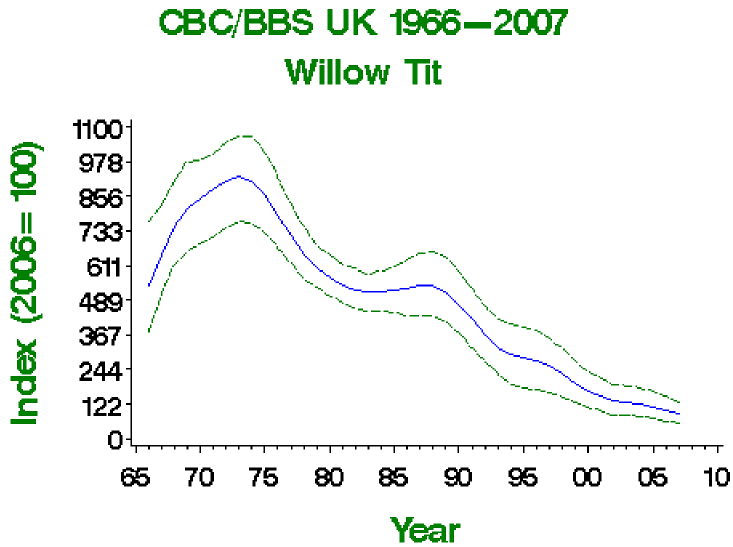


Table of population changes for Willow Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	43	-85	-93	-72	>50	
	25	1981-2006	44	-82	-90	-69	>50	
	10	1996-2006	60	-64	-72	-51	>50	
	5	2001-2006	47	-33	-47	-14	>25	
CBC/BBS England	39	1967-2006	40	-83	-92	-70	>50	
	25	1981-2006	40	-82	-91	-72	>50	
	10	1996-2006	53	-62	-71	-51	>50	
	5	2001-2006	40	-34	-51	-17	>25	
CES adults	22	1984-2006	20	-58	-89	-25	>50	
	10	1996-2006	15	-49	-82	-4	>25	Small sample
CES juveniles	22	1984-2006	28	-58	-78	-35	>50	
	10	1996-2006	21	-55	-72	-38	>50	
	5	2001-2006	14	-20	-53	17		Small sample
BBS UK	11	1995-2006	54	-66	-74	-54	>50	

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS England	11	1995-2006	47	-66	-75	-57	>50	
	10	1996-2006	46	-63	-72	-54	>50	
	5	2001-2006	40	-36	-52	-19	>25	

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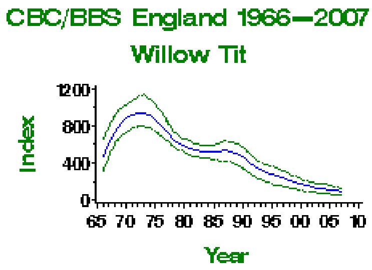
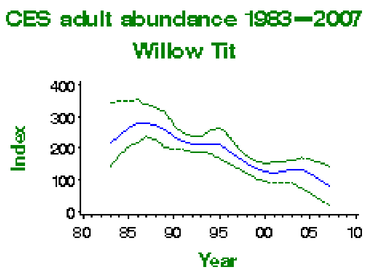
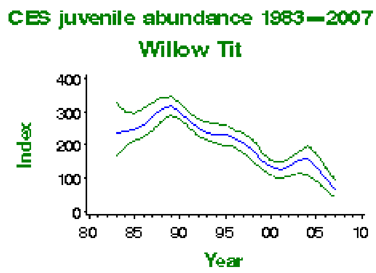
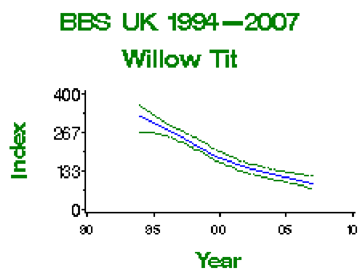
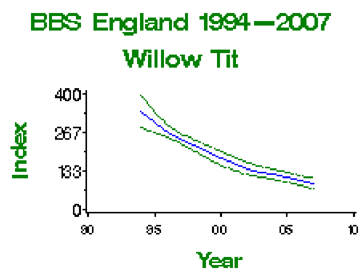










Productivity trends

Table of productivity changes for Willow Tit

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Juvenile to Adult ratio (CES)	22	1984-2006	31	Smoothed trend	118 Index value	100 Index value	-15%	
Juvenile to Adult ratio (CES)	10	1996-2006	24	Smoothed trend	87 Index value	100 Index value	15%	
Juvenile to Adult ratio (CES)	5	2001-2006	16	Smoothed trend	88 Index value	100 Index value	13%	Small sample

Insufficient data on clutch size available for this species

Insufficient data on brood size available for this species

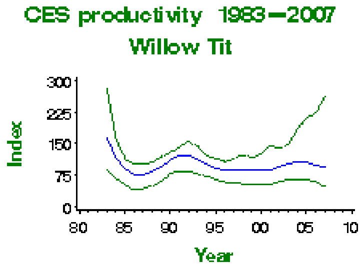
Insufficient data on nest failure available for this species

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: priority species

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 continuously 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**). Marsh Tits appear to select breeding territories on the quality of the shrub layer rather than the tree canopy, and may be adversely affected by factors that damage the shrub layer, such as overgrazing and canopy closure (**Hinsley *et al.* 2007**). Numbers have fallen widely in Europe since 1980 (**PECBMS 2007**). 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

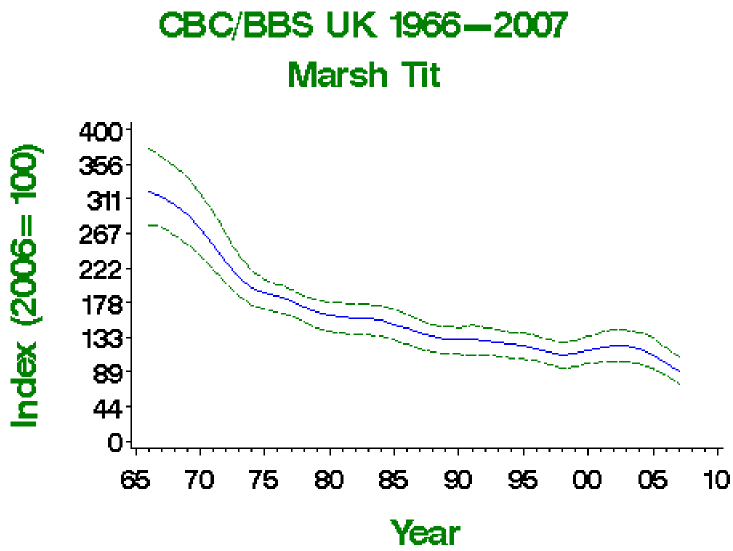


Table of population changes for Marsh Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	89	-68	-77	-56	>50	
	25	1981-2006	107	-38	-51	-16	>25	
	10	1996-2006	164	-16	-28	-2		
	5	2001-2006	154	-16	-27	-4		
CBC/BBS England	39	1967-2006	82	-68	-78	-55	>50	
	25	1981-2006	98	-37	-52	-15	>25	
	10	1996-2006	148	-16	-28	-1		
	5	2001-2006	139	-15	-27	-2		
BBS UK	11	1995-2006	138	-10	-25	10		
	10	1996-2006	141	-12	-27	4		
	5	2001-2006	154	-18	-28	-5		
BBS England	11	1995-2006	124	-13	-30	10		
	10	1996-2006	126	-13	-27	7		

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

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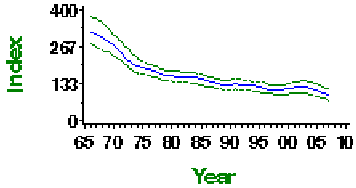
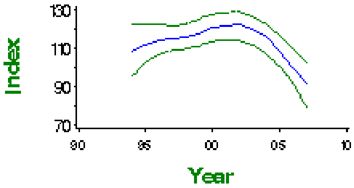
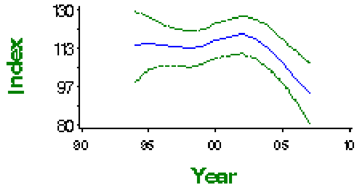
CBC/BBS England 1966—2007
Marsh Tit



BBS UK 1994—2007
Marsh Tit



BBS England 1994—2007
Marsh Tit

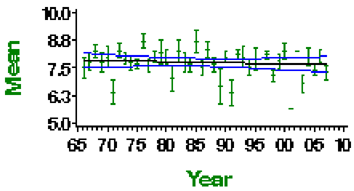


Productivity trends

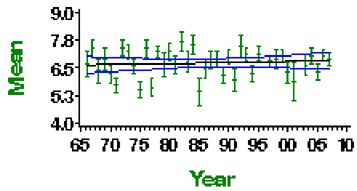
Table of productivity changes for Marsh Tit

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	13	None				Small sample
Brood size	38	1968-2006	22	None				Small sample
Daily failure rate (eggs)	38	1968-2006	20	Linear decline	0.76% nests/day	0.14% nests/day	-81.6%	Small sample
Daily failure rate (chicks)	38	1968-2006	19	None				Small sample
Laying date	38	1968-2006	14	Linear decline	Apr 28	Apr 19	-9 days	Small sample

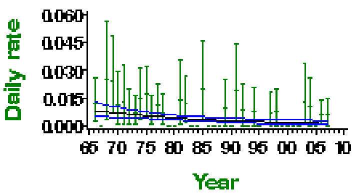
Clutch size 1966—2007
Marsh Tit



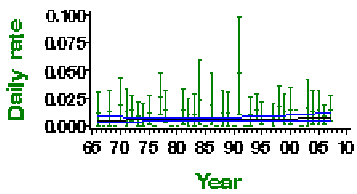
Brood size 1966—2007
Marsh Tit



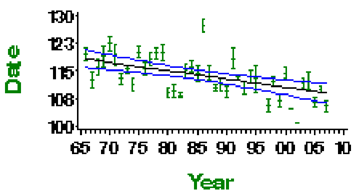
Egg stage nest failure rate
Marsh Tit



Chick stage nest failure rate
Marsh Tit



Laying date 1966—2007
Marsh Tit



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 (**PECBMS 2007**).

Population changes

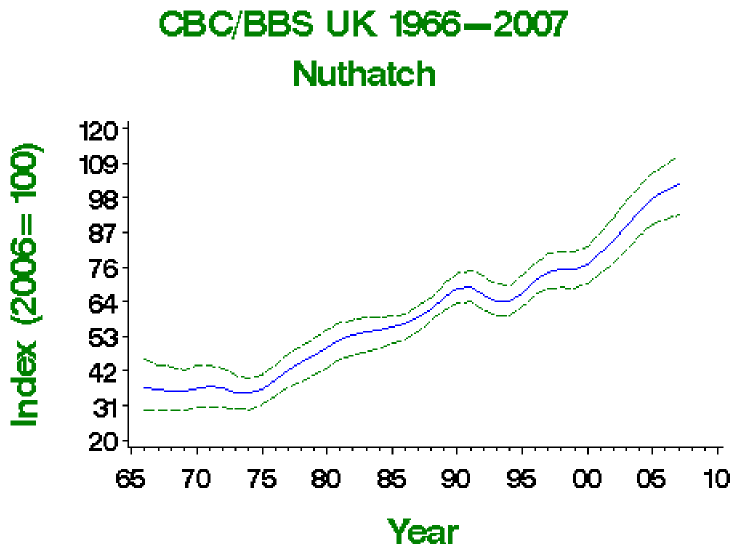


Table of population changes for Nuthatch

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	169	177	98	282		
	25	1981-2006	235	92	58	142		
	10	1996-2006	435	40	27	51		
	5	2001-2006	480	25	18	34		
CBC/BBS England	39	1967-2006	145	182	97	310		
	25	1981-2006	200	88	45	143		
	10	1996-2006	364	43	28	56		
	5	2001-2006	400	28	19	35		
BBS UK	11	1995-2006	381	49	36	60		
	10	1996-2006	398	41	29	52		
	5	2001-2006	480	24	16	30		
BBS England	11	1995-2006	316	50	36	67		
	10	1996-2006	330	43	30	58		
	5	2001-2006	400	26	17	35		
BBS Wales	11	1995-2006	65	38	14	67		
	10	1996-2006	67	25	5	49		
	5	2001-2006	79	10	-3	27		

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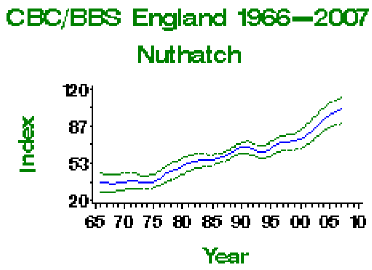
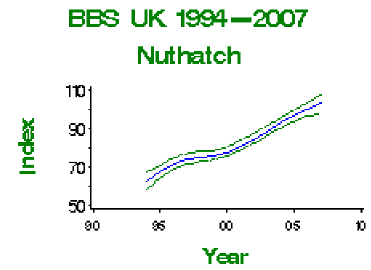
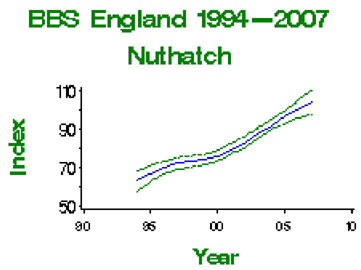
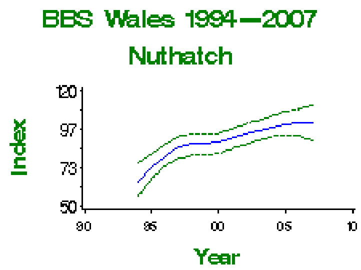




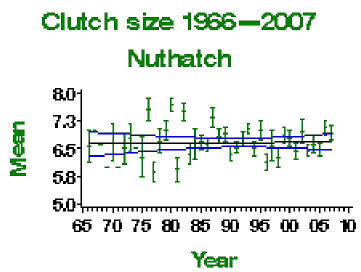


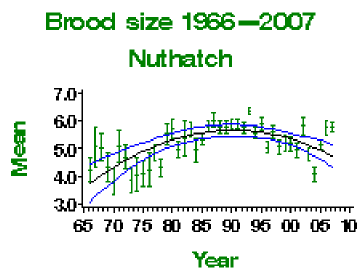


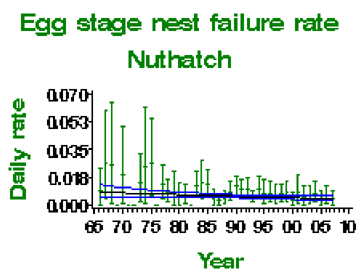
Productivity trends

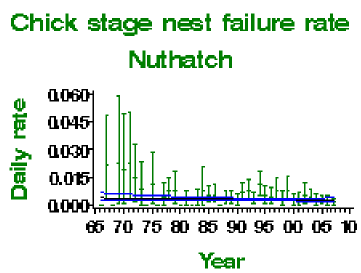
Table of productivity changes for Nuthatch

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	26	None				Small sample
Brood size	38	1968-2006	62	Curvilinear	4.05 chicks	4.87 chicks	20.1%	
Daily failure rate (eggs)	38	1968-2006	47	None				
Daily failure rate (chicks)	38	1968-2006	53	None				
Laying date	38	1968-2006	26	Linear decline	May 2	Apr 21	-11 days	Small sample

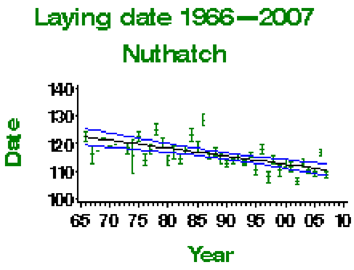








Insufficient data on CES
available for this species

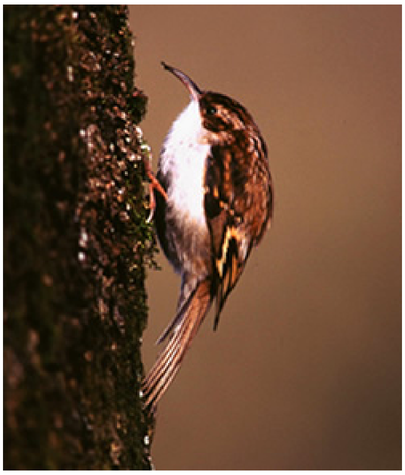


Additional information

- 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, following the severe winter of 1962/63, and the trough around 1980. Census 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 but a sharp downturn in recent years. There has been a significant fall in nest failure rates at the egg stage (18 days, comprising 14 days incubation and 4 days laying). The trend towards earlier laying can be partly explained by recent climate change (**Crick & Sparks 1999**).

Population changes

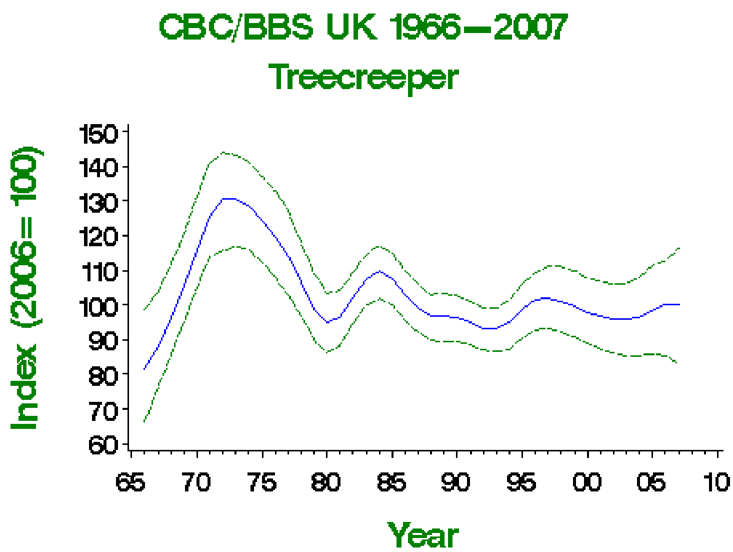
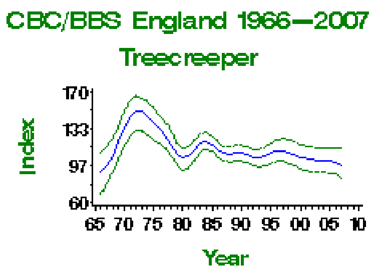


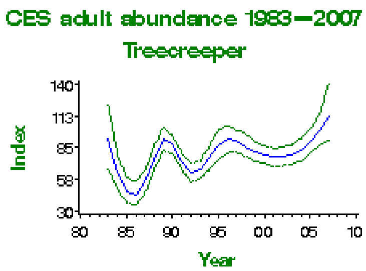
Table of population changes for Treecreeper

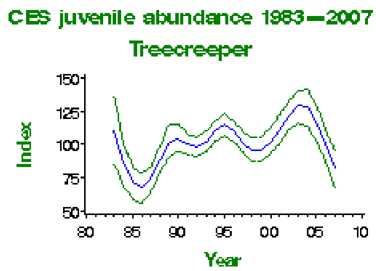
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	177	14	-15	51		
	25	1981-2006	225	4	-18	27		
	10	1996-2006	361	-1	-14	12		
	5	2001-2006	338	3	-11	19		
CBC/BBS England	39	1967-2006	140	4	-22	44		
	25	1981-2006	176	-6	-24	18		
	10	1996-2006	273	-10	-21	2		
	5	2001-2006	251	-4	-11	6		
CES adults	22	1984-2006	37	60	9	122		
	10	1996-2006	43	8	-13	40		
	5	2001-2006	39	30	7	58		
CES juveniles	22	1984-2006	58	16	-14	65		
	10	1996-2006	67	-10	-23	5		
	5	2001-2006	64	-10	-24	5		
BBS UK	11	1995-2006	305	3	-10	17		

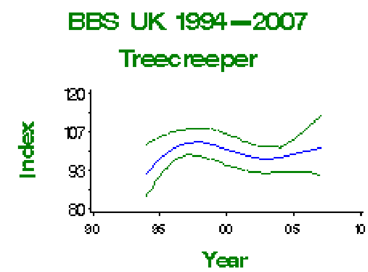
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS England	11	1995-2006	226	-8	-19	5		
	10	1996-2006	233	-10	-21	1		
	5	2001-2006	251	-5	-13	2		
BBS Scotland	5	2001-2006	31	38	-10	75		
BBS Wales	11	1995-2006	40	13	-20	45		
	10	1996-2006	41	-1	-26	22		
	5	2001-2006	43	-21	-37	-6		

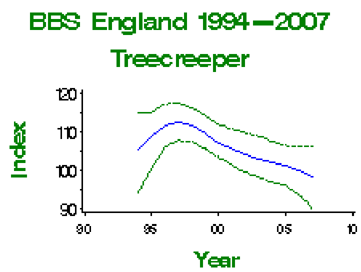
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

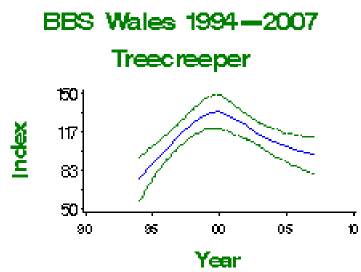








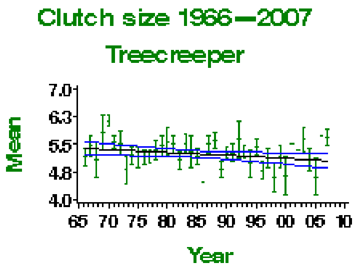


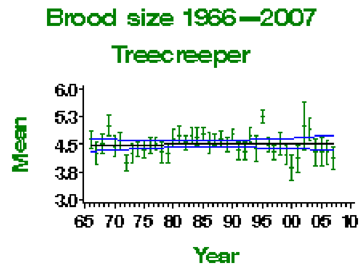


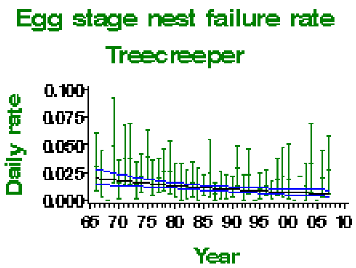
Productivity trends

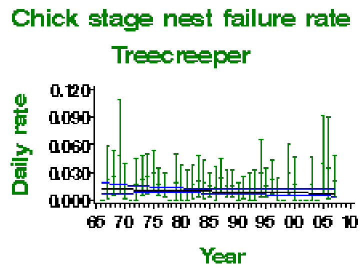
Table of productivity changes for Treecreeper

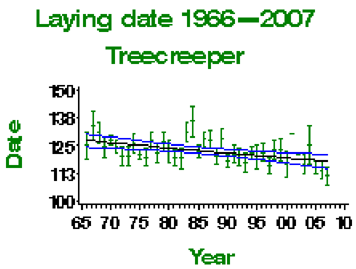
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	13	None				Small sample
Brood size	38	1968-2006	27	None				Small sample
Daily failure rate (eggs)	38	1968-2006	22	Linear decline	1.91% nests/day	0.62% nests/day	-67.5%	Small sample
Daily failure rate (chicks)	38	1968-2006	23	None				Small sample
Laying date	38	1968-2006	13	Linear decline	May 7	Apr 28	-9 days	Small sample
Juvenile to Adult ratio (CES)	22	1984-2006	66	Smoothed trend	145 Index value	100 Index value	-31%	
Juvenile to Adult ratio (CES)	10	1996-2006	75	Smoothed trend	135 Index value	100 Index value	-26%	
Juvenile to Adult ratio (CES)	5	2001-2006	72	Smoothed trend	146 Index value	100 Index value	-31% >25	

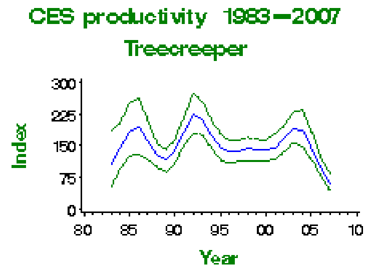












Additional information

- 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 ten-year period. No trends are known in breeding performance.

Population changes

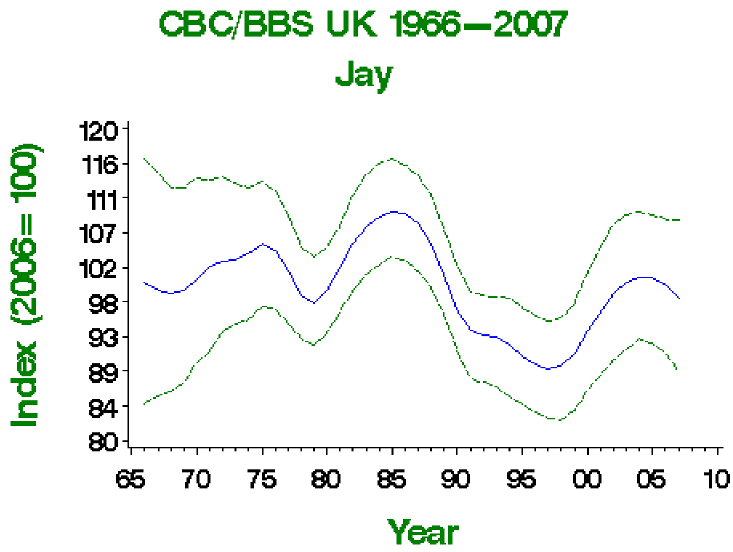
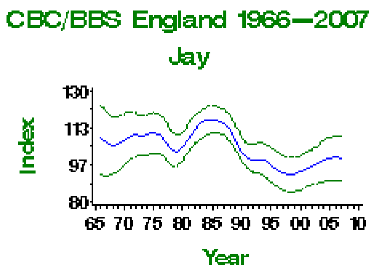
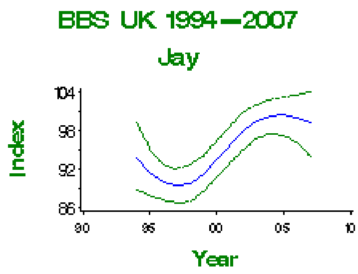


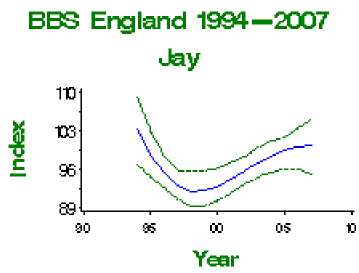
Table of population changes for Jay

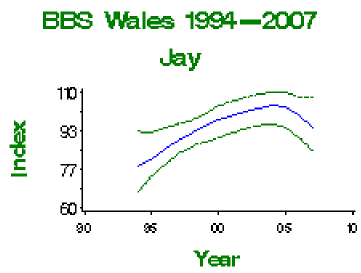
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	284	1	-19	25		
	25	1981-2006	386	-2	-15	13		
	10	1996-2006	704	11	5	18		
	5	2001-2006	756	4	-4	10		
CBC/BBS England	39	1967-2006	252	-6	-26	20		
	25	1981-2006	339	-8	-21	7		
	10	1996-2006	610	5	-3	14		
	5	2001-2006	648	5	-1	13		
BBS UK	11	1995-2006	628	9	1	18		
	10	1996-2006	652	11	4	19		
	5	2001-2006	756	5	-2	11		
BBS England	11	1995-2006	543	1	-7	9		
	10	1996-2006	561	5	-3	11		
	5	2001-2006	648	6	-1	11		
BBS Wales	11	1995-2006	65	24	-4	48		
	10	1996-2006	69	17	-6	36		
	5	2001-2006	79	0	-11	16		

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







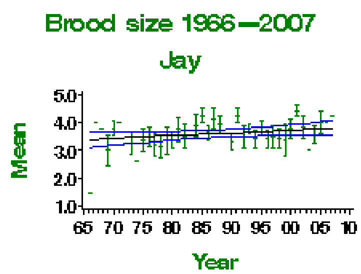


Productivity trends

Table of productivity changes for Jay

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Brood size	38	1968-2006	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

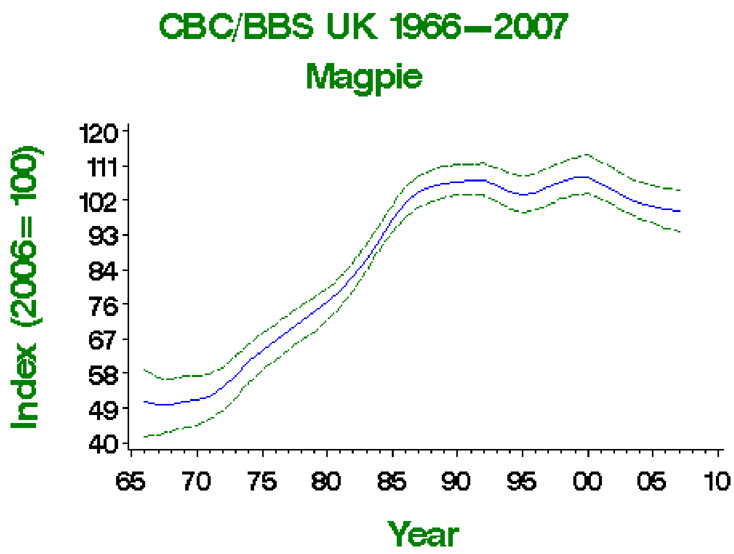
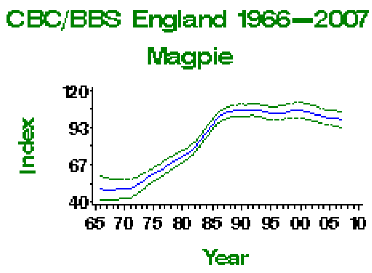


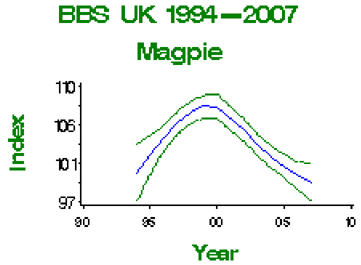
Table of population changes for Magpie

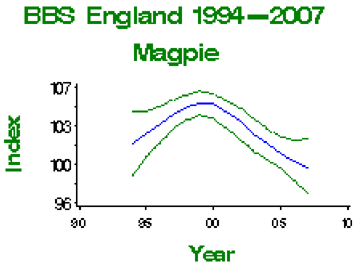
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	625	101	65	152		
	25	1981-2006	897	27	16	41		
	10	1996-2006	1774	-4	-7	-1		
	5	2001-2006	1854	-6	-9	-4		
CBC/BBS England	39	1967-2006	530	105	61	156		
	25	1981-2006	757	33	18	47		
	10	1996-2006	1476	-3	-6	0		
	5	2001-2006	1527	-5	-7	-2		
BBS UK	11	1995-2006	1648	-2	-5	2		
	10	1996-2006	1698	-4	-7	-1		
	5	2001-2006	1854	-6	-8	-4		
BBS England	11	1995-2006	1371	-2	-6	2		
	10	1996-2006	1406	-3	-7	1		
	5	2001-2006	1527	-4	-7	-2		
BBS Scotland	11	1995-2006	38	11	-15	53		

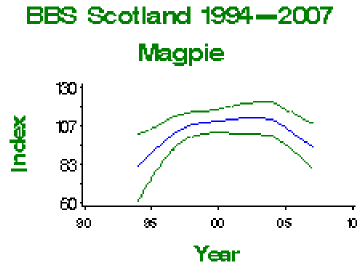
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Wales	11	1995-2006	154	-17	-27	-7		
	10	1996-2006	160	-19	-28	-9		
	5	2001-2006	178	-12	-22	-4		
BBS N.Ireland	11	1995-2006	74	29	-5	56		
	10	1996-2006	80	18	-5	32		
	5	2001-2006	92	-5	-13	5		

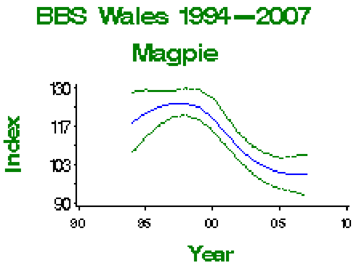
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

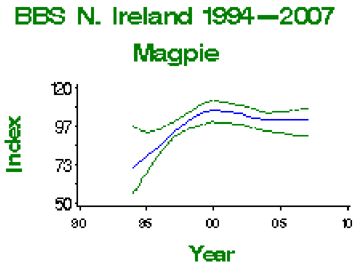












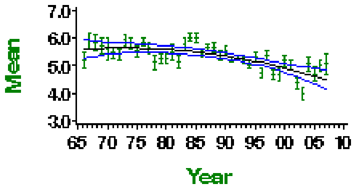
Productivity trends

Table of productivity changes for Magpie

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	45	Curvilinear	5.62 eggs	4.56 eggs	-18.8%	
Brood size	38	1968-2006	79	Curvilinear	3.09 chicks	2.84 chicks	-8.1%	
Daily failure rate (eggs)	38	1968-2006	52	Linear decline	2.73% nests/day	0.28% nests/day	-89.7%	
Daily failure rate (chicks)	38	1968-2006	50	Linear decline	1.73% nests/day	0.13% nests/day	-92.5%	
Laying date	38	1968-2006	35	Curvilinear	Apr 21	Mar 21	-31 days	

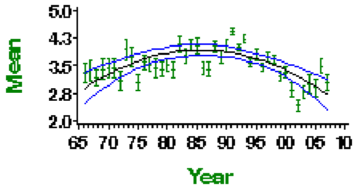
Clutch size 1966—2007

Magpie



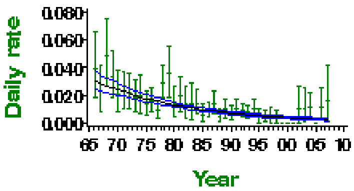
Brood size 1966—2007

Magpie



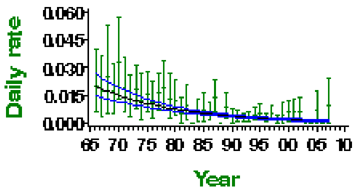
Egg stage nest failure rate

Magpie



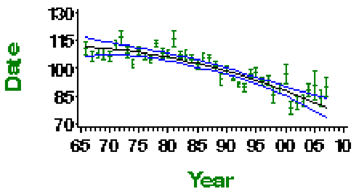
Chick stage nest failure rate

Magpie



Laying date 1966—2007

Magpie



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 that the increase is continuing in all UK countries. 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

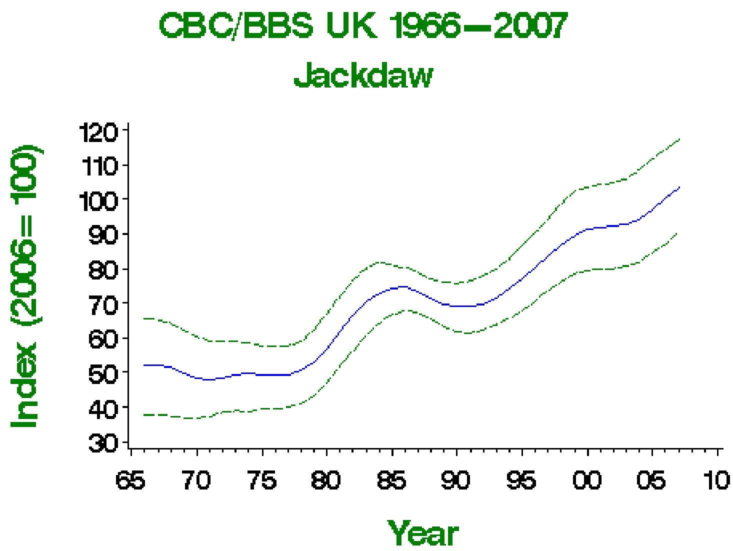


Table of population changes for Jackdaw

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	489	92	30	206		
	25	1981-2006	728	62	20	124		
	10	1996-2006	1514	25	14	39		
	5	2001-2006	1648	9	4	16		
CBC/BBS England	39	1967-2006	389	79	15	184		
	25	1981-2006	577	56	18	110		
	10	1996-2006	1195	27	19	35		
	5	2001-2006	1299	12	6	17		
BBS UK	11	1995-2006	1427	28	17	41		
	10	1996-2006	1474	24	14	36		
	5	2001-2006	1648	9	3	15		
BBS England	11	1995-2006	1127	32	23	43		
	10	1996-2006	1162	27	19	36		
	5	2001-2006	1299	12	7	18		
BBS Scotland	11	1995-2006	99	8	-9	34		
	10	1996-2006	101	4	-11	29		
	5	2001-2006	107	-2	-16	19		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	155	8	-9	28		
BBS N.Ireland	11	1995-2006	66	58	11	94		
	10	1996-2006	71	50	16	72		
	5	2001-2006	83	8	-2	26		

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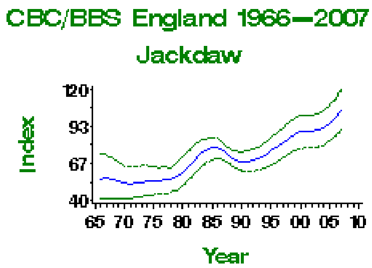
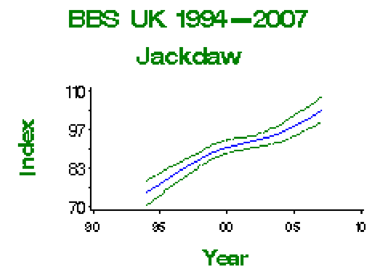
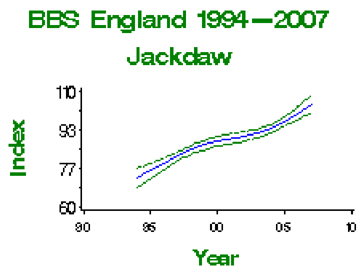
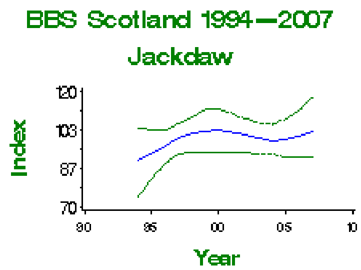
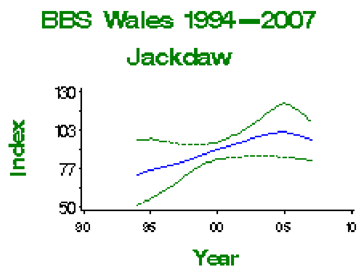
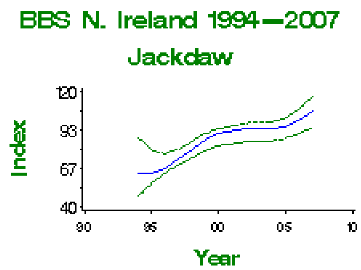












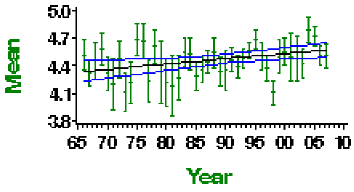
Productivity trends

Table of productivity changes for Jackdaw

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	43	Linear increase	4.35 eggs	4.57 eggs	4.9%	
Brood size	38	1968-2006	91	Curvilinear	2.69 chicks	2.6 chicks	-3.2%	
Daily failure rate (eggs)	38	1968-2006	54	Linear decline	0.76% nests/day	0.2% nests/day	-73.7%	
Daily failure rate (chicks)	38	1968-2006	52	Linear decline	1.26% nests/day	0.24% nests/day	-81%	
Laying date	38	1968-2006	23	Curvilinear	Apr 23	Apr 18	-5 days	Small sample

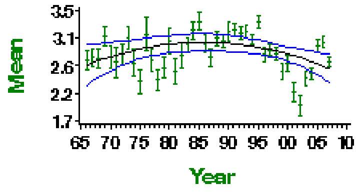
Clutch size 1966—2007

Jackdaw



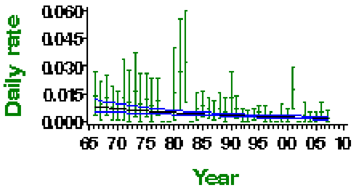
Brood size 1966—2007

Jackdaw



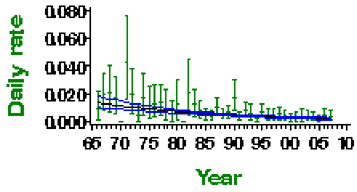
Egg stage nest failure rate

Jackdaw



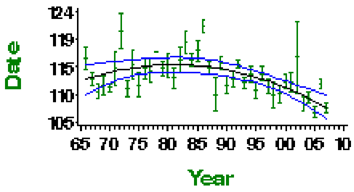
Chick stage nest failure rate

Jackdaw



Laying date 1966—2007

Jackdaw



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: 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 during transect walks and not from the BBS nest counts, suggest possible decrease in Scotland, Wales and Northern Ireland since around 2000. There have been no clear trends in breeding productivity since the 1960s.

Population changes

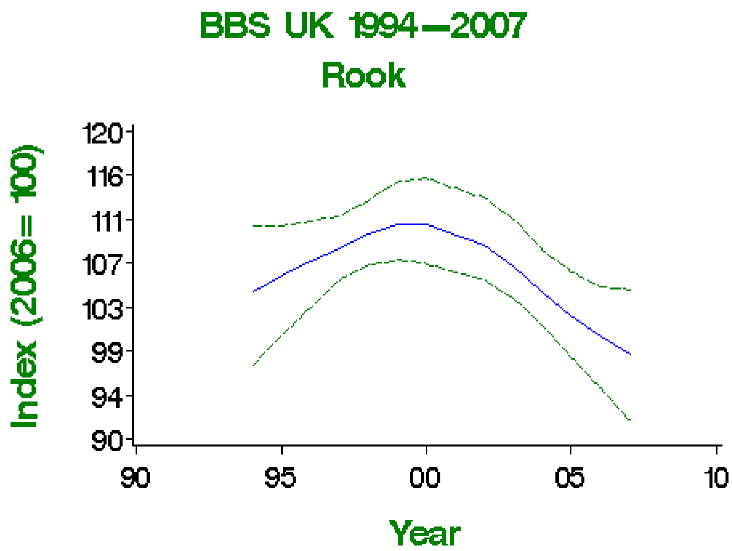


Table of population changes for Rook

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	1141	-6	-15	5		
	10	1996-2006	1169	-7	-15	3		
	5	2001-2006	1241	-9	-16	-2		
BBS England	11	1995-2006	895	2	-9	14		
	10	1996-2006	914	1	-8	11		
	5	2001-2006	968	2	-6	11		
BBS Scotland	11	1995-2006	101	-20	-39	14		
	10	1996-2006	102	-18	-38	13		
	5	2001-2006	100	-21	-35	-4		
BBS Wales	11	1995-2006	75	-22	-44	7		
	10	1996-2006	78	-23	-45	-1		
	5	2001-2006	85	-14	-31	3		
BBS N.Ireland	11	1995-2006	67	14	-15	51		
	10	1996-2006	72	3	-23	22		
	5	2001-2006	85	-27	-39	-13	>25	

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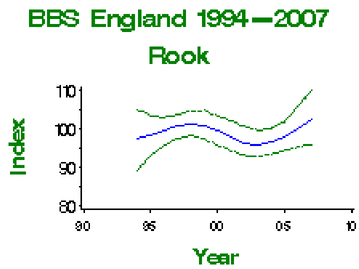
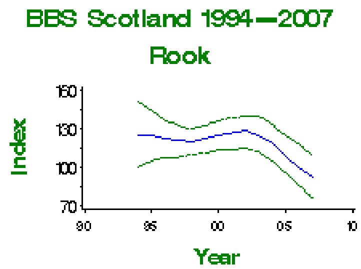
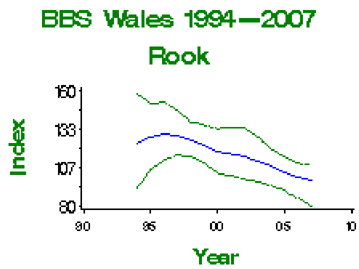
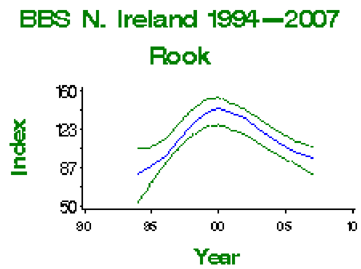




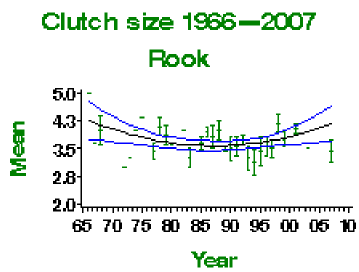


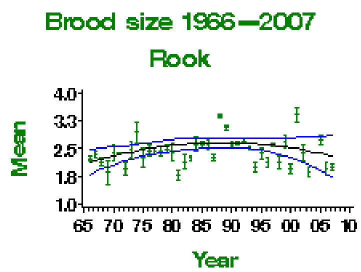


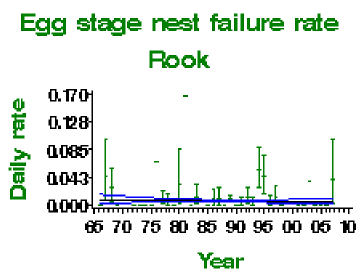
Productivity trends

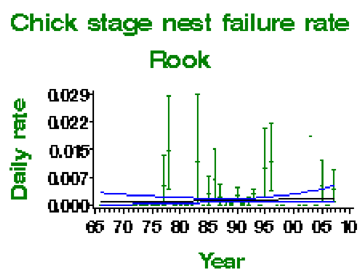
Table of productivity changes for Rook

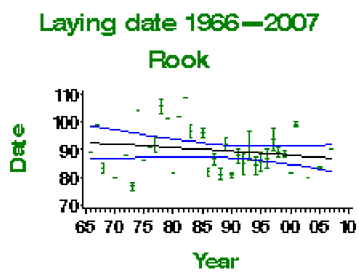
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	13	Curvilinear	4.15 eggs	4.12 eggs	-0.7%	Small sample
Brood size	38	1968-2006	85	Curvilinear	2.22 chicks	2.34 chicks	5.2%	
Daily failure rate (eggs)	38	1968-2006	32	None				
Daily failure rate (chicks)	38	1968-2006	51	None				
Laying date	38	1968-2006	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 only now are there any signs of the population size stabilising. This trend has been associated with increases in nesting success and with 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

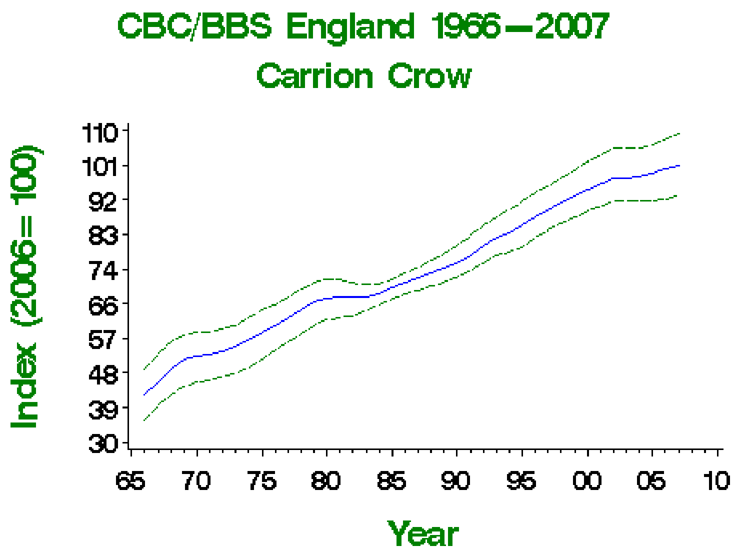


Table of population changes for Carrion Crow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	614	119	77	179		Includes Hooded Crow
	25	1981-2006	884	49	27	77		Includes Hooded Crow
	10	1996-2006	1764	14	7	21		Includes Hooded Crow
	5	2001-2006	1858	4	-1	9		Includes Hooded Crow
BBS UK	11	1995-2006	2013	14	7	21		
	10	1996-2006	2069	9	4	15		
	5	2001-2006	2272	-1	-5	5		
BBS England	11	1995-2006	1647	19	11	25		
	10	1996-2006	1693	15	8	21		
	5	2001-2006	1858	4	0	8		
BBS Scotland	11	1995-2006	164	1	-17	21		
	10	1996-2006	167	-3	-18	15		
	5	2001-2006	173	-11	-26	5		
BBS Wales	11	1995-2006	189	13	-3	33		
	10	1996-2006	197	7	-8	26		
	5	2001-2006	227	-2	-14	14		

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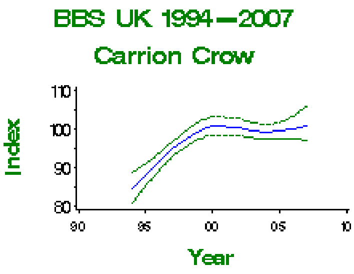
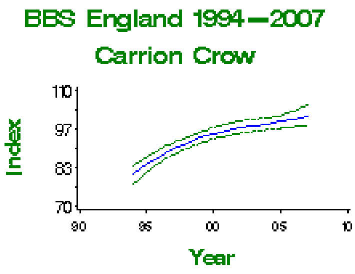
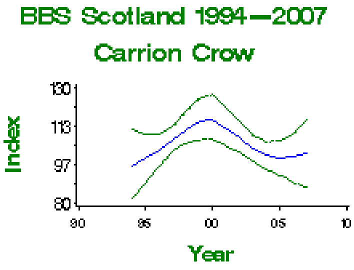
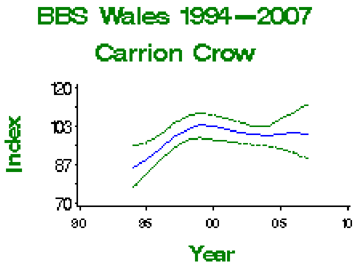




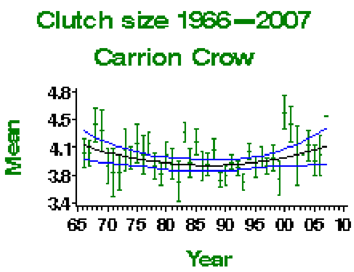


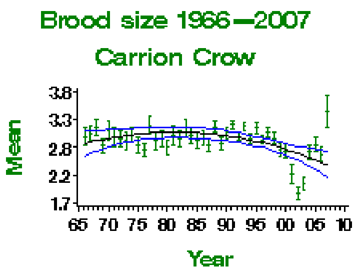


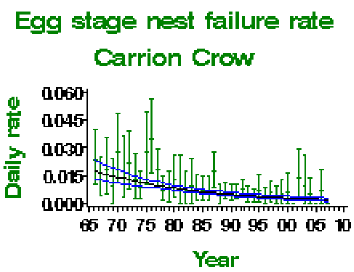
Productivity trends

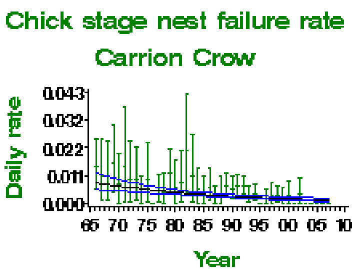
Table of productivity changes for Carrion Crow

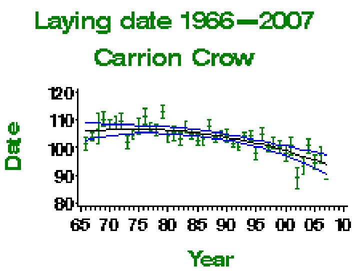
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	33	Curvilinear	4.08 eggs	4.09 eggs	0.1%	
Brood size	38	1968-2006	79	Curvilinear	2.87 chicks	2.48 chicks	-13.9%	
Daily failure rate (eggs)	38	1968-2006	50	Linear decline	1.59% nests/day	0.22% nests/day	-86.2%	
Daily failure rate (chicks)	38	1968-2006	42	Linear decline	0.74% nests/day	0.14% nests/day	-81.1%	
Laying date	38	1968-2006	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 in 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, but that this has been countered by increase in Northern Ireland. Hooded Crows have increased markedly in Ireland since 1924 (**Hutchinson 1989**).

Population changes

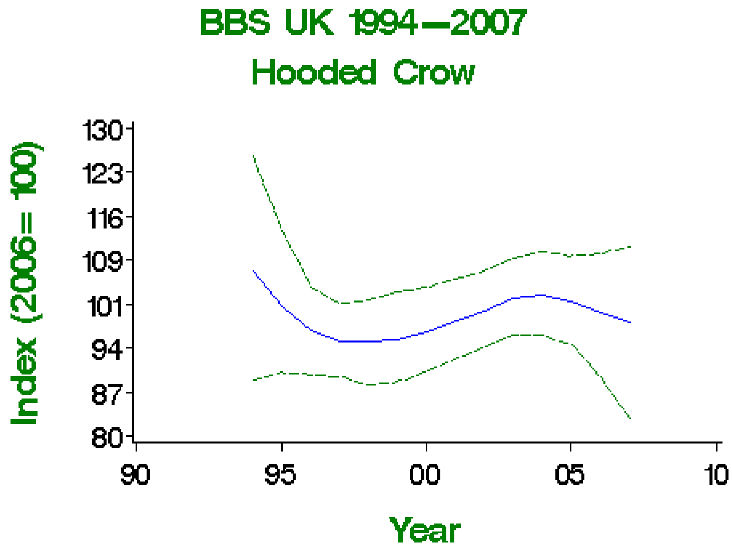


Table of population changes for Hooded Crow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	126	-1	-20	25		
	10	1996-2006	131	3	-14	24		
	5	2001-2006	142	1	-14	17		
BBS Scotland	11	1995-2006	50	-27	-45	0		
	10	1996-2006	49	-19	-39	8		
	5	2001-2006	46	9	-14	34		
BBS N.Ireland	11	1995-2006	71	111	59	160		
	10	1996-2006	77	76	37	100		
	5	2001-2006	92	-4	-15	11		

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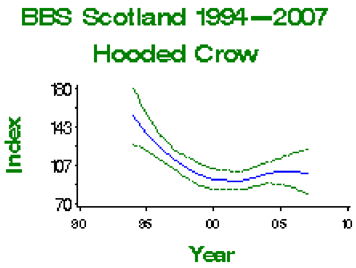

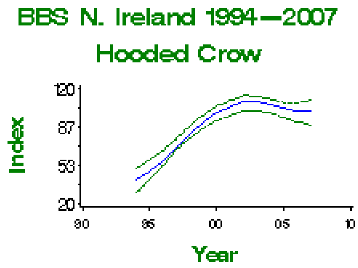

Productivity trends

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: probable increase

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**). A thorough survey of northwest Wales during 1998 to 2005 found at least 69% more nesting pairs than a previous survey of the same area during 1978–85 and evidence of an increase of 173% since around 1950, at a rate that accelerated after 1990 (**Driver 2006**). Ravens have also 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. Nesting success appears to have improved, but brood size has fallen. Ravens are estimated to have increased by 118% across Europe during 1980–2005 (**PECBMS 2007**).

Population changes

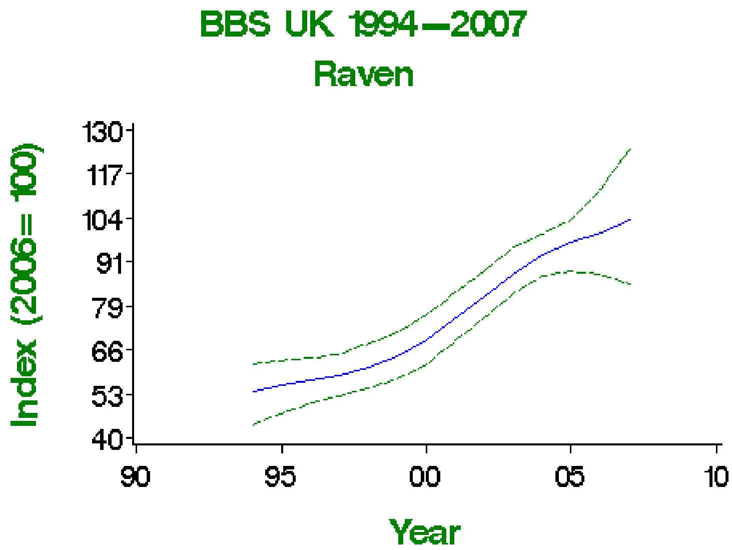

Table of population changes for Raven

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	214	80	40	133		
	10	1996-2006	224	76	36	124		
	5	2001-2006	266	34	8	70		
BBS England	11	1995-2006	71	172	68	303		
	10	1996-2006	75	152	63	270		
	5	2001-2006	100	61	28	99		
BBS Scotland	11	1995-2006	39	63	3	138		
	10	1996-2006	39	67	2	160		
	5	2001-2006	38	51	-11	143		
BBS Wales	11	1995-2006	82	46	-5	138		
	10	1996-2006	86	39	-6	109		
	5	2001-2006	101	4	-14	25		

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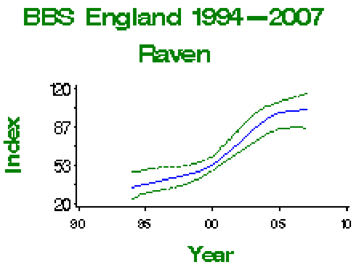
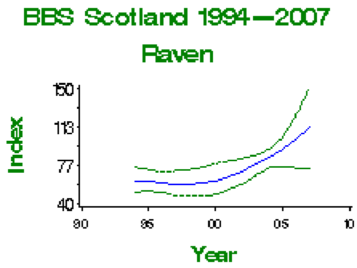
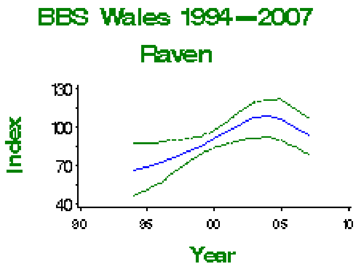


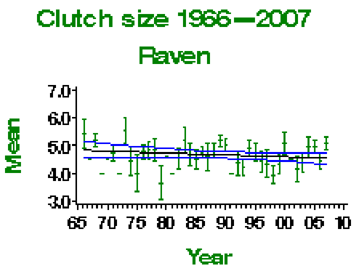


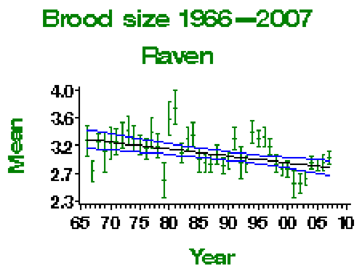


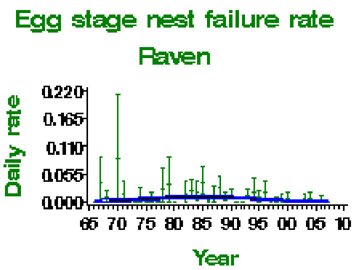
Productivity trends

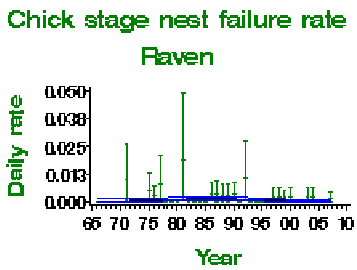
Table of productivity changes for Raven

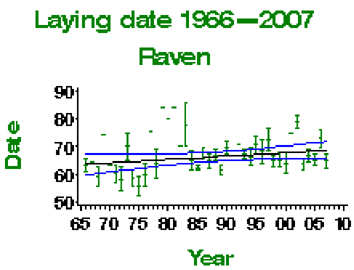
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	13	None				Small sample
Brood size	38	1968-2006	67	Linear decline	3.23 chicks	2.83 chicks	-12.4%	
Daily failure rate (eggs)	38	1968-2006	22	Curvilinear	0.21% nests/day	0.09% nests/day	-57.1%	Small sample
Daily failure rate (chicks)	38	1968-2006	29	Curvilinear	0.03% nests/day	0.02% nests/day	-33.3%	Small sample
Laying date	38	1968-2006	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: priority species

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**) and continues to be strongly downward. The declines have been greatest in the south and west of Britain; recent BBS data suggest that populations are also decreasing in Scotland and Northern Ireland, where the trends were initially upward. 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

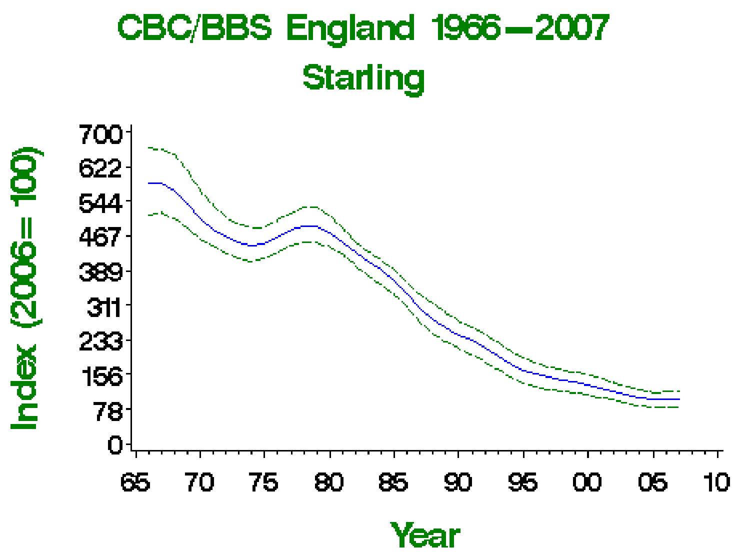


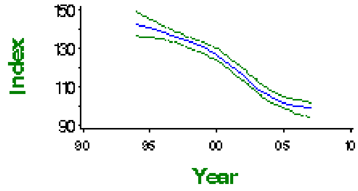
Table of population changes for Starling

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	492	-83	-88	-77	>50	
	25	1981-2006	702	-78	-83	-73	>50	
	10	1996-2006	1394	-36	-39	-32	>25	
	5	2001-2006	1406	-20	-25	-16		
BBS UK	11	1995-2006	1631	-29	-34	-24	>25	
	10	1996-2006	1665	-28	-32	-23	>25	
	5	2001-2006	1739	-17	-22	-14		
BBS England	11	1995-2006	1335	-38	-41	-34	>25	
	10	1996-2006	1359	-36	-39	-32	>25	
	5	2001-2006	1406	-20	-24	-16		
BBS Scotland	11	1995-2006	134	-9	-26	6		
	10	1996-2006	136	-12	-27	2		
	5	2001-2006	145	-16	-27	-4		
BBS Wales	11	1995-2006	83	-46	-64	-23	>25	

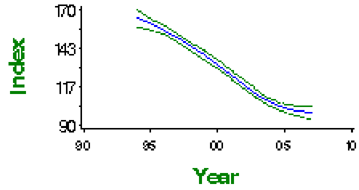
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS N.Ireland	11	1995-2006	69	86	35	169		
	10	1996-2006	75	64	23	108		
	5	2001-2006	89	-8	-21	7		

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

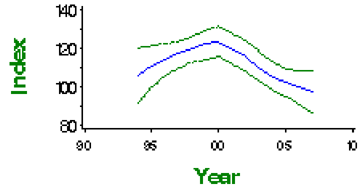
BBS UK 1994—2007
Starling



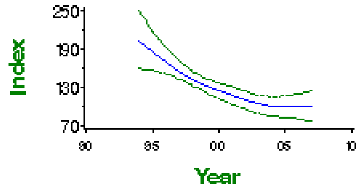
BBS England 1994—2007
Starling



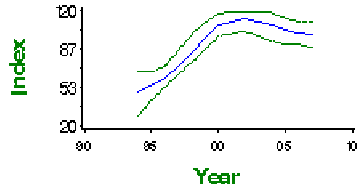
BBS Scotland 1994—2007
Starling



BBS Wales 1994—2007
Starling



BBS N. Ireland 1994—2007
Starling

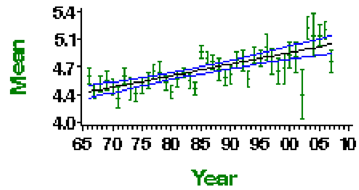


Productivity trends

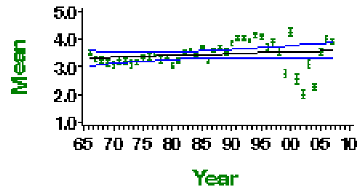
Table of productivity changes for Starling

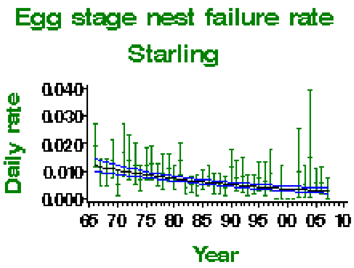
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	76	Linear increase	4.42 eggs	4.97 eggs	12.6%	
Brood size	38	1968-2006	205	None				
Daily failure rate (eggs)	38	1968-2006	118	Linear decline	1.12% nests/day	0.3% nests/day	-73.2%	
Daily failure rate (chicks)	38	1968-2006	136	Linear decline	0.63% nests/day	0.19% nests/day	-69.8%	
Laying date	38	1968-2006	82	None				

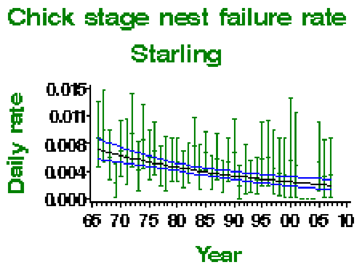
Clutch size 1966—2007
Starling

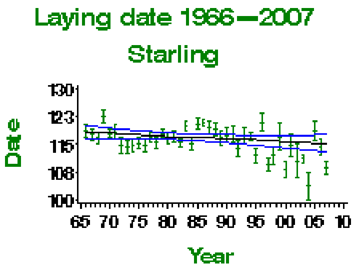


Brood size 1966—2007
Starling









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: priority species

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 studies and anecdotal reports, and have generated great conservation concern (see **Summers-Smith 2003**). A change in the listing criteria 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**, **Vincent 2005**, **Summers-Smith 2007**, **Peach *et al.* 2008**).

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**). Within urban areas, House Sparrows may have disappeared predominantly from more affluent areas, where changes are more likely to have occurred to habitat structure (**Shaw *et al.* 2008**). The continued availability of allotments, gardens and other green spaces in urban areas is crucial to preventing further decline (**Chamberlain *et al.* 2007**). BBS suggests increases recently in Scotland and Wales. Overall, brood size has decreased, raising NRS concern (**Leech & Barimore 2008**), but nest success has improved markedly. Following widespread declines across Europe since the 1980s, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

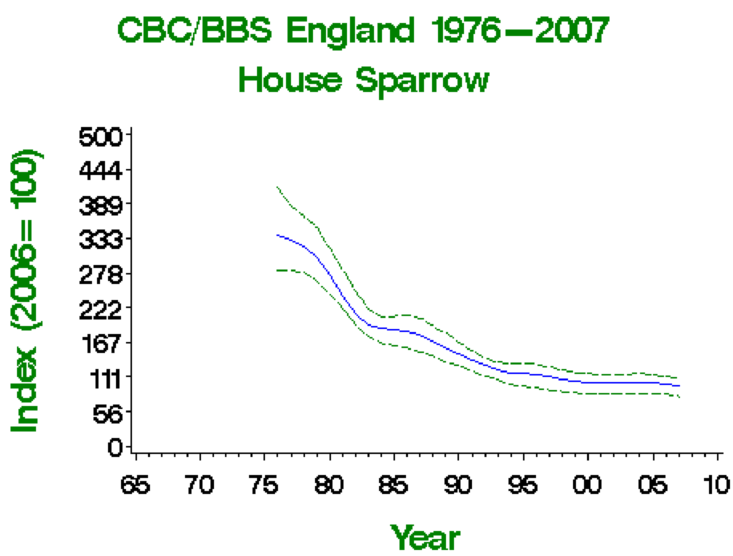


Table of population changes for House Sparrow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	29	1977-2006	511	-70	-79	-60	>50	
	25	1981-2006	587	-59	-71	-49	>50	

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	1416	-6	-12	1		
	10	1996-2006	1453	-4	-10	2		
	5	2001-2006	1567	1	-2	5		
BBS England	11	1995-2006	1169	-15	-20	-10		
	10	1996-2006	1195	-13	-17	-9		
	5	2001-2006	1272	-3	-6	1		
BBS Scotland	11	1995-2006	80	37	2	75		
	10	1996-2006	81	39	7	73		
	5	2001-2006	85	13	-5	26		
BBS Wales	11	1995-2006	113	68	45	100		
	10	1996-2006	117	53	33	76		
	5	2001-2006	138	14	5	26		
BBS N.Ireland	11	1995-2006	45	43	-18	91		
	10	1996-2006	49	47	4	65		
	5	2001-2006	58	18	-4	36		

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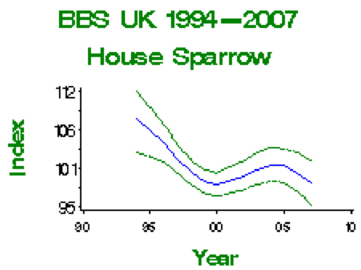
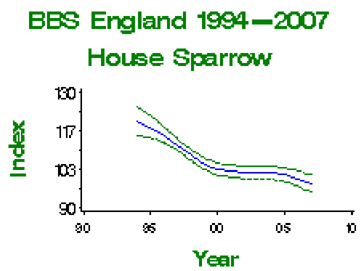
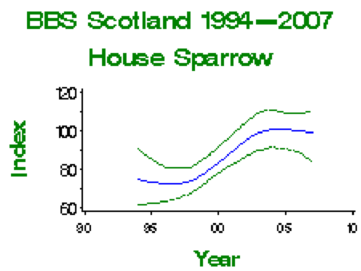
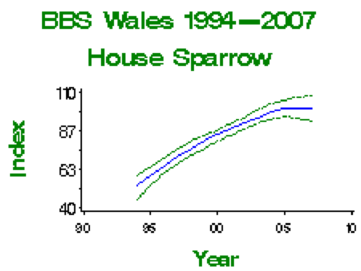
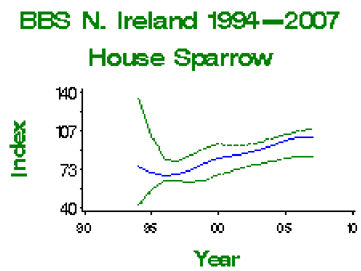






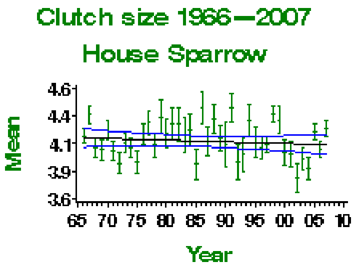


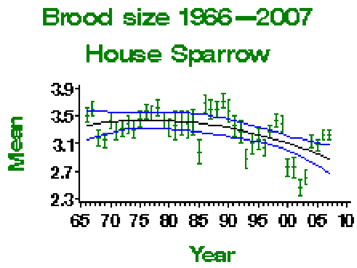


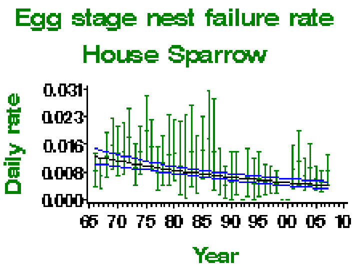
Productivity trends

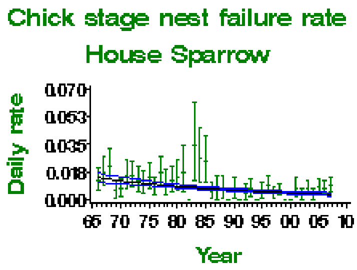
Table of productivity changes for House Sparrow

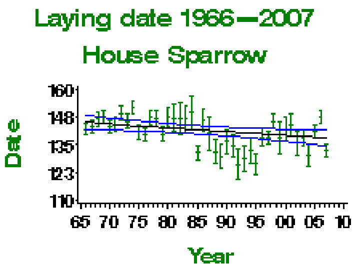
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	66	None				
Brood size	38	1968-2006	111	Curvilinear	3.39 chicks	2.92 chicks	-13.9%	
Daily failure rate (eggs)	38	1968-2006	92	Linear decline	1.15% nests/day	0.41% nests/day	-64.3%	
Daily failure rate (chicks)	38	1968-2006	88	Linear decline	1.3% nests/day	0.36% nests/day	-72.3%	
Laying date	38	1968-2006	51	Linear decline	May 25	May 18	-7 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

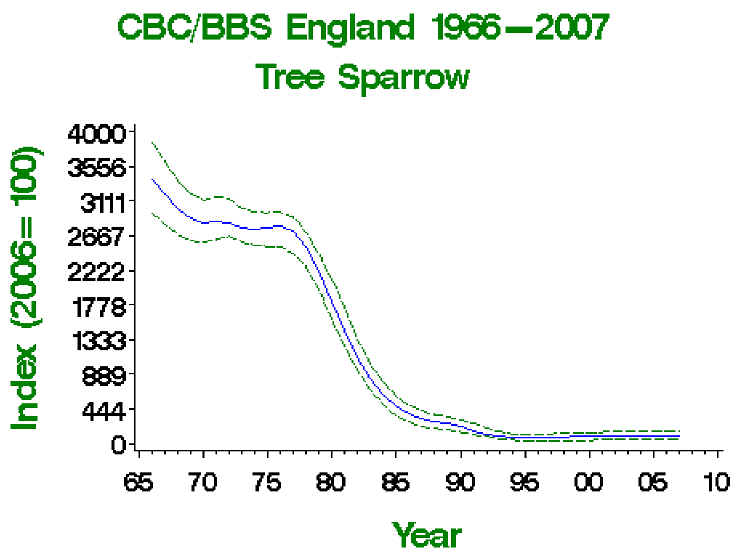
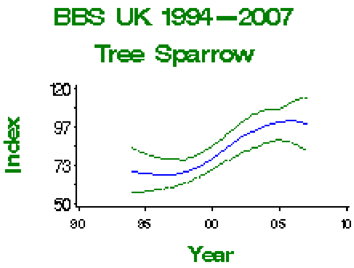
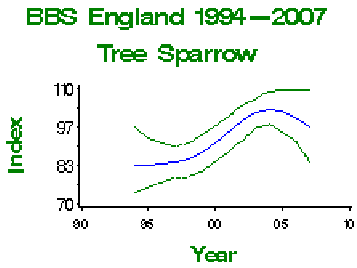


Table of population changes for Tree Sparrow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	83	-97	-99	-94	>50	
	25	1981-2006	80	-93	-97	-88	>50	
	10	1996-2006	126	24	7	54		
	5	2001-2006	125	6	-8	24		
BBS UK	11	1995-2006	147	46	12	100		
	10	1996-2006	149	48	13	99		
	5	2001-2006	156	20	-3	46		
BBS England	11	1995-2006	121	20	-3	44		
	10	1996-2006	121	20	-1	41		
	5	2001-2006	125	6	-8	24		

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

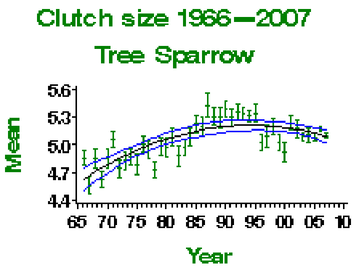


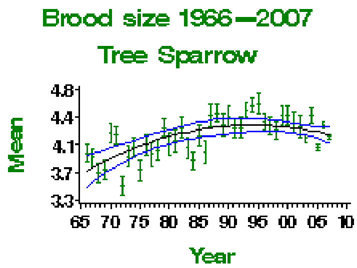


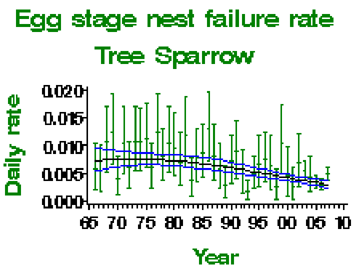
Productivity trends

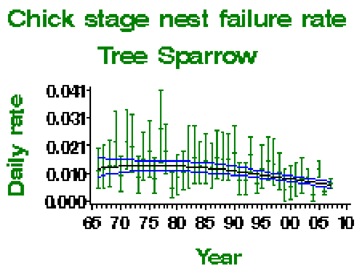
Table of productivity changes for Tree Sparrow

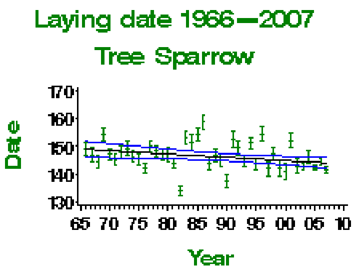
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	155	Curvilinear	4.71 eggs	5.11 eggs	8.5%	
Brood size	38	1968-2006	197	Curvilinear	3.78 chicks	4.21 chicks	11.2%	
Daily failure rate (eggs)	38	1968-2006	207	Curvilinear	0.74% nests/day	0.32% nests/day	-56.8%	
Daily failure rate (chicks)	38	1968-2006	151	Curvilinear	1.25% nests/day	0.64% nests/day	-48.8%	
Laying date	38	1968-2006	167	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 has increased rapidly since the early 1970s, according to CBC/BBS and CES, but numbers seemed to stabilise for a period during the 1990s. This relative stability was 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, but these trends are now reversed. 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 it is possible that they have benefited by environmental changes from which other seed-eating passerines have suffered.

Population changes

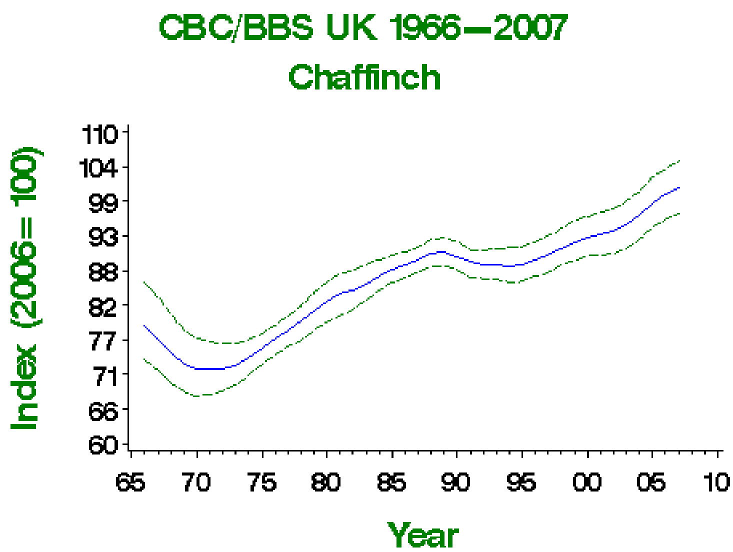


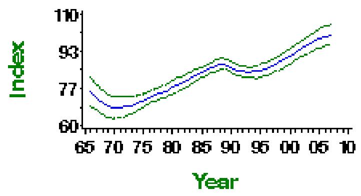
Table of population changes for Chaffinch

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	821	30	14	45		
	25	1981-2006	1164	19	11	30		
	10	1996-2006	2291	12	7	16		
	5	2001-2006	2406	7	4	10		
CBC/BBS England	39	1967-2006	651	38	22	56		
	25	1981-2006	915	27	18	39		
	10	1996-2006	1781	17	13	21		
	5	2001-2006	1860	8	5	11		
CES adults	22	1984-2006	78	27	-27	106		
	10	1996-2006	88	-9	-28	13		
	5	2001-2006	84	-1	-11	11		
CES juveniles	22	1984-2006	59	75	-21	251		
	10	1996-2006	69	21	-31	86		
	5	2001-2006	69	43	10	70		
BBS UK	11	1995-2006	2129	13	9	18		
	10	1996-2006	2190	11	7	16		
	5	2001-2006	2406	6	4	9		

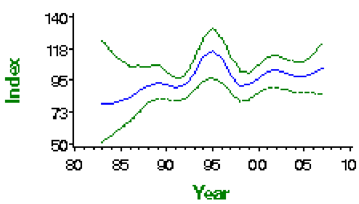
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	1860	8	5	10		
BBS Scotland	11	1995-2006	205	6	-3	20		
	10	1996-2006	207	5	-4	17		
	5	2001-2006	211	7	-1	15		
BBS Wales	11	1995-2006	186	-3	-17	11		
	10	1996-2006	193	0	-11	11		
	5	2001-2006	223	6	-1	14		
BBS N.Ireland	11	1995-2006	79	37	4	57		
	10	1996-2006	86	20	-3	33		
	5	2001-2006	98	-5	-14	6		

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

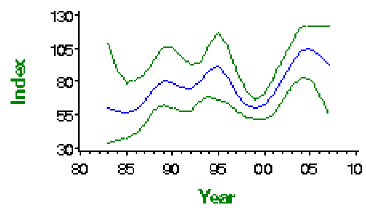
CBC/BBS England 1966—2007
Chaffinch



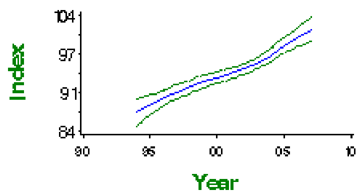
CES adult abundance 1983—2007
Chaffinch



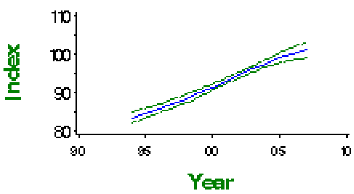
CES juvenile abundance 1983—2007
Chaffinch



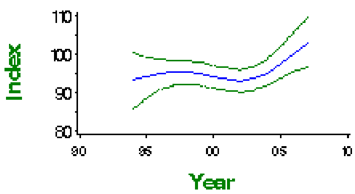
BBS UK 1994—2007
Chaffinch



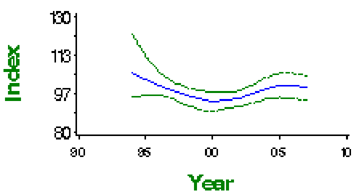
BBS England 1994—2007
Chaffinch



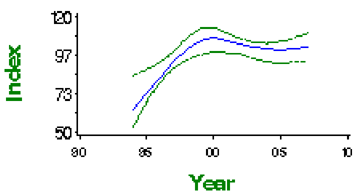
BBS Scotland 1994—2007
Chaffinch



BBS Wales 1994—2007
Chaffinch



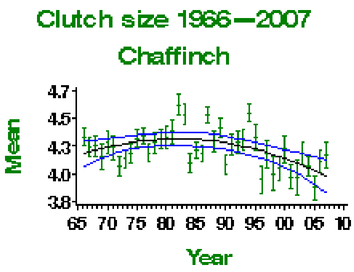
BBS N. Ireland 1994—2007
Chaffinch

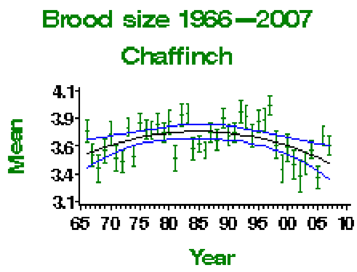


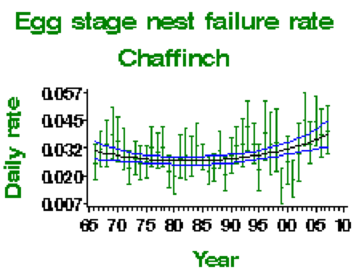
Productivity trends

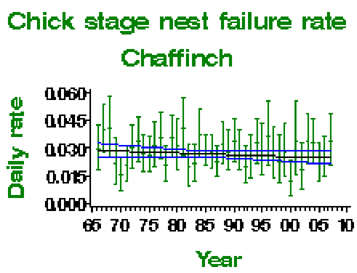
Table of productivity changes for Chaffinch

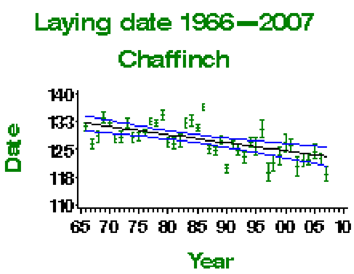
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	86	Curvilinear	4.22 eggs	4.03 eggs	-4.4%	
Brood size	38	1968-2006	136	Curvilinear	3.57 chicks	3.49 chicks	-2.5%	
Daily failure rate (eggs)	38	1968-2006	165	Curvilinear	2.97% nests/day	3.68% nests/day	23.9%	
Daily failure rate (chicks)	38	1968-2006	116	None				
Laying date	38	1968-2006	107	Linear decline	May 11	May 3	-8 days	
Juvenile to Adult ratio (CES)	22	1984-2006	84	Smoothed trend	62 Index value	100 Index value	61%	
Juvenile to Adult ratio (CES)	10	1996-2006	95	Smoothed trend	103 Index value	100 Index value	-3%	
Juvenile to Adult ratio (CES)	5	2001-2006	92	Smoothed trend	86 Index value	100 Index value	16%	

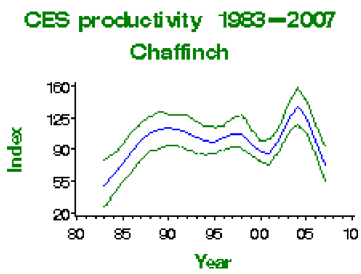












Additional information

- 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

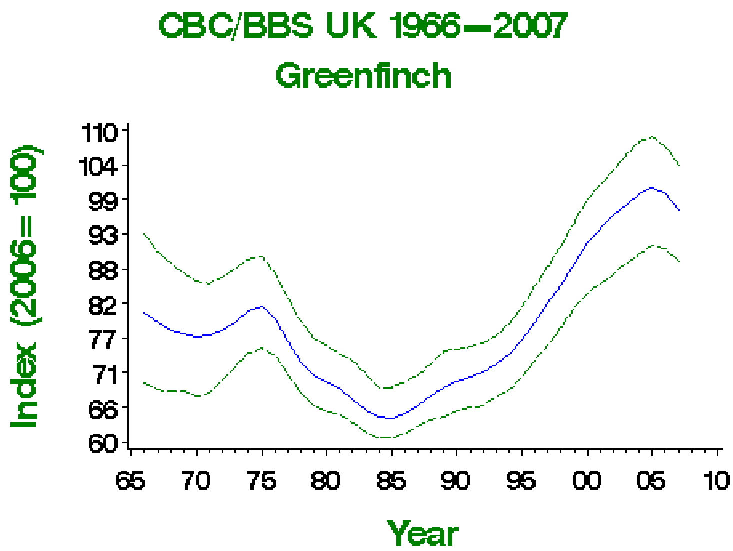
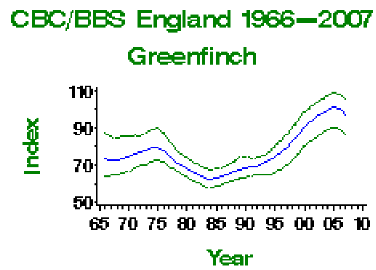


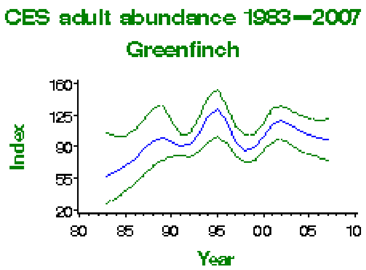
Table of population changes for Greenfinch

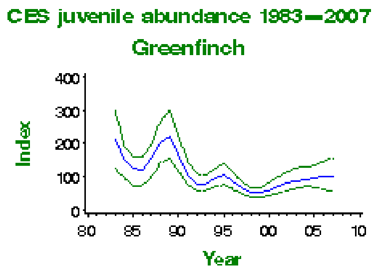
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	596	26	-1	59		
	25	1981-2006	846	46	20	68		
	10	1996-2006	1709	26	21	33		
	5	2001-2006	1871	6	3	10		
CBC/BBS England	39	1967-2006	505	38	6	67		
	25	1981-2006	714	50	22	77		
	10	1996-2006	1435	30	25	36		
	5	2001-2006	1559	7	4	11		
CES adults	22	1984-2006	43	59	-21	278		
	10	1996-2006	48	-15	-35	9		
	5	2001-2006	48	-13	-30	10		
CES juveniles	22	1984-2006	27	-35	-67	53		
	10	1996-2006	35	13	-30	63		
	5	2001-2006	38	43	-12	99		
BBS UK	11	1995-2006	1595	31	25	39		
	10	1996-2006	1648	26	21	32		
	5	2001-2006	1871	6	3	9		

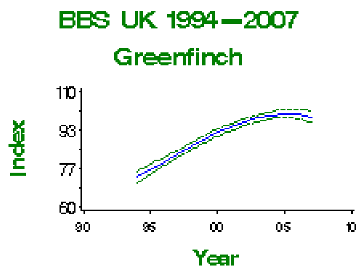
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	1559	7	5	11		
BBS Scotland	11	1995-2006	93	8	-12	32		
	10	1996-2006	96	4	-14	24		
	5	2001-2006	103	-1	-17	13		
BBS Wales	11	1995-2006	106	28	5	57		
	10	1996-2006	111	20	-2	45		
	5	2001-2006	132	0	-8	13		
BBS N.Ireland	11	1995-2006	46	115	34	204		
	10	1996-2006	50	82	25	122		
	5	2001-2006	63	18	-3	37		

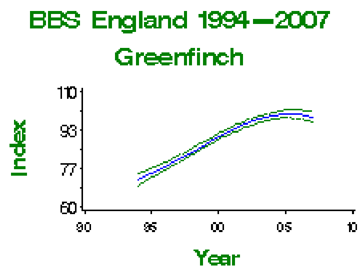
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

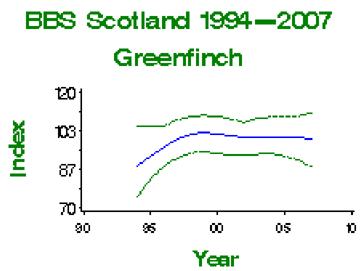


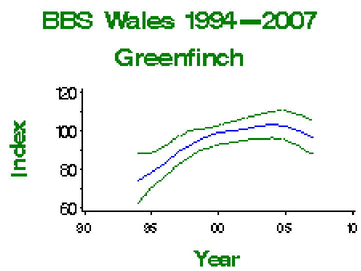










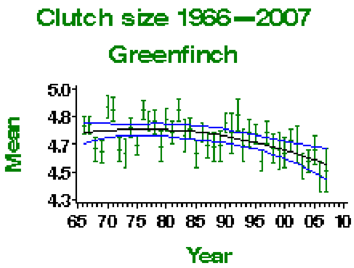


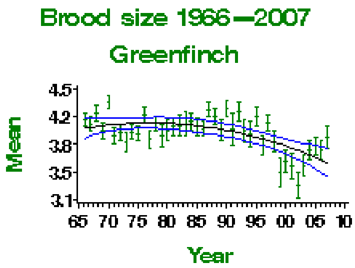
Productivity trends

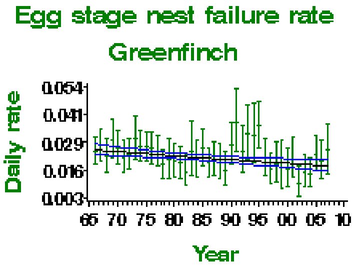
Table of productivity changes for Greenfinch

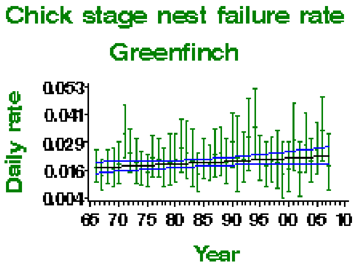
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	93	Curvilinear	4.73 eggs	4.54 eggs	-4%	
Brood size	38	1968-2006	115	Curvilinear	4.03 chicks	3.61 chicks	-10.5%	
Daily failure rate (eggs)	38	1968-2006	132	Linear decline	2.48% nests/day	1.8% nests/day	-27.4%	
Daily failure rate (chicks)	38	1968-2006	98	None				
Laying date	38	1968-2006	95	Linear decline	May 25	May 10	-15 days	
Juvenile to Adult ratio (CES)	22	1984-2006	47	Smoothed trend	148 Index value	100 Index value	-32%	

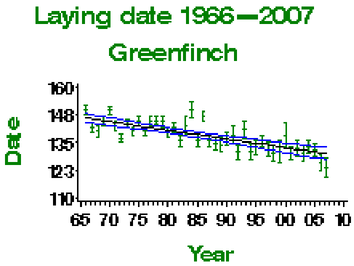
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Juvenile to Adult ratio (CES)								

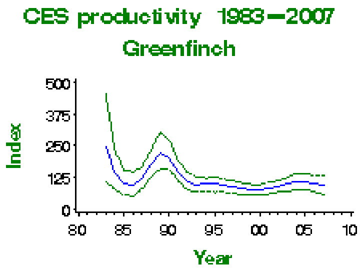












Additional information

- 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 of conservation concern 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 France and Iberia, where the migrant majority of the population wintered, 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

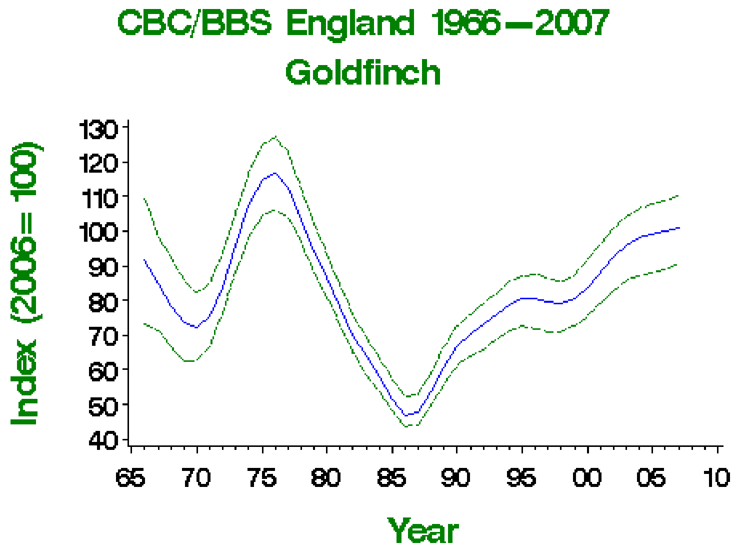
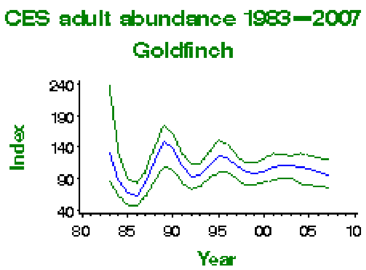


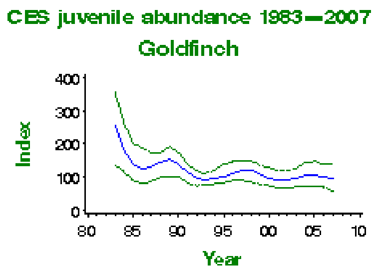
Table of population changes for Goldfinch

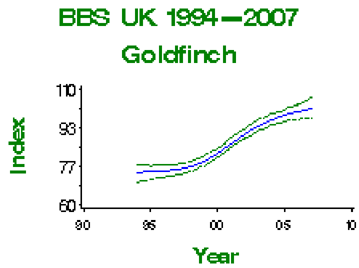
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	382	18	-11	53		
	25	1981-2006	543	28	8	48		
	10	1996-2006	1103	24	17	30		
	5	2001-2006	1213	13	7	18		
CES adults	22	1984-2006	33	14	-44	77		
	10	1996-2006	40	-19	-40	10		
	5	2001-2006	38	-7	-34	36		
CES juveniles	22	1984-2006	19	-45	-74	16		Small sample
	10	1996-2006	23	-11	-46	24		
	5	2001-2006	22	12	-34	75		
BBS UK	11	1995-2006	1266	35	25	47		
	10	1996-2006	1309	34	25	45		
	5	2001-2006	1501	16	10	22		
BBS England	11	1995-2006	1036	24	17	32		
	10	1996-2006	1067	25	18	32		
	5	2001-2006	1213	14	10	19		

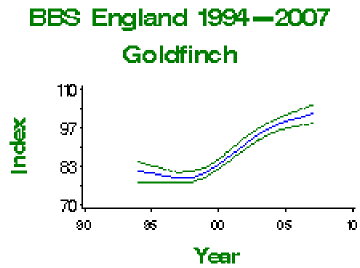
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	84	18	-7	50		
BBS Wales	11	1995-2006	115	56	21	113		
	10	1996-2006	120	45	14	93		
	5	2001-2006	142	-1	-9	11		
BBS N.Ireland	11	1995-2006	34	543	.	.		
	10	1996-2006	37	442	.	.		
	5	2001-2006	52	101	.	.		

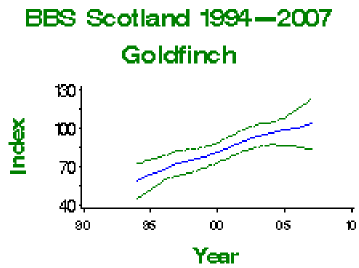
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

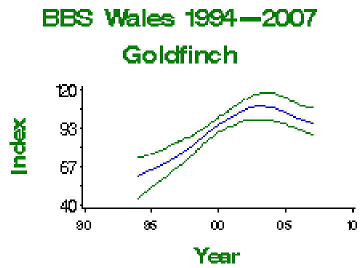










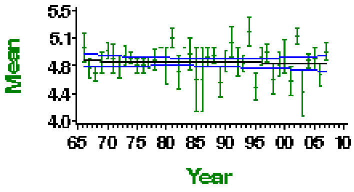


Productivity trends

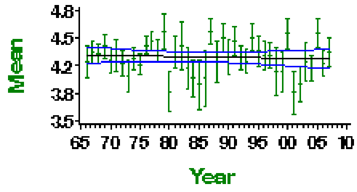
Table of productivity changes for Goldfinch

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	19	None				Small sample
Brood size	38	1968-2006	32	None				
Daily failure rate (eggs)	38	1968-2006	35	None				
Daily failure rate (chicks)	38	1968-2006	29	None				Small sample
Laying date	38	1968-2006	22	Linear decline	Jun 6	May 30	-7 days	Small sample
Juvenile to Adult ratio (CES)	22	1984-2006	38	Smoothed trend	267 Index value	100 Index value	-63% >50	
Juvenile to Adult ratio (CES)	10	1996-2006	46	Smoothed trend	148 Index value	100 Index value	-32%	
Juvenile to Adult ratio (CES)	5	2001-2006	45	Smoothed trend	164 Index value	100 Index value	-39%	

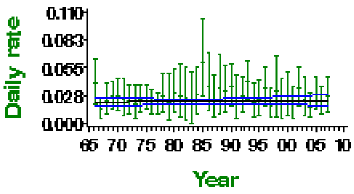
Clutch size 1966—2007
Goldfinch



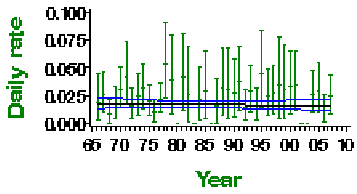
Brood size 1966—2007
Goldfinch



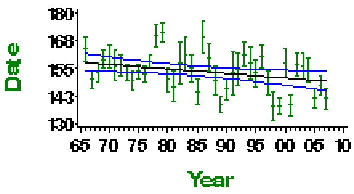
Egg stage nest failure rate
Goldfinch



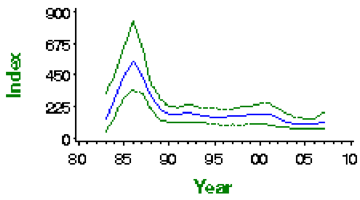
Chick stage nest failure rate
Goldfinch



Laying date 1966—2007
Goldfinch



CES productivity 1983—2007
Goldfinch



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. Its 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 to boost 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 samples were still insufficient for annual monitoring until BBS began in 1994. Results since then show extraordinary fluctuations, in both England and Scotland, which have been largely in parallel. To some extent, this may reflect the occasional large continental influxes affecting numbers on a broad UK scale.

Population changes

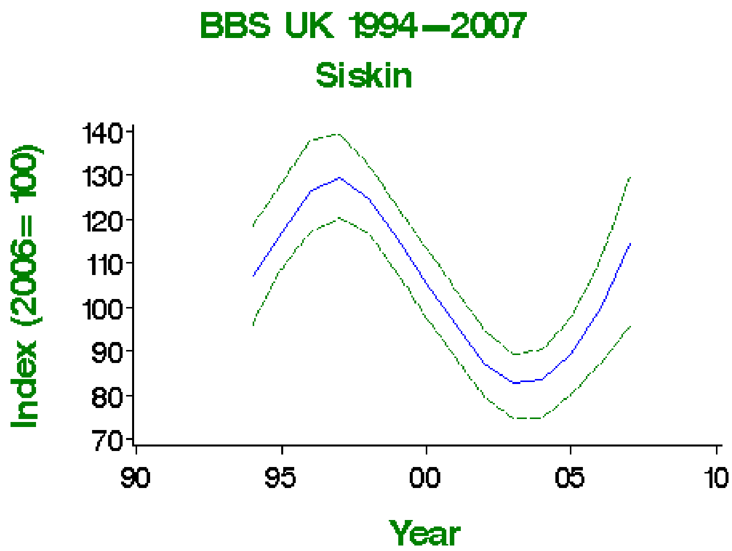
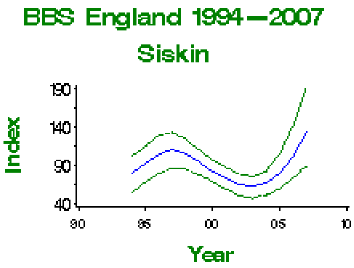
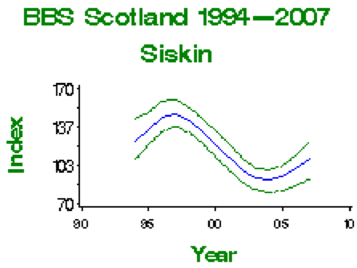


Table of population changes for Siskin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	11	1995-2006	120	-15	-32	4		
	10	1996-2006	123	-21	-37	-3		
	5	2001-2006	123	4	-15	24		
BBS England	11	1995-2006	39	9	-39	129		
	10	1996-2006	40	-4	-47	92		
	5	2001-2006	43	38	-10	130		
BBS Scotland	11	1995-2006	54	-25	-43	-9	>25	
	10	1996-2006	55	-30	-48	-15	>25	
	5	2001-2006	50	-9	-27	7		

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 Wales and possibly some increase in Northern Ireland. 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. Recent decreases in clutch and brood sizes, and in nest survival at the chick stage, raise NRS concern (**Leech & Barimore 2008**). 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**). Linnets are estimated to have declined by 54% across Europe during 1980–2005 (**PECBMS 2007**). Following widespread declines across Europe during the 1990s, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

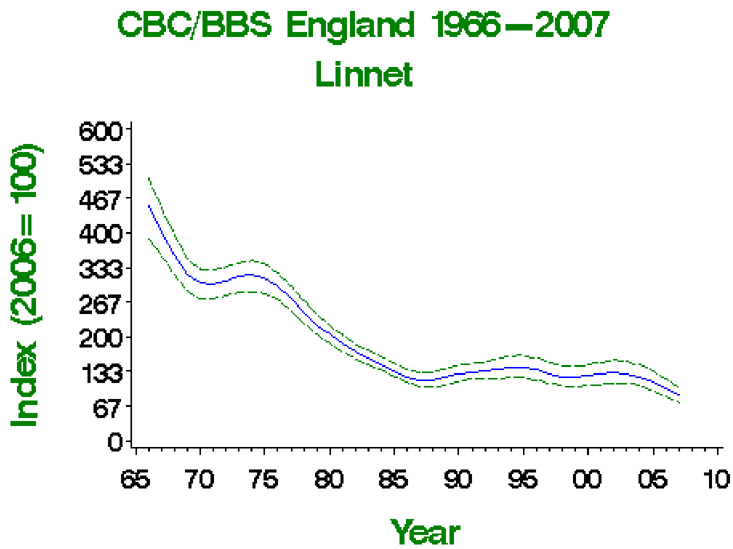
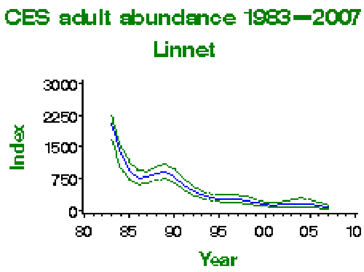


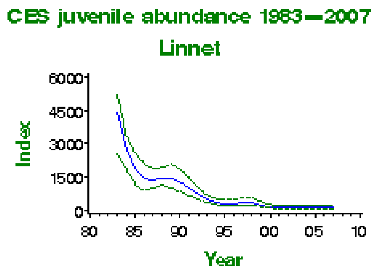
Table of population changes for Linnet

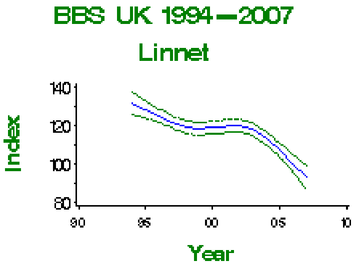
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	39	1967-2006	367	-75	-81	-66	>50	
	25	1981-2006	501	-47	-57	-32	>25	
	10	1996-2006	967	-27	-32	-21	>25	
	5	2001-2006	953	-22	-25	-16		
CES adults	22	1984-2006	20	-92	-97	-84	>50	
	10	1996-2006	18	-62	-84	-35	>50	Small sample
	5	2001-2006	14	-14	-54	40		Small sample
CES juveniles	22	1984-2006	14	-96	-99	-87	>50	Small sample
	10	1996-2006	14	-67	-91	-38	>50	Small sample
	5	2001-2006	12	-6	-64	71		Small sample
BBS UK	11	1995-2006	1122	-22	-29	-16		
	10	1996-2006	1145	-20	-26	-14		
	5	2001-2006	1193	-16	-22	-10		
BBS England	11	1995-2006	909	-30	-35	-23	>25	
	10	1996-2006	925	-26	-31	-19	>25	

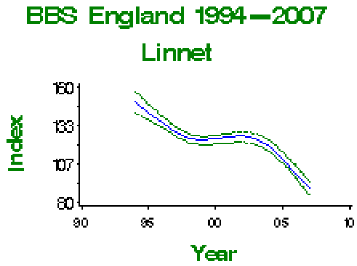
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS Scotland								
	10	1996-2006	85	1	-24	21		
	5	2001-2006	88	-3	-20	18		
BBS Wales	11	1995-2006	91	-14	-34	14		
	10	1996-2006	94	-17	-37	7		
	5	2001-2006	106	-26	-40	-8	>25	
BBS N.Ireland	11	1995-2006	31	48	-7	109		
	10	1996-2006	33	37	-10	93		
	5	2001-2006	37	4	-19	36		

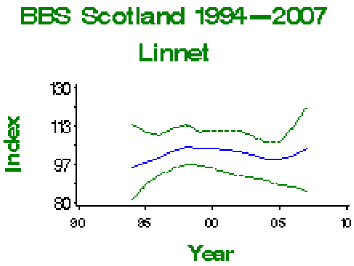
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

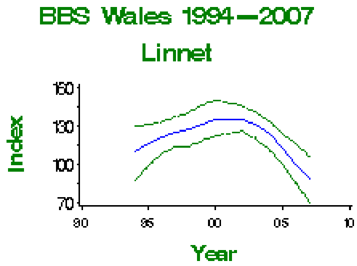








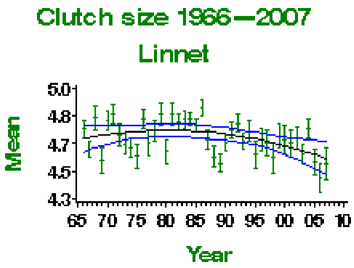


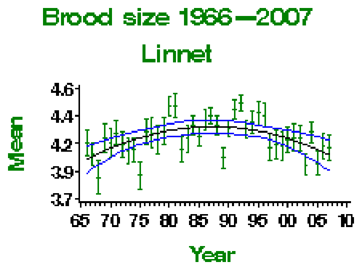


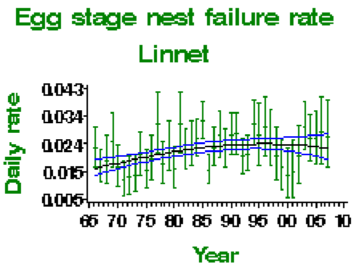
Productivity trends

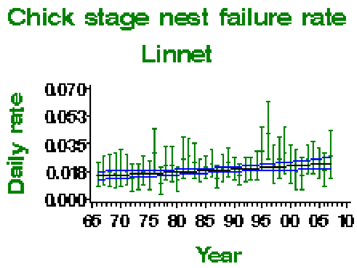
Table of productivity changes for Linnet

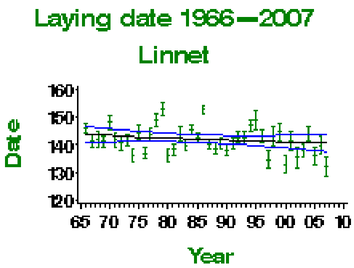
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	108	Curvilinear	4.7 eggs	4.57 eggs	-2.7%	
Brood size	38	1968-2006	122	Curvilinear	4.07 chicks	4.08 chicks	0.3%	
Daily failure rate (eggs)	38	1968-2006	154	Curvilinear	1.65% nests/day	2.29% nests/day	38.8%	
Daily failure rate (chicks)	38	1968-2006	110	Linear increase	1.52% nests/day	2.24% nests/day	47.4%	
Laying date	38	1968-2006	109	None				
Juvenile to Adult ratio (CES)	22	1984-2006	22	Smoothed trend	474 Index value	100 Index value	-79% >50	
Juvenile to Adult ratio (CES)	10	1996-2006	21	Smoothed trend	177 Index value	100 Index value	-44%	
Juvenile to Adult ratio (CES)	5	2001-2006	18	Smoothed trend	186 Index value	100 Index value	-46%	Small sample

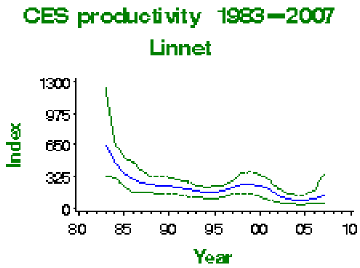












Additional information

- **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: moderate decline
England: rapid 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 there are large fluctuations around the overall downward trend. 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. Recent decreases in brood size and in nest survival have raised NRS concern (**Leech & Barimore 2008**). Numbers have fallen widely in Europe since 1980 (**PECBMS 2007**).

Population changes

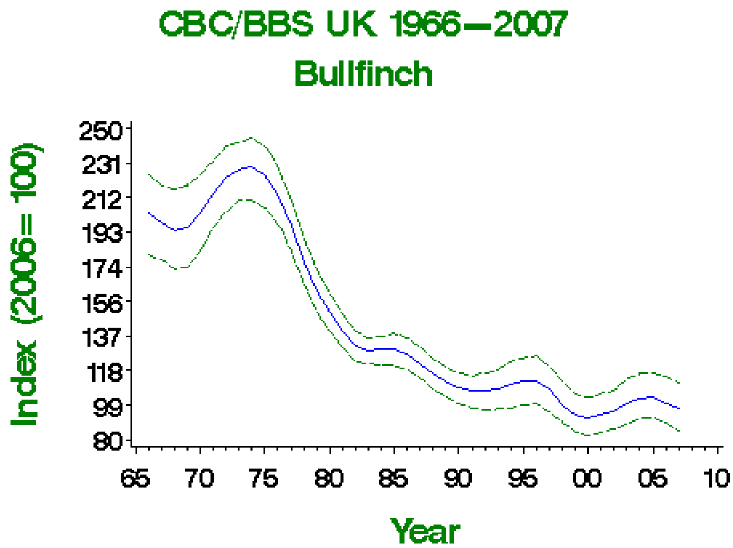


Table of population changes for Bullfinch

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	271	-50	-61	-37	>25	
	25	1981-2006	340	-28	-39	-14	>25	
	10	1996-2006	585	-11	-17	-3		
	5	2001-2006	584	7	1	17		
CBC/BBS England	39	1967-2006	221	-52	-62	-39	>50	
	25	1981-2006	271	-31	-42	-19	>25	
	10	1996-2006	452	-9	-17	-2		
	5	2001-2006	446	1	-7	8		
CES adults	22	1984-2006	80	-19	-36	2		
	10	1996-2006	85	-20	-33	-7		
	5	2001-2006	77	8	-7	25		
CES juveniles	22	1984-2006	62	-21	-43	21		
	10	1996-2006	67	-14	-29	3		

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK								
	10	1996-2006	530	-9	-18	-2		
	5	2001-2006	584	5	-3	15		
BBS England	11	1995-2006	396	-12	-19	-3		
	10	1996-2006	406	-7	-15	0		
	5	2001-2006	446	1	-6	8		
BBS Scotland	11	1995-2006	32	-12	-39	14		
	10	1996-2006	34	-23	-45	-5		
	5	2001-2006	32	-5	-25	19		
BBS Wales	11	1995-2006	60	-3	-21	24		
	10	1996-2006	62	7	-11	35		
	5	2001-2006	75	15	0	35		

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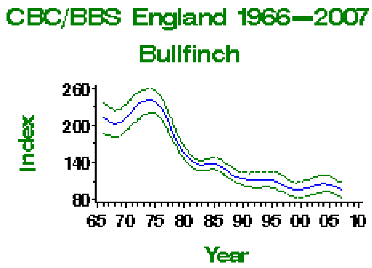
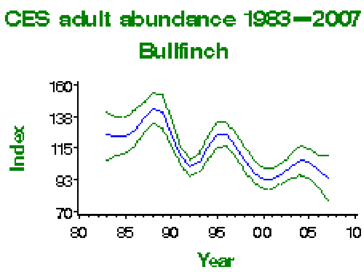
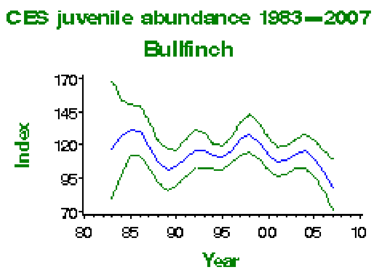
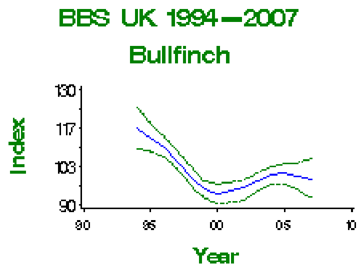
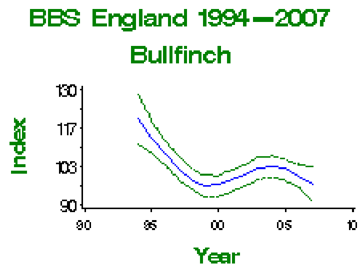
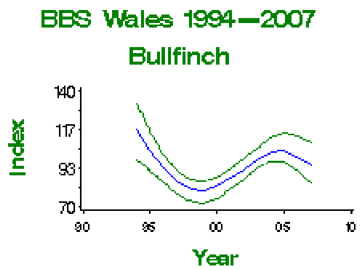










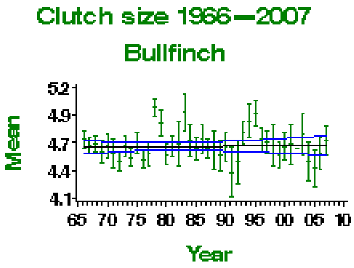


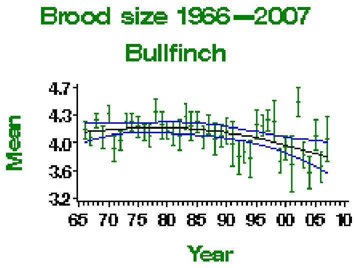
Productivity trends

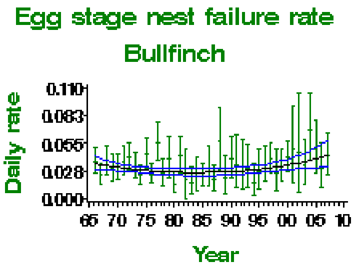
Table of productivity changes for Bullfinch

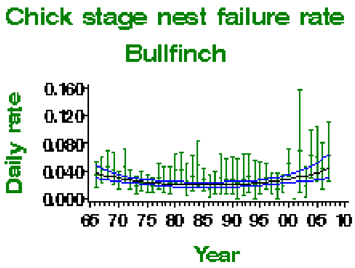
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	35	None				
Brood size	38	1968-2006	36	Curvilinear	4.11 chicks	3.79 chicks	-8%	
Daily failure rate (eggs)	38	1968-2006	50	Curvilinear	3.33% nests/day	4.13% nests/day	24%	
Daily failure rate (chicks)	38	1968-2006	34	Curvilinear	3.36% nests/day	4.05% nests/day	20.5%	
Laying date	38	1968-2006	32	None				
Juvenile to Adult ratio (CES)	22	1984-2006	84	Smoothed trend	97 Index value	100 Index value	3%	

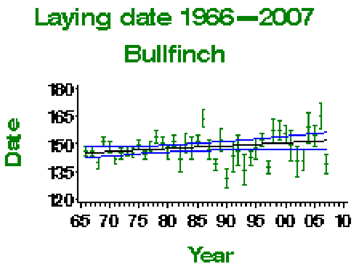
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Juvenile to Adult ratio (CES)								

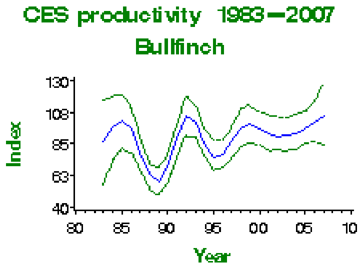












Additional information

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

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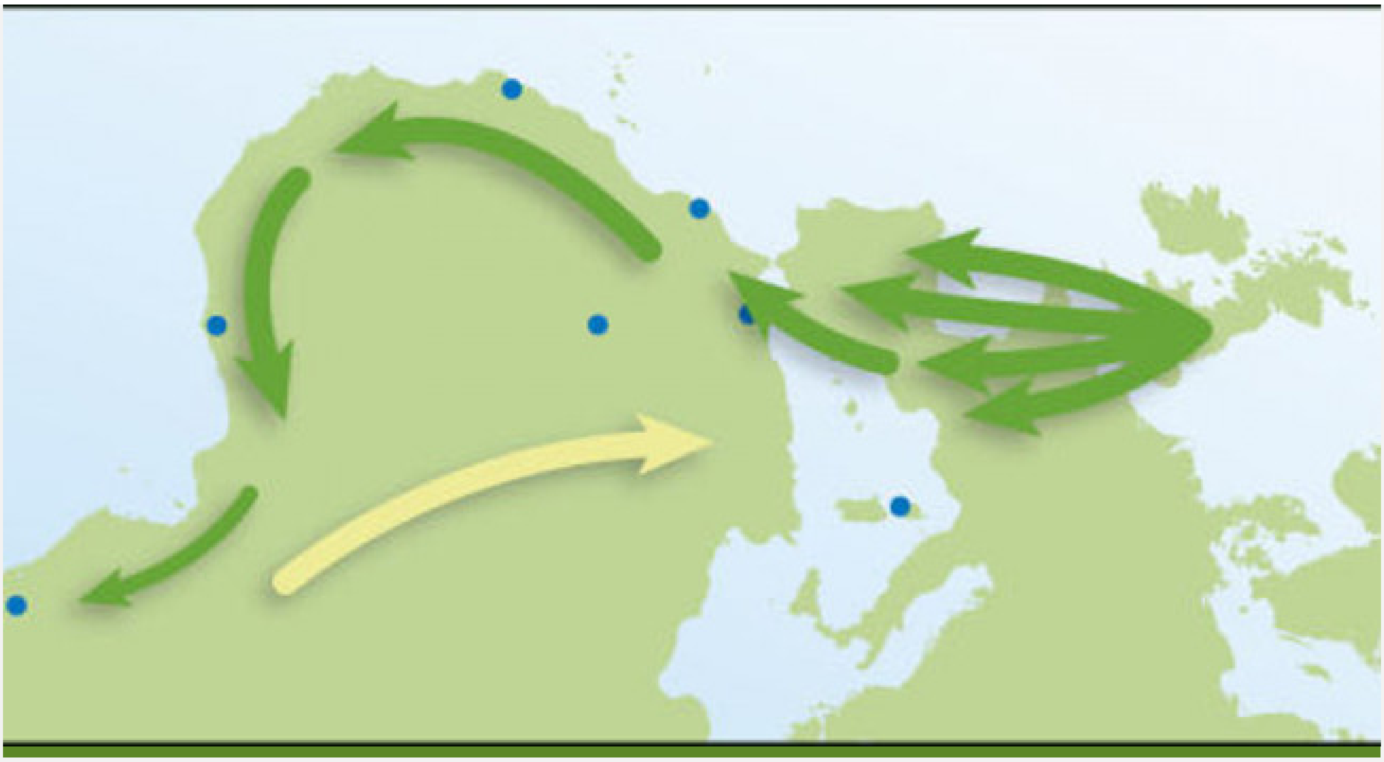


ARTICLE

Results

See live NBC results and watch the breeding season unfold

CASE STUDY

Climate change in a warming world

BTO science contributes to our understanding of future scenarios, and informing policies and conservation management strategies to help species adapt.

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...

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: priority species

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, is now red listed. 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 clutch size, brood size and nest success are of NRS concern (**Leech & Barimore 2008**). 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. **Gillings *et al.* (2005)** have identified better population performance in areas with extensive winter stubble, presumably because overwinter survival is relatively high. 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 (**PECBMS 2007**).

Population changes

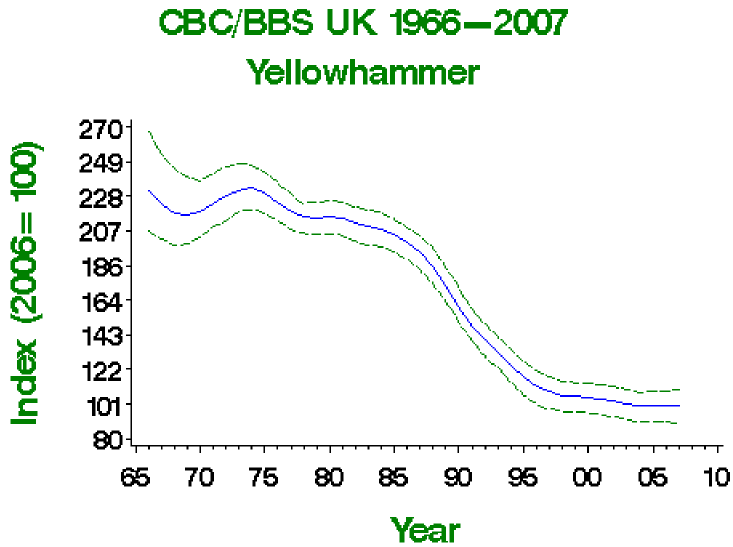
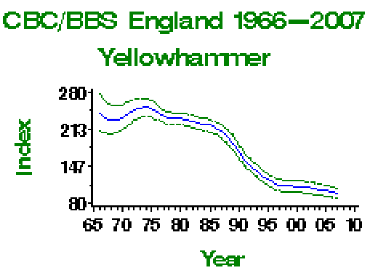


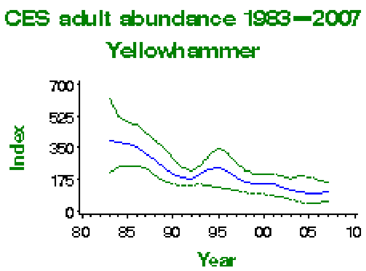
Table of population changes for Yellowhammer

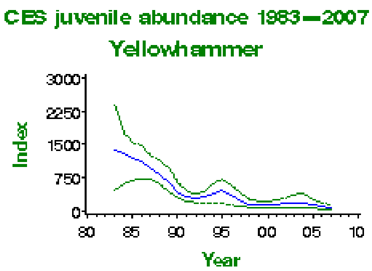
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	440	-55	-65	-47	>50	
	25	1981-2006	605	-53	-59	-48	>50	
	10	1996-2006	1148	-11	-15	-5		
	5	2001-2006	1123	-4	-8	1		
CBC/BBS England	39	1967-2006	385	-57	-66	-46	>50	
	25	1981-2006	529	-57	-62	-50	>50	
	10	1996-2006	1003	-15	-18	-11		
	5	2001-2006	986	-9	-12	-5		
CES adults	22	1984-2006	18	-74	-91	-28	>50	Small sample
	10	1996-2006	13	-55	-83	1		Small sample
	5	2001-2006	10	-32	-69	44		Small sample
BBS UK	11	1995-2006	1084	-14	-18	-9		
	10	1996-2006	1102	-11	-16	-7		
	5	2001-2006	1123	-4	-7	1		

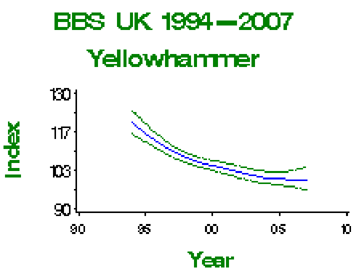
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	986	-8	-11	-5		
BBS Scotland	11	1995-2006	93	4	-16	24		
	10	1996-2006	95	5	-14	23		
	5	2001-2006	93	11	-2	26		
BBS Wales	11	1995-2006	38	-36	-53	-16	>25	
	10	1996-2006	38	-32	-48	-12	>25	
	5	2001-2006	37	-10	-27	11		

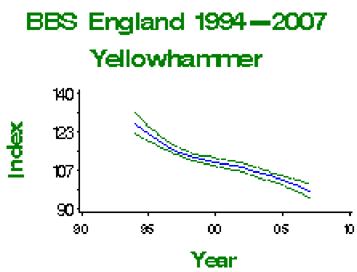
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

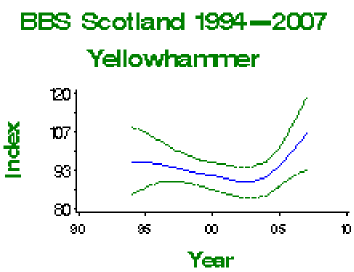


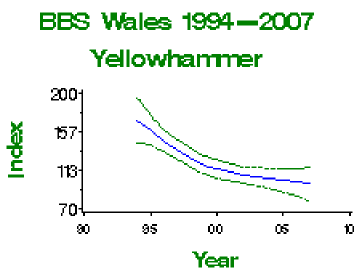








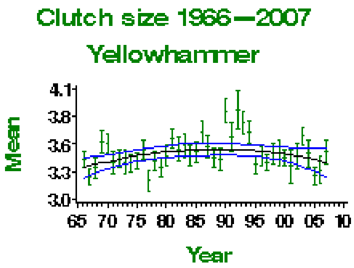


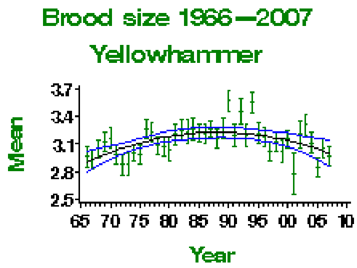


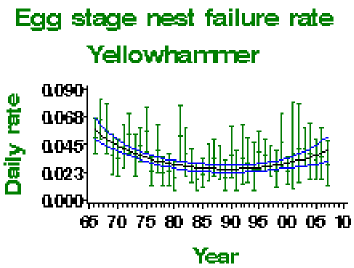
Productivity trends

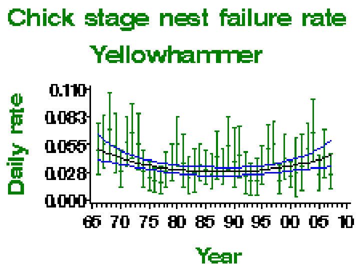
Table of productivity changes for Yellowhammer

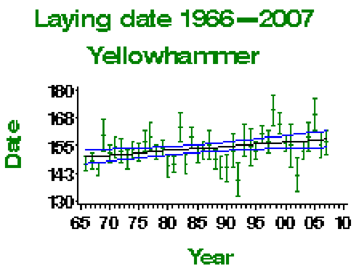
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	44	Curvilinear	3.35 eggs	3.39 eggs	1.2%	
Brood size	38	1968-2006	67	Curvilinear	2.96 chicks	3.03 chicks	2.3%	
Daily failure rate (eggs)	38	1968-2006	66	Curvilinear	5% nests/day	3.8% nests/day	-24%	
Daily failure rate (chicks)	38	1968-2006	52	Curvilinear	4.62% nests/day	4.23% nests/day	-8.4%	
Laying date	38	1968-2006	27	Linear increase	May 30	Jun 7	8 days	Small sample
Juvenile to Adult ratio (CES)	22	1984-2006	20	Smoothed trend	87 Index value	100 Index value	15%	
Juvenile to Adult ratio (CES)	10	1996-2006	15	Smoothed trend	158 Index value	100 Index value	-37%	Small sample
Juvenile to Adult ratio (CES)	5	2001-2006	12	Smoothed trend	73 Index value	100 Index value	38%	Small sample

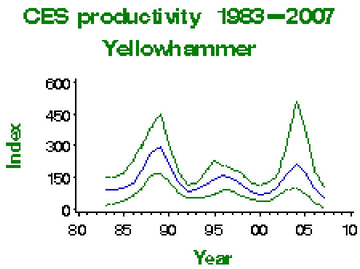












Additional information

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- 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: shallow 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. In recent years, BBS results indicate significant population increase. 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 by a significant increase in failure rates at the egg stage, which has raised NRS concern (Leech & Barimore 2008). 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).

Population changes

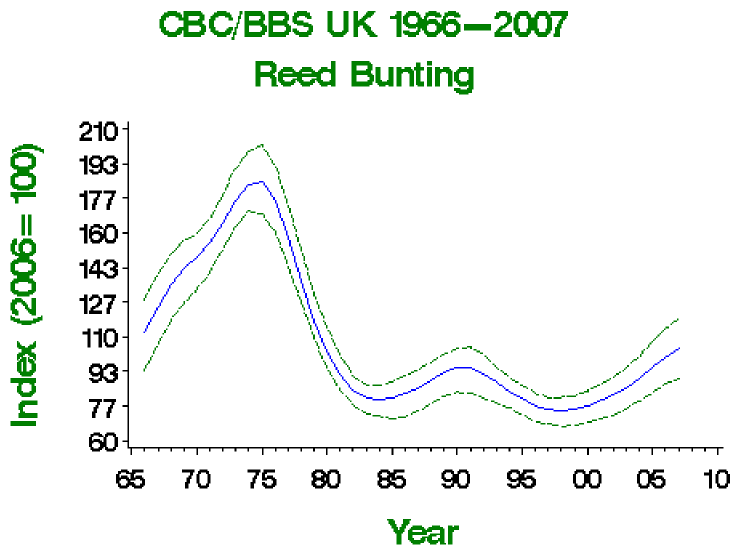
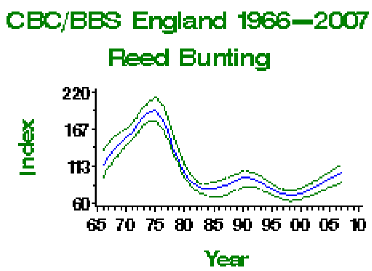


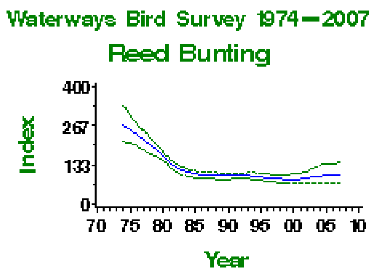
Table of population changes for Reed Bunting

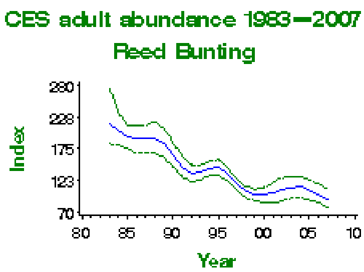
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	194	-19	-36	3		
	25	1981-2006	242	9	-11	31		
	10	1996-2006	441	30	19	44		
	5	2001-2006	478	26	15	38		
CBC/BBS England	39	1967-2006	153	-22	-41	-1		
	25	1981-2006	187	7	-14	28		
	10	1996-2006	332	30	19	44		
	5	2001-2006	353	29	20	37		
WBS waterways	31	1975-2006	51	-61	-75	-33	>50	
	25	1981-2006	53	-31	-54	17		
	10	1996-2006	53	10	-14	66		
	5	2001-2006	44	16	-1	41		
CES adults	22	1984-2006	59	-51	-64	-36	>50	
	10	1996-2006	68	-25	-36	-12		
	5	2001-2006	59	-2	-12	12		

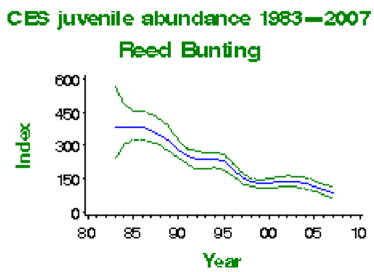
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
	5	2001-2006	43	-26	-40	-9	>25	
BBS UK	11	1995-2006	406	28	17	41		
	10	1996-2006	416	30	18	42		
	5	2001-2006	478	24	16	36		
BBS England	11	1995-2006	303	25	12	34		
	10	1996-2006	309	31	18	40		
	5	2001-2006	353	27	18	36		
BBS Scotland	11	1995-2006	48	42	16	83		
	10	1996-2006	48	41	10	79		
	5	2001-2006	56	21	-7	53		

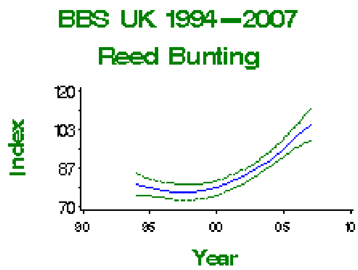
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

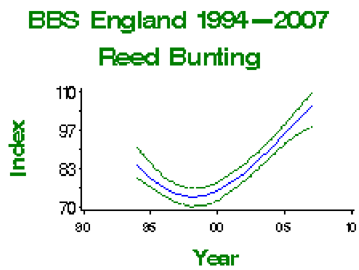


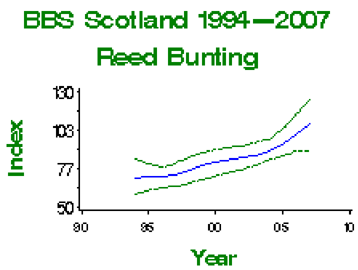








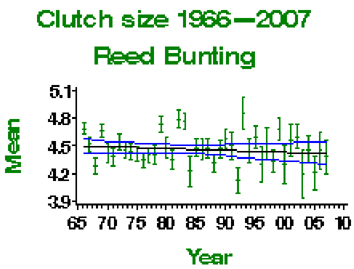


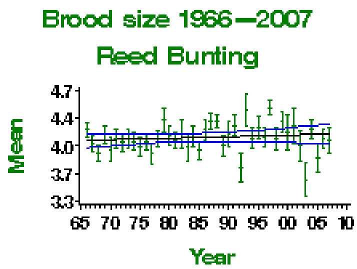


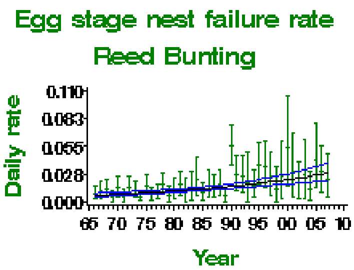
Productivity trends

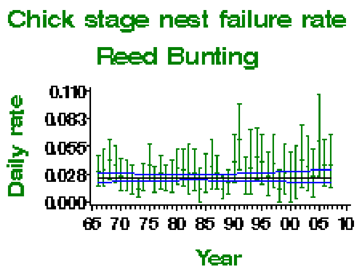
Table of productivity changes for Reed Bunting

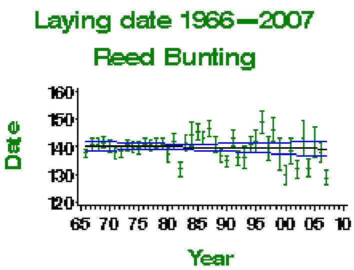
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Clutch size	38	1968-2006	44	None				
Brood size	38	1968-2006	61	None				
Daily failure rate (eggs)	38	1968-2006	52	Linear increase	0.73% nests/day	2.74% nests/day	275.3%	
Daily failure rate (chicks)	38	1968-2006	52	None				
Laying date	38	1968-2006	48	None				
Juvenile to Adult ratio (CES)	22	1984-2006	62	Smoothed trend	217 Index value	100 Index value	-54% >50	
Juvenile to Adult ratio (CES)	10	1996-2006	71	Smoothed trend	171 Index value	100 Index value	-42% >25	
Juvenile to Adult ratio (CES)	5	2001-2006	62	Smoothed trend	127 Index value	100 Index value	-21%	

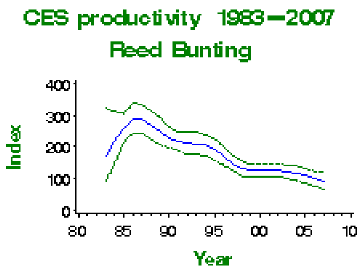












Additional information

- 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**). Brood size and nest survival at the chich stage are currently of NRS concern (**Leech & Barimore 2008**). 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**). Management interventions in eastern Scotland were shown to have the potential to halt, or perhaps reverse, the Corn Bunting decline there (**Perkins *et al.* 2008**). Corn Buntings are estimated to have declined by 61% across Europe during 1980–2005 (**PECBMS 2007**). With declines across much of its European range, this previously 'secure' species is now provisionally evaluated as 'declining' (**BirdLife International 2004**).

Population changes

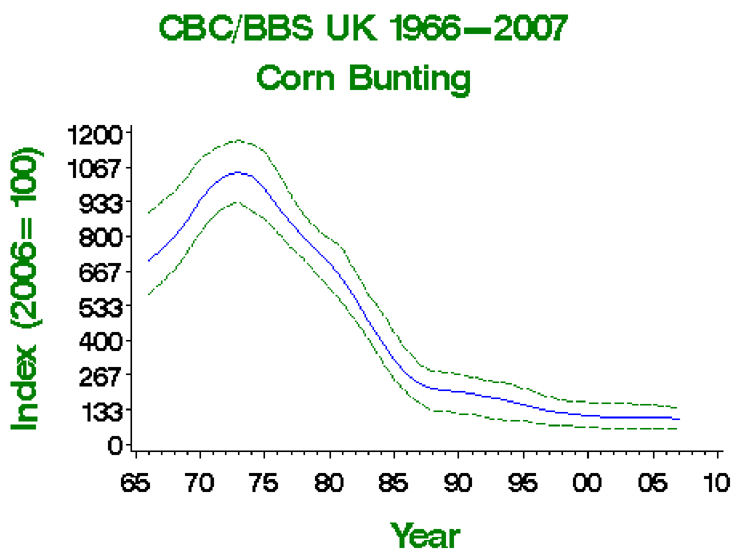


Table of population changes for Corn Bunting

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS UK	39	1967-2006	63	-87	-94	-77	>50	
	25	1981-2006	80	-84	-92	-74	>50	Small CBC sample
	10	1996-2006	144	-27	-38	-15	>25	
	5	2001-2006	126	-6	-21	8		
CBC/BBS England	39	1967-2006	60	-84	-93	-74	>50	
	25	1981-2006	76	-83	-92	-71	>50	Small CBC sample
	10	1996-2006	138	-22	-36	-8		
	5	2001-2006	120	0	-16	20		
BBS UK	11	1995-2006	138	-32	-45	-21	>25	
	10	1996-2006	138	-26	-39	-16	>25	
	5	2001-2006	126	-7	-21	6		
BBS England	11	1995-2006	132	-28	-40	-18	>25	

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

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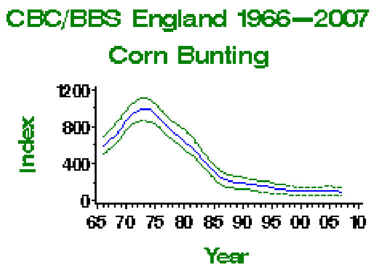
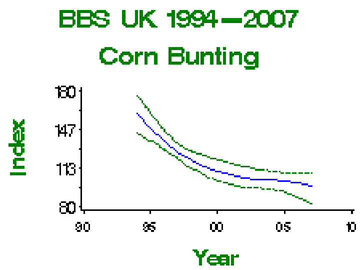
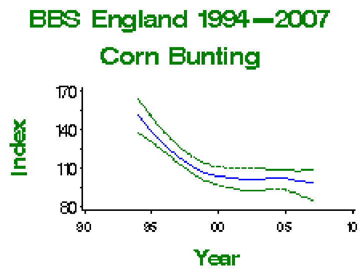




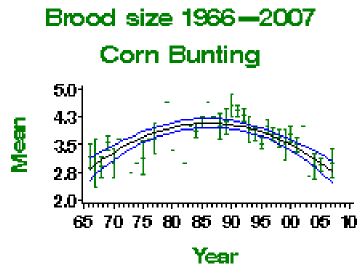


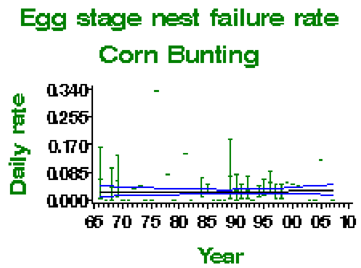
Productivity trends

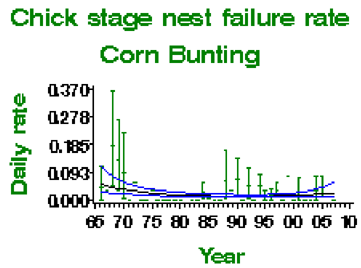
Table of productivity changes for Corn Bunting

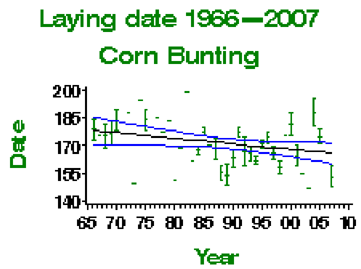
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2006	Change	Comment
Brood size	38	1968-2006	12	Curvilinear	3.07 chicks	2.89 chicks	-5.9%	Small sample
Daily failure rate (eggs)	38	1968-2006	11	None				Small sample
Daily failure rate (chicks)	38	1968-2006	11	Curvilinear	4.5% nests/day	2.24% nests/day	-50.2%	Small sample
Laying date	38	1968-2006	13	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**, **2008**), 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

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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 39 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 2008**).

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 red and amber 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 the 25-year period 1974–99. The latest long-term population changes and alerts over the maximum period available (usually 39 years) and over 25 years are shown in Table 4.2.1. The species are listed in descending order of long-term percentage change.

The results confirm the declining status of all of the 16 species concerned (although the 25-year change for **Reed Bunting** is now a non-significant increase). All these updated 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** (which, although apparently large, has very wide confidence limits and is thus not statistically significant). **Linnet**, **Marsh Tit**, **Skylark** and **Song Thrush** now show declines of less than 50% over the most recent 25-year period, 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	39	CBC/BBS England	-97	-99	-94	>50	
Tree Sparrow	25	CBC/BBS England	-93	-97	-88	>50	
Grey Partridge	39	CBC/BBS UK	-88	-91	-83	>50	
Grey Partridge	25	CBC/BBS UK	-78	-85	-71	>50	
Corn Bunting	39	CBC/BBS UK	-87	-94	-77	>50	
Corn Bunting	25	CBC/BBS UK	-84	-92	-74	>50	
Spotted Flycatcher	39	CBC/BBS UK	-86	-90	-80	>50	
Spotted Flycatcher	25	CBC/BBS UK	-81	-86	-75	>50	
Turtle Dove	39	CBC/BBS UK	-85	-90	-76	>50	
Turtle Dove	25	CBC/BBS UK	-82	-88	-75	>50	
Willow Tit	39	CBC/BBS UK	-85	-93	-72	>50	
Willow Tit	25	CBC/BBS UK	-82	-90	-69	>50	
Starling	39	CBC/BBS England	-83	-88	-77	>50	
Starling	25	CBC/BBS England	-78	-83	-73	>50	
Linnet	39	CBC/BBS England	-75	-81	-66	>50	
Linnet	25	CBC/BBS England	-47	-57	-32	>25	
House Sparrow	29	CBC/BBS England	-70	-79	-60	>50	
House Sparrow	25	CBC/BBS England	-59	-71	-49	>50	
Marsh Tit	39	CBC/BBS UK	-68	-77	-56	>50	
Marsh Tit	25	CBC/BBS UK	-38	-51	-16	>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	39	CBC/BBS England	-59	-66	-51	>50	
Skylark	25	CBC/BBS England	-47	-54	-40	>25	
Yellowhammer	39	CBC/BBS UK	-55	-65	-47	>50	
Yellowhammer	25	CBC/BBS UK	-53	-59	-48	>50	
Song Thrush	39	CBC/BBS UK	-51	-58	-43	>50	
Song Thrush	25	CBC/BBS UK	-16	-27	-5		
Bullfinch	39	CBC/BBS UK	-50	-61	-37	>25	
Bullfinch	25	CBC/BBS UK	-28	-39	-14	>25	
Reed Bunting	39	CBC/BBS UK	-19	-36	3		
Reed Bunting	25	CBC/BBS UK	9	-11	31		

See **PSoB** pages for information on red and amber criteria

4.2.2 Long-term trends of PSoB amber-listed species

Most of the species considered here were **amber-listed** due to long-term declines of more than 25%, but less than 50%, over the 25-year period 1974–99. In addition, three species where the best trend estimate was a decline of more than 50% were listed amber, rather than red, on the grounds that the census data were sparse or maybe unrepresentative. The latest long-term population changes and alerts over the maximum period available (usually 39 years) and over 25 years are shown in Table 4.2.2. The species are listed in descending order of long-term percentage change. These results confirm the declining 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	39	CBC/BBS England	-90	-96	-78	>50	
Lesser Redpoll	25	CBC/BBS England	-95	-98	-91	>50	
Tree Pipit	39	CBC/BBS England	-83	-92	-71	>50	
Tree Pipit	25	CBC/BBS England	-82	-91	-69	>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	39	CBC/BBS UK	-74	-88	-46	>50	
Yellow Wagtail	25	CBC/BBS UK	-70	-82	-55	>50	
Cuckoo	39	CBC/BBS England	-61	-71	-48	>50	
Cuckoo	25	CBC/BBS England	-61	-67	-54	>50	
Willow Warbler	39	CBC/BBS England	-58	-70	-46	>50	
Willow Warbler	25	CBC/BBS England	-58	-67	-49	>50	
House Martin	39	CBC/BBS England	-56	-86	42		
House Martin	25	CBC/BBS England	-60	-88	105		
Redshank	31	WBS waterways	-49	-85	-16	>25	Small sample
Redshank	25	WBS waterways	-45	-76	-22	>25	Small sample
Meadow Pipit	39	CBC/BBS England	-46	-74	-24	>25	
Meadow Pipit	25	CBC/BBS England	-43	-61	-26	>25	
Mistle Thrush	39	CBC/BBS UK	-43	-51	-31	>25	
Mistle Thrush	25	CBC/BBS UK	-38	-45	-31	>25	
Lapwing	39	CBC/BBS UK	-34	-64	-5	>25	
Lapwing	25	CBC/BBS UK	-53	-65	-37	>50	
Dunnock	39	CBC/BBS UK	-33	-42	-22	>25	
Dunnock	25	CBC/BBS UK	-6	-17	5		
Grey Wagtail	31	WBS waterways	-23	-44	0		
Grey Wagtail	25	WBS waterways	35	9	60		
Kestrel	39	CBC/BBS England	6	-23	53		
Kestrel	25	CBC/BBS England	-21	-35	-1		
Goldcrest	39	CBC/BBS England	42	-20	197		
Goldcrest	25	CBC/BBS England	-18	-38	14		

See **PSoB** pages for information on red and amber criteria

Six species show significant declines of greater than 50% and could thus be candidates for red listing at the next review. Three of these, **Lesser Redpoll**, **Tree Pipit** and **Woodcock**, were listed amber rather than red in 2002 as a result of uncertainty about the reliability of the data, and there has been no substantial change in the information available on their declines. The others, **Yellow Wagtail**, **Willow Warbler** and **Cuckoo**, have been subject to ongoing declines that have since passed the 50% threshold (although it should be noted that for the last two species the long-term data are from England only). The serious nature of the **Yellow Wagtail** decline is supported by data from both WBS (-97% over 31 years) and BBS (-44% over 11 years). BBS data indicate that **Willow Warblers** and **Cuckoos** have continued to decline in England and Wales over the last 11 years, but have shown more stability in Scotland. Scottish Willow Warblers have shown a significant decline over the recent five years, however.

Our best estimate of long-term change in the English **House Martin** population now also shows a decline of more than 50%, but statistically it is not significantly different from no change. Thus no alerts are raised for this species. **House Martin** is probably best regarded as data deficient rather than as a candidate for red listing. BBS data indicate that its numbers have been stable or increasing since 1994.

Dunnock ceased its decline in the early 1990s, and has subsequently shown significant increase: consequently, its 25-year trend shows no significant change. **Grey Wagtails** have also been increasing recently, especially since the late 1990s, and as a result their 25-year change is now +28%, while the decline over the longest period for which we can measure changes in their populations (31 years) is just 23%. 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 39 years than 25 years, reflecting modest increases prior to the declines that are now a cause of concern. For **Kestrel**, the 39-year trend shows little overall change. For **Lapwing**, the 25-year decline now exceeds 50%, which could make it a candidate for future red-listing, and it has already been promoted to a priority species on the UK Biodiversity Action Plan. **Goldcrest** is a difficult species for status assessments because its populations show such wide fluctuations. Numbers increased by 42% over the 39-year period and decreased by only 18% over 25 years, neither change being statistically significant. More recently, BBS data show that numbers have increased by 25% over the last 11 years, and it is questionable 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 have identified 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). Should their downward trends continue, these species may be possible candidates for red or amber listing at the next review.

The position of Whitethroat at the head of this list is somewhat misleading. Much of the recorded 62% decline is the result of the well-documented crash between 1968 and 1969 (**Winstanley *et al.* 1974**). The 25-year change for this species is a 65% increase, representing a partial recovery to former levels. 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 in this habitat over the last ten years while BBS, which is likely to cover a more representative set of habitat types for this species, shows an increase over the same period.

Evidence for a **Little Owl** decline is statistically significant for both the 39-year and 25-year periods. **Tawny Owls** have shown a very slow decline since the early 1970s, which became more rapid around 1999, and now show a decline of 25% which just reaches statistical significance. These figures must be treated with some caution, however, because CBC and BBS census techniques are not designed with nocturnal and crepuscular species in mind.

Reed Warbler shows a decline of 31% over 21 years in its core habitat of large reedbeds, based on CES data. In clear contrast, however, CBC/BBS and WBS indices, both show strong and ongoing significant increase in this species, and are supported by atlas data showing range expansion. Further investigation is required of how the population changes of this species may differ with respect to region and habitat. For **Sedge Warbler**, a strong decline is indicated by CBC/BBS, WBS and CES schemes but is statistically significant only for CES.

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
Whitethroat	39	CBC/BBS UK	-62	-73	-50	>50	
Little Grebe	31	WBS waterways	-59	-87	-9	>50	Small sample
Little Grebe	25	WBS waterways	-64	-87	-23	>50	Small sample
Little Owl	39	CBC/BBS UK	-46	-68	-12	>25	
Little Owl	25	CBC/BBS UK	-46	-63	-29	>25	
Reed Warbler	22	CES adults	-33	-46	-10	>25	
Curlew	39	CBC/BBS England	-29	-68	25		
Curlew	25	CBC/BBS England	-31	-66	10		
Common Sandpiper	25	WBS waterways	-28	-44	-10	>25	
Sedge Warbler	39	CBC/BBS UK	-28	-58	18		
Tawny Owl	25	CBC/BBS UK	-25	-43	-2		

See **PSoB** pages for information on red and amber criteria

Two wader species, **Common Sandpiper** and **Curlew**, also appear in the table. Declines for Curlew have wide confidence intervals and are not matched by WBS data, which show increase. Common Sandpipers were recorded by WBS as increasing up to the mid 1980s, and a smaller decline (22%) is therefore estimated for the 31-year period.

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 alongside 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 20 or so 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 2006

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	31	WBS waterways	-97	-99	-93	>50	Small sample
Reed Bunting	31	WBS waterways	-61	-75	-33	>50	
Little Grebe	31	WBS waterways	-59	-87	-9	>50	Small sample
Pied Wagtail	31	WBS waterways	-53	-66	-43	>50	
Redshank	31	WBS waterways	-49	-85	-16	>25	Small sample

The trends for **Yellow Wagtail** and **Reed Bunting** are consistent in direction with those reported from CBC/BBS, but in each case are more severe. The trend for **Little Grebe** is discussed in **section 4.2.3**. The **Pied Wagtail** decline of 53% is intriguing because it contrasts markedly with recent increases as measured by CBC/BBS. Over the 25-year period 1981–2006, **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 its decline along waterways is currently unknown. For **Redshank**, WBS has provided valuable data to support the amber listing of this species.

A full set of alerts raised by WBS, and long-term increases detected by that scheme, are tabulated in **section 7.2**.

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 certain 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 22 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 2006

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Redpoll	22	CES adults	-96	-99	-91	>50	Small sample
Linnet	22	CES adults	-92	-97	-84	>50	
Yellowhammer	22	CES adults	-74	-91	-28	>50	Small sample
Willow Warbler	22	CES adults	-61	-70	-52	>50	
Lesser Whitethroat	22	CES adults	-59	-78	-40	>50	
Willow Tit	22	CES adults	-58	-89	-25	>50	
Reed Bunting	22	CES adults	-51	-64	-36	>50	
Whitethroat	22	CES adults	-36	-57	-22	>25	
Sedge Warbler	22	CES adults	-33	-49	-11	>25	
Reed Warbler	22	CES adults	-33	-46	-10	>25	

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 decline of **Whitethroat** has also been discussed above (**section 4.2.3**). Both **Whitethroat** and **Lesser Whitethroat** are doing less well on CES sites than in the UK as a whole. Over the ten-year period 1996–2006, **Whitethroats** increased by 14% in the UK but decreased by 37% at CES sites. Similarly **Lesser Whitethroats** increased by 8% in the UK as a whole but decreased by 49% 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.

Reed Warbler and **Sedge Warbler** present further similar cases. CES has both as declining enough to raise an alert, whereas over similar time periods CBC/BBS records little change for **Sedge Warbler** and substantial increase for **Reed Warbler**. Increase for the latter species, also noted by WBS, accords better with the considerable range extensions recorded by **atlas projects**.

A full set of alerts raised by CES, and long-term increases detected by that scheme, are tabulated in **section 7.3**.

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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 trends to be more positive in recent years compared with the earlier part of the time series. To examine this, we list in Table 4.3.1 the best change estimates over the most recent ten-year period for which we have data (1996–2006) for all of the declining species listed in the previous section of this report (**section 4.2**). The table also includes four species, **Wood Warbler** (amber), **Red Grouse** (amber), **Grasshopper Warbler** (red) and **Snipe** (amber) for which we can report ten-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	-64	-72	-51	>50	
Turtle Dove	10	CBC/BBS UK	-58	-62	-51	>50	
Wood Warbler	10	BBS UK	-53	-67	-36	>50	
Lesser Spotted Woodpecker	10	CBC to 1999	-51	-75	-22	>50	Small sample
Cuckoo	10	CBC/BBS England	-46	-49	-43	>25	
Yellow Wagtail	10	CBC/BBS UK	-42	-53	-31	>25	
Woodcock	10	CBC to 1999	-40	-62	-11	>25	Small sample
Grey Partridge	10	CBC/BBS UK	-39	-48	-31	>25	
Starling	10	CBC/BBS England	-36	-39	-32	>25	
Lesser Redpoll	10	CBC/BBS England	-33	-51	13		
Redshank	10	WBS waterways	-33	-51	-12	>25	Small sample
Spotted Flycatcher	10	CBC/BBS UK	-32	-38	-16	>25	
Little Grebe	10	WBS waterways	-30	-72	22		Small sample
Tree Pipit	10	CBC/BBS England	-30	-47	-7	>25	
Willow Warbler	10	CBC/BBS England	-30	-36	-24	>25	
Corn Bunting	10	CBC/BBS UK	-27	-38	-15	>25	
Linnet	10	CBC/BBS England	-27	-32	-21	>25	
Reed Warbler	10	CES adults	-26	-36	-13	>25	
Little Owl	10	CBC/BBS UK	-20	-33	-7		
Red Grouse	10	BBS UK	-20	-31	-7		
Curlew	10	CBC/BBS England	-19	-26	-12		
Marsh Tit	10	CBC/BBS UK	-16	-28	-2		
Tawny Owl	10	CBC/BBS UK	-15	-29	5		
House Sparrow	10	CBC/BBS England	-13	-18	-7		
Skylark	10	CBC/BBS England	-13	-17	-9		
Lapwing	10	CBC/BBS UK	-12	-23	-3		
Bullfinch	10	CBC/BBS UK	-11	-17	-3		
Common Sandpiper	10	WBS waterways	-11	-28	5		
Yellowhammer	10	CBC/BBS UK	-11	-15	-5		
Grasshopper Warbler	10	BBS UK	-6	-32	13		
Mistle Thrush	10	CBC/BBS UK	-6	-11	2		
Meadow Pipit	10	CBC/BBS England	-5	-15	6		
Sedge Warbler	10	CBC/BBS UK	-3	-18	11		
House Martin	10	CBC/BBS England	5	-4	14		
Kestrel	10	CBC/BBS England	5	-2	14		
Whitethroat	10	CBC/BBS UK	14	7	20		
Goldcrest	10	CBC/BBS England	22	11	35		
Dunnock	10	CBC/BBS UK	23	18	28		
Song Thrush	10	CBC/BBS UK	23	17	29		
Tree Sparrow	10	CBC/BBS England	24	7	54		
Snipe	10	BBS UK	29	14	47		
Reed Bunting	10	CBC/BBS UK	30	19	44		
Grey Wagtail	10	WBS waterways	32	14	48		

See **PSoB** pages for information on red and amber criteria

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. The eight species include **Curlew** which is already amber listed for reasons concerned with its European status.

Eight species at the foot of the table, **Grey Wagtail**, **Reed Bunting**, **Snipe**, **Tree Sparrow**, **Song Thrush**, **Dunnock**, **Goldcrest** and **Whitethroat**, show clear positive trends over the last ten years. The increases in the red-listed **Reed Bunting** and **Song Thrush** are particularly encouraging, as are the positive trends for the amber-listed **Grey Wagtail** and **Dunnock**. 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 ten years, much of the former range across lowland Britain lost since the 1960s remains unoccupied, and moreover 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 constant annual rates of change). A further nine species, **Yellowhammer**, **Sedge Warbler**, **Common Sandpiper**, **Meadow Pipit**, **Bullfinch**, **Mistle Thrush**, **Kestrel**, **Grasshopper Warbler** and **House Martin** have population changes of between +11% and -11% over the last ten years. Where these changes are not statistically significant (eight species), these populations are best regarded as stable. Thus our data suggest that the declines of these species appear to be levelling off, although on this time scale there is as yet no indication of recovery. The position of **Yellowhammer**, with a significant decrease of 11%, is less certain.

Ten-year changes for the remaining 26 species in Table 4.3.1 indicate ongoing declines, with rates equivalent to at least 25% over 25 years. Four species, **Willow Tit**, **Turtle Dove**, **Wood Warbler** and **Lesser Spotted Woodpecker**, have declined by more than 50% over the last ten years alone. For **Lesser Spotted Woodpecker**, the ten years in question are 1989–99, since when the species has become too scarce for BBS to monitor. A further 12 species have declined by more than 25% over the last ten years alone. The ongoing declines of so many of the species listed in Table 4.3.1 must be a cause of serious conservation concern.

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Next page – 4.4 Increasing species

4.4��� Increasing species

Population changes of species for which our best trend estimate from CBC/BBS (usually over 39 years) or from WBS (usually over 31 years) shows an increase of more than 50% are shown in Table 4.4.1 below. There are 25 species included, of which 17 have at least doubled their population size over the decades under review. Four groups of species stand out: corvids – **Carrion Crow**, **Magpie** and **Jackdaw**; doves – **Collared Dove**, **Stock Dove** and **Woodpigeon**; insectivores; and some waterbirds. Corvids appear to have benefited from the decrease of predator control by gamekeepers in recent years, and the increased use of brassica crops (particularly oilseed rape) has probably been beneficial to the larger doves.

The majority of increasing insectivores are woodland species that are also common in gardens: **Great Spotted Woodpecker**, **Green Woodpecker**, **Nuthatch**, **Blackcap**, **Great Tit**, **Wren**, **Long-tailed Tit** and **Coal Tit**. The reasons for these increases are presently unclear. **Pied Wagtail** has increased in numbers by 80% on CBC/BBS plots over 39 years, but declined by 53% on WBS plots over the past 31 years. The former survey is likely to be more representative of the UK population as a whole. The increase in **Pheasants** is driven largely by the scale of releases for shooting.

Table 4.4.1 Long-term population increases of greater than 50% from CBC/WBS (1967-2006) or WBS (1975-2006) using the best survey for each species

Species	Period (yrs)	Source	Change (%)	Lower limit	Upper limit	Alert	Comment
Buzzard	39	CBC/BBS UK	419	251	1372		
Collared Dove	34	CBC/BBS UK	415	236	646		
Great Spotted Woodpecker	39	CBC/BBS UK	349	233	603		
Shelduck	31	CBC to 1999	300	94	787		Small sample
Green Woodpecker	39	CBC/BBS England	205	133	327		
Mute Swan	39	CBC/BBS UK	199	33	473		
Nuthatch	39	CBC/BBS UK	177	98	282		
Mallard	39	CBC/BBS UK	166	111	226		
Sparrowhawk	31	CBC/BBS England	166	78	360		
Stock Dove	39	CBC/BBS England	163	79	293		
Blackcap	39	CBC/BBS UK	149	104	213		
Woodpigeon	39	CBC/BBS UK	146	22	445		
Goosander	25	WBS waterways	144	18	405		
Carrion Crow	39	CBC/BBS England	119	77	179		Includes Hooded Crow
Oystercatcher	31	WBS waterways	113	67	213		
Great Tit	39	CBC/BBS UK	110	90	142		
Magpie	39	CBC/BBS UK	101	65	152		
Pheasant	39	CBC/BBS England	99	53	187		
Wren	39	CBC/BBS UK	98	74	120		
Jackdaw	39	CBC/BBS UK	92	30	206		
Canada Goose	25	WBS waterways	90	-9	698		
Pied Wagtail	39	CBC/BBS UK	80	36	147		
Long-tailed Tit	39	CBC/BBS England	77	28	168		
Coot	31	WBS waterways	66	-16	223		
Coal Tit	39	CBC/BBS England	50	-17	188		

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.�For **Mallard**, the CBC/BBS increase was matched by a WBS increase of 165% over 31 years. The growth of this population is still continuing, with CBC/BBS recording a 16% increase over the most recent ten-year period. 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 most recent survey of **Breeding Waders of 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 16% increase over the last 25 years. Nevertheless this population has undergone a sustained increase of 58% over the last 77 years (1929–2006).

Two widespread raptors have shown remarkable recoveries from low population levels caused by pesticides in the 1950s and 1960s, assisted by a relaxation of predator control. **Buzzards** increased by a remarkable 419% between 1967 and 2006, with a rapid increase of 39% over the last ten years alone. **Sparrowhawks**, too scarce for CBC to monitor until the mid 1970s, showed a 166% increase over the 31-year period from 1975 to 2006. However, their recovery appears to have been completed earlier than for **Buzzard**, with the population having been relatively stable since the early 1990s.

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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** (NRS) and the **Constant Effort Sites** (CES) 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 poorer productivity. Alternatively, increases in abundance may be accompanied by range expansion into new, suboptimal habitats where breeding performance is poorer, thus reducing the average productivity of the population; conversely, where declines result from the loss of individuals from these suboptimal habitats, there may be a subsequent increase in average productivity.

4.5.1 Changes in clutch and brood size from Nest Record Scheme data

Those species exhibiting statistically significant trends in clutch and brood size over the past 38 years (1968–2006) are shown in Tables 4.5.1.1 and 4.5.1.2. More species showed decreases than increases in clutch size (19 decreases, 15 increases) while the reverse was true for brood size (18 decreases, 22 increases).

Table 4.5.1.1

Significant trends in Clutch size measured between 1968-2006

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Long-tailed Tit	38	34	Linear decline	7.63 eggs	6.46 eggs	-1.17 eggs	
Magpie	38	45	Curvilinear	5.62 eggs	4.56 eggs	-1.06 eggs	
Great Tit	38	152	Linear decline	8.32 eggs	7.38 eggs	-0.94 eggs	
Hen Harrier	38	13	Curvilinear	5.48 eggs	4.73 eggs	-0.75 eggs	Small sample
Moorhen	38	91	Linear decline	6.52 eggs	5.96 eggs	-0.56 eggs	
Blue Tit	38	156	Linear decline	9.28 eggs	8.74 eggs	-0.54 eggs	
Peregrine	38	16	Linear decline	3.58 eggs	3.09 eggs	-0.49 eggs	Small sample
Twite	38	12	Curvilinear	5.43 eggs	5.1 eggs	-0.33 eggs	Small sample
Mute Swan	38	22	Curvilinear	5.89 eggs	5.64 eggs	-0.25 eggs	Small sample
Pied Wagtail	38	59	Linear decline	5.12 eggs	4.92 eggs	-0.2 eggs	
Nightjar	38	17	Linear decline	2.02 eggs	1.82 eggs	-0.2 eggs	Small sample
Greenfinch	38	93	Curvilinear	4.73 eggs	4.54 eggs	-0.19 eggs	
Chaffinch	38	86	Curvilinear	4.22 eggs	4.03 eggs	-0.19 eggs	
Linnet	38	108	Curvilinear	4.7 eggs	4.57 eggs	-0.13 eggs	
Common Sandpiper	38	11	Curvilinear	3.99 eggs	3.88 eggs	-0.11 eggs	Small sample
Sedge Warbler	38	37	Curvilinear	4.95 eggs	4.85 eggs	-0.1 eggs	
Spotted Flycatcher	38	81	Curvilinear	4.22 eggs	4.15 eggs	-0.07 eggs	
Rook	38	13	Curvilinear	4.15 eggs	4.12 eggs	-0.03 eggs	Small sample
Grey Wagtail	38	38	Curvilinear	4.68 eggs	4.65 eggs	-0.03 eggs	
Carrion Crow	38	33	Curvilinear	4.08 eggs	4.09 eggs	0.01 eggs	Includes Hooded Crow
Dipper	38	72	Curvilinear	4.48 eggs	4.5 eggs	0.02 eggs	
Yellowhammer	38	44	Curvilinear	3.35 eggs	3.39 eggs	0.04 eggs	
Swallow	38	220	Curvilinear	4.46 eggs	4.51 eggs	0.05 eggs	
Lapwing	38	122	Linear increase	3.69 eggs	3.82 eggs	0.13 eggs	
Mistle Thrush	38	35	Linear increase	3.88 eggs	4.09 eggs	0.21 eggs	
Jackdaw	38	43	Linear increase	4.35 eggs	4.57 eggs	0.22 eggs	
Little Owl	38	18	Linear increase	3.39 eggs	3.62 eggs	0.23 eggs	Small sample
Dunnock	38	99	Linear increase	3.94 eggs	4.2 eggs	0.26 eggs	
Skylark	38	38	Linear increase	3.37 eggs	3.68 eggs	0.31 eggs	
Redstart	38	48	Curvilinear	5.89 eggs	6.23 eggs	0.34 eggs	
Sand Martin	38	32	Curvilinear	4.68 eggs	5.06 eggs	0.38 eggs	
Tree Sparrow	38	155	Curvilinear	4.71 eggs	5.11 eggs	0.4 eggs	
Starling	38	76	Linear increase	4.42 eggs	4.97 eggs	0.55 eggs	
Barn Owl	38	22	Linear increase	4.53 eggs	5.15 eggs	0.62 eggs	Small sample

See **Help** for help with interpretation

Nine species (**Nightjar**, **Pied Wagtail**, **Spotted Flycatcher**, **Long-tailed Tit**, **Blue Tit**, **Great Tit**, **Magpie**, **Chaffinch** and **Greenfinch**) exhibited decreases in both clutch size and brood size over the period, whilst another eight species (**Barn Owl**, **Skylark**, **Swallow**, **Dipper**, **Dunnock**, **Redstart**, **Tree Sparrow** and **Yellowhammer**) exhibited increases in both clutch size and brood size. **Moorhen**, **Grey Wagtail**, **Rook** and **Linnet** all showed a decline in average clutch size and an increase in average brood size, although the magnitude of the change in **Rook** clutch sizes and in **Grey Wagtail** and **Linnet** brood sizes was small (<0.04 eggs/chicks). **Jackdaw** and **Carrion Crow** showed the opposite pattern, with clutch sizes increasing while brood sizes decreased, although again the magnitude of the change in **Carrion Crow** clutch size was very small (0.01 eggs); note that, for historical reasons, **Carrion Crow** figures include a small proportion of data from **Hooded Crow**.

Table 4.5.1.2

Significant trends in Brood size measured between 1968-2006

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Great Tit	38	287	Linear decline	7.57 chicks	6.24 chicks	-1.33 chicks	
Blue Tit	38	270	Linear decline	8.32 chicks	7.35 chicks	-0.97 chicks	
Long-tailed Tit	38	28	Curvilinear	6.68 chicks	6.17 chicks	-0.51 chicks	Small sample
Yellow Wagtail	38	13	Linear decline	4.83 chicks	4.34 chicks	-0.49 chicks	Small sample
House Sparrow	38	111	Curvilinear	3.39 chicks	2.92 chicks	-0.47 chicks	
Greenfinch	38	115	Curvilinear	4.03 chicks	3.61 chicks	-0.42 chicks	
Raven	38	67	Linear decline	3.23 chicks	2.83 chicks	-0.4 chicks	
Carrion Crow	38	79	Curvilinear	2.87 chicks	2.48 chicks	-0.39 chicks	Includes Hooded Crow
Chiffchaff	38	33	Linear decline	5.12 chicks	4.74 chicks	-0.38 chicks	
Bullfinch	38	36	Curvilinear	4.11 chicks	3.79 chicks	-0.32 chicks	
Magpie	38	79	Curvilinear	3.09 chicks	2.84 chicks	-0.25 chicks	
Pied Wagtail	38	114	Linear decline	4.53 chicks	4.34 chicks	-0.19 chicks	
Corn Bunting	38	12	Curvilinear	3.07 chicks	2.89 chicks	-0.18 chicks	Small sample
Nightjar	38	24	Curvilinear	1.82 chicks	1.7 chicks	-0.12 chicks	Small sample
Jackdaw	38	91	Curvilinear	2.69 chicks	2.6 chicks	-0.09 chicks	
Chaffinch	38	136	Curvilinear	3.57 chicks	3.49 chicks	-0.08 chicks	
Robin	38	169	Curvilinear	4.41 chicks	4.36 chicks	-0.05 chicks	
Spotted Flycatcher	38	130	Curvilinear	3.61 chicks	3.6 chicks	-0.01 chicks	
Grey Wagtail	38	80	Curvilinear	3.95 chicks	3.95 chicks	0 chicks	
Linnet	38	122	Curvilinear	4.07 chicks	4.08 chicks	0.01 chicks	
Stock Dove	38	111	Curvilinear	1.82 chicks	1.84 chicks	0.02 chicks	
Blackbird	38	151	Curvilinear	3.35 chicks	3.38 chicks	0.03 chicks	
Swallow	38	378	Curvilinear	4.07 chicks	4.12 chicks	0.05 chicks	
Yellowhammer	38	67	Curvilinear	2.96 chicks	3.03 chicks	0.07 chicks	
Buzzard	38	94	Curvilinear	1.87 chicks	1.95 chicks	0.08 chicks	
Kestrel	38	121	Curvilinear	3.74 chicks	3.83 chicks	0.09 chicks	
Collared Dove	38	70	Linear increase	1.76 chicks	1.85 chicks	0.09 chicks	
Barn Owl	38	149	Curvilinear	3.01 chicks	3.12 chicks	0.11 chicks	
Rook	38	85	Curvilinear	2.22 chicks	2.34 chicks	0.12 chicks	
Reed Warbler	38	127	Linear increase	3.45 chicks	3.58 chicks	0.13 chicks	
Dunnock	38	106	Linear increase	3.48 chicks	3.63 chicks	0.15 chicks	
Skylark	38	67	Curvilinear	3.1 chicks	3.29 chicks	0.19 chicks	
Merlin	38	55	Linear increase	3.52 chicks	3.79 chicks	0.27 chicks	
Dipper	38	135	Curvilinear	3.4 chicks	3.69 chicks	0.29 chicks	
Sparrowhawk	38	71	Curvilinear	3.11 chicks	3.45 chicks	0.34 chicks	
Tree Pipit	38	28	Linear increase	4.38 chicks	4.74 chicks	0.36 chicks	Small sample
Redstart	38	85	Curvilinear	5.1 chicks	5.48 chicks	0.38 chicks	
Tree Sparrow	38	197	Curvilinear	3.78 chicks	4.21 chicks	0.43 chicks	
Nuthatch	38	62	Curvilinear	4.05 chicks	4.87 chicks	0.82 chicks	
Moorhen	38	77	Curvilinear	3.12 chicks	4.3 chicks	1.18 chicks	

See **Help** for help with interpretation

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 productivity were identified for **Spotted Flycatcher** (clutch and brood size), **House Sparrow** and **Bullfinch** (brood size). The mean number of eggs and chicks produced by **Spotted Flycatcher** began to fall in the mid 1980s, a worrying trend for a species that, by this point, had been in rapid decline for at least two decades. Population modelling work undertaken by **Freeman & Crick (2003)** suggests that reduced survival rates of first-year birds drove the initial population decline, but an additive effect of reduced reproductive output may now be a possibility. Declines in **Bullfinch** populations are also thought to have begun due to falling survival rates (**Proffitt *et al.* 2004**, **Marquiss 2007**), although the mechanism is not clear-cut (**Siriwardena *et al.* 2001**) and a reduction in brood size over the last 25 years may again have had detrimental effects at a population level.

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. **Peach *et al.* (2008)** 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 might have been compensated for by reduced nest failure rates at the egg and chick stages.

It is worth noting that **Pied Wagtail** and **Grey Wagtail** are also exhibiting significant declines in both clutch and brood sizes – data from **WBS** suggest that populations using rivers and canals declined significantly between the 1970s and the 1990s, although **BBS** results suggest that **Pied Wagtail** populations in the wider countryside are stable.

Several increasing species exhibit concurrently increasing brood sizes, particularly **Sparrowhawk**, **Collared Dove**, **Redstart** and **Nuthatch**. **Sparrowhawk** has returned to eastern areas of the UK, where populations of songbird prey are greater, which may have impacted positively on breeding success, although both the population and the brood size trends began to level out in the early to mid 1990s. **Collared Dove** has spread rapidly since colonising the UK in the 1950s, and brood sizes have exhibited a steady increase over the past 35 years. **Redstart** is one of the only long-distance migrant passerines currently exhibiting significant population growth, and increasing clutch and brood sizes over the last three decades may have contributed to this. The UK **Nuthatch** population, which has been expanding northwards and has increased considerably in size since the 1970s, currently produces 0.75 more young per nesting attempt than it did on average during the late 1960s. It would seem likely that this has helped to drive the population increase of this species; brood sizes have started to fall in the last decade, however, possibly indicating the onset of density dependent-reductions in productivity (see below).

Inverse associations between clutch or brood size and population trend are found in some 23 species (i.e. they show lower productivity with higher population size). Such relationships may arise through density-dependent processes, whereby increased competition leads to reduced clutch or brood sizes at higher population densities. Eleven increasing species and 12 decreasing species show such associations. Notable examples amongst increasing species include **Magpie**, **Blue Tit**, **Great Tit**, **Long-tailed Tit**, **Chaffinch**, **Greenfinch** (clutch and brood size) **Robin** and **Chiffchaff** (brood size). Amongst declining species examples include **Skylark**, **Dunnock**, **Tree Sparrow** (clutch and brood size), **Lapwing**, **Starling** and **Mistle Thrush** (clutch size).

4.5.2 Changes in nest failure rates from Nest Record Scheme data

Statistically significant trends in the daily nest failure rates at the egg and chick stages over the past 38 years (1968–2006) are shown in Tables 4.5.2.1 and 4.5.2.2. The number of species exhibiting declines in failure rates at the egg stage (39) was treble the number displaying increases (13), and while 26 species exhibited declines in chick-stage failure rates, only 13 displayed increases. Thus, the general picture is one of improving nesting success.

Table 4.5.2.1

Significant trends in Daily failure rate (eggs) measured between 1968-2006

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Woodlark	38	20	Curvilinear	0.0683 nests/day	0.0275 nests/day	-0.0408 nests/day	Small sample
Long-tailed Tit	38	52	Linear decline	0.0358 nests/day	0.0084 nests/day	-0.0274 nests/day	
Magpie	38	52	Linear decline	0.0273 nests/day	0.0028 nests/day	-0.0245 nests/day	
Redshank	38	33	Linear decline	0.0398 nests/day	0.0169 nests/day	-0.0229 nests/day	
Dipper	38	100	Curvilinear	0.0257 nests/day	0.0033 nests/day	-0.0224 nests/day	
Snipe	38	16	Linear decline	0.033 nests/day	0.0136 nests/day	-0.0194 nests/day	Small sample
Tree Pipit	38	12	Curvilinear	0.0487 nests/day	0.0312 nests/day	-0.0175 nests/day	Small sample
Robin	38	188	Curvilinear	0.0247 nests/day	0.0103 nests/day	-0.0144 nests/day	
Carrion Crow	38	50	Linear decline	0.0159 nests/day	0.0022 nests/day	-0.0137 nests/day	Includes Hooded Crow
Treecreeper	38	22	Linear decline	0.0191 nests/day	0.0062 nests/day	-0.0129 nests/day	Small sample
Sand Martin	38	24	Linear decline	0.0127 nests/day	0.0001 nests/day	-0.0126 nests/day	Small sample
Yellowhammer	38	66	Curvilinear	0.05 nests/day	0.038 nests/day	-0.012 nests/day	
Wood Warbler	38	21	Linear decline	0.0191 nests/day	0.0079 nests/day	-0.0112 nests/day	Small sample
Redstart	38	73	Linear decline	0.0116 nests/day	0.0031 nests/day	-0.0085 nests/day	
Stock Dove	38	78	Curvilinear	0.012 nests/day	0.0036 nests/day	-0.0084 nests/day	
Pied Wagtail	38	83	Curvilinear	0.0152 nests/day	0.0068 nests/day	-0.0084 nests/day	
Starling	38	118	Linear decline	0.0112 nests/day	0.003 nests/day	-0.0082 nests/day	
Tawny Owl	38	55	Linear decline	0.0095 nests/day	0.0018 nests/day	-0.0077 nests/day	Nocturnal species
House Sparrow	38	92	Linear decline	0.0115 nests/day	0.0041 nests/day	-0.0074 nests/day	
Wheatear	38	18	Curvilinear	0.0082 nests/day	0.0009 nests/day	-0.0073 nests/day	Small sample
Sedge Warbler	38	44	Linear decline	0.013 nests/day	0.0061 nests/day	-0.0069 nests/day	
Greenfinch	38	132	Linear decline	0.0248 nests/day	0.018 nests/day	-0.0068 nests/day	
Barn Owl	38	18	Linear decline	0.0075 nests/day	0.001 nests/day	-0.0065 nests/day	Small sample
Marsh Tit	38	20	Linear decline	0.0076 nests/day	0.0014 nests/day	-0.0062 nests/day	Small sample
Buzzard	38	26	Linear decline	0.007 nests/day	0.0012 nests/day	-0.0058 nests/day	Small sample
Jackdaw	38	54	Linear decline	0.0076 nests/day	0.002 nests/day	-0.0056 nests/day	
Kestrel	38	40	Linear decline	0.0055 nests/day	0.0009 nests/day	-0.0046 nests/day	
Merlin	38	26	Linear decline	0.0067 nests/day	0.0024 nests/day	-0.0043 nests/day	Small sample
Tree Sparrow	38	207	Curvilinear	0.0074 nests/day	0.0032 nests/day	-0.0042 nests/day	
Wren	38	141	Linear decline	0.0183 nests/day	0.0143 nests/day	-0.004 nests/day	
Sparrowhawk	38	34	Linear decline	0.0047 nests/day	0.0009 nests/day	-0.0038 nests/day	
Stonechat	38	35	Curvilinear	0.0052 nests/day	0.0027 nests/day	-0.0025 nests/day	
Great Tit	38	265	Curvilinear	0.0068 nests/day	0.0043 nests/day	-0.0025 nests/day	
Blue Tit	38	259	Linear decline	0.0046 nests/day	0.0025 nests/day	-0.0021 nests/day	
Raven	38	22	Curvilinear	0.0021 nests/day	0.0009 nests/day	-0.0012 nests/day	Small sample
Dunnock	38	143	Curvilinear	0.0251 nests/day	0.0248 nests/day	-0.0003 nests/day	
Spotted Flycatcher	38	122	Curvilinear	0.0177 nests/day	0.0188 nests/day	0.0011 nests/day	
Peregrine	38	21	Curvilinear	0.0014 nests/day	0.0028 nests/day	0.0014 nests/day	Small sample
Hen Harrier	38	11	Curvilinear	0.0003 nests/day	0.0022 nests/day	0.0019 nests/day	Small sample
Ringed Plover	38	125	Linear increase	0.0236 nests/day	0.0285 nests/day	0.0049 nests/day	
Linnet	38	154	Curvilinear	0.0165 nests/day	0.0229 nests/day	0.0064 nests/day	
Chaffinch	38	165	Curvilinear	0.0297 nests/day	0.0368 nests/day	0.0071 nests/day	
Willow Warbler	38	69	Linear increase	0.0093 nests/day	0.0166 nests/day	0.0073 nests/day	
Lapwing	38	133	Curvilinear	0.0167 nests/day	0.0245 nests/day	0.0078 nests/day	
Moorhen	38	110	Curvilinear	0.0135 nests/day	0.0215 nests/day	0.008 nests/day	
Mute Swan	38	30	Curvilinear	0.0061 nests/day	0.0141 nests/day	0.008 nests/day	Small sample
Bullfinch	38	50	Curvilinear	0.0333 nests/day	0.0413 nests/day	0.008 nests/day	
Blackbird	38	179	Curvilinear	0.0257 nests/day	0.0365 nests/day	0.0108 nests/day	
Oystercatcher	38	112	Curvilinear	0.0143 nests/day	0.0272 nests/day	0.0129 nests/day	
Whinchat	38	15	Linear increase	0.0065 nests/day	0.0217 nests/day	0.0152 nests/day	Small sample
Reed Bunting	38	52	Linear increase	0.0073 nests/day	0.0274 nests/day	0.0201 nests/day	
Nightjar	38	22	Linear increase	0.0138 nests/day	0.0355 nests/day	0.0217 nests/day	Small sample

See **Help** for help with interpretation

Increases in both egg-stage and chick-stage failure rates were observed for four species: **Nightjar**, **Spotted Flycatcher**, **Linnet** and **Bullfinch**. Use of nest cameras to identify potential nest predators of **Nightjar** nests is currently under way in Thetford Forest as part of a collaborative project between BTO and the University of East Anglia, which is also monitoring **Woodlark**. Researchers have also used nest cameras to observe predation events at **Spotted Flycatcher** nests, identifying **Jay** as the main predator in their study population in SW England (**Stevens *et al.* 2008**). Predation is not necessarily the only cause of nest failure, but it is a major cause for open-nesting bird species.

Eighteen species exhibited declines in both egg-stage and chick-stage failure rates: **Kestrel**, **Merlin**, **Barn Owl**, **Tawny Owl**, **Stock Dove**, **Sand Martin**, **Pied Wagtail**, **Robin**, **Redstart**, **Stonechat**, **Magpie**, **Jackdaw**, **Carrion Crow**, **Raven**, **Starling**, **House Sparrow**, **Tree Sparrow** and **Yellowhammer**. For a further six species (**Tree Pipit**, **Dipper**, **Whinchat**, **Blackbird**, **Great Tit**, **Blue Tit** and **Long-tailed Tit**), better success at one stage was partly 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 1968-2006

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Grey Heron	38	26	Linear decline	0.054 nests/day	0.0004 nests/day	-0.0536 nests/day	Non-breeders included
Corn Bunting	38	11	Curvilinear	0.045 nests/day	0.0224 nests/day	-0.0226 nests/day	Small sample
Meadow Pipit	38	60	Linear decline	0.0271 nests/day	0.0108 nests/day	-0.0163 nests/day	
Magpie	38	50	Linear decline	0.0173 nests/day	0.0013 nests/day	-0.016 nests/day	
Sand Martin	38	36	Linear decline	0.0157 nests/day	0.0008 nests/day	-0.0149 nests/day	
Reed Warbler	38	110	Curvilinear	0.0174 nests/day	0.005 nests/day	-0.0124 nests/day	
Blackbird	38	154	Linear decline	0.0303 nests/day	0.0192 nests/day	-0.0111 nests/day	
Grey Wagtail	38	58	Linear decline	0.0206 nests/day	0.0098 nests/day	-0.0108 nests/day	
Jackdaw	38	52	Linear decline	0.0126 nests/day	0.0024 nests/day	-0.0102 nests/day	
House Sparrow	38	88	Linear decline	0.013 nests/day	0.0036 nests/day	-0.0094 nests/day	
Redstart	38	52	Linear decline	0.0123 nests/day	0.0039 nests/day	-0.0084 nests/day	
Collared Dove	38	55	Linear decline	0.0182 nests/day	0.0106 nests/day	-0.0076 nests/day	
Stonechat	38	54	Curvilinear	0.0116 nests/day	0.004 nests/day	-0.0076 nests/day	
Robin	38	162	Curvilinear	0.0249 nests/day	0.0177 nests/day	-0.0072 nests/day	
Merlin	38	29	Linear decline	0.0094 nests/day	0.0024 nests/day	-0.007 nests/day	Small sample
Tree Sparrow	38	151	Curvilinear	0.0125 nests/day	0.0064 nests/day	-0.0061 nests/day	
Carrion Crow	38	42	Linear decline	0.0074 nests/day	0.0014 nests/day	-0.006 nests/day	Includes Hooded Crow
Stock Dove	38	57	Linear decline	0.012 nests/day	0.0071 nests/day	-0.0049 nests/day	
Starling	38	136	Linear decline	0.0063 nests/day	0.0019 nests/day	-0.0044 nests/day	
Pied Wagtail	38	91	Linear decline	0.0127 nests/day	0.0084 nests/day	-0.0043 nests/day	
Yellowhammer	38	52	Curvilinear	0.0462 nests/day	0.0423 nests/day	-0.0039 nests/day	
Great Spotted Woodpecker	38	31	Linear decline	0.0037 nests/day	0.0002 nests/day	-0.0035 nests/day	
Tawny Owl	38	82	Curvilinear	0.0031 nests/day	0.0011 nests/day	-0.002 nests/day	Nocturnal species
Barn Owl	38	69	Linear decline	0.0021 nests/day	0.0003 nests/day	-0.0018 nests/day	
Kestrel	38	65	Linear decline	0.0022 nests/day	0.0009 nests/day	-0.0013 nests/day	
Raven	38	29	Curvilinear	0.0003 nests/day	0.0002 nests/day	-0.0001 nests/day	Small sample
Whinchat	38	26	Curvilinear	0.0261 nests/day	0.0261 nests/day	0 nests/day	Small sample
Twite	38	13	Curvilinear	0.0061 nests/day	0.0062 nests/day	0.0001 nests/day	Small sample
Dipper	38	78	Curvilinear	0.0059 nests/day	0.0062 nests/day	0.0003 nests/day	
Blue Tit	38	194	Linear increase	0.0065 nests/day	0.0087 nests/day	0.0022 nests/day	
Swallow	38	251	Linear increase	0.0028 nests/day	0.0053 nests/day	0.0025 nests/day	
Great Tit	38	197	Linear increase	0.0057 nests/day	0.0083 nests/day	0.0026 nests/day	
Spotted Flycatcher	38	109	Linear increase	0.0098 nests/day	0.0143 nests/day	0.0045 nests/day	
Nightjar	38	21	Curvilinear	0.0005 nests/day	0.0067 nests/day	0.0062 nests/day	Small sample
Bullfinch	38	34	Curvilinear	0.0336 nests/day	0.0405 nests/day	0.0069 nests/day	
Linnet	38	110	Linear increase	0.0152 nests/day	0.0224 nests/day	0.0072 nests/day	
Tree Pipit	38	19	Curvilinear	0.0337 nests/day	0.0411 nests/day	0.0074 nests/day	Small sample
Long-tailed Tit	38	37	Linear increase	0.008 nests/day	0.0171 nests/day	0.0091 nests/day	

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Garden Warbler	38	19	Linear increase	0.0105 nests/day	0.0257 nests/day	0.0152 nests/day	Small sample

See **Help** for help with interpretation

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 long-term decreases in population size for ten species, and may have contributed to the observed population declines of **Nightjar**, **Spotted Flycatcher**, **Linnet**, **Bullfinch** (egg- and chick-stage failure rates increasing), **Lapwing**, **Willow Warbler** and **Reed Bunting** (egg-stage failure rates increasing). Although **Nightjar** has shown a large historical decline and is red-listed because of this, it should be noted that recent surveys show a population increase (**Conway *et al*. 2007**). Reductions in breeding performance at the egg stage have been implicated in a detailed analysis of the population declines of the **Linnet** (**Siriwardena *et al.* 2000b**), but the extent to which decreased productivity has influenced Bullfinch population trends is still not clearly understood (**Siriwardena *et al.* 2001**). It has also been suggested that poor breeding performance may be preventing the recovery of **Reed Bunting** populations (**Peach *et al.* 1999**). The increasing trend in egg- and chick-stage failure rates of **Spotted Flycatcher** has only recently become significant and previous work suggested that other demographic factors were more important in the decline of this species (**Freeman & Crick 2003**). Researchers have failed to find any trend in survival rates that might explain declines in **Lapwing** numbers (**Peach *et al.* 1994**, **King *et al*. 2008**), and a fall in productivity is thought to have been a major factor (**Galbraith 1988**), although a recent study failed to find any correlation between nest failure rates and changes in abundance at a regional scale (**Sharpe *et al.* 2008**). The population decline of Willow Warbler is much more pronounced in the south of the UK than in Scotland, and collaborative project between BTO and the University of East Anglia is currently investigating whether demographic parameters, including productivity, exhibit the similar patterns of spatial variation. Failure rates are also thought to be increasing at the egg and chick stages for the declining **Hen Harrier** and **Twite**, although sample sizes for both are extremely limited, and at the egg stage for **Moorhen**, a species for which the current population trajectory is unclear but which did decline in abundance during the 1980s.

Sixteen species showed clear associations between long-term increases in abundance and long-term reductions in nest failure rates. **Sparrowhawk**, **Buzzard**, **Wren** and **Greenfinch** experienced reduced nest failure rates at the egg stage, while **Grey Heron**, **Great Spotted Woodpecker** and **Collared Dove** exhibited a reduction in failure rates at the chick stage. The remaining nine species (**Barn Owl**, **Stock Dove**, **Robin**, **Redstart**, **Stonechat**, **Magpie**, **Jackdaw**, **Carrion Crow** and **Raven**) displayed reduced failure rates at both the egg and chick stages. Corvids, such as **Magpie**, **Jackdaw**, **Carrion Crow** and **Raven**, appear to have benefited from improvements in nesting success at the egg stage, as have owls and raptors such as **Barn Owl**, **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 had a major impact on the size of the population, given the high number of breeding attempts made by this species each year, and the decreased chick-stage failure rates of **Collared Dove** may have aided the rapid growth of the UK population over the last 38 years. **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. **Greenfinch** has rapidly adapted to the provision of supplementary food in gardens and is now very much associated with human habitats. Such provisioning may lead to increased productivity because of its positive impact on adult body condition. Causes of the reduction in failure rates for **Wren**, **Robin**, **Redstart** and **Stonechat** are less clear, although all feed primarily on ground-dwelling invertebrates and changes in arthropod abundance or activity could be responsible.

Inverse associations between changes in egg- or chick-stage nest survival and population trends are found in some 23 species. Such relationships may arise through density-dependent processes where increased competition leads to increased failure rates at higher population densities. Four increasing species (**Mute Swan**, **Peregrine**, **Oystercatcher** and **Chaffinch**) showed long-term increases in egg-stage failure rates, while 19 declining species showed evidence of improving nesting success. **Ringed Plover**, **Snipe**, **Redshank**, **Woodlark**, **Dunnock**, **Wheatear**, **Sedge Warbler**, **Wood Warbler** and **Marsh Tit** showed decreasing failure at the egg stage while decreasing chick-stage failure rates were identified for **Meadow Pipit**, **Grey Wagtail** and **Corn Bunting**. The remaining seven species, **Kestrel**, **Merlin**, **Starling**, **House Sparrow**, **Tree Sparrow**, **Yellowhammer** and **Pied Wagtail** (which is thought to be declining in waterway habitats), exhibited decreasing failure rates at both stages.

Several species demonstrated a decrease in failure rates at one stage but a compensatory increase at the other, including **Dipper**, **Great Tit**, **Blue Tit**, **Long-tailed Tit**, **Tree Pipit**, **Whinchat** (declining egg failure, increasing chick failure) and **Blackbird** (increasing egg-stage failure, declining chick-stage failure).

4.5.3 Changes in productivity from Constant Effort Scheme ringing data

The CES started monitoring populations in 1983, so the changes in productivity shown in Table 4.5.3 cover roughly half the time period of the Nest Record Scheme results. The CES data set is unique in providing relative measures of adult abundance and productivity from the same set of sites in wetland and scrub habitats. While the NRS data set monitors the productivity of individual nesting attempts, the proportion of juveniles in the CES catch provides a relative measure of annual variation in productivity that integrates the effects of the number of fledglings produced per attempt, number of nesting attempts and immediate post-fledging survival. Use of these two techniques in combination provides a powerful method of determining which factors are responsible for observed declines in recruitment of young birds into the breeding population.

Overall, ten species exhibit declines of greater than 25% in the proportion of juveniles captured, while only **Chaffinch** shows an increase of greater than 25% in the ratio of juveniles to adults. Six of these species, **Nightingale**, **Sedge Warbler**, **Blue Tit**, **Linnet**, **Goldfinch** and **Reed Bunting**, all exhibit declines in the proportion of juveniles captured over the last 20 years of greater than 50%, although it should be noted that **Nightingale** occurs on a relatively small number of plots. A further four species show reductions in relative productivity of between 25% and 50%: **Song Thrush**, **Blackcap**, **Willow Warbler** and **Great Tit**. Of the nine of these species for which sufficient Nest Record Scheme data are available for comparison (**Nightingale** is excluded), six have also been identified as exhibiting negative trends in either clutch size, brood size or nest survival (**Sedge Warbler**, **Willow Warbler**, **Blue Tit**, **Great Tit**, **Linnet** and **Reed Bunting**).

Six of the ten species exhibiting productivity declines greater than 25% (**Nightingale**, **Song Thrush**, **Sedge Warbler**, **Willow Warbler**, **Linnet** and **Reed Bunting**) have experienced significant population declines, either on CES sites or 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**, **Willow Warbler** and **Reed Bunting** other work indicates that variation in survival rates is likely to have been a more important contributor to population changes (**Peach *et al.* 1995a**, **Peach *et al.* 1999**, **Robinson *et al.* 2004**, **Baillie *et al.* 2008**). 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 (**Blackcap**, **Great Tit**, **Blue Tit**, and **Goldfinch**) demonstrating marked reductions in productivity on CES sites have not experienced related declines in abundance, either on CES sites or more widely. These productivity declines may be driven by density-dependent processes, whereby increased competition for resources in an expanding population reduces the mean breeding success per pair.

Taking the CES data set as a whole, 20 species show some decline in productivity over the last 22 years while only five show increases. The strong preponderance of trends towards lower productivity requires urgent and more detailed investigation.

Table 4.5.3

Changes in productivity indices (percentage juveniles) for CES 1984-2006 (22 years) calculated from smoothed trend

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Comment
Nightingale	22	11	-85	-99	-27	Small sample
Linnet	22	22	-79	-94	-39	
Goldfinch	22	38	-63	-86	-14	
Sedge Warbler	22	69	-55	-75	-34	
Blue Tit	22	99	-54	-64	-41	
Reed Bunting	22	62	-54	-75	-18	
Song Thrush	22	88	-37	-55	-14	
Great Tit	22	97	-32	-51	-1	
Willow Warbler	22	95	-31	-49	-9	
Blackcap	22	94	-25	-44	-5	
Chaffinch	22	84	61	3	192	

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4.5.4 Changes in average laying dates from Nest Record Scheme data

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 38 years the majority of species exhibiting significant trends show an advancement of laying dates rather than a delay. Thus 40 species are laying between 31 days and 1 day earlier, on average, than they were 38 years ago. Three species, **Nightjar**, **Twite** and **Wood Warbler**, are added to the list of earlier layers published in the previous report in this series. 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 two species, **Skylark** and **Yellowhammer**, show significant changes towards later laying, and sample sizes are small. Both of these species are multi-brooded, however, and it may be that differences in the ratio of first to repeat broods initiated may be obscuring advances in laying date. Evidence of temporal and spatial variation in **Yellowhammer** repeat-brooding over time is currently being investigated in a collaborative research project between BTO and Aberdeen University. 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 not well understood but is an active research area within several research groups. Earlier average laying may be beneficial for birds because earlier fledging is often related to improved survival to the following year – early-nesting parents have an increased chance of having their offspring recruited into the next generation (**Visser *et al.* 1998**). However, the timing of leaf emergence and the speed of caterpillar development is also changing under increased temperatures (**Buse *et al.* 1999**, **Visser & Holleman 2001**) and the results of several recent studies have suggested that some birds may be unable to advance their phenology sufficiently to match phenological changes in their food supply, such that later-nesting birds are suffering from poorer productivity. **Both *et al.* (2006)** demonstrated that mismatches between periods of food availability and chick demand can affect abundance in Dutch **Pied Flycatcher** populations, with those demonstrating the largest mismatches between arrival in spring and peak caterpillar abundance exhibiting the greatest declines. As a consequence of climate change there may be an increasing mismatch between predator activities and the availability of their food supplies at different trophic levels within ecosystems (**Both *et al.* 2009**). The conservation significance of such phenological disjunction remains an active research area with potentially important policy implications for conservation.

Table 4.5.4

Significant trends in Laying date measured between 1968-2006

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Magpie	38	35	Curvilinear	Apr 21	Mar 21	-31 days	
Grey Heron	38	26	Linear decline	Apr 8	Mar 11	-28 days	Non-breeders included
Long-tailed Tit	38	44	Linear decline	Apr 21	Apr 6	-15 days	
Greenfinch	38	95	Linear decline	May 25	May 10	-15 days	
Chiffchaff	38	44	Linear decline	May 17	May 3	-14 days	
Redstart	38	61	Curvilinear	May 21	May 9	-12 days	
Nuthatch	38	26	Linear decline	May 2	Apr 21	-11 days	Small sample
Carrion Crow	38	32	Curvilinear	Apr 16	Apr 5	-11 days	Includes Hooded Crow
Tree Pipit	38	19	Linear decline	May 25	May 16	-9 days	Small sample
Dipper	38	59	Linear decline	Apr 18	Apr 9	-9 days	
Blackcap	38	37	Curvilinear	May 20	May 11	-9 days	
Marsh Tit	38	14	Linear decline	Apr 28	Apr 19	-9 days	Small sample
Treecreeper	38	13	Linear decline	May 7	Apr 28	-9 days	Small sample
Swallow	38	105	Curvilinear	Jun 20	Jun 12	-8 days	
Garden Warbler	38	21	Curvilinear	May 25	May 17	-8 days	Small sample
Chaffinch	38	107	Linear decline	May 11	May 3	-8 days	
Oystercatcher	38	46	Linear decline	May 17	May 10	-7 days	
Tawny Owl	38	14	Linear decline	Mar 29	Mar 22	-7 days	Nocturnal species
Whitethroat	38	18	Curvilinear	May 26	May 19	-7 days	Small sample
Blue Tit	38	197	Linear decline	May 3	Apr 26	-7 days	
Great Tit	38	176	Linear decline	May 4	Apr 27	-7 days	
House Sparrow	38	51	Linear decline	May 25	May 18	-7 days	
Goldfinch	38	22	Linear decline	Jun 6	May 30	-7 days	Small sample
Lesser Redpoll	38	11	Curvilinear	May 26	May 19	-7 days	Small sample
Kestrel	38	21	Linear decline	May 4	Apr 28	-6 days	Small sample
Robin	38	120	Linear decline	Apr 28	Apr 22	-6 days	
Stonechat	38	35	Curvilinear	May 3	Apr 27	-6 days	
Ring Ouzel	38	24	Linear decline	May 14	May 8	-6 days	Small sample
Sedge Warbler	38	49	Curvilinear	May 29	May 23	-6 days	
Reed Warbler	38	159	Curvilinear	Jun 16	Jun 10	-6 days	
Willow Warbler	38	84	Linear decline	May 20	May 14	-6 days	
Moorhen	38	68	Linear decline	May 10	May 5	-5 days	
Wren	38	87	Linear decline	May 14	May 9	-5 days	
Whinchat	38	27	Curvilinear	May 28	May 23	-5 days	Small sample
Wood Warbler	38	31	Curvilinear	May 23	May 18	-5 days	
Jackdaw	38	23	Curvilinear	Apr 23	Apr 18	-5 days	Small sample
Tree Sparrow	38	167	Linear decline	May 29	May 24	-5 days	
Twite	38	16	Linear decline	Jun 2	May 28	-5 days	Small sample
Dunnock	38	79	Linear decline	May 3	Apr 29	-4 days	
Nightjar	38	18	Curvilinear	Jun 17	Jun 16	-1 days	Small sample
Skylark	38	20	Curvilinear	May 25	Jun 1	7 days	Small sample
Yellowhammer	38	27	Linear increase	May 30	Jun 7	8 days	Small sample

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5. Acknowledgements

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Report production and analysis

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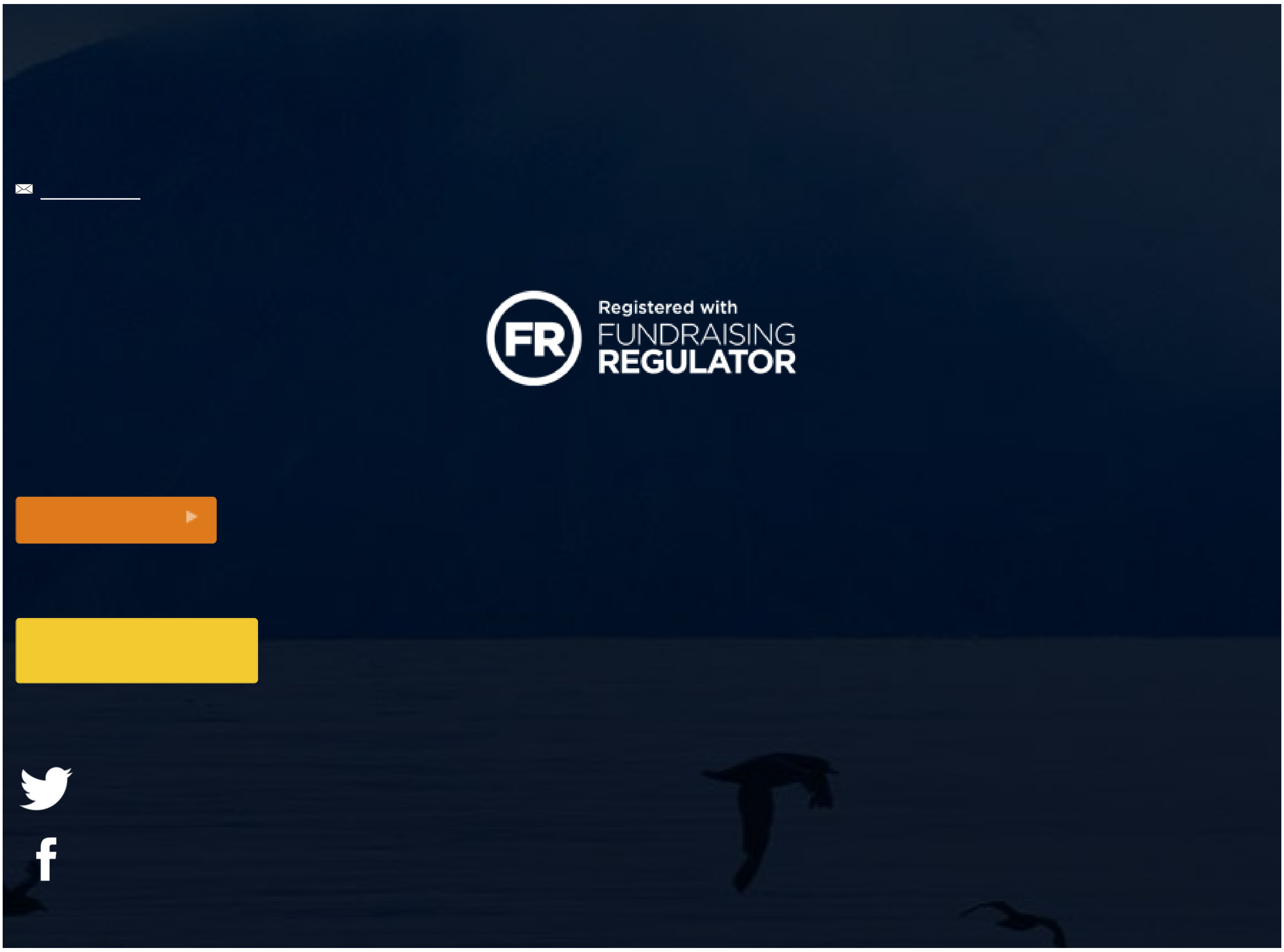
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Section 7 – Appendix

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7. Appendix – Summary tables of changes in population size and breeding performance

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7.1 Tables of alerts and population increases from CBC/BBS

1a. Table of population alerts for CBC/BBS UK 1967-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Grey Partridge	39	119	-88	-91	-83	>50	
Corn Bunting	39	63	-87	-94	-77	>50	
Spotted Flycatcher	39	121	-86	-90	-80	>50	
Turtle Dove	39	106	-85	-90	-76	>50	
Willow Tit	39	43	-85	-93	-72	>50	
Yellow Wagtail	39	71	-74	-88	-46	>50	
Marsh Tit	39	89	-68	-77	-56	>50	
Whitethroat	39	447	-62	-73	-50	>50	
Yellowhammer	39	440	-55	-65	-47	>50	
Song Thrush	39	678	-51	-58	-43	>50	
Bullfinch	39	271	-50	-61	-37	>25	
Little Owl	39	54	-46	-68	-12	>25	
Mistle Thrush	39	447	-43	-51	-31	>25	
Lapwing	39	231	-34	-64	-5	>25	
Dunnock	39	703	-33	-42	-22	>25	

1b. Table of population alerts for CBC/BBS England 1967-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Tree Sparrow	39	83	-97	-99	-94	>50	
Lesser Redpoll	39	43	-90	-96	-78	>50	
Grey Partridge	39	107	-88	-91	-82	>50	
Spotted Flycatcher	39	93	-87	-92	-82	>50	
Turtle Dove	39	105	-85	-91	-76	>50	
Corn Bunting	39	60	-84	-93	-74	>50	
Tree Pipit	39	44	-83	-92	-71	>50	
Willow Tit	39	40	-83	-92	-70	>50	
Starling	39	492	-83	-88	-77	>50	
Linnet	39	367	-75	-81	-66	>50	
Yellow Wagtail	39	69	-72	-85	-38	>50	
Marsh Tit	39	82	-68	-78	-55	>50	
Whitethroat	39	388	-63	-73	-50	>50	
Cuckoo	39	260	-61	-71	-48	>50	
Skylark	39	455	-59	-66	-51	>50	
Willow Warbler	39	399	-58	-70	-46	>50	
Yellowhammer	39	385	-57	-66	-46	>50	
Bullfinch	39	221	-52	-62	-39	>50	
Song Thrush	39	540	-51	-60	-42	>50	
Mistle Thrush	39	367	-49	-57	-39	>25	
Meadow Pipit	39	136	-46	-74	-24	>25	
Sedge Warbler	39	81	-39	-69	-13	>25	
Dunnock	39	582	-37	-46	-26	>25	

2a. Table of population alerts for CBC/BBS UK 1981-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Corn Bunting	25	80	-84	-92	-74	>50	
Turtle Dove	25	123	-82	-88	-75	>50	
Willow Tit	25	44	-82	-90	-69	>50	
Spotted Flycatcher	25	142	-81	-86	-75	>50	
Grey Partridge	25	142	-78	-85	-71	>50	
Yellow Wagtail	25	91	-70	-82	-55	>50	
Lapwing	25	324	-53	-65	-37	>50	
Yellowhammer	25	605	-53	-59	-48	>50	
Little Owl	25	69	-46	-63	-29	>25	
Mistle Thrush	25	615	-38	-45	-31	>25	
Marsh Tit	25	107	-38	-51	-16	>25	
Bullfinch	25	340	-28	-39	-14	>25	

2b. Table of population alerts for CBC/BBS England 1981-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Redpoll	25	40	-95	-98	-91	>50	
Tree Sparrow	25	80	-93	-97	-88	>50	
Corn Bunting	25	76	-83	-92	-71	>50	
Turtle Dove	25	122	-82	-88	-74	>50	
Tree Pipit	25	48	-82	-91	-69	>50	
Spotted Flycatcher	25	105	-82	-87	-75	>50	
Willow Tit	25	40	-82	-91	-72	>50	
Grey Partridge	25	126	-78	-84	-71	>50	
Starling	25	702	-78	-83	-73	>50	
Yellow Wagtail	25	89	-68	-81	-49	>50	
Cuckoo	25	352	-61	-67	-54	>50	
House Sparrow	25	587	-59	-71	-49	>50	
Willow Warbler	25	532	-58	-67	-49	>50	
Yellowhammer	25	529	-57	-62	-50	>50	
Skylark	25	644	-47	-54	-40	>25	
Linnet	25	501	-47	-57	-32	>25	
Mistle Thrush	25	500	-46	-52	-38	>25	
Lapwing	25	266	-43	-58	-16	>25	
Meadow Pipit	25	192	-43	-61	-26	>25	
Little Owl	25	66	-37	-55	-8	>25	
Marsh Tit	25	98	-37	-52	-15	>25	
Bullfinch	25	271	-31	-42	-19	>25	

3a. Table of population alerts for CBC/BBS UK 1996-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	10	60	-64	-72	-51	>50	
Turtle Dove	10	199	-58	-62	-51	>50	
Yellow Wagtail	10	164	-42	-53	-31	>25	
Grey Partridge	10	245	-39	-48	-31	>25	
Spotted Flycatcher	10	222	-32	-38	-16	>25	
Corn Bunting	10	144	-27	-38	-15	>25	

3b. Table of population alerts for CBC/BBS England 1996-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	10	53	-62	-71	-51	>50	
Turtle Dove	10	195	-57	-62	-51	>50	
Cuckoo	10	614	-46	-49	-43	>25	
Yellow Wagtail	10	160	-42	-49	-31	>25	
Starling	10	1394	-36	-39	-32	>25	
Grey Partridge	10	220	-33	-41	-25	>25	

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Spotted Flycatcher	10	159	-32	44	16	>25	
Tree Pipit	10	73	-30	47	-7	>25	
Willow Warbler	10	938	-30	-36	-24	>25	
Linnet	10	967	-27	-32	-21	>25	

4a. Table of population alerts for CBC/BBS UK 2001-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Turtle Dove	5	157	-40	-47	-31	>25	
Willow Tit	5	47	-33	-47	-14	>25	
Little Owl	5	101	-25	-39	-13	>25	
Yellow Wagtail	5	149	-25	-35	-14	>25	

4b. Table of population alerts for CBC/BBS England 2001-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Turtle Dove	5	155	-40	-47	-30	>25	
Willow Tit	5	40	-34	-51	-17	>25	

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Appendix 7.1 Tables 5a and 5b

7.1	Tables of alerts and population increases from CBC/BBS

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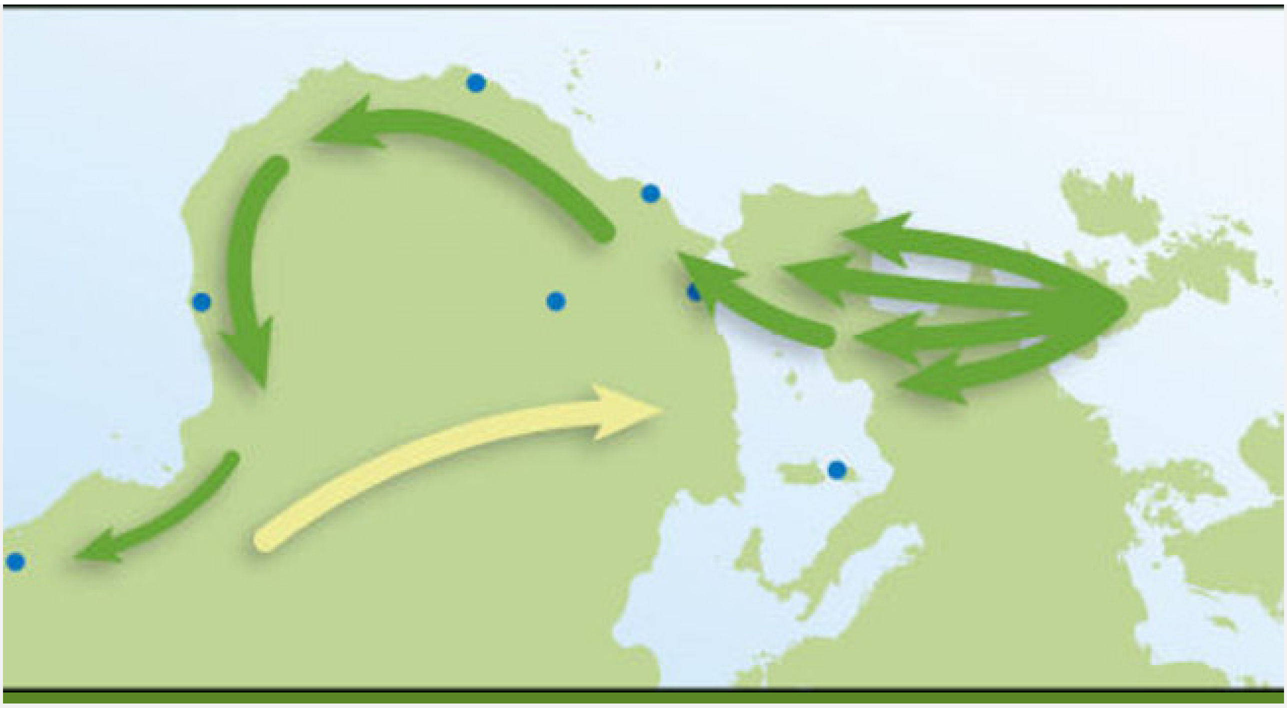

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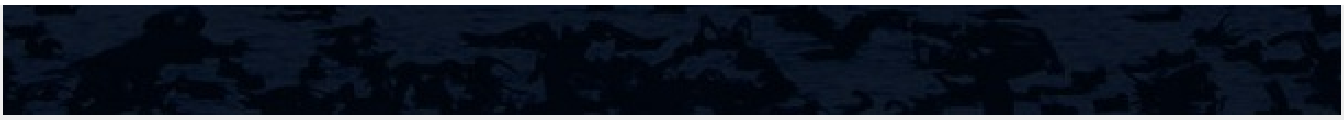

7.2 Tables of alerts and population increases from WBS

1. Table of alerts for WBS waterways 1975-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	31	18	-97	-99	-93	>50	Small sample
Reed Bunting	31	51	-61	-75	-33	>50	
Little Grebe	31	16	-59	-87	-9	>50	Small sample
Pied Wagtail	31	64	-53	-66	-43	>50	
Redshank	31	17	-49	-85	-16	>25	Small sample

2. Table of alerts for WBS waterways 1981-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	25	16	-97	-99	-95	>50	Small sample
Little Grebe	25	15	-64	-87	-23	>50	Small sample
Redshank	25	17	-45	-76	-22	>25	Small sample
Pied Wagtail	25	64	-39	-53	-25	>25	
Common Sandpiper	25	26	-28	-44	-10	>25	

3. Table of alerts for WBS waterways 1996-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Sand Martin	10	22	-44	-59	-25	>25	
Redshank	10	13	-33	-51	-12	>25	Small sample

4. Table of population increases for WBS waterways 1975-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Oystercatcher	31	23	113	67	213		
Mallard	31	92	165	88	258		
Whitethroat	31	41	171	15	367		

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Appendix 7.3

7.3 Tables of alerts and population increases from CES

1. Table of alerts for CES adults 1984-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Redpoll	22	17	-96	-99	-91	>50	Small sample
Linnet	22	20	-92	-97	-84	>50	
Yellowhammer	22	18	-74	-91	-28	>50	Small sample
Willow Warbler	22	88	-61	-70	-52	>50	
Lesser Whitethroat	22	40	-59	-78	-40	>50	
Willow Tit	22	20	-58	-89	-25	>50	
Reed Bunting	22	59	-51	-64	-36	>50	
Whitethroat	22	59	-36	-57	-22	>25	
Sedge Warbler	22	64	-33	-49	-11	>25	
Reed Warbler	22	52	-33	-46	-10	>25	

2. Table of alerts for CES adults 1996-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Redpoll	10	12	-86	-95	-72	>50	Small sample
Linnet	10	18	-62	-84	-35	>50	Small sample
Lesser Whitethroat	10	37	-49	-61	-32	>25	
Willow Tit	10	15	-49	-82	-4	>25	Small sample
Willow Warbler	10	91	-48	-54	-42	>25	
Sedge Warbler	10	74	-46	-54	-37	>25	
Whitethroat	10	68	-37	-46	-27	>25	
Reed Warbler	10	60	-26	-36	-13	>25	

3. Table of alerts for CES adults 2001-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Sedge Warbler	5	64	-26	-34	-19	>25	

4. Table of population increases for CES adults 1984-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Wren	22	95	58	35	87		
Treecreeper	22	37	60	9	122		
Robin	22	89	63	40	87		
Blackcap	22	86	69	39	112		
Chiffchaff	22	67	161	75	304		

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Appendix 7.4

7.4 Tables of population declines and increases from BBS

1. Table of declines >25% for BBS UK 1995-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	11	54	-66	-74	-54	>50	
Turtle Dove	11	182	-60	-66	-54	>50	
Wood Warbler	11	53	-58	-70	-44	>50	
Pied Flycatcher	11	41	-50	-63	-38	>25	
Yellow Wagtail	11	158	-44	-53	-34	>25	
Grey Partridge	11	227	-40	-49	-32	>25	
Curlew	11	453	-38	-43	-33	>25	
Whinchat	11	74	-38	-53	-18	>25	
Spotted Flycatcher	11	202	-37	-46	-23	>25	
Cuckoo	11	729	-33	-38	-27	>25	
Corn Bunting	11	138	-32	-45	-21	>25	
Starling	11	1631	-29	-34	-24	>25	
Swift	11	961	-26	-33	-18	>25	

2. Table of declines >25% for BBS England 1995-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	11	47	-66	-75	-57	>50	
Turtle Dove	11	179	-60	-65	-52	>50	
Cuckoo	11	584	-50	-53	-46	>25	
Yellow Wagtail	11	154	-43	-52	-33	>25	
Starling	11	1335	-38	-41	-34	>25	
Spotted Flycatcher	11	144	-37	-48	-21	>25	
Grey Partridge	11	202	-35	-44	-26	>25	
Tree Pipit	11	67	-35	-51	-11	>25	
Whinchat	11	30	-34	-60	-9	>25	
Lesser Redpoll	11	54	-34	-58	-6	>25	
Willow Warbler	11	866	-32	-37	-27	>25	
Linnet	11	909	-30	-35	-23	>25	
Swift	11	825	-28	-36	-18	>25	
Corn Bunting	11	132	-28	-40	-18	>25	

3. Table of declines >25% for BBS Scotland 1995-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Black-headed Gull	11	72	-69	-83	-45	>50	

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
[illegible]	11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Swift	11	46	-42	-59	-18	>25	
Kestrel	11	42	-40	-56	-17	>25	
Lapwing	11	86	-38	-50	-25	>25	
Siskin	11	54	-25	-43	-9	>25	

4. Table of declines >25% for BBS Wales 1995-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Starling	11	83	-46	-64	-23	>25	
Curlew	11	38	-45	-58	-30	>25	
Yellowhammer	11	38	-36	-53	-16	>25	
Cuckoo	11	57	-33	-47	-19	>25	
Garden Warbler	11	53	-29	-46	-5	>25	
Willow Warbler	11	152	-27	-37	-14	>25	
Coal Tit	11	68	-26	-46	-1	>25	
Wheatear	11	50	-25	-43	-8	>25	

1. Table of declines >25% for BBS UK 1996-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	10	53	-64	-72	-51	>50	
Turtle Dove	10	184	-58	-63	-51	>50	
Wood Warbler	10	53	-53	-67	-36	>50	
Pied Flycatcher	10	41	-49	-61	-37	>25	
Yellow Wagtail	10	157	-43	-52	-33	>25	
Grey Partridge	10	230	-38	-47	-30	>25	
Whinchat	10	73	-38	-53	-18	>25	
Curlew	10	460	-36	-40	-31	>25	
Spotted Flycatcher	10	206	-35	-42	-21	>25	
Cuckoo	10	731	-29	-35	-24	>25	
Great Black-backed Gull	10	101	-28	-43	-2	>25	
Starling	10	1665	-28	-32	-23	>25	
Corn Bunting	10	138	-26	-39	-16	>25	

2. Table of declines >25% for BBS England 1996-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	10	46	-63	-72	-54	>50	
Turtle Dove	10	181	-57	-63	-50	>50	
Nightingale	10	30	-47	-61	-31	>25	
Cuckoo	10	582	-46	-49	-42	>25	
Yellow Wagtail	10	153	-42	-51	-32	>25	
Starling	10	1359	-36	-39	-32	>25	
Lesser Redpoll	10	55	-35	-60	-9	>25	
Spotted Flycatcher	10	146	-34	-44	-20	>25	
Whinchat	10	30	-32	-58	-9	>25	
Grey Partridge	10	205	-31	-41	-23	>25	
Willow Warbler	10	873	-31	-36	-26	>25	
Tree Pipit	10	67	-30	-47	-10	>25	
Linnet	10	925	-26	-31	-19	>25	
Swift	10	840	-25	-32	-19	>25	

3. Table of declines >25% for BBS Scotland 1996-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Black-headed Gull	10	72	-63	-79	-39	>50	
Curlew	10	120	-47	-53	-41	>25	
Kestrel	10	42	-34	-50	-12	>25	
Lapwing	10	87	-34	-47	-20	>25	
Great Black-backed Gull	10	37	-33	-49	-8	>25	

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Swift	10	48	-33	-53	-13	>25	
Siskin	10	55	-30	-48	-15	>25	

4. Table of declines >25% for BBS Wales 1996-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Curlew	10	39	-43	-55	-29	>25	
Starling	10	85	-41	-61	-20	>25	
Goldcrest	10	83	-38	-56	-7	>25	
Cuckoo	10	59	-32	-46	-21	>25	
Yellowhammer	10	38	-32	-48	-12	>25	
Swift	10	68	-30	-48	-4	>25	
Garden Warbler	10	55	-28	-45	-7	>25	
Whitethroat	10	77	-26	-39	-12	>25	
Willow Warbler	10	157	-26	-36	-14	>25	

1. Table of declines >25% for BBS UK 2001-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Turtle Dove	5	157	-40	-46	-32	>25	
Willow Tit	5	47	-36	-51	-21	>25	
Great Black-backed Gull	5	106	-28	-40	-9	>25	

2. Table of declines >25% for BBS England 2001-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Turtle Dove	5	155	-40	-48	-31	>25	
Willow Tit	5	40	-36	-52	-19	>25	
Redshank	5	58	-27	-38	-7	>25	

3. Table of declines >25% for BBS Scotland 2001-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Great Black-backed Gull	5	38	-35	-47	-14	>25	
Curlew	5	110	-31	-40	-24	>25	
Mallard	5	96	-26	-37	-17	>25	
Red Grouse	5	43	-26	-44	-6	>25	

4. Table of declines >25% for BBS Wales 2001-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Goldcrest	5	93	-31	-45	-16	>25	
Curlew	5	37	-26	-40	-10	>25	
Swift	5	77	-26	-41	-11	>25	
Linnet	5	106	-26	-40	-8	>25	

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Appendix 7.4 continued

7.4 Tables of population declines and increases from BBS

5. Table of population increases for BBS UK 1995-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Blackcap	11	1293	55	48	64		
Raven	11	214	80	40	133		
Great Spotted Woodpecker	11	811	112	100	124		
Canada Goose	11	393	115	72	159		
Greylag Goose	11	127	120	21	281		
Stonechat	11	122	200	140	265		
Red Kite	11	43	282	152	599		

6. Table of population increases for BBS England 1995-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Green Woodpecker	11	636	51	42	62		
Buzzard	11	400	90	68	117		
Canada Goose	11	367	102	58	152		
Great Spotted Woodpecker	11	721	105	94	119		
Greylag Goose	11	103	126	64	257		
Stonechat	11	48	167	83	278		
Raven	11	71	172	68	303		
Ring-necked Parakeet	11	34	522	202	1861		

7. Table of population increases for BBS Scotland 1995-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Mistle Thrush	11	66	51	21	101		
Goldcrest	11	79	57	24	82		
Goldfinch	11	73	58	14	126		
Raven	11	39	63	3	138		
Wren	11	194	66	43	80		
House Martin	11	53	84	21	136		
Whitethroat	11	66	87	41	155		
Blackcap	11	36	145	81	246		
Chiffchaff	11	29	158	62	336		
Stonechat	11	29	229	122	359		

8. Table of population increases for BBS Wales 1995-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Blackcap	11	109	56	30	83		
Goldfinch	11	115	56	21	113		
Pheasant	11	82	57	32	97		
House Sparrow	11	113	68	45	100		
Great Spotted Woodpecker	11	61	98	62	148		
Herring Gull	11	76	137	35	294		
Stonechat	11	33	207	117	360		

9. Table of population increases for BBS Northern Ireland 1995-2006

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Meadow Pipit	11	59	51	21	101		
Jackdaw	11	66	58	11	94		
House Martin	11	36	59	1	146		
Wren	11	82	62	21	95		
Woodpigeon	11	73	64	28	103		
Goldcrest	11	38	84	21	111		
Starling	11	69	86	35	169		
Coal Tit	11	53	87	40	137		
Dunnock	11	62	90	37	136		
Hooded Crow	11	71	111	59	160		
Greenfinch	11	46	115	34	204		
Great Tit	11	61	124	71	160		
Pheasant	11	30	148	46	239		
Goldfinch	11	34	543	.	.		

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